IEC 61158-6-3

Edition 3.0 2014-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Industrial communication networks – Fieldbus specifications – Part 6-3: Application layer protocol specification – Type 3 elements

Réseaux de communication industriels – Spécifications des bus de terrain – Partie 6-3: Spécification du protocole de la couche application – Éléments de type 3

IEC 61158-6-3:2014-08(en-fr)

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CONTENTS

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INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 6-3: Application layer protocol specification – Type 3 elements

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NOTE Combinations of protocol types are specified in IEC 61784-1 and IEC 61784-2.

International Standard IEC 61158-6-3 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

This third edition cancels and replaces the second edition published in 2010. This edition constitutes a technical revision.

The main changes with respect to the previous edition are listed below:

- corrections, in Table 4, Table 5, Table 6, and Table 7;

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- added references for data types;
- corrected state machine in Table 91 and Table 97;
- updated macro START_MSAL1M,
- spelling and grammar.

The text of this standard is based on the following documents:

FDIS	Report on voting
65C/764/FDIS	65C/774/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 61158 series, published under the general title *Industrial communication networks – Fieldbus specifications*, can be found on the IEC web site.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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INTRODUCTION

This part of IEC 61158 is one of a series produced to facilitate the interconnection of automation system components. It is related to other standards in the set as defined by the "three-layer" fieldbus reference model described in IEC 61158-1.

The application protocol provides the application service by making use of the services available from the data-link or other immediately lower layer. The primary aim of this standard is to provide a set of rules for communication expressed in terms of the procedures to be carried out by peer application entities (AEs) at the time of communication. These rules for communication are intended to provide a sound basis for development in order to serve a variety of purposes:

- as a guide for implementors and designers;
- for use in the testing and procurement of equipment;
- as part of an agreement for the admittance of systems into the open systems environment;
- as a refinement to the understanding of time-critical communications within OSI.

This standard is concerned, in particular, with the communication and interworking of sensors, effectors and other automation devices. By using this standard together with other standards positioned within the OSI or fieldbus reference models, otherwise incompatible systems may work together in any combination.

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of patents concerning Type 3 elements and possibly other types given in the normative elements of this standard.

The following patent rights for Type 3 have been announced by [SI]:

Publication	Title
EP 1253494	Control device with fieldbus

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[SI]: Siemens AG
CT IP M&A

Otto-Hahn-Ring 6
D-81739 Munich
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INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 6-3: Application layer protocol specification – Type 3 elements

1 Scope

1.1 General

The Fieldbus Application Layer (FAL) provides user programs with a means to access the fieldbus communication environment. In this respect, the FAL can be viewed as a “window between corresponding application programs.”

This standard provides common elements for basic time-critical and non-time-critical messaging communications between application programs in an automation environment and material specific to Type 3 fieldbus. The term “time-critical” is used to represent the presence of a time-window, within which one or more specified actions are required to be completed with some defined level of certainty. Failure to complete specified actions within the time window risks failure of the applications requesting the actions, with attendant risk to equipment, plant and possibly human life.

This standard defines in an abstract way the externally visible behavior provided by the Type 3 fieldbus application layer in terms of

a) the abstract syntax defining the application layer protocol data units conveyed between communicating application entities,
b) the transfer syntax defining the application layer protocol data units conveyed between communicating application entities,
c) the application context state machine defining the application service behavior visible between communicating application entities; and
d) the application relationship state machines defining the communication behavior visible between communicating application entities.

The purpose of this standard is to define the protocol provided to

a) define the wire-representation of the service primitives specified in IEC 61158-5-3, and
b) define the externally visible behavior associated with their transfer.

This standard specifies the protocol of the Type 3 fieldbus application layer, in conformance with the OSI Basic Reference Model (ISO/IEC 7498-1) and the OSI Application Layer Structure (ISO/IEC 9545).

FAL services and protocols are provided by FAL application-entities (AE) contained within the application processes. The FAL AE is composed of a set of object-oriented Application Service Elements (ASEs) and a Layer Management Entity (LME) that manages the AE. The ASEs provide communication services that operate on a set of related application process object (APO) classes. One of the FAL ASEs is a management ASE that provides a common set of services for the management of the instances of FAL classes.

Although these services specify, from the perspective of applications, how request and responses are issued and delivered, they do not include a specification of what the requesting and responding applications are to do with them. That is, the behavioral aspects of the

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applications are not specified; only a definition of what requests and responses they can send/receive is specified. This permits greater flexibility to the FAL users in standardizing such object behavior. In addition to these services, some supporting services are also defined in this standard to provide access to the FAL to control certain aspects of its operation.

1.2 Specifications

The principal objective of this standard is to specify the syntax and behavior of the application layer protocol that conveys the application layer services defined in IEC 61158-5-3.

A secondary objective is to provide migration paths from previously-existing industrial communications protocols. It is this latter objective which gives rise to the diversity of protocols standardized in parts of the IEC 61158-6 subparts.

1.3 Conformance

This standard does not specify individual implementations or products, nor does it constrain the implementations of application layer entities within industrial automation systems.

There is no conformance of equipment to the application layer service definition standard. Instead, conformance is achieved through implementation of this application layer protocol specification.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE All parts of the IEC 61158 series, as well as IEC 61784-1 and IEC 61784-2 are maintained simultaneously. Cross-references to these documents within the text therefore refer to the editions as dated in this list of normative references.

IEC 61158-3-3:2014, *Industrial communication networks - Fieldbus specifications – Part 3-3: Data-link layer service definition – Type 3 elements*

IEC 61158-4-3:2014, *Industrial communication networks – Fieldbus specifications – Part 4-3: Data-link layer protocol specification – Type 3 elements*

IEC 61158-5-3:2014, *Industrial communication networks – Fieldbus specifications – Part 5-3: Application layer service definition – Type 3 elements*

IEC 61158-5-10:2014, *Industrial communication networks – Fieldbus specifications – Part 5-10: Application layer service definition – Type 10 elements*

IEC 61158-6-10:2014, *Industrial communication networks – Fieldbus specifications – Part 6-10: Application layer protocol specification – Type 10 elements*

ISO/IEC 7498-1, *Information technology – Open Systems Interconnection – Basic Reference Model: The Basic Model*

ISO/IEC 8822, *Information technology – Open Systems Interconnection – Presentation service definition*

ISO/IEC 8824-1, *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation*

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ISO/IEC 9545, *Information technology – Open Systems Interconnection – Application Layer structure*

ISO/IEC 10731, *Information technology – Open Systems Interconnection – Basic Reference Model – Conventions for the definition of OSI services*

IEEE 754, *IEEE Standard for Floating-Point Arithmetic,* available at <http://www.ieee.org>

3 Terms, definitions, abbreviations, symbols and conventions

For the purposes of this document, the following terms, definitions, abbreviations, symbols and conventions apply.

3.1 Referenced terms and definitions

3.1.1 ISO/IEC 7498-1 terms

For the purposes of this document, the following terms as defined in ISO/IEC 7498-1 apply:

a) application entity
b) application process
c) application protocol data unit
d) application service element
e) application entity invocation
f) application process invocation
g) application transaction
h) real open system
i) transfer syntax

3.1.2 ISO/IEC 8822 terms

For the purposes of this document, the following terms as defined in ISO/IEC 8822 apply:

a) abstract syntax
b) presentation context

3.1.3 ISO/IEC 9545 terms

For the purposes of this document, the following terms as defined in ISO/IEC 9545 apply:

a) application-association
b) application-context
c) application context name
d) application-entity-invocation
e) application-entity-type
f) application-process-invocation
g) application-process-type
h) application-service-element
i) application control service element

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3.1.4 ISO/IEC 8824-1 terms

For the purposes of this document, the following terms as defined in ISO/IEC 8824-1 apply:

a) object identifier

b) type

3.1.5 Fieldbus Data Link Layer terms

For the purposes of this document, the following terms as defined in IEC 61158-3-3 and IEC 61158-4-3 apply.

a) DL-Time

b) DL-Scheduling-policy

c) DLCEP

d) DLC

e) DL-connection-oriented mode

f) DLPDU

g) DLSDU

h) DLSAP

i) link

j) network address

k) node address

l) node

m) scheduled

3.2 Additional definitions

3.2.1
access protection
limitation of the usage of an application object to one client

3.2.2
address-assignment-table
mapping of the client's internal I/O-Data object storage to the decentralized input and output data objects

3.2.3
channel
single physical or logical link of an input or output application object of a server to the process

3.2.4
channel related diagnosis
information concerning a specific element of an input or output application object, provided for maintenance purposes

EXAMPLE: validity of data

3.2.5
configuration check
comparison of the expected I/O-Data object structuring of the client with the real I/O-Data object structuring to the server in the start-up phase

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3.2.6
configuration fault
an unacceptable difference between the expected I/O-Data object structuring and the real I/O-Data object structuring, as detected by the server

3.2.7
configuration identifier
representation of a portion of I/O Data of a single input- and/or output-module of a server.

3.2.8
configuration identifier related diagnosis
compromises all module specific data available at the server for maintenance purposes

3.2.9
control commands
action invocations transferred from client to server to clear outputs, freeze inputs and/or synchronize outputs

3.2.10
data consistency
means for coherent transmission and access of the input- or output-data object between and within client and server

3.2.11
Data-eXchange-Broadcast
DXB
service for conveyance of information between the DP-master (Class 1) and the assigned DP-slaves initiating the Publisher and Subscriber functionality in the DP-slaves

3.2.12
default DL-address
value 126 as an initial value for DL-address, which has to be changed (e.g. by assignment of an DL-address via the fieldbus) before operation with a DP-master (class 1)

3.2.13
device related diagnosis
compromises all data related to the whole DP-slave available at the server for maintenance purposes

3.2.14
diagnosis information
all data available at the server for maintenance purposes

3.2.15
diagnosis information collection
system diagnosis information that is assembled at the client side

3.2.16
DP-master (class 1)
a controlling device which controls several DP-slaves (field devices)

Note 1 to entry: This is usually a programmable controller or a distributed control system.

3.2.17
DP-master (class 2)
controlling device which manages configuration data (parameter sets) and diagnosis data of a DP-master (Class 1), and that additionally performs all communication capabilities of a DP-master (Class 1)

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3.2.18
DP-slave
field device that can be assigned to one DP-master (Class 1) as a provider for cyclic I/O data exchange, in addition acyclic functions and alarms could be provided

3.2.19
DXB request
cyclic data exchange service request with a specific DL service between the DP-master (Class 1) and the assigned DP-slaves initiating the Publisher functionality in the DP-slaves

3.2.20
DXB response
cyclic data exchange service response not to the individual address of the requester (DP-master (Class 1)) but to the broadcast address (=127)

3.2.21
freeze

function at the DP-slaves for simultaneous data transfer between the input data object and the process

3.2.22
group
set of DP-slaves which perform a Freeze or Sync function

3.2.23
I/O data
object designated to be transferred cyclically for the purpose of processing.

3.2.24
ident number
DP-master (Class 1) or DP-slave device type

3.2.25
index
address of an object within an application process

3.2.26
isochronous mode
special operation mode of a DP system that implies both a constant DP cycle with a fixed schedule of the cyclic and acyclic DP services, and the synchronisation of the application in the DP-master (Class 1) and the DP-slaves with this constant DP cycle

3.2.27
master parameter set
the configuration and parameterization data of all DP-slaves that are assigned to the corresponding DP-master and the bus parameters

3.2.28
module
addressable unit inside the DP-slave

3.2.29
process data
object(s) which are already pre-processed and transferred acyclically for the purpose of information or further processing

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3.2.30
publisher
role of a CR endpoint that transmits APDUs onto the Fieldbus for consumption by one or more subscribers

Note 1 to entry: A publisher may not be aware of the identity or the number of subscribers and it may publish its APDUs using a dedicated CR.

3.2.31
real configuration
input and output data structure of a DP-slave, including definition of data consistency

3.2.32
subscriber
role of a CREP in which it receives APDUs produced by a publisher

3.2.33
slot
address of a module within a DP-slave

3.2.34
sync
function at the DP-slaves for simultaneous data transfer between the output data object and the process

3.3 Abbreviations and symbols

Ack	Acknowledgement
Add	Address
AP	Application Process
APDU	Application Protocol Data Unit
API	Application Process Identifier
AR	Application Relationship
AREP	Application Relationship End Point
ARL	Application Relationship List
ASE	Application Service Element
Cfg	Configuration
cnf	confirmation primitive
CREP	Communication Relationship End Point
CRL	Communication Relationship List
D_	Destination
DLL	Data Link Layer
DLM	Data Link-management
DLSAP	Data Link Service Access Point
DLSDU	Data Link Service Data Unit
DMPM	Data Link Mapping Protocol Machine
DMPMM1	Data Link Mapping Protocol Machine DP-master (Class 1)
DMPMM2	Data Link Mapping Protocol Machine DP-master (Class 2)
DMPMS	Data Link Mapping Protocol Machine DP-slave
DSAP	Destination Service Access Point
DXB	Data eXchange Broadcast
FAL	Fieldbus Application Layer
FIFO	First In First Out
FSPMM1	FAL Service Protocol Machine DP-master (Class 1)
FSPMM2	FAL Service Protocol Machine DP-master (Class 2)
FSPMS	FAL Service Protocol Machine DP-slave
HSA	Highest Station Address
I&M	Identification and Maintenance Profile
ID	Identifier
IEC	International Electrotechnical Commission
ind	indication primitive

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Inp	Input
ISO	International Organization For Standardization
IsoM	Isochronous Mode
L_sdu	Link Service Data Unit
lsb	least significant bit
msb	most significant bit
OSI	Open Systems Interconnection
Outp	Output
Param	Parameter
PDU	Protocol Data Unit
RD_	Read
Rem	Remote
Req	Request (used to indicate an APDU type)
req	request primitive
REQ	Request to indicate a Request PDU
RES	Response to indicate a Response PDU
RM	Resource Manager
RPL_UPD	Reply Update
Rsp	Response (used to indicate an APDU type)
rsp	response primitive
S_	Source
SAP	Service Access Point
SCL	Security Level
SD	Start Delimiter
SDN	Send Data with no Acknowledge
SDR	Station Delay Responder
Seq	Sequence
Src	Source
SRD	Send and Request Data with Reply
SSAP	Source Service Access Point
TR	Technical Report
USIF	User Interface
WD	Watchdog

3.4 Conventions

3.4.1 General concept

The FAL is defined as a set of object-oriented ASEs. Each ASE is specified in a separate subclause. Each ASE specification is composed of three parts: its class definitions, its services, and its protocol specification. The first two are contained in IEC 61158-5-3. The protocol specification for each of the ASEs is defined in this standard.

The class definitions define the attributes of the classes supported by each ASE. The attributes are accessible from instances of the class using the Management ASE services specified in IEC 61158-5-3 standard. The service specification defines the services that are provided by the ASE.

This standard uses the descriptive conventions given in ISO/IEC 10731.

3.4.2 Abstract syntax conventions

PDUs are described as octets or groups of octets.

a) Groups of octets separated by a comma appear in the order they are transferred If optional octets are not present the following octets appear without a gap

b) If octets or groups of octets are grouped within "{ }" the order is arbitrary

c) If octets or groups of octets are marked with "*" they may appear more than once. If it is used within a "{ }" section they may appear mixed with other octets or group of octets of this section.

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d) Octets can be grouped or values can be assigned within "( )"

e) If octets or groups of octets are grouped within "[ ]" the group can be omitted

f) Complex APDUs may be built by means of substitutions (sub-structures)

g) Exclusive selections of octets or groups of octets are separated by "^"

NOTE 1 The formal PDU example

AP_PDU=Octet1,OctetGroup1,[Octet2],[Octet3],{[OctGroup2*],OctetGroup3^Octet4}
According to this the following variants are valid on the wire (non exhaustive):

Variant 1: Octet1, OctetGroup1, Octet2, Octet3, OctetGroup2,OctetGroup3

Variant 2: Octet1, OctetGroup1, Octet2, Octet3, OctetGroup2, OctetGroup2, OctetGroup2,OctetGroup3

Variant 3: Octet1, OctetGroup1, OctetGroup2, OctetGroup2, OctetGroup2,OctetGroup3, OctetGroup2

Variant4: Octet1, OctetGroup1, OctetGroup2, OctetGroup3, OctetGroup2, OctetGroup2, OctetGroup2, OctetGroup2

Variant 5: Octet1, OctetGroup1, Octet3, Octet4

NOTE 2 The arbitrary order implies that groups of octets are characterized by a special header that is described within the coding rules.

NOTE 3 The APDU syntax implies that according to the maximum DLSDU a APDU shall not exceed 244 octets in total.

3.4.3 Convention for the encoding of reserved bits and octets

The term "reserved" may be used to describe bits in octets or whole octets. All bits or octets that are reserved should be set to zero at the sending side and shall not be tested at the receiving side except it is explicitly stated or if the reserved bits or octets are checked by a state machine.

The term "reserved" may also be used to indicate that certain values within the range of a parameter are reserved for future extensions. In this case the reserved values should not be used at the sending side and shall not be tested at the receiving side except it is explicitly stated or if the reserved values are check by a state machine.

3.4.4 Conventions for the common coding s of specific field octets

APDUs may contain specific fields that carry information in a primitive and condensed way. These fields shall be coded in the order according to Figure 1.

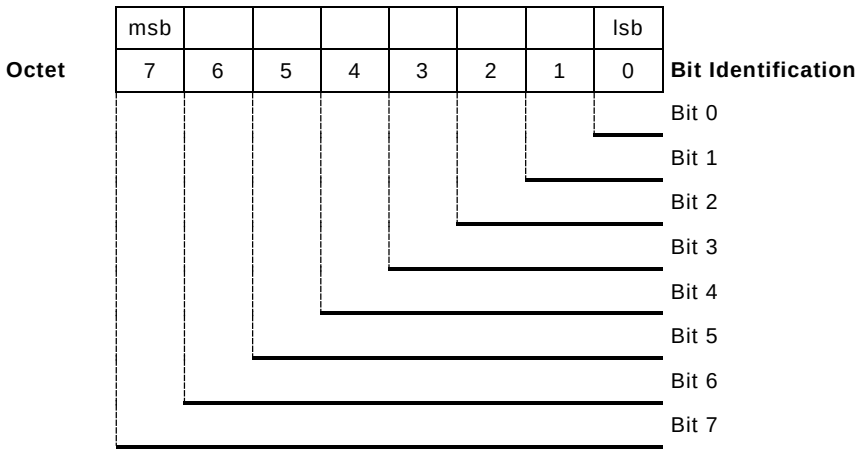

Figure 1 – Common structure of specific fields

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– Bits may be grouped as group of bits. Each bit or group of bits shall be addressed by its Bit Identification (e.g. Bit 0, Bit 1 to 4). The position within the octet shall be according to the figure above. Alias names may be used for each bit or group of bits or they may be marked as reserved. The grouping of individual bits shall be in ascending order without gaps. The values for a group of bits may be represented as binary, decimal or hexadecimal values. This value shall only be valid for the grouped bits and can only represent the whole octet if all 8 bits are grouped. Decimal or hexadecimal values shall be transferred in binary values so that the bit with the highest number of the group represents the msb concerning the grouped bits.

EXAMPLE 1: Description and relation for the specific field octet

Bit 0: reserved.

Bit 1-3: Reason_Code The decimal value 2 for the Reason_Code means general error.

Bit 4-7: shall always set to one.

The octet that is constructed according to the description above looks as follows:

(msb) Bit 7 = 1,

Bit 6 = 1,

Bit 5 = 1,

Bit 4 = 1,

Bit 3 = 0,

Bit 2 = 1,

Bit 1 = 0,

(lsb) Bit 0 = 0.

The bit combination "0-1-0" for Bit 1-3 equals the decimal value 2.

3.5 Conventions used in state machines

3.5.1 State machine conventions

The protocol sequences are described by means of State Machines.

In state diagrams states are represented as boxes state transitions are shown as arrows. Names of states and transitions of the state diagram correspond to the names in the textual listing of the state transitions.

The textual listing of the state transitions is structured as follows, see also Table 1.

a) The first row contains the name of the transition.

b) The second row in define the current state.

c) The third row contains an optional event followed by Conditions starting with a “/” as first line character and finally followed by the Actions starting with a “=>” as first line character.

d) The last row contains the next state.

e) If the event occurs and the conditions are fulfilled the transition fires, i.e. the actions are executed and the next state is entered.

The layout of a Machine description is shown in Table 1. The meaning of the elements of a State Machine Description are shown in Table 2.

Table 1 – State machine description elements

#	Current state	Event or condition => action	Next state

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Table 2 – Description of state machine elements

Description element	Meaning
Current state Next state	Name of the given states.
#	Name or number of the state transition.
Event	Name or description of the event.
/Condition	Boolean expression. The preceding "\" is not part of the condition.
=> Action	List of assignments and service or function invocations. The preceding "=>" is not part of the action.

The conventions used in the state machines are shown in Table 3.

Table 3 – Conventions used in state machines

Convention	Meaning
:=	Value of an item on the left is replaced by value of an item on the right. If an item on the right is a parameter, it comes from the primitive shown as an input event.
xxx	A parameter name. Example: Identifier := reason means value of a 'reason' parameter is assigned to a parameter called 'Identifier.'
"xxx"	Indicates fixed value. Example: Identifier := "abc" means value "abc" is assigned to a parameter named 'Identifier.'
=	A logical condition to indicate an item on the left is equal to an item on the right.
<	A logical condition to indicate an item on the left is less than the item on the right.
>	A logical condition to indicate an item on the left is greater than the item on the right.
<>	A logical condition to indicate an item on the left is not equal to an item on the right.
&&	Logical "AND"
||	Logical "OR"

for (Identifier := start_value to end_value)
actions
endfor
	This construct allows the execution of a sequence of actions in a loop within one transition. The loop is executed for all values from start_value to end_value.

If (condition)
actions
else
actions
	This construct allows the execution of alternative actions depending on some condition (which might be the value of some identifier or the outcome of a previous action) within one transition. The parts beginning with "else" can be ommitted if there is no action if the condition is not fulfilled.

Readers are strongly recommended to refer to the subclauses for the AREP and CREP attribute definitions, the local functions, and the FAL-PDU definitions to understand protocol machines. It is assumed that readers have sufficient knowledge of these definitions and they are used without further explanations.

In addition the following description elements are used:

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Wildcard in names

name_XXX: “XXX” is used as wildcard string for all names beginning with “name”.

The typical use of a wildcard is an Event. In this context there are as many state transitions as possible events for this wildcard exists.

Conditional macro

<CONDITIONAL -MACRO-NAME>

<

CONDITION1: macrobody1

CONDITION2: macrobody2

…

>

CONDITION1, CONDITION2, etc. define all possible cases for the conditional macro. The “CONDITIONAL-MACRO-NAME” acts as place holder for the “macrocode” depending on the result of the condition.

Replacement macro

<REPLACEMENT-MACRO-NAME>

<

XXX= Name1 : macrobody1

XXX= Name2 : macrobody2

…

>

Name1, Name2, etc. define all possible cases for the replacement macro. The “REPLACEMENT-MACRO-NAME” acts as place holder for the “macrocode” depending on the value of the current use of the wildcard XXX.

Example:
<SERVICE_REQ_PARA>
<
XXX=Read: Para1, Para2
XXX=Write: Para1, Para2, Para3
>
when called in
MSAB_XXX.req(<SERVICE_REQ_PARA>)
will result in
MSAB_Read.req(Para1, Para2) or MSAB_Write.req(Para1, Para2, Para3)

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4 FAL syntax description

4.1 APDU abstract syntax

Table 4 defines the abstract syntax of the DP Application Layer PDUs referred to as APDUs. The defined order of octets shall be used to convey the APDUs.

Table 4 – APDU syntax

APDU name	APDU structure
DataExchange-REQ-PDU	[Outp_Data*]
DataExchange-RES-PDU	[Inp_Data*]
RD_Input-RES-PDU	[Inp_Data*]
RD_Output-RES-PDU	[Outp_Data*]
Chk_Cfg-REQ-PDU	{[Identifier_Format*], [Special_Identifier_Format*]^ [Extended_Special_Identifier_Format*]}
Get_Cfg-RES-PDU	{[Identifier_Format*], [Special_Identifier_Format*]^[Extended_Special_Identifier_Format*]}
Set_Prm-REQ-PDU	Station_status, WD_Fact_1, WD_Fact_2, min_TSDR, Ident_Number, Group_Ident, User_Prm_Data
Set_Ext_Prm-REQ-PDU	Structured_Prm_Data*
Diagnosis-RES-PDU	Station_status_1, Station_status_2, Station_status_3, Diag_Master_Add, Ident_Number, {[Device_Related_Diagnosis*]^([Alarm], [Status*],[Modul_Status],[DXB_Link_Status], { [Red_Status] ^[PrmCmdAck]}), [Identifier_Related_Diagnosis], [Channel_Related_Diagnosis*], [Revision_Number]} The field Device_Related_Diagnosis may be present if DPV1=FALSE, otherwise if DPV1=TRUE it shall not be present. In this case the fields Alarm, Status, Modul_Status may be present.
Set_Slave_Add-REQ-PDU	New_Slave_Add, Ident_Number, No_Add_Chg, [Rem_Slave_Data*]
Global_Control-REQ-PDU	Control_Command, Group_Select
Clock-Value-PDU	Clock_value_time_event, Clock_value_previous_TE, Clock_value_status1, Clock_value_status2
Initiate-REQ-PDU	Function_Num(0x57), reserved (3 Octets), Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param
Initiate-RES-PDU	Function_Num(0x57), Max_Len_Data_Unit, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param
Initiate-NRS-PDU	Function_Num(0xD7), Error_Decode, Error_Code_1, Error_Code_2
Abort-REQ-PDU	Function_Num(0x58), Subnet, Instance_Reason_Code
Read-REQ-PDU	Function_Num(0x5E), Slot_Number, Index (0 .. 254), Length
Read-RES-PDU	Function_Num(0x5E), Slot_Number, Index (0 .. 254), Length, [Data*]
Read-NRS-PDU Pull-NRS-PDU	Function_Num(0xDE), Error_Decode, Error_Code_1, Error_Code_2
Write-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (0 .. 254), Length, [Data*]
Write-RES-PDU	Function_Num(0x5F), Slot_Number, Index (0 .. 254), Length
Write-NRS-PDU Initiate_Load_NRS-PDU Push-NRS-PDU Terminate_Load-NRS-PDU Start-NRS-PDU Stop-NRS-PDU Resume-NRS-PDU Reset-NRS-PDU Call-NRS-PDU Get_FI_State-NRS-PDU	Function_Num(0xDF), Error_Decode, Error_Code_1, Error_Code_2
Alarm_Ack-REQ-PDU	Function_Num(0x5C), Slot_Number, Alarm_Type, Alarm_Specifier

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APDU name	APDU structure
Alarm_Ack-RES-PDU	Function_Num(0x5C), Slot_Number, Alarm_Type, Alarm_Specifier
Alarm_Ack-NRS-PDU	Function_Num(0xDC), Error_Decode, Error_Code_1, Error_Code_2
Idle-REQ-PDU	Function_Num(0x48)
Idle-RES-PDU	Function_Num(0x48)
Data_Transport-REQ-PDU	Function_Num(0x51), Slot_Number, Index, Length, [Data*]
Data_Transport-RES-PDU	Function_Num(0x51), Slot_Number, Index, Length, [Data*]
Data_Transport-NRS-PDU	Function_Num(0xD1), Error_Decode, Error_Code_1, Error_Code_2
Initiate_Load-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x00), Options, LR_Index, LR_Length, Intersegment_Request_Timeout, [User_Specific]
Initiate_Load-RES-PDU	Function_Num(0x5E), Slot_Number, Index (255), Length, Extended_Function_Num (0x00), Max_Segment_Length, LR_Index, LR_Length, Max_Response_Delay
Push-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x01), Options, Sequence_Number, LR_Data
Pull-REQ-PDU	Function_Num(0x5E), Slot_Number, Index (255), Length
Pull-RES-PDU	Function_Num(0x5E), Slot_Number, Index (255), Length, Extended_Function_Num (0x02), Options, Sequence_Number, LR_Data
Terminate_Load-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x03), reserved (1 octet), reserved (2 Octets),
Start-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x04), reserved (1 octet), FI_Index, [Execution_Argument]
Stop-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x05), reserved (1 octet), FI_Index
Resume-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x06), reserved (1 octet), FI_Index, [Execution_Argument]
Reset-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x07), reserved (1 octet), FI_Index
Call-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x08), Entity Number, FI_Index (=0…64999), [Execution_Argument] Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x08), Entity Number, FI_Index (=65000..65199), [IMData_Execution_Argument]
Call-RES-PDU	Function_Num(0x5E), Slot_Number, Index (255), Length, Extended_Function_Num (0x08), Entity Number, FI_Index (=0…64999), [Result_Argument] Function_Num(0x5E), Slot_Number, Index (255), Length, Extended_Function_Num (0x08), Entity Number, FI_Index (=65000…65199), [IMData_Result_Argument]
Get_FI_State-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x09), reserved (1 octet), FI_Index
Get_FI_State-RES-PDU	Function_Num(0x5E), Slot_Number, Index (255), Length, Extended_Function_Num (0x09), reserved (1 octet), FI_Index, FI_State
Push-RES-PDU Terminate_Load-RES-PDU Start-RES-PDU Stop-RES-PDU Resume-RES-PDU Reset-RES-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length
RM-REQ-PDU	Function_Num(0x56), Server_SAP, Send_Timeout
Get_Master_Diag-REQ-PDU	Function_Num(0x41), MDiag_Identifier
Get_Master_Diag-RES-PDU	Function_Num(0x41), MDiag_Identifier(=0..125), Diagnosis-RES-PDU Function_Num(0x41), MDiag_Identifier(=126), System_Diagnosis Function_Num(0x41), MDiag_Identifier(=127), Master_Status Function_Num(0x41), MDiag_Identifier(=128), Data_Transfer_List
Start_Seq-REQ-PDU	Function_Num(0x42), Area_CodeUpDownload, Timeout

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APDU name	APDU structure
Start_Seq-RES-PDU	Function_Num(0x42), Area_CodeUpDownload, Timeout, Max_Len_Data_Unit
Download-REQ-PDU	Function_Num(0x43), Area_CodeUpDownload(=0..125), Add_Offset, DP_Slave_Parameter_Set Function_Num(0x43), Area_CodeUpDownload(=127), Add_Offset, Bus_Parameter_Set Function_Num(0x43), Area_CodeUpDownload(=129), Add_Offset, Statistic_Counters Function_Num(0x43), Area_CodeUpDownload(=136 to 139), Add_Offset, Master_Parameter_Set
Download-RES-PDU	Function_Num(0x43), Area_CodeUpDownload, Add_Offset
Upload-REQ-PDU	Function_Num(0x44), Area_CodeUpDownload, Add_Offset, Data_Len
Upload-RES-PDU	Function_Num(0x44), Area_CodeUpDownload(=0..125), Add_Offset, DP_Slave_Parameter_Set Function_Num(0x44), Area_CodeUpDownload(=127), Add_Offset, Bus_Parameter_Set Function_Num(0x44), Area_CodeUpDownload(=129), Add_Offset, Statistic_Counters Function_Num(0x43), Area_CodeUpDownload(=136 to 139), Add_Offset, Master_Parameter_Set
End_Seq-REQ-PDU	Function_Num(0x45)
End_Seq-RES-PDU	Function_Num(0x45)
Act_Para_Brct-REQ-PDU	Function_Num(0x46), Area_CodeActBrct
Act_Param-REQ-PDU	Function_Num(0x47), Area_CodeAct, Activate
Act_Param-RES-PDU	Function_Num(0x47), Area_CodeAct, Activate
ZERO-PDU	Octet1(0)
NULL-PDU	

NOTE 1 If a APDU consists only of user data octets the distinction is made by use of different Data Link Layer service access points (see Protocol Machines).

NOTE 2 A ZERO-PDU contains one octet with all bits set to zero. This APDU is used to indicate diagnosis from a device without inputs.

NOTE 3 A NULL-PDU contains no octets. It is used to submit no DLSDU to data link layer.

Table 5 defines structures for substitutions of elements of the APDU structures shown in Table 4.

Table 5 – Substitutions

Substitution name	Structure
Identifier_Format	Cfg_Identifier
Special_Identifier_Format	Special_Cfg_Identifier, [Length_Octet] , [Length_Octet], [Manufacturer_Specific_Data*] Length_Octet fields shall always start with fields that indicate output data if present.
Extended_Special_Identifier_Format	Special_Cfg_Identifier,[Extended_Length_Octet], [Extended_Length_Octet], [Data_Type*], [Manufacturer_Specific_Data*] Extended_Length_Octet fields shall always start with fields that indicate output data if present. The field Data_Type shall only be omitted in case of an empty slot. Otherwise it shall be present in relation to the length fields.
Device_Related_Diagnosis	Header_Octet, Diagnosis_User_Data*
Identifier_Related_Diagnosis	Header_Octet, Identifier_Diagnosis_Data_Array
Channel_Related_Diagnosis	Identifier_Number, (Channel_Number, Type_of_Diagnosis)*
Alarm	Header_Octet, Alarm_Type, Slot_Number, Alarm_Specifier, [Diagnosis_User_Data*]

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Substitution name	Structure
Status	Header_Octet, Status_Type, Slot_Number, Status_Specifier, Diagnosis_User_Data*]
Modul_Status	Header_Octet, Status_Type(=Modul_Status), Slot_Number(=0), Status_Specifier, Modul_Status_Array
DXB_Link_Status	Header_Octet, Status_Type(=DXB_Link_Status), Slot_Number(=0), Status_Specifier, (Publisher_Address, Publisher_Status)*
PrmCmdAck	Header_Octet, Status_Type(=PrmCmdAck), Slot_Number(=0), Status_Specifier, Function, Red_Status1, Red_Status2, Red_Status3
Red_Status	Header_Octet, Status_Type(=Red_Status), Slot_Number(=0), Status_Specifier, Function, Red_Status1, Red_Status2, Red_Status3
User_Prm_Data	[DPV1_Status_1, DPV1_Status_2, DPV1_Status_3], [Structured_Prm_Data*] ^ [User_Prm_Data_Element*] Special case DPV1=FALSE: [User_Prm_Data_Element*] Special case DPV1=TRUE and DPV1_Status_3.Prm_Structure=FALSE: DPV1_Status_1, DPV1_Status_2, DPV1_Status_3, [User_Prm_Data_Element*] Special case DPV1=TRUE and DPV1_Status_3.Prm_Structure=TRUE: DPV1_Status_1, DPV1_Status_2, DPV1_Status_3, Structured_Prm_Data* The fields DPV1_Status_1, DPV1_Status_2 and DPV1_Status_3 shall be present if DPV1=TRUE. Structured_Prm_Data shall be present if the DPV1_Status_3.Prm_Structure is TRUE, otherwise it shall not be used.
Structured_Prm_Data	Structure_Length, Structure_Type, Slot_Number, reserved (1 octet), User_Prm_Data_Element* Special Case DXB LinkTable: Structure_Length, Structure_Type(=3), Slot_Number(=0), reserved (1 octet), Version(=1), (Publisher_Addr, Publisher_Length, Sample_Offset, Sample_Length)* Special Case DXB-Subscribertable: Structure_Length, Structure_Type(=7), Slot_Number(=0), reserved (1 octet), Version(=1), (Publisher_Addr, Publisher_Length, Sample_Offset, Dest_Slot_Number, Offset_Data_Area, Sample_Length)* Special Case IsoM Parameter: Structure_Length, Structure_Type(=4), Slot_Number(=0), reserved (1 octet), Version(=1), TBASE_DP, TDP, TMAPC, TBASE_IO, TI, TO, TDX, TPLL_W, TPLL_D Special Case PrmCmd: Structure_Length, Structure_Type(=2), Slot_Number(=0), Specifier, Function, Properties, Output_Hold_Time Special Case Time AR Parameter: Structure_Length, Structure_Type(=8), Slot_Number(=0), reserved (1 octet), Clock Sync Interval, [CS Delay Time] Special Case F-Parameter: Structure_Length, Structure_Type(=5), Slot_Number, reserved (1 octet), User_Prm_Data*
Features_Supported	Features_Supported_1, Features_Supported_2
Profile_Features_Supported	Profile_Features_Supported_1, Profile_Features_Supported_2
Add_Addr_Param	S_Type, S_Len, D_Type, D_Len, S_API, S_SCL, [S_Network_Address], [S_MAC_Address], D_API, D_SCL, [D_Network_Address], [D_MAC_Address]

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Substitution name	Structure
Master_Status	USIF_State, Ident_Number, Hardware_Release_DP, Firmware_Release_DP, Hardware_Release_User, Firmware_Release_User, reserved (9 Octets)
DP_Slave_Parameter_Set	Slave_Para_Len, Sl_Flag, Slave_Type, Max_Diag_Data_Len, Max_Alarm_Len, Max_Channel_Data_Length, Diag_Upd_Delay, Alarm_Mode, Add_Sl_Flag, MS1_Timeout, reserved (4 Octets), Prm_Data_Len, Prm_Data, Cfg_Data_Len, Cfg_Data, Add_Tab_Len, Add_Tab, Slave_User_Data_Len, Slave_User_Data, Ext_Prm_Data_Len, [Ext_Prm_Data]
Bus_Parameter_Set	Bus_Para_Len, DL_Add, Data_rate, T_{SL}, min T_{SDR}, max T_{SDR}, T_{QUI}, T_{SET}, T_{TR}, G, HSA, max_retry_limit, Bp_Flag, Min_Slave_Interval, Poll_Timeout, Data_Control_Time, Alarm_Max, Max_User_Global_Control, reserved (4 Octets), Master_User_Data_Len, Master_Class2_Name, Master_User_Data*, T_{CT}, maxT_{SH}
Master_Parameter_Set	Bus_Parameter_Set, DP_Slave_Parameter_Set*
Statistic_Counters	Counter_Group*
Counter_Group	if Add_Offset 0..126: DLPDU_sent_count(Add_Offset), Error_count(Add_Offset) if Add_Offset 127: SD_sent_count, SD_error_count
Add_Tab	[Number_of_Entries], [Add_Tab_Entry_Header, I/O_Data_Length, IO_Config_Address, Host_Address]*
IMData_Execution_Argument	[I&M1] ^ [I&M2] ^ [I&M3] ^ [I&M4] ^ [I&M_Profile_Specific_x] ^ [I&M_Manufacturer_Specific_x]
IMData_Result_Argument	I&M0 ^ [I&M1] ^ [I&M2] ^ [I&M3] ^ [I&M4] ^ [I&M_Profile_Specific_x] ^ [I&M_Manufacturer_Specific_x]
I&M0	IM_Header, IM_Manufacturer_ID, OrderID, IM_Serial_Number, IM_Hardware_Revision, IM_Software_Revision, IM_Revision_Counter, IM_Profile_ID, IM_Profile_Specific_Type, IM_Version, IM_Supported
I&M1	IM_Header, IM_Tag_Function, IM_Tag_Location
I&M2	IM_Header, IM_Date
I&M3	IM_Header, IM_Descriptor
I&M4	IM_Header, IM_Signature
I&M_Profile_Specific_x	IM_Header, IM_Profile_Specific_Data
IM_Version	IM_Version_Major, IM_Version_Minor
IM_Software_Revision	SWRevisionPrefix, IM_SWRevision_Functional_Enhancement, IM_SWRevision_Bug_Fix, IM_SWRevision_Internal_Change
NOTE The DP_Slave_Parameter_Set and the Bus_Parameter_Set may exceed the maximum APDU size to a size up to 64 Koctets. The conveyance of the data is therefore segmented by means of a window addressed with the parameter Add_Offset.	

4.2 Data types

4.2.1 Notation for the Boolean type

Boolean ::= BOOLEAN -- TRUE if the value is non-zero.

-- FALSE if the value is zero.

4.2.2 Notation for the Integer type

Integer8 ::= INTEGER (-128..+127) -- range $-2^7 <= I <= 2^7-1$

Integer16 ::= INTEGER (-32768..+32767) -- range $-2^{15} <= I <= 2^{15}-1$

Integer32 ::= INTEGER -- range $-2^{31} <= I <= 2^{31}-1$

Integer64 ::= INTEGER -- range $-2^{63} <= I <= 2^{63}-1$

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4.2.3 Notation for the Unsigned type

Unsigned8 ::= INTEGER (0..255) -- range 0 <= I <= 2^8-1

Unsigned16 ::= INTEGER (0..65535) -- range 0 <= I <= 2^{16}-1

Unsigned32 ::= INTEGER -- range 0 <= I <= 2^{32}-1

Unsigned64 ::= INTEGER -- range 0 <= I <= 2^{64}-1

4.2.4 Notation for the Floating Point type

Floating32 ::= BIT STRING SIZE (4) -- IEEE 754 Single precision

Floating64 ::= BIT STRING SIZE (8) -- IEEE 754 Double precision

4.2.5 Notation for the OctetString type

OctetString ::= OCTET STRING -- For generic use

4.2.6 Notation for VisibleString type

VisibleString2 ::= VISIBLE STRING -- For generic use

4.2.7 Notation for BinaryDate type

BinaryDate ::= OctetString7

4.2.8 Notation for TimeOfDay type

TimeOfDay with date indication ::= OctetString6

TimeOfDay without date indication ::= OctetString4

4.2.9 Notation for TimeDifference type

TimeDifference with date indication ::= OctetString6

TimeDifference without date indication ::= OctetString4

4.2.10 Notation for Network Time type

Network Time ::= OctetString8

4.2.11 Notation for Network Time Difference type

Network Time Difference ::= OctetString8

5 Transfer syntax

5.1 Coding of basic data types

5.1.1 Encoding of a Boolean value

a) The encoding of a Boolean value shall be primitive. The ContentsOctets shall consist of a single octet.

b) If the Boolean value is FALSE, the ContentsOctets shall be 0 (zero). If the Boolean value is TRUE, the ContentsOctets shall be 0xff.

5.1.2 Encoding of an Integer value

a) The encoding of a fixed-length Integer value of Integer8, Integer16, and Integer32 types shall be primitive, and the ContentsOctets shall consist of exactly one, two, or four octets, respectively.

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b) The ContentsOctets shall be a two's complement binary number equal to the integer value, and consist of bits 7 to 0 of the first octet, followed by bits 7 to 0 of the second octet, followed by bits 7 to 0 of each octet in turn up to and including the last octet of the ContentsOctets.

NOTE The value of a two's complement binary number is derived by numbering the bits in the ContentsOctets, starting with bit 0 of the last octet as bit zero and ending the numbering with bit 7 of the first octet. Each bit is assigned a numerical value of 2^N, where N is its position in the above numbering sequence. The value of the two's complement binary number is obtained by adding the numerical values assigned to each bit for those bits which are set to one, excluding bit 7 of the first octet, and then reducing this value by the numerical value assigned to bit 7 of the first octet if that bit is set to one.

5.1.3 Encoding of an Unsigned value

a) The encoding of a fixed-length Unsigned value of Unsigned8, Unsigned16, and Unsigned32 types shall be primitive, and the ContentsOctets shall consist of exactly one, two, or four octets, respectively.

b) The ContentsOctets shall be a binary number equal to the Unsigned value, and consist of bits 7 to 0 of the first octet, followed by bits 7 to 0 of the second octet, followed by bits 7 to 0 of each octet in turn up to and including the last octet of the ContentsOctets.

NOTE The value of a binary number is derived by numbering the bits in the ContentsOctets, starting with bit 0 of the last octet as bit zero and ending the numbering with bit 7 of the first octet. Each bit is assigned a numerical value of 2^N, where N is its position in the above numbering sequence. The value of the binary number is obtained by adding the numerical values assigned to each bit for those bits which are set to one.

5.1.4 Encoding of a Floating-Point value

a) The encoding of a Floating32 value shall be primitive, and the ContentsOctets shall consist of exactly four octets.

b) The ContentsOctets shall contain floating-point values defined in conformance with IEEE 754. The sign is encoded in bit 7 of the first octet. It is followed by the exponent starting from bit 6 of the first octet, and then the mantissa starting from bit 6 of the second octet for Floating32.

5.1.5 Encoding of a Visible String value

a) The encoding of a variable length VisibleString value shall be primitive.

b) There is no Length field; the length is encoded implicitly.

c) The ContentsOctets shall be a sequence of octets. The leftmost string element is encoded in the first octet, followed by the second octet, followed by each octet in turn up to and including the last octet as rightmost of the ContentsOctets.

5.1.6 Encoding of an Octet String value

a) The encoding of a variable length OctetString value shall be primitive.

b) There is no Length field; the length is encoded implicitly.

c) The ContentsOctets shall be a sequence of octets. The leftmost string element is encoded in the first octet, followed by second octet, followed by each octet in turn up to and including the last octet as rightmost of the ContentsOctets.

5.1.7 Encoding of a BinaryDate value

Coding of BinaryDate within IEC 61158-6-10 applies.

5.1.8 Encoding of a TimeOfDay with and without date indication value

Coding of TimeOfDay with and without date indication within IEC 61158-6-10 applies.

5.1.9 Encoding of a Time Difference with and without date indication value

Coding of Time Difference with and without date indication within IEC 61158-6-10 applies.

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5.1.10 Encoding of a Network Time value

Coding of Network Time within IEC 61158-6-10 applies.

5.1.11 Encoding of a Network Time Difference value

Coding of Network Time Difference within IEC 61158-6-10 applies.

5.1.12 Encoding of a Null value

a) The encoding of a NULL value shall be primitive.

b) The ContentsOctet shall be omitted.

5.2 Coding section related to data exchange PDUs

5.2.1 General

IEC 61158-5-10, Clause 5 applies.

NOTE Data types with variable length (Visible String, Octet String, TimeOfDay, Time Difference) for Inp_Data or Outp_Data are only once present in the DataExchange-RES-PDU or DataExchange-REQ-PDU. The user data correspond to the contents of the Configuration-PDU.

5.2.2 Coding of the field Outp_Data

E.g. one of the following data types shall be used for each Outp_Data field:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.2.3 Coding of the field Inp_Data

E.g. one of the following data types shall be used for each Inp_Data field:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.3 Coding section related to slave diagnosis PDUs

5.3.1 Coding of the field Station_status_1

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: Diag.Station_Non_Existent
Shall be set to zero in case of Diagnoses-RES-PDU

Value (0): means FALSE if Get_Master_Diag-RES-PDU

Value (1): means TRUE if Get_Master_Diag-RES-PDU

Bit 1: Diag.Station_Not_Ready
FALSE (0)

TRUE (1)

Bit 2: Diag.Cfg_Fault (Configuration Fault)
FALSE (0)

TRUE (1)

Bit 3: Diag.Ext_Diag (Extended Diagnosis)
FALSE (0): means that the device is in state diagnosis

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TRUE (1): means that the device is NOT in state diagnosis

Should be set to FALSE if no faulty conditions exist. If set to TRUE, the reason should be reported as Device Related Diagnosis, Identifier Related Diagnosis, or Channel Related Diagnosis.

Bit 4: Diag.Not_Supported
FALSE (0)

TRUE (1)

Bit 5: Diag.Invalid_Slave_Response
Shall be set to zero if Diagnoses-RES-PDU

Value (0): means FALSE if Get_Master_Diag-RES-PDU

Value (1): means TRUE if Get_Master_Diag-RES-PDU

Bit 6: Diag.Prm_Fault (Parameter Fault)
FALSE (0), TRUE (1)

Bit 7: Diag.Master_Lock
Shall be set to zero if Diagnoses-RES-PDU

Value (0): means FALSE if Get_Master_Diag-RES-PDU

Value (1): means TRUE if Get_Master_Diag-RES-PDU

5.3.2 Coding of the field Station_status_2

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: Diag.Prm_Req (Parameterization Requested)
FALSE (0)

TRUE (1)

Bit 1: Diag.Stat_Diag (Static Diagnosis)
FALSE (0)

TRUE (1)

Bit 2: DP (DP Protocol)
Shall always set to ones

Bit 3: Diag.WD_On (Watchdog on)
FALSE (0)

TRUE (1)

Bit 4: Diag.Freeze_Mode
FALSE (0)

TRUE (1)

Bit 5: Diag.Sync_Mode (Synchronisation Mode)
FALSE (0)

TRUE (1)

Bit 6: reserved

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Bit 7: Diag.Deactivated
Shall be set to zero if Diagnoses-RES-PDU

Value (0): means FALSE if Get_Master_Diag-RES-PDU

Value (1): means TRUE if Get_Master_Diag-RES-PDU

5.3.3 Coding of the field Station_status_3

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 6: reserved

Bit 7: Diag.Ext_Diag_Overflow (Overflow of extended Diagnosis)
FALSE (0)

TRUE (1)

5.3.4 Coding of the field Diag_Master_Add

This field shall be coded as data type Unsigned8 with the following values:

Decimal (0-125)
means the address of the DP-master (Class 1) which has parameterized this DP-slave

Decimal (255)
means DP-slave has not been parameterized or has got invalid parameterisation.

Decimal (126-254)
not allowed

5.3.5 Coding of the field Ident_Number

This field shall be coded as data type Unsigned16.

5.3.6 Coding of the field Header_Octet

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 5: Block_Length
It shall contain the length of the diagnosis block according to the values of Table 6. The Header_Octet itself shall always be counted.

Table 6 – Block_Length range

Value (decimal)	Meaning
2 to 63	Device Related Diagnosis in base diagnosis format
2 to 32	Identifier Related Diagnosis
4 to 63	Device Related Diagnosis in DPV1 diagnosis format

NOTE The Identifier Related Diagnoses is limited to 32 because the identifiers itself are limited to 244.

Bit 6 to 7: Selection
The Selection shall contain the values according to Table 7.

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Table 7 – Selection range

Value (decimal)	Meaning
0	Device Related Diagnosis
1	Identifier Related Diagnosis
2	Channel Related Diagnosis
3	Revision_Number

5.3.7 Coding of the field Alarm_Type

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 6: Alarm_Type
The Alarm_Type shall contain the values according to Table 8.

Table 8 – Alarm_Type range

Value (decimal)	Meaning
0	reserved
1	Diagnostic_Alarm
2	Process_Alarm
3	Pull_Alarm
4	Plug_Alarm
5	Status_Alarm
6	Update_Alarm
7 – 31	reserved
32 – 126	manufacturer-specific
127	reserved

Bit 7: shall be zero (identifying Alarm)
Decimal (0): means Alarm

5.3.8 Coding of the field Status_Type

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 6: Status_Type
The Status_Type shall contain values according to Table 9.

Table 9 – Status_Type value range

Value (decimal)	Meaning
0	reserved
1	Status_Message
2	Modul_Status
3	DXB_Link_Status
4 to 29	reserved

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Value (decimal)	Meaning
30	PrmCmdAck
31	Red_Status
32 to 126	Manufacturer-specific
127	reserved

Bit 7: shall be one (identifying Status)
Decimal (1): means Status

5.3.9 Coding of the field Slot_Number

This field shall be coded as data type Unsigned8. The value shall be taken from the range 0 to 254. The value 255 is reserved.

5.3.10 Coding of the field Alarm_Specifier

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 1: Alarm_Specifier
This bit group shall contain the alarm specifier with the values according to Table 10.

Table 10 – Alarm_Specifier

Value (decimal)	Meaning	Comment
0	No further differentiation	—
1	Error appears and Slot disturbed	the slot generates an alarm due to an error
2	Error disappears and Slot is okay	the slot generates an alarm and indicates that the slot has no further errors
3	Error disappears and Slot is still disturbed	the slot generates an alarm and indicates that the slot has still further errors

Bit 2: Additional_Acknowledge
Value (0): means no additional acknowledge used

Value (1): means additional acknowledge is used

Bit 3 to 7: Sequence_Number
The value range shall be from 0 to 31 (decimal).

5.3.11 Coding of the field Status_Specifier

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 1: Status_Specifier
Decimal (0): means no further differentiation

Decimal (1): means status appears

Decimal (2): means status disappears

Decimal (3): reserved

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Bit 2 to 7: reserved

5.3.12 Coding of the field Diagnosis_User_Data

One of the following data types shall be used for each Diagnosis_User_Data field:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.3.13 Coding of the field Modul_Status_Array

The field Modul_Status_Array is an array of octets that shall contain at least one and at most 61 octets referred to as Modul_Status_Octet. A Modul_Status_Octet shall consist of at least one and at most 4 module stati referred to as Modul_Status_Entry_1 to Modul_Status_Entry_4 coded in two bits each. Therefore, the number of Modul_Status_Octet corresponds to the number of configured modules within a device and shall be calculated as follows

a) $N = 1$ if $M_{highest} \leq 4$

b) $N = M_{highest}$ DIV 4 +1 if $M_{highest}$ MOD 4 $\neq 0$

c) $N = M_{highest}$ DIV 4 if $M_{highest}$ MOD 4 = 0

where

N is the number of octets Modul_Status_Octet or the number of array elements,

$M_{highest}$ is the highest number of configured modules within a device (maximum 244).

The last Modul_Status_Octet (octet N) may not contain all 4 module status entries. If $M_{highest}$ MOD 4 $\neq 0$ the octet N is not fully filled and the remaining bits shall be set to zero referred to as Padding Bits.

The status of the device's modules shall be structured in ascending order without gaps. The status of module number one is always placed in Modul_Status_Entry_1 of the Modul_Status_Octet number one. The coding of a Modul_Status_Octet shall be according to 3.4 and the individual bits shall have the following meaning:

NOTE The term configured modules" addresses physical or virtual modules of a device that have had a related format field in the Chk_Cfg-REQ-PDU. Modules that are not part of the configuration are purely local and therefore not related to the Modul_Status_Array field.

Bit 0 to 1: Modul_Status_Entry_1
It shall contain the module status of a configured module with the number that meets m MOD 4 = 1. Padding bits shall not be used here.

Bit 2 to 3: Modul_Status_Entry_2
It shall contain the module status of a configured module with the number that meets m MOD 4 = 2. Otherwise padding bits (00 binary) shall be used.

Bit 4 to 5: Modul_Status_Entry_3
It shall contain the module status of a configured module with the number that meets m MOD 4 = 3. Otherwise padding bits (00 binary) shall be used.

Bit 6 to 7: Modul_Status_Entry_4
These 2 bits shall contain the module status of a configured module with the number that meets m MOD 4 = 0. Otherwise padding bits (00 binary) shall be used.

where

m is the number of the current module with $1 \leq m \leq N$.

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Figure 2 illustrates the arrangement of Modul_Status_Entry_(1 to 4) fields as an example for a device with 6 configured modules.

	Bit Number							
	7	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Modul_ Status_ Octet 1	status module number 4		status module number 3		status module number 2		status module number 1	
Modul_ Status_ Octet 2	Padding Bits		Padding Bits		status module number 6		status module number 5	
	Modul_Status_Entry_4		Modul_Status_Entry_3		Modul_Status_Entry_2		Modul_Status_Entry_1	

Figure 2 – Example Modul_Status_Array

Each entry Modul_Status_Entry_1 to Modul_Status_Entry_4 shall contain the module status according to Table 11.

Table 11 – Range of Modul_Status_Entry (1-4)

Value (decimal)	Meaning
0	data valid
1	data invalid: the data of the corresponding module are not valid due to an error (e.g. short circuit)
2	data invalid/wrong module: the data of the corresponding module are not valid, due to a wrong module in place
3	data invalid/no module: the data of the corresponding module are not valid, because there is no module in place

5.3.14 Coding of the field Identifier_Diagnosis_Data_Array

The field Identifier_Diagnosis_Data_Array is an array of octets that shall contain at least one and at most 31 octets referred to as Identifier_Diagnosis_Data_Octet. A Identifier_Diagnosis_Data_Octet shall consist of at least one and at most 8 diagnosis entries referred to as Identifier_Diagnosis_Entry_1 to Identifier_Diagnosis_Entry_8. Therefore, the number of Identifier_Diagnosis_Data_Octet corresponds to the number of configured modules within a device and shall be calculated as follows:

a) $N = 1$ if $M_{highest} \leq 8$

b) $N = M_{highest}$ DIV 8 +1 if $M_{highest}$ MOD $4 \neq 0$

c) $N = M_{highest}$ DIV 8 if $M_{highest}$ MOD $4 = 0$

where

N is the number of octets Identifier_Diagnosis_Data_Octet or the number of array elements,

$M_{highest}$ is the highest number of configured modules within a device (maximum 244).

The last Identifier_Diagnosis_Data_Octet (octet N) may not contain all 8 diagnosis entries. If $M_{highest}$ MOD $8 \neq 0$ the octet N is not fully filled and the remaining bits shall be set to zero referred to as Padding Bits.

NOTE The term DIV stands for division without rest. The term MOD stands for the rest of the division.

The identifier diagnosis of the device's modules shall be structured in ascending order without gaps. The identifier diagnosis of module number one is always placed in

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Identifier_Diagnosis_Entry_1 of the Identifier_Diagnosis_Data_Octet number one. The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: Identifier_Diagnosis_Entry_1
This bit shall be set to one if the module with the number that meets m MOD 8 = 1 indicates diagnosis otherwise it shall be set to zero. A padding bit shall not be used here.

Bit 1: Identifier_Diagnosis_Entry_2
This bit shall be set to one if the module with the number that meets m MOD 8 = 2 indicates diagnosis otherwise it shall be set to zero. A padding bit shall be used if there is no module configured.

Bit 2: Identifier_Diagnosis_Entry_3
This bit shall be set to one if the module with the number that meets m MOD 8 = 3 indicates diagnosis otherwise it shall be set to zero. A padding bit shall be used if there is no module configured.

Bit 3: Identifier_Diagnosis_Entry_4
This bit shall be set to one if the module with the number that meets m MOD 8 = 4 indicates diagnosis otherwise it shall be set to zero. A padding bit shall be used if there is no module configured.

Bit 4: Identifier_Diagnosis_Entry _5
This bit shall be set to one if the module with the number that meets m MOD 8 = 5 indicates diagnosis otherwise it shall be set to zero. A padding bit shall be used if there is no module configured.

Bit 5: Identifier_Diagnosis_Entry _6
This bit shall be set to one if the module with the number that meets m MOD 8 = 6 indicates diagnosis otherwise it shall be set to zero. A padding bit shall be used if there is no module configured.

Bit 6: Identifier_Diagnosis_Entry _7
This bit shall be set to one if the module with the number that meets m MOD 8 = 7 indicates diagnosis otherwise it shall be set to zero. A padding bit shall be used if there is no module configured.

Bit 7: Identifier_Diagnosis_Entry_8
This bit shall be set to one if the module with the number that meets m MOD 8 = 0 indicates diagnosis otherwise it shall be set to zero. A padding bit shall be used if there is no module configured.

where m is the number of the current module with $1 \leq m \leq N$.

5.3.15 Coding of the field Identifier_Number

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 5: Identifier_Number
The values 0 to 63 (decimal) are valid.

Bit 6 to 7: Selection
The Selection shall contain the value Channel Related Diagnosis according to Table 7.

5.3.16 Coding of the field Channel_Number

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 5: Channel_Number
The values 0 to 63 (decimal) are valid.

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Bit 6 to 7: Input_Output_Selection
The Input_Output_Selection shall be set as shown in Table 12.

Table 12 – Input_Output_Selection

Value (decimal)	Meaning
0	Reserved
1	Input.
2	Output.
3	Input and output

5.3.17 Coding of the field Type_of_Diagnosis

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 4: Error_Type
The Error_Type shall be set as shown in Table 13.

Table 13 – Error type

Value (decimal)	Meaning
0 to 31	Coding of the field ChannelErrorType within IEC 61158-6-10 applies.

Bit 5 to 7: Channel_Type
The Channel_Type shall be set as shown in Table 14.

Table 14 – Channel_Type

Value (decimal)	Meaning
0	Unspecific, may be used for any type
1	1 bit
2	2 bit.
3	4 bit
4	Octet
5	Word
6	2 words
7	Reserved

5.3.18 Coding of the field Revision_Number

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 5: Revision_Number
The values 1 to 63 (decimal) are valid.

Bit 6 to 7: Selection
The Selection shall contain the value Revision_Number according to Table 7.

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5.3.19 Coding of the field Publisher_Address

This field shall be coded as data type Unsigned8. The range of values shall be 0 to 125. This parameter shall contain the address of the DP-slave acting as Publisher.

5.3.20 Coding of the field Publisher_Status

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 7: Link_Status
FALSE (0): error or not active during the last monitoring period

TRUE (1) means no error and active

Bit 6: Link_Error
FALSE (0): means no error

TRUE (1): means length error

Bit 0 to 5: reserved

5.3.21 Coding of the field RedSpecifier

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 1: Status_Specifier
Decimal (0): means no further differentiation

Decimal (1, 2 and 3): reserved

Bit 3 to 7: Seq Number
Contains Sequence Number of the last PrmCmd processed

5.3.22 Coding of the field Function

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: reserved

Bit 1: Primary
FALSE (0) means no Primary request was executed last

TRUE (1) means a Primary request was executed last

Bit 2: Start MS1
FALSE (0) means no Start MS1 request was executed last

TRUE (1) means a Start MS1 request was executed last

Bit 3: Stop MS1
FALSE (0) means no Stop MS1 request was executed last

TRUE (1) means a Stop MS1 request was executed last

Bit 4: Check_Properties
FALSE (0) means no Check_Properties request was executed last

TRUE (1) means a Check_Properties request was executed last

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Bit 5: reserved

Bit 6: MasterStateClear
FALSE (0) means no MasterStateClear request was executed last

TRUE (1) means a MasterStateClear request was executed last

Bit 7: reserved

5.3.23 Coding of the field Red_Status1

This field represents the Status of the Component which sent the status. The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: Backup
FALSE (0) means Component is not in Backup State

TRUE (1) means Component is in Backup State

Bit 1: Primary
FALSE (0) means Component is not in Primary State

TRUE (1) means Component is in Primary State

Bit 2: HW-Defect
FALSE (0) means has no Hardware Defect

TRUE (1) means Component has a Hardware Defect

Bit 3: DataExchange
FALSE (0) means Component is not in DataExchange State

TRUE (1) means Component is in DataExchange State

Bit 4: Fail Safe
FALSE (0) means Component is not in Fail Safe State

TRUE (1) means Component is in Fail Safe State

Bit 5: DatarateSet
FALSE (0) means has no Datarate set

TRUE (1) means Component has a Datarate set

Bit 6: TohStarted
FALSE (0) means has not started Toh

TRUE (1) means Component has a started Toh

Bit 7: reserved

5.3.24 Coding of the field Red_Status2

This field represents the Status of a Partner Component of the Component which sent the status. The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: Backup
FALSE (0) means Component is not in Backup State

TRUE (1) means Component is in Backup State

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Bit 1: Primary
FALSE (0) means Component is not in Primary State

TRUE (1) means Component is in Primary State

Bit 2: HW-Defect
FALSE (0) means has no Hardware Defect

TRUE (1) means Component has a Hardware Defect

Bit 3: DataExchange
FALSE (0) means Component is not in DataExchange State

TRUE (1) means Component is in DataExchange State

Bit 4: Fail Safe
FALSE (0) means Component is not in Fail Safe State

TRUE (1) means Component is in Fail Safe State

Bit 5: DatarateSet
FALSE (0) means has no Datarate set

TRUE (1) means Component has a Datarate set

Bit 6: TohStarted
FALSE (0) means has not started Toh

TRUE (1) means Component has a started Toh

Bit 7: reserved

5.3.25 Coding of the field Red_Status3

This field shall be coded as data type Unsigned8. The values are user specific.

5.4 Coding section related to parameterization PDU

5.4.1 Coding of the field Station_status

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: reserved

Bit 1: reserved

Bit 2: reserved

Bit 3: WD_On (Watchdog on)
FALSE (0)

TRUE (1)

Bit 4: Freeze_Req
FALSE (0): Freeze mode not requested

TRUE (1): Freeze mode requested

Bit 5: Sync_Req
FALSE (0): Sync mode not requested

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TRUE (1): Sync mode requested

Bit 6: Unlock_Req
Shall be used as described in Table 15.

Bit 7: Lock_Req
Shall be used as described in Table 15.

Table 15 – Specification of the bits Lock_Req and Unlock_Req

Bit 7	Bit 6	Meaning
0	0	The parameter min T_{SDR} can be changed. All other parameters remain unchanged.
0	1	The DP-slave will be unlocked for other Masters.
1	0	The DP-slave is locked for other Masters, all parameters are accepted (exception: min T_{SDR} = 0)
1	1	The DP-slave is unlocked for other Masters.

5.4.2 Coding of the field WD_Fact_1

This field shall be coded as data type Unsigned8 with the following value range:

Decimal 1 to 255

5.4.3 Coding of the field WD_Fact_2

This field shall be coded as data type Unsigned8 with the following value range:

Decimal 1 to 255

The Watch Dog Time (T_{WD}) shall be calculated according to Formula (1).

$$T_{WD} = WD\_Fact\_1 \times WD\_Fact\_2 \times WD\_Base \quad (1)$$

where

T_{WD}	is the Watch Dog Time
WD_Fact_1	is the first factor to be multiplied with the time base
WD_Fact_2	is the second factor to be multiplied with the time base
WD_Base	is the time base (1 ms or 10 ms) derived from DPV1_Status_1.WD_Base_1ms. If no DPV1_Status_1.WD_Base_1ms exist, then 10 ms is used as time base.

5.4.4 Coding of the field min_T_{SDR}

This field shall be coded as data type Unsigned8 with the following value range:

Decimal (0 to max T_{SDR} (see Part 4)) if DP operation

Decimal (0): means current value remains unchanged

5.4.5 Coding of the field Group_Ident

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: Group_1

Bit 1: Group_2

Bit 2: Group_3

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Bit 3: Group_4

Bit 4: Group_5

Bit 5: Group_6

Bit 6: Group_7

Bit 7: Group_8

Each of the bits above shall set to one if the device belongs to the indicated group number. Otherwise it shall be set to zero.

NOTE A device may belong to no groups (Group_Ident=decimal(0)) or all groups (Group_Ident=decimal(255)).

5.4.6 Coding of the field User_Prm_Data_Element

One of the following data types shall be used for each User_Prm_Data_Element:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.4.7 Coding of the field DPV1_Status_1

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: reserved

Bit 1: reserved

Bit 2: WD_Base_1ms
Value (0): Watchdog time base equals 10 milliseconds

Value (1): Watchdog time base equals 1 millisecond

Bit 3 to 4: reserved

Bit 5: Publisher_Enable
FALSE (0): Publisher disabled

TRUE (1): Publisher enabled

Bit 6: Fail_Safe
FALSE (0): Fail_Safe disabled

TRUE (1): Fail_Safe enabled

Bit 7: DPV1_Enable
FALSE (0): DPV1 disabled

TRUE (1): DPV1 enabled

5.4.8 Coding of the field DPV1_Status_2

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

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Bit 0: Check_Cfg_Mode
FALSE (0): normal check (restrictive)

TRUE (1): user specific check (more flexible)

Bit 1: reserved

Bit 2: Enable_Update_Alarm
FALSE (0): Update_Alarm disabled

TRUE (1): Update_Alarm enabled

Bit 3: Enable_Status_Alarm
FALSE (0): Status_Alarm disabled

TRUE (1): Status_Alarm enabled

Bit 4: Enable_Manufacturer_Specific_Alarm
FALSE (0): Manufacturer_Specific_Alarm disabled

TRUE (1): Manufacturer_Specific_Alarm enabled

Bit 5: Enable_Diagnostic_Alarm
FALSE (0): Diagnostic_Alarm disabled

TRUE (1): Diagnostic_Alarm enabled

Bit 6: Enable_Process_Alarm
FALSE (0): Process_Alarm disabled

TRUE (1): Process_Alarm enabled

Bit 7: Enable_Pull_Plug_Alarm
FALSE (0): Pull_Plug_Alarm disabled

TRUE (1): Pull_Plug_Alarm enabled

5.4.9 Coding of the field DPV1_Status_3

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 2: Alarm_Mode
Decimal (0): 1 alarm of each type

Decimal (1): 2 alarms in total

Decimal (2): 4 alarms in total

Decimal (3): 8 alarms in total

Decimal (4): 12 alarms in total

Decimal (5): 16 alarms in total

Decimal (6): 24 alarms in total

Decimal (7): 32 alarms in total

Bit 3: Prm_Structure
FALSE (0): Prm_Structure disabled

TRUE (1): Prm_Structure enabled

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Bit 4: IsoM_Req
FALSE (0): IsoM_Req disabled

TRUE (1): IsoM_Req enabled

Bit 5 to 6: reserved

Bit 7: PrmCmd
FALSE (0): PrmCmd disabled

TRUE (1): PrmCmd enabled

5.4.10 Coding of the field Structure_Length

This field shall be coded as data type Unsigned8 with the following value range:

Decimal 5 to 244, 255

The field Structure_Length contains the number of octets including itself. A value of 255 means that all elements in the Prm_User_Data following this element belongs to this structure.

5.4.11 Coding of the field Structure_Type

This field shall be coded as data type Unsigned8 with the following value range:

Decimal 0 to 1: reserved

Decimal 2: PrmCmd

Decimal 3: DXB Linktable

Decimal 4: IsoM Parameter

Decimal 5: F-Parameter

Decimal 6: reserved

Decimal 7: DXB Subscribertable

Decimal 8: Time AR Parameter

Decimal 9 to 31: reserved

Decimal 32 to 128: Manufacturer Specific

Decimal 129: User Prm Data

Decimal 130 to 255: reserved

5.4.12 Coding of the field Version

This field shall be coded as data type Unsigned8 with the following value range:

Decimal 0: reserved

Decimal 1: Version 1

Decimal 2 to 255: reserved

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5.4.13 Coding of the field Publisher_Addr

This field shall be coded as data type Unsigned8 with the following value range:

Decimal 0 to 125, 128

Decimal 126, 127, 129 to 255: reserved

In case of the DXB-Subscribertable the value 128 indicates an entry for the DP-master (Class 1).

5.4.14 Coding of the field Publisher_Length

This field shall be coded as data type Unsigned8 with the following value range:

Decimal 1 to 244

Decimal 0, 245 to 255: reserved

In case of a Master Data entry in the DXB-Subscribertable the value in this field is not relevant and shall be set to 0.

5.4.15 Coding of the field Sample_Offset

This field shall be coded as data type Unsigned8 with the following value range:

Decimal 0 to 243

Decimal 244 to 255: reserved

5.4.16 Coding of the field Sample_Length

This field shall be coded as data type Unsigned8 with the following value range:

Decimal 1 to 244

Decimal 0, 245 to 255: reserved

5.4.17 Coding of the Dest_Slot_Number

This field shall be coded as data type Unsigned8 with the following value range:

Decimal 1 to 244

Decimal 0, 245 to 255: reserved

5.4.18 Coding of the Offset_Data_Area

This field shall be coded as data type Unsigned8 with the following value range:

Decimal 0 to 244

Decimal 245 to 255: reserved

5.4.19 Coding of the field T_{BASE_DP}

This field shall be coded as data type Unsigned32 with the allowed values of decimal 375, 750, 1 500 (default), 3 000, 6 000, 12 000. All other values are reserved.

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5.4.20 Coding of the field T_{DP}

This field shall be coded as data type Unsigned16 with the value range from 154 to 2^{16}-1.

5.4.21 Coding of the field T_{MAPC}

This field shall be coded as data type Unsigned8.

5.4.22 Coding of the field T_{BASE_IO}

This field shall be coded as data type Unsigned32 with the allowed values of decimal 375, 750, 1 500 (default), 3 000, 6 000, 12 000. All other values are reserved.

5.4.23 Coding of the field T_I

This field shall be coded as data type Unsigned16.

5.4.24 Coding of the field T_O

This field shall be coded as data type Unsigned16.

5.4.25 Coding of the field T_{DX}

This field shall be coded as data type Unsigned32.

5.4.26 Coding of the field T_{PLL_W}

This field shall be coded as data type Unsigned16 with the value range from 1 to 2^{16}-1.

5.4.27 Coding of the field T_{PLL_D}

This field shall be coded as data type Unsigned16 with the value range from 0 to 2^{16} -1.

5.4.28 Coding of the field Specifier

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 1: Specifier
Decimal (0): means no further differentiation

Bit 3 to 7: Seq Number
Contains Sequence Number of the PrmCmd

5.4.29 Coding of the field Function

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: reserved

Bit 1: Primary
FALSE (0): means no Primary request is requested

TRUE (1): means a Primary request is requested

Bit 2: Start MS1
FALSE (0): means no Start MS1 request is requested

TRUE (1): means a Start MS1 request is requested

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Bit 3: Stop MS1
FALSE (0): means no Stop MS1 request is requested

TRUE (1): means a Stop MS1 request is requested

Bit 4: Check_Properties
FALSE (0): means no Check_Properties request is requested

TRUE (1): means a Check_Properties request is requested

Bit 5: reserved

Bit 6: MasterStateClear
FALSE (0): means the MasterState is Operate

TRUE (1): means the MasterState is Clear

Bit 7: reserved

5.4.30 Coding of the field Properties

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: Primary
FALSE (0): means no Primary request is used

TRUE (1): means a Primary request is used

Bit 1: Start Stop MS1
FALSE (0): means no Start Stop MS1 request is used

TRUE (1): means a Start Stop MS1 request is used

Bit 2: AddressChange
FALSE (0): means no Address Change is required with Primary/Backup role

TRUE (1): means Address Change is required with Primary/Backup role

Bit 3: AddressOffset
FALSE (0): means Address Offset is 0

TRUE (1): means Address Offset is 64

Bit 4 to 7: reserved

5.4.31 Coding of the field Output Hold Time

This field shall be coded as data type Unsigned16 with the value range from 0 to 2^{16}-1.

5.4.32 Coding of the field Clock Sync Interval

This field shall be coded as data type Unsigned16 with the value range from 0 to 2^{16}-1.

5.4.33 Coding of the field CS Delay Time

This field shall be coded as data type Network Time Difference.

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5.5 Coding section related to configuration PDUs

5.5.1 Coding of the field Cfg_Identifier

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 3: Data_Length
Decimal (0): means 1 octet or 1 word according to the Length_Format

Decimal (1): means 2 octets or 2 words according to the Length_Format

Decimal (2): means 3 octets or 3 words according to the Length_Format

Decimal (3): means 4 octets or 4 words according to the Length_Format

Decimal (4): means 5 octets or 5 words according to the Length_Format

...

Decimal (15): means 16 octets or 16 words according to the Length_Format

Bit 4 to 5: Input_Output_Selection
Decimal (0): shall not be used here, means special identifier format

Decimal (1): means input

Decimal (2): means output

Decimal (3): means input and output

Bit 6: Length_Format
Value (0) : means octet structure used

Value (1) : means word structure used (high octet transferred first, big-endian)

Bit 7: Consistency
Value (0): means octet or word consistency

Value (1): means consistency over the whole length

5.5.2 Coding of the field Special_Cfg_Identifier

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 3: Length_of_Manufacturer_Specific_Data
The length in octet information of the manufacturer specific data shall be in dependency of the use in the Chk_Cfg-REQ-PDU or Get_Cfg-RES-PDU as shown in Table 16 and Table 17. Data type fields shall always be counted if present.

Bit 4 to 5: shall be set to zero (decimal)

Bit 6 to 7: Input_Output_Selection
Decimal (0): means empty slot, no input or output data for this module

Decimal (1): means one length octet for input data follows

Decimal (2): means one length octet for output data follows

Decimal (3): means one length octet for output data followed by one length octet for input data follows

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Table 16 – Range of Length_of_Manufacturer_Specific_Data if used in Chk_Cfg-REQ-PDU

Value (decimal)	Meaning
0	No manufacturer specific data follow; no data in Real_Cfg_Data.
1 to 14	Manufacturer specific data of specified length follow; these shall be identical with the data in Real_Cfg_Data.
15	No manufacturer specific data follow; the verification can be omitted.

Table 17 – Range of Length_of_Manufacturer_Specific_Dat if used in Get_Cfg-RES-PDU

Value (decimal)	Meaning
0	No manufacturer specific data follow.
1 to 14	Manufacturer specific data with specified length follow.
15	Not allowed.

5.5.3 Coding of the fields Length_Octet

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 5: Data_Length
Decimal (0): means 1 octet or 1 word according to the Length_Format

Decimal (1): means 2 octets or 2 words according to the Length_Format

...

Decimal (63): means 64 octets or 64 words according to the Length_Format

Bit 6: Length_Format
Value (0): means octet structure used

Value (1): means word structure used (high octet transferred first, big-endian)

Bit 7: Consistency
Value (0): means octet or word consistency

Value (1): means consistency over the whole length indicated in Data_Length

5.5.4 Coding of the field Manufacturer_Specific_Data

One of the following data types shall be used for each Manufacturer_Specific_Data field:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.5.5 Coding of the field Extended_Length_Octet

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 5: Data_Length
Decimal (0): means 1 octet

Decimal (1): means 2 octets

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Decimal (2): means 3 octets

Decimal (3): means 4 octets

Decimal (4): means 5 octets

...

Decimal (63): means 64 octets

Bit 6: Format
This bit shall be set to zero that means octet structure is used.

Bit 7: Consistency
This bit shall be set to one that means consistency over the whole length.

5.5.6 Coding of the field Data_Type

This field shall be coded as data type Unsigned8 with values according to Table 18.

Table 18 – Data types

Data type name	Code / DataLength	Remark
See IEC 61158-5-10, Clause 5		

The user specific coding (value>=128) shall not be used in any combination with type specific coding (value<=70) in one Chk_Cfg-REQ-PDU or Get_Cfg-REQ-PDU.

Sequences of data types shall be coded as a list of simple data types. The sum of the lengths of the data types shall correspond to the input- or output data length.

Data types with variable length (visible string, octet string, time of day, time difference) shall not be handled in a sequence, but as single element.

5.6 Coding section related to global control PDUs

5.6.1 Coding of the field Control_Command

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: reserved

Bit 1: Clear_Data
Value (0): no command

Value (1): clear output (set output data in safe state)

Bit 2: UnFreeze
Value (0): no command

Value (1): cancels Freeze command

Bit 3: Freeze
Value (0): no command

Value (1): freeze input values

Table 19 illustrates the meaning and priority of the Bits 2 to 3.

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Table 19 – Specification of the bits for Un-/Freeze

Bit 2	Bit 3	Meaning
0	0	no function
0	1	function is activated
1	0	function is deactivated
1	1	function is deactivated

Bit 4: Unsync
Value (0): no command

Value (1): cancels Sync command

Bit 5: Sync
Value (0): no command

Value (1): synchronize output values

Table 20 illustrates the meaning and priority of the Bits 4 to 5.

Table 20 – Specification of the bits for Un-/Sync

Bit 4	Bit 5	Meaning
0	0	no function
0	1	function is activated
1	0	function is deactivated
1	1	function is deactivated

Bit 6: reserved

Bit 7: reserved

5.6.2 Coding of the field Group_Select

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: Group_1

Bit 1: Group_2

Bit 2: Group_3

Bit 3: Group_4

Bit 4: Group_5

Bit 5: Group_6

Bit 6: Group_7

Bit 7: Group_8

Each of the bits above shall set to one if the control command belongs to the indicated group number. Otherwise it shall be set to zero. Zero means that all assigned Slaves shall execute the Control Command.

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NOTE A control command may belong to no groups (Group_Ident=decimal(0)) or all groups (Group_Ident=decimal(255)).

5.7 Coding section related to clock-value-PDUs

5.7.1 Coding of the field Clock_value_time_event

The coding of this field shall be as data type Network Time with the fixed length of 8.

5.7.2 Clock_value_previous_TE

The coding of this field shall be as data type Network Time with the fixed length of 8.

5.7.3 Coding of the field Clock_value_status1

The coding of this field shall be according to 3.4, with C and CV mapped to the parameter local time diff in the set time service. The individual bits shall have the following meaning:

Bit 0: reserved

Bit 1: reserved

Bit 2 to 6: CV (Correction Value)
Value (0): 0 min

Value (1): 30 min

Value (2): 60 min

Value (3): 90 min

...

Value (31): 930 min

Bit 7: C (Sign of CV)
Value (0): CV to be added from Time

Value (1): CV to be subtracted from Time

5.7.4 Coding of the field Clock_value_status2

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: SYF (Synchronisation fault)
Value (0): Clock_value_time_event is synchronized

Value (1): Clock_value_time_event is not synchronized (with other clocks in the system)

Bit 1: reserved

Bit 2: reserved

Bit 3 to 4: CR (Accuracy)
Value (0): 1 ms

Value (1): 10 ms

Value (2): 100 ms

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Value (3): 1 s

Bit 5: reserved

Bit 6: SWT (Summer/Winter-Time)
Value (0): Winter Time

Value (1): Summer Time

Bit 7: ANH (Announcement Hour)
Value (0): No Change planned within the next hour

Value (1): A Change of SWT will occur within the next hour

5.8 Coding section related to function identification and errors

5.8.1 Coding of the field Function_Num

The coding of this field shall be according to 3.4 and the individual bits shall have the following meanings. The meaning of the complete field is defined in Table 21.

Bit 0 to 4: Function_Code / Error_Code
These bits contain the Function_Code or the Error_Code corresponding to the DLPDU_Selector. The Function_Code shall be set according to Table 21.

Bit 5 to 6: PDU_Identifier
These two bits shall be set to 2 (decimal) to indicate a DP-PDU.

Bit 7: DLPDU_Selector
Value (0): means request DLPDU or positive response DLPDU

Value (1): means error or negative response DLPDU

The field Function_Num is transferred in the request and response DLPDU. If the service is processed correctly, bit 7 of Function_Num in the response APDU shall be set to zero. In case of an error an error DLPDU is transferred. In this APDU Function_Num contains an error code and the bit 7 shall be set to one.

Table 21 – Coding of the Function_Code/ Function_Num

DLPDU_ Selector (decimal)	PDU_ Identifier (decimal)	Function_Code (decimal)	Meaning	Complete field: Function_Num (hexadecimal)
0	2	0	reserved	0x40
0	2	1	Get_Master_Diag	0x41
0	2	2	Start_Seq	0x42
0	2	3	Download	0x43
0	2	4	Upload	0x44
0	2	5	End_Seq	0x45
0	2	6	Act_Para_Brct	0x46
0	2	7	Act_Param	0x47
0	2	8	Idle	0x48
0	2	9 to 16	reserved	0x49 to 0x50
0	2	17	Data_Transport	0x51
0	2	18 to 21	reserved	0x52 to 0x55
0	2	22	RM	0x56

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DLPDU_ Selector (decimal)	PDU_ Identifier (decimal)	Function_Code (decimal)	Meaning	Complete field: Function_Num (hexadecimal)
0	2	23	Initiate	0x57
0	2	24	Abort	0x58
0	2	25	reserved	0x59
0	2	26	reserved	0x5A
0	2	27	reserved	0x5B
0	2	28	Alarm_Ack	0x5C
0	2	29	reserved	0x5D
0	2	30	Read	0x5E
0	2	31	Write	0x5F

The Error_Code shall be set according to Table 22.

Table 22 – Coding of the Error_Code / Function_Num

DLPDU_ Selector (decimal)	PDU_ Identifier (decimal)	Error_Code (decimal)	Meaning	Complete field: Function_Num (hexadecimal)
1	2	0	reserved	0xC0
1	2	1	FE	0xC1
1	2	2	NI	0xC2
1	2	3	AD	0xC3
1	2	4	EA	0xC4
1	2	5	LE	0xC5
1	2	6	RE	0xC6
1	2	7	IP	0xC7
1	2	8	SC	0xC8
1	2	9	SE	0xC9
1	2	10	NE	0xCA
1	2	11	DI	0xCB
1	2	12	NC	0xCC
1	2	13	TO	0xCD
1	2	14	CA	0xCE
1	2	15 to 16	reserved	0xCF to 0xD0
1	2	17	Error Data_Transport	0xD1
1	2	18 to 22	reserved	0xD2 to 0xD6
1	2	23	Error Initiate	0xD7
1	2	24	reserved	0xD8
1	2	25	reserved	0xD9
1	2	26	reserved	0xDA
1	2	27	reserved	0xDB
1	2	28	Error Alarm_Ack	0xDC
1	2	29	reserved	0xDD
1	2	30	Error Read	0xDE
1	2	31	Error Write	0xDF

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5.8.2 Coding of the field Error_Decode

The coding of this field shall be as data type Unsigned8 and the values shall be set according to Table 23.

Table 23 – Values of Error_Decode

Value (decimal)	Meaning
0 to 127	reserved
128	DPV1
129 to 253	reserved
254 to 255	PROFILE_SPECIFIC

The field Error_Decode defines the meaning of the following Octets Error_Code_x. The Error_Decode values PROFILE_SPECIFIC indicate that the parameters Error_Code_x shall be set as defined in the corresponding protocols:

PROFILE_SPECIFIC

Error_Code_1= taken from profile specification

Error_Code_2= taken from profile specification

5.8.3 Coding of the field Error_Code_1

If field Error_Decode = DPV1

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 3: Error_Code
The values shall be set according to the Error_Code column in Table 24.

Bit 4 to 7: Error_Class
The values shall be set according to the Error_Class column in Table 24.

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Table 24 – Coding of Error_Code_1 at DPV1

Error_Class (decimal)	Meaning	Error_Code (decimal)
0 to 9	not specified	not specified [a]
10	application	0 = read error 1 = write error 2 = module failure 3 to 6 = not specified [a] 7 = busy 8 = version conflict 9 = feature not supported 10 to 15 = User specific
11	access	0 = invalid index 1 = write length error 2 = invalid slot 3 = type conflict 4 = invalid area 5 = state conflict 6 = access denied 7 = invalid range 8 = invalid parameter 9 = invalid type 10= backup 11 to 15 = User specific
12	resource	0 = read constrain conflict 1 = write constrain conflict 2 = resource busy 3 = resource unavailable 4 to 7 = not specified [a] 8 to 15 = User specific
13 to 15	User specific	

[a] Not specified values are used to serve legacy codes and are intended to be passed unchanged to the application.

If field Error_Decode = PROFILE_SPECIFIC

Error_Code_1= from profile specification, needs to be specified in the profile definition

5.8.4 Coding of the field Error_Code_2

If field Error_Decode = DPV1

The coding of this field shall be as data type Unsigned8. The values are user specific.

If field Error_Decode = PROFILE_SPECIFIC

Error_Code_2 = from profile specification, needs to be specified in the profile definition.

5.9 Coding section related to master diagnosis PDU

5.9.1 Coding of the field MDiag_Identifier

The coding of this field shall be as data type Unsigned8 and the values shall be set according Table 25:

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Table 25 – Values of MDiag_Identifier

Value (decimal)	Meaning
0 to 125	Diag_Data of the DP-slave
126	System_Diagnostis
127	Master_Status
128	Data_Transfer_List
129 to 255	reserved

5.9.2 Coding of the field System_Diagnosis

The coding of this field shall be as data type Octet String with the fixed length of 16. The 16 octets of System_Diagnosis shall be coded as follows:

Octet 1
Bit 0 shall be set to one if station number 0 has reported diagnosis otherwise it shall be set to zero.

Bit 1 shall be set to one if station number 1 has reported diagnosis otherwise it shall be set to zero.

Bit 2 shall be set to one if station number 2 has reported diagnosis otherwise it shall be set to zero.

Bit 3 shall be set to one if station number 3 has reported diagnosis otherwise it shall be set to zero.

Bit 4 shall be set to one if station number 4 has reported diagnosis otherwise it shall be set to zero.

Bit 5 shall be set to one if station number 5 has reported diagnosis otherwise it shall be set to zero.

Bit 6 shall be set to one if station number 6 has reported diagnosis otherwise it shall be set to zero.

Bit 7 shall be set to one if station number 7 has reported diagnosis otherwise it shall be set to zero.

Octet 2
Bit 0 shall be set to one if station number 8 has reported diagnosis otherwise it shall be set to zero.

Bit 1 shall be set to one if station number 9 has reported diagnosis otherwise it shall be set to zero.

etc.

Octet 16
.

.

Bit 5 shall be set to one if station number 125 has reported diagnosis otherwise it shall be set to zero.

Bit 6 to 7 shall be set to zero (not used)

5.9.3 Coding of the field USIF_State

This field shall be coded as data type Unsigned8. The following values are defined:

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Value (0x40): shall be set if operation mode of DP-master (Class 1) is STOP

Value (0x80): shall be set if operation mode of DP-master (Class 1) is CLEAR

Value (0xC0): shall be set if operation mode of DP-master (Class 1) is OPERATE

5.9.4 Coding of the field Hardware_Release_DP

This field shall be coded as data type Unsigned8.

5.9.5 Coding of the field Firmware Release_DP

This field shall be coded as data type Unsigned8.

5.9.6 Coding of the field Hardware_Release_User

This field shall be coded as data type Unsigned8.

5.9.7 Coding of the field Firmware Release_User

This field shall be coded as data type Unsigned8.

5.9.8 Coding of the field Data_Transfer_List

The coding of this field shall be as data type Octet String with the fixed length of 16. The 16 octets of Data_Transfer_List shall be coded as follows:

Octet 1
Bit 0 shall be set to one if data exchange executed with station number 0 otherwise it shall be set to zero.

Bit 1 shall be set to one if data exchange executed with station number 1 otherwise it shall be set to zero.

Bit 2 shall be set to one if data exchange executed with station number 2 otherwise it shall be set to zero.

Bit 3 shall be set to one if data exchange executed with station number 3 otherwise it shall be set to zero.

Bit 4 shall be set to one if data exchange executed with station number 4 otherwise it shall be set to zero.

Bit 5 shall be set to one if data exchange executed with station number 5 otherwise it shall be set to zero.

Bit 6 shall be set to one if data exchange executed with station number 6 otherwise it shall be set to zero.

Bit 7 shall be set to one if data exchange executed with station number 7 otherwise it shall be set to zero.

Octet 2
Bit 0 shall be set to one if data exchange executed with station number 8 otherwise it shall be set to zero.

Bit 1 shall be set to one if data exchange executed with station number 9 otherwise it shall be set to zero.

etc.

Octet 16
.

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.

Bit 5 shall be set to one if data exchange executed with station number 125 otherwise it shall be set to zero.

Bit 6 to 7 shall be set to zero (not used)

5.10 Coding section related to upload/download/act para PDUs

5.10.1 Coding of the field Area_Code_UpDownload

The coding of this field shall be as data type Unsigned8 and the values shall be set according to Table 26.

Table 26 – Values for Area_Code_UpDownload

Value (decimal)	Meaning
0 to 125	DP-slave parameter set (see field DP_Slave_Parameter_Set)
126	reserved
127	Bus parameter set (see field Bus_Parameter_Set)
128	reserved
129	statistic counters (see field Statistic_Counter)
130 to 135	reserved
136 to 139	Master parameter set (see field Master_Parameter_Set)
140 to 254	reserved
255	No local access protection in Start_Seq-REQ-PDU or Start_Seq-RES-PDU

5.10.2 Coding of the field Timeout

The coding of this field shall be as data type Unsigned16 and the time base for the timer shall be 1 ms.

5.10.3 Coding of the field Max_Len_Data_Unit

The coding of this field shall be as data type Unsigned8 and the value for the Max_Len_Data_Unit shall be in the range from 1 to 240.

NOTE The minimum value for the Max_Len_Data_Unit is 68 in case of Initiate-RES_PDU.

5.10.4 Coding of the field Add_Offset

The coding of this field shall be as data type Unsigned16.

5.10.5 Coding of the field Data

One of the following data types shall be used for each Data field:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.10.6 Coding of the field Data_Len

The coding of this field shall be as data type Unsigned8 and the value for the Data_Len shall be in the range from 1 to 240.

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5.10.7 Coding of the field Area_CodeActBrct

The coding of this field shall be as data type Unsigned8 and the values shall be set according to Table 27.

Table 27 – Values for Area_CodeActBrct

Value (decimal)	Meaning
0 to 126	reserved
127	Bus_parameter set
128 to 129	reserved
130 to 135	reserved
136 to 139	Master parameter set
140 to 254	reserved
255	reserved

5.10.8 Coding of the field Area_CodeAct

The coding of this field shall be as data type Unsigned8 and the values shall be set according Table 28.

Table 28 – Values for Area_CodeAct

Value (decimal)	Meaning
0 to 125	DP-slave parameter set The Active Flag in the DP-slave parameter set of the DP-master (Class 1) is influenced accordingly. The DP-slave concerned takes part in the cyclic data exchange mode or is removed from this mode and no longer addressed.
126	reserved
127	Bus parameter set
128	operation mode
129	reserved
130 to 135	reserved
136 to 139	Master parameter set
140 to 255	reserved

5.10.9 Coding of the field Activate

This field shall be coded as data type Unsigned8 according to Table 29.

Table 29 – Values for Activate

Value (hexadecimal)	Meaning
0x80	means activate the corresponding DP-slave parameter set if the field Area_CodeAct equals 0.. 125
0x00	means deactivate if the field Area_CodeAct equals 0.. 125
0xFF	means activate the bus parameter set if the field Area_CodeAct equals 127
0x40	means set operation mode to STOP if the field Area_CodeAct equals 128
0x80	means set operation mode to CLEAR if the field Area_CodeAct equals 128
0xC0	means set operation mode to OPERATE if the field Area_CodeAct equals 128

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5.11 Coding section related to the bus parameter set

5.11.1 Coding of the field Bus_Para_Len

This field shall contain the length of Bus_Para inclusive the field Bus_Para_Len itself. This field shall be coded as data type Unsigned16. The range of values shall be from 66 to 2^{16}-1.

5.11.2 Coding of the field DL_Add

This field shall be coded as data type Unsigned8. The range of values shall be 0 to 125. This parameter shall contain the own address of the DP-master.

5.11.3 Coding of the field Data_rate

This field shall be coded as data type Unsigned8. The values shall be set as shown at Table 30:

Table 30 – Values for Data_rate

Value (decimal)	Meaning
0	9,6 kbit/s
1	19,2 kbit/s
2	93,75 kbit/s
3	187,5 kbit/s
4	500 kbit/s
5	reserved
6	1 500 kbit/s
7	3 000 kbit/s
8	6 000 kbit/s
9	12 000 kbit/s
10	31,25 kbit/s
11	45,45 kbit/s
12 to 255	reserved

5.11.4 Coding of the fields T_{SL}, min T_{SDR}, max T_{SDR}

These parameters are described in IEC 61158-3-3. The coding of these fields shall be as data type Unsigned16.

5.11.5 Coding of the fields T_{QUI}, T_{SET}, G, HSA, max_retry_limit

These parameters are described in IEC 61158-3-3. The coding of these fields shall be as data type Unsigned8.

5.11.6 Coding of the field T_{TR} (Target Token Rotation time)

This field is described in IEC 61158-3-3. The coding of this field shall be as data type Unsigned32.

5.11.7 Coding of the field Bp_Flag (Busparameter flag)

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

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Bit 0 to 2: reserved

Bit 3 to 4: Isochronous Mode
Decimal (0): Not Synchronized

Decimal (1): Buffered Synchronized

Decimal (2): Enhanced Synchronized

Decimal (3): reserved

Bit 5: IsoM Sync
This bit shall be set to one if the DP master (Class 1) shall send a Global_Control-REQ-PDU with Control Command Sync in case of isochronous operation. Otherwise this bit shall be set to zero.

Bit 6: IsoM Freeze
This bit shall be set to one if the DP master (Class 1) shall send a Global_Control-REQ-PDU with Control Command Freeze in case of isochronous operation. Otherwise this bit shall be set to zero.

Bit 7: Error_Action_Flag
This bit shall be set to one if the DP master (Class 1) shall change the operation mode in case of an error. Otherwise this bit shall be set to zero.

5.11.8 Coding of the field Min_Slave_Interval

The coding of this field shall be as data type Unsigned16 with the value range from 1 to 2^{16}-1 and the time base for the timer shall be 100 µs.

5.11.9 Coding of the field Poll_Timeout

The coding of this field shall be as data type Unsigned16 with the value range from 1 to 2^{16}-1 and the time base for the timer shall be 1 ms.

5.11.10 Coding of the field Data_Control_Time

The coding of this field shall be as data type Unsigned16 with the value range from 1 to 2^{16}-1 and the time base for the timer shall be 10 ms.

5.11.11 Coding of the field Alarm_Max

The coding of this field shall be as data type Unsigned8 with the value range from 7 to 32.

5.11.12 Coding of the field Max_User_Global_Control

The coding of this field shall be as data type Unsigned8 with the value range from 1 to 255. The value Zero is reserved.

NOTE This parameter defines the maximum number of Global_Control requests, which may be started by the User at the same time. The parameter describes the ability of the DP-master. A practicable value for Max_User_Global_Control is 16. For each of the 8 Slave groups one SYNC and one FREEZE command may be started at the same time.

5.11.13 Coding of the field Master_User_Data_Len

This field shall contain the length of Master_User_Data inclusive the field Master_User_Data_Len itself. This field shall be coded as data type Unsigned16. The range of values shall be from 2 to (2^{16}–1).

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5.11.14 Coding of the field Master_Class2_Name

The coding of this field shall be as data type Visible String with the fixed length of 32.

5.11.15 Coding of the field Master_User_Data

One of the following data types shall be used for each Master_User_Data field:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.11.16 Coding of the field T_{CT}

The coding of this field shall be as data type Unsigned32 with the value range from 1 to $2^{24}-1$.

5.11.17 Coding of the field $maxT_{SH}$

The coding of this field shall be as data type Unsigned8 with the value range from 1 to $2^{8}-1$.

5.12 Coding section related to the slave parameter set

5.12.1 Coding of the field Slave_Para_Len

The coding of this field shall be as data type Unsigned16 and the value for the Slave_Para_Len shall be in the range from 0 to $2^{16}-1$.This parameter shall contain the length of Slave_Para inclusive the length parameter itself. A DP-slave parameter set can be deleted by setting the Slave_Para_Len to zero.

5.12.2 Coding of the field Sl_Flag (slave flag)

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: reserved

Bit 1: Extra_Alarm_SAP
This bit shall be set if the DP-master (Class 1) shall acknowledge alarms via SAP 50. Otherwise, if the DP-master (Class 1) acknowledges alarms via SAP 51 this bit shall not be set.

Bit 2: DPV1_Data_Types
This bit shall be set if extended data types are used in configuration (Extended_Special_Identifier_Format). Otherwise, if only octet or word types with the Identifier_Format or Special_Identifier_Format this bit may not be set.

Bit 3: DPV1_Supported
This bit shall be set to enable the DPV1 extensions. Otherwise the extensions shall be disabled.

Bit 4: Publisher_Enable
This bit shall be set to enable the publisher function. Otherwise the publisher function shall be disabled.

Bit 5: Fail_Safe
This bit shall be set to force the DP-master (Class 1) to convey a NULL-PDU during operation mode Clear. Otherwise data with the value zero will be sent during Clear.

Bit 6: New_Prm
This bit shall be set to force the DP-master (Class 1) to convey a new Set_Prm-REQ-PDU during the data transfer phase. Otherwise this bit shall be set to zero.

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Bit 7: Active
This bit shall be set to force the DP-master (Class 1) to activate the corresponding DP-slave. Otherwise this bit shall be set to zero.

5.12.3 Coding of the field Slave_Type

This field shall be coded as data type Unsigned8 with values according to Table 31:

Table 31 – Values for Slave_Type

Value (decimal)	Meaning
0	DP-slave
1 to 15	reserved
16 to 255	manufacturer specific

5.12.4 Coding of the field Max_Diag_Data_Len

This field shall be coded as data type Unsigned8 and with values from the range 6 to 244.

5.12.5 Coding of the field Max_Alarm_Len

This field shall be coded as data type Unsigned8 and with values from the range 4 to Min(Max_Diag_Data_Len-6, 64).

5.12.6 Coding of the field Max_Channel_Data_Length

This field shall be coded as data type Unsigned8 and with values from the range 4 to 244.

NOTE This parameter defines the maximum APDU size for the corresponding DP-slaves on the MS1-AR.

5.12.7 Coding of the field Diag_Upd_Delay

This field shall be coded as data type Unsigned8 and with values from the range 0 to 15 (extendible up to 255).

NOTE The parameter is used to count the number of Slave_Diag.cnf in the state DIAG2 while Diag_Data.Prm_Req is still set (for Slaves with reduced performance).

5.12.8 Coding of the field Alarm_Mode

This parameter specifies the maximum number of possible active alarms.

This field shall be coded as data type Unsigned8 with values according to Table 32:

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Table 32 – Values for Alarm_Mode

Value (decimal)	Meaning
0	1 alarm of each type
1	2 alarms in total
2	4 alarms in total
3	8 alarms in total
4	12 alarms in total
5	16 alarms in total
6	24 alarms in total
7	32 alarms in total

5.12.9 Coding of the field Add_Sl_Flag

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: NA_To_Abort
This bit shall be set if the DP-master (Class 1) shall proceed with data exchange in case the corresponding DP-slave is not responding. Otherwise this bit shall not be set.

Bit 1: Ignore_AClr
This bit shall be set if the DP-master (Class 1) shall exclude the corresponding DP-slave from the auto-clear behaviour. Otherwise this bit shall not be set.

Bit 2 to 7: reserved

5.12.10 Coding of the field MS1_Timeout

This field shall be coded as data type Unsigned16 with values from the range decimal 1 to $2^{16}-1$. The value 0 is reserved but may be used for back-up values.

5.12.11 Coding of the field Prm_Data_Len

This parameter contains the length of Prm_Data inclusive the length parameter.

This field shall be coded as data type Unsigned16 and with values from the range 9 to 246.

5.12.12 Coding of the field Prm_Data

This field shall be coded as a Set_Prm-REQ-PDU.

5.12.13 Coding of the field Cfg_Data_Len

This parameter contains the length of Cfg_Data inclusive the length parameter.

This field shall be coded as data type Unsigned16 and with values from the range 3 to 246.

5.12.14 Coding of the field Cfg_Data

This field shall be coded as a Chk_Cfg-REQ-PDU.

5.12.15 Coding of the field Add_Tab_Len

This parameter contains the length of Add_Tab inclusive the length parameter.

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This field shall be coded as data type Unsigned16 and with values from the range 2 to $2^{16}-31$.

5.12.16 Coding of the field Number_of_Entries

This field contains the number of entries in the address table.

This field shall be coded as data type Unsigned16 and with values from the range 1 to 488.

NOTE This parameter contains the number of entries in the address assignment table in the host to the addressed DP-slave. At maximum 488 entries per DP-slave are allowed (maximal 244 configuration strings doubled for inputs and outputs are possible).

5.12.17 Coding of the field Add_Tab_Entry_Header

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: IO_Selection
This bit shall be set if the following addresses belong to the output part. Otherwise this bit shall not be set and the following addresses belong to the input part.

Bit 1: Address_Format_Selection
This bit shall be set to one if the following addresses are coded as Unsigned32. This bit shall be set to zero if the following addresses are coded as Unsigned16.

Bit 2 to 7: reserved

5.12.18 Coding of the field I/O_Data_Length

This field shall be coded as data type Unsigned8 with the values from 1 to 244.

5.12.19 Coding of the field I/O_Config_Address

This field represents the local address of the related configuration identifier.

This field shall be coded as data type Unsigned16 if the bit Address_Format_Selection in the field Add_Tab_Entry_Header is set to zero.

This field shall be coded as data type Unsigned32 if the bit Address_Format_Selection in the field Add_Tab_Entry_Header is set to one.

5.12.20 Coding of the field Host_Address

This field represents the local address of the related input or output data.

This field shall be coded as data type Unsigned16 if the bit Address_Format_Selection in the field Add_Tab_Entry_Header is set to zero.

This field shall be coded as data type Unsigned32 if the bit Address_Format_Selection in the field Add_Tab_Entry_Header is set to one.

5.12.21 Coding of the field Slave_User_Data_Len

This parameter contains the length of Slave_User_Data inclusive the length parameter.

This field shall be coded as data type Unsigned16 and with values from the range 2 to $2^{16}-31$.

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5.12.22 Coding of the field Slave_User_Data

One of the following data types shall be used for each Slave_User_Data field:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.12.23 Coding of the field Ext_Prm_Data_Len

This parameter contains the length of Ext_Prm_Data inclusive the length parameter (2 octets).

This field shall be coded as data type Unsigned16 and with values from the range 2 (no Ext_Prm_Data follow) and 7 to 246.

5.12.24 Coding of the field Ext_Prm_Data

This field shall be coded as a Set_Ext_Prm-REQ-PDU.

5.13 Coding section related to statistic counters

5.13.1 Coding of the field DLPDU_sent_count and SD_count

The coding of this field shall be as data type Unsigned32.

5.13.2 Coding of the field Error_count and SD_error_count

The coding of this field shall be as data type Unsigned16.

5.14 Coding section related to set slave address PDU

5.14.1 Coding of the field New_Slave_Add

This field shall be coded as data type Unsigned8 with values from the range 0 to 125.

5.14.2 Coding of the field No_Add_Change

This field shall be coded as data type Boolean. The value TRUE shall be used to indicate that the change of the address is only once possible. The value FALSE shall be used to indicate that the change of the address is more than once possible.

5.14.3 Coding of the field Rem_Slave_Data

One of the following data types shall be used for each Rem_Slave _Data field:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.15 Coding section related to initiate/abort PDUs

5.15.1 Coding of the field Features_Supported_1

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: Read_Write
This bit shall be set to indicate that Read and Write services on MS2-AR are supported.

NOTE Read and Write are mandatory on a MS2-AR.

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Bit 1 to 7: reserved

5.15.2 Coding of the field Features_Supported_2

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 7: reserved

5.15.3 Coding of the field Profile_Features_Supported_1

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 7: defined by profile

This field shall be set to zero (decimal) if no profile is used. Otherwise the value shall be taken from the appropriate profile specification.

5.15.4 Coding of the field Profile_Features_Supported_2

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 7: defined by profile

This field shall be set to zero (decimal) if no profile is used. Otherwise the value shall be taken from the appropriate profile specification.

5.15.5 Coding of the field Profile_Ident_Number

The coding of this field shall be as data type Unsigned16. The value zero shall be set if no profile is used. Otherwise the value shall be taken from the appropriate profile specification.

5.15.6 Coding of the field S_Type (source type)

The coding of this field shall be as data type Unsigned8. The value zero shall be set to indicate the use of the short address format. The value one shall be set to indicate the use of the long address format. Other values are reserved.

NOTE The terms source and destination always belong to the direction of the used PDU.

5.15.7 Coding of the field D_Type (destination type)

The coding of this field shall be as data type Unsigned8. The value zero shall be set to indicate the use of the short address format. The value one shall be set to indicate the use of the long address format. Other values are reserved.

5.15.8 Coding of the field S_Len (source length)

This field shall be coded as data type Unsigned8.

5.15.9 Coding of the field D_Len (destination length)

This field shall be coded as data type Unsigned8.

5.15.10 Coding of the field S_API (source application identifier)

This field shall be coded as data type Unsigned8.

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5.15.11 Coding of the field D_API (destination application identifier)

This field shall be coded as data type Unsigned8.

5.15.12 Coding of the field S_SCL (source security level)

This field shall be coded as data type Unsigned8. The value zero shall be set to indicate that no access level is used.

5.15.13 Coding of the field D_SCL (destination security level)

This field shall be coded as data type Unsigned8. The value zero shall be set to indicate that no access level is used.

5.15.14 Coding of the field S_Network_Address

The field shall only be present if the field S_Type is set to one.

The coding of this field shall be as data type Octet String with the fixed length of 6.

5.15.15 Coding of the field D_Network_Address

The field shall only be present if the field D_Type is set to one.

The coding of this field shall be as data type Octet String with the fixed length of 6.

5.15.16 Coding of the field S_MAC_Address

The field shall only be present if the field S_Type is set to one.

The coding of this field shall be as data type Octet String.

5.15.17 Coding of the field D_MAC_Address

The field shall only be present if the field D_Type is set to one.

The coding of this field shall be as data type Octet String.

5.15.18 Coding of the field Send_Timeout

This field shall be coded as data type Unsigned16. The time base for the timer shall be 10 ms. The values shall be set from the range 1 to $2^{16}-1$.

5.15.19 Coding of the field Server_SAP

This field shall be coded as data type Unsigned8. The values shall be set from the range 0 to 48.

5.15.20 Coding of the field Subnet

The coding of this field shall be as data type Unsigned8 and the values shall be set according to Table 33.

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Table 33 – Values for Subnet

Value (decimal)	Meaning
0	means no subnet
1	means subnet local
2	means subnet remote
3 to 255	reserved

5.15.21 Coding of the field Instance_Reason_Code

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0 to 3: Reason Code
The values shall be set according to Table 34 if Instance is set to DLL.

Table 34 – Values of reason code if instance is DLL

Value (decimal)	Meaning
1	UE (meaning see IEC 61158-3-3)
2	RR (meaning see IEC 61158-3-3)
3	RS (meaning see IEC 61158-3-3)
9	NR (meaning see IEC 61158-3-3)
10	DH (meaning see IEC 61158-3-3)
11	LR (meaning see IEC 61158-3-3)
12	RDL (meaning see IEC 61158-3-3)
13	RDH (meaning see IEC 61158-3-3)
14	DS (meaning see IEC 61158-3-3)
15	NA (meaning see IEC 61158-3-3)

The values shall be set according to Table 35 if Instance is set to MS2.

Table 35 – Values of reason code if instance is MS2

Value (decimal)	Meaning
1	ABT_SE means sequence error
2	ABT_FE means invalid request APDU received
3	ABT_TO means connection timed out
4	ABT_RE means invalid response APDU received
5	ABT_IV means invalid service from the User
6	ABT_STO means requested value of Send_Timeout was too short
7	ABT_IA means invalid additional address information
8	ABT_OC means S-Timer expired, response APDU has not been sent yet

Bit 4 to 5: Instance
The values shall be set as follows:

Decimal (0): DLL

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Decimal (1): MS2

Decimal (2): USER

Decimal (3): reserved

Bit 6 to 7: reserved

5.16 Coding section related to read/write/data transport PDUs

5.16.1 Coding of the field Index

This field shall be coded as data type Unsigned8 with values from the range 0 to 255.

5.16.2 Coding of the field Length

This field contains the number of octets of the Data field.

This field shall be coded as data type Unsigned8 with values from the range 0 to 240.

5.17 Coding section related to load region and function invocation PDUs

5.17.1 Coding of the field Extended_Function_Num

In addition to the field Function_Num, as described in 5.8.1, this field specifies the function of the Load Region or Function Invocation service.

The coding of this field shall be as data type Unsigned8 and the values shall be set according to Table 36:

Table 36 – Values of Extended_Function_Num

Value (decimal)	Meaning
0	Initiate_Load
1	Push
2	Pull
3	Terminate
4	Start
5	Stop
6	Resume
7	Reset
8	Call
9	Get_FI_State
10 to 255	reserved

5.17.2 Coding of the field Options

The coding of this field shall be according to 3.4 and the individual bits shall have the following meaning:

Bit 0: More_follows
This bit is only valid for the Push APDU and Pull APDU. This bit shall be set if the Load Region sequence is not finished and additional Push APDUs or Pull APDUS follow

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subsequently. This bit shall be reset, if the sequence is finished and no additional Push APDUs or Pull APDUS follow.

For the Initiate_Load APDU this bit shall be reset.

Bit 1 to 6: reserved

Bit 7: Pull / Push
This bit is only valid in the Initiate_Load APDU. This bit shall be set, if Pull LR sequence is initialized. This bit shall be reset, if a Push LR sequence is initialized.

For the Push APDU and Pull APDU this bit shall be reset.

5.17.3 Coding of the field Sequence_Number

This field shall be coded as data type Unsigned32.

5.17.4 Coding of the field LR_Data

This field shall be coded as data type Octet String.

5.17.5 Coding of the field Max_Segment_Length

This field shall be coded as data type Unsigned8.

5.17.6 Coding of the field LR_Index

This field shall be coded as data type Unsigned16.

5.17.7 Coding of the field LR_Length

This field shall be coded as data type Unsigned32.

5.17.8 Coding of the field Max_Response_Delay

This field shall be coded as data type Unsigned16.

5.17.9 Coding of the field Intersegment_Request_Timeout

This field shall be coded as data type Unsigned16.

5.17.10 Coding of the field User_Specific

This field contains user specific information, e.g. the format of the LR_Data.

This field shall be coded as data type Octet String.

5.17.11 Coding of the field FI_Index

This field shall be coded as data type Unsigned16 with values according to Table 37.

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Table 37 – Values of FI_Index

Value (decimal)	Meaning
0 to 32 767	Indices reserved for manufacturer specific use
32 768 to 64 999	Indices reserved for Profibus system services
65 000 to 65 199	Indices reserved for Identification and Maintenance (I&M) services

5.17.12 Coding of the field Entity Number

This field shall be coded as data type Unsigned8.

The meaning of this parameter is profile specific. If not used it shall be set to 0.

5.17.13 Coding of the field Execution_Argument

This field shall be coded as data type Octet String.

5.17.14 Coding of the field Result_Argument

This field shall be coded as data type Octet String.

5.17.15 Coding of the field FI_State

This field contains the state of the Function Invocation entity. The coding of this field shall be as data type Unsigned8 and the values shall be set according to Table 38:

Table 38 – Values of FI_State

Value (decimal)	Meaning
0	IDLE
1	STARTING
2	RUNNING
3	STOPPING
4	STOPPED
5	RESUMING
6	UNRUNNABLE
7	RESETTING
8	WAIT-SET-IN-USE
9	WAIT-SET-IN-USE-2
10	WAIT-DEL-IN-USE
11	WAIT-DEL-IN-USE-2
12	EXEC-ERR
13	EXEC-TERM
14 to 255	reserved

This field shall be coded as data type OctetString with 10 octect. The value shall be set manufacturer specific and shall be filled with 0 if it is shorter than 16.

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5.17.16 Coding of the field IMData_Execution_Argument

5.17.16.1 General

This field contains the IMData_Execution_Argument of the CALL-REQ-PDU which are coded according to Table 39.

Table 39 – IMData_Execution_Argument

IMData_Execution_Argument	Reference
IM_Header	See 5.17.16.2
IM_Profile_Specific_Data	See 5.17.16.3
I&M_Manufacturer_Specific_x	See 5.17.16.4
IM_Date	See field IM_Date within IEC 61158-6-10
IM_Descriptor	See field IM_Descriptor within IEC 61158-6-10
IM_Signature	See field IM_Signature within IEC 61158-6-10
IM_Tag_Function	See field IM_Tag_Function within IEC 61158-6-10
IM_Tag_Location	See field IM_Tag_Location within IEC 61158-6-10
IM_Manufacturer_ID	See field VendorID within IEC 61158-6-10

5.17.16.2 Coding of the field IM_Header

This field shall be coded as data type OctetString with 10 octet. The value shall be set manufacturer specific and shall be filled with 0x00 if it is shorter than 16.

5.17.16.3 Coding of the field IM_Profile_Specific_Data

This field shall be coded as data type OctetString with 54 octets. The value shall be set profile specific and shall be filled with 0x00 if it is shorter than 54.

5.17.16.4 Coding of the field I&M_Manufacturer_Specific_x

This field shall be coded as data type OctetString with 64 octets. The value shall be set manufacturer specific and shall be filled with 0x00 if it is shorter than 64.

5.17.17 Coding of the field IMData_Result_Argument

This field contains the IMData_Result_Argument of the CALL-RES-PDU which are coded according to Table 40.

Table 40 – IMData_Result_Argument

IMData_Result_Argument	Reference
IM_Header	See 5.17.16.2
IM_Profile_Specific_Data	See 5.17.16.3
I&M_Manufacturer_Specific_x	See 5.17.16.4
IM_Date	See field IM_Date within IEC 61158-6-10
IM_Descriptor	See field IM_Descriptor within IEC 61158-6-10
IM_Signature	See field IM_Signature within IEC 61158-6-10
IM_Tag_Function	See field IM_Tag_Function within IEC 61158-6-10
IM_Tag_Location	See field IM_Tag_Location within IEC 61158-6-10
IM_Manufacturer_ID	See field VendorID within IEC 61158-6-10
IM_Hardware_Revision	See field IM_Hardware_Revision within IEC 61158-6-10

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IMData_Result_Argument	Reference
IM_Profile_ID	See field IM_Profile_ID within IEC 61158-6-10
IM_Profile_Specific_Type	See field IM_Profile_Specific_Type within IEC 61158-6-10
IM_Revision_Counter	See field IM_Revision_Counter within IEC 61158-6-10
IM_Serial_Number	See field IM_Serial_Number within IEC 61158-6-10
IM_Supported	See field IM_Supported within IEC 61158-6-10
IM_SWRevision_Bug_Fix	See field IM_SWRevision_Bug_Fix within IEC 61158-6-10
IM_SWRevision_Functional_Enhancement	See field IM_SWRevision_Functional_Enhancement within IEC 61158-6-10
IM_SWRevision_Internal_Change	See field IM_SWRevision_Internal_Change within IEC 61158-6-10
IM_Version_Major	See field IM_Version_Major within IEC 61158-6-10
IM_Version_Minor	See field IM_Version_Minor within IEC 61158-6-10
OrderID	See field OrderID within IEC 61158-6-10
SWRevisionPrefix	See field SWRevisionPrefix within IEC 61158-6-10

5.18 Examples of diagnosis-RES-PDUs

Figure 3 illustrates an example for a diagnosis APDU with a device related status message, a device related process alarm and an identifier related diagnostic.

bits	7	6	5	4	3	2	1	0	
octets									
1	0	0	0	0	0	1	1	1	Headeroctet: device related diagnostic
2	1	0	0	0	0	0	0	1	Status_Type: Status_Message
3	0	0	0	0	0	0	1	0	Slot_Number: 2 (sensor A)
4	0	0	0	0	0	0	0	0	Specifier: no further differentiation
5	0	0	0	0	0	1	0	1	Diagnostic_User_Data: 5 (average temperature)
6									Diagnostic_User_Data: temperature
7									value (Unsigned16)
8	0	0	0	0	1	0	0	1	Headeroctet: device related diagnostic
9	0	0	0	0	0	0	1	0	Alarm_Type: Process_Alarm
10	0	0	0	0	0	0	1	1	Slot_Number: 3 (valve B)
11	0	0	0	0	0	0	0	1	Specifier: alarm appears
12	0	1	0	1	0	0	0	0	Diagnostic_User_Data: 0x50 (upper limit exceeded pressure)
13									Diagnostic_User_Data: time stamp
14									(Time_of_day = 4 octets)
15									
16									
17	0	1	0	0	0	0	1	0	Headeroctet: identifier related diagnostic
18	0	0	0	0	0	1	0	1	1st identifier Number with diagnosis
	msb								

Figure 3 – Example of Ext_Diag_Data in case of DPV1 diagnosis format with alarm and status PDU

Corresponding textual part
Text assignments for sensor A and valve B

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Unit_Diag_Area = 24-27

Value (1) = “Minimum temperature”

Value (2) = “Maximum temperature”

Value (5) = “Average temperature”

Unit_Diag_Area_End

Unit_Diag_Area = 28-31

Value (1) = “lower limit exceeded pressure”

Value (5) = “upper limit exceeded pressure”

Unit_Diag_Area_End

Unit_Diag_Area = 8-15

Value (2) = “sensor A”

Value (3) = “valve B”

Unit_Diag_Area_End

Unit_Diag_Area = 16-17

Value (1) = “alarm/status appearing”

Value (2) = “alarm/status disappearing”

Unit_Diag_Area_End

Since these definitions are used for both alarms and status messages their values should be different. That means different values for alarms and status messages should be used at the same position within the diagnostic field.

Figure 4 illustrates an example for a diagnosis APDU with a device related user specific diagnostic, an identifier related diagnostic and a channel related diagnostic.

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bits	7	6	5	4	3	2	1	0	
octets 1	0	0	0	0	0	1	0	0	device related diagnostic:
2	device specific								meaning of the bits is defined
3	diagnostic field								manufacturer specific
4	of length 3								
5	0	1	0	0	0	1	0	0	identifier related diagnostic:
6	0	0	0	0	0	0	0	1	identifier number 0 has diagnostic
7	0	0	0	1	0	0	0	0	identifier number 12 has diagnostic
8	0	0	0	0	0	1	0	0	identifier number 18 has diagnostic
9	1	0	0	0	0	0	0	0	channel related diagnostic: identifier number 0
10	0	0	0	0	0	0	1	0	channel 2
11	0	0	1	0	0	1	0	0	overload, channel bit organized
12	1	0	0	0	1	1	0	0	identifier number 12
13	0	0	0	0	0	1	1	0	channel 6
14	1	0	1	0	0	1	1	1	upper limit value exceeded, channel word organized
	msb								

Figure 4 – Example of Ext_Diag_Data in case of the basic diagnosis format

5.19 Example of Chk_Cfg-REQ-PDU

Figure 5 illustrates an example for a Chk_Cfg APDU with a special identifier format.

bits	7	6	5	4	3	2	1	0	
octets 1	1	1	0	0	0	0	1	1	input/output, 3 octets manufacturer specific data
2	1	1	0	0	1	1	1	1	consistency, output, 16 words
3	1	1	0	0	0	1	1	1	consistency, input, 8 words
4	manufacturer								
5	specific								
6	data								
	msb								

Figure 5 – Example of a special identifier format

5.20 Examples of Chk_Cfg-REQ-PDUs with DPV1 data types

The data types are coded into the manufacturer-specific part.

Simple data types are coded in a octet which contains the code of the data type.

Sequences of data types are coded as a list of simple data types. The sum of the lengths of the data types has to correspond to the input- or output data length. Data types with variable length (visible string, octet string, time of day, time difference) cannot be handled in a sequence, but as single element. Comments may be added at the end of the list of the data types.

Figure 6 shows the special identifier format for an analogue input block containing a value (Floating Point), Status (Unsigned8) and Comment (3 Octets).

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bits	7	6	5	4	3	2	1	0	
octets									
1	0	1	0	0	0	1	0	1	Manufacturer-specific format
2	1	0	0	0	0	1	0	0	Consistency, 5 Octets (Input)
3	0	0	0	0	1	0	0	0	Data type Floating Point
4	0	0	0	0	0	1	0	1	Data type Unsigned8
5	Manufacturer								Comment
6	Specific								Comment
7	Data								Comment
	msb								

Figure 6 – Example of a special identifier format with data types

Figure 7 shows the special identifier format for an analogue output block where the output value can be read back.

The representation of this analogue output block is structured as follows:

a) Output Value (Floating Point)
b) Output Status (Unsigned8)
c) read back Value (Floating Point)
d) read back Status (Unsigned8)
e) comment (1 octet)

bits	7	6	5	4	3	2	1	0	
octets									
1	1	1	0	0	0	1	0	1	Manufacturer-specific format
2	1	0	0	0	0	1	0	0	Consistency, 5 Octets (Output)
3	1	0	0	0	0	1	0	0	Consistency, 5 Octets (Input)
4	0	0	0	0	1	0	0	0	Data Type Floating Point
5	0	0	0	0	0	1	0	1	Data Type Unsigned8
6	0	0	0	0	1	0	0	0	Data Type Floating Point
7	0	0	0	0	0	1	0	1	Data Type Unsigned8
8	1	1	1	1	0	0	0	0	Comment
	msb								

Figure 7 – Example of a special identifier format with data types

Figure 8 shows the special identifier format for an empty slot with 3 octets comment.

The representation of this empty slot is structured as follows:

a) empty slot
b) comment (3 octets)

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bits	7	6	5	4	3	2	1	0	
octets 1	0	0	0	0	0	0	1	1	Manufacturer-specific format
2	1	1	1	1	0	0	0	0	Comment
3	1	1	1	1	0	1	0	0	Comment
4	1	1	1	1	0	0	1	0	Comment
	msb								

Figure 8 – Example of an empty slot with data types

Figure 9 shows the use of the special identifier format for a multi-variable device which utilizes the user specific coding instead of data types in the data type field.

The representation of this multi variable device is structured as follows:

a) Analog Input (AI)

b) Discrete Output (DO) with setpoint (SP_D) and readback (READBACK_D)

bits	7	6	5	4	3	2	1	0	Multi variable device, AI and DO
octets 1	0	1	0	0	0	0	1	0	**Analog Input** Special Config Identifier for the example AI (0x42)
2	1	0	0	0	0	1	0	0	Extended Length Octet for input (0x84)
3	1	0	0	0	0	0	0	1	User specific instead of data type >128 (e.g block code for AI 0x81)
4	1	1	1	1	0	0	0	1	User specific (e.g. Identification of cyclic parameter for AI 0x81)
5	1	1	0	0	0	0	1	0	**Discrete Output** Special Config Identifier for the example DO (0xC2)
6	1	0	0	0	0	0	0	1	Extended Length Octet for output (0x81)
7	1	0	0	0	0	0	0	1	Extended Length Octet for input (0x81)
8	1	0	0	0	0	1	0	0	User specific instead of data type >128 (e.g. block code for DO 0x84)
9	1	0	0	0	0	0	1	1	User specific instead of data type >128 (e.g. Identification of cyclic parameter for DO with SP_D and READBACK_D 0x83)
	msb								

Figure 9 – Example for multi-variable device with AI and DO function blocks

5.21 Example structure of the Data_Unit for Data_Exchange

The structure of the Data_Unit for the service Data_Exchange is defined by the identifiers which are passed to the DP-slave with the service Chk_Cfg at configuration.

The following example illustrates how the data in the Data_Unit will be transferred, corresponding to the given identifiers. Figure 10 shows the data which shall be sent by Data_Exchange and their order as defined by the service Chk_Cfg.

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1. ID	2. ID	3. ID	4. ID	5. ID	6. ID	7. ID	
1 B_I	1 W_I	2 W_O	2 B_IO	1 B_O	2 W_I	3 W_A	

Figure 10 – Identifiers (ID)

Figure 11 shows the type and length of the data corresponding to their Identifiers and the direction of their transfer, meaning whether they are Input or Output.

1 B_I: 1 Octet input;
1 B_O: 1 Octet output;
2 B_IO: 2 Octet out- and input
1 W_I: 1 Word input
1 W_O: 1 Word output
etc.

Figure 11 – Identifier list

The sequence of data in the Data_Unit is shown in Figure 12.

Data_Exchange.req

Bit	msb 7	6	5	4	3	2	1	0
octets								
1	Word_high				(3. ID)			
2	Word_low				(3. ID)			
3	Data				(4. ID)			
4	Data				(4. ID)			
5	Data				(5. ID)			
6	1.Word_high				(7. ID)			
7	1.Word_low				(7. ID)			
8	2.Word_high				(7. ID)			
9	2.Word_low				(7. ID)			
10	3.Word_high				(7. ID)			
11	3.Word_low				(7. ID)			
12	etc.							
...								
n								

Data_Exchange.res

Bit	msb 7	6	5	4	3	2	1	0
octets								
1	Data				(1. ID)			
2	Word_high				(2. ID)			
3	Word_low				(2. ID)			
4	Data				(4. ID)			
5	Data				(4. ID)			
6	1.Word_high				(6. ID)			
7	1.Word_low				(6. ID)			
8	2.Word_high				(6. ID)			
9	2.Word_low				(6. ID)			
10	etc.							
11								
12								
...								
n								

Figure 12 – Structure of the Data_Unit for the request- and response-DLPDU

For the configuration identifier “empty slot” no data will be transferred in the Data_Unit.

6 FAL protocol state machines

6.1 Overall structure

6.1.1 Fieldbus Service Protocol Machines (FSPM)

The FSPM State Machines co-ordinate the underlying state machines used for processing of the various services and application relations.

There exists one state machine for each device type (FSPMS for DP-slave, FSPMM1 for DP-master (Class 1) and FSPMM2 for DP-master (Class 2).

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6.1.2 Master to Slave cyclic (MS0)

The MSCY1 State Machines are responsible for the cyclic data transfer between the DP-master (Class 1) and one DP-slave (MSCY1M/MSCY1S). This comprises the parameterisation, configuration, diagnostic and the data exchange as well as the Global Control commands. There exist one MSCY1S for a DP-slave and up to 125 MSCY1M for a DP-master (Class 1). To Subscribe Input Data objects a DP-slave use up to 125 SSCY1S.

6.1.3 Master (class 1) to Slave acyclic (MS1)

The MSAC1 State Machines (MSAC1M, MSAC1S) are responsible for the acyclic data transfer between the DP-master (Class 1) and one DP-slave. The MS1 communication relationship is coupled to the cyclic communication relationship and processes the services Read, Write and Alarm Ack as well as the Load Region and Function Invocation services.

Additionally the MSAL1M state machine is used for alarm handling at the DP-master.

There exist one MSAC1S for a DP-slave and up to 125 MSAC1M/MSAL1M for a DP-master (Class 1).

6.1.4 Master (class 2) to Slave acyclic (MS2)

The MS2 State Machines (MSAC2M, MSRM2S, MSAC2S) are responsible for the acyclic data transfer between the DP-master (Class 2) and one DP-slave. The MS2 communication relationship processes the services Read, Write and Data_Transport as well as the Load Region and Function Invocation services.

The Master Slave Resource Manager (MSRM2S) is responsible for the assignment of a DLSAP and the related resources to each established MSAC2 communication relationship in the DP-slave. The Master Slave Resource Manager additionally starts the appropriate MSAC2S State Machine.

At the DP-master (Class 2) an arbitrary number of MSAC2M state machines exist. The maximum number of MSAC2M state machines is given by the maximum number of DP-slaves (=125) where each DP-slave provides the maximum number of MS2 CRs (=49).

6.1.5 Master to Slave clock synchronisation (MS3)

By means of the MSCS1 State Machines the clock synchronisation can be accomplished between the DP-master (Class 1) and the DP-slaves.

There exist at most one state machine at DP-master (Class 1) and one at DP-slave.

6.1.6 Master Master acyclic (MM1/MM2)

By means of the MMAC State Machines the Master_Diag, the Master Parameter Set, Slave Parameter Set, Bus Parameter Set can be transferred between the DP-master (Class 1) and the DP-master (Class 2).

There exist at most one state machine at DP-master (Class 1) and one at DP-master (Class 2).

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6.1.7 DLL Mapping Protocol Machines (DMPM)

The DL Mapping Protocol Machines (DMPM) connects the other State machines and Layer 2. DMPM provides the coordination of all state machines concerning the configuration and error handling of the Data Link Layer Usage. The functions are mapped by the DMPM to the DLL and DLM services of Layer 2. The DMPM generates the necessary Layer 2 parameters of the service, receives the confirmations and indications from Layer 2 and passes them to the appropriate DMPM-User.

There exist one state machine for each device type (FSPMS for DP-slave, FSPMM1 for DP-master (Class 1) and FSPMM2 for DP-master (Class 2).

Interface between DMPM and Layer 2

The DMPM is directly put upon the DLL User – DLL interface and on the DLMS User – DLM interface as described in Data Link Layer Service Definitions (Refer to DL Service Definition in IEC 61158-3-3).

The DMPM uses for the mapping of the DMPM functions on the Layer 2 the following services:

a) DLL services
   Send and Request Data with Reply (SRD)
   Send Data with No Acknowledge (SDN)
   Send and Request Data with Multicast Reply (MSRD)
   Clock Synchronization (CS)
b) DLM services
   Reset
   Set Value
   Get Value
   Event
   SAP Activate
   SAP Activate Responder
   SAP Deactivate

6.2 Assignment of state machines to devices

Table 41 shows the assignment of State Machines to devices. Some State Machines are always required and thus marked with ‘M’ (mandatory) others are marked with ‘O’ (optional). The Remarks show options in mandatory machines.

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Table 41 – Assignment of state machines

Device type	Machine	Mandatory/ optional	Remarks
DP-slave	FSPMS	M	Alarm handling is optional
	MSCY1S	M	
	SSCY1S	O	
	MSAC1S	O	
	MSAC2S	O	
	MSRM2S	O	
	DMPMS	M	
DP-master (Class 1)	FSPMM1	M	
	MSCY1M	M	
	MSAL1M	O	
	MSAC1M	O	
	MMAC1	O	
	DMPMM1	M	
DP-master (Class 2)	FSPMM2	M	
	MSAC2M	O	
	MMAC2	O	
	DMPMM2	M	

6.3 Overview DP-slave

Figure 13 illustrates the general structure of the AL of a DP-slave by showing its state machines and the services used by them.

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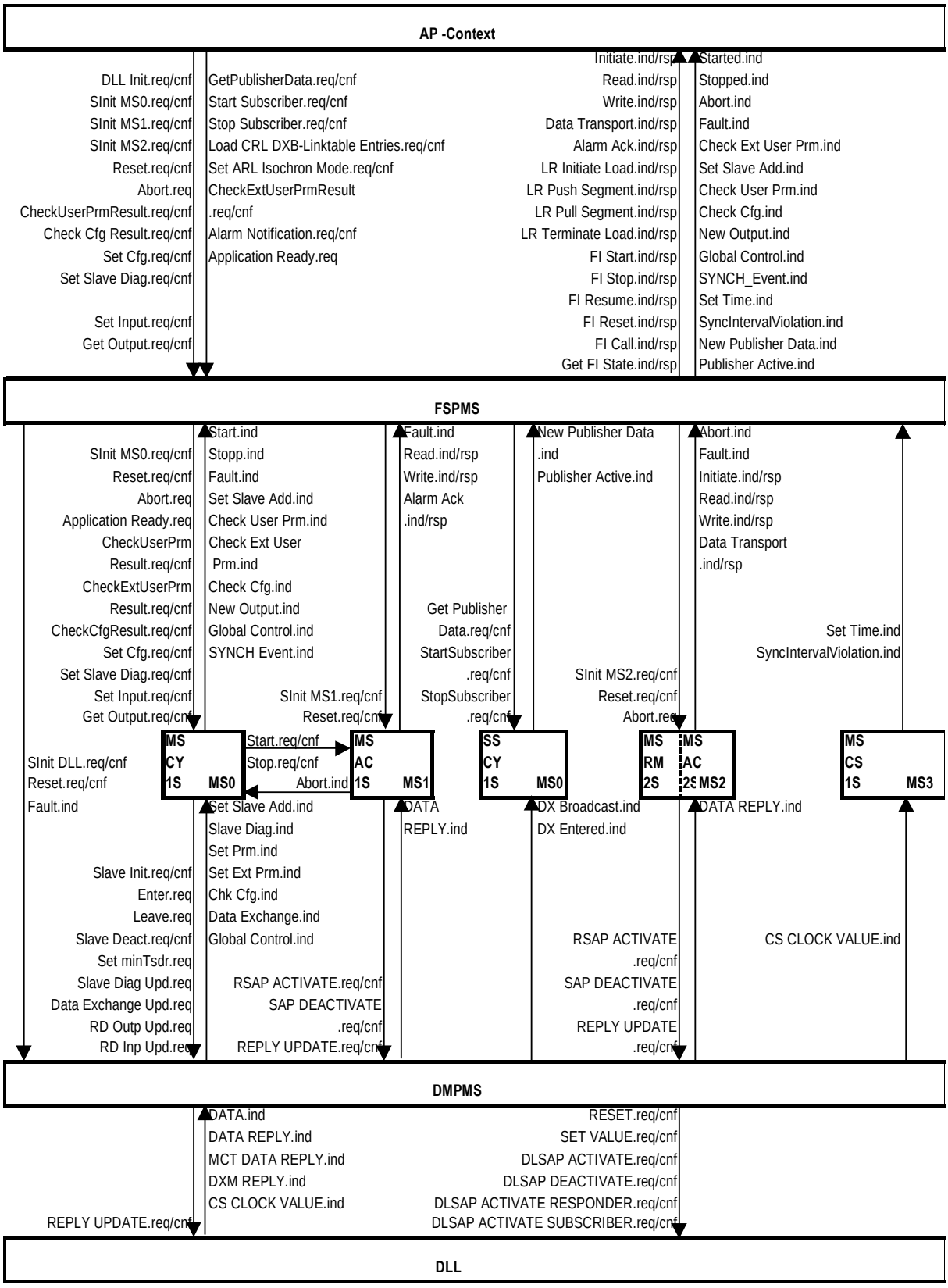

Figure 13 – Structuring of the protocol machines and adjacent layers in a DP-slave

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6.4 Overview DP-master (class 1)

Figure 14 illustrates the general structure of the AL of a DP-master (Class 1) by showing its state machines and the services used by them.

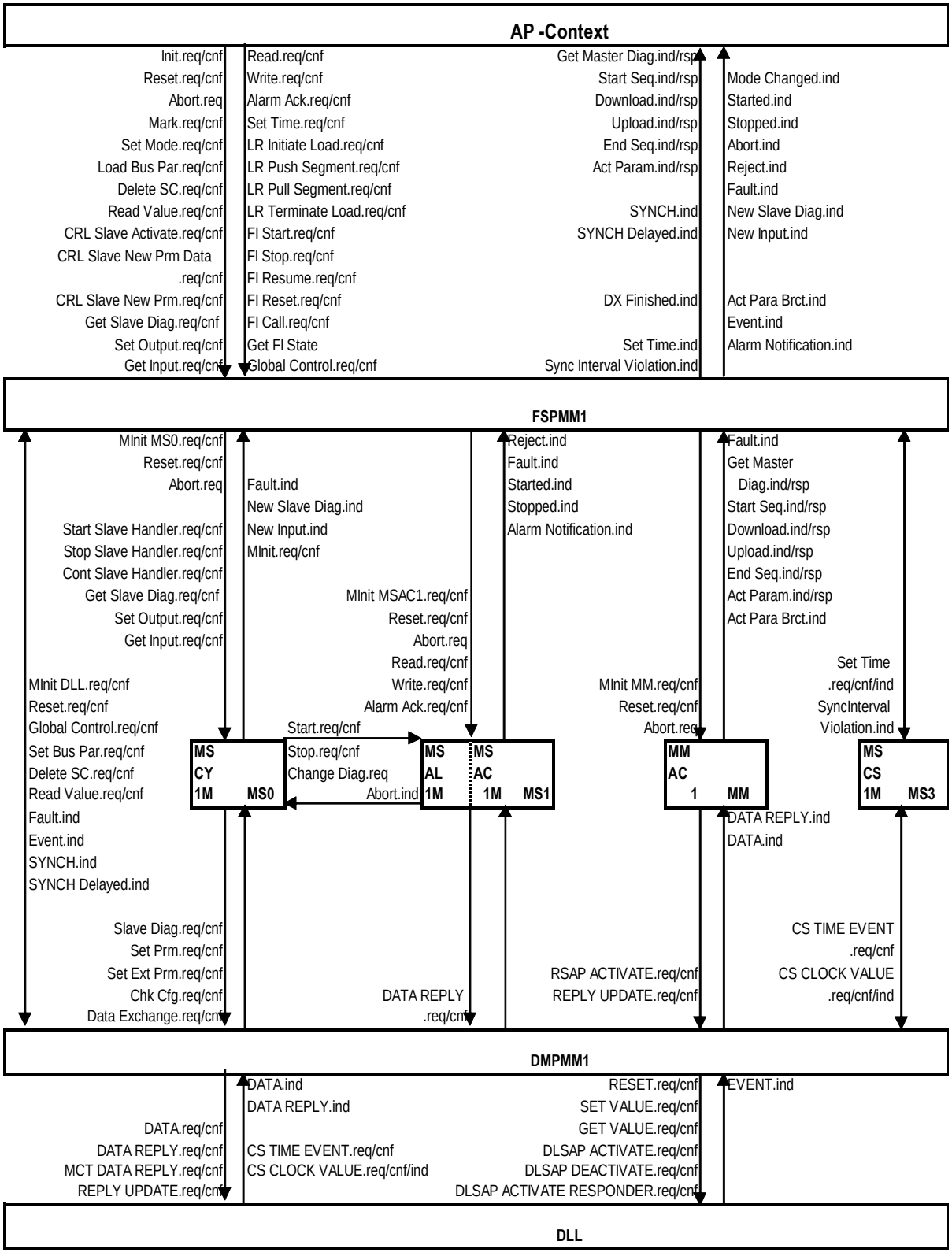

Figure 14 – Structuring of the protocol machines and adjacent layers in a DP-master (class 1)

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6.5 Overview DP-master (class 2)

Figure 15 illustrates the general structure of the AL of a DP-master (Class 2) showing its state machines and the services used.

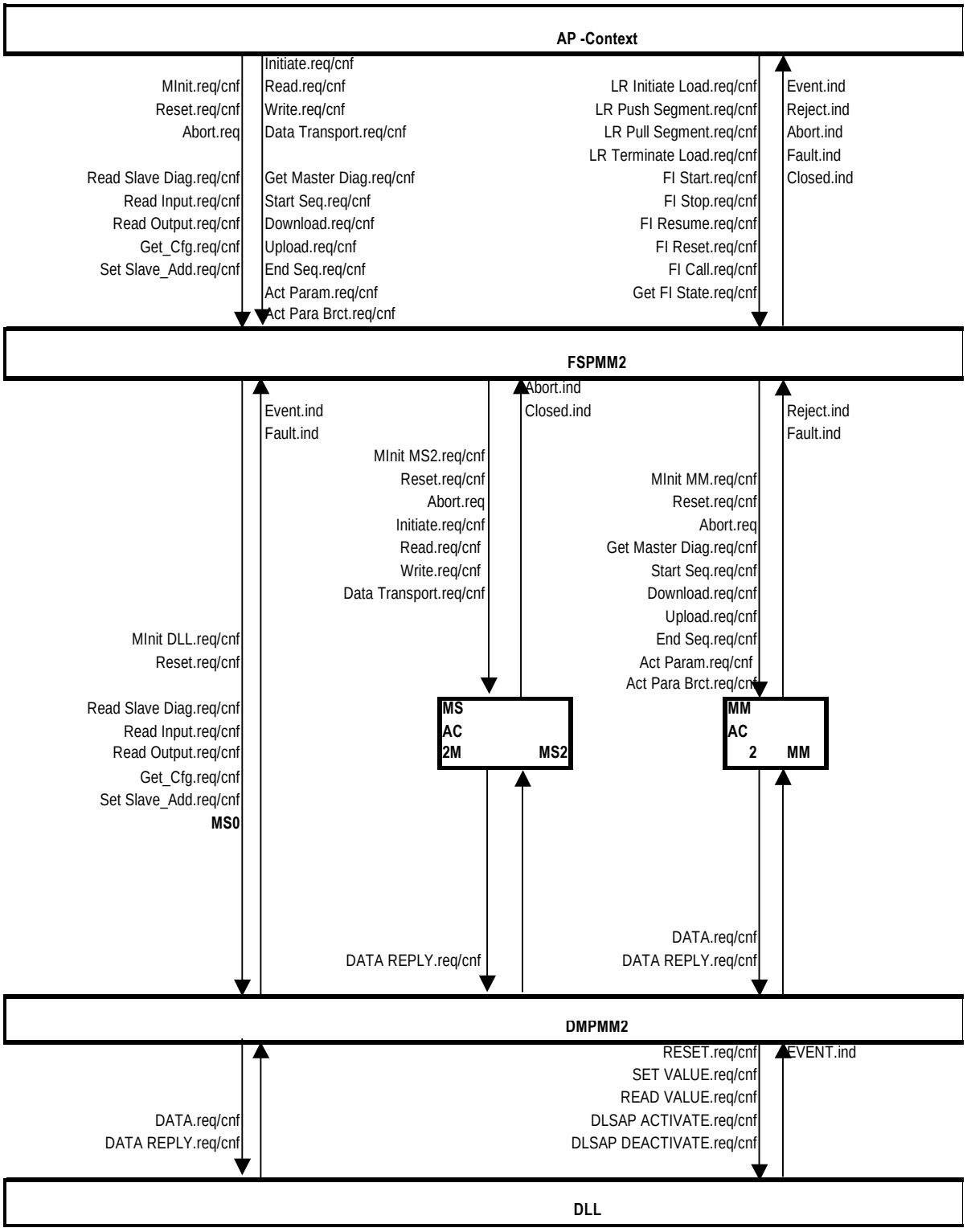

Figure 15 – Structuring of the protocol machines and adjacent layers in a DP-master (class 2)

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6.6 Cyclic communication between DP-master (class 1) and DP-slave

The communication between DP-master and DP-slave is established with the sequence as shown in Figure 16:

If the DP-master wants to communicate with a DP-slave, the DP-master requests the Diag_Data of the DP-slave, in order to check the readiness for operation of the DP-slave.

This Diagnosis request will be repeated until the DP-slave responds with the requested data.

If the DP-slave responds with the requested diagnostic information, the DP-master checks whether another DP-master occupies this DP-slave. If this is not the case, the DP-slave will be parameterized and configured (Set_Prm / Chk_Cfg).

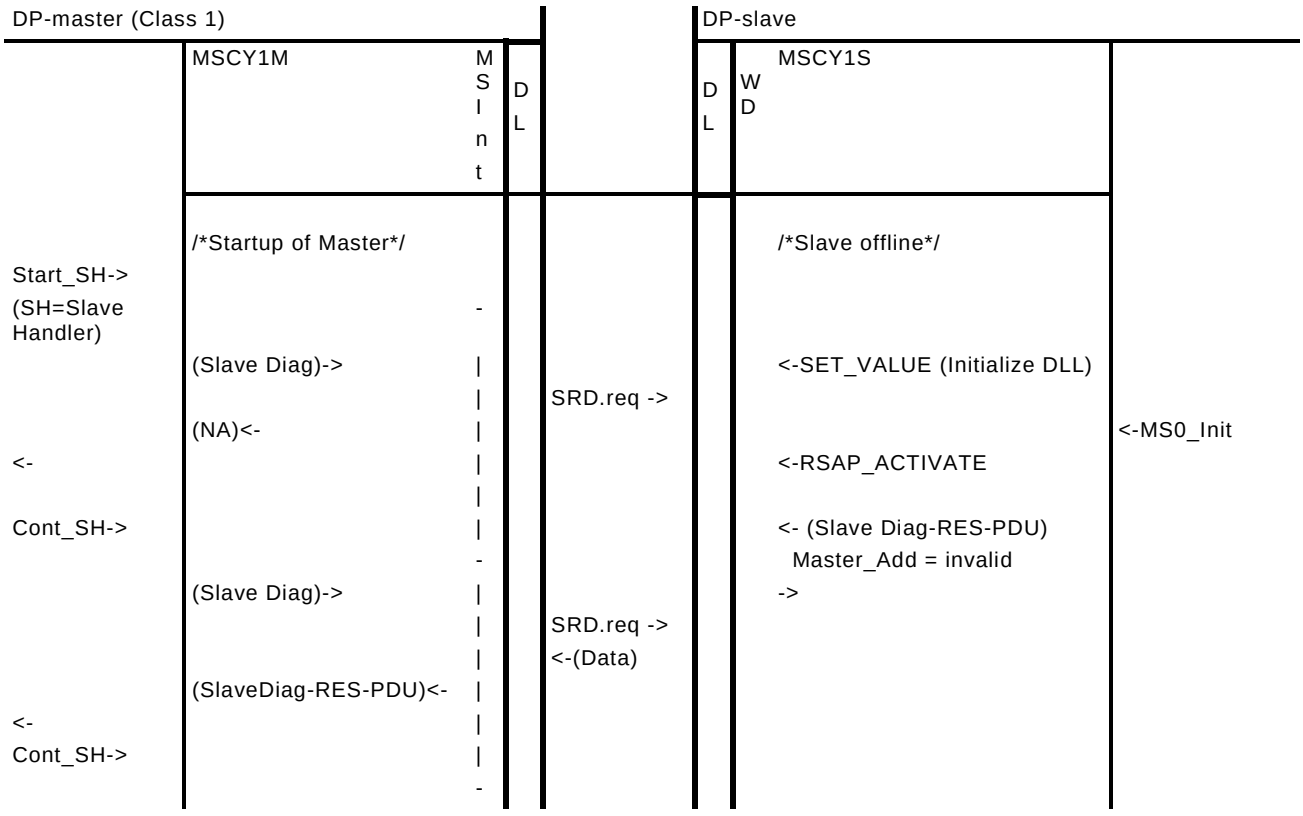
Subsequently the DP-master requests again the diagnostic data from the DP-slave. The following messages can occur:

- Parameterization or configuration error
- The DP-slave is occupied by another DP-master
- Static User diagnostics, no normal data transfer possible (for Example: start-up procedure for DP correctly executed, but some external parameterization outstanding)
- DP-slave is not ready for operation

In the cases a) and b) the DP-master returns to the starting state and checks again the readiness for operation of the DP-slave.

In the cases c) and d) the DP-master requests the diagnostic information from the DP-slave until the mentioned messages disappear.

If no error messages occur the DP-master starts the data exchange to the DP-slave. The input and output data will be transferred to and from the DP-slave. The DP-master (Class 1) indicates his own operation mode to the DP-slaves for the first time.



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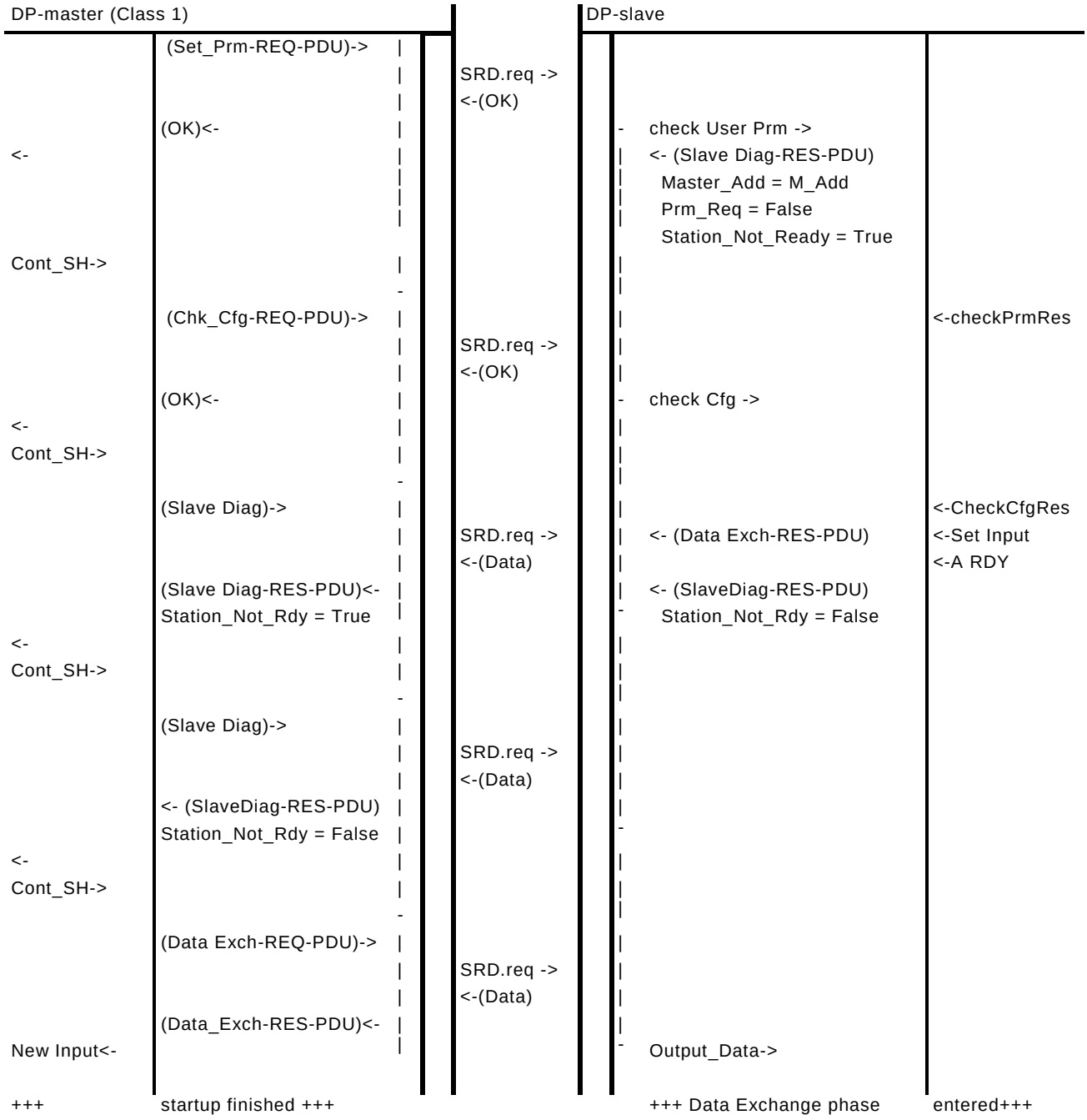

Figure 16 – Sequence of the communication between DP-master and DP-slave

6.7 Acyclic communication between DP-master (class 2) and DP-master (class 1)

The communication between DP-master (Class 2) and DP-master (Class 1) is handled in a fixed way (Request-Poll-Response), see Figure 17, with one exception.

This exception is the function Act_Para_Brct, which is transferred as a multicast from the DP-master (Class 2) to the corresponding DP-master (Class 1).

Communication is always initiated by the DP-master (Class 2). The DP-master (Class 2) sends a request to the DP-master (Class 1) and waits for the response. The service is processed by the MMAC2 of the DP-master (Class 2). After the receipt of the response the DP-master (Class 2) can make a new request.

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At one point of time the DP-master (Class 1) can only communicate with one DP-master (Class 2).

The DP-master communication is initiated by a xxx.req from the DP-master (Class 2). The MMAC1 passes this request to Layer 2 and checks the status after receipt of the DMPM-response. If the response status is NR (no reply data) it will continue with a new SRD with no L_sdu to get response data. This procedure will be repeated by the DP-master (Class 2) until

an erroneous response occurs,

or a SRD_RES_PDU with response data is received,

or the Timer T1 expires.

The result will then be passed to the User of the DP-master (Class 2).

The timer T1 will be started after receipt of the xxx.req in the MMAC2 of the DP-master (Class 2) and will be stopped after release of the xxx.cnf. The value loaded in the timer T1 depends on the DLL parameter and the performance of the DP-master (Class 1).

The responder (DP-master (Class 1)) waits after a reset for a request. If the MMAC1 of the DP-master (Class 1) receives a valid request, this request is passed to the User by the corresponding xxx.ind. At this point of time an access protection was set to the local service access point (SAP) for the communication with the DP-master (Class 2). This is necessary to make sure that the response data will be sent to the right DP-master (Class 2).

After receipt of the response from the User (xxx.rsp) the response data will be passed with a REPLY_UPDATE.req to DMPM. Additionally, a timer will be started which controls the request for the response. If this timer expires and the response data are still not fetched by the DP-master (Class 2), the MMAC1 deletes the response data because the MMAC1 presumes that the DP-master (Class 2) is no longer available. In this case the access protection for the DP-master (Class 2) will be cancelled. This will also be done in the case of a single transaction if a DATA_REPLY.ind indicates that the response data are fetched by the DP-master (Class 2). The value loaded in the timer of the DP-master (Class 1) depends on the DL parameter and the performance of the DP-master (Class 2).

In case of Master-Master communication a sequence of requests can put into parentheses. Therefore the access protection will be set by the “Start_Seq” and released by the “End_Seq”. To avoid errors the time between two requests will be supervised. The value for the time supervision is added to the Start_Seq request. With the Start_Seq.req the User can additionally send an areacode. By means of this areacode at the beginning of a sequence an area can be reserved at the User in the DP-master (Class 1).

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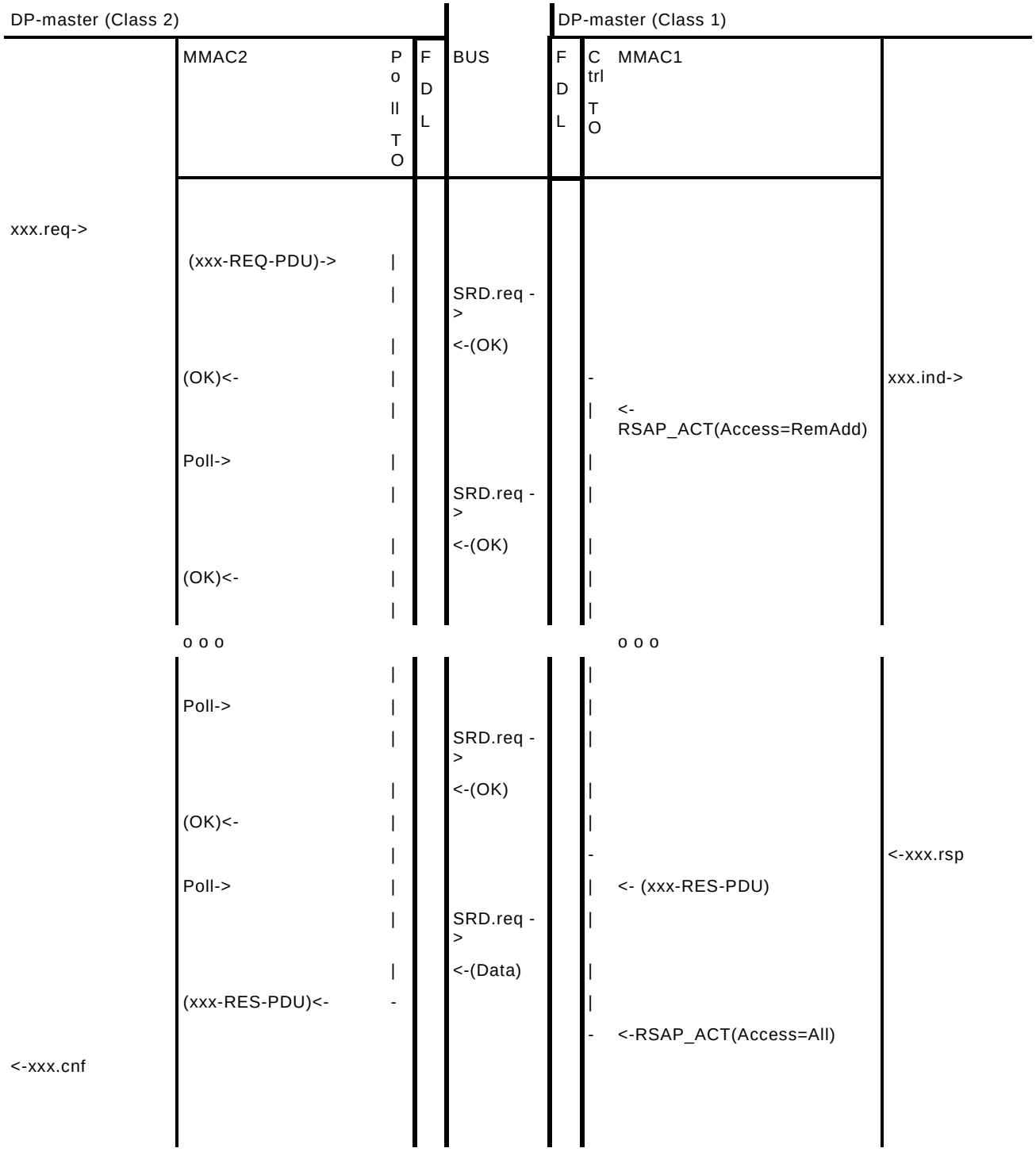

Figure 17 – Sequence of communication between DP-master (class 2) and DP-master (class 1)

6.8 Acyclic communication between DP-master (class 1) and DP-slave

The acyclic communication between DP-master (Class 1) and DP-slave is handled in a fixed way (Request-Poll-Response) on the MS1 application relationship, see Figure 18.

The communication is always initiated by the DP-master (Class 1). The connection is established if the cyclic communication MS0 AR has entered the data exchange mode. The DP-master (Class 1) issues a request and polls for the response.

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The communication is initiated by a xxx.req from the DP-master (Class 1). The MSAC1M passes this request to Layer 2 and checks the status after receipt of the DMPMM1-response. If the response status is NR (no reply data) it will continue with a new SRD with a NULL-PDU to get response data. This procedure will be repeated by the DP-master (Class 1) until

– an erroneous response occurs,

– or a SRD_RES_PDU with response data is received.

The result will then be passed to the User of the DP-master (Class 1) by means of a corresponding xxx.cnf.

The responder (DP-slave) waits for a request. If the MSAC1S of the DP-slave receives a valid request, this request is passed to the User by the corresponding xxx.ind.

After receipt of the response from the User (xxx.rsp) the response data will be passed with a REPLY_UPDATE.req to DMPMS.

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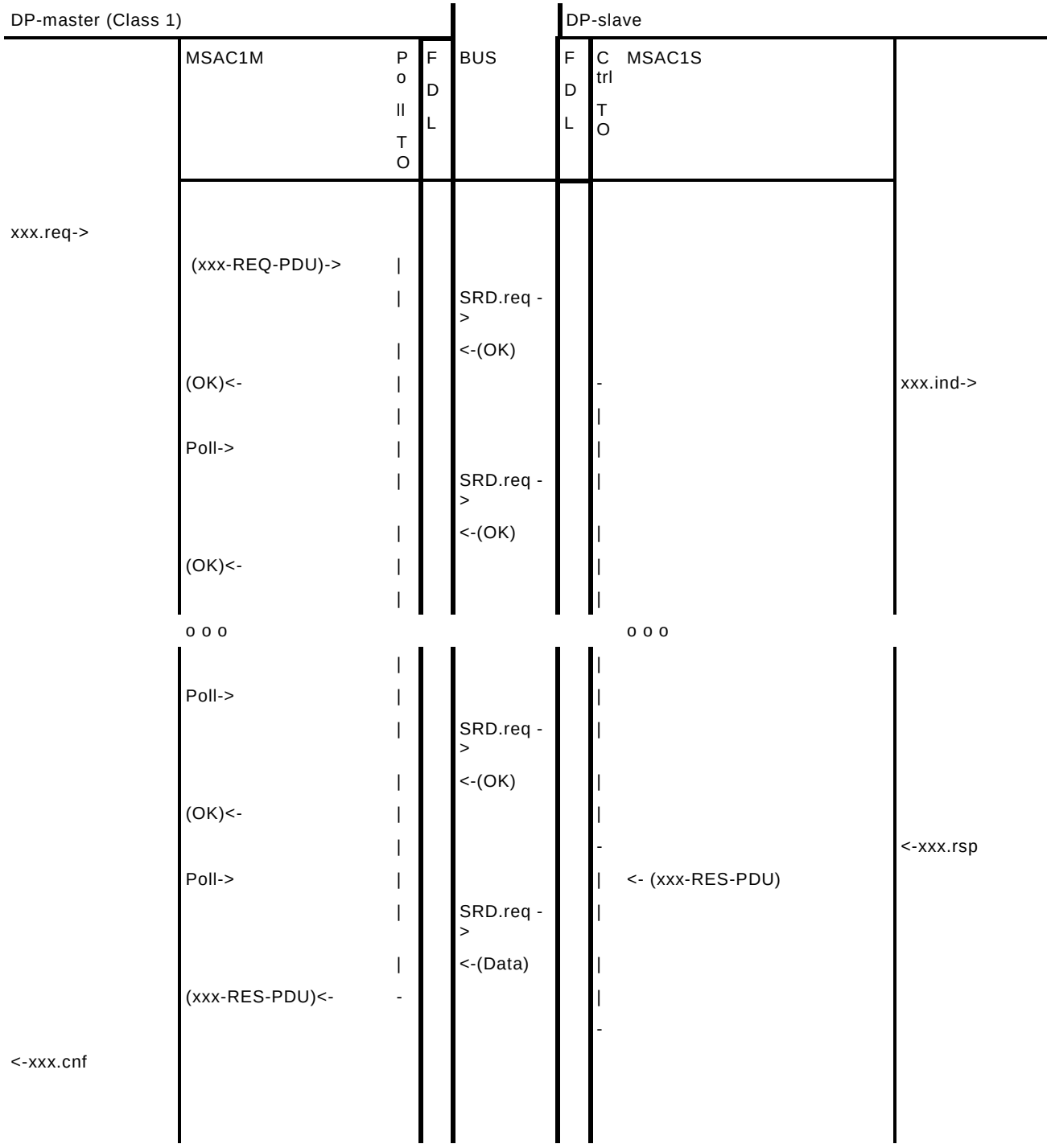

Figure 18 – Sequence of acyclic communication between DP-master (class 1) and DP-slave

6.9 Application relationship monitoring

6.9.1 Monitoring of the MS0 – AR

6.9.1.1 General

In industrial control systems there is a need for checking the correct functioning of each individual part. In such a system a medium failure or a defect in a bus master shall not cause errors in the peripheral devices. In the above mentioned cases, a peripheral device shall switch to a safe state. Additionally, the User of a bus master (Class 1) has to be informed about transmission breakdowns after a certain amount of time.

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6.9.1.2 Control interval at the DP-slave

Watchdog control

This Timer, restarted by received Requests on the bus master side, will set the outputs of a bus slave to the safe state after the expiration of the timer.

Rules for issuing Check User Prm Result.req and Check Cfg Result.req

The order of issuing these primitives shall be the same as the order of invocation of Check User Prm.ind and Check Cfg Result.ind primitives by MSCY1S.

6.9.1.3 Control intervals at the DP-master (class 1)

Min_Slave_Interval

This monitoring time specifies the smallest allowed period of time between two Slave poll cycles. This ensures that the sequence of function requests from the bus master can be handled by the bus slave. This period of time will be complied by the bus master (Class 1) for every master-slave function with exception of the function Global_Control. For the function Global_Control the User is responsible for compliance with Min_Slave_Interval.

Data_Control_Time

The Data_Control_Time defines the time in which a DP-master (Class 1) checks the data transfer to its associated DP-slaves. Furthermore, in half of this time the DP-master (Class 1) indicates his operation mode by means of a Global Control Service to the dedicated DP-slaves .

The Master parameter set contains the Data_Control_Time.

Rule

$$T_{WD} > T_{TR} \quad (2)$$

$$T_{WD} > \text{Min\_Slave\_Interval} \quad (3)$$

$$\text{Data\_Control\_Time} \geq 6 \cdot T_{WD} \quad (4)$$

6.9.2 Monitoring of the MS2 – AR

The objective of the connection monitoring is to detect the failure of the communication partner. Idle PDUs are exchanged to retrigger the monitoring timer of the communication partner.

The Idle service cycle initiated by a bus master is called Master-Idle. The Idle service cycle initiated by the Slave is called Slave-Idle.

All monitoring and idle sequences are controlled with a single timebase “Send Timeout”.

Send_Timeout

Each MSAC2 communication relationship is supervised by a Timer (Send_Timeout).

If this Timer expires the bus master (Class 2) aborts the MSAC2-communication relationship. Additionally the User of a bus master (Class 2) has to be informed.

This Timer has to be set up according to

a) the network load
b) the number of parallel connections per DP-master

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Rule

$$T_{Send\_TO(TS)} \geq \left(\sum ATCyc\right) \times Num\_of\_max(TS) \quad (5)$$

where

ATCyc means delay of all activities of a token cycle,

Num_of_max means number of maximal acyclic connections.

NOTE The Send_Timeout parameter in the Initiate service is coded as an unsigned integer value, each unit represents 10ms. Due to Timer errors and the round-up of integer, the next possible integer plus one has to be used as Send_Timeout.

It is assumed that one acyclic interaction is executed within a Token cycle at each DP-master. If more than one can be executed, the Send_TO may be divided by the number of acyclic interactions per token cycle.

Figure 19 shows an example for the establishment of an MS2 connection between a Master (Class 2) and a Slave. The connection monitoring starts immediately after this.

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Master				BUS			Slave	
	MSAC2M	Timer	FDL		FDL	Timer	MSRM2S/MSAC2S	
	/*Connection Establishment*/							<<<RM_SAP used
Initiate.req->	SRD(Initiate-REQ-PDU) ->	S						
		S		SRD.req ->				
	(NA) <-	S					MSAC2S_Init(all C2-SM started)	← RM_Init.req
	<- Abort						<- SAP_Activate(RM_SAP)	
Initiate.req->							<- RPL_UPD (RM-REQ-PDU)	
	SRD(Initiate-REQ-PDU)->	S						
		S		SRD.req ->				
		S		<- (Data)			-> Initiate-REQ-PDU	
		S					<- RPL_UPD(RM-REQ-PDU)	
	<- RM-REQ-PDU	S					<- SAP_Activate(Server_SAP)	
								<<<Server_SAP used
	Poll.req ->	R				U	Initiate.ind ->	
		R		SRD.req->		U		
		R		<-(no Data)		U		
		R				U		
		R		SRD.req->		U		
		R		<-(no Data)		U		<- Initiate.res(+)
		R				F	<- RPL_UPD(Initiate-RES-PDU)	
		R		SRD.req ->		F		
		R		<- (Data)		F		
	Initiate-RES-PDU<-	R				I	-> Initiate send	
	<- Initiate.cnf	S				I		
		S				I	+++Connection open+++	
		S				I		

Figure 19 – Example for connection establishment on MS2

Phase a) Connection monitoring during pending MS2 service response or running Master-Idle:

The DP-master starts the R-Timer (receive timer) when the MS2 service request is transferred to the local DLL. The R-Timer monitors the remote MSAC2S and the local DLL.

The R-Timer is stopped if a response is received or restarted if a Slave-Idle request is received. The connection monitoring aborts the connection if a negative DL confirmation appears or the R-Timer expires.

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The slave starts the U-Timer (user response timer) when a confirmed service indication is passed to the User. The U-Timer is stopped when the User provides the service response. If the U-Timer expires a Slave-Idle request is sent to retrigger the monitoring R-Timer of the Master.

The DP-slave starts the F-Timer (fetch response timer) when a service response or Slave-Idle request is passed to the local DLL. The F-Timer is stopped when the master has fetched the PDU. If the F-Timer expires the connection monitoring aborts the connection.

The connection monitoring of phase a) is shown in Figure 20.

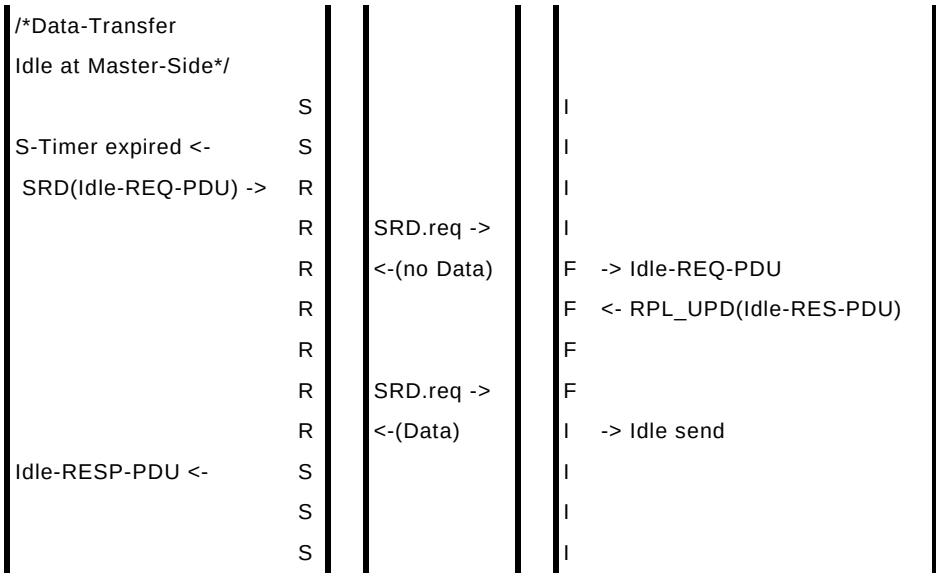

Figure 20 – Idle at master-side on MS2

Phase b) Connection monitoring without pending service response:

The bus master starts the S-Timer (send timer) if a response PDU or an Idle-PDU is received. The S-Timer is stopped if a service request is provided by the User. If the S-Timer expires a Master-Idle request is sent to stop the monitoring I-Timer of the Slave.

During pending Master-Idle responses the connection monitoring is handled as described in Phase a).

The Slave starts the I-Timer (indication timer) when the reply update buffer has been fetched by the Master. The I-Timer is stopped if a Master-Idle request or a service indication is received. If the I-Timer expires the connection monitoring aborts the connection.

The Master monitors the transmission of the Abort-REQ-PDU. The Master starts the S-Timer when the Abort.req is transferred to the local DLL. The S-Timer is stopped when the Abort.req is sent. If the S-Timer expires the connection is closed and the User is informed with a MSAC2M_Closed.ind.

The Slave monitors the fetching of the Abort-REQ-PDU by the Master. The Slave starts the F-Timer when the Abort.req is transferred to the local DL. The F-Timer is stopped if the Master has fetched the Abort-REQ-PDU. If the F-Timer expires the Server_SAP is deactivated and the connection is closed.

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The connection monitoring of phase b) is shown in Figure 21.

Master					Slave			
	MSAC2M	Timer	FDL	BUS	FDL	Timer	MSRM2S/MSAC2S	
	/*Data-Transfer							
	Idle at Slave-Side*/							
Read.req->		S				I		
	SRD(Read-REQ-PDU)->	R				I		
		R		SRD.req ->		I		
		R		<-(no Data)			-> Read-REQ-PDU	
	Poll.req ->	R				U	Read.ind ->	
		R		SRD.req ->		U		
		R		<-(no Data)		U		
		R				U	-> U-Timer expired	
		R				F	<- RPL_UPD(Idle-REQ-PDU)	
		R				F		
		R		SRD.req ->		F		
		R		<-(Data)		I	-> Idle send	
	Idle-REQ-PDU<-	R				I		
	SRD(Idle-RES-PDU) ->	R				I		
		R		SRD.req ->		I		
		R		<-(no Data)		U	-> Idle-RES-PDU	
		R				U		
		R		SRD.req ->		U		<- Read.res
		R		<-(no Data)		F	<- RPL_UPD(Read-RES-PDU)	
		R				F		
		R		SRD.req ->		F		
		R		<-(Data)		I	-> Response send	
	Read-RES-PDU <-	R				I		
	<- Read.cnf	S				I		
		S				I		

Figure 21 – Idle at slave-side on MS2

7 AP-context state machine

There is no AP-Context State Machine defined for this Protocol.

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8 FAL service protocol machines (FSPMs)

8.1 FSPMS

8.1.1 Primitive definitions

8.1.1.1 Primitives exchanged between FSPMS and AP-Context

Table 42 shows the service primitives including their associated parameters issued by the AP-Context and received by the FSPMS.

Table 42 – Primitives issued by AP-Context to FSPMS

Primitive name	Source	Associated parameters	Functions
DLL Init DP slave.req	AP-Context	Bus Para	Refer to FAL Service Definition Type 3 Fieldbus, IEC 61158-5-3
SInit MS0.req	AP-Context	AREP	
SInit MS1.req	AP-Context	AREP	
SInit MS2.req	AP-Context	AREP	
Reset DP slave.req	AP-Context	(none)	
Abort.req	AP-Context	AREP, Subnet, Instance, Reason Code	
DP slave Application Ready.req	AP-Context	AREP	
Check User Prm Result.req	AP-Context	AREP, Prm_OK	
Check Ext User Prm Result	AP-Context	AREP, Ext_Prm_OK	
Check Cfg Result.req	AP-Context	AREP, Cfg_OK, Input Data Len, Output Data Len	
Set Cfg.req	AP-Context	AREP, Cfg Data	
Set Slave Diag.req	AP-Context	AREP, Ext Diag Overflow, Ext Diag Flag, Ext Diag Data	
Set Input.req	AP-Context	AREP, Input Data	
Get Output.req	AP-Context	AREP	
Alarm Notification.req	AP-Context	AREP, Slot Number, Alarm Type, Seq Nr, Add Ack, Alarm Specifier, Alarm Data	
Initiate.rsp(+)	AP-Context	AREP, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	
Initiate.rsp(-)	AP-Context	AREP, Error Decode, Error Code 1 Error Code 2	

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Primitive name	Source	Associated parameters	Functions
Read.rsp(+)	AP-Context	AREP, Length, Data	
Read.rsp(-)	AP-Context	AREP, Error Decode, Error Code 1 Error Code 2	
Write.rsp(+)	AP-Context	AREP, Length	
Write.rsp(-)	AP-Context	AREP, Error Decode, Error Code 1 Error Code 2	
Data Transport.rsp(+)	AP-Context	AREP, Length, Data	
Data Transport.rsp(-)	AP-Context	AREP, Error Decode, Error Code 1 Error Code 2	
Alarm Ack.rsp(+)	AP-Context	AREP, Slot Number, Alarm Type, Seq Nr	
Alarm Ack.rsp(-)	AP-Context	AREP, Slot Number, Alarm Type, Seq Nr	
Load ARL DP slave.req	AP-Context	Min Send Timeout, List of Resource Manager Entries, List of S_SAP_indices, List of ARL Entries	
Get ARL DP slave.req	AP-Context	(none)	
Load CRL DP slave.req	AP-Context	List of CRL Entries	
Get CRL DP slave.req	AP-Context	(none)	
Set ARL Isochronous Mode.req	AP-Context	Isochronous Mode	
Get Publisher Data.req	AP-Context	AREP, CREP	
Start Subscriber.req	AP-Context	AREP, CREP	
Stop Subsciber.req	AP-Context	AREP, CREP	
Load CRL DXB-Linktable Entries.req	AP-Context	AREP, DXB-Linktable	
Initiate Load.rsp(+)	AP-Context	AREP, Actual LR Size, Max Response Delay, Max Segment Length User Specific	
Initiate Load.rsp(-)	AP-Context	AREP, Error Code	
Pull Segment.rsp(+)	AP-Context	AREP, Segment Length, Segment Number, More Follows, Data	
Pull Segment.rsp(-)	AP-Context	AREP, Error Code	
Push Segment.rsp(+)	AP-Context	AREP	

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Primitive name	Source	Associated parameters	Functions
Push Segment.rsp(-)	AP-Context	AREP, Error Code	
Terminate Load.rsp(+)	AP-Context	AREP	
Terminate Load.rsp(-)	AP-Context	AREP, Error Code	
Start.rsp(+)	AP-Context	AREP	
Start.rsp(-)	AP-Context	AREP Error Code	
Stop.rsp(+)	AP-Context	AREP	
Stop.rsp(-)	AP-Context	AREP Error Code	
Resume.rsp(+)	AP-Context	AREP	
Resume.rsp(-)	AP-Context	AREP Error Code	
Reset.rsp(+)	AP-Context	AREP	
Reset.rsp(-)	AP-Context	AREP Error Code	
Call.rsp(+)	AP-Context	AREP Result Argument	
Call.rsp(-)	AP-Context	AREP Error Code	
Get FI State.rsp(+)	AP-Context	AREP FI State	
Get FI State.rsp(-)	AP-Context	AREP Error Code	

Table 43 shows the service primitives including their associated parameters issued by the FSPMS and received by the AP-Context.

Table 43 – Primitives issued by FSPMS to AP-Context

Primitive name	Source	Associated parameters	Functions
Sinit DLL.cnf	FSPMS	(none)	Refer to FAL Service Definition Type 3 Fieldbus, IEC 61158-5-3
Sinit MS0.cnf	FSPMS	AREP	
Sinit MS1.cnf	FSPMS	AREP	
Sinit MS2.cnf	FSPMS	AREP	
Reset.cnf	FSPMS	(none)	
Check User Prm Result.cnf(+)	FSPMS	AREP	
Check User Prm Result.cnf(-)	FSPMS	AREP, Status	
Check Ext User Prm Result.cnf(+)	FSPMS	AREP	
Check Ext User Prm Result.cnf(-)	FSPMS	AREP, Status	
Check Cfg Result.cnf(+)	FSPMS	AREP	
Check Cfg Result.cnf(-)	FSPMS	AREP, Status	
Set Cfg.cnf(+)	FSPMS	AREP	
Set Cfg.cnf(-)	FSPMS	AREP	
Set Slave Diag.cnf	FSPMS	AREP	

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Primitive name	Source	Associated parameters	Functions
Set Input.cnf(+)	FSPMS	AREP	
Set Input.cnf(-)	FSPMS	AREP	
Get Output.cnf(+)	FSPMS	AREP, Output Data, Clear Flag, New Flag	
Get Output.cnf(-)	FSPMS	AREP	
Started.ind	FSPMS	AREP, Actual Enabled Alarms, Alarm Sequence, Alarm Limit	
Stopped.ind	FSPMS	AREP	
Abort.ind	FSPMS	AREP, Locally Generated, Subnet, Instance, Reason Code, Additional Detail	
Fault.ind	FSPMS	AREP	
Alarm Reject.ind	FSPMS	AREP, Slot Number, Alarm Type, Seq Nr	
Set Slave Add.ind	FSPMS	AREP, New Slave Add, Ident Number, No Add Chg, Rem Slave Data	
Check User Prm.ind	FSPMS	AREP, User Prm Data	
Check Ext User Prm.ind	FSPMS	AREP, Ext User Prm Data	
Check Cfg.ind	FSPMS	AREP, Cfg Data	
New Output.ind	FSPMS	AREP, Output Data, Clear Flag	
Global Control.ind	FSPMS	AREP, Clear Command, Sync Command, Freeze Command, Group Select	
Initiate.ind	FSPMS	AREP, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	
Read.ind	FSPMS	AREP, Slot Number, Index, Length	
Write.ind	FSPMS	AREP, Slot Number, Index, Length, Data	
Data Transport.ind	FSPMS	AREP, Slot Number, Index, Length, Data	

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Primitive name	Source	Associated parameters	Functions
Alarm Ack.ind	FSPMS	AREP, Slot Number, Alarm Type, Seq Nr	
Load ARL DP slave.cnf(+)	FSPMS	(none)	
Load ARL DP slave.cnf(-)	FSPMS	Status	
Get ARL DP slave.cnf(+)	FSPMS	Min Send Timeout, List of Resource Manager Entries, List of S_SAP_indices, List of ARL Entries	
Get ARL DP slave.cnf(-)	FSPMS	Status	
Load CRL DP slave.cnf(+)	FSPMS	(none)	
Load CRL DP slave.cnf(-)	FSPMS	Status	
Get CRL DP slave.cnf(+)	FSPMS	List of CRL Entries	
Get CRL DP slave.cnf(-)	FSPMS	Status	
Set ARL Isochronous Mode.cnf(+)	FSPMS		
Set ARL Isochronous Mode.cnf(-)	FSPMS	Status	
SYNCH Event.ind	FSPMS	AREP, Status	
Publisher Active.ind	FSPMS	AREP, CREP, Status	
New Publisher Data.ind	FSPMS	AREP, CREP	
Get Publisher Data.cnf(+)	FSPMS	AREP, CREP, Data, New Flag	
Get Publisher Data.cnf(-)	FSPMS	AREP, CREP	
Start Subsciber.cnf(+)	FSPMS	AREP, CREP	
Start Subscriber.cnf(-)	FSPMS	AREP, CREP	
Stop Subscriber.cnf(+)	FSPMS	AREP, CREP	
Stop Subscriber.cnf(-)	FSPMS	AREP, CREP	
Load CRL DXB-Linktable Entries.cnf(+)	FSPMS	AREP	
Load CRL DXB-Linktable Entries.cnf(-)	FSPMS	AREP	
Set Time.ind	FSPMS	AREP, Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour	
Sync Interval Violation.ind	FSPMS	AREP	

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Primitive name	Source	Associated parameters	Functions
Initiate Load.ind	FSPMS	AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request Timeout User Specific	
Pull Segment.ind	FSPMS	AREP, Slot Number, LR Index, Segment Length	
Push Segment.ind	FSPMS	AREP, Slot Number LR Index, Segment Length Segment Number, More Follows, Data	
Terminate Load.ind	FSPMS	AREP Slot Number LR Index	
Start.ind	FSPMS	AREP Slot Number FI Index Execution Argument	
Stop.ind	FSPMS	AREP Slot Number FI Index	
Resume.ind	FSPMS	AREP Slot Number FI Index Execution Argument	
Reset.ind	FSPMS	AREP Slot Number FI Index	
Call.ind	FSPMS	AREP Slot Number Entity Number FI Index Execution Argument	
Get FI State	FSPMS	AREP Slot Number FI Index	

8.1.1.2 Parameters of FSPMS primitives

The parameters used with the primitives exchanged between the FSPMS and the AP-Context are described in FAL Service Definition Type 3 Fieldbus, see IEC 61158-5-3.

8.1.2 State machine description

This Machine is used to co-ordinate the Interactions between AP-Context and DMPMS, MSCY1S, MSAC1S, MSRM2S and MSAC2S. As Alarms requires the support of several State Machines the alarms are handled by this machine.

With the SInit_MS1.req, the local variables of the State Machines are set to the start-up values and MSAC1 State Machines is initialized.

When the MSCY1S enters the Data-Exchange-State (This is signalled by a start.ind) alarm messages can be generated by the User.

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The parallel processing of alarm messages is limited by:

a) the number of Alarm_Classes (Alarm_Sequence = False)

b) the number of Alarms accepted by the Master (Alarm_Sequence = True)

c) the number of Alarms handled by this Slave (Alarm_Sequence=True).

Alarms may be processed only if the appropriate Alarm_Class is enabled by the DP-master. An Alarm issued by an Alarm_Notification will be transmitted via a diagnosis (MSCY1S) to a DP-master (Class 1). The Acknowledgement will be received by an Alarm Ack service processed by MSAC1S.

The State Machine needs local variables which are described below. Furthermore the machine uses functions and macros which are listed in 8.1.4.

Local variables

Alarm_Sequence
(Boolean)
This variable indicates whether

a) only one alarm of a specific Alarm_Class can be active at one time (Alarm_Sequence = False), or

b) several alarms (2 to 32) of any type can be active at one time (Alarm_Sequence = True).

Initial_Alarm_Sequence
(Boolean)

This variable stores the basic ability of the Slave.

Outstanding_Alarm_TABLE
(Array 0...7, 0...31 of Alarm_Status, Alarm_Type)

Alarm_Status: pending, not_pending

Alarm_Type: 1 to 6, 32 to 126

The Alarm_State_Table is a two dimensional array with 7 * 32 elements. Each element within the array stores information about the actual state of any alarm. The array is addressed with the Alarm_Class calculated from the Alarm_Type and the Seq_Nr of the alarm.

Alarm_Max
(Unsigned8)

This variable indicates the maximum number of parallel alarms of this Slave.

Range: 1 to 32

Alarm_Limit
(Unsigned8)

This variable contains the maximum number of Alarms allowed by the actual Master-Slave-connection.

Range: 1 to 32

Alarm_Decode
(Array 0 to 7 of Unsigned8)

Decoding the number of parallel alarms:

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Alarm_Decode[0] = 1

Alarm_Decode[1] = 2

Alarm_Decode[2] = 4

Alarm_Decode[3] = 8

Alarm_Decode[4] = 12

Alarm_Decode[5] = 16

Alarm_Decode[6] = 24

Alarm_Decode[7] = 32

Alarm_Count
(Unsigned8)

This counter contains the number of alarms (0 to 32) which have actually been sent by the DP-slave. The counter is only used in the sequence mode.

Range: 0 to Alarm_Limit

Req_Alarm_FIFO
The Req_Alarm_FIFO is used to store the Alarms which are still to be sent. Each element consists of an Alarm-PDU. The FIFO shall be able to hold up to 32 respectively Alarm_Max entries.

Actual_Enabled_Alarms

(Array of Bits)

This variable indicates the type of alarms which are actually supported by the Master.

Bit 0 = reserved
Bit 1 = reserved
Bit 2 = Update_Alarm
Bit 3 = Status_Alarm
Bit 4 = Manufacturer_Specific_Alarm
Bit 5 = Diagnostic_Alarm
Bit 6 = Process_Alarm
Bit 7 = Pull_Plug_Alarm

Alarms_Supported
(Array of Bits)

This variable indicates the type of alarms which are supported by the Slave.

Bit 0 = reserved
Bit 1 = reserved
Bit 2 = Update_Alarm
Bit 3 = Status_Alarm
Bit 4 = Manufacturer_Specific_Alarm
Bit 5 = Diagnostic_Alarm
Bit 6 = Process_Alarm
Bit 7 = Pull_Plug_Alarm

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Local_Diag_Buffer
(Octet-String)

This local variable is used to store the Diag-Data except the first 6 Octets and the Alarm- and Status-PDUs.

L_Ext_Diag_Flag
(Bit)

This local variable is used to store the Ext_Diag_Flag.

Stored_Diag
(Boolean)

Flag which indicates, that new Diag_Data are stored in the Diag_Buffer while waiting for transmission of a previous Diagnosis.

Diag_Buffer

(Octet-String)

Buffer for storing a Slave-Diagnostic(Identification-Related-Diagnosis, Channel-Related-Diagnosis, Revision_Number)

Index
(Structure of Alarm_Class, Seq_Nr)

This index is used for addressing outstanding Alarm_Table.

LR_State
(Unsigned8)

This variable stores the state of the Load Region sequence.

CurrentBuffer
(Array of structure Empty, WriteLength and Data)

This buffer stores APDUs for Load Region for each AREP.

CurrentLoadType
(Unsigned8)

This variable stores whether a Pull or a Push sequence is active.

CurrentLRIndex
(Unsigned16)

This variable stores the LR type.

8.1.3 FSPMS state table

Table 44 contains the complete description of the FSPMS state machine.

Processing constraints for isochronous mode:
The time from Issuing the SYNCH.ind until the Service Requests from the MSCY1S to the DL shall be small enough to allow the MAC to send out all requests from MSCY1S within a cycle.

The following definition for a state set is used in Table 44.

t_state = W-START or W-DIA-UPD or W-FETCHED

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Table 44 – FSPMS state table

#	Current State	Event /Condition =>Action	Next State
1	POWER-ON	Load ARL DP Slave.req (Min Send Timeout, List of Resource Manager Entries, List of S_SAP_indices, List of ARL Entries) /valid parameters => Load ARL DP Slave.cnf(+)	POWER-ON
2	POWER-ON	Load ARL DP Slave.req (Min Send Timeout, List of Resource Manager Entries, List of S_SAP_indices, List of ARL Entries) /invalid parameters => Status := NO Load ARL DP Slave.cnf(-) (Status)	POWER-ON
3	POWER-ON	Get ARL DP Slave.req /ARL loaded => Get ARL DP Slave.cnf(+) (Min Send Timeout, List of Resource Manager Entries, List of S_SAP_indices, List of ARL Entries)	POWER-ON
4	POWER-ON	Get ARL DP Slave.req /ARL not loaded => Status := NO Get ARL DP Slave.cnf(-) (Status)	POWER-ON
5	POWER-ON	Load CRL DP Slave.req (List of CRL Entries) /valid parameters => Load CRL DP Slave.cnf(+)	POWER-ON
6	POWER-ON	Load CRL DP Slave.req (List of CRL Entries) /invalid parameters => Status := NO Load CRL DP Slave.cnf(-) (Status)	POWER-ON
7	POWER-ON	Get CRL DP Slave.req /CRL loaded => Get CRL DP Slave.cnf(+) (List of CRL Entries)	POWER-ON
8	POWER-ON	Get CRL DP Slave.req /CRL not loaded => Status := NO Get CRL DP Slave.cnf(-) (Status)	POWER-ON
9	POWER-ON	FSPMS_SInit_MS1.req (AREP) /Alarm_Mode_Slave <> 0 => Alarm_Sequence := True Initial_Alarm_Sequence := Alarm_Sequence Alarm_Max := Alarm_Decode[Alarm_Mode_Slave] Alarm_Max := max(Alarm_Max, 7) Local_Diag_Buffer := Default_Ext_Diag_Data L_Ext_Diag_Flag := Default_Ext_Diag FILL (Outstanding_Alarm_TABLE.Alarm_Status, not_pending) Stored_Diag:=False Reset_Req_Alarm_FIFO() Act_Ref := 0 MSAC1_SInit_MS1.req	W-START-C1

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#	Current State	Event /Condition =>Action	Next State
10	POWER-ON	FSPMS_SInit_MS1.req (AREP) /Alarm_Mode_Slave = 0 => Alarm_Sequence := False Initial_Alarm_Sequence := Alarm_Sequence Alarm_Max := 7 Local_Diag_Buffer := Default_Ext_Diag_Data L_Ext_Diag_Flag := Default_Ext_Diag FILL(Outstanding_Alarm_TABLE.Alarm_Status, not_pending) Stored_Diag:=False Reset_Req_Alarm_FIFO() FSPMS_User_Reset:=False Act_Ref := 0 CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSAC1_SInit_MS1.req	W-START-C1
11	W-START-C1	MSAC1S_SInit_MS1.cnf => FSPMS_SInit_MS1.cnf(AREP)	W-START
12	W-START	FSPMS_Abort.req(AREP) /AREP.AR_Type=MS0 => CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSCY1S_Abort.req	W-START
13	W-START	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) => FSPMS_Alarm_Notification.cnf(-)(AREP, Alarm_Type, Slot_Number, Seq_Nr, Status=No_Start)	W-START
14	W-START	FSPMS_Set_Slave_Diag.req(AREP,Ext_Diag_Flag, Ext_Diag) => L_Ext_Diag_Flag := Ext_Diag_Flag L_Ext_Diag_Overflow := Ext_Diag_Overflow Local_Diag_Buffer := Ext_Diag Act_Ref := Act_Ref + 1 MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref) FSPMS_Set_Slave_Diag.cnf(AREP)	W-START
15	W-START	MSAC1S_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) => MSCY1S_Abort.req FSPMS_Abort.ind(AREP)	W-START
16	W-START	MSCY1S_Set_Slave_Diag.cnf(-) (Reference) => ignore	W-START
17	W-START	MSCY1S_Set_Slave_Diag.cnf(+) (Reference) => ignore	W-START
18	W-START	MSCY1S_Start.ind(Enabled_Alarms, Alarm_Mode_Master, Diag_Flag) /(Enabled Alarms & Alarms_Supported) = 0 => FSPMS DP Slave Started.ind(AREP,Actual_Enabled_Alarms, Alarm_Sequence, Alarm_Limit)	W-START

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#	Current State	Event /Condition =>Action	Next State
19	W-START	MSCY1S_Start.ind(Enabled_Alarms, Alarm_Mode_Master, Diag_Flag) / ((Enabled Alarms & Alarms_Supported) <> 0) && Alarm_Mode_Master <> 0 && Initial_Alarm_Sequence = TRUE && Diag_Flag=FALSE => Alarm_Sequence := True Actual_Enabled_Alarms := Enabled_Alarms Alarm_Limit := min(Alarm_Max, Alarm_Decode[Alarm_Mode_Master]) Alarm_Count := 0 FSPMS DP Slave Started.ind(AREP,Actual_Enabled_Alarms, Alarm_Sequence, Alarm_Limit)	W-DIA-UPD
20	W-START	MSCY1S_Start.ind(Enabled_Alarms, Alarm_Mode_Master, Diag_Flag) / ((Enabled Alarms & Alarms_Supported) <> 0) && Alarm_Mode_Master <> 0 && Initial_Alarm_Sequence =FALSE => MSCY1S_Abort.req	W-START
21	W-START	MSCY1S_Start.ind(Enabled_Alarms, Alarm_Mode_Master, Diag_Flag) / ((Enabled Alarms & Alarms_Supported) <> 0) && Alarm_Mode_Master = 0 && Diag_Flag=TRUE => Alarm_Sequence := False Actual_Enabled_Alarms := Enabled_Alarms FSPMS DP Slave Started.ind(AREP,Actual_Enabled_Alarms, Alarm_Sequence, Alarm_Limit)	W-FETCHED
22	W-START	MSCY1S_Start.ind(Enabled_Alarms, Alarm_Mode_Master, Diag_Flag) / ((Enabled Alarms & Alarms_Supported) <> 0) && Alarm_Mode_Master = 0 && Diag_Flag=FALSE => Alarm_Sequence := False Actual_Enabled_Alarms := Enabled_Alarms FSPMS DP Slave Started.ind(AREP,Actual_Enabled_Alarms, Alarm_Sequence, Alarm_Limit)	W-DIA-UPD
23	W-START	MSCY1S_Stop.ind => FSPMS_Stopped.ind(AREP)	W-START
24	W-DIA-UPD	FSPMS_Abort.req(AREP) /AREP.AR_Type=MS0 => Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending) CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSCY1S_Abort.req	RESET-P-LEAVE
25	W-DIA-UPD	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=FALSE => FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number, Seq_Nr, Status=Not_Enabled)	W-DIA-UPD
26	W-DIA-UPD	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=TRUE && Alarm_Count=Alarm_Limit => FSPMS_Alarm_Notification.cnf(-)(AREP, Alarm_Type, Slot_Number, Seq_Nr, Status=Limit_Expired)	W-DIA-UPD

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#	Current State	Event /Condition =>Action	Next State
27	W-DIA-UPD	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=TRUE && Alarm_Count<Alarm_Limit && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]=not_pending => Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]:=pending Outstanding_Alarm_TABLE.Alarm_Type[Acls(Alarm_Type),Seq_Nr]:=Alarm_Type Alarm_Count:=Alarm_Count+1 Ext_Diag_Flag:=L_Ext_Diag_Flag Ext_Diag_Overflow:=L_Ext_Diag_Overflow Ext_Diag:=(Local_Diag_Buffer, Alarm(Slot_Number,Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data)) Act_Ref := Act_Ref + 1 MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref) FSPMS_Alarm_Notification.cnf(+)(AREP,Alarm_Type, Slot_Number, Seq_Nr)	W-FETCHED
28	W-DIA-UPD	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=TRUE && Alarm_Count<Alarm_Limit && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]= pending => FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number, Seq_Nr, Status=Sequence_Nr_Pending)	W-DIA-UPD
29	W-DIA-UPD	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=FALSE && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]= pending => FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number, Seq_Nr, Status=Sequence_Nr_Pending)	W-DIA-UPD
30	W-DIA-UPD	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=FALSE && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]= not_pending => Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]:=pending Outstanding_Alarm_TABLE.Alarm_Type[Acls(Alarm_Type),Seq_Nr]:=Alarm_Type Ext_Diag_Flag:=L_Ext_Diag_Flag Ext_Diag_Overflow:=L_Ext_Diag_Overflow Ext_Diag:=(Local_Diag_Buffer, Alarm(Slot_Number,Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data)) Act_Ref := Act_Ref + 1 MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref) FSPMS_Alarm_Notification.cnf(+)(AREP,Alarm_Type, Slot_Number, Seq_Nr)	W-FETCHED
31	W-DIA-UPD	FSPMS_Set_Slave_Diag.req(AREP,Ext_Diag_Flag, Ext_Diag) => if (PrmCmdAck in Ext_Diag or Stored_PrmCmdAck != NULL) Stored_PrmCmdAck := PrmCmdAck, Ext_Diag.Red_Status := PrmCmdAck endif L_Ext_Diag_Flag := Ext_Diag_Flag L_Ext_Diag_Overflow := Ext_Diag_Overflow Local_Diag_Buffer := Ext_Diag Act_Ref := Act_Ref + 1 MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref) FSPMS_Set_Slave_Diag.cnf(AREP)	W-DIA-UPD
32	W-DIA-UPD	MSAC1S_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) /Alarm_Sequence=TRUE && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]=pending => Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr] := not_pending Alarm_Count:=Alarm_Count-1 FSPMS_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) MSAC1S_Alarm Ack.rsp(+) (Slot Number, Alarm Type, Seq Nr)	W-DIA-UPD

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#	Current State	Event /Condition =>Action	Next State
33	W-DIA-UPD	MSAC1S_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) /Alarm_Sequence=FALSE && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr] =pending => Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr] := not_pending FSPMS_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) MSAC1S_Alarm Ack.rsp(+) (Slot Number, Alarm Type, Seq Nr)	W-DIA-UPD
34	W-DIA-UPD	MSAC1S_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) /Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr] =not_pending => Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending) MSCY1S_Abort.req FSPMS_Abort.ind(AREP)	RESET-P-LEAVE
35	W-DIA-UPD	MSCY1S_Set_Slave_Diag.cnf(-) (Reference) => R_Cnt:=0 FSPMS DP Slave Fault.ind DMPMS_Reset.req MSCY1S_Reset.req MSAC1S_Reset.req MSRM2S_Reset.req	W-RESET
36	W-DIA-UPD	MSCY1S_Set_Slave_Diag.cnf(+) (Reference) /Reference < Act_Ref => ignore	W-DIA-UPD
37	—	—	—
38	W-DIA-UPD	MSCY1S_Start.ind(Enabled_Alarms, Alarm_Mode_Master, Diag_Flag) => MSCY1S_Abort.req	W-START
39	W-DIA-UPD	MSCY1S_Stop.ind => Alarm_Count:=0 Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending)	RESET-PENDING
40	RESET-PENDING	/Index.Seq_Nr <> 255 => Outstanding Alarm_TABLE.Alarm_Status[Index] := not_pending Alarm_Type := Outstanding_Alarm_TABLE.Alarm_Type[Acls(Alarm_Type),Seq_Nr] Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending) FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number=0, Index.Seq_Nr, Status=MSAL1S_Stopped)	RESET-PENDING
41	RESET-PENDING	/Index.Seq_Nr = 255 => Reset_Req_Alarm_FIFO() FSPMS DP Slave Stopped.ind(AREP)	W-START
42	RESET-P-LEAVE	/Index.Seq_Nr <> 255 => Outstanding Alarm_TABLE.Alarm_Status[Index] := not_pending Alarm_Type:= Outstanding_Alarm_TABLE.Alarm_Type[Acls(Alarm_Type),Seq_Nr] Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending) FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number=0, Index.Seq_Nr, Status=Stopped)	RESET-P-LEAVE
43	RESET-P-LEAVE	/Index.Seq_Nr = 255 => Reset_Req_Alarm_FIFO()	W-START

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#	Current State	Event /Condition =>Action	Next State
44	W-FETCHED	FSPMS_Abort.req(AREP) /AREP.AR_Type=MS0 && Alarm_Sequence=TRUE && Alarm_Count=0 => Stored_Diag:=False Ext_Diag_Flag:=L_Ext_Diag_Flag Ext_Diag_Overflow:=L_Ext_Diag_Overflow Ext_Diag:=(Local_Diag_Buffer)Act_Ref := Act_Ref + 1 CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref) MSCY1S_Abort.req	W-START
45	W-FETCHED	FSPMS_Abort.req(AREP) /AREP.AR_Type=MS0 && Alarm_Sequence=FALSE || Alarm_Count<>0 => Stored_Diag:=False Ext_Diag_Flag:=L_Ext_Diag_Flag Ext_Diag_Overflow:=L_Ext_Diag_Overflow Ext_Diag:=(Local_Diag_Buffer) Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending) Act_Ref := Act_Ref + 1 CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref) MSCY1S_Abort.req	RESET-P-LEAVE
46	W-FETCHED	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=FALSE => FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number, Seq_Nr, Status=Not_Enabled)	W-FETCHED
47	W-FETCHED	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=TRUE && Alarm_Count=Alarm_Limit => FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number, Seq_Nr, Status=Limit_Expired)	W-FETCHED
48	W-FETCHED	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=TRUE && Alarm_Count<Alarm_Limit && Outstanding_Alarm_TABLE.Alarm_Status[AclsAlarm_Type),Seq_Nr]=not_pending => Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]:=pending Alarm_Count:=Alarm_Count+1 Store_to_Req_Alarm_FIFO(Alarm(Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data)) FSPMS_Alarm_Notification.cnf(+)(AREP,Alarm_Type, Slot_Number, Seq_Nr)	W-FETCHED
49	W-FETCHED	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=TRUE && Alarm_Count<Alarm_Limit&& Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]= pending => FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number, Seq_Nr, Status=Sequence_Nr_Pending)	W-FETCHED
50	W-FETCHED	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=FALSE && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]= pending => FSPMS_Alarm_Notification.cnf(-)(AREP, Alarm_Type, Slot_Number, Seq_Nr, Status=Sequence_Nr_Pending)	W-FETCHED

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#	Current State	Event /Condition =>Action	Next State
51	W-FETCHED	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=FALSE && Outstanding_Alarm_TABLE.Alarm_Status[AclsL(Alarm_Type),Seq_Nr]= not_pending => Outstanding_Alarm_TABLE.Alarm_Status[AclsL(Alarm_Type),Seq_Nr] := pending Outstanding_Alarm_TABLE.Alarm_Type[Acls(Alarm_Type),Seq_Nr] := Alarm_Type Store_to_Req_Alarm_FIFO(Alarm(Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data)) FSPMS_Alarm_Notification.cnf(+)(AREP,Alarm_Type, Slot_Number, Seq_Nr)	W-FETCHED
52	W-FETCHED	FSPMS_Set_Slave_Diag.req(AREP,Ext_Diag_Flag, Ext_Diag) => if (PrmCmdAck in Ext_Diag or Stored_PrmCmdAck != NULL) Stored_PrmCmdAck := PrmCmdAck, Ext_Diag.Red_Status := PrmCmdAck endif Stored_Diag := True L_Ext_Diag_Flag := Ext_Diag_Flag L_Ext_Diag_Overflow := Ext_Diag_Overflow Local_Diag_Buffer := Ext_Diag FSPMS_Set_Slave_Diag.cnf(AREP)	W-FETCHED
53	W-FETCHED	MSAC1S_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) /Alarm_Sequence=TRUE && Outstanding_Alarm_TABLE.Alarm_Status[Acls (Alarm_Type),Seq_Nr]=pending => Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]:=not_pending Alarm_Count:=Alarm_Count-1 FSPMS_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) MSAC1S_Alarm Ack.rsp(+) (Slot Number, Alarm Type, Seq Nr)	W-FETCHED
54	W-FETCHED	MSAC1S_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) /Alarm_Sequence=FALSE && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]=pending => Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]:=not_pending FSPMS_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) MSAC1S_Alarm Ack.rsp(+) (Slot Number, Alarm Type, Seq Nr)	W-FETCHED
55	W-FETCHED	MSAC1S_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) /Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]=not_pending => Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending) MSCY1S_Abort.req FSPMS_Abort.ind(AREP)	RESET-P-LEAVE
56	W-FETCHED	MSCY1S_Set_Slave_Diag.cnf(-) (Reference) => R_Cnt:=0 FSPMS DP Slave Fault.ind DMPMS_Reset.req MSCY1S_Reset.req MSAC1S_Reset.req MSRM2S_Reset.req	W-RESET
57	W-FETCHED	MSCY1S_Set_Slave_Diag.cnf(+) (Reference) /Reference < Act_Ref => ignore	W-FETCHED
58	W-FETCHED	MSCY1S_Set_Slave_Diag.cnf(+) (Reference) /Reference >= Act_Ref => Stored_PrmCmdAck := NULL	CHK-TRANSMIT
59	W-FETCHED	MSCY1S_Start.ind(Enabled_Alarms, Alarm_Mode_Master, Diag_Flag) => MSCY1S_Abort.req	W-START

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#	Current State	Event /Condition =>Action	Next State
60	W-FETCHED	MSCY1S_Stop.ind /Alarm_Sequence=TRUE && Alarm_Count=0 => Stored_Diag:=False Ext_Diag_Flag:=L_Ext_Diag_Flag Ext_Diag_Overflow:=L_Ext_Diag_Overflow Ext_Diag:=(Local_Diag_Buffer) Act_Ref := Act_Ref + 1 CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref) FSPMS_Stopped.ind(AREP)	W-START
61	W-FETCHED	MSCY1S_Stop.ind /Alarm_Sequence=FALSE || Alarm_Count<>0 => Stored_Diag:=False Alarm_Count:=0 Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending) Ext_Diag_Flag:=L_Ext_Diag_Flag Ext_Diag_Overflow:=L_Ext_Diag_Overflow Ext_Diag:=(Local_Diag_Buffer) Act_Ref := Act_Ref + 1 CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref)	RESET-PENDING
62	CHK-TRANSMIT	/Req_Alarm_FIFO_state=empty &&Stored_Diag = FALSE	W-DIA-UPD
63	CHK-TRANSMIT	/Req_Alarm_FIFO_state=empty && Stored_Diag = TRUE=>Stored_Diag:=FalseExt_Diag_Flag:=L_Ext_Diag_FlagExt_Diag_Overflow:=L_Ext_Diag_OverflowExt_Diag:=(Local_Diag_Buffer)Act_Ref := Act_Ref + 1MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref)	W-FETCHED
64	CHK-TRANSMIT	/Req_Alarm_FIFO_state<>empty => Alarm:=Load_from_Req_Alarm_FIFO() Stored_Diag:=False Ext_Diag_Flag:=L_Ext_Diag_Flag Ext_Diag_Overflow:=L_Ext_Diag_Overflow Ext_Diag:=(Local_Diag_Buffer, Alarm) Act_Ref := Act_Ref + 1 MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref)	W-FETCHED
65	W-RESET	DMPMS_Reset.cnf /R_Cnt<3 => R_Cnt:=R_Cnt+1	W-RESET
66	W-RESET	MSCY1S_Reset.cnf /R_Cnt<3 => R_Cnt:=R_Cnt+1	W-RESET
67	W-RESET	MSAC1S_Reset.cnf /R_Cnt<3 => R_Cnt:=R_Cnt+1	W-RESET
68	W-RESET	MSRM2S_Reset.cnf /R_Cnt<3 => R_Cnt:=R_Cnt+1	W-RESET

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#	Current State	Event /Condition =>Action	Next State

69	W-RESET	DMPMS_Reset.cnf
		/R_Cnt>=3
		=>
		if (FSPMS_User_Reset=True)
		FSPMS_Reset DP Slave .cnf
		endif
			POWER-ON

70	W-RESET	MSCY1S_Reset.cnf
		/R_Cnt>=3
		=>
		if (FSPMS_User_Reset=True)
		FSPMS_Reset DP Slave .cnf
		endif
			POWER-ON

71	W-RESET	MSAC1S_Reset.cnf
		/R_Cnt>=3
		=>
		if (FSPMS_User_Reset=True)
		FSPMS_Reset DP Slave .cnf
		endif
			POWER-ON

72	W-RESET	MSRM2S_Reset.cnf /R_Cnt>=3 => if (FSPMS_User_Reset=True) FSPMS_Reset DP Slave .cnfendif	POWER-ON
73	any state	DMPMS_SYCL_Clock_Value.ind (Clock Value Time Event, Clock Value previous TE, Clock Value Status, Receive Delay Time, Src add Clk msg) => FSPMS_SYCL_Clock_Value.ind (AREP, Clock Value Time Event, Clock Value previous TE, Clock Value Status, Receive Delay Time, Src add Clk msg)	SAME
74	any state	DMPMS_Fault.ind => R_Cnt:=0 FSPMS DP Slave Fault.ind DMPMS_Reset.req MSCY1S_Reset.req MSAC1S_Reset.req MSRM2S_Reset.req	W-RESET
75	any state	MSAC1S_Fault.ind => R_Cnt:=0 FSPMS DP Slave Fault.ind DMPMS_Reset.req MSCY1S_Reset.req MSAC1S_Reset.req MSRM2S_Reset.req	W-RESET
76	any state	MSCY1S_Fault.ind => R_Cnt:=0 FSPMS DP Slave Fault.ind DMPMS_Reset.req MSCY1S_Reset.req MSAC1S_Reset.req MSRM2S_Reset.req	W-RESET
77	any state	MSRM2S_Fault.ind => R_Cnt:=0 FSPMS DP Slave Fault.ind DMPMS_Reset.req MSCY1S_Reset.req MSAC1S_Reset.req MSRM2S_Reset.req	W-RESET

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#	Current State	Event /Condition =>Action	Next State
78	any state	FSPMS_Reset DP Slave .req => R_Cnt:=0 FSPMS_User_Reset:=True DMPMS_Reset.req MSCY1S_Reset.req MSAC1S_Reset.req MSRM2S_Reset.req	W-RESET
79	W-FETCHED	Set_ARL_Isochron_Mode.req(Isochron_Mode) => Set_ARL_Isochron_Mode.cnf(+)	W-FETCHED
80	W-DIA-UPD	Set_ARL_Isochron_Mode.req(Isochron_Mode) => Set_ARL_Isochron_Mode.cnf(+)	W-DIA-UPD
81	W-START	Set_ARL_Isochron_Mode.req(Isochron_Mode) => Status:= NO Set_ARL_Isochron_Mode.cnf(-)(Status)	W-START
82	t-state	Load CRL DXB Linktable Entries.req(AREP, DXB-Linktable) /valid Parameters => Load CRL DXB Linktable Entries.cnf(+)	
83	t-state	Load CRL DXB Linktable Entries.req(AREP, DXB-Linktable) /invalid Parameters => Status:= NO Load CRL DXB Linktable Entries.cnf(-) (Status)	
84	t-state	FSPMS DLL Init DP Slave.req (Bus Para) => DMPMS_Sinit_DLL.req (Bus_Para)	SAME
85	t-state	FSPMS_SInit MS0.req (AREP) => MSCY1S_SInit MS0.req ( )	SAME
86	t-state	FSPMS_SInit MS2.req ( ) => MSRM2S_SInit MS2.req ( )	SAME
87	t-state	FSPMS_Abort.req (AREP, Subnet, Instance, Reason Code) /AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSAC2S_Abort.req (Subnet, Instance, Reason Code)	SAME
88	t-state	FSPMS_DP Slave Application Ready.req (AREP) /AREP.AR_Type=MS0 => MSCY1S_Application Ready.req ( )	SAME
89	t-state	FSPMS_Check User Prm Result.req (AREP, Prm_OK) /AREP.AR_Type=MS0 => MSCY1S_Check User Prm Result.req (Prm_OK)	SAME
90	t-state	FSPMS_Check Cfg Result.req (AREP, Cfg_OK, Input Data Len, Output Data Len) /AREP.AR_Type=MS0 => MSCY1S_Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len)	SAME
91	t-state	FSPMS_Set Cfg.req (AREP, Cfg Data) /AREP.AR_Type=MS0 => MSCY1S_Set Cfg.req (Cfg Data)	SAME
92	t-state	FSPMS_Set Input.req (AREP, Input Data) /AREP.AR_Type=MS0 => MSCY1S_Set Input.req (Input Data)	SAME

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#	Current State	Event /Condition =>Action	Next State
93	t-state	FSPMS_Get Output.req (AREP) /AREP.AR_Type=MS0 => MSCY1S_Get Output.req ( )	SAME
94	t-state	FSPMS_Initiate.rsp(+) (AREP, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param) /AREP.AR_Type=MS1 => MSAC2S_Initiate.rsp(+) (Res SAP, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param)	SAME
95	t-state	FSPMS_Initiate.rsp(-) (AREP, Error Decode, Error Code 1 Error Code 2) /AREP.AR_Type=MS2 => MSAC2S_Initiate.rsp(-) (Res SAP, Error Decode, Error Code 1 Error Code 2)	SAME
96	t-state	FSPMS_Read.rsp(+) (AREP, Length, Data) /AREP.AR_Type=MS1 => MSAC1S_Read.rsp(+) (Length, Data)	SAME
97	t-state	FSPMS_Read.rsp(+) (AREP, Length, Data) /AREP.AR_Type=MS2 => MSAC2S_Read.rsp(+) (Length, Data)	SAME
98	t-state	FSPMS_Read.rsp(-) (AREP, Error Decode, Error Code 1 Error Code 2) /AREP.AR_Type=MS1 => MSAC1S_Read.rsp(-) (Error Decode, Error Code 1 Error Code 2)	SAME
99	t-state	FSPMS_Read.rsp(-) (AREP, Error Decode, Error Code 1 Error Code 2) /AREP.AR_Type=MS2 => MSAC2S_Read.rsp(-) (Error Decode, Error Code 1 Error Code 2)	SAME
100	t-state	FSPMS_Write.rsp(+) (AREP, Length) /AREP.AR_Type=MS1 => MSAC1S_Write.rsp(+) (Length)	SAME
101	t-state	FSPMS_Write.rsp(+) (AREP, Length) /AREP.AR_Type=MS2 => MSAC2S_Write.rsp(+) (Length)	SAME
102	t-state	FSPMS_Write.rsp(-) (AREP, Error Decode, Error Code 1 Error Code 2) /AREP.AR_Type=MS1 => MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2)	SAME
103	t-state	FSPMS_Write.rsp(-) (AREP, Error Decode, Error Code 1 Error Code 2) /AREP.AR_Type=MS2 => MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2)	SAME
104	t-state	FSPMS_Data Transport.rsp(+) (AREP, Length, Data) /AREP.AR_Type=MS2 => MSAC2S_Data Transport.rsp(+) (Res SAP, Length, Data)	SAME
105	t-state	FSPMS_Data Transport.rsp(-) (AREP, Error Decode, Error Code 1 Error Code 2) /AREP.AR_Type=MS2 => MSAC2S_Data Transport.rsp(-) (Res SAP, Error Decode, Error Code 1 Error Code 2)	SAME
106	t-state	FSPMS_Alarm Ack.rsp(+) (AREP, Slot Number, Alarm Type, Seq Nr) /AREP.AR_Type=MS1 =>	SAME
107	t-state	FSPMS_Alarm Ack.rsp(-) (AREP, Slot Number, Alarm Type, Seq Nr) /AREP.AR_Type=MS1 =>	SAME

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#	Current State	Event /Condition =>Action	Next State
108	t-state	DMPMS_SInit DLL.cnf ( ) => FSPMS DLL Init DP Slave.cnf ( )	SAME
109	t-state	MSCY1S_SInit MS0.cnf ( ) => AREP=MS0-AR FSPMS_SInit MS0.cnf (AREP)	SAME
110	t-state	MSRM2S_SInit MS2.cnf ( ) => FSPMS_SInit MS2.cnf ( )	SAME
111	t-state	MSCY1S_Check User Prm Result.cnf(+) ( ) => AREP=MS0-AR FSPMS_Check User Prm Result.cnf(+) (AREP)	SAME
112	t-state	MSCY1S_Check User Prm Result.cnf(-) (Status) => AREP=MS0-AR FSPMS_Check User Prm Result.cnf(-) (AREP, Status)	SAME
113	t-state	MSCY1S_Check Cfg Result.cnf(+) ( ) => AREP=MS0-AR FSPMS_Check Cfg Result.cnf(+) (AREP)	SAME
114	t-state	MSCY1S_Check Cfg Result.cnf(-) (Status) => AREP=MS0-AR FSPMS_Check Cfg Result.cnf(-) (AREP, Status)	SAME
115	t-state	MSCY1S_Set Cfg.cnf(+) ( ) => AREP=MS0-AR FSPMS_Set Cfg.cnf(+) (AREP)	SAME
116	t-state	MSCY1S_Set Cfg.cnf(-) ( ) => AREP=MS0-AR FSPMS_Set Cfg.cnf(-) (AREP)	SAME
117	t-state	MSCY1S_Set Input.cnf(+) ( ) => AREP=MS0-AR FSPMS_Set Input.cnf(+) (AREP)	SAME
118	t-state	MSCY1S_Set Input.cnf(-) ( ) => AREP=MS0-AR FSPMS_Set Input.cnf(-) (AREP)	SAME
119	t-state	MSCY1S_Get Output.cnf(+) (Output Data, Clear Flag, New Flag) => AREP=MS0-AR FSPMS_Get Output.cnf(+) (AREP, Output Data, Clear Flag, New Flag)	SAME
120	t-state	MSCY1S_Get Output.cnf(-) ( ) => AREP=MS0-AR FSPMS_Get Output.cnf(-) (AREP)	SAME
121	t-state	MSCY1S_Set Slave Add.ind (New Slave Add, Ident Number, No Add Chg, Rem Slave Data) => AREP=MS0-AR FSPMS_Set Slave Add.ind (AREP, New Slave Add, Ident Number, No Add Chg, Rem Slave Data)	SAME
122	t-state	MSCY1S_Check User Prm.ind (User Prm Data) => AREP=MS0-AR FSPMS_Check User Prm.ind (AREP, User Prm Data)	SAME

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#	Current State	Event /Condition =>Action	Next State
123	t-state	MSCY1S_Check Cfg.ind (Check Cfg Mode, Cfg Data) => AREP=MS0-AR FSPMS_Check Cfg.ind (AREP, Check Cfg Mode, Cfg Data)	SAME
124	t-state	MSCY1S_New Output.ind (Clear Flag) => AREP=MS0-AR FSPMS_New Output.ind (AREP, Clear Flag)	SAME
125	t-state	MSCY1S_Global Control.ind (Clear Command, Sync Command, Freeze Command, Group Select) => AREP=MS0-AR FSPMS_Global Control.ind (AREP, Clear Command, Sync Command, Freeze Command, Group Select)	SAME
126	t-state	MSAC2S_Initiate.ind (Res SAP, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param) /SetContext(Res_SAP, Service)=TRUE => FSPMS_Initiate.ind (AREP, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param)	SAME
127	t-state	MSAC2S_Abort.ind (Res SAP, Locally Generated, Subnet, Instance, Reason Code, Additional Detail) /SetContext(Res_SAP, Service)=TRUE => CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND FSPMS_Abort.ind (AREP, Locally Generated, Subnet, Instance, Reason Code, Additional Detail)	SAME
128	t-state	MSAC2S_Read.ind (Res SAP, Slot Number, Index, Length) /SetContext(Res_SAP, Service)=TRUE && Index<>255 => FSPMS_Read.ind (AREP, Slot Number, Index, Length)	SAME
129	t-state	MSAC1S_Read.ind (Res SAP, Slot Number, Index, Length) /SetContext(Res_SAP, Service)=TRUE && Index<>255 => FSPMS_Read.ind (AREP, Slot Number, Index, Length)	SAME
130	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /SetContext(Res_SAP, Service)=TRUE && Index<>255 => FSPMS_Write.ind (AREP, Slot Number, Index, Length, Data)	SAME
131	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /SetContext(Res_SAP, Service)=TRUE &&Index<>255 => FSPMS_Write.ind (AREP, Slot Number, Index, Length, Data)	SAME
132	t-state	MSAC2S_Data Transport.ind (Res SAP, Slot Number, Index, Length, Data) /SetContext(Res_SAP, Service)=TRUE => FSPMS_Data Transport.ind (AREP, Slot Number, Index, Length, Data)	SAME
133	t-state	FSPMS_Get_Publisher_Data.req (AREP, CREP) /AREP.AR_Type=MS0 => Rem_Add=CREP.Rem_Add SSCY1S_Get_Publisher_Data.req (Rem_Add)	SAME
134	t-state	FSPMS_Start_Subscriber.req (AREP, CREP) /AREP.AR_Type=MS0 => Rem_Add=CREP.Rem_Add SSCY1S_Start_Subscriber.req (Rem_Add)	SAME

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#	Current State	Event /Condition =>Action	Next State
135	t-state	FSPMS_Stop_Subscriber.req (AREP, CREP) /AREP.AR_Type=MS0 => Rem_Add=CREP.Rem_Add SSCY1S_Stop_Subscriber.req (Rem_Add)	SAME
136	t-state	FSPMS_Check_Ext_User_Prm_Result.req (AREP, Ext_Prm_OK) /AREP.AR_Type=MS0 => MSCY1S_Check_Ext_User_Prm_Result.req (Ext_Prm_OK)	SAME
137	t-state	SSCY1S_Get_Publisher_Data.cnf(+) (Rem_Add, Data, New_Flag) /SetContext(Rem_Add, Service)=TRUE => FSPMS_Get_Publisher_Data.cnf(+) (AREP, CREP, Data, New_Flag)	SAME
138	t-state	SSCY1S_Get_Publisher_Data.cnf(-) (Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMS_Get_Publisher_Data.cnf(-) (AREP, CREP)	SAME
139	t-state	SSCY1S_Start_Subscriber.cnf(+) (Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMS_Start_Subscriber.cnf(+) (AREP, CREP)	SAME
140	t-state	SSCY1S_Start_Subscriber.cnf(-) (Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMS_Start_Subscriber.cnf(-) (AREP, CREP)	SAME
141	t-state	SSCY1S_Stop_Subscriber.cnf(+) (Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMS_Stop_Subscriber.cnf(+) (AREP, CREP)	SAME
142	t-state	SSCY1S_Stop_Subscriber.cnf(-) (Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMS_Stop_Subscriber.cnf(-) (AREP, CREP)	SAME
143	t-state	SSCY1S_New_Publisher_Data.ind (Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMS_New_Publisher_Data.ind(AREP, CREP)	SAME
144	t-state	SSCY1S_Publisher_Active.ind (Rem_Add, Status) /SetContext(Rem_Add, Service)=TRUE => FSPMS_Publisher_Active.ind(AREP, CREP, Status)	SAME
145	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.IL.Extended_Function_Num=Initiate_Load) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length Current Load Type[AREP]:=Data.w.IL.Load_Type LR Index:=Data.w.IL.LR_Index Load Type:=Data.w.IL.Load_Type Load Image Size:=Data.w.IL.Load_Image_Size User Specific:=Data.w.IL.User_Specific Intersegment Request Timeout:=Data.w.IL.Intersegment_Request_Timeout FSPMS_Initiate_Load.ind (AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request Timeout, User Specific) LR_State[AREP]:=W-LR-RES	SAME

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#	Current State	Event /Condition =>Action	Next State
146	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.IL.Extended_Function_Num=Initiate_Load) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length Current Load Type[AREP]:=Data.w.IL.Load_Type LR Index:=Data.w.IL.LR_Index Load Type:=Data.w.IL.Load_Type Load Image Size:=Data.w.IL.Load_Image_Size User Specific:=Data.w.IL.User_Specific Intersegment Request Timeout:=Data.w.IL.Intersegment_Request_Timeout FSPMS_Initiate_Load.ind (AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request Timeout, User Specific) LR_State[AREP]:=W-LR-RES	SAME
147	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.IL.Extended_Function_Num=Initiate_Load) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length CurrentLoadType[AREP]:=Data.w.IL.Load_Type CurrentLRIndex[AREP]:=Data.w.IL.LR_Index LR Index:=Data.w.IL.LR_Index Load Type:=Data.w.IL.Load_Type Load Image Size:=Data.w.IL.Load_Image_Size User Specific:=Data.w.IL.User_Specific Intersegment Request Timeout:=Data.w.IL.Intersegment_Request_Timeout FSPMS_Initiate_Load.ind (AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request Timeout, User Specific) LR_State[AREP]:=W-LR-RES	SAME
148	t-state	FSPMS_Initiate_Load.rsp(+) (AREP, Actual LR Size, Max Response Delay, Max Segment Length, User Specific) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].LR:=TRUE CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r.IL.Actual_LR_Size:=Actual LR Size CurrentBuffer[AREP].data.r.IL.Max_Response_Delay:=Max Response Delay CurrentBuffer[AREP].data.r.IL.Max_Segment_Length:=Max Segment Length CurrentBuffer[AREP].data.r.IL.User_Specific:=User Specific MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
149	t-state	FSPMS_Initiate_Load.rsp(+) (AREP, Actual LR Size, Max Response Delay, Max Segment Length, User Specific) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].LR:=TRUE CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r.IL.Actual_LR_Size:=Actual LR Size CurrentBuffer[AREP].data.r.IL.Max_Response_Delay:=Max Response Delay CurrentBuffer[AREP].data.r.IL.Max_Segment_Length:=Max Segment Length CurrentBuffer[AREP].data.r.IL.User_Specific:=User Specific MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
150	t-state	MSAC1S_Read.ind (Res SAP, Slot Number, Index, Length)/LR_State[AREP]==W-LR-IND&SetContext(Res_SAP, Service)=TRUE &&(Index=255 && CurrentBuffer[AREP].Empty=FALSE && CurrentBuffer[AREP].LR=FALSE)=>Data:=CurrentBuffer[AREP].dataLength:=sizeof(CurrentBuffer[AREP].data)MSAC1S_Read.rsp(+) (Length, Data)LR_State[AREP]:=W-LR-IND	SAME

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#	Current State	Event /Condition =>Action	Next State
151	t-state	MSAC1S_Read.ind (Res SAP, Slot Number, Index, Length) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && CurrentBuffer[AREP].Empty=FALSE && CurrentBuffer[AREP].LR=TRUE) => CurrentBuffer[AREP].Empty:=TRUE Data:=CurrentBuffer[AREP].data Length:=sizeof(CurrentBuffer[AREP].data) MSAC1S_Read.rsp(+) (Length, Data) LR_State[AREP]:=W-LR-IND	SAME
152	t-state	MSAC2S_Read.ind (Res SAP, Slot Number, Index, Length) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && CurrentBuffer[AREP].Empty=FALSE && CurrentBuffer[AREP].LR=FALSE) => Data:=CurrentBuffer[AREP].data Length:=sizeof(CurrentBuffer[AREP].data) MSAC2S_Read.rsp(+) (Length, Data) LR_State[AREP]:=W-LR-IND	SAME
153	t-state	MSAC2S_Read.ind (Res SAP, Slot Number, Index, Length) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && CurrentBuffer[AREP].Empty=FALSE && CurrentBuffer[AREP].LR=TRUE) => CurrentBuffer[AREP].Empty:=TRUE Data:=CurrentBuffer[AREP].data Length:=sizeof(CurrentBuffer[AREP].data) MSAC2S_Read.rsp(+) (Length, Data) LR_State[AREP]:=W-LR-IND	SAME
154	t-state	FSPMS_Initiate_Load.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
155	t-state	FSPMS_Initiate_Load.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
156	t-state	MSAC1S_Read.ind (Res SAP, Slot Number, Index, Length) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE &&(Index=255 && CurrentBuffer[AREP].Empty=TRUE && CurrentBuffer[AREP].LR=TRUE) => LR Index:=CurrentLRIndex[AREP] Segment Length:=Length FSPMS_Pull_Segment.ind (AREP, Slot Number, LR Index, Segment Length) LR_State[AREP]:=W-LR-RES	SAME

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#	Current State	Event /Condition =>Action	Next State
157	t-state	MSAC1S_Read.ind (Res SAP, Slot Number, Index, Length) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && CurrentBuffer[AREP].Empty=TRUE && CurrentBuffer[AREP].LR=FALSE) => Error Decode:=DPV1 Error Code 1 :=state conflict Error Code 2:=0 MSAC1S_Read.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-RES	SAME
158	t-state	MSAC2S_Read.ind (Res SAP, Slot Number, Index, Length) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && CurrentBuffer[AREP].Empty=TRUE && CurrentBuffer[AREP].LR=TRUE) => LR Index:=CurrentLRIndex[AREP] Segment Length:=Length FSPMS_Pull_Segment.ind (AREP, Slot Number, LR Index, Segment Length) LR_State[AREP]:=W-LR-RES	SAME
159	t-state	MSAC2S_Read.ind (Res SAP, Slot Number, Index, Length) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && CurrentBuffer[AREP].Empty=TRUE && CurrentBuffer[AREP].LR=FALSE) => Error Decode:=DPV1 Error Code 1 :=state conflict Error Code 2:=0 MSAC2S_Read.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-RES	SAME
160	t-state	FSPMS_Pull_Segment.rsp(+) (AREP, Segment Length, Segment Number, More Follows, Data) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Data.PULL.Extended_Function_Num=Pull Data.PULL.Sequence Number:=Segment Number Data.PULL.Options.More Follows:=More Follows Data.PULL.Region Data := Data Length:=6+Segment Length MSAC1S_Read.rsp(+) (Length, Data) LR_State[AREP]:=W-LR-IND	SAME
161	t-state	FSPMS_Pull_Segment.rsp(+) (AREP, Segment Length, Segment Number, More Follows, Data) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Data.PULL.Extended_Function_Num=Pull Data.PULL.Sequence Number:=Segment Number Data.PULL.Options.More Follows:=More Follows Data.PULL.Region Data := Data Length:=6+Segment Length MSAC2S_Read.rsp(+) (Length, Data) LR_State[AREP]:=W-LR-IND	SAME
162	t-state	FSPMS_Pull Segment.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Read.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME

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#	Current State	Event /Condition =>Action	Next State
163	t-state	FSPMS_Pull Segment.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Read.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
164	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.PUSH.Extended_Function_Num=Push) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length LR Index:=Data.PUSH.LR_Index Segment Length:=Length Segment Number:=Data.PUSH.Segment_Number More Follows:=Data.PUSH.More_Follows Data:=Data.PUSH.data FSPMS_Push_Segment.ind (AREP, Slot Number, LR Index, Segment Length, Segment Number, More Follows, Data) LR_State[AREP]:=W-LR-RES	SAME
165	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.PUSH.Extended_Function_Num=Push) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length LR Index:=Data.PUSH.LR_Index Segment Length:=Length Segment Number:=Data.PUSH.Segment_Number More Follows:=Data.PUSH.More_Follows Data:=Data.PUSH.data FSPMS_Push_Segment.ind (AREP, Slot Number, LR Index, Segment Length, Segment Number, More Follows, Data) LR_State[AREP]:=W-LR-RES	SAME
166	t-state	FSPMS_Push_Segment.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
167	t-state	FSPMS_Push_Segment.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => Length:=CurrentBuffer[AREP].WriteLength MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
168	t-state	FSPMS_Push_Segment.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME

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#	Current State	Event /Condition =>Action	Next State
169	t-state	FSPMS_Push_Segment.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
170	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.TL.Extended_Function_Num=Terminate_Load) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length LR Index:=Data.w.TL.LR_Index FSPMS_Terminate_Load.ind (AREP, Slot Number, LR Index) LR_State[AREP]:=W-LR-RES	SAME
171	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.TL.Extended_Function_Num=Terminate_Load) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length LR Index:=Data.w.TL.LR_Index FSPMS_Terminate_Load.ind (AREP, Slot Number, LR Index) LR_State[AREP]:=W-LR-RES	SAME
172	t-state	FSPMS_Terminate_Load.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].LR:=FALSE CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r:=NIL Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
173	t-state	FSPMS_Terminate_Load.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].LR:=FALSE CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r:=NIL Length:=CurrentBuffer[AREP].WriteLength MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
174	t-state	FSPMS_Terminate_Load.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME

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#	Current State	Event /Condition =>Action	Next State
175	t-state	FSPMS_Terminate_Load.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
176	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &CurrentBuffer[AREP].LR:=FALSE &&SetContext(Res_SAP, Service)=TRUE &&(Index=255 && Length >= 4) &&(Data.w.CALL.Extended_Function_Num=CALL) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.w.CALL.FI_Index Entity_Number :=Data.w.CALL. Entity_Number Execution Argument:=Data.w.CALL.Execution_Argument FSPMS_Call.ind (AREP, Slot Number, Entity_Number, FI Index, Execution Argument) LR_State[AREP]:=W-LR-RES	SAME
177	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &CurrentBuffer[AREP].LR:=True && SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.CALL.Extended_Function_Num=CALL) => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=state conflict Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
178	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &CurrentBuffer[AREP].LR:=FALSE && SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.CALL.Extended_Function_Num=CALL) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length Entity_Number :=Data.w.CALL. Entity_Number FI Index:=Data.w.CALL.FI_Index Execution Argument:=Data.w.CALL.Execution_Argument FSPMS_Call.ind (AREP, Slot Number, Entity_Number, FI Index, Execution Argument) LR_State[AREP]:=W-LR-RES	SAME
179	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &CurrentBuffer[AREP].LR:=True && SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.CALL.Extended_Function_Num=CALL) => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=state conflict Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME

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#	Current State	Event /Condition =>Action	Next State
180	t-state	FSPMS_Call.rsp(+) (AREP, Result Argument) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r.CALL.ResultArgument:=Result Argument Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
181	t-state	FSPMS_Call.rsp(+) (AREP, Result Argument) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r.CALL.ResultArgument:=Result Argument Length:=CurrentBuffer[AREP].WriteLength MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
182	t-state	FSPMS_Call.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
183	t-state	FSPMS_Call.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
184	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Start) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index Execution Argument:=Data.FIS.Execution_Argument FSPMS_Start.ind (AREP, Slot Number, FI Index, Execution Argument) LR_State[AREP]:=W-LR-RES	SAME
185	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Start) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index Execution Argument:=Data.FIS.Execution_Argument FSPMS_Start.ind (AREP, Slot Number, FI Index, Execution Argument) LR_State[AREP]:=W-LR-RES	SAME
186	t-state	FSPMS_Start.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME

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#	Current State	Event /Condition =>Action	Next State
187	t-state	FSPMS_Start.rsp(+) (AREP)/LR_State[AREP]==W-LR-RES&AREP.AR_Type=MS2=>Length:=CurrentBuffer[AREP].WriteLengthMSAC2S_Write.rsp(+) (Length)LR_State[AREP]:=W-LR-IND	SAME
188	t-state	FSPMS_Start.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
189	t-state	FSPMS_Start.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
190	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Stop) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index FSPMS_Stop.ind (AREP, Slot Number, FI Index) LR_State[AREP]:=W-LR-RES	SAME
191	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Stop) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index FSPMS_Stop.ind (AREP, Slot Number, FI Index) LR_State[AREP]:=W-LR-RES	SAME
192	t-state	FSPMS_Stop.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
193	t-state	FSPMS_Stop.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => Length:=CurrentBuffer[AREP].WriteLength MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
194	t-state	FSPMS_Stop.rsp(-) (AREP, Error Code)/LR_State[AREP]==W-LR-RES&AREP.AR_Type=MS1=>CurrentBuffer[AREP].Empty:=TRUEError Decode:=DPV1Error Code 1 :=Error CodeError Code 2:=0MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2)LR_State[AREP]:=W-LR-IND	SAME

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#	Current State	Event /Condition =>Action	Next State
195	t-state	FSPMS_Stop.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
196	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Resume) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index Execution Argument:=Data.FIS.Execution_Argument FSPMS_Resume.ind (AREP, Slot Number, FI Index, Execution Argument) LR_State[AREP]:=W-LR-RES	SAME
197	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Resume) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index Execution Argument:=Data.FIS.Execution_Argument FSPMS_Resume.ind (AREP, Slot Number, FI Index, Execution Argument) LR_State[AREP]:=W-LR-RES	SAME
198	t-state	FSPMS_Resume.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
199	t-state	FSPMS_Resume.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => Length:=CurrentBuffer[AREP].WriteLength MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
200	t-state	FSPMS_Resume.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
201	t-state	FSPMS_Resume.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME

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#	Current State	Event /Condition =>Action	Next State
202	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Reset) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index FSPMS_Reset.ind (AREP, Slot Number, FI Index) LR_State[AREP]:=W-LR-RES	SAME
203	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Reset) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index FSPMS_Reset.ind (AREP, Slot Number, FI Index) LR_State[AREP]:=W-LR-RES	SAME
204	t-state	FSPMS_Reset.rsp (+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
205	t-state	FSPMS_Reset.rsp (+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => Length:=CurrentBuffer[AREP].WriteLength MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
206	t-state	FSPMS_Reset.rsp (-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
207	t-state	FSPMS_Reset.rsp (-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
208	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.STATE.Extended_Function_Num=Get_State) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.w.STATE.FI_Index FSPMS_Get_FI_State.ind (AREP, Slot Number, FI Index) LR_State[AREP]:=W-LR-RES	SAME

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#	Current State	Event /Condition =>Action	Next State
209	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.STATE.Extended_Function_Num=Get_State) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.w.STATE.FI_Index FSPMS_Get_FI_State.ind (AREP, Slot Number, FI Index) LR_State[AREP]:=W-LR-RES	SAME
210	t-state	FSPMS_Get_FI_State.rsp (+) (AREP, FI State) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r.STATE.FI_State:=FI State Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
211	t-state	FSPMS_Get_FI_State.rsp (+) (AREP, FI State) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r.STATE.FI_State:=FI State Length:=CurrentBuffer[AREP].WriteLength MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
212	t-state	FSPMS_Get_FI_State.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
213	t-state	FSPMS_Get_FI_State.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME

8.1.4 Functions

Table 45 contains the functions used by the FSPMS, their arguments and their descriptions.

Table 45 – Functions used by the FSPMS

Function name	Description
SetContext(Rem_Add, Service)	This function checks if there exist an entry for the inputs Rem_Add resp. Res_SAP and invoked Service in the ARL and related CRL of the DP-slave. A) If there exist an entry then it returns TRUE and sets the local context according to the current CREP and AREP. B) Otherwise it returns FALSE.

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Function name	Description
FILL(Outstanding_Alarm_TABLE.Alarm_Status, State)	This function sets each entry of the two dimensional Outstanding_Alarm_TABLE to the given initial value of State. Valid parameters for State are pending/not_pending. The function has no return value.
Search_In_Outstanding_Alarm_TABLE(Alarm_Status)	This function scans each entry of the two dimensional Outstanding_Alarm_TABLE for a specific Alarm_Status. The return value of this function is an index that refers to an Alarm_Table entry that fulfills the Alarm_Status criteria pending/not_pending.
SReset_Req_Alarm_FIFO()	This function resets the FIFO for alarms not yet sent. During this function all entries are cleared. The function has no return value.
Store_To_Req_Alarm_FIFO(Alarm)	By means of this function the Alarm is stored into the Req_Alarm_FIFO. The function has no return value.
Load_From_Req_Alarm_FIFO ()	By means of this function one Alarm is read from the Req_Alarm_FIFO. The return value is an Alarm.
Req_Alarm_FIFO_state ()	This function checks the FIFO for alarms not yet sent. The function has the return values empty/not empty.

Acls(Alarm_Type)	This function calculates the Alarm_Type related index as return value as follows:
	if (Alarm_Type = 1) return 0
	if (Alarm_Type = 2) return 1
	if (Alarm_Type = 3) return 2
	if (Alarm_Type = 4) return 3
	if (Alarm_Type = 5) return 4
	if (Alarm_Type = 6) return 5
	if (Alarm_Type >= 32) && (Alarm_Type <= 126) return 6

IsDynamicAttributeLoadable(Attribute)	This function checks the ARL and CRL if the given attribute is loadable in the current state. For the attribute DXB-Linktable the function returns TRUE: if all elements in the DXB-Linktable have a corresponding attribute in the CRL and none of the corresponding SSCY1S state machines is in the state RUN.
SetDynamicAtrribute(Attribute)	This function stores the given attribute in the ARL or CRL. For the attribute DXB-Linktable each entry is stored at the corresponding CRL attribute.

Macros

ALARM_ENABLED

```
(
((Alarm_Type=3 OR Alarm_Type=4) &&
Actual_Enabled_Alarms[7]=TRUE)
OR ((Alarm_Type=2) && Actual_Enabled_Alarms[6]=TRUE)
OR ((Alarm_Type=1) && Actual_Enabled_Alarms[5]=TRUE)
OR ((Alarm_Type>=32 && Alarm_Type<=126)
&& Actual_Enabled_Alarms[4]=TRUE)
OR ((Alarm_Type=5) && Actual_Enabled_Alarms[3]=TRUE)
OR ((Alarm_Type=6) && Actual_Enabled_Alarms[2]=TRUE)
)
```

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8.2 FSPMM1

8.2.1 Primitive definitions

8.2.1.1 Primitives exchanged between AP-Context and FSPMM1

Table 46 shows the service primitives including their associated parameters issued by the AP-Context and received by the FSPMM1.

Table 46 – Primitives issued by AP-Context to FSPMM1

Primitive name	Source	Associated parameters	Functions
Init DP master Cl1.req	AP-Context	Bus Para	Refer to FAL Service Definition in IEC 61158-5-3 and in IEC 61158-3-3
Reset DP master Cl1.req	AP-Context	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Load ARL DP master Cl1.req	AP-Context	Alarm Max, List of ARL Entries	
Get ARL DP master Cl1.req	AP-Context	(none)	
Load CRL DP master Cl1.req	AP-Context	Update, List of CRL Entries	
Get CRL DP master Cl1.req	AP-Context	(none)	
CRL Slave Activate.req	AP-Context	Activate	
CRL New Prm.req	AP-Context	New Prm	
CRL New Prm Data.req	AP-Context	Prm Data	
Abort DP master Cl1.req	AP-Context	AREP	
Mark DP master Cl1.req	AP-Context	AREP	
Set Mode DP master Cl1.req	AP-Context	AREP, USIF State	
Load Bus Par DP master Cl1.req	AP-Context	Bus Para	
Delete SC DP master Cl1.req	AP-Context	Address	
Read Value DP master Cl1.req	AP-Context	Variable	
Get Slave Diag.req	AP-Context	AREP, CREP	
Set Output.req	AP-Context	AREP, CREP, Slot Number, Output Data, Final	
Get Input.req	AP-Context	AREP, CREP, Slot Number	
Global Control.req	AP-Context	AREP, Sync Command, Freeze Command, Group Select	
Read.req	AP-Context	AREP, Slot Number, Index, Length	
Write.req	AP-Context	AREP, Slot Number, Index, Length, Data	

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Primitive name	Source	Associated parameters	Functions
Alarm Ack.req(+)	AP-Context	AREP, Slot Number, Alarm Type, Seq Nr	
Get Master Diag.rsp(+)	AP-Context	AREP, Diagnosis Data	
Get Master Diag.rsp(-)	AP-Context	AREP, Status	
Start Seq.rsp(+)	AP-Context	AREP, Max Len Data Unit	
Start Seq.rsp(-)	AP-Context	AREP, Status	
Download.rsp(+)	AP-Context	AREP	
Download.rsp(-)	AP-Context	AREP, Status	
Upload.rsp(+)	AP-Context	AREP, Data	
Upload.rsp(-)	AP-Context	AREP, Status	
End Seq.rsp(+)	AP-Context	AREP	
End Seq.rsp(-)	AP-Context	AREP, Status	
Act Param.rsp(+)	AP-Context	AREP	
Act Param.rsp(-)	AP-Context	AREP, Status	
Set Time.req	AP-Context	AREP, Time Value Local Time Diff Summertime Accuracy Synchronisation Active Announcement Hour	
Initiate Load.req	AP-Context	AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request, Timeout User_Specific	
Pull Segment.req	AP-Context	AREP, Slot Number, LR Index, Segment Length	
Push Segment.req	AP-Context	AREP, Slot Number LR Index, Segment Length Segment Number, More Follows, Data	
Terminate Load.req	AP-Context	AREP Slot Number LR Index	
Start.req	AP-Context	AREP Slot Number FI Index Execution Argument	

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Primitive name	Source	Associated parameters	Functions
Stop.req	AP-Context	AREP Slot Number FI Index	
Resume.req	AP-Context	AREP Slot Number FI Index Execution Argument	
Reset.req	AP-Context	AREP Slot Number FI Index	
Call.req	FSPMS	AREP Slot Number Entity Number FI Index Execution Argument	
Get_FI_State.req	FSPMS	AREP Slot Number FI Index	

Table 47 shows the service primitives including their associated parameters issued by the FSPMM1 and received by the AP-Context.

Table 47 – Primitives issued by FSPMM1 to AP-Context

Primitive name	Source	Associated parameters	Functions
Init DP master Cl1.cnf	FSPMM1	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Reset DP master Cl1.cnf	FSPMM1	(none)	
Load ARL DP master Cl1.cnf(+)	FSPMM1	(none)	
Load ARL DP master Cl1.cnf(-)	FSPMM1	Status	
Get ARL DP master Cl1.cnf(+)	FSPMM1	Alarm Max, List of ARL Entries	
Get ARL DP master Cl1.cnf(-)	FSPMM1	Status	
Load CRL DP master Cl1.cnf(+)	FSPMM1	(none)	
Load CRL DP master Cl1.cnf(-)	FSPMM1	Status	
Get CRL DP master Cl1.cnf(+)	FSPMM1	List of CRL Entries	
Get CRL DP master Cl1.cnf(-)	FSPMM1	Status	
CRL Slave Activate.cnf(+)	FSPMM1		
CRL Slave Activate.cnf(-)	FSPMM1	Status	
CRL New Prm.cnf(+)	FSPMM1		
CRL New Prm.cnf(-)	FSPMM1	Status	
CRL New Prm Data.cnf(+)	FSPMM1		
CRL New Prm Data.cnf(-)	FSPMM1	Status	
Mark DP master Cl1.cnf(+)	FSPMM1	AREP, Dia	
Mark DP master Cl1.cnf(-)	FSPMM1	AREP, Status	
Set Mode DP master Cl1.cnf(+)	FSPMM1	AREP, Bus Accessible	
Set Mode DP master Cl1.cnf(-)	FSPMM1	AREP, Bus Accessible	

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Primitive name	Source	Associated parameters	Functions
Load Bus Par DP master Cl1.cnf	FSPMM1	Status	
Delete SC DP master Cl1.cnf	FSPMM1	Status	
Read Value DP master Cl1.cnf	FSPMM1	Value, Status	
Get Slave Diag.cnf(+)	FSPMM1	AREP, CREP, Diag Data	
Get Slave Diag.cnf(-)	FSPMM1	AREP, CREP	
Set Output.cnf(+)	FSPMM1	AREP, CREP, Slot Number	
Set Output.cnf(-)	FSPMM1	AREP, CREP, Slot Number, Status	
Get Input.cnf(+)	FSPMM1	AREP, CREP, Slot Number, Input Data	
Get Input.cnf(-)	FSPMM1	AREP, CREP, Slot Number, Status	
Global Control.cnf(+)	FSPMM1	AREP	
Global Control.cnf(-)	FSPMM1	AREP, Status	
Read.cnf(+)	FSPMM1	AREP, Length, Data	
Read.cnf(-)	FSPMM1	AREP, Error Decode, Error Code 1 Error Code 2	
Write.cnf(+)	FSPMM1	AREP, Length	
Write.cnf(-)	FSPMM1	AREP, Error Decode, Error Code 1 Error Code 2	
Alarm Ack.cnf(+)	FSPMM1	AREP, Slot Number, Alarm Type, Seq Nr	
Alarm Ack.cnf(-)	FSPMM1	AREP Slot Number, Alarm Type, Seq Nr	
Get Master Diag.ind	FSPMM1	AREP, Mdiag Identifier	
Start Seq.ind	FSPMM1	AREP, Area Code, Timeout	
Download.ind	FSPMM1	AREP, Area Code, Add Offset, Data	

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Primitive name	Source	Associated parameters	Functions
Upload.ind	FSPMM1	AREP, Area Code, Add Offset, Data Len	
End Seq.ind	FSPMM1	AREP	
Act Param.ind	FSPMM1	AREP, Area Code, Activate	
Act Para Brct.ind	FSPMM1	AREP, Area Code	
New Slave Diag.ind	FSPMM1	AREP, CREP	
New Input.ind	FSPMM1	AREP	
Alarm Notification.ind	FSPMM1	AREP, Slot Number, Alarm Type, Seq Nr, Add Ack, Alarm Specifier, Alarm Data	
DP master Cl1 Mode Changed.ind	FSPMM1	AREP, USIF State	
DP master Cl1 Event.ind		Event, Add Info	
DP master Cl1 Started.ind	FSPMM1	AREP	
DP master Cl1 Stopped.ind	FSPMM1	AREP	
Abort.ind	FSPMM1	AREP	
DP master Cl1 Reject.ind	FSPMM1	AREP, Reason	
DP master Cl1 Fault.ind	FSPMM1	(none)	
SYNCH.ind	FSPMM1	AREP	
SYNCH Delayed.ind	FSPMM1	AREP, T_{SH}	
DX Finished.ind	FSPMM1	AREP	
Set Time.ind	FSPMM1	AREP, Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour	
Set Time.cnf	FSPMM1	AREP, Status	
Sync Interval Violation.ind	FSPMM1	AREP	
Initiate Load.cnf(+)	FSPMM1	AREP, Actual LR Size, Max Response Delay, Max Segment Length User Specific	
Initiate Load.cnf(-)	FSPMM1	AREP, Error Code	
Pull Segment.cnf(+)	FSPMM1	AREP, Segment Length, Segment Number, More Follows, Data	
Pull Segment.cnf(-)	FSPMM1	AREP, Error Code	

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Primitive name	Source	Associated parameters	Functions
Push Segment.cnf(+)	FSPMM1	AREP	
Push Segment.cnf(-)	FSPMM1	AREP, Error Code	
Terminate Load.cnf(+)	FSPMM1	AREP	
Terminate Load.cnf(-)	FSPMM1	AREP, Error Code	
Start.cnf(+)	FSPMM1	AREP	
Start.cnf(-)	FSPMM1	AREP Error Code	
Stop.cnf(+)	FSPMM1	AREP	
Stop.cnf(-)	FSPMM1	AREP Error Code	
Resume.cnf(+)	FSPMM1	AREP	
Resume.cnf(-)	FSPMM1	AREP Error Code	
Reset.cnf(+)	FSPMM1	AREP	
Reset.cnf(-)	FSPMM1	AREP Error Code	
Call.cnf(+)	FSPMM1	AREP Result Argument	
Call.cnf(-)	FSPMM1	AREP Error Code	
Get FI State.cnf(+)	FSPMM1	AREP FI State	
Get FI State.cnf(-)	FSPMM1	AREP Error Code	

8.2.1.2 Parameters of FSPMM1 primitives

The parameters used with the primitives exchanged between the FSPMM1 and the AP-Context are described in FAL Service Definition in IEC 61158-5-3.

8.2.2 State machine description

This Machine is used to co-ordinate the Interactions between AP-Context and DMPMM1, MSCY1M, MSAC1M, MSAL1M and MMAC1. As the support of several State Machines for the communication with individual slave as well as timing constraints of the operation of slave require a consistent scheduling, this task is accomplished by FSPMM1 a s well.

For each DP-slave an individual set of state machines (MSCY1M, MSAL1M, MSAC1M) will be established which will be controlled by the Scheduler in the DP-master (Class 1). The Scheduler will be controlled by the AP-Context with special services. The Slave-Handlers(MSCY1M) are triggered sequentially from the FSPMS-Scheduler to perform the necessary actions. The FSPMM1 notifies the operation modes CLEAR and OPERATE in fixed time intervals (Dx_Control_Timer) to the DP-slaves. This occurs also at state transitions of FSPMM1.

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The Scheduler provides four operation modes for the User:

OFFLINE

STOP

CLEAR

OPERATE

Local Variables

Go_AClr
(Boolean)

State variable which indicates by the value True that after finishing the current Slave cycle the FSPMM1 has to force all DP-slaves into a safe state (Scheduler-State = CLEAR).

Internal_Go_AClr
(Boolean)

Only after finishing the current Slave cycle the FSPMS has to go to state CLEAR if Go_AClr is True. During each cycle the state variable Internal_Go_AClr stores the actual value of Go_AClr. At the end of each cycle the value of Internal_Go_AClr is copied into Go_AClr.

Mark_Active
(Unsigned8)

Indicates the state of the local function Mark.

Range:

Possible values are:

0 => Mark is not active

1 => Mark is active, but not yet in execution

2 => Mark is active and in execution

Diag_Active
(Boolean)

Used to store the information if at least one of the DP-slaves is not in the data exchange mode (True). The information is issued to the User with Mark.cnf.

UGC_Count
(Unsigned8)

Global_Control requests of the User are possible at any time during the FSPMM1 operation modes CLEAR and OPERATE. Confirmations of these requests will be passed to the User. The FSPMM1 uses the service Global_Control to send cyclic Global_Control requests with its actual operation mode to all assigned DP-slaves. Confirmations of cyclic Global_Control requests have to be utilized by the FSPMM1. The FSPMM1 has to know which Global_Control.cnf belongs to which previously called Global_Control.req It is not possible to resolve this relationship only by using DL services. Therefore the FSPMM1 shall get this relationship information by using the sequential order of the received Global_Control confirmations. The counters UGC_Count and CGC_Count are used to store information about the order of the requests and also information about the order of the confirmations.

With the UGC_Count counter all User Global_Control requests are counted incrementally. The initial value is 0. It is decremented with each Global_Control.cnf. In addition the counter is related with the parameter Bus_Para.Max_User_Global_Control.

Range: 0 .. Bus_Para.Max_User_Global_Control

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CGC_Count
(Unsigned8)

With this counter all cyclic Global_Control requests are counted which were started by the Scheduler. The initial value is 0. With each new cyclic Global_Control.req UGC_Count is incremented and its value is copied to CGC_Count. UGC_Count also is decremented with each new Global_Control.cnf. If this counter reaches the value 1, the actual Global_Control.cnf is a confirmation for a cyclic Global_Control.req

Range: 0 .. Bus_Para.Max_User_Global_Control

Bus_Accessible
(Boolean)

Indicates the actual state of the bus system. If services can be sent, its value is True.

Act_Rem_Add
(Unsigned8)

This variable stores the actually used station address of a DP-slave.

Range: 0 .. 125

Act_msac1m_Max_L_sdu_len
(Unsigned8)

This variable is used to store the actual value of the parameter msac1m_Max_L_sdu_len.

Range: 0 .. 240

User_Sched_Reset
(Boolean)

This variable indicates whether the actual reset was started by the User (AP-Context) or by any other State Machine.

Act_New_Bus_Para
(Bus_Para)

This structure is used to save an actual bus parameter set passed from the AP-Context to FSPMM1 temporarily.

DX_Lock
(Boolean)

This variable marks an active data exchange cycle to lock the data buffer and block user access. The value TRUE is set when the first Continue Slave Handler.req is issued until DX Finished.ind. The value remains FALSE until the next SYNCH.ind starts again the data exchange cycle.

DX_Synch
(Boolean)

This variable marks the interval between a SYNCH.ind and the next data exchange cycle. The value TRUE is set when the SYNCH.ind is received until the first Continue Slave Handler.req is issued. The value remains FALSE until the next SYNCH.ind.

Chg Buffer
(Boolean)

The value TRUE indicates that the buffers for input and output data below shall be changed with the next DX Finished.ind. It remains FALSE until the next Set Output.req (Final=TRUE) is received.

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Bfr_Set_Output
(Octet String)

This variable is a local buffer for output data that belongs to the application. It allows asynchronous access from the application process to the output data in Buffered Synchronized Mode. The contents of the buffer is refreshed by the FSPMM1 when the application process has issued a Set Output.req (Final = TRUE) and the DX Finished.ind has been received. The buffer may accessed again after the next SYNCH.ind.

Bfr_Get_Input
(Octet String)

This variable is a local buffer for input data that belongs to the application. It allows asynchronous access from the application process to the input data in Buffered Synchronized Mode. The refreshment is done together with the Bfr_Set_Output.

Set_Output
(Octet String)

This variable is a local buffer for output data that belongs to the network. It allows asynchronous access from the application process to the output data in Buffered Synchronized Mode. The contents of the buffer is refreshed by the FSPMM1 when the application process has issued a Set Output.req (Final = TRUE) and the DX Finished.ind has been received. The buffer may be accessed again after the next SYNCH.ind.

Get_Input
(Octet String)

This variable is a local buffer for input data that belongs to the network. It allows asynchronous access from the application process to the input data in Buffered Synchronized Mode. The refreshment is done together with the Bfr_Set_Output

LR_State
(Array of Unsigned8)

This variable stores the state of the Load Region sequence of the corresponding CREP.

CurrentExtendedFunctionNum
(Array of Unsigned 8)

This variable stores the extended function number of the currently processed LR service of the corresponding CREP.

CurrentSlotNumber
(Array of Unsigned8)

This variable stores the slot number of the currently processed LR service of the corresponding CREP.

Timers

Min_Sl_Interval_Timer
This timer supervises the minimal access control time of the DP-slaves. It is evaluated only within the FSPMM1 states CCLEAR and COPERATE.

Dx_Control_Interval_Timer
If this timer expires the broadcast service Global_Control is executed in order to inform the DP-slave whether the DP-master (Class 1) is in the state CLEAR or OPERATE. If the timer expires and the confirmation of the last Global_Control has not yet been received a physical bus access problem has occurred.

Macros

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INDICATE_BUS_ACCESSIBILITY
If (Accessible = True) Bus_Accessible = True

8.2.3 FSPMM1 state table

Table 48 contains the complete description of the FSPMM1 state machine.

The following definition for a state set is used in Table 48.

t_state = STOP or CLEAR or OPERATE

Table 48 – FSPMM1 state table

#	Current State	Event /Condition =>Action	Next State
1	POWER-ON	Load ARL DP Master Cl1.req (Alarm Max, List of ARL Entries) /valid parameters => Load ARL DP Master Cl1.cnf(+)	POWER-ON
2	POWER-ON	Load ARL DP Master Cl1.req (Alarm Max, List of ARL Entries) /invalid parameters => Status := NO Load ARL DP Master Cl1.cnf(-) (Status)	POWER-ON
3	POWER-ON	Get ARL DP Master Cl1.req /ARL loaded => Get ARL DP Master Cl1.cnf(+) (Alarm Max, List of ARL Entries)	POWER-ON
4	POWER-ON	Get ARL DP Master Cl1.req /ARL not loaded => Status := NO Get ARL DP Master Cl1.cnf(-) (Status)	POWER-ON
5	POWER-ON	Load CRL DP Master Cl1.req (List of CRL Entries) /valid parameters => Load CRL DP Master Cl1.cnf(+)	POWER-ON
6	POWER-ON	Load CRL DP Master Cl1.req (List of CRL Entries) /invalid parameters => Status := NO Load CRL DP Master Cl1.cnf(-) (Status)	POWER-ON
7	POWER-ON	Get CRL DP Master Cl1.req /CRL loaded => Get CRL DP Master Cl1.cnf(+) (List of CRL Entries)	POWER-ON
8	POWER-ON	Get CRL DP Master Cl1.req /CRL not loaded => Status := NO Get CRL DP Master Cl1.cnf(-) (Status)	POWER-ON
9	POWER-ON	FSPMM1_Init DP Master Cl1.req(Bus_Para) => User_Init:=TRUE USER_ChangedCritical_Para := FALSE DX_Lock := FALSE Chg_Buffer := FALSE Current Extended Function Num[CREP]:=No_Service LR_State[CREP]:=W-LR-REQ DMPMM1_Minit_DLL.req(Bus_Para)	INIT-DMPM
10	INIT-DMPM	DMPMM1_Minit_DLL.cnf => Act_Rem_Add := 0 MSAC1M_MInit_MSAC1.req(Rem_Add:=Act_Rem_Add)	INIT-AC1

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#	Current State	Event /Condition =>Action	Next State
11	—	—	—
12	INIT-AC1	MSAC1M_MInit_MSAC1.cnf(Rem_Add) /Act_Rem_Add<125 => Act_Rem_Add := Act_Rem_Add + 1 MSAC1M_MInit_MSAC1.req(Rem_Add:=Act_Rem_Add)	INIT-AC1
13	INIT-AC1	MSAC1M_MInit_MSAC1.cnf(Rem_Add) /Act_Rem_Add=125 => Act_Rem_Add := 0 MSAL1M_MInit.req(Rem_Add:=Act_Rem_Add)	INIT-AL1
14	INIT-AL1	MSAL1M_MInit.cnf(Rem_Add) /Act_Rem_Add<125 => Act_Rem_Add := Act_Rem_Add + 1 MSAL1M_MInit.req(Rem_Add:=Act_Rem_Add)	INIT-AL1
15	INIT-AL1	MSAL1M_MInit.cnf(Rem_Add) /Act_Rem_Add = 125 => Act_Rem_Add := 0 MSCY1M_Minit_MS0.req(Rem_Add:=Act_Rem_Add)	INIT-CY1
16	INIT-CY1	MSCY1M_Minit_MS0.cnf(Rem_Add) /Act_Rem_Add<125 => Act_Rem_Add := Act_Rem_Add + 1 MSCY1M_Minit_MS0.req(Rem_Add:=Act_Rem_Add)	INIT-CY1
17	INIT-CY1	MSCY1M_Minit_MS0.cnf(Rem_Add) /Act_Rem_Add=125 && IsARExistent(MM)=TRUE => MMAC1_Minit_MM.req	INIT-MM1

18	INIT-CY1	MSCY1M_Minit_MS0.cnf(Rem_Add)
		/Act_Rem_Add=125 && IsARExistent(MM)=FALSE &&
		USER_ChangedCritical_Para = FALSE
		=>
		Bus_accessible := FALSE
		if(USER_SetMode_Offline=FALSE)
		  FSPMM1_Init DP Master Cl1.cnf
		else
		  FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)
		  USER_SetMode_Offline:=FALSE
		endif
			OFFLINE

19	INIT-CY1	MSCY1M_Minit_MS0.cnf(Rem_Add) /Act_Rem_Add=125 && IsARExistent(MM)=FALSE && USER_ChangedCritical_Para = TRUE => DMPMM1_Set_Bus_Par.req(Bus_Para:=Act_New_Bus_Para)	LDBP
20	INIT-MM1	MMAC1_Minit_MM.cnf /USER_ChangedCritical_Para = TRUE => DMPMM1_Set_Bus_Par.req(Bus_Para:=Act_New_Bus_Para)	LDBP

21	INIT-MM1	MMAC1_Minit_MM.cnf
		/USER_ChangedCritical_Para = FALSE
		=>
		Bus_accessible := FALSE
		if(USER_SetMode_Offline=FALSE)
		  FSPMM1_Init DP Master Cl1.cnf
		else
		  FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)
		  USER_SetMode_Offline:=FALSE
		endif
			OFFLINE

22	OFFLINE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State <> Stop && USIF_State <> Offline => FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	OFFLINE

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#	Current State	Event /Condition =>Action	Next State
23	OFFLINE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Offline => FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)	OFFLINE
24	OFFLINE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Stop && Bus_Para invalid => FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	OFFLINE
25	OFFLINE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Stop && Bus_Para valid => Mark_Active := 0 Diag_Active := False DMPMM1_Set_Bus_Par.req(Bus_Para)	LDBP
26	OFFLINE	FSPMM1_Mark.req(AREP) => FSPMM1_Mark.cnf(-)(AREP, Status:=NO)	OFFLINE
27	OFFLINE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	OFFLINE
28	OFFLINE	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) => FSPMM1_Load_Bus_Par.cnf(-)(Status:=NO)	OFFLINE
29	OFFLINE	FSPMM1_Delete_SC DP Master Cl1.req(Address) => DMPMM1_Delete_SC.req(Address)	DELSC-OFF
30	OFFLINE	FSPMM1_Read_Value DP Master Cl1.req(Variable) => DMPMM1_Read_Value.req(Variable)	RDVAL-OFF
31	LDBP	DMPMM1_Set_Bus_Par.cnf /USER_ChangeCritical_Para = FALSE => FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)	STOP
32	LDBP	DMPMM1_Set_Bus_Par.cnf /USER_ChangeCritical_Para = TRUE => FSPMM1_Load_Bus_Para.cnf(+)	STOP
33	DELSC-OFF	DMPMM1_Delete_SC.cnf => FSPMM1_Delete_SC DP Master Cl1.cnf	OFFLINE
34	RDVAL-OFF	DMPMM1_Read_Value.cnf(Status,Value) => FSPMM1_Read_Value DP Master Cl1.cnf(Status, Value)	OFFLINE
35	STOP	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Offline => USER_SetMode_Offline:=TRUE	RESET
36	STOP	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Stop => FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)	STOP
37	STOP	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Operate => FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	STOP

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#	Current State	Event /Condition =>Action	Next State
38	STOP	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Clear => UGC_Count := 0 CGC_Count := 0 Bus_Acessible := True Go_AClr := Bus_Para.Error_Action_Flag Internal_Go_AClr := False Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) MSCY1M_Start_Slave_Handler.req(0 .. 125)	CLEAR
39	STOP	FSPMM1_Mark.req(AREP) => FSPMM1_Mark.cnf(-)(AREP, Status:=NO)	STOP
40	STOP	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	STOP
41	STOP	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /Bus_Para invalid => FSPMM1_Load_Bus_Par.cnf(-)(Status:=IV)	STOP
42	STOP	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /(Bus_Para valid) && (critical parameters unchanged) => DMPMM1_Set_Bus_Par.req(Bus_Para)	LDBP-ST-CPU
43	STOP	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /(Bus_Para valid) && (critical parameters changed) => Act_New_Bus_Para := Bus_Para User_ChangedCritical_Para := TRUE	RESET
44	STOP	FSPMM1_Delete_SC DP Master Cl1.req(Address) => DMPMM1_Delete_SC.req(Address)	DELSC-ST
45	STOP	FSPMM1_Read_Value DP Master Cl1.req(Variable) => DMPMM1_Read_Value.req(Variable)	RDVAL-ST
46	LDBP-ST-CPU	DMPMM1_Set_Bus_Par.cnf => FSPMM1_Load_Bus_Para.cnf(+)	STOP
47	DELSC-ST	DMPMM1_Delete_SC.cnf => FSPMM1_Delete_SC DP Master Cl1.cnf	STOP
48	RDVAL-ST	DMPMM1_Read_Value.cnf(Status,Value) => FSPMM1_Read_Value DP Master Cl1.cnf(Status, Value)	STOP
49	CLEAR	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Offline => FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	CLEAR
50	CLEAR	FSPMM1_Mark DP Master Cl1.req(AREP) /Mark_Active = 0 => Mark_Active := 1	CLEAR
51	CLEAR	FSPMM1_Mark DP Master Cl1.req(AREP) /Mark_Active <> 0 => FSPMM1_Mark.cnf(-)(AREP, Status:=NO)	CLEAR
52	CLEAR	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Stop && Mark_Active = 0 => Stop Dx_Control_Interval_Timer MSCY1M_Stop_Slave_Handler.req(0..125)	SLHSTP

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#	Current State	Event /Condition =>Action	Next State
53	CLEAR	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Stop && Mark_Active <> 0 => Mark_Active := 0 Stop Dx_Control_Interval_Timer FSPMM1_Mark.cnf(-)(AREP; Status:=NO) MSCY1M_Stop_Slave_Handler.req(0..125)	SLHSTP
54	CLEAR	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Clear => FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)	CLEAR
55	CLEAR	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Operate && Go_AClr = False && Internal_Go_AClr = False && CGC_Count > 0 => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2	SGC-CO-WGC
56	CLEAR	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Operate && Go_AClr = False && Internal_Go_AClr = False && CGC_Count = 0 => UGC_Count := UGC_Count+1 CGC_Count := UGC_Count Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2 DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=0, Group_Select:=0)	SGC-CO
57	CLEAR	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Operate && (Go_AClr = True || Internal_Go_AClr = True) => FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	CLEAR
58	CLEAR	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /NOT received all MSCY1M_Start_Slave_Handler.cnf => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	CLEAR
59	CLEAR	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /received all MSCY1M_Start_Slave_Handler.cnf && CGC_Count = 0 && UGC_Count >= Bus_Para.Max_User_Global_Control => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	CLEAR
60	CLEAR	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /received all MSCY1M_Start_Slave_Handler.cnf && CGC_Count = 0 && UGC_Count < Bus_Para.Max_User_Global_Control && (Isochronous Mode = Not Synchronized || Group_Select < 0x80) => UGC_Count := UGC_Count+1 DMPMM1_Global_Control.req(Rem_Add:=CREP.Rem_Add, Control_Command.1:=1, Group_Select)	CLEAR
61	CLEAR	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /received all MSCY1M_Start_Slave_Handler.cnf && CGC_Count > 0 && UGC_Count >= Bus_Para.Max_User_Global_Control+1 => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	CLEAR

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#	Current State	Event /Condition =>Action	Next State
62	CLEAR	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /received all MSCY1M_Start_Slave_Handler.cnf && CGC_Count > 0 && UGC_Count < Bus_Para.Max_User_Global_Control+1 && (Isochronous Mode = Not Synchronized || Group_Select < 0x80) => UGC_Count := UGC_Count+1 DMPMM1_Global_Control.req(Rem_Add:=CREP.Rem_Add, Control_Command.1:=1, Group_Select)	CLEAR
63	CLEAR	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 0 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	CLEAR
64	CLEAR	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := 0	CLEAR
65	CLEAR	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /received all MSCY1M_Start_Slave_Handler.cnf && CGC_Count = 0 && UGC_Count < Bus_Para.Max_User_Global_Control && Isochronous Mode = (Buffered Synchronized || Enhanced Synchronized) && Group_Select >= 0x80 => FSPMM1_Global_Control.cnf(-)(AREP, Status:=GE)	CLEAR
66	CLEAR	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /received all MSCY1M_Start_Slave_Handler.cnf && CGC_Count > 0 && UGC_Count < Bus_Para.Max_User_Global_Control+1 && Isochronous Mode = (Buffered Synchronized || Enhanced Synchronized) && Group_Select >= 0x80 => FSPMM1_Global_Control.cnf(-)(AREP, Status:=GE)	CLEAR
67	CLEAR	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count > 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := CGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	CLEAR
68	CLEAR	MSCY1M_Start_Slave_Handler.cnf(Rem_Add) /NOT received all MSCY1M_Start_Slave_Handler.cnf => ignore	CLEAR
69	CLEAR	MSCY1M_Start_Slave_Handler.cnf(Rem_Add) /received all MSCY1M_Start_Slave_Handler.cnf && Isochronous Mode = Not Synchronized => Internal_Go_AClr := False Start Min_SI_Interval_Timer(Bus_Para.Min_Slave_Interval) Set_Mode.cnf(Status:=OK, Bus_Accessible) MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=True)	CLEAR

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#	Current State	Event /Condition =>Action	Next State
70	CLEAR	MSCY1M_Start_Slave_Handler.cnf(Rem_Add) /received all MSCY1M_Start_Slave_Handler.cnf && Isochronous Mode <> Not Synchronized => Internal_Go_AClr := False Set_Mode.cnf(Status:=OK, Bus_Accessible) MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=True)	CLEAR
71	CLEAR	DMPMM1_SYNCH.ind => FSPMM1_DP Master Cl1 Fault.ind	RESET
72	CLEAR	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /NOT received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 2 => Diag_Active := Diag_Active OR Diag Internal_Go_AClr := Internal_Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr)	CLEAR
73	CLEAR	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /NOT received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active <> 2 => Internal_Go_AClr := Internal_Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr)	CLEAR
74	CLEAR	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 0 => Internal_Go_AClr := Internal_Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) DX_Lock := FALSE	CCLEAR
75	CLEAR	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 1 => Mark_Active:=2 Diag_Active := False Internal_Go_AClr := Internal_Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) DX_Lock := FALSE	CCLEAR
76	CLEAR	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 2 => Diag_Active := Diag_Active OR Diag Internal_Go_AClr := Internal_Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) Mark_Active:=0 DX_Lock := FALSE FSPMM1_Mark.cnf(+)(AREP, Dia:=Diag_Active)	CCLEAR
77	CLEAR	Dx_Control_Interval_Timer expired /CGC_Count = 0 => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) UGC_Count := UGC_Count+1 CGC_Count := UGC_Count DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=2, Group_Select:=0)	CLEAR
78	CLEAR	Dx_Control_Interval_Timer expired /CGC_Count > 0 => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_Accessible := False	CLEAR

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#	Current State	Event /Condition =>Action	Next State
79	CLEAR	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /Bus_Para invalid => FSPMM1_Load_Bus_Par.cnf(-)(Status:=IV)	CLEAR
80	CLEAR	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /(Bus_Para valid) && (critical parameters changed) => FSPMM1_Load_Bus_Par.cnf(-)(Status:=NO)	CLEAR
81	CLEAR	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /(Bus_Para valid) && (critical parameters unchanged) => DMPMM1_Set_Bus_Par.req(Bus_Para)	LDBP-CL-CPU
82	CLEAR	FSPMM1_Delete_SC DP Master Cl1.req(Address) => DMPMM1_Delete_SC.req(Address)	DELSC-CL
83	CLEAR	FSPMM1_Read_Value DP Master Cl1.req(Variable) => DMPMM1_Read_Value.req(Variable)	RDVAL-CL
84	SLHSTP	MSCY1M_Stop_Slave_Handler.cnf(Rem_Add) /NOT received all MSCY1M_Stop_Slave_Handler.cnf => ignore	SLHSTP
85	SLHSTP	MSCY1M_Stop_Slave_Handler.cnf(Rem_Add) /received all MSCY1M_Stop_Slave_Handler.cnf => Set_Mode.cnf(Status:=OK, Bus_Accessible)	STOP
86	SGC-CO-WGC	Dx_Control_Interval_Timer expired => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_Accessible := False FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	CLEAR
87	SGC-CO-WGC	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count > 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := CGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	SGC-CO-WGC
88	SGC-CO-WGC	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 1 => INDICATE_BUS_ACCESSIBILITY CGC_Count := UGC_Count DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=0, Group_Select:=0)	SGC-CO
89	SGC-CO	Dx_Control_Interval_Timer expired => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_Accessible := False Set_Mode.cnf(Status:=OK, Bus_Accessible)	OPERATE
90	SGC-CO	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count > 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := CGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	SGC-CO
91	SGC-CO	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := 0 FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)	OPERATE

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#	Current State	Event /Condition =>Action	Next State
92	CCLEAR	Min_SI_Interval_Timer expired => Go_AClr := Internal_Go_AClr Internal_Go_AClr := False Start Min_SI_Interval_Timer(Bus_Para.Min_Slave_Interval) MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=True)	CLEAR
93	CCLEAR	DMPMM1_SYNCH.ind => DX_Lock := TRUE Output_Data = Set_Output MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=False) MSCY1M_Set_Output.req(Rem_Add:=0..125, Slot_Number:=ALL, Output_Data) MSCY1M_Get_Input.req(Rem_Add:=0..125, Slot_Number:=ALL) FSPMM1_SYNCH.ind (AREP)	CLEAR
94	LDBP-CL-CPU	DMPMM1_Set_Bus_Par.cnf => FSPMM1_Load_Bus_Para.cnf(+)	CLEAR
95	DELSC-CL	DMPMM1_Delete_SC.cnf => FSPMM1_Delete_SC DP Master Cl1.cnf	CLEAR
96	RDVAL-CL	DMPMM1_Read_Value.cnf(Status,Value) => FSPMM1_Read_Value DP Master Cl1.cnf(Status, Value)	CLEAR
97	OPERATE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State <> Clear && USIF_State <> Operate => FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	OPERATE
98	OPERATE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Operate => FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)	OPERATE
99	OPERATE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Clear && CGC_Count > 0 => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2)	SGC-OC-WGC
100	OPERATE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Clear && CGC_Count = 0 => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2 UGC_Count := UGC_Count+1 CGC_Count := UGC_Count DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=2, Group_Select:=0)	SGC-OC
101	OPERATE	FSPMM1_Mark DP Master Cl1.req(AREP) /Mark_Active = 0 => Mark_Active := 1	OPERATE
102	OPERATE	FSPMM1_Mark DP Master Cl1.req(AREP) /Mark_Active <> 0 => FSPMM1_Mark.cnf(-)(AREP, Status:=NO)	OPERATE
103	OPERATE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /Control_Command.1 = 1 => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	OPERATE
104	OPERATE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /Control_Command.1 = 0 && CGC_Count = 0 && UGC_Count >= Bus_Para.Max_User_Global_Control => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	OPERATE

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#	Current State	Event /Condition =>Action	Next State
105	OPERATE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /Control_Command.1 = 0 && CGC_Count = 0 && UGC_Count < Bus_Para.Max_User_Global_Control && (Isochronous Mode = Not Synchronized || Group_Select < 0x80) => UGC_Count := UGC_Count+1 DMPMM1_Global_Control.req(Rem_Add:=CREP.Rem_Add, Control_Command.1:=0, Group_Select)	OPERATE
106	OPERATE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /Control_Command.1 = 0 && CGC_Count > 0 && UGC_Count >= Bus_Para.Max_User_Global_Control+1 => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	OPERATE
107	OPERATE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /Control_Command.1 = 0 && CGC_Count > 0 && UGC_Count < Bus_Para.Max_User_Global_Control+1 && (Isochronous Mode = Not Synchronized || Group_Select < 0x80) => UGC_Count := UGC_Count+1 DMPMM1_Global_Control.req(Rem_Add:=CREP.Rem_Add, Control_Command.1:=0, Group_Select)	OPERATE
108	OPERATE	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 0 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	OPERATE
109	OPERATE	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := 0	OPERATE
110	OPERATE	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count > 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := CGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	OPERATE
111	OPERATE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /Control_Command.1 = 0 && CGC_Count = 0 && UGC_Count < Bus_Para.Max_User_Global_Control && Isochronous Mode = (Buffered Synchronized || Enhanced Synchronized) && Group_Select >= 0x80 => FSPMM1_Global_Control.cnf(-)(AREP, Status:=GE)	OPERATE
112	OPERATE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /Control_Command.1 = 0 && CGC_Count > 0 && UGC_Count < Bus_Para.Max_User_Global_Control+1 && Isochronous Mode = (Buffered Synchronized || Enhanced Synchronized) && Group_Select >= 0x80 => FSPMM1_Global_Control.cnf(-)(AREP, Status:=GE)	OPERATE

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#	Current State	Event /Condition =>Action	Next State
113	OPERATE	DMPMM1_SYNCH.ind => FSPMM1_DP Master Cl1 Fault.ind	RESET
114	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /NOT received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 2 => Diag_Active:=Diag_Active OR Diag Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr)	OPERATE
115	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /NOT received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active <> 2 => Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr)	OPERATE
116	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 0 && (Isochronous Mode = Not Synchronized || Isochronous Mode = Enhanced Synchronized) => Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) DX_Lock := FALSE FSPMM1_DX_Finished.ind (AREP)	COPERATE
117	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 1 && (Isochronous Mode = Not Synchronized || Isochronous Mode = Enhanced Synchronized) => Mark_Active:=2 Diag_Active := False Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) DX_Lock := FALSE FSPMM1_DX_Finished.ind (AREP)	COPERATE
118	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 2 && (Isochronous Mode = Not Synchronized || Isochronous Mode = Enhanced Synchronized) => Diag_Active:=Diag_Active OR Diag Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) Mark_Active:=0 DX_Lock := FALSE FSPMM1_Mark.cnf(+)(AREP, Dia:=Diag_Active) DX_Finished.ind (AREP)	COPERATE
119	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 0 && Isochronous Mode = Buffered Synchronized => Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) DX_Lock := FALSE Chg_Bfr (Bfr_Get_Input, Get_Input) FSPMM1_DX_Finished.ind (AREP)	COPERATE

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#	Current State	Event /Condition =>Action	Next State
120	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 1 && Isochronous Mode = Buffered Synchronized => Mark_Active:=2 Diag_Active := False Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) DX_Lock := FALSE Chg_Bfr (Bfr_Get_Input, Get_Input) FSPMM1_DX_Finished.ind (AREP)	COPERATE
121	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 2 && Isochronous Mode = Buffered Synchronized => Diag_Active:=Diag_Active OR Diag Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) Mark_Active:=0 DX_Lock := FALSE FSPMM1_Mark.cnf(+)(AREP, Dia:=Diag_Active) DX_Finished.ind (AREP)	COPERATE
122	OPERATE	Dx_Control_Interval_Timer expired /CGC_Count = 0 => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) UGC_Count := UGC_Count+1 CGC_Count := UGC_Count DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=0, Group_Select:=0)	OPERATE
123	OPERATE	Dx_Control_Interval_Timer expired /CGC_Count > 0 => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_accessible := False	OPERATE
124	OPERATE	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /Bus_Para invalid => FSPMM1_Load_Bus_Par.cnf(-)(Status:=IV)	OPERATE
125	OPERATE	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /(Bus_Para valid) && (critical parameters changed) => FSPMM1_Load_Bus_Par.cnf(-)(Status:=NO)	OPERATE
126	OPERATE	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /(Bus_Para valid) && (critical parameters unchanged) => DMPMM1_Set_Bus_Par.req(Bus_Para)	LDBP-OP-CPU
127	OPERATE	FSPMM1_Delete_SC DP Master Cl1.req(Address) => DMPMM1_Delete_SC.req(Address)	DELSC-OP
128	OPERATE	FSPMM1_Read_Value DP Master Cl1.req(Variable) => DMPMM1_Read_Value.req(Variable)	RDVAL-OP
129	SGC-OC-WGC	Dx_Control_Interval_Timer expired /Go_AClr = False => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_Accessible := False FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	OPERATE
130	SGC-OC-WGC	Dx_Control_Interval_Timer expired /Go_AClr = True => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_Accessible := False	SGC-OC-WGC

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#	Current State	Event /Condition =>Action	Next State
131	SGC-OC-WGC	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count > 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := CGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	SGC-OC-WGC
132	SGC-OC-WGC	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 1 => INDICATE_BUS_ACCESSIBILITY CGC_Count := UGC_Count DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=2, Group_Select:=0)	SGC-OC
133	SGC-OC	Dx_Control_Interval_Timer expired /Go_AClr = False => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_Accessible := False Set_Mode.cnf(Status:=OK, Bus_Accessible)	CLEAR
134	SGC-OC	Dx_Control_Interval_Timer expired /Go_AClr = True => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_Accessible := False FSPMM1_DP Master Cl1 Mode_Changed.ind(AREP, USIF_State:=Clear) MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=True)	CLEAR
135	SGC-OC	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count > 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := CGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	SGC-OC
136	SGC-OC	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 1 && Go_AClr = False => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := 0 FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)	CLEAR
137	SGC-OC	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 1 && Go_AClr = True => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := 0 FSPMM1_DP Master Cl1 Mode_Changed.ind(AREP, USIF_State:=Clear) MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=True)	CLEAR
138	COPERATE	Min_Sl_Interval_Timer expired /Go_AClr = False => Start Min_Sl_Interval_Timer (Bus_Para.Min_Slave_Interval) MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=False)	OPERATE
139	COPERATE	Min_Sl_Interval_Timer expired /Go_AClr = True && CGC_Count > 0 => Start Dx_Control_Interval_Timer (Bus_Para.Data_Control_Time/2) Start Min_Sl_Interval_Timer (Bus_Para.Min_Slave_Interval)	SGC-OC-WGC

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#	Current State	Event /Condition =>Action	Next State
140	COPERATE	Min_SI_Interval_Timer expired /Go_AClr = True && CGC_Count = 0 => Start Dx_Control_Interval_Timer (Bus_Para.Data_Control_Time/2) UGC_Count := UGC_Count+1 CGC_Count := UGC_Count Start Min_SI_Interval_Timer (Bus_Para.Min_Slave_Interval) DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=2, Group_Select:=0)	SGC-OC
141	COPERATE	DMPMM1_SYNCH.ind /Go_AClr = False => DX_Lock := TRUE Output_Data = Set_Output MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=False) MSCY1M_Set_Output.req(Rem_Add:=0..125, Slot_Number:=ALL, Output_Data) MSCY1M_Get_Input.req(Rem_Add:=0..125, Slot_Number:=ALL) FSPMM1_SYNCH.ind (AREP)	COPERATE
142	COPERATE	DMPMM1_SYNCH.ind /Go_AClr = True && CGC_Count > 0 => Start Dx_Control_Interval_Timer (Bus_Para.Data_Control_Time/2) DX_Lock := TRUE Output_Data = Set_Output MSCY1M_Set_Output.req(Rem_Add:=0..125, Slot_Number:=ALL, Output_Data) MSCY1M_Get_Input.req(Rem_Add:=0..125, Slot_Number:=ALL) FSPMM1_SYNCH.ind (AREP)	COPERATE
143	COPERATE	DMPMM1_SYNCH.ind /Go_AClr = True && CGC_Count = 0 => Start Dx_Control_Interval_Timer (Bus_Para.Data_Control_Time/2) UGC_Count := UGC_Count+1 CGC_Count := UGC_Count DX_Lock := TRUE Output_Data = Set_Output DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=2, Group_Select:=0) MSCY1M_Set_Output.req(Rem_Add:=0..125, Slot_Number:=ALL, Output_Data) MSCY1M_Get_Input.req(Rem_Add:=0..125, Slot_Number:=ALL) FSPMM1_SYNCH.ind (AREP)	COPERATE
144	LDBP-OP-CPU	DMPMM1_Set_Bus_Par.cnf => FSPMM1_Load_Bus_Para.cnf(+)	OPERATE
145	DELSC-OP	DMPMM1_Delete_SC.cnf => FSPMM1_Delete_SC DP Master Cl1.cnf	OPERATE
146	RDVAL-OP	DMPMM1_Read_Value.cnf(Status,Value) => FSPMM1_Read_Value DP Master Cl1.cnf(Status, Value)	OPERATE
147	RESET	/spontanous => Act_Rem_Add := 0 MSCY1M_Reset.req(Act_Rem_Add)	RESET-MS0
148	RESET-MS0	MSCY1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add<125 => Act_Rem_Add := Act_Rem_Add+1 MSCY1M_Reset.req(Act_Rem_Add)	RESET-MS0

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#	Current State	Event /Condition =>Action	Next State
149	RESET-MS0	MSCY1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add=125 && IsARExistent(MS1)=TRUE => Act_Rem_Add := 0 MSAC1M_Reset.req(Act_Rem_Add)	RESET-MS1
150	RESET-MS0	MSCY1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add=125 && IsARExistent(MS1)=FALSE && && IsARExistent(MM1)=TRUE => MMAC1_Reset.req	RESET-MM1
151	RESET-MS0	MSCY1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add=125 && IsARExistent(MS1)=FALSE && && IsARExistent(MM1)=FALSE => DMPMM1_Reset.req	RESET-DMPM
152	RESET-MS1	MSAC1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add=125 => Act_Rem_Add := 0 MSAL1M_Reset.req(Act_Rem_Add)	RESET-MS1
153	RESET-MS1	MSAL1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add<125 => Act_Rem_Add := Act_Rem_Add + 1 MSAL1M_Reset.req(Act_Rem_Add)	RESET-MS1
154	RESET-MS1	MSAL1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add = 125 && IsARExistent(MM1)=TRUE => MMAC1_Reset.req	RESET-MM1
155	RESET-MS1	MSAL1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add = 125 && IsARExistent(MM1)=FALSE => DMPMM1_Reset.req	RESET-DMPM
156	RESET-MM1	MMAC1_Reset.cnf => DMPMM1_Reset.req	RESET-DMPM
157	RESET-DMPM	DMPMM1_Reset.cnf /USER_SetMode_Offline = TRUE || USER_ChangedCritical_Para = TRUE	INIT-DMPM

158	RESET-DMPM	DMPMM1_Reset.cnf
		/USER_SetMode_Offline = FALSE && USER_ChangedCritical_Para = FALSE
		=>
		if(USER_sched_Reset = TRUE)
		  FSPMM1_Reset DP Master Cl1.cnf
		endif
			POWER-ON

159	t state	FSPMM1_Abort DP Master Cl1.req(AREP) /AREP.AR_Type=MS0 => Current Extended Function Num[CREP]:=No_Service LR_State[CREP]:=W-LR-REQ MSCY1M_Abort.req(Rem_Add:=CREP.Rem_Add)	SAME
160	t state	FSPMM1_Abort DP Master Cl1.req(AREP) /AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=No_Service LR_State[CREP]:=W-LR-REQ MSAC1M_Abort.req(Rem_Add:=CREP.Rem_Add)	SAME
161	t state	FSPMM1_Abort DP Master Cl1.req(AREP) /AREP.AR_Type=MM1 => MMAC1_Abort.req(Rem_Add:=CREP.Rem_Add)	SAME

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#	Current State	Event /Condition =>Action	Next State
162	t state	FSPMM1_Get_Slave_Diag.req(AREP, CREP) /AREP.AR_Type=MS0 => MSCY1M_Get_Slave_Diag.req(CREP.Rem_Add)	SAME
163	t state	MSCY1M_Get_Slave_Diag.cnf(+)(Rem_Add, Diag_Data) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Get_Slave_Diag.cnf(+)(AREP, CREP, Diag_Data)	SAME
164	t state	MSCY1M_Get_Slave_Diag.cnf(-)(Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Get_Slave_Diag.cnf(-)(AREP, CREP)	SAME
165	t state	MSCY1M_Set_Output.cnf(+)(Rem_Add, Slot_Number) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = (Not Synchronized || Enhanced Synchronized) => FSPMM1_Set_Output.cnf(+)(AREP, CREP, Slot_Number)	SAME
166	t state	MSCY1M_Set_Output.cnf(-)(Rem_Add, Slot_Number) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = (Not Synchronized || Enhanced Synchronized) => Status := SC FSPMM1_Set_Output.cnf(-)(AREP, CREP, Slot_Number, Status)	SAME
167	t state	MSCY1M_Get_Input.cnf(+)(Rem_Add, Slot_Number, Input_Data) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = (Not Synchronized || Enhanced Synchronized) => FSPMM1_Get_Input.cnf(+)(AREP, CREP, Slot_Number, Input_Data)	SAME
168	t state	MSCY1M_Get_Input.cnf(-)(Rem_Add, Slot_Number) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = (Not Synchronized || Enhanced Synchronized) => Status := SC FSPMM1_Get_Input.cnf(-)(AREP, CREP, Slot_Number, Status)	SAME
169	t state	FSPMM1_Read.req(AREP, Slot_Number, Index, Length) /AREP.AR_Type=MS1 => MSAC1M_Read.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length)	SAME
170	t state	MSAC1M_Read.cnf(+)(Rem_Add, Length, Data) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Read.cnf(+)(AREP, Length, Data)	SAME
171	t state	MSAC1M_Read.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Read.cnf(-)(AREP, Rem_Add, Error_Decode, Error_Code_1, Error_Code_2)	SAME
172	t state	FSPMM1_Write.req(AREP, Slot_Number, Index, Length, Data) /AREP.AR_Type=MS1 => MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data)	SAME
173	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Write.cnf(+)(AREP, Length)	SAME
174	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Write.cnf(-)(AREP, Rem_Add, Error_Decode, Error_Code_1, Error_Code_2)	SAME

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#	Current State	Event /Condition =>Action	Next State
175	t state	FSPMM1_Alarm_Ack.req(AREP, Slot_Number, Alarm_Type, Seq_Nr) /AREP.AR_Type=MS1 => MSAL1M_Alarm_Ack.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Alarm_Type, Seq_Nr)	SAME
176	t state	MSAL1M_Alarm_Ack.cnf(+)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Alarm_Ack.cnf(+)(AREP, Slot_Number, Alarm_Type,Seq_Nr)	SAME
177	t state	MSAL1M_Alarm_Ack.cnf(-)(Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Alarm_Ack.cnf(-)(AREP, Slot Number, Alarm Type,Seq Nr)	SAME
178	t state	FSPMM1_Get_Master_Diag.rsp(+)(AREP, Diagnosis_Data) /AREP.AR_Type=MM1 => MMAC1_Get_Master_Diag.rsp(Status:=OK, Diagnosis_Data)	SAME
179	t state	FSPMM1_Get_Master_Diag.rsp(-)(AREP, Status) /AREP.AR_Type=MM1 => MMAC1_Get_Master_Diag.rsp(Status)	SAME
180	t state	MMAC1_Get_Master_Diag.ind(Identifier) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Get_Master_Diag.ind(AREP, Mdiag_Identifier:=Identifier)	SAME
181	t state	FSPMM1_Start_Seq.rsp(+)(AREP, Max_Len_Data_Unit) /AREP.AR_Type=MM1 => MMAC1_Start_Seq.rsp(Status:=OK, Max_Length_Data_Unit)	SAME
182	t state	FSPMM1_Start_Seq.rsp(-)(AREP, Status) /AREP.AR_Type=MM1 => MMAC1_Start_Seq.rsp(Status)	SAME
183	t state	MMAC1_Start_Seq.ind(Req_Add, Area_Code, Timeout) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Start_Seq.ind(AREP, Area_Code, Timeout)	SAME
184	t state	FSPMM1_Download.rsp(+)(AREP) /AREP.AR_Type=MM1 => MMAC1_Download.rsp(Status:=OK)	SAME
185	t state	FSPMM1_Download.rsp(-)(AREP, Status) /AREP.AR_Type=MM1 => MMAC1_Download.rsp(Status)	SAME
186	t state	MMAC1_Download.ind(Req_Add, Area_Code, Address_Offset, Data) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Download.ind(AREP, Area_Code, Add_Offset, Data)	SAME
187	t state	FSPMM1_Upload.rsp(+)(AREP, Data) /AREP.AR_Type=MM1 => MMAC1_Upload.rsp(Status:=OK, Data)	SAME
188	t state	FSPMM1_Upload.rsp(-)(AREP, Status) /AREP.AR_Type=MM1 => MMAC1_Upload.rsp(Status)	SAME

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#	Current State	Event /Condition =>Action	Next State
189	t state	MMAC1_Upload.ind(Req_Add, Area_Code, Address_Offset, Data_Length) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Upload.ind(AREP, Area_Code, Add_Offset, Data_Len:=Data_Length)	SAME
190	t state	FSPMM1_End_Seq.rsp(+)(AREP) /AREP.AR_Type=MM1 => MMAC1_End_Seq.rsp(Status:=OK)	SAME
191	t state	FSPMM1_End_Seq.rsp(-)(AREP, Status) /AREP.AR_Type=MM1 => MMAC1_End_Seq.rsp(Status)	SAME
192	t state	MMAC1_End_Seq.ind(Req_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_End_Seq.ind(AREP)	SAME
193	t state	FSPMM1_Act_Param.rsp(+)(AREP) /AREP.AR_Type=MM1 => MMAC1_Act_Param.rsp(Status:=OK)	SAME
194	t state	FSPMM1_Act_Param.rsp(-)(AREP, Status) /AREP.AR_Type=MM1 => MMAC1_Act_Param.rsp(Status)	SAME
195	t state	MMAC1_Act_Param.ind(Area_Code, Activate) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Act_Param.ind(AREP, Area_Code, Activate)	SAME
196	t state	MMAC1_Act_Para_Brct.ind(Area_Code) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Act_Para_Brct.ind(AREP, Area_Code)	SAME
197	t state	MSAC1M_Reject.ind(Rem_Add, Status) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_DP Master Cl1 Reject.ind(AREP, Reason:=Status)	SAME
198	t state	MSAL1M_Started.ind(Rem_Add, Alarm_Limit) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_DP Master Cl1 Started.ind(AREP, Alarm_Limit)	SAME
199	t state	MSAL1M_Stopped.ind(Rem_Add) /SetContext(Rem_Add, Service)=TRUE => Current Extended Function Num[CREP]:=No_Service LR_State[CREP]:=W-LR-REQ FSPMM1_DP Master Cl1 Stopped.ind(AREP)	SAME
200	t state	MSAL1M_Alarm_Notification.ind(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr, Alarm_Specifier, Add_Ack, Alarm_Data) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Alarm_Notification.ind(AREP, Alarm_Type, Slot_Number, Seq_Nr, Alarm_Specifier, Add_Ack, Alarm_Data)	SAME
201	t state	MSCY1M_New_Slave_Diag.ind(Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_New_Slave_Diag.ind(AREP, CREP)	SAME
202	t state	MSCY1M_New_Input.ind(Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_New_Input.ind(AREP, CREP)	SAME

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#	Current State	Event /Condition =>Action	Next State
203	t state	FSPMM1_Set_Output.req(AREP, CREP, Slot_Number, Output_Data, Final) /AREP.AR_Type=MS0 && (DX_Lock || Chg_Buffer) => Status := SE FSPMM1_Set_Output.cnf(-)(AREP, CREP, Slot_Number, Status)	SAME
204	t state	FSPMM1_Get_Input.req(AREP, CREP, Slot_Number) /AREP.AR_Type=MS0 && (DX_Lock || Chg_Buffer) => Status := SE FSPMM1_Get_Input.cnf(-)(AREP, CREP, Slot_Number, Status)	SAME
205	t state	FSPMM1_Set_Output.req(AREP, CREP, Slot_Number, Output_Data, Final) /AREP.AR_Type=MS0 && !DX_Lock && !Chg_Buffer && Isochronous Mode <> Buffered Synchronized => MSCY1M_Set_Output.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Output_Data)	SAME
206	t state	FSPMM1_Get_Input.req(AREP, CREP, Slot_Number) /AREP.AR_Type=MS0 && !DX_Lock && !Chg_Buffer && Isochronous Mode <> Buffered Synchronized => MSCY1M_Get_Input.req(Rem_Add:=CREP.Rem_Add, Slot_Number)	SAME
207	t state	FSPMM1_Set_Output.req(AREP, CREP, Slot_Number, Output_Data, Final) /AREP.AR_Type=MS0 && !DX_Lock && !Chg_Buffer && Isochronous Mode = Buffered Synchronized => Bfr_Set_Output := Output_Data Chg_Buffer := Final FSPMM1_Set_Output.cnf(+)(AREP, CREP, Slot_Number)	SAME
208	t state	FSPMM1_Get_Input.req(AREP, CREP, Slot_Number) /AREP.AR_Type=MS0 && !DX_Lock && !Chg_Buffer && Isochronous Mode = Buffered Synchronized => Input_Data := Bfr_Get_Input FSPMM1_Get_Input.cnf(+)(AREP, CREP, Slot_Number, Input_Data)	SAME
209	t state	MSCY1M_Set_Output.cnf(+)(Rem_Add, Slot_Number) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = Buffered Synchronized =>	SAME
210	t state	MSCY1M_Set_Output.cnf(-)(Rem_Add, Slot_Number) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = Buffered Synchronized => Set_Output = Nil	SAME
211	t state	MSCY1M_Get_Input.cnf(+)(Rem_Add, Slot_Number, Input_Data) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = Buffered Synchronized && NOT received all MSCY1M_Get_Input.cnf => Get_Input = Input_Data	SAME
212	t state	MSCY1M_Get_Input.cnf(+)(Rem_Add, Slot_Number, Input_Data) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = Buffered Synchronized&& NOT received all MSCY1M_Get_Input.cnf => Chg_Buffer := FALSE Get_Input = Input_Data	SAME
213	t state	MSCY1M_Get_Input.cnf(-)(Rem_Add, Slot_Number) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = Buffered Synchronized => Get_Input = Nil	SAME

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#	Current State	Event /Condition =>Action	Next State
214	ANY-STATE	DMPMM1_Event.ind(Event, Add_Info) => FSPMM1_DP Master Cl1 Event.ind(Event, Add_Info)	SAME
215	ANY-STATE	DMPMM1_SYNCH_Delayed.ind (TSH) => FSPMM1_SYNCH_Delayed.ind (AREP, TSH)	SAME
216	ANY-STATE	DMPMM1_Fault.ind => USER_sched_Reset := False FSPMM1_DP Master Cl1 Fault.ind	RESET
217	ANY-STATE	MSCY1M_Fault.ind => USER_sched_Reset := False FSPMM1_DP Master Cl1 Fault.ind	RESET
218	ANY-STATE	MSAL1M_Fault.ind => USER_sched_Reset := False FSPMM1_DP Master Cl1 Fault.ind	RESET
219	ANY-STATE	MSAC1M_Fault.ind => USER_sched_Reset := False FSPMM1_DP Master Cl1 Fault.ind	RESET
220	ANY-STATE	MMAC1_Fault.ind => USER_sched_Reset := False FSPMM1_DP Master Cl1 Fault.ind	RESET
221	ANY-STATE	FSPMM1_Reset DP Master Cl1.req => USER_sched_Reset := True	RESET
222	ANY-STATE	DMPMM1_SYCL_Time_Event.cnf (Send Delay Time, Status) => FSPMM1_SYCL_Time_Event.cnf (AREP, Send Delay Time, Status)	SAME
223	ANY-STATE	FSPMM1_SYCL_Time_Event.req (AREP) => DMPMM1_SYCL_Time_Event.req	SAME
224	ANY-STATE	FSPMM1_SYCL_Clock_Value.req (AREP, Clock Value Time Event, Clock Value previous TE, Clock Value Status) => DMPMM1_SYCL_Clock_Value.req (Clock Value Time Event, Clock Value previous TE, Clock Value Status)	SAME
225	ANY-STATE	DMPMM1_SYCL_Clock_Value.cnf (Status) => FSPMM1_SYCL_Clock_Value.cnf (AREP, Status)	SAME
226	ANY-STATE	DMPMM1_SYCL_Clock_Value.ind (Clock Value Time Event, Clock Value previous TE, Clock Value Status, Receive Delay Time, Src add Clk msg) => FSPMM1_SYCL_Clock_Value.ind (AREP, Clock Value Time Event, Clock Value previous TE, Clock Value Status, Receive Delay Time, Src add Clk msg)	SAME

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#	Current State	Event /Condition =>Action	Next State
227	t state	FSPMM1_Initiate_Load.req (AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request Timeout, User Specific) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Initiate_Load Current Slot Number[CREP]:=Slot Number Index:=255 Length:=10+sizeof(User Specific) Data.w.IL.Extended_Function_Num:=Initiate_Load Data.w.IL.LR_Index:=LR Index Data.w.IL.Load_Type:=Load Type Data.w.IL.Load_Image_Size:=Load Image Size Data.w.IL.User_Specific:=User Specific Data.w.IL.Intersegment_Request_Timeout:=Intersegment Request Timeout MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
228	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Initiate_Load => Slot_Number:=Current Slot Number[CREP] Index:=255 Length:=10 MSAC1M_Read.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length) LR_State[CREP]:=W-LR-CNF	SAME
229	t state	MSAC1M_Read.cnf(+)(Rem_Add, Length, Data) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Initiate_Load => Current Extended Function Num[CREP]=No_Service Actual LR Size:=Data.r.IL.Actual_LR_Size Max Response Delay:=Data.r.IL.Max_Response_Delay Max Segment Length:=Data.r.IL.Max_Segment_Length User Specific:=Data.r.IL.User_Specific FSPMM1_Initiate_Load.cnf(+) (AREP, Actual LR Size, Max Response Delay, Max Segment Length, User Specific) LR_State[CREP]:=W-LR-REQ	SAME
230	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Initiate_Load => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Initiate_Load.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
231	t state	FSPMM1_Pull_Segment.req (AREP, Slot Number, LR Index, Segment Length) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Pull Current LR Index[CREP]:=LR Index Index:=255 Length:=Segment Length MSAC1M_Read.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length) LR_State[CREP]:=W-LR-CNF	SAME

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#	Current State	Event /Condition =>Action	Next State
232	t state	MSAC1M_Read.cnf(+)(Rem_Add, Length, Data) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Pull => Current Extended Function Num[CREP]=No_Service Segment Number:=Data.PULL.Sequence Number More Follows:=Data.PULL.Options.More Follows Data:=Data.PULL.Region Data Segment Length:=Length-6 FSPMM1_Pull_Segment.cnf(+) (AREP, Segment Length, Segment Number, More Follows, Data) LR_State[CREP]:=W-LR-REQ	SAME
233	t state	MSAC1M_Read.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Pull => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Pull_Segment.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
234	t state	FSPMM1_Push_Segment.req (AREP, Slot Number, LR Index, Segment Length, Segment Number, More Follows, Data) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Push Current Slot Number[CREP]:=Slot Number Index:=255 Length:=6+Segment Length Data.PUSH.Extended_Function_Num:=Push Data.PUSH.LR_Index:=LR Index Data.PUSH.Segment_Number:=Segment Number Data.PUSH.Option.More_Follows:=More Follows Data.PUSH.Data:=Data MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
235	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Push => Current Extended Function Num[CREP]=No_Service Segment Number:=Data.PUSH.Sequence Number More Follows:=Data.PUSH.Options.More Follows Data:=Data.PUSH.Region Data Segment Length:=Length-6 FSPMM1_Push_Segment.cnf(+) (AREP) LR_State[CREP]:=W-LR-REQ	SAME
236	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Push => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Push_Segment.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME

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#	Current State	Event /Condition =>Action	Next State
237	t state	FSPMM1_Terminate_Load.req (AREP, Slot Number, LR Index) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Terminate_Load Current Slot Number[CREP]:=Slot Number Index:=255 Length:=6 Data.TL.Extended_Function_Num:=Terminate_Load Data.TL.LR_Index:=LR Index MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
238	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Terminate_Load => Current Extended Function Num[CREP]=No_Service FSPMM1_Terminate_Load.cnf(+) (AREP) LR_State[CREP]:=W-LR-REQ	SAME
239	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Terminate_Load => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Terminate_Load.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
240	t state	FSPMM1_Call.req (AREP, Slot Number, Entity Number, FI Index, Execution Argument) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Call Current Slot Number[CREP]:=Slot Number Index:=255 Length:=4+sizeof(Execution Argument) Data.w.CALL.Extended_Function_Num:=Call Data.w.CALL. Entity_Number:= Entity_Number Data.w.CALL.FI_Index:=FI Index Data.w.CALL.Execution_Argument:=Execution Argument MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
241	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Call => Slot_Number:=Current Slot Number[CREP] Index:=255 Length:=CREP.Max_PDU_Length MSAC1M_Read.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length) LR_State[CREP]:=W-LR-CNF	SAME
242	t state	MSAC1M_Read.cnf(+)(Rem_Add, Length, Data) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Call => Current Extended Function Num[CREP]=No_Service Result Argument:=Data.r.CALL.Result_Argument FSPMM1_Call.cnf(+) (AREP, Result Argument) LR_State[CREP]:=W-LR-REQ	SAME

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#	Current State	Event /Condition =>Action	Next State
243	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Call => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Call.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
244	t state	FSPMM1_Start.req (AREP, Slot Number, FI Index, Execution Argument) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Start Current Slot Number[CREP]:=Slot Number Index:=255 Length:=4+sizeof(Execution Argument) Data.FIS.Extended_Function_Num:=Start Data.FIS.FI_Index:=FI Index Data.FIS.Execution_Argument:=Execution Argument MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
245	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Start => Current Extended Function Num[CREP]=No_Service FSPMM1_Start.cnf(+) (AREP) LR_State[CREP]:=W-LR-REQ	SAME
246	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Start => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Start.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
247	t state	FSPMM1_Stop.req (AREP, Slot Number, FI Index) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Stop Current Slot Number[CREP]:=Slot Number Index:=255 Length:=4 Data.FIS.Extended_Function_Num:=Stop Data.FIS.FI_Index:=FI Index MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
248	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Stop => Current Extended Function Num[CREP]=No_Service FSPMM1_Stop.cnf(+) (AREP) LR_State[CREP]:=W-LR-REQ	SAME

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#	Current State	Event /Condition =>Action	Next State
249	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Stop => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Stop.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
250	t state	FSPMM1_Resume.req (AREP, Slot Number, FI Index, Execution Argument) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Resume Current Slot Number[CREP]:=Slot Number Index:=255 Length:=4+sizeof(Execution Argument) Data.FIS.Extended_Function_Num:=Resume Data.FIS.FI_Index:=FI Index Data.FIS.Execution_Argument:=Execution Argument MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
251	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Resume => Current Extended Function Num[CREP]=No_Service FSPMM1_Resume.cnf(+) (AREP) LR_State[CREP]:=W-LR-REQ	SAME
252	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Resume => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Resume.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
253	t state	FSPMM1_Reset.req (AREP, Slot Number, FI Index) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Reset Current Slot Number[CREP]:=Slot Number Index:=255 Length:=4 Data.FIS.Extended_Function_Num:=Reset Data.FIS.FI_Index:=FI Index MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
254	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Reset => Current Extended Function Num[CREP]=No_Service FSPMM1_Reset.cnf(+) (AREP) LR_State[CREP]:=W-LR-REQ	SAME

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#	Current State	Event /Condition =>Action	Next State
255	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Reset => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Reset.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
256	t state	FSPMM1_Get_FI_State.req (AREP, Slot Number, FI Index) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Get_State Current Slot Number[CREP]:=Slot Number Index:=255 Length:=4 Data.w.STATE.Extended_Function_Num:=Get_State Data.w.STATE.FI_Index:=FI Index MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
257	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Get_State => Slot_Number:=Current Slot Number[CREP] Index:=255 Length:=5 MSAC1M_Read.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length) LR_State[CREP]:=W-LR-CNF	SAME
258	t state	MSAC1M_Read.cnf(+)(Rem_Add, Length, Data) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Get_State => Current Extended Function Num[CREP]=No_Service FI State:=Data.r.STATE.State FSPMM1_Get_FI_State.cnf (+) (AREP, FI State) LR_State[CREP]:=W-LR-REQ	SAME
259	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Get_State => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Get_State.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME

8.2.4 Functions

Table 49 contains the functions used by the FSPMM1, their arguments and their descriptions.

Table 49 – Functions used by the FSPMM1

Function name	Description
SetContext (Rem_Add, Service-Id)	This function checks if there exist an entry for the inputs Rem_Add resp. Res_SAP and Service in the ARL and related CRL of the DP-master (Class 1). A) If there exists an entry then it returns TRUE and sets the local context according to the current CREP and AREP. B) Otherwise it returns FALSE.

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Function name	Description
IsARexistent (AR)	This function checks if there exist an entry with ARtype=AR.
Chg_Bfr(Buffer1, Buffer 2)	This function exchanges Buffer 1 and Buffer 2.

8.3 FSPMM2

8.3.1 Primitive definitions

8.3.1.1 Primitives exchanged between AP-Context and FSPMM2

Table 50 shows the service primitives including their associated parameters issued by the AP-Context and received by the FSPMM2.

Table 50 – Primitives issued by AP-Context to FSPMM2

Primitive name	Source	Associated parameters	Functions
Init DP master Cl2.req	AP-Context	Bus Para	Refer to FAL Service Definition in IEC 61158-5-3 and in IEC 61158-3-3
Reset DP master Cl2.req	AP-Context	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Abort.req	AP-Context	AREP Subnet, Instance, Reason Code	
Read Slave Diag.req	AP-Context	AREP	
Read Output.req	AP-Context	AREP	
Read Input.req	AP-Context	AREP	
Get Cfg.req	AP-Context	AREP	
Set Slave Add.req	AP-Context	AREP, New Slave Add, Ident Number, No Add Chg, Rem Slave Data	
Initiate.req	AP-Context	AREP, Send Timeout, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	
Read.req	AP-Context	AREP, Slot Number, Index, Length	
Write.req	AP-Context	AREP, Slot Number, Index, Length, Data	
Data Transport.req	AP-Context	AREP, Slot Number, Index, Length, Data	
Get Master Diag.req	AP-Context	AREP, MDiag Identifier	
Start Seq.req	AP-Context	AREP, Area Code, Timeout	

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Primitive name	Source	Associated parameters	Functions
Download.req	AP-Context	AREP, Area Code, Add Offset, Data	
Upload.req	AP-Context	AREP, Area Code, Add Offset, Data Len	
End Seq.req	AP-Context	AREP	
Act Param.req	AP-Context	AREP, Area Code, Activate	
Act Para Brct.req	AP-Context	AREP, Area Code	
Load ARL DP master Cl2.req	AP-Context	List of ARL Entries	
Get ARL DP master Cl2.req	AP-Context	(none)	
Load CRL DP master Cl2.req	AP-Context	List of CRL Entries	
Get CRL DP master Cl2.req	AP-Context	(none)	
Initiate Load.req	AP-Context	AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request, Timeout	
Pull Segment.req	AP-Context	AREP, Slot Number, LR Index, Segment Length	
Push Segment.req	AP-Context	AREP, Slot Number LR Index, Segment Length Segment Number, More Follows, Data	
Terminate Load.req	AP-Context	AREP Slot Number LR Index	
Start.req	AP-Context	AREP Slot Number FI Index Execution Argument	
Stop.req	AP-Context	AREP Slot Number FI Index	
Resume.req	AP-Context	AREP Slot Number FI Index Execution Argument	
Reset.req	AP-Context	AREP Slot Number FI Index	
Call.req	FSPMS	AREP Slot Number Entity Number FI Index Execution Argument	

Table 51 shows the service primitives including their associated parameters issued by the AP-Context and received by the FSPMS.

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Table 51 – Primitives issued by FSPMM2 to AP-Context

Primitive name	Source	Associated parameters	Functions
Init DP master Cl2.cnf	FSPMM2	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Reset.cnf	FSPMM2	(none)	
Read Slave Diag.cnf(+)	FSPMM2	AREP, Diag Data	
Read Slave Diag.cnf(-)	FSPMM2	AREP, Status	
Get Cfg.cnf(+)	FSPMM2	AREP, Cfg Data	
Get Cfg.cnf(-)	FSPMM2	AREP, Status	
Read Output.cnf(+)	FSPMM2	AREP, Output Data	
Read Output.cnf(-)	FSPMM2	AREP, Status	
Read Input.cnf(+)	FSPMM2	AREP, Input Data	
Read Input.cnf(-)	FSPMM2	AREP, Status	
Set Slave Add.cnf(+)	FSPMM2	AREP	
Set Slave Add.cnf(-)	FSPMM2	AREP, Status	
Initiate.cnf(+)	FSPMM2	AREP, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	
Initiate.cnf(-)	FSPMM2	AREP, Error Decode, Error Code 1 Error Code 2	
Read.cnf(+)	FSPMM2	AREP, Length, Data	
Read.cnf(-)	FSPMM2	AREP, Error Decode, Error Code 1 Error Code 2	
Write.cnf(+)	FSPMM2	AREP, Length	
Write.cnf(-)	FSPMM2	AREP, Error Decode, Error Code 1 Error Code 2	
Data Transport.cnf(+)	FSPMM2	AREP, Length, Data	
Data Transport.cnf(-)	FSPMM2	AREP, Error Decode, Error Code 1 Error Code 2	
Get Master Diag.cnf(+)	FSPMM2	AREP, Diagnosis Data	
Get Master Diag.cnf(-)	FSPMM2	AREP, Status	

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Primitive name	Source	Associated parameters	Functions
Start Seq.cnf(+)	FSPMM2	AREP, Max Len Data Unit	
Start Seq.cnf(-)	FSPMM2	AREP, Status	
Download.cnf(+)	FSPMM2	AREP	
Download.cnf(-)	FSPMM2	AREP, Status	
Upload.cnf(+)	FSPMM2	AREP, Data	
Upload.cnf(-)	FSPMM2	AREP, Status	
End Seq.cnf(+)	FSPMM2	AREP	
End Seq.cnf(-)	FSPMM2	AREP, Status	
Act Param.cnf(+)	FSPMM2	AREP	
Act Param.cnf(-)	FSPMM2	AREP, Status	
Act Para Brct.cnf(+)	FSPMM2	AREP	
Act Para Brct.cnf(-)	FSPMM2	AREP, Status	
Event.ind	FSPMM2	Event, Add Info	
DP master Cl2 Reject.ind	FSPMM2	AREP, Reason	
Abort.ind	FSPMM2	AREP, Locally Generated, Subnet, Instance, Reason_Code, Additional_Detail	
DP master Cl2 Fault.ind	FSPMM2	(none)	
Load ARL DP master Cl2.cnf(+)	FSPMM2	(none)	
Load ARL DP master Cl2.cnf(-)	FSPMM2	Status	
Get ARL DP master Cl2.cnf(+)	FSPMM2	List of ARL Entries	
Get ARL DP master Cl2.cnf(-)	FSPMM2	Status	
Load CRL DP master Cl2.cnf(+)	FSPMM2	(none)	
Load CRL DP master Cl2.cnf(-)	FSPMM2	Status	
Get CRL DP master Cl2.cnf(+)	FSPMM2	List of CRL Entries	
Get CRL DP master Cl2.cnf(-)	FSPMM2	Status	
Initiate Load.cnf(+)	FSPMM2	AREP, Actual LR Size, Max Response Delay, Max Segment Length	
Initiate Load.cnf(-)	FSPMM2	AREP, Error Code	
Pull Segment.cnf(+)	FSPMM2	AREP, Segment Length, Segment Number, More Follows, Data	
Pull Segment.cnf(-)	FSPMM2	AREP, Error Code	
Push Segment.cnf(+)	FSPMM2	AREP	

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Primitive name	Source	Associated parameters	Functions
Push Segment.cnf(-)	FSPMM2	AREP, Error Code	
Terminate Load.cnf(+)	FSPMM2	AREP	
Terminate Load.cnf(-)	FSPMM2	AREP, Error Code	
Start.cnf(+)	FSPMM2	AREP	
Start.cnf(-)	FSPMM2	AREP Error Code Function Invocation State	
Stop.cnf(+)	FSPMM2	AREP	
Stop.cnf(-)	FSPMM2	AREP Error Code Function Invocation State	
Resume.cnf(+)	FSPMM2	AREP	
Resume.cnf(-)	FSPMM2	AREP Error Code Function Invocation State	
Reset.cnf(+)	FSPMM2	AREP	
Reset.cnf(-)	FSPMM2	AREP Error Code	
Call.cnf(+)	FSPMM2	AREP Result Argument	
Call.cnf(-)	FSPMM2	AREP Result Argument Error Code	

8.3.1.2 Parameters of FSPMM2 primitives

The parameters used with the primitives exchanged between the FSPMM2 and the AP-Context are described in FAL Service Definition in IEC 61158-5-3.

8.3.2 State machine description

This Machine is used to co-ordinate the Interactions between AP-Context and DMPMM1, MSCY1M, MSAC1M, MSAL1M and MMAC1. As the support of several State Machines for the communication with individual slave as well as timing constraints of the operation of slave require a consistent scheduling, this task is accomplished by FSPMM1 as well.

Local Variables

LR_State
(Array of Unsigned8)

This variable stores the state of the Load Region sequence of the corresponding AREP.

CurrentExtendedFunctionNum
(Array of Unsigned 8)

This variable stores the extended function number of the currently processed LR service of the corresponding AREP.

CurrentSlotNumber
(Array of Unsigned8)

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This variable stores the slot number of the currently processed LR service of the corresponding AREP.

8.3.3 FSPMM2 state table

Table 52 contains the complete description of the FSPMM2 state machine.

Table 52 – FSPMM2 state table

#	Current state	Event / condition => action	Next state
1	POWER-ON	Load ARL DP master Cl2.req (List of ARL Entries) /valid parameters => Load ARL DP master Cl2.cnf(+)	POWER-ON
2	POWER-ON	Load ARL DP master Cl2.req (List of ARL Entries) /invalid parameters => Status := NO Load ARL DP master Cl2.cnf(-) (Status)	POWER-ON
3	POWER-ON	Get ARL DP master Cl2.req /ARL loaded => Get ARL DP master Cl2.cnf(+) (List of ARL Entries)	POWER-ON
4	POWER-ON	Get ARL DP master Cl2.req /ARL not loaded => Status := NO Get ARL DP master Cl2.cnf(-) (Status)	POWER-ON
5	POWER-ON	Load CRL DP master Cl2.req (List of CRL Entries) /valid parameters => Load CRL DP master Cl2.cnf(+)	POWER-ON
6	POWER-ON	Load CRL DP master Cl2.req (List of CRL Entries) /invalid parameters => Status := NO Load CRL DP master Cl2.cnf(-) (Status)	POWER-ON
7	POWER-ON	Get CRL DP master Cl2.req /CRL loaded => Get CRL DP master Cl2.cnf(+) (List of CRL Entries)	POWER-ON
8	POWER-ON	Get CRL DP master Cl2.req /CRL not loaded => Status := NO Get CRL DP master Cl2.cnf(-) (Status)	POWER-ON
9	PON	FSPMM2_Init DP master Cl2 .req(Bus_Para) => StoreNumberIssuedMInit() Current Extended Function Num[AREP]=No_Service LR_State[AREP]:=W-LR-REQ DMPMM2_Minit_DLL.req(Bus_Para) MMAC_MInit_MM.req MSAC2M_MInit_MS2.req(First_MS2_AREP ..Last_MS2_AREP)	INIT-DLM
10	INIT-DLM	DMPMM2_Minit_DLL.cnf => ignore	INIT-DLM
11	INIT-DLM	MMAC2_MInit_MM.cnf => ignore	INIT-DLM

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#	Current state	Event / condition => action	Next state
12	INIT-DLM	MSAC2M_MInit_MS2.cnf (CREP) /IsLastWaitingMInit()=FALSE => ignore	INIT-DLM
13	INIT-DLM	MSAC2M_MInit_MS2.cnf (CREP) /IsLastWaitingMInit()=TRUE => FSPMM2_Init DP master Cl2 .cnf	RUN
14	RUN	Any FSPMM2.req /wrong AREP.AR_Type => ignore	RUN
15	RUN	Any MMAC1.cnf /SetContext(Rem_add, Service) = FALSE => ignore	RUN
16	RUN	Any MSAC2M.req /SetContext(CREP, Service) = FALSE => ignore	RUN
17	RUN	Any DMPMM2.req /SetContext(Rem_add, Service) = FALSE => ignore	RUN
18	RUN	FSPMM2_Abort.req(AREP, Subnet, Instance, Reason_Code) /AREP.AR_Type = MS0 => DMPMM2_Abort.req	RUN
19	RUN	FSPMM2_Abort.req(AREP, Subnet, Instance, Reason_Code) /AREP.AR_Type = MM1 => MMAC2_Abort.req	RUN
20	RUN	FSPMM2_Abort.req(AREP, Subnet, Instance, Reason_Code) /AREP.AR_Type = MS2 => Current Extended Function Num[AREP]=No_Service LR_State[AREP]:=W-LR-REQ MSAC2M_Abort.req(CREP, Subnet, Instance, Reason_Code)	RUN
21	RUN	MSAC2M_Abort.ind(CREP, Locally_Generated, Subnet, Instance, Reason_Code, Abort_Detail) /SetContext(CREP, Service) = TRUE => Current Extended Function Num[AREP]=No_Service LR_State[AREP]:=W-LR-REQ FSPMM2_Abort.ind(AREP, Locally Generated, Subnet, Instance, Reason Code, Additional Detail)	RUN
22	RUN	DMPMM2_Event.ind(Event, Add_info) => FSPMM2_Event.ind(Event=Event/Fault, Add_Info=Add_info)	RUN
23	RUN	FSPMM2_Read_Slave_Diag.req(AREP) /AREP.AR_Type = MS0 => DMPMM2_Read_Slave_Diag.req(CREP.Rem_Add)	RUN
24	RUN	DMPMM2_Read_Slave_Diag.cnf(+)(Rem_Add, Diag_Data) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Read_Slave_Diag.cnf(+)(AREP, Diag_Data)	RUN
25	RUN	DMPMM2_Read_Slave_Diag.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Read_Slave_Diag.cnf(-)(AREP, Status=Status)	RUN

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#	Current state	Event / condition => action	Next state
26	RUN	FSPMM2_Get_Cfg.req(AREP) /AREP.AR_Type = MS0 => DMPMM2_Get_Cfg.req(CREP.Rem_Add)	RUN
27	RUN	DMPMM2_Get_Cfg.cnf(+)(Rem_Add, Cfg_Data) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Get_Cfg.cnf(+)(AREP, Cfg_Data)	RUN
28	RUN	DMPMM2_Get_Cfg.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Get_Cfg.cnf(-)(AREP, Status)	RUN
29	RUN	FSPMM2_Read_Input.req(AREP) /AREP.AR_Type = MS0 => DMPMM2_Read_Input.req(CREP.Rem_Add)	RUN
30	RUN	DMPMM2_Read_Input.cnf(+)(Rem_Add, Inp_Data) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Read_Input.cnf(+)(AREP, Inp_Data)	RUN
31	RUN	DMPMM2_Read_Input.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Read_Input.cnf(-)(AREP, Status)	RUN
32	RUN	FSPMM2_Read_Output.req(AREP) /AREP.AR_Type = MS0 => DMPMM2_Read_Output.req(CREP.Rem_Add)	RUN
33	RUN	DMPMM2_Read_Output.cnf(+)(Rem_Add, Outp_Data) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Read_Output.cnf(+)(AREP, Outp_Data)	RUN
34	RUN	DMPMM2_Read_Output.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Read_Output.cnf(-)(AREP, Status)	RUN
35	RUN	FSPMM2_Set_Slave_Add.req(AREP, New_Slave_Add, Ident_Number, No_Add_Chg, Rem_Slave_Data) /AREP.AR_Type = MS0 => DMPMM2_Set_Slave_Add.req(CREP.Rem_Add, New_Slave_Add, Ident_Number, No_Add_Chg, Rem_Slave_Data)	RUN
36	RUN	DMPMM2_Set_Slave_Add.cnf(+)(Rem_Add) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Set_Slave_Add.cnf(+)(AREP)	RUN
37	RUN	DMPMM2_Set_Slave_Add.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Set_Slave_Add.cnf(-)(AREP, Status=Status)	RUN
38	RUN	Any DMPMM2.req /SetContext(Rem_add, Service) = FALSE => ignore	RUN
39	RUN	FSPMM2_Initiate.req(AREP, Send Timeout, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param) /AREP.AR_Type = MS2 => MSAC2M_Initiate.req(CREP, Send Timeout, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param)	RUN

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#	Current state	Event / condition => action	Next state
40	RUN	MSAC2M_Initiate.cnf(+)(CREP, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param) /SetContext(CREP, Service) = TRUE => FSPMM2_Initiate.cnf(+)(AREP, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param)	RUN
41	RUN	MSAC2M_Initiate.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /SetContext(CREP, Service) = TRUE => FSPMM2_Initiate.cnf(-)(AREP, Error Decode, Error Code 1, Error Code 2)	RUN
42	RUN	FSPMM2_Read.req(AREP, Slot Number, Index, Length) /AREP.AR_Type = MS2 => MSAC2M_Read.req(CREP, Slot Number, Index, Length)	RUN
43	RUN	MSAC2M_Read.cnf(+)(CREP, Length, Data) /SetContext(CREP, Service) = TRUE => FSPMM2_Read.cnf(+)(AREP, Length, Data)	RUN
44	RUN	MSAC2M_Read.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /SetContext(CREP, Service) = TRUE => FSPMM2_Read.cnf(-)(AREP, Error Decode, Error Code 1, Error Code 2)	RUN
45	RUN	FSPMM2_Write.req(AREP, Slot Number, Index, Length, Data) /AREP.AR_Type = MS2 => MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data)	RUN
46	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /SetContext(CREP, Service) = TRUE => FSPMM2_Write.cnf(+)(AREP, Length)	RUN
47	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /SetContext(CREP, Service) = TRUE => FSPMM2_Write.cnf(-)(AREP, Error Decode, Error Code 1, Error Code 2)	RUN
48	RUN	FSPMM2_Data_Transport.req(AREP, Slot Number, Index, Length, Data) /AREP.AR_Type = MS2 => MSAC2M_Data_Transport.req(CREP, Slot Number, Index, Length, Data)	RUN
49	RUN	MSAC2M_Data_Transport.cnf(+)(CREP, Length, Data) /SetContext(CREP, Service) = TRUE => FSPMM2_Data_Transport.cnf(+)(AREP, Length, Data)	RUN
50	RUN	MSAC2M_Data_Transport.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /SetContext(CREP, Service) = TRUE => FSPMM2_Data_Transport.cnf(-)(AREP, Error Decode, Error Code 1, Error Code 2)	RUN
51	RUN	MSAC2M_Closed.ind(CREP) /SetContext(CREP, Service) = TRUE => FSPMM2 DP master Cl2 _Closed.ind(AREP)	RUN
52	RUN	MMAC2_Reject.ind(Rem_Add, Reason_Code) /SetContext(Rem_add, Service) = TRUE => FSPMM2 DP master Cl2 _Reject.ind(AREP, Reason)	RUN
53	RUN	FSPMM2_Get_Master_Diag.req(AREP, MDiag Identifier) /AREP.AR_Type = MM1 => MMAC2_Get_Master_Diag.req(AREP, MDiag Identifier)	RUN

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#	Current state	Event / condition => action	Next state
54	RUN	MMAC2_Get_Master_Diag.cnf(+)(Rem_Add, Diagnosis Data) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Get_Master_Diag.cnf(+)(AREP, Diagnosis Data)	RUN
55	RUN	MMAC2_Get_Master_Diag.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Get_Master_Diag.cnf(-)(AREP, Status)	RUN
56	RUN	FSPMM2_Start_Seq.req(AREP, Area Code, Timeout) /AREP.AR_Type = MM1 => MMAC2_Start_Seq.req(AREP, Area Code, Timeout)	RUN
57	RUN	MMAC2_Start_Seq.cnf(+)(Rem_Add, Max Len Data Unit) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Start_Seq.cnf(+)(AREP, Max Len Data Unit)	RUN
58	RUN	MMAC2_Start_Seq.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Start_Seq.cnf(-)(AREP, Status)	RUN
59	RUN	FSPMM2_End_Seq.req(AREP) /AREP.AR_Type = MM1 => MMAC2_End_Seq.req(AREP)	RUN
60	RUN	MMAC2_End_Seq.cnf(+)(Rem_Add) /SetContext(Rem_add, Service) = TRUE => FSPMM2_End_Seq.cnf(+)(AREP)	RUN
61	RUN	MMAC2_End_Seq.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_End_Seq.cnf(-)(AREP, Status)	RUN
62	RUN	FSPMM2_Download.req(AREP, Area Code, Add Offset, Data) /AREP.AR_Type = MM1 => MMAC2_Download.req(AREP, Area Code, Add Offset, Data)	RUN
63	RUN	MMAC2_Download.cnf(+)(Rem_Add) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Download.cnf(+)(AREP)	RUN
64	RUN	MMAC2_Download.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Download.cnf(-)(AREP, Status)	RUN
65	RUN	FSPMM2_Upload.req(AREP, Area Code, Add Offset, Data Len) /AREP.AR_Type = MM1 => MMAC2_Upload.req(AREP, Area Code, Add Offset, Data Len)	RUN
66	RUN	MMAC2_Upload.cnf(+)(Rem_Add, Data) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Upload.cnf(+)(AREP, Data)	RUN
67	RUN	MMAC2_Upload.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Upload.cnf(-)(AREP, Status)	RUN
68	RUN	FSPMM2_Act_Param.req(AREP, Area Code, Activate) /AREP.AR_Type = MM1 => MMAC2_Act_Param.req(AREP, Area Code, Activate)	RUN

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#	Current state	Event / condition => action	Next state
69	RUN	MMAC2_Act_Param.cnf(+)(Rem_Add) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Act_Param.cnf(+)(AREP)	RUN
70	RUN	MMAC2_Act_Param.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Act_Param.cnf(-)(AREP, Status)	RUN
71	RUN	FSPMM2_Act_Param_Brct.req(AREP, Area Code) /AREP.AR_Type = MM2 => MMAC2_Act_Param_Brct.req(AREP, Area Code, Activate)	RUN
72	RUN	MMAC2_Act_Param_Brct.cnf(+)(Rem_Add) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Act_Param_Brct.cnf(+)(AREP)	RUN
73	RUN	MMAC2_Act_Param_Brct.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Act_Param_Brct.cnf(-)(AREP, Status)	RUN
74	any state	DMPMM2_SYCL_Time_Event.cnf (Send Delay Time, Status) => FSPMM2_SYCL_Time_Event.cnf (AREP, Send Delay Time, Status)	SAME
75	any state	FSPMM2_SYCL_Time_Event.req (AREP) => DMPMM2_SYCL_Time_Event.req	SAME
76	any state	FSPMM2_SYCL_Clock_Value.req (AREP, Clock Value Time Event, Clock Value previous TE, Clock Value Status) => DMPMM2_SYCL_Clock_Value.req (Clock Value Time Event, Clock Value previous TE, Clock Value Status)	SAME
77	any state	DMPMM2_SYCL_Clock_Value.cnf (Status) => FSPMM2_SYCL_Clock_Value.cnf (AREP, Status)	SAME
78	any state	DMPMM2_SYCL_Clock_Value.ind (Clock Value Time Event, Clock Value previous TE, Clock Value Status, Receive Delay Time, Src add Clk msg) => FSPMM2_SYCL_Clock_Value.ind (AREP, Clock Value Time Event, Clock Value previous TE, Clock Value Status, Receive Delay Time, Src add Clk msg)	SAME
79	any state	FSPMM2_Reset DP master Cl2 .req => StoreNumberIssuedResets() FSPMM2_UserReset = TRUE DMPMM2_Reset.req MMAC2_Reset.req MSAC2M_Reset.req(First_MS2_AREP ..Last_MS2_AREP)	WAIT-RESET
80	any state	DMPMM2_Fault.ind => StoreNumberIssuedResets() FSPMM2_UserReset = FALSE DMPMM2_Reset.req MMAC2_Reset.req MSAC2M_Reset.req(First_MS2_AREP ..Last_MS2_AREP) FSPMM2 DP master Cl2 Fault.ind	WAIT-RESET
81	any state	MMAC2_Fault.ind => StoreNumberIssuedResets() FSPMM2_UserReset = FALSE DMPMM2_Reset.req MMAC2_Reset.req MSAC2M_Reset.req(First_MS2_AREP ..Last_MS2_AREP) FSPMM2 DP master Cl2 Fault.ind	WAIT-RESET

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#	Current state	Event / condition => action	Next state
82	WAIT-RESET	DMPMM2_Reset.cnf => no action	WAIT-RESET
83	WAIT-RESET	MMAC2_Reset.cnf => no action	WAIT-RESET
84	WAIT-RESET	MSAC2M_Reset.cnf (CREP) /IsLastWaitingReset()=FALSE => no action	WAIT-RESET
85	WAIT-RESET	MSAC2M_Reset.cnf (CREP) /IsLastWaitingReset()=TRUE AND FSPMM2_UserReset = TRUE => FSPMM2_Reset DP master Cl2 .cnf	PON
86	WAIT-RESET	MSAC2M_Reset.cnf (CREP) /IsLastWaitingReset()=TRUE AND FSPMM2_UserReset = FALSE => no action	PON
87	RUN	FSPMM2_Initiate_Load.req (AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request Timeout, User Specific) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Initiate_Load Current Slot Number[AREP]:=Slot Number Index:=255 Length:=10+sizeof(User Specific) Data.w.IL.Extended_Function_Num:=Initiate_Load Data.w.IL.LR_Index:=LR Index Data.w.IL.Load_Type:=Load Type Data.w.IL.Load_Image_Size:=Load Image Size Data.w.IL.User_Specific:=User Specific Data.w.IL.Intersegment_Request_Timeout:=Intersegment Request Timeout MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
88	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Initiate_Load => Slot_Number:=Current Slot Number[AREP] Index:=255 Length:=10 MSAC2M_Read.req(CREP, Slot Number, Index, Length) LR_State[AREP]:=W-LR-CNF	RUN
89	RUN	MSAC2M_Read.cnf(+)(CREP, Length, Data) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Initiate_Load => Current Extended Function Num[AREP]=No_Service Actual LR Size:=Data.r.IL.Actual_LR_Size Max Response Delay:=Data.r.IL.Max_Response_Delay Max Segment Length:=Data.r.IL.Max_Segment_Length User Specific:=Data.r.IL.User_Specific FSPMM2_Initiate_Load.cnf(+) (AREP, Actual LR Size, Max Response Delay, Max Segment Length, User Specific) LR_State[AREP]:=W-LR-REQ	RUN

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#	Current state	Event / condition => action	Next state
90	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Initiate_Load => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Initiate_Load.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN
91	RUN	FSPMM2_Pull_Segment.req (AREP, Slot Number, LR Index, Segment Length) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Pull Current LR Index[AREP]:=LR Index Index:=255 Length:=Segment Length MSAC2M_Read.req(CREP, Slot Number, Index, Length) LR_State[AREP]:=W-LR-CNF	RUN
92	RUN	MSAC2M_Read.cnf(+)(CREP, Length, Data) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Pull => Current Extended Function Num[AREP]=No_Service Segment Number:=Data.PULL.Sequence Number More Follows:=Data.PULL.Options.More Follows Data:=Data.PULL.Region Data Segment Length:=Length-6 FSPMM2_Pull_Segment.cnf(+) (AREP, Segment Length, Segment Number, More Follows, Data) LR_State[AREP]:=W-LR-REQ	RUN
93	RUN	MSAC2M_Read.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(Service, Service)=TRUE && Current Extended Function Num[AREP]=Pull => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Pull_Segment.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN
94	RUN	FSPMM2_Push_Segment.req (AREP, Slot Number, LR Index, Segment Length, Segment Number, More Follows, Data) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Push Current Slot Number[AREP]:=Slot Number Index:=255 Length:=6+Segment Length Data.PUSH.Extended_Function_Num:=Push Data.PUSH.LR_Index:=LR Index Data.PUSH.Segment_Number:=Segment Number Data.PUSH.Option.More_Follows:=More Follows Data.PUSH.Data:=Data MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
95	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Push => Current Extended Function Num[AREP]=No_Service Segment Number:=Data.PUSH.Sequence Number More Follows:=Data.PUSH.Options.More Follows Data:=Data.PUSH.Region Data Segment Length:=Length-6 FSPMM2_Push_Segment.cnf(+) (AREP) LR_State[AREP]:=W-LR-REQ	RUN

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#	Current state	Event / condition => action	Next state
96	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Push => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Push_Segment.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN
97	RUN	FSPMM2_Terminate_Load.req (AREP, Slot Number, LR Index) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Terminate_Load Current Slot Number[AREP]:=Slot Number Index:=255 Length:=6 Data.TL.Extended_Function_Num:=Terminate_Load Data.TL.LR_Index:=LR Index MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
98	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Terminate_Load => Current Extended Function Num[AREP]=No_Service FSPMM2_Terminate_Load.cnf(+) (AREP) LR_State[AREP]:=W-LR-REQ	RUN
99	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Terminate_Load => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Terminate_Load.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN
100	RUN	FSPMM2_Call.req (AREP, Slot Number, Entity Number, FI Index, Execution Argument) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Call Current Slot Number[AREP]:=Slot Number Index:=255 Length:=4+sizeof(Execution Argument) Data.w.CALL.Extended_Function_Num:=Call Data.w.CALL. Entity_Number:= Entity_Number Data.w.CALL.FI_Index:=FI Index Data.w.CALL.Execution_Argument:=Execution Argument MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
101	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Call => Slot_Number:=Current Slot Number[AREP] Index:=255 Length:=AREP.Max_PDU_Length MSAC2M_Read.req(CREP, Slot Number, Index, Length) LR_State[AREP]:=W-LR-CNF	RUN

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#	Current state	Event / condition => action	Next state
102	RUN	MSAC2M_Read.cnf(+)(CREP, Length, Data) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Call => Current Extended Function Num[AREP]=No_Service Result Argument:=Data.r.CALL.Result_Argument FSPMM2_Call.cnf(+) (AREP, Result Argument) LR_State[AREP]:=W-LR-REQ	RUN
103	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Call => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Call.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN
104	RUN	FSPMM2_Start.req (AREP, Slot Number, FI Index, Execution Argument) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Start Current Slot Number[AREP]:=Slot Number Index:=255 Length:=4+sizeof(Execution Argument) Data.FIS.Extended_Function_Num:=Start Data.FIS.FI_Index:=FI Index Data.FIS.Execution_Argument:=Execution Argument MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
105	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Start => Current Extended Function Num[AREP]=No_Service FSPMM2_Start.cnf(+) (AREP) LR_State[AREP]:=W-LR-REQ	RUN
106	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Start => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Start.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN
107	RUN	FSPMM2_Stop.req (AREP, Slot Number, FI Index) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Stop Current Slot Number[AREP]:=Slot Number Index:=255 Length:=4 Data.FIS.Extended_Function_Num:=Stop Data.FIS.FI_Index:=FI Index MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
108	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Stop => Current Extended Function Num[AREP]=No_Service FSPMM2_Stop.cnf(+) (AREP) LR_State[AREP]:=W-LR-REQ	RUN

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#	Current state	Event / condition => action	Next state
109	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Stop => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Stop.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN
110	RUN	FSPMM2_Resume.req (AREP, Slot Number, FI Index, Execution Argument) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Resume Current Slot Number[AREP]:=Slot Number Index:=255 Length:=4+sizeof(Execution Argument) Data.FIS.Extended_Function_Num:=Resume Data.FIS.FI_Index:=FI Index Data.FIS.Execution_Argument:=Execution Argument MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
111	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Resume => Current Extended Function Num[AREP]=No_Service FSPMM2_Resume.cnf(+) (AREP) LR_State[AREP]:=W-LR-REQ	RUN
112	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Resume => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Resume.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN
113	RUN	FSPMM2_Reset.req (AREP, Slot Number, FI Index) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Reset Current Slot Number[AREP]:=Slot Number Index:=255 Length:=4 Data.FIS.Extended_Function_Num:=Reset Data.FIS.FI_Index:=FI Index MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
114	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Reset => Current Extended Function Num[AREP]=No_Service FSPMM2_Reset.cnf(+) (AREP) LR_State[AREP]:=W-LR-REQ	RUN
115	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Reset => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Reset.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN

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#	Current state	Event / condition => action	Next state
116	RUN	FSPMM2_Get_FI_State.req (AREP, Slot Number, FI Index) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Get_State Current Slot Number[AREP]:=Slot Number Index:=255 Length:=4 Data.w.STATE.Extended_Function_Num:=Get_State Data.w.STATE.FI_Index:=FI Index MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
117	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Get_State => Slot_Number:=Current Slot Number[AREP] Index:=255 Length:=5 MSAC2M_Read.req(CREP, Slot Number, Index, Length) LR_State[AREP]:=W-LR-CNF	RUN
118	RUN	MSAC2M_Read.cnf(+)(CREP, Length, Data) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Get_State => Current Extended Function Num[AREP]=No_Service FI State:=Data.r.STATE.State FSPMM2_Get_FI_State.cnf (+) (AREP, FI State) LR_State[AREP]:=W-LR-REQ	RUN
119	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Get_State => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Get_State.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN

8.3.4 Functions

Table 53 contains the functions used by the FSPMM2, their arguments and their descriptions.

Table 53 – Functions used by the FSPMM2

Function name	Description
SetContext(Rem_Add/CREP, Service)	This function checks if there exist an entry for the inputs Rem_Add/CREP and Service in the ARL and related CRL of the DP-master (Class 2). A) If there exists an entry then it returns TRUE and sets the local context according to the current CREP and AREP. B) Otherwise it returns FALSE.
IsLastWaitingReset()	This function returns TRUE if all Reset service confirmation are received otherwise it returns FALSE.
StoreNumberIssuedResets()	This function checks stores the number of issued Reset service request in a local variable.
IsLastWaitingMInit()	This function returns TRUE if all MInit service confirmation are received otherwise it returns FALSE.
StoreNumberIssuedMInit()	This function checks stores the number of issued MInit service request in a local variable.

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9 Application relationship protocol machines (ARPMs)

9.1 MSCY1S

9.1.1 Primitive definitions

9.1.1.1 Primitives exchanged between MSCY1S and FSPMS

Table 54 shows the service primitives including their associated parameters issued by FSPMS and received by the MSCY1S.

Table 54 – Primitives issued by FSPMS to MSCY1S

Primitive name	Source	Associated parameters	Functions
SInit MS0.req	FSPMS	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Reset.req	FSPMS	(none)	
Abort.req	FSPMS	(none)	
Application Ready.req	FSPMS	(none)	
Check User Prm Result.req	FSPMS	Prm_OK	
Check Ext User Prm Result.req	FSPMS	Ext_Prm_OK	
Check Cfg Result.req	FSPMS	Cfg_OK, Input Data Len, Output Data Len	
Set Cfg.req	FSPMS	Cfg Data	
Set Slave Diag.req	FSPMS	Ext Diag Flag, Ext Diag Overflow, Ext Diag Data	
Set Input.req	FSPMS	Input Data	
Get Output.req	FSPMS	(none)	

Table 55 shows the service primitives including their associated parameters issued by MSCY1S and received by the FSPMS.

Table 55 – Primitives issued by MSCY1S to FSPMS

Primitive name	Source	Associated parameters	Functions
SInit MS0.cnf	MSCY1S	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Reset.cnf	MSCY1S	(none)	
Check User Prm Result.cnf(+)	MSCY1S	(none)	
Check User Prm Result.cnf(-)	MSCY1S	Status	
Check Ext User Prm Result.cnf(+)	MSCY1S	(none)	
Check Ext User Prm Result.cnf(-)	MSCY1S	Status	
Check Cfg Result.cnf(+)	MSCY1S	(none)	
Check Cfg Result.cnf(-)	MSCY1S	Status	
Set Cfg.cnf(+)	MSCY1S	(none)	
Set Cfg.cnf(-)	MSCY1S	(none)	
Set Slave Diag.cnf(+)	MSCY1S	(none)	

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Primitive name	Source	Associated parameters	Functions
Set Slave Diag.cnf(-)	MSCY1S	(none)	
Set Input.cnf(+)	MSCY1S	(none)	
Set Input.cnf(-)	MSCY1S	(none)	
Get Output.cnf(+)	MSCY1S	Output Data, Clear Flag, New Flag	
Get Output.cnf(-)	MSCY1S	(none)	
Start.ind	MSCY1S	Actual Enabled Alarms, Alarm Sequence, Alarm Limit	
Stop.ind	MSCY1S	(none)	
Fault.ind	MSCY1S	(none)	
Set Slave Add.ind	MSCY1S	New Slave Add, Ident Number, No Add Chg, Rem Slave Data	
Check User Prm.ind	MSCY1S	User Prm Data	
Check Ext User Prm.ind	MSCY1S	Ext User Prm Data	
Check Cfg.ind	MSCY1S	Check Cfg Mode, Cfg Data	
New Output.ind	MSCY1S	Clear Flag	
SYNCH Event.ind	MSCY1S	Status	
Global Control.ind	MSCY1S	Clear Command, Sync Command, Freeze Command, Group Select	

9.1.1.2 Parameters of MSCY1S primitives

The parameters used with the primitives exchanged between the FSPMS and the MSCY1S are described in FAL Service Definition in IEC 61158-5-3.

9.1.2 State machine description

The MSCY1S State Machine handles the following services issued by the DP-master (Class 1):

diagnostic,

parameterisation,

configuration,

(cyclic) data exchange.

The MSCY1S State Machine starts (Start.req/cnf) and stops (Stop.req/cnf) the MSAC1S State Machine that handles acyclic services. The MSAC1S State Machine sends an Abort.ind to the MSCY1S State Machine that closes also the cyclic connection. The MSCY1S State Machine informs the FSPMS that the MSAC1S and the MSCY1S have been started (Start.ind) or stopped (Stop.ind).

If a Slave does not implement the parameterization structures DPV1_Status 1-3, the MSAL1S and MSAC1S State Machines, the following macros should be left empty. In this case the variable Operation_Mode remains in state V0:

PV0V0 shall return TRUE

OPERATION_MODE_OK shall return TRUE

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NOPRMCMD shall return TRUE

ISO_MODE_OK shall return TRUE

STOP_ISOM

STOP_ASM

CHECK_ALARM_START

SET_OPERATION_MODE

SET_ALARM_CHKCFGM

EXE_PRM_CMD

START_C1

STOP_C1

START_C1_CON

STOP_C1_CON

Rules for checking parameterization data

The rules according to Table 56 shall be used to check the octets DPV1_Status_1 to DPV1_Status_3 from the Set_Prm-REQ-PDU with local capabilities of the DP-slave.

Table 56 – Rules for DPV1_Status_1, DPV1_Status_2 and DPV1_Status_3 check

Bit(s) in Set_Prm-REQ-PDU	Rules for checking	
Reserved bits in field DPV1_Status_1 (Bit 0, Bit 1, Bit 3, Bit 4)	These bits shall not be checked (don't care). => okay for any combination	
Bit WD_Base_1ms in field DPV1_Status_1	= FALSE(0): => okay	= TRUE (1) & WD_Base_1ms_supp = 1: => okay = TRUE (1) & WD_Base_1ms_supp = 0: => okay, but the DP-slave shall load its local WD-Timer with a corrected value (based on the next possible value with 10 ms base)
Bit Publisher_Enable in field DPV1_Status_1	= FALSE(0): => okay	= TRUE(1) & Publisher_supp = 1: => okay = TRUE(1) & Publisher_supp = 0: => Prm_Fault
Bit Fail_Safe in field DPV1_Status_1	= FALSE(0) & Fail_Safe_required = 1: => Prm_Fault = FALSE(0) & Fail_Safe_required = 0: => okay	= TRUE(1) & Fail_Safe_supp = 1: => okay = TRUE(1) & Fail_Safe_supp = 0: => Prm_Fault
Bit DPV1_Enable in field DPV1_Status_1	= FALSE(0) & C1_Read_Write_required=0: => okay = FALSE(0) & C1_Read_Write_required=1: => Prm_Fault	= TRUE(1) & C1_Read_Write_supp = 0: => Prm_Fault = TRUE(1) & C1_Read_Write_supp = 1: => okay, open MS1 application relationship
Bit Check_Cfg_Mode in field DPV1_Status_2	= 0 (strict check) : => okay The application process has to check the data of the following Chk_Cfg-REQ-PDU in a strict way (equality).	= 1 (more flexible check): => okay; The application process has to check the data of the following Chk_Cfg-REQ-PDU in a more flexible way (compatibility).
Reserved Bit 1 in field DPV1_Status_2	= 0: => okay	= 1: => Prm_Fault

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Bit(s) in Set_Prm-REQ-PDU	Rules for checking	
Enable_xx_Alarm Bits in field DPV1_Status_2	= FALSE(0) & xx_Alarm_required = 1 & DPV1_Status_1.DPV1_Enable = FALSE (0): => Prm_Fault = FALSE(0) & xx_Alarm_required = 0 & DPV1_Status_1.DPV1_Enable = FALSE (0): => okay = FALSE(0) & xx_Alarm_required = 1 & DPV1_Status_1.DPV1_Enable = TRUE (1): => Prm_Fault = FALSE(0) & xx_Alarm_required = 0 & DPV1_Status_1.DPV1_Enable = TRUE (1): => okay	=TRUE(1) & DPV1_Status_1.DPV1_Enable = FALSE(0): => Prm_Fault =TRUE(1) & DPV1_Status_1.DPV1_Enable = TRUE (1): => okay
Bits Alarm_Mode in field DPV1_Status_3	0 => okay	<>0 & Alarm_Sequence_Mode_count<>0: => okay <>0 & Alarm_Sequence_Mode_count=0: => Prm_Fault
Bit Prm_Structure in field DPV1_Status_3	= FALSE(0) & Prm_Structure_required=FALSE: =>okay = FALSE(0) & Prm_Structure_required=TRUE: => Prm_Fault	= TRUE(1) & Prm_Structure_supp=TRUE: =>okay = TRUE(1) & Prm_Structure_supp=FALSE: => Prm_Fault
Bit IsoM_Req in field DPV1_Status_3	= FALSE(0) & Isochronous_Mode_required=FALSE: =>okay = FALSE(0) & Isochronous_Mode_required=TRUE: => Prm_Fault	= TRUE(1) & (Isochronous_Mode_supp = TRUE & DPV1_Status_1.Fail_Safe = TRUE & Group_Ident< 0x80 & Freeze_Req=0 & Sync_Req=0): => okay TRUE(1) & !(Isochronous_Mode_supp = TRUE & DPV1_Status_1.Fail_Safe = TRUE & Group_Ident< 0x80 & Freeze_Req=0 & Sync_Req=0): => Prm-Fault
Bit PrmCmd in field DPV1_Status_3	= FALSE(0) & PrmCmd_required=FALSE: =>okay = FALSE(0) & PrmCmd_required=TRUE: => Prm_Fault	= TRUE(1) & (PrmCmd_supp = TRUE): => okay TRUE(1) & (PrmCmd_supp = FALSE): => Prm-Fault
Reserved-Bits (Bit 5 and Bit 6) in field DPV1_Status_3	= 0: => okay	1: => Prm_Fault
NOTE The table above gives a comprehensive overview on all checks that belong to the parameter. However, some of them may also checked on other places within the state machine.		

Isochronous behaviour

Devices that support isochronous operation shall set the concerning AR attributes according to the configuration. The block for isochronous parameters belong to the application and are part of user data within the Set_Prm-REQ-PDU or Set_Ext_Prm-REQ-PDU. The DP-master sets the DP-slave into isochronous operation by setting the IsoM_Req-Bit TRUE. When the MSCY1S receives the Set_Prm-REQ-PDU it has to check the following condition:

If(Isochronous Mode = TRUE) then Failsafe shall be set and any Group shall not be set concerning the Set_Prm-REQ-PDU otherwise the DP-slaves shall generate a Prm_Fault and shall leave the Data Exchange state. DP-slaves that do not support isochronous operation may be integrated in an isochronous working system by selecting “Group_8” for only this DP-slaves and using Sync and Freeze commands.

If the condition above is fulfilled the DP-slave operates isochronous. Additionally to normal cyclic data exchange the MSCY1S generates a SYNCH Event.ind with Status “IsoM Start” with receiving the first Global_Control-REQ-PDU, “IsoM SYNCH” with subsequent

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Global_Control-REQ-PDU's, and "IsoM Stop" when receiving Global_Control-REQ-PDU with Control Command "Clear" or leaving the data exchange cycle. This service triggers the PLL of the application process.The right access with Get Input and Set Output from the application point of view is monitored with the help of the PLL.

Redundancy behaviour

Devices that support Slave redundancy shall support the PrmCmd. This allows a DP-master (Class 1) to use a DP-slave as Primary or Backup. Additionally the DP-master (Class 1) can stop and start MS1 after a swichover of the DP-master. MSCY1S provides the basic mechanism to support a redundancy structure in the Application.

Local variables

Act_Ref
Counter for Reference Numbers for Diagnosis Updates.

Act_Cnt
Storage for Users Reference number

Ref_Cnt
Storage of Act_Ref at users Diagnosis.

B Sync
(Octet-String)

Intermediate storage for outputs if the DP-slave is operated in Sync Mode.

B Output
(Octet-String)

Output data of the DP-slave that can be fetched by the Get Output service. The requirements for the consistency as described in the Cfg_Data shall be taken into consideration.

B Freeze
(Octet-String)

Intermediate storage for input data.

B Input
(Octet-String)

Depending on the type (see description of Cfg_Data), the data shall be consistently loaded by the Set Input service, or may be captured freely.

B Real_Cfg
(Octet-String)

The configuration which was previously defined for the device, or the configuration which is determined in the start-up by the device, respectively. The structure of the individual octets corresponds to the structure of Cfg_Data (->Chk_Cfg).

B User Prm
(Octet-String)

Intermediate storage for User Prm data.

B Ext User Prm
(Octet-String)

Intermediate storage for Ext User Prm data.

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B Cfg
(Octet-String)

Intermediate storage for Cfg data.

Diag
(Octet-String)

Intermediate storage for Diag data.

Ext Diag Data
(Octet-String)

Intermediate storage for Ext Diag Data, the diagnosis setup by the user.

Ext Diag Flag
(Boolean)

Intermediate storage for Ext Diag Flag, which indicates important user diagnosis.

Clear Command
Sync Command
Freeze Command
Intermediate storage for global control commands.

Station_Address
(Unsigned8)

Own station address which may be set by the service "Set_Slave_Add" or which is locally stored.

Check_Prm_Add
(Unsigned8)

Masters station address which has invoked the last service "Set_Prm ".

Check_Ext_Prm_Add
(Unsigned8)

Masters station address which has invoked the last service "Set_Ext_Prm ".

Check_Cfg_Add
(Unsigned8)

Masters station address which has invoked the last service "Chk_Cfg ".

Output Data Len
(Unsigned8)

Indicates the number of output octets that are actually used.

Input Data Len
(Unsigned8)

Indicates the number of input octets that are actually used.

Real_No_Add_Chg
(Boolean)

Indicates if an address change is possible (FALSE) or not. Can be statically defined or stored.

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Active_Groups
(Unsigned8)

Contains the Group_Ident as set via Set_Prm. This is used at Global_Control for the decision if the station is addressed.

Diag_Flag
(Boolean)

This flag indicates that the Master shall be informed by a high prior Reply-Update that a change in the diagnostic information occurred.

Sync_Supp
(Boolean)

Indicates that the DP-slave does support the Sync-Mode.

Freeze_Supp
(Boolean)

Indicates that the DP-slave does support the Freeze-Mode.

Operation_Mode
(Boolean)

Local flag that stores the Operation_Mode set with the Set_Prm service. Operation_Mode=V0 means that the Slave does not support acyclic services on MSAC1 and alarms.

Prm_Pending
(Unsigned8)

Local flag that indicates that the User is still processing the last call of the function “Check UserPrm ".

Ext_Prm_Pending
(Unsigned8)

Local flag that indicates that the User is still processing the last call of the function “Check Ext_Prm ".

Cfg_Pending
(Unsigned8)

Local flag that indicates that the User is still processing the last call of the function “Check Cfg ".

Input_Pending
(Unsigned8)

Local flag that indicates that the User has not yet set the Input data

New Output
(Unsigned8)

Local flag that indicates that there are Output data available not yet fetched with "Get Output".

DX_Entered
(Boolean)

Local flag which is set after the MSCY1S State Machine has entered the DATA-EXCH mode and at least one Data_Exchange service has been completed.

Start_State
(Unsigned8)

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Local variable which is used to store the state of the MSAC1S-State Machine.

Possible values for Start_State:

Idle MSAC1S is closed

Run MSAC1S is open

B Start_Operation is initiated

E Stop_Operation is initiated

BE Start_Operation is initiated, Stop_Operation is queued

EB Stop_Operation is initiated, Start _Operation is queued

BEB Start_Operation is initiated, Stop_Operation (first) and Start_Operation(second) are queued

Safe_State
(Boolean)

Indicates whether the outputs has to be switched to the safe state.

Chk Cfg Mode
(Boolean)

Indicates how to check the Cfg Data.

First Synch
(Boolean)

This local variable is FALSE if the Isochronous mode has been activated and at least one Global_Control-REQ-PDU with Group Select (Group_8) has been received.

9.1.3 MSCY1S state table

Table 57 contains the complete description of the MSCY1S state machine.

Table 57 – MSCY1S state table

#	Current State	Event /Condition =>Action	Next State
1	POWER-ON	MSCY1S SInit MS0.req () => Diag.Ext_Diag_Data := NIL Diag.Ext Diag Flag := FALSE B Real Cfg := Real Cfg Data Chk Cfg Mode := FALSE Sync Supp := Sync Supported Freeze Supp := Freeze Supported Diag.Ident Number := Ident Number Real No Add Chg := No Add Chg Act_Ref := 0 Act_Cnt := 0 Ref_Cnt := 0 DMPMS Slave Init.req ()	WAIT-INI-CON
2	POWER-ON	MSCY1S Abort.req () => ignore	POWER-ON
3	POWER-ON	MSCY1S Set Slave Diag.req (Ext Diag Flag, Ext Diag Overflow, Ext Diag Data, Reference) => Act_Cnt := Reference MSCY1S Set Slave Diag.cnf(-) (Reference := Act_Cnt)	POWER-ON

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#	Current State	Event /Condition =>Action	Next State
4	POWER-ON	MSCY1S Set Cfg.req (Cfg Data) => MSCY1S Set Cfg.cnf(-) ()	POWER-ON
5	POWER-ON	MSCY1S Get Output.req () => MSCY1S Get Output.cnf(-) ()	POWER-ON
6	POWER-ON	MSCY1S Set Input.req (Input Data) => MSCY1S Set Input.cnf(-) ()	POWER-ON
7	POWER-ON	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) => Status := Reset MSCY1S Check Cfg Result.cnf(-) (Status)	POWER-ON
8	POWER-ON	MSCY1S Application Ready.req() => ignore	POWER-ON
9	POWER-ON	MSCY1S Check User Prm Result.req (Prm_OK) => Status := Reset MSCY1S Check User Prm Result.cnf(-) (Status)	POWER-ON
10	POWER-ON	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) => Status := Reset MSCY1S Check Ext User Prm Result.cnf(-) (Status)	POWER-ON
11	WAIT-INI-CON	DMPMS Slave Init.cnf () => Operation Mode := V0 Start_State := Idle Safe_State:=TRUE Diag.Prm_Req := TRUE Diag.Cfg_Fault := FALSE Diag.Prm_Fault := FALSE Diag.Not_Supported := FALSE Diag.Master_Add := Invalid Diag.WD_On := FALSE Diag.Station_Not_Ready := TRUE Diag.Sync_Mode := FALSE Diag.Freeze_Mode := FALSE Diag.Stat_Diag := FALSE Diag.Ext_Diag_Overflow := FALSE B User Prm := NIL B Cfg := NIL Diag_Flag := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 Prm Structure = FALSE DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Get Cfg Upd.req (Cfg Data) MSCY1S SInit MS0.cnf ()	WAIT-PRM
12	WAIT-PRM	MSCY1S Abort.req () => ignore	WAIT-PRM
13	WAIT-PRM	MSCY1S Set Slave Diag.req (Ext Diag Flag, Ext Diag Overflow, Ext Diag Data, Reference) => Diag.Ext Diag Data := Ext Diag Data Diag.Ext Diag Flag := Ext Diag Flag Diag.Ext Diag Overflow := Ext Diag Overflow Diag Data := Diag Act_Ref := Act_Ref + 1 Act_Cnt := Reference Ref_Cnt := Act_Ref DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) MSCY1S Set Slave Diag.cnf(+) (Reference := Act_Cnt)	WAIT-PRM

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#	Current State	Event /Condition =>Action	Next State
14	WAIT-PRM	MSCY1S Set Cfg.req (Cfg Data) => DMPMS Get Cfg Upd.req (Cfg Data) MSCY1S Set Cfg.cnf(+) ()	WAIT-PRM
15	WAIT-PRM	MSCY1S Get Output.req () => MSCY1S Get Output.cnf(-) ()	WAIT-PRM
16	WAIT-PRM	MSCY1S Set Input.req (Input Data) => MSCY1S Set Input.cnf(-) ()	WAIT-PRM
17	WAIT-PRM	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 0 => Status := Not pending MSCY1S Check User Prm Result.cnf(-) (Status)	WAIT-PRM
18	WAIT-PRM	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 2 => Status := New Prm Prm_Pending := 1 User Parameter Data := B User Prm MSCY1S Check User Prm Result.cnf(-) (Status) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	WAIT-PRM
19	WAIT-PRM	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 1 => Prm_Pending := 0 MSCY1S Check User Prm Result.cnf(+)()	WAIT-PRM
20	WAIT-PRM	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 0 => Status := Not pending MSCY1S Check Cfg Result.cnf(-) (Status)	WAIT-PRM
21	WAIT-PRM	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 2 => Status := New Cfg Cfg_Pending := 1 Cfg Data := B Cfg MSCY1S Check Cfg Result.cnf(-) (Status) MSCY1S Check Cfg.ind (Cfg Data)	WAIT-PRM
22	WAIT-PRM	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 => Cfg_Pending := 0 MSCY1S Check Cfg Result.cnf(+) ()	WAIT-PRM
23	WAIT-PRM	MSCY1S Application Ready.req() => ignore	WAIT-PRM
24	WAIT-PRM	MSAC1S Abort.ind() => ignore	WAIT-PRM
25	WAIT-PRM	MSAC1S Start.cnf() => START_C1_CON	WAIT-PRM
26	WAIT-PRM	MSAC1S Stop.cnf() => Start_State := Idle	WAIT-PRM

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#	Current State	Event /Condition =>Action	Next State
27	WAIT-PRM	DMPMS Set Slave Add.ind(New Slave Add, Ident Number, No Add Chg, Rem Slave Data) /Real_No_Add_Chg = FALSE && Diag.Ident_Number = Ident_Number && New_Slave_Address <= 125 => MSCY1S Set Slave Add.ind (New Slave Add, Ident Number, No Add Chg, Rem Slave Data)	POWER-ON
28	WAIT-PRM	DMPMS Set Slave Add.ind(New Slave Add, Ident Number, No Add Chg, Rem Slave Data) /Real_No_Add_Chg = TRUE || Diag.Ident_Number <> Ident_Number || New_Slave_Add > 125 => ignore	WAIT-PRM
29	WAIT-PRM	DMPMS Slave Diag.ind(Req Add, Reference) => ignore	WAIT-PRM
30	WAIT-PRM	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Lock_Req = FALSE && Unlock_Req = FALSE => DMPMS Set minTsdr.req (MinTsdr)	WAIT-PRM
31	WAIT-PRM	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = TRUE => ignore	WAIT-PRM
32	WAIT-PRM	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Lock_Req = TRUE && Unlock_Req = FALSE && (Ident_Number <> Diag.Ident_Number || !OPERATION_MODE_OK || WD_On = TRUE && (WD_Fact_1=0 || WD_Fact_2=0)) => Diag.Prm_Fault := TRUE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
33	WAIT-PRM	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Lock_Req = TRUE && Unlock_Req = FALSE && Ident_Number = Diag.Ident_Number && OPERATION_MODE_OK && (WD_On = FALSE || (WD_Fact_1 > 0 && WD_Fact_2 > 0)) && (Freeze_Req = TRUE && Freeze Supp = FALSE || Sync_Req = TRUE && Sync Supp = FALSE || Prm_Data[1].0, .1, .2 = TRUE) => Diag.Not_Supported := TRUE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
34	WAIT-PRM	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len < 7 => ignore	WAIT-PRM

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#	Current State	Event /Condition =>Action	Next State
35	WAIT-PRM	DMPMS Set Prm.ind(Req Add, Prm Data) /PRM_OK && Prm_Pending = 0 => Diag.Master_Add := Req Add Check_Prm_Add := Req Add FirstSynch := TRUE SET_OPERATION_MODE SET_WD Active_Groups := Group_Ident Diag.Prm_Fault := FALSE Diag.Prm_Req := FALSE Diag.Not_Supported := FALSE Prm_Pending := 1 User Parameter Data := Prm Data.User Prm SET_ALARM_CHKCFGM Input_Pending := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	WAIT-CFG
36	WAIT-PRM	DMPMS Set Prm.ind(Req Add, Prm Data) /PRM_OK && Prm_Pending > 0 => Diag.Master_Add := Req Add Check_Prm_Add := Req Add FirstSynch := TRUE SET_OPERATION_MODE SET_WD Active_Groups := Group_Ident Diag.Prm_Fault := FALSE Diag.Prm_Req := FALSE Diag.Not_Supported := FALSE Prm_Pending := 2 B User Prm := Prm Data.User Prm SET_ALARM_CHKCFGM Input_Pending := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr)	WAIT-CFG
37	WAIT-PRM	DMPMS Chk Cfg.ind(Req Add, Cfg Data) => ignore	WAIT-PRM
38	WAIT-PRM	DMPMS Set Ext Prm.ind(Req_Add, Ext Prm Data) /Diag.Master_Add = Req_Add => ignore	WAIT-PRM
39	WAIT-PRM	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 0 => Status := Not pending MSCY1S Check Ext User Prm Result.cnf(-) (Status)	WAIT-PRM
40	WAIT-PRM	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 2 => Status := New Prm Prm_Pending := 1 Ext User Parameter Data := B Ext User Prm MSCY1S Check Ext User Prm Result.cnf(-) (Status) MSCY1S Check Ext User Prm.ind (Ext User Parameter Data)	WAIT-PRM
41	WAIT-PRM	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 1 => Ext_Prm_Pending := 0 MSCY1S Check Ext User Prm Result.cnf(+)()	WAIT-PRM

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#	Current State	Event /Condition =>Action	Next State
42	WAIT-CFG	MSCY1S Abort.req () => Operation_Mode := V0 Diag.Master_Add := invalid Diag.Prm_Req := TRUE Diag.Station_Not_Ready := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
43	WAIT-CFG	MSCY1S Set Slave Diag.req (Ext Diag Flag, Ext Diag Overflow, Ext Diag Data, Reference) => Diag.Ext Diag Data := Ext Diag Data Diag.Ext Diag Flag := Ext Diag Flag Diag.Ext Diag Overflow := Ext Diag Overflow Diag Data := Diag Act_Ref := Act_Ref + 1 Act_Cnt := Reference Ref_Cnt := Act_Ref DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) MSCY1S Set Slave Diag.cnf(+) (Reference := Act_Cnt)	WAIT-CFG
44	WAIT-CFG	MSCY1S Set Cfg.req (Cfg Data) => DMPMS Get Cfg Upd.req (Cfg Data) MSCY1S Set Cfg.cnf(+) ()	WAIT-CFG
45	WAIT-CFG	MSCY1S Get Output.req () => MSCY1S Get Output.cnf(-) ()	WAIT-CFG
46	WAIT-CFG	MSCY1S Set Input.req (Input Data) /Input_Pending = FALSE => MSCY1S Set Input.cnf(-) ()	WAIT-CFG
47	WAIT-CFG	MSCY1S Set Input.req (Input Data) /Input_Pending = TRUE && Operation_Mode = V0 => Inp Data := Input Data Diag.Cfg_Fault := FALSE Diag_Flag := TRUE Diag.Stat_Diag := TRUE Diag.Station_Not_Ready := FALSE DX_Entered := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 MSCY1S Set Input.cnf(+) () DMPMS Enter.req (Master Add, Input Data Len, Output Data Len) DMPMS RD Inp Upd.req (Inp Data) DMPMS Data Exchange Upd.req (Diag Flag, Inp Data) DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	DATA-EXCH
48	WAIT-CFG	MSCY1S Set Input.req (Input Data) /Input_Pending = TRUE && Operation_Mode = V1 => B Input := Input Data START_C1 MSCY1S Set Input.cnf(+) ()	WAIT-CFG
49	WAIT-CFG	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 0 => Status := Not pending MSCY1S Check User Prm Result.cnf(-) (Status)	WAIT-CFG

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#	Current State	Event /Condition =>Action	Next State
50	WAIT-CFG	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 2 => Status := New Prm Prm_Pending := 1 User Parameter Data := B User Prm MSCY1S Check User Prm Result.cnf(-) (Status) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	WAIT-CFG
51	WAIT-CFG	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 1 && Diag.Master_Add <> Check_Prm_Add => Status := Inv Master Add Prm_Pending := 0 MSCY1S Check User Prm Result.cnf(-) (Status)	WAIT-CFG
52	WAIT-CFG	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 1 && Diag.Master_Add = Check_Prm_Add && Prm_OK = TRUE => Prm_Pending := 0 MSCY1S Check User Prm Result.cnf(+)()	WAIT-CFG
53	WAIT-CFG	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 1 && Diag.Master_Add = Check_Prm_Add && Prm_OK = FALSE => Prm_Pending := 0 Diag.Prm_Fault := TRUE Diag.Master_Add := Invalid Diag.Prm_Req := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 MSCY1S Check User Prm Result.cnf(+)() DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
54	WAIT-CFG	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 0 => Status := Not pending MSCY1S Check Cfg Result.cnf(-) (Status)	WAIT-CFG
55	WAIT-CFG	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 2 => Status := New Cfg Cfg_Pending := 1 Cfg Data := B Cfg MSCY1S Check Cfg Result.cnf(-) (Status) MSCY1S Check Cfg.ind (Cfg Data)	WAIT-CFG
56	WAIT-CFG	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add <> Check_Cfg_Add => Status := Inv Master Add Cfg_Pending := 0 MSCY1S Check Cfg Result.cnf(-) (Status)	WAIT-CFG
57	WAIT-CFG	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add = Check_Cfg_Add && Cfg_OK = TRUE && Input Data Len > 0 => Inp Data Len := Input Data Len Outp Data Len := Output Data Len Cfg_Pending := 0 Input_Pending := TRUE MSCY1S Check Cfg Result.cnf(+) ()	WAIT-CFG

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#	Current State	Event /Condition =>Action	Next State
58	WAIT-CFG	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add = Check_Cfg_Add && Cfg_OK = TRUE && Operation_Mode = V1 && Input Data Len = 0 => Inp Data Len := 0 Outp Data Len := Output Data Len Inp Data := NIL Cfg_Pending := 0 START_C1 MSCY1S Check Cfg Result.cnf(+) ()	WAIT-CFG
59	WAIT-CFG	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add = Check_Cfg_Add && Cfg_OK = TRUE && Operation_Mode = V0 && Input Data Len = 0 => Inp Data Len := 0 Outp Data Len := Output Data Len Inp Data := NIL Cfg_Pending := 0 Diag.Cfg_Fault := FALSE Diag_Flag := TRUE Diag.Stat_Diag := TRUE Diag.Station_Not_Ready := FALSE DX_Entered := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Enter.req DMPMS Data Exchange Upd.req (Diag Flag, Inp Data) DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) MSCY1S Check Cfg Result.cnf(+) ()	DATA-EXCH
60	WAIT-CFG	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add = Check_Cfg_Add && Cfg_OK = FALSE => Cfg_Pending := 0 Diag.Cfg_Fault := TRUE Diag.Prm_Req := TRUE Diag.Master_Add := Invalid StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) MSCY1S Check Cfg Result.cnf(+) ()	WAIT-PRM
61	WAIT-CFG	MSCY1S Application Ready.req() => ignore	WAIT-CFG
62	WAIT-CFG	MSAC1S Abort.ind() => ignore	WAIT-CFG
63	WAIT-CFG	MSAC1S Start.cnf() /Start_State <> B => START_C1_CON	WAIT-CFG
64	WAIT-CFG	MSAC1S Start.cnf() /Start_State = B => Diag.Cfg_Fault := FALSE Diag_Flag := TRUE Diag.Stat_Diag := TRUE Diag.Station_Not_Ready := FALSE DX_Entered := FALSE START_C1_CON Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Enter.req DMPMS RD Inp Upd.req (Inp Data) DMPMS Data Exchange Upd.req (Diag Flag, Inp Data) DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	DATA-EXCH

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#	Current State	Event /Condition =>Action	Next State
65	WAIT-CFG	MSAC1S Stop.cnf() => STOP_C1_CON	WAIT-CFG
66	WAIT-CFG	MSAC1S Abort.ind() => Operation_Mode := V0 Diag.Master_Add := invalid Diag.Prm_Req := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
67	WAIT-CFG	DMPMS Set Slave Add.ind(New Slave Add, Ident Number, No Add Chg, Rem Slave Data) => ignore	WAIT-CFG
68	WAIT-CFG	DMPMS Slave Diag.ind(Req Add, Reference) /Diag.Master_Add = Req_Add => TRIG_WD	WAIT-CFG
69	WAIT-CFG	DMPMS Slave Diag.ind(Req Add, Reference) /Diag.Master_Add <> Req_Add => ignore	WAIT-CFG
70	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = TRUE && Diag.Master_Add = Req_Add => Diag.Master_Add := invalid Diag.Prm_Req := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
71	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = TRUE && Diag.Master_Add <> Req_Add => ignore	WAIT-CFG
72	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = FALSE && Lock_Req = TRUE && Diag.Master_Add = Req_Add && (Ident_Number <> Diag.Ident_Number || OPERATION_MODE_OK = FALSE || WD_On = TRUE && (WD_Fact_1=0 || WD_Fact_2=0)) => Diag.Prm_Fault := TRUE Diag.Master_Add := Invalid Diag.Prm_Req := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM

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#	Current State	Event /Condition =>Action	Next State
73	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = FALSE && Lock_Req = TRUE && Diag.Master_Add = Req_Add && Ident_Number = Diag.Ident_Number && OPERATION_MODE_OK && (WD_On = FALSE || WD_Fact_1>0 && WD_Fact_2>0) && (Freeze_Req = TRUE && Freeze Supp = FALSE || Sync_Req = TRUE && Sync Supp = FALSE || Prm_Data[1].0, .1, .2 = TRUE) => Diag.Not_Supported := TRUE Diag.Master_Add := Invalid Diag.Prm_Req := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
74	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = FALSE && Lock_Req = TRUE && Diag.Master_Add <> Req_Add && (Ident_Number <> Diag.Ident_Number || OPERATION_MODE_OK = FALSE || WD_On = TRUE && (WD_Fact_1=0 || WD_Fact_2=0) || Freeze_Req = TRUE && Freeze Supp = FALSE || Sync_Req = TRUE && Sync Supp = FALSE || Prm_Data[1].0, .1, .2 = TRUE) => ignore	WAIT-CFG
75	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /PRM_OK && Prm_Pending = 0 => Diag.Master_Add := Req_Add Check_Prm_Add := Req Add SET_OPERATION_MODE SET_WD Active_Groups := Group_Ident Prm_Pending := 1 User Parameter Data := Prm Data.User Prm SET_ALARM_CHKCFGM Input_Pending := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	WAIT-CFG
76	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /PRM_OK && Prm_Pending > 0 => Diag.Master_Add := Req_Add Check_Prm_Add := Req Add SET_OPERATION_MODE SET_WD Active_Groups := Group_Ident Prm_Pending := 2 B User Prm := Prm Data.User Prm SET_ALARM_CHKCFGM Input_Pending := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr)	WAIT-CFG
77	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = FALSE && Lock_Req = FALSE => DMPMS Set minTsdr.req (MinTsdr)	WAIT-CFG

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#	Current State	Event /Condition =>Action	Next State
78	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len < 7 => ignore	WAIT-CFG
79	WAIT-CFG	DMPMS Chk Cfg.ind(Req Add, Cfg Data) /Diag.Master_Add <> Req_Add => ignore	WAIT-CFG
80	WAIT-CFG	DMPMS Chk Cfg.ind(Req Add, Cfg Data) /Diag.Master_Add = Req_Add && Cfg_Pending = 0 => Cfg_Pending := 1 Check_Cfg_Add := Req Add TRIG_WD MSCY1S Check Cfg.ind (Check Cfg Mode, Cfg Data)	WAIT-CFG
81	WAIT-CFG	DMPMS Chk Cfg.ind(Req Add, Cfg Data) /Diag.Master_Add = Req_Add && Cfg_Pending > 0 => Cfg_Pending := 2 Check_Cfg_Add := Req Add B Cfg := Cfg Data TRIG_WD	WAIT-CFG
82	WAIT-CFG	WDTimer expired => Diag.Master_Add := invalid Diag.Prm_Req := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
83	WAIT-CFG	DMPMS Set Ext Prm.ind(Req_Add, Ext Prm Data) /Diag.Master_Add = Req_Add &&Ext_Prm_Pending = 0 => TRIG_WD Ext User Parameter Data := Ext User Prm Data Ext_Prm_Pending := 1 Check_Ext_Prm_Add := Req_Add MSCY1S Check Ext User Prm.ind (Ext User Parameter Data)	WAIT-CFG
84	WAIT-CFG	DMPMS Set Ext Prm.ind(Req_Add, Ext Prm Data) /Diag.Master_Add = Req_Add && Ext_Prm_Pending > 0 => TRIG_WD B Ext User Prm := Ext User Prm Data Ext_Prm_Pending := 2 Check_Ext_Prm_Add := Req_Add	WAIT-CFG
85	WAIT-CFG	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 0 => Status := Not pending MSCY1S Check Ext User Prm Result.cnf(-) (Status)	WAIT-CFG
86	WAIT-CFG	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 2 => Status := New Prm Ext_Prm_Pending := 1 Ext User Parameter Data := B Ext User Prm MSCY1S Check Ext User Prm Result.cnf(-) (Status) MSCY1S Check Ext User Prm.ind (Ext User Parameter Data)	WAIT-CFG

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#	Current State	Event /Condition =>Action	Next State
87	WAIT-CFG	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 1 && Diag.Master_Add <> Check_Ext_Prm_Add => Status := Inv Master Add Ext_Prm_Pending := 0 MSCY1S Check Ext User Prm Result.cnf(-) (Status)	WAIT-CFG
88	WAIT-CFG	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 1 && Diag.Master_Add = Check_Ext_Prm_Add && Ext_Prm_OK = TRUE => Ext_Prm_Pending := 0 MSCY1S Check Ext User Prm Result.cnf(+)()	WAIT-CFG
89	WAIT-CFG	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 1 && Diag.Master_Add = Check_Prm_Add && Ext_Prm_OK = FALSE => Ext_Prm_Pending := 0 Diag.Cfg_Fault := TRUE Diag.Master_Add := Invalid Diag.Prm_Req := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 MSCY1S Check Ext User Prm Result.cnf(+)() DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
90	DATA-EXCH	MSCY1S Abort.req () => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
91	DATA-EXCH	MSCY1S Set Slave Diag.req (Ext Diag Flag, Ext Diag Overflow, Ext Diag Data, Reference) => Diag.Ext Diag Data := Ext Diag Data Diag.Ext Diag Flag := Ext Diag Flag Diag.Ext Diag Overflow := Ext Diag Overflow Diag Data := Diag Diag Flag := TRUE Act_Ref := Act_Ref + 1 Act_Cnt := Reference Ref_Cnt := Act_Ref DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Data Exchange Upd.req(Diag Flag, Inp Data)	DATA-EXCH
92	DATA-EXCH	MSCY1S Set Cfg.req (Cfg Data) => Diag.Cfg_Fault:=TRUE LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Get Cfg Upd.req (Cfg Data) MSCY1S Set Cfg.cnf(+) () DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
93	DATA-EXCH	MSCY1S Get Output.req () /DX_Entered = TRUE => Clear Flag := Safe_State New Flag := New Output New Output := FALSE Outp Data, Output Data := B Output DMPMS RD Outp Upd.req (Outp Data) MSCY1S Get Output.cnf(+) (Output Data, Clear Flag, New Flag)	DATA-EXCH
94	DATA-EXCH	MSCY1S Get Output.req () /DX_Entered = FALSE => MSCY1S Get Output.cnf(-) ()	DATA-EXCH

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#	Current State	Event /Condition =>Action	Next State
95	DATA-EXCH	MSCY1S Set Input.req (Input Data) /Diag.Freeze_Mode = FALSE => Inp Data, B Input := Input Data DMPMS Data Exchange Upd.req (Diag Flag, Inp Data) DMPMS RD Inp Upd.req (Inp Data) MSCY1S Set Input.cnf(+) ()	DATA-EXCH
96	DATA-EXCH	MSCY1S Set Input.req (Input Data) /Diag.Freeze_Mode = TRUE => B Freeze := Input Data MSCY1S Set Input.cnf(+) ()	DATA-EXCH
97	DATA-EXCH	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 0 => Status := Not pending MSCY1S Check User Prm Result.cnf(-) (Status)	DATA-EXCH
98	DATA-EXCH	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 2 => Status := New Prm Prm_Pending := 1 User Parameter Data := B User Prm MSCY1S Check User Prm Result.cnf(-) (Status) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	DATA-EXCH
99	DATA-EXCH	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 1 && Diag.Master_Add # Check_Prm_Add => Status := Inv Master Add Prm_Pending := 0 MSCY1S Check User Prm Result.cnf(-) (Status)	DATA-EXCH
100	DATA-EXCH	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 1 && Diag.Master_Add = Check_Prm_Add && Prm_OK = TRUE => Prm_Pending := 0 MSCY1S Check User Prm Result.cnf(+)()	DATA-EXCH
101	DATA-EXCH	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 1 && Diag.Master_Add = Check_Prm_Add && Prm_OK = FALSE => Diag.Prm_Fault := TRUE LEAVE-MASTER Prm_Pending := 0 Act_Ref := Act_Ref + 1 MSCY1S Check User Prm Result.cnf(+)() DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
102	DATA-EXCH	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 0 => Status := Not pending MSCY1S Check Cfg Result.cnf(-) (Status)	DATA-EXCH
103	DATA-EXCH	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 2 => Status := New Cfg Cfg_Pending := 1 Cfg Data := B Cfg MSCY1S Check Cfg Result.cnf(-) (Status) MSCY1S Check Cfg.ind (Cfg Data)	DATA-EXCH
104	DATA-EXCH	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add # Check_Cfg_Add => Status := Inv Master Add Cfg_Pending := 0 MSCY1S Check Cfg Result.cnf(-) (Status)	DATA-EXCH

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#	Current State	Event /Condition =>Action	Next State
105	DATA-EXCH	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add = Check_Cfg_Add && Cfg_OK = TRUE && Input Data Len = Inp Data Len && Output Data Len = Outp Data Len => Cfg_Pending := 0 MSCY1S Check Cfg Result.cnf(+) ()	DATA-EXCH
106	DATA-EXCH	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add = Check_Cfg_Add && Cfg_OK = TRUE && Input Data Len <> Inp Data Len && Output Data Len <> Outp Data Len => Diag.Cfg_Fault := TRUE LEAVE-MASTER Act_Ref := Act_Ref + 1 MSCY1S Check Cfg Result.cnf(+) () DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
107	DATA-EXCH	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add = Check_Cfg_Add && Cfg_OK = FALSE => Diag.Cfg_Fault := TRUE LEAVE-MASTER Act_Ref := Act_Ref + 1 MSCY1S Check Cfg Result.cnf(+) () DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
108	DATA-EXCH	MSCY1S Application Ready.req() /Diag.Stat_Diag = TRUE => Diag.Stat_Diag := FALSE Diag_Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Data Exchange Upd.req(Diag Flag, Inp Data)	DATA-EXCH
109	DATA-EXCH	MSCY1S Application Ready.req() /Diag.Stat_Diag = FALSE => ignore	DATA-EXCH
110	DATA-EXCH	MSAC1S Abort.ind() => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
111	DATA-EXCH	MSAC1S Start.cnf() /Start_State <> B => START_C1_CON	DATA-EXCH
112	DATA-EXCH	MSAC1S Start.cnf() /Start_State = B => START_C1_CON MSCY1S_Start.ind (Actual_Enabled_Alarms, Alarm_Sequence, Alarm_Limit)	DATA-EXCH
113	DATA-EXCH	MSAC1S Stop.cnf() /Start_State <> E => STOP_C1_CON	DATA-EXCH
114	DATA-EXCH	MSAC1S Stop.cnf() /Start_State = E => STOP_C1_CON MSCY1S_Stop.ind	DATA-EXCH
115	DATA-EXCH	DMPMS Set Slave Add.ind(New Slave Add, Ident Number, No Add Chg, Rem Slave Data) => ignore	DATA-EXCH

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#	Current State	Event /Condition =>Action	Next State
116	DATA-EXCH	DMPMS Slave Diag.ind(Req Add, Reference) /Diag.Master_Add = Req_Add && (Diag.Stat_Diag = TRUE || Reference < Ref_Cnt) => TRIG_WD	DATA-EXCH
117	DATA-EXCH	DMPMS Slave Diag.ind(Req Add, Reference) /Diag.Master_Add = Req_Add && Diag.Stat_Diag = FALSE && Reference >= Ref_Cnt => Diag Flag := FALSE TRIG_WD DMPMS Data Exchange Upd.req (Diag Flag, Inp Data) DMPMS RD Inp Upd.req (Inp Data) MSCY1S Set Slave Diag.cnf(+) (Reference := Act_Cnt)	DATA-EXCH
118	DATA-EXCH	DMPMS Slave Diag.ind(Req Add, Reference) /Diag.Master_Add <> Req_Add => ignore	DATA-EXCH
119	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Lock_Req = FALSE && Unlock_Req = FALSE => DMPMS Set minTsdr.req (MinTsdr)	DATA-EXCH
120	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = TRUE && Diag.Master_Add <> Req_Add => ignore	DATA-EXCH
121	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = TRUE && Diag.Master_Add = Req_Add => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
122	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Lock_Req = TRUE && Unlock_Req = FALSE && Diag.Master_Add = Req_Add && (Ident_Number <> Diag.Ident_Number || !OPERATION_MODE_OK || WD_On && (WD_Fact_1=0 || WD_Fact_2=0)) => Diag.Prm_Fault := TRUE LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
123	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Lock_Req = TRUE && Unlock_Req = FALSE && Diag.Master_Add = Req_Add && Ident_Number = Diag.Ident_Number && OPERATION_MODE_OK && !WD_On || (WD_Fact_1>0 && WD_Fact_2>0) && (Freeze_Req && Freeze Supp = FALSE || Sync_Req && Sync Supp = FALSE || Prm_Data[1].0, .1, .2 = TRUE) => Diag.Not_Supported := TRUE LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
124	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Lock_Req = TRUE && Unlock_Req = FALSE && Diag.Master_Add <> Req_Add && (Ident_Number <> Diag.Ident_Number || !OPERATION_MODE_OK || WD_On && (WD_Fact_1=0 || WD_Fact_2=0) || Freeze_Req && !Freeze Supp || Sync_Req && !Sync Supp || Prm_Data[1].0, .1, .2 = TRUE) => ignore	DATA-EXCH

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#	Current State	Event /Condition =>Action	Next State
125	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Diag.Master_Add = Req_Add && PRM_OK &&!PV0V0 && NOPRMCMD => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
126	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Diag.Master_Add = Req_Add && PRM_OK && !NOPRMCMD && Prm_Pending = 0 => SET_WD Active_Groups := Group_Ident EXE_PRM_CMD Prm_Pending := 1 Check_Prm_Add := Req Add User Parameter Data := Prm Data.User Prm Diag_Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	DATA-EXCH
127	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Diag.Master_Add = Req_Add && PRM_OK && !NOPRMCMD && Prm_Pending > 0 => SET_WD Active_Groups := Group_Ident EXE_PRM_CMD Prm_Pending := 2 Check_Prm_Add := Req Add B User Prm := Prm Data.User Prm Diag_Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr)	DATA-EXCH
128	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Diag.Master_Add = Req_Add && PRM_OK && NOPRMCMD && PV0V0 && Prm_Pending = 0 => SET_WD Active_Groups := Group_Ident Prm_Pending := 1 Check_Prm_Add := Req Add User Parameter Data := Prm Data.User Prm Diag_Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	DATA-EXCH
129	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Diag.Master_Add = Req_Add && PRM_OK && NOPRMCMD && PV0V0 && Prm_Pending > 0 =>SET_WD Active_Groups := Group_Iden tPrm_Pending := 2 Check_Prm_Add := Req Add B User Prm := Prm Data.User Prm Diag_Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr)	DATA-EXCH

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#	Current State	Event /Condition =>Action	Next State
130	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Diag.Master_Add <> Req_Add && PRM_OK && Prm_Pending = 0 => Diag.Sync_Mode := FALSE Diag.Freeze_Mode := FALSE Diag.Station_Not_Ready := TRUE Diag.Stat_Diag := FALSE SET_OPERATION_MODE SET_WD Active_Groups := Group_Ident Safe_State := TRUE Diag.Master_Add := Req_Add Check_Prm_Add := Req Add STOP_ASM STOP_C1 Prm_Pending := 1 User Parameter Data := Prm Data.User Prm SET_ALARM_CHKCFGM Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Leave.req DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	WAIT-CFG
131	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Diag.Master_Add <> Req_Add && PRM_OK && Prm_Pending > 0 => Diag.Sync_Mode := FALSE Diag.Freeze_Mode := FALSE Diag.Station_Not_Ready := TRUE Diag.Stat_Diag := FALSE SET_OPERATION_MODE SET_WD Active_Groups := Group_Ident Safe_State := TRUE Diag.Master_Add := Req_Add Check_Prm_Add := Req Add STOP_ASM STOP_C1 Prm_Pending := 2 B User Prm := Prm Data.User Prm SET_ALARM_CHKCFGM Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Leave.req DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr)	WAIT-CFG
132	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len < 7 => ignore	DATA-EXCH
133	DATA-EXCH	DMPMS Chk Cfg.ind(Req Add, Cfg Data) /Diag.Master_Add <> Req_Add => ignore	DATA-EXCH
134	DATA-EXCH	DMPMS Chk Cfg.ind(Req Add, Cfg Data) /Diag.Master_Add = Req_Add && Cfg_Pending = 0 => Cfg_Pending := 1 Check_Cfg_Add := Req Add TRIG_WD MSCY1S Check Cfg.ind (Check Cfg Mode, Cfg Data)	DATA-EXCH
135	DATA-EXCH	DMPMS Chk Cfg.ind(Req Add, Cfg Data) /Diag.Master_Add = Req_Add && Cfg_Pending > 0 => Cfg_Pending := 2 Check_Cfg_Add := Req Add B Cfg := Cfg Data TRIG_WD	DATA-EXCH

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#	Current State	Event /Condition =>Action	Next State
136	DATA-EXCH	DMPMS Data Exchange.ind(Outp Data) /Outp_Data.len > 0 && Outp_Data.len = Outp Data Len && Diag.Sync_Mode = FALSE => B Output := Outp Data TRIG_WD Safe_State := FALSE Clear Flag := FALSE New Output := TRUE CHECK_ALARM_START MSCY1S New Output.ind (Clear Flag)	DATA-EXCH
137	DATA-EXCH	DMPMS Data Exchange.ind(Outp Data) /Outp_Data.len > 0 && Outp_Data.len = Outp Data Len && Diag.Sync_Mode = TRUE => B Sync := Outp Data TRIG_WD Safe_State := FALSE CHECK_ALARM_START	DATA-EXCH
138	DATA-EXCH	DMPMS Data Exchange.ind(Outp Data) /Outp_Data.len = 0 && Outp Data Len = 0 => TRIG_WD CHECK_ALARM_START	DATA-EXCH
139	DATA-EXCH	DMPMS Data Exchange.ind(Outp Data) /Outp_Data.len <> Outp Data Len && (Outp_Data.len = 0 && Fail_Safe_supp) => TRIG_WD Safe_State := TRUE Clear Flag := TRUE New Output := TRUE CHECK_ALARM_START MSCY1S New Output.ind (Clear Flag)	DATA-EXCH
140	DATA-EXCH	DMPMS Data Exchange.ind(Outp Data) /Outp_Data.len <> Outp Data Len && (Outp_Data.len <> 0 || Fail_Safe_supp) => LEAVE-MASTERAct_Ref := Act_Ref + 1 Diag.Cfg_Fault := TRUE DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
141	DATA-EXCH	WDTimer expired => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
142	DATA-EXCH	DMPMS Global Control.ind(Control Command, Group Select) / (Control_Command.0, .6, .7 = TRUE) => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
143	DATA-EXCH	DMPMS Global Control.ind(Control Command, Group Select) /Group_Select <> 0 && ((Active_Groups & Group_Select) = 0) && ((Group_Select < 0x80) || Isochronous Mode = FALSE) && (Control_Command.0, .6, .7 = FALSE) => ignore	DATA-EXCH
144	DATA-EXCH	DMPMS Global Control.ind(Control Command, Group Select) /Control Command.Clear Command = FALSE && (Group_Select = 0 || (Active_Groups & Group_Select) <> 0 || ((Group_Select >= 0x80) && Isochronous Mode = TRUE)) && (Control_Command.0, .6, .7 = FALSE) => Clear Command := FALSE	CHECK-ISOM

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#	Current State	Event /Condition =>Action	Next State
145	DATA-EXCH	DMPMS Global Control.ind(Control Command, Group Select) /Control Command.Clear Command = TRUE && (Group_Select = 0 || (Active_Groups & Group_Select) <> 0 || ((Group_Select >= 0x80) && Isochronous Mode = TRUE)) && (Control_Command.0, .6, .7 = FALSE) => Clear Command := TRUE Clear Flag := TRUE New Output := TRUE Safe_State := TRUE	CHECK-ISOM
146	DATA-EXCH	DMPMS Set Ext Prm.ind(Req_Add, Ext Prm Data) /Diag.Master_Add = Req_Add => Diag.Prm_Fault := TRUE LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
147	DATA-EXCH	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 0 => Status := Not pending MSCY1S Check Ext User Prm Result.cnf(-) (Status)	DATA-EXCH
148	DATA-EXCH	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 2 => Status := New Prm Ext_Prm_Pending := 1 Ext_User Parameter Data := B Ext User Prm MSCY1S Check Ext User Prm Result.cnf(-) (Status) MSCY1S Check Ext User Prm.ind (Ext User Parameter Data)	DATA-EXCH
149	DATA-EXCH	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 1 && Diag.Master_Add <> Check_Ext_Prm_Add => Status := Inv Master Add Ext_Prm_Pending := 0 MSCY1S Check Ext User Prm Result.cnf(-) (Status)	DATA-EXCH
150	DATA-EXCH	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 1 && Diag.Master_Add = Check_Ext_Prm_Add && Ext_Prm_OK = TRUE => Ext_Prm_Pending := 0 MSCY1S Check Ext User Prm Result.cnf(+)()	DATA-EXCH
151	DATA-EXCH	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 1 && Diag.Master_Add = Check_Ext_Prm_Add && Ext_Prm_OK = FALSE => Diag.Cfg_Fault := TRUE LEAVE-MASTER Ext_Prm_Pending := 0 Act_Ref := Act_Ref + 1 MSCY1S Check Ext User Prm Result.cnf(+)() DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
152	CHECK-SYNC	/NOSYNC => Sync Command := 0	CHECK-FREEZE
153	CHECK-SYNC	/UNSYNC && Sync Supp = FALSE => Sync Command := 2	CHECK-FREEZE
154	CHECK-SYNC	/SYNC && Sync Supp = FALSE => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM

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#	Current State	Event /Condition =>Action	Next State
155	CHECK-SYNC	/UNSYNC && Sync Supp = TRUE && B Sync <> Nil => B Output := B Sync B Sync := Nil Sync Command := 2 Clear Flag := Safe_State New Outpu t := TRUE Diag.Sync_Mode := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 MSCY1S New Output.ind (Clear Flag) DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	CHECK-FREEZE
156	CHECK-SYNC	/UNSYNC && Sync Supp = TRUE && B Sync = Nil => Sync Command := 2 Clear Flag := Safe_State Diag.Sync_Mode := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	CHECK-FREEZE
157	CHECK-SYNC	/SYNC && Sync Supp = TRUE && Diag.Sync_Mode = FALSE => B Sync := Nil Sync Command := 1 Diag.Sync_Mode := TRUE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	CHECK-FREEZE
158	CHECK-SYNC	/SYNC && Sync Supp = TRUE && Diag.Sync_Mode = TRUE && B Sync <> Nil => B Output := B Sync B Sync := Nil Clear Flag := Safe State New Output := TRUE Sync Command := 1 MSCY1S New Output.ind (Clear Flag)	CHECK-FREEZE
159	CHECK-SYNC	/SYNC && Sync Supp = TRUE && Diag.Sync_Mode = TRUE && B Sync = Nil => Sync Command := 1	CHECK-FREEZE

160	CHECK-ISOM	/(Group_Select >= 0x80) && Isochronous Mode = TRUE
		=>
		if (FirstSynch = TRUE)
		Status:= IsoM Start
		FirstSynch:= FALSE
		else
		Status:=IsoM SYNCH
		endif
		MSCY1S SYNCH Event.ind(Status)
			CHECK-SYNC

161	CHECK-ISOM	/(Group_Select < 0x80) || Isochronous Mode = FALSE =>	CHECK-SYNC
162	CHECK-FREEZE	/NOFREEZE => Freeze Command := 0 MSCY1S Global Control.ind (Clear Command, Sync Command, Freeze Command)	DATA-EXCH
163	CHECK-FREEZE	/UNFREEZE && Freeze Supp = FALSE => Freeze Command := 2 MSCY1S Global Control.ind (Clear Command, Sync Command, Freeze Command)	DATA-EXCH
164	CHECK-FREEZE	/FREEZE && Freeze Supp = FALSE => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM

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#	Current State	Event /Condition =>Action	Next State
165	CHECK-FREEZE	/UNFREEZE && Freeze Supp = TRUE && B Freeze <> Nil => Inp Data := B Freeze B Freeze := Nil Freeze Command := 2 Diag.Freeze_Mode := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Data Exchange Upd.req (Diag Flag, Inp Data) DMPMS RD Inp Upd.req (Inp Data) DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) MSCY1S Global Control.ind (Clear Command, Sync Command, Freeze Command)	DATA-EXCH
166	CHECK-FREEZE	/UNFREEZE && Freeze Supp = TRUE && B Freeze = Nil => Freeze Command := 2 Diag.Freeze_Mode := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) MSCY1S Global Control.ind (Clear Command, Sync Command, Freeze Command)	DATA-EXCH
167	CHECK-FREEZE	/FREEZE && Freeze Supp = TRUE && Diag.Freeze_Mode = FALSE => B Freeze := Nil Freeze Command := 1 Diag.Freeze_Mode := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) MSCY1S Global Control.ind (Clear Command, Sync Command, Freeze Command)	DATA-EXCH
168	CHECK-FREEZE	/FREEZE && Freeze Supp = TRUE && Diag.Freeze_Mode = TRUE && B Freeze <> Nil => Inp Data := B Freeze B Freeze := Nil Freeze Command := 1 DMPMS Data Exchange Upd.req (Diag Flag, Inp Data) DMPMS RD Inp Upd.req (Inp Data) MSCY1S Global Control.ind (Clear Command, Sync Command, Freeze Command)	DATA-EXCH
169	CHECK-FREEZE	/FREEZE && Freeze Supp = TRUE && Diag.Freeze_Mode = TRUE && B Freeze = Nil => Freeze Command := 1 MSCY1S Global Control.ind (Clear Command, Sync Command, Freeze Command)	DATA-EXCH
170	any state	MSCY1S Reset.req () => DMPMS Slave Deact.req ()	SL-DEACT
171	any state	DMPMS Set Ext Prm.ind(Req_Add, Ext Prm Data) /Diag.Master_Add <> Req_Add => ignore	SAME
172	SL-DEACT	DMPMS Slave Deact.cnf () => MSCY1S Reset.cnf ()	

9.1.4 Functions

Table 58 contains the functions used by the MSCY1S and their descriptions.

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Table 58 – Functions used by the MSCY1S

Name	Function
LEAVE-MASTER	Diag.Master_Add=invalid Diag.Sync_Mode=FALSE Diag.Freeze_Mode=FALSE Diag.Prm_Req=TRUE Diag.Station_Not_Ready=TRUE StopTimer(WD), Diag.WD_On=FALSE Diag.Stat_Diag=FALSE, Operation_Mode=V0 Safe_State=TRUE STOP_ASM, STOP_C1, STOP_ISOM DMPMS_Leave.Req Diag_Data=Diag
PRM_OK	Prm_Data.len>=7 && Lock_Req=TRUE && Unlock_Req=FALSE && Ident_Number=Diag.Ident_Number && (WD_On=FALSE || (WD_On=TRUE && WD_Fact_1>0 && WD_Fact_2>0)) && (Freeze_Req=FALSE || Freeze_Supported) && (Sync_Req=FALSE || Sync_Supported) && (Prm_Data[1].0, .1, .2=FALSE) && OPERATION_MODE_OK

SET_WD	if (WD_On=TRUE)
	StartTimer(WD),
	Diag.WD_On=TRUE)
	else
	StopTimer(WD),
	Diag.WD_On=FALSE
	endif

TRIG_WD	if (Diag.WD_On=TRUE)
	StartTimer(WD)
	endif

NOSYNC	Control_Command.Sync=0 && Control_Command.UnSync=0
SYNC	Control_Command.Sync=1 && Control_Command.UnSync=0
UNSYNC	Control_Command.UnSync=1
NOFREEZE	Control_Command.Freeze=0 && Control_Command.UnFreeze=0
FREEZE	Control_Command.Freeze=1 && Control_Command.UnFreeze=0
UNFREEZE	Control_Command.UnFreeze=1

STOP_ISOM	if(Isochronous Mode Supp = TRUE
	&& Isochronous Mode =TRUE
	&& First Synch = FALSE)
	MSCY1S SYNCH Event.ind(Status:= IsoM Stop)
	First Synch = TRUE
	endif

STOP_ASM	if (DX_Entered=TRUE)
	MSCY1S_Stop.ind
	endif

CHECK_ALARM_START	if (DX_Entered=FALSE && Diag.Stat_Diag=FALSE)
	DX_Entered=TRUE,
	MSCY1S_Start.ind(Actual_Enabled_Alarms, Alarm_Sequence, Alarm_Limit)
	endif

SET_OPERATION_MODE	if (Prm_Data.len >= 10 && DPV1_Enable=TRUE)
	Operation_Mode=V1
	else
	Operation_Mode=V0
	endif
	if (Prm_Data.len >= 10 && IsoM_Req =TRUE)
	Isochron_Mode=True
	else
	Isochron_Mode=FALSE
	endif

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Name	Function
PV0V0	Operation_Mode = V0 && (Prm_Data.len < 10 || DPV1_Enable = FALSE)
OPERATION_MODE_OK	if (IsARexistent(MS1) && DPV1_Enable) further checks according the table “Rules for DPV1_Status_1, DPV1_Status_2, and DPV1_Status_3 check”
NOPRMCMD	!(DPV1_Status_3.PrmCmd = 1 && Prm_Data.len = 18 && PrmCmd_supp)

SET_ALARM_CHKCFGM	if (Prm_Data.len >=10 && DPV1_Enable=TRUE)
	Enabled_Alarms=DPV1_Status_2.2 - DPV1_Status_2.7
	else
	Enabled_Alarms=0
	endif
	if (Prm_Data.len >=10)
	Alarm_Mode_Master=DPV1_Status_3.0 - DPV1_Status_3.2,
	Chk Cfg Mode = DPV1_Status_2.0,
	Prm Structure = DPV1_Status_3.4,
	if (DPV1_Status3.PrmCmd&& Prm_Data.PrmCmd exist)
	EXE_PRM_CMD
	else
	Alarm_Mode_Master=0,
	Chk Cfg Mode = FALSE,
	Prm Structure = FALSE
	endif

EXE_PRM_CMD	if (PrmCmd.Function.Primary)
	Primary=TRUE,
	if(Start_State=B||Start_State=BEB||Start_State=EB||Start_State=Run)
	STOP_C1, START_C1
	else
	START_C1
	endif
	else
	Primary=FALSE
	endif
	if (PrmCmd.Function.Stop_MS1)
	if(Start_State=B||Start_State=BEB||Start_State=EB||Start_State=Run)
	STOP_C1
	endif
	endif
	if (PrmCmd.Function.Start_MS1)
	if(Start_State=E||Start_State=BE||Start_State=Idle)
	START_C1
	endif
	endif

START_C1	if (Start_State=Idle)
	MSAC1S_Start.req(Diag.Master_Add),
	Start_State=B
	endif
	if (Start_State=E)
	Start_State=EB
	endif
	if (Start_State=BE)
	Start_State=BEB
	endif

STOP_C1	if (Start_State=B)
	Start_State=BE
	endif
	if (Start_State=Run)
	MSAC1S_Stop.req,
	Start_State=E
	endif
	if (Start_State=EB)
	Start_State=E
	endif
	if (Start_State=BEB)
	Start_State=BE
	endif

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Name	Function

START_C1_CON	if (Start_State=B)
	  Start_State=Run
	endif
	if (Start_State=BE)
	  MSAC1S_Stop.req, Start_State=E
	endif
	if (Start_State=BEB)
	  MSAC1S_Stop.req, Start_State=EB
	endif

STOP_C1_CON	if (Start_State=E)
	  Start_State=Idle
	endif
	if (Start_State=EB)
	  MSAC1S_Start.req(Diag.Master_Add),
	  Start_State=B
	endif

LEAVE-MASTER	Diag.Master_Add=invalid Diag.Sync_Mode=FALSE Diag.Freeze_Mode=FALSE Diag.Prm_Req=TRUE Diag.Station_Not_Ready=TRUE StopTimer(WD), Diag.WD_On=FALSE Diag.Stat_Diag=FALSE, Operation_Mode=V0 Safe_State=TRUE STOP_ASM, STOP_C1, STOP_ISOM DMPMS_Leave.Req Diag_Data=Diag

9.2 MSAC1S

9.2.1 Primitive definitions

9.2.1.1 Primitives exchanged between MSAC1S and FSPMS

Table 59 shows the service primitives including their associated parameters issued by the FSPMS and received by the MSAC1S.

Table 59 – Primitives issued by FSPMS to MSAC1S

Primitive name	Source	Associated parameters	Functions
SInit MS1.req	FSPMS	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Reset.req	FSPMS	(none)	
Read.rsp(+)	FSPMS	Length, Data	
Read.rsp(-)	FSPMS	Error Decode, Error Code 1 Error Code 2	
Write.rsp(+)	FSPMS	Length	
Write.rsp(-)	FSPMS	Error Decode, Error Code 1 Error Code 2	
Alarm Ack.rsp(+)	FSPMS	Slot Number, Alarm Type, Seq Nr	
Alarm Ack.rsp(-)	FSPMS	(none)	

Table 60 shows the service primitives including their associated parameters issued by MSAC1S and received by the FSPMS.

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Table 60 – Primitives issued by MSAC1S to FSPMS

Primitive name	Source	Associated parameters	Functions
SInit MS1.cnf	MSAC1S	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Reset.cnf	MSAC1S	(none)	
Fault.ind	MSAC1S	(none)	
Read.ind	MSAC1S	Slot Number, Index, Length	
Write.ind	MSAC1S	Slot Number, Index, Length, Data	
Alarm Ack.ind	MSAC1S	Slot Number, Alarm Type, Seq Nr	

9.2.1.2 Primitives exchanged between MSAC1S and MSCY1S

Table 61 shows the service primitives including their associated parameters issued by MSCY1S and received by the MSAC1S.

Table 61 – Primitives issued by MSCY1S to MSAC1S

Primitive name	Source	Associated parameters	Functions
Start.req	MSCY1S	Master Add	Start Processing of acyclic services
Stop.req	MSCY1S	(none)	Stop Processing of acyclic services

Table 62 shows the service primitives including their associated parameters issued by the MSAC1S and received by the MSCY1S.

Table 62 – Primitives issued by MSAC1S to MSCY1S

Primitive name	Source	Associated parameters	Functions
Start.cnf	MSAC1S	(none)	MSAC1 is ready to execute acyclic services
Stop.cnf	MSAC1S	(none)	MSAC1 is disabled
Abort.ind	MSAC1S	(none)	Termination of MSAC1 due to a sequence error or wrong protocol elements

9.2.1.3 Parameter of MSAC1S primitives

The parameters used with the primitives exchanged between the FSPMS and the MSAC1S are described in FAL Service Definition in IEC 61158-5-3. Additional parameters are described in Table 63.

Table 63 – Parameter used with primitives exchanged between MSAC1S and MSCY1S

Parameter name	Description
MasterAdd	This parameter conveys the DL address of the assigned DP-master.

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9.2.2 State machine description

After Power-On the MSAC1S waits for initiation by means of SInit MS1.

In the state CLOSED the service Start called from the MSCY1S is expected. Then the access protection for the SAP 51 (50) will be activated by means of the function RSAP_ACTIVATE.

When receiving the confirmation the State Machine enters the OPEN state. In this state the services Read, Write and Alarm_Ack are allowed. Only one request from the DP-master is processed simultaneously on each SAP. Additionally to Read/Write at SAP 51 a Alarm_Ack may be executed at SAP 50.

When a valid service is invoked by the DP-master, the MSAC1S will indicate this primitive to the AP-Context (Read/Write or Alarm_Ack) and waits for response. After receiving the corresponding response MSAC1S will provide this PDU in the corresponding SAP update-buffer. The service is finished after DP-master has fetched the response.

The local service Stop called from the MSCY1S is closing the connection. The SAP 51 (50) is deactivated and a possibly stored response in the DL is deleted.

The abort of the connection is indicated to the MSCY1S with the local service Abort. If the User is still processing a response while the connection is aborted this response shall be discarded by the User.

Local variables of the MSAC1S

Server_SAP
(Unsigned8)

This SAP (51) is used for the MSAC1S_Read/_Write and MSAC1S_Alarm_Ack services.

Alarm_SAP
(Unsigned8)

This SAP (50) is reserved for MSAC1S_Alarm_Ack services.

Res_SAP
(Unsigned8)

Variable holding the SAP for the MSAC1S_Alarm_Ack -Response.

Service_Header
(Unsigned8)

The actual service header of the service processed. Used to check whether the User generates the correct response.

AA_State
MSAC1S_Alarm_Ack services may be executed simultaneously with the MSAC1S_Read-/_Write-services. Thus, the actual state of the MSAC1S_Alarm_Ack processing is stored in the variable AA_State:

Values of AA_State:

Idle	No MSAC1S_Alarm_Ack in progress
WRes	MSAC1S_Alarm_Ack.ind is sent to the MSAL1S waiting for response
Upd	Response of the MSAL1S will be sent to the Update-Buffer
SRes	Response is stored – waiting for the next poll of the DP-master

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VS_Upd
Indicates that a Response will be sent to the Update-Buffer.

9.2.3 MSAC1S state table

Table 64 contains the complete description of the MSAC1S state machine.

Table 64 – MSAC1S state table

#	Current state	Event / condition => action	Next state
1	POWER-ON	MSAC1S_SInit_MS1.req => Server_SAP:=51 Alarm_SAP:=50 MSAC1S_SInit_MS1.cnf	CLOSED
2	POWER-ON	MSAC1S_Reset.req => MSAC1S_Reset.cnf	POWER-ON
3	POWER-ON	MSAC1S_Alarm_Ack.rsp(+) (Alarm_Type, Slot_Number, Seq_Nr) => MSAC1S_Fault.ind	POWER-ON
4	POWER-ON	MSAC1S_Alarm_Ack.rsp(-) () => MSAC1S_Fault.ind	POWER-ON
5	CLOSED	MSAC1S_Start.req(Master_Add) => DMPMS_RSAP_ACTIVATE.req(SSAP=Server_SAP, Access=Master_Add, L_sdu_length_list=Nil,Indication_Mode=Unchanged)	SET-ACC51
6	CLOSED	MSAC1S_Stop.req => MSAC1S_Stop.cnf	CLOSED
7	SET-ACC51	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status = OK => DMPMS_RSAP_ACTIVATE.req(SSAP=Alarm_SAP, Access=Master_Add, L_sdu_length_list=Nil,Indication_Mode=Unchanged)	SET-ACC50
8	SET-ACC51	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status=NO/IV => MSAC1S_Fault.ind	POWER-ON
9	SET-ACC50	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Alarm_SAP,M_status) /M_status = OK => AA_State:=Idle VS_Upd:=False MSAC1S_Start.cnf	OPEN
10	SET-ACC50	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Alarm_SAP,M_status) /M_status=NO/IV => MSAC1S_Fault.ind	POWER-ON
11	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON
12	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON

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#	Current state	Event / condition => action	Next state
13	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Read-REQ-PDU( ) => Service_Header:=Function_Num MSAC1S_Read.ind(Req_Add=Loc_add, Slot_Number,Index,Length)	VS-WRES
14	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Write-REQ-PDU( ) && L_sdu.len >= (Length+4) => Service_Header:=Function_Num MSAC1S_Write.ind(Req_Add=Loc_add, Slot_Number,Index,Length,Data)	VS-WRES
15	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Alarm_Ack-REQ-PDU( ) => AA_State:=WRes Res_SAP:=Server_SAP MSAC1S_Alarm_Ack.ind(Alarm_Type, Slot_Number,Seq_Nr)	AA-WRES
16	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Alarm_Ack-REQ-PDU( ) => AA_State:=WRes Res_SAP:=Alarm_SAP MSAC1S_Alarm_Ack.ind(Alarm_Type, Slot_Number,Seq_Nr)	AA-WRES
17	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /NOT(Read-REQ-PDU( ) || Write-REQ-PDU( ) && (L_sdu.len >= Length+4) || Alarm_Ack-REQ-PDU( )) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
18	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /NOT(Alarm_Ack-REQ-PDU( )) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
19	OPEN	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) => MSAC1S_Fault.ind	POWER-ON
20	OPEN	MSAC1S_Read.rsp(+)(Length, Data) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
21	OPEN	MSAC1S_Read.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
22	OPEN	MSAC1S_Write.rsp(+)(Length) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
23	OPEN	MSAC1S_Write.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
24	OPEN	MSAC1S_Alarm_Ack.rsp(+) (Alarm_Type, Slot_Number, Seq_Nr) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51

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#	Current state	Event / condition => action	Next state
25	OPEN	MSAC1S_Alarm_Ack.rsp(-) () => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
26	OPEN	MSAC1S_Stop.req => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP)	STOP-DEA51
27	OPEN	MSAC1S_Start.req(Master_Add) => MSAC1S_Fault.ind	POWER-ON
28	OPEN	MSAC1S_SInit_MS1.req => MSAC1S_Fault.ind	POWER-ON
29	OPEN	MSAC1S_Reset.req => MSAC1S_Reset.cnf	POWER-ON
30	VS-WRES	MSAC1S_Read.rsp(+)(Length, Data) /Service_Header=0x5E && Max_DLSDU_Length_Req_Low>=(Length+4) => VS_Upd:=True L_sdu:=Read-RES-PDU DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low,Transmit=Single)	VS-SRES
31	VS-WRES	MSAC1S_Read.rsp(+)(Length, Data) /Service_Header=0x5E && Max_DLSDU_Length_Req_Low<(Length+4) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
32	VS-WRES	MSAC1S_Write.rsp(+)(Length) /Service_Header=0x5F => VS_Upd:=True L_sdu:=Write-RES-PDU DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low,Transmit=Single)	VS-SRES
33	VS-WRES	MSAC1S_Read.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) /Service_Header=0x5E => VS_Upd:=True L_sdu:=Read-NRS-PDU DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low,Transmit=Single)	VS-SRES
34	VS-WRES	MSAC1S_Write.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) /Service_Header=0x5F => VS_Upd:=True L_sdu:=Write-NRS-PDU DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low,Transmit=Single)	VS-SRES
35	VS-WRES	MSAC1S_Read.rsp(+)(Length, Data) /Service_Header<>0x5E => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
36	VS-WRES	MSAC1S_Read.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) /Service_Header<>0x5E => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
37	VS-WRES	MSAC1S_Write.rsp(+)(Length) /Service_Header<>0x5F => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51

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#	Current state	Event / condition => action	Next state
38	VS-WRES	MSAC1S_Write.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) /Service_Header<>0x5F => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
39	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON
40	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON
41	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
42	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Alarm_Ack-REQ-PDU( ) && AA_State=Idle => AA_State:=WRes Res_SAP:=Alarm_SAP MSAC1S_Alarm_Ack.ind(Alarm_Type, Slot_Number,Seq_Nr)	VS-WRES
43	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && L_sdu.len=0 && AA_State=SRes => AA_State:=Idle	VS-WRES
44	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /NOT((Alarm_Ack-REQ-PDU( ) && AA_State=Idle) || (Update_status=LO && L_sdu.len=0 && AA_State=SRes)) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
45	VS-WRES	MSAC1S_Start.req(Master_Add) => MSAC1S_Fault.ind	POWER-ON
46	VS-WRES	MSAC1S_Stop.req => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP)	STOP-DEA51
47	VS-WRES	MSAC1S_Alarm_Ack.rsp(+) (Alarm_Type, Slot_Number, Seq_Nr) /AA_State<>WRes => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
48	VS-WRES	MSAC1S_Alarm_Ack.rsp(-) () /AA_State<>WRes => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
49	VS-WRES	MSAC1S_Alarm_Ack.rsp(+) (Alarm_Type, Slot_Number, Seq_Nr) /AA_State=WRes => AA_State:=Upd DMPMS_REPLY_UPDATE.req(SSAP=Res_SAP, L_sdu=Alarm_Ack-RES-PDU, Serv_class=Low,Transmit=Single)	VS-WRES

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#	Current state	Event / condition => action	Next state
50	VS-WRES	MSAC1S_Alarm_Ack.rsp(-) () /AA_State=WRes => AA_State:=Upd DMPMS_REPLY_UPDATE.req(SSAP=Res_SAP, L_sdu=Alarm_Ack-NRS-PDU, Serv_class=Low,Transmit=Single)	VS-WRES
51	VS-WRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Alarm_SAP,Serv_class,L_status) /L-status=OK && AA_State=Upd => AA_State:=SRes	VS-WRES
52	VS-WRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Alarm_SAP,Serv_class,L_status) /L-status=OK && AA_State<>Upd => MSAC1S_Fault.ind	POWER-ON
53	VS-WRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) /L_status=LS/IV/LR => MSAC1S_Fault.ind	POWER-ON
54	VS-WRES	MSAC1S_SInit_MS1.req => MSAC1S_Fault.ind	POWER-ON
55	VS-WRES	MSAC1S_Reset.req => MSAC1S_Reset.cnf	POWER-ON
56	VS-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) /L-status=OK && VS_Upd=True => VS_Upd:=False	VS-SRES
57	VS-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) /L_status=LS/IV/LR => MSAC1S_Fault.ind	POWER-ON
58	VS-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) /L-status=OK && VS_Upd=False => MSAC1S_Fault.ind	POWER-ON
59	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON
60	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON
61	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && L_sdu.len=0 && AA_State=Idle&& VS_Upd=False	OPEN
62	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && L_sdu.len=0 && AA_State=WRes && VS_Upd=False	AA-WRES
63	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && L_sdu.len=0 && (AA_State=SRes|| AA_State=Upd) && VS_Upd=False	AA-SRES
64	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && VS_Upd=True => MSAC1S_Fault.ind	POWER-ON

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#	Current state	Event / condition => action	Next state
65	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len<>0 => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
66	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Alarm_Ack-REQ-PDU( ) && AA_State=Idle => AA_State:=WRes Res_SAP:=Alarm_SAP MSAC1S_Alarm_Ack.ind(Alarm_Type, Slot_Number,Seq_Nr)	VS-SRES
67	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && L_sdu.len=0 && AA_State=SRes => AA_State:=Idle	VS-SRES
68	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /NOT((Alarm_Ack-REQ-PDU( ) && AA_State=Idle) || (Update_status=LO && L_sdu.len=0 && AA_State=SRes)) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
69	VS-SRES	MSAC1S_Start.req(Master_Add) => MSAC1S_Fault.ind	POWER-ON
70	VS-SRES	MSAC1S_Stop.req => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP)	STOP-DEA51
71	VS-SRES	MSAC1S_Read.rsp(+)(Length, Data) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
72	VS-SRES	MSAC1S_Read.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
73	VS-SRES	MSAC1S_Write.rsp(+)(Length) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
74	VS-SRES	MSAC1S_Write.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
75	VS-SRES	MSAC1S_Alarm_Ack.rsp(+) (Alarm_Type, Slot_Number, Seq_Nr) /AA_State<>WRes => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
76	VS-SRES	MSAC1S_Alarm_Ack.rsp(-) () /AA_State<>WRes => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
77	VS-SRES	MSAC1S_Alarm_Ack.rsp(+) (Alarm_Type, Slot_Number, Seq_Nr) /AA_State=WRes => AA_State:=Upd DMPMS_REPLY_UPDATE.req(SSAP=Res_SAP, L_sdu=Alarm_Ack-RES-PDU, Serv_class=Low,Transmit=Single)	VS-SRES

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#	Current state	Event / condition => action	Next state
78	VS-SRES	MSAC1S_Alarm_Ack.rsp(-) () /AA_State=WRes => AA_State:=Upd DMPMS_REPLY_UPDATE.req(SSAP=Res_SAP, L_sdu=Alarm_Ack-NRS-PDU, Serv_class=Low,Transmit=Single)	VS-SRES
79	VS-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Alarm_SAP,Serv_class,L_status) /L-status=OK && AA_State=Upd => AA_State:=SRes	VS-SRES
80	VS-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Alarm_SAP,Serv_class,L_status) /L-status=OK && AA_State<>Upd => MSAC1S_Fault.ind	POWER-ON
81	VS-SRES	MSAC1S_SInit_MS1.req => MSAC1S_Fault.ind	POWER-ON
82	VS-SRES	MSAC1S_Reset.req => MSAC1S_Reset.cnf	POWER-ON
83	AA-WRES	MSAC1S_Alarm_Ack.rsp(+) (Alarm_Type, Slot_Number, Seq_Nr) => AA_State:=Upd L_sdu:=Alarm_Ack-RES-PDU DMPMS_REPLY_UPDATE.req(SSAP=Res_SAP, L_sdu, Serv_class=Low,Transmit=Single)	AA-SRES
84	AA-WRES	MSAC1S_Alarm_Ack.rsp(-) () => AA_State:=Upd L_sdu:=Alarm_Ack-NRS-PDU DMPMS_REPLY_UPDATE.req(SSAP=Res_SAP, L_sdu, Serv_class=Low,Transmit=Single)	AA-SRES
85	AA-WRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) => MSAC1S_Fault.ind	POWER-ON
86	AA-WRES	MSAC1S_Read.rsp(+)(Length, Data) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
87	AA-WRES	MSAC1S_Read.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
88	AA-WRES	MSAC1S_Write.rsp(+)(Length) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
89	AA-WRES	MSAC1S_Write.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
90	AA-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON
91	AA-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON

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#	Current state	Event / condition => action	Next state
92	AA-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
93	AA-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Read-REQ-PDU( ) && Res_SAP=Alarm_SAP => Service_Header:=Function_Num MSAC1S_Read.ind(Req_Add=Loc_add, Slot_Number,Index,Length)	VS-WRES
94	AA-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Write-REQ-PDU( ) && Res_SAP=Alarm_SAP => Service_Header:=Function_Num MSAC1S_Write.ind(Req_Add=Loc_add, Slot_Number,Index,Length,Data)	VS-WRES
95	AA-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /NOT(Write-REQ-PDU( ) || Read-REQ-PDU( )) || Res_SAP=Server_SAP => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
96	AA-WRES	MSAC1S_Start.req(Master_Add) => MSAC1S_Fault.ind	POWER-ON
97	AA-WRES	MSAC1S_Stop.req => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP)	STOP-DEA51
98	AA-WRES	MSAC1S_Reset.req => MSAC1S_Reset.cnf	POWER-ON
99	AA-WRES	MSAC1S_SInit_MS1.req => MSAC1S_Fault.ind	POWER-ON
100	AA-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Alarm_SAP,Serv_class,L_status) /L-status=OK && AA_State=Upd && Res_SAP=Alarm_SAP => AA_State:=SRes	AA-SRES
101	AA-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) /L_status=LS/IV/LR => MSAC1S_Fault.ind	POWER-ON
102	AA-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Alarm_SAP,Serv_class,L_status) /L-status=OK &&(AA_State<>Upd || Res_SAP<>Alarm_SAP) => MSAC1S_Fault.ind	POWER-ON
103	AA-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) /L-status=OK && AA_State=Upd && Res_SAP=Server_SAP => AA_State:=SRes	AA-SRES
104	AA-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) /L-status=OK && (AA_State<>Upd || Res_SAP<>Server_SAP) => MSAC1S_Fault.ind	POWER-ON
105	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON

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#	Current state	Event / condition => action	Next state
106	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON
107	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && L_sdu.len=0 && AA_State=SRes => AA_State:=Idle	OPEN
108	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /(Update_status<>LO || AA_State<>SRes) && Res_SAP=Alarm_SAP => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
109	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && L_sdu.len=0 && AA_State=SRes => AA_State:=Idle	OPEN
110	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /(Update_status<>LO || L_sdu.len<>0 || AA_State<>SRes) && Res_SAP=Server => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
111	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Read-REQ-PDU( ) && RES_SAP=ALARM_SAP => Service_Header:=Function_Num MSAC1S_Read.ind(Req_Add=Loc_add, Slot_Number,Index,Length)	VS-WRES
112	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Write-REQ-PDU( ) && RES_SAP=ALARM_SAP => Service_Header:=Function_Num MSAC1S_Write.ind(Req_Add=Loc_add, Slot_Number,Index,Length,Data)	VS-WRES
113	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /NOT(Write-REQ-PDU( ) || Read-REQ-PDU( )) && RES_SAP=ALARM_SAP => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
114	AA-SRES	MSAC1S_Start.req(Master_Add) => MSAC1S_Fault.ind	POWER-ON
115	AA-SRES	MSAC1S_Stop.req => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP)	STOP-DEA51
116	AA-SRES	MSAC1S_Read.rsp(+)(Length, Data) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
117	AA-SRES	MSAC1S_Read.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
118	AA-SRES	MSAC1S_Write.rsp(+)(Length) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51

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#	Current state	Event / condition => action	Next state
119	AA-SRES	MSAC1S_Write.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
120	AA-SRES	MSAC1S_Alarm_Ack.rsp (Alarm_Type, Slot_Number, Seq_Nr) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
121	AA-SRES	MSAC1S_Alarm_Ack.rsp (Alarm_Type, Slot_Number, Seq_Nr) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
122	AA-SRES	MSAC1S_SInit_MS1.req => MSAC1S_Fault.ind	POWER-ON
123	AA-SRES	MSAC1S_Reset.req => MSAC1S_Reset.cnf	POWER-ON
124	STOP-DEA51	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status = OK => DMPMS_SAP_DEACTIVATE.req(SSAP=Alarm_SAP)	STOP-DEA50
125	STOP-DEA51	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status=NO/IV => MSAC1S_Fault.ind	POWER-ON
126	STOP-DEA50	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Alarm_SAP,M_status) /M_status = OK => MSAC1S_Stop.cnf	CLOSED
127	STOP-DEA50	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Alarm_SAP,M_status) /M_status=NO/IV => MSAC1S_Fault.ind	POWER-ON
128	ERR-DEA51	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status = OK => DMPMS_SAP_DEACTIVATE.req(SSAP=Alarm_SAP)	ERR-DEA50
129	ERR-DEA51	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status=NO/IV => MSAC1S_Fault.ind	POWER-ON
130	ERR-DEA50	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Alarm_SAP,M_status) /M_status = OK	CLOSED
131	ERR-DEA50	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Alarm_SAP,M_status) /M_status=NO/IV => MSAC1S_Fault.ind	POWER-ON

9.2.4 Functions

Table 65 contains the functions used by the MSAC1S, their arguments and their descriptions.

Table 65 – Functions used by the MSAC1S

Function name	Description
Read-REQ-PDU ( )	This function will return TRUE if the corresponding L_sdu is a valid Read-REQ-PDU. (L_sdu.len >= 4 && L_sdu[1] = 0x5E)

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Function name	Description
Write-REQ-PDU ( )	This function will return TRUE if the corresponding L_sdu is a valid Write-REQ-PDU. (L_sdu.len >= 4 && L_sdu[1] = 0x5F)
Alarm_Ack-REQ-PDU ( )	This function will return TRUE if the corresponding L_sdu is a valid Alarm_Ack-REQ-PDU. (L_sdu.len >= 4 && L_sdu[1] = 0x5C)

9.3 SSCY1S

9.3.1 Primitive definitions

9.3.1.1 Primitives exchanged between SSCY1S and FSPMS

Table 66 shows the service primitives including their associated parameters issued by the FSPMS and received by the SSCY1S.

Table 66 – Primitives issued by FSPMS to SSCY1S

Primitive name	Source	Associated parameters	Functions
Get Publisher Data.req	FSPMS	Rem_Add	Refer to FAL Service Definition in IEC 61158-5-3
Start Subscriber.req	FSPMS	Rem_Add	
Stop Subscriber.req	FSPMS	Rem_Add	

Table 67 shows the service primitives including their associated parameters issued by the SSCY1S and received by the FSPMS.

Table 67 – Primitives issued by SSCY1S to FSPMS

Primitive name	Source	Associated parameters	Functions
Get Publisher Data.cnf(+)	SSCY1S	Rem_Add, Data, New Flag	Refer to FAL Service Definition in IEC 61158-5-3
Get Publisher Data.cnf(-)	SSCY1S	Rem_Add	
Start Subscriber.cnf(+)	SSCY1S	Rem_Add	
Start Subscriber.cnf(-)	SSCY1S	Rem_Add	
Stop Subscriber.cnf(+)	SSCY1S	Rem_Add	
Stop Subscriber.cnf(-)	SSCY1S	Rem_Add	
New Publisher Data.ind	SSCY1S	Rem_Add	
Publisher Active.ind	SSCY1S	Rem_Add, Status	

9.3.1.2 Parameter of SSCY1S primitives

The parameters used with the primitives exchanged between the FSPMS and the SSCY1S are described in FAL Service Definition in IEC 61158-5-3.

9.3.2 State machine description

After Power-On the SSCY1S waits for initiation by means of DMPMS DX Entered.ind with the Status TRUE. It indicates that the MSCY1S is opened for data exchange by the associated DP-master.

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In the state W-START the service Start Subscriber called from the FSPMS is expected. When receiving this event the transition initializes all local variables and enters the RUN state. Furthermore, the local monitoring timer with the WD value (MSCY1S) is started.

When receiving a DMPMS DX Broadcast.ind with publisher data in the OPEN state the sample data according to the filter table are stored. Furthermore, the local flags New Data and New Stat will be set to TRUE and a New Publisher Data.ind will be issued to the FSPMS. The application retrieves the sample data with the Get Publisher Data request service primitive.

When the monitoring timer expires the status is checked and the timer will be started again. If the current status (New Stat) differs from status (Status) of the last interval the change is indicated to the application by means of the Publisher Active indication service primitive. Therefore, every change of status from active to passive is reported to the application. The application may stop the subscribing procedure by sending a Stop Subscriber service request that sets the state machine back to W-START.

In any case, when a DMPMS DX Entered .ind with status FALSE (MSCY1S leaves the data exchange) is invoked the state machine is set back to POWER ON.

Local variables of the SSCY1S

Status
(Boolean)

This local variable is TRUE if the publisher was active during the last WD period. That means the data exchange mode was entered, the subscriber was started and at least one DXB had been received during the previous WD interval. Otherwise it is FALSE.

New_Stat
(Boolean)

This local variable is TRUE if the publisher is active. That means the Data Exchange is entered, the subsciber is started and at least one DXB has been received during the current WD interval. Otherwise it is FALSE

New Data
(Boolean)

This variable is TRUE if new data have arrived and are not retrieved by the Get Publisher Data service primitive. Otherwise it is FALSE.

Sample Data
(Octet-String)

The data buffer for publisher data.

9.3.3 SSCY1S state table

Table 68 contains the complete description of the SSCY1S state machine.

Table 68 – SSCY1S state table

#	Current state	Event / condition => action	Next state
1	POWER-ON	SSCY1S_Start_Subscriber.req (Rem_Add) => SSCY1S_Start_Subscriber.cnf (-) (Rem_Add)	POWER-ON
2	POWER-ON	SSCY1S_Stop_Subscriber.req (Rem_Add) => SSCY1S_Stop_Subscriber.cnf (-) (Rem_Add)	POWER-ON

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#	Current state	Event / condition => action	Next state
3	POWER-ON	SSCY1S_Get_Publisher_Data.req (Rem_Add) => SSCY1S_Get_Publisher_Data.cnf (-) (Rem_Add)	POWER-ON
4	POWER-ON	DMPMS_DX_Broadcast.ind (Rem_Add, Data) => ignore	POWER-ON
5	POWER-ON	DMPMS_DX_Entered.ind (Rem_Add, Status) /Status =>	W-START
6	W-START	SSCY1S_Start_Subscriber.req (Rem_Add) => SET_WD, New_Stat := FALSE New_Data := FALSE, Sample_Data := 0 SSCY1S_Start_Subscriber.cnf (+) (Rem_Add)	RUN
7	W-START	SSCY1S_Stop_Subscriber.req (Rem_Add) => SSCY1S_Stop_Subscriber.cnf (-) (Rem_Add)	W-START
8	W-START	SSCY1S_Get_Publisher_Data.req (Rem_Add) => SSCY1S_Get_Publisher_Data.cnf (-) (Rem_Add)	W-START
9	W-START	DMPMS_DX_Broadcast.ind (Rem_Add, Data) => ignore	W-START
10	RUN	SSCY1S_Start_Subscriber.req (Rem_Add) => SSCY1S_Start_Subscriber.cnf (-) (Rem_Add)	RUN
11	RUN	SSCY1S_Stop_Subscriber.req (Rem_Add) => StopTimer(WD) SSCY1S_Stop_Subscriber.cnf (+) (Rem_Add)	W-START
12	RUN	SSCY1S_Get_Publisher_Data.req (Rem_Add) => Data := Sample_Data, New_Flag := New_Data, New_Data := FALSE SSCY1S_Get_Publisher_Data.cnf (+) (Rem_Add, Data, New_Flag)	RUN
13	RUN	DMPMS_DX_Broadcast.ind (Rem_Add, Data) => New_Stat := TRUE, New_Data := TRUE, Sample_Data := Filter (Data) SSCY1S_New_Publisher_Data.ind (Rem_Add)	RUN
14	RUN	WDTimer expired /New_Stat => TRIG_WD, New_Stat := FALSE SSCY1S_Publisher_Active.ind (Rem_Add, Status)	RUN
15	RUN	WDTimer expired /!New_Stat => TRIG_WD, New_Stat := FALSE	RUN

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#	Current state	Event / condition => action	Next state
16	any	DMPMS_DX_Entered.ind (Rem_Add, Status) /!Status => StopTimer(WD), Publisher Address := 127, Status := FALSE, New_Stat := FALSE SSCY1S_Publisher_Active.ind (Rem_Add, Status)	POWER-ON

9.3.4 Functions

Table 69 contains the functions used by the SSCY1S, their arguments and their descriptions.

Table 69 – Functions used by the SSCY1S

Function name	Description
Filter(Data)	This function will return sample data (Octete-String) extracted from Data according to the offset and length from the DXB link attributes.

SET_WD	if (WD Enabled = TRUE)
	  StartTimer (WD)
	else
	  StopTimer (WD)

TRIG_WD	if (WD Enabled = TRUE) StartTimer (WD)

9.4 MSRM2S

9.4.1 Primitive definitions

9.4.1.1 Primitives exchanged between MSRM2S and FSPMS

Table 70 shows the service primitives including their associated parameters issued by the FSPMS and received by the MSRM2S.

Table 70 – Primitives issued by FSPMS to MSRM2S

Primitive name	Source	Associated parameters	Functions
SInit MS2.req	FSPMS	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Reset.req	FSPMS	(none)	

Table 71 shows the service primitives including their associated parameters issued by the MSRM2S and received by the FSPMS.

Table 71 – Primitives issued by MSRM2S to FSPMS

Primitive name	Source	Associated parameters	Functions
SInit MS2.cnf	MSRM2S	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Reset.cnf	MSRM2S	(none)	
Fault.ind	MSRM2S	(none)	

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9.4.1.2 Parameter of MSRM2S primitives

There are no parameters associated to the primitives.

9.4.2 State machine description

For acyclic communication the DSAPs are allocated dynamically by the so called Resource Manager (RM) of the DP-slave.

The Resource Manager (RM) co-ordinates the communication resources for MS2 AR of the DP-slave. The main features of the RM are described in the following sequence, see Figure 22.

- The DP-master requests a communication connection by means of the service Initiate (DSAP 49). If multiple application processes are used in the DP-slave it is possible to address these application processes through an Application Process Identifier (API).
- The RM of the DP-slave provides an unused SAP (SAP 0 - 48). The possible SAPs are defined locally in the Res_SAP_List.
- The RM responds the Initiate.req immediately with the RM_REQ-PDU containing the corresponding unused SAP.
- Further steps following the Initiate.req (Initiate.res, Read, Write, Abort) are handled by the corresponding MSAC2S State Machine.

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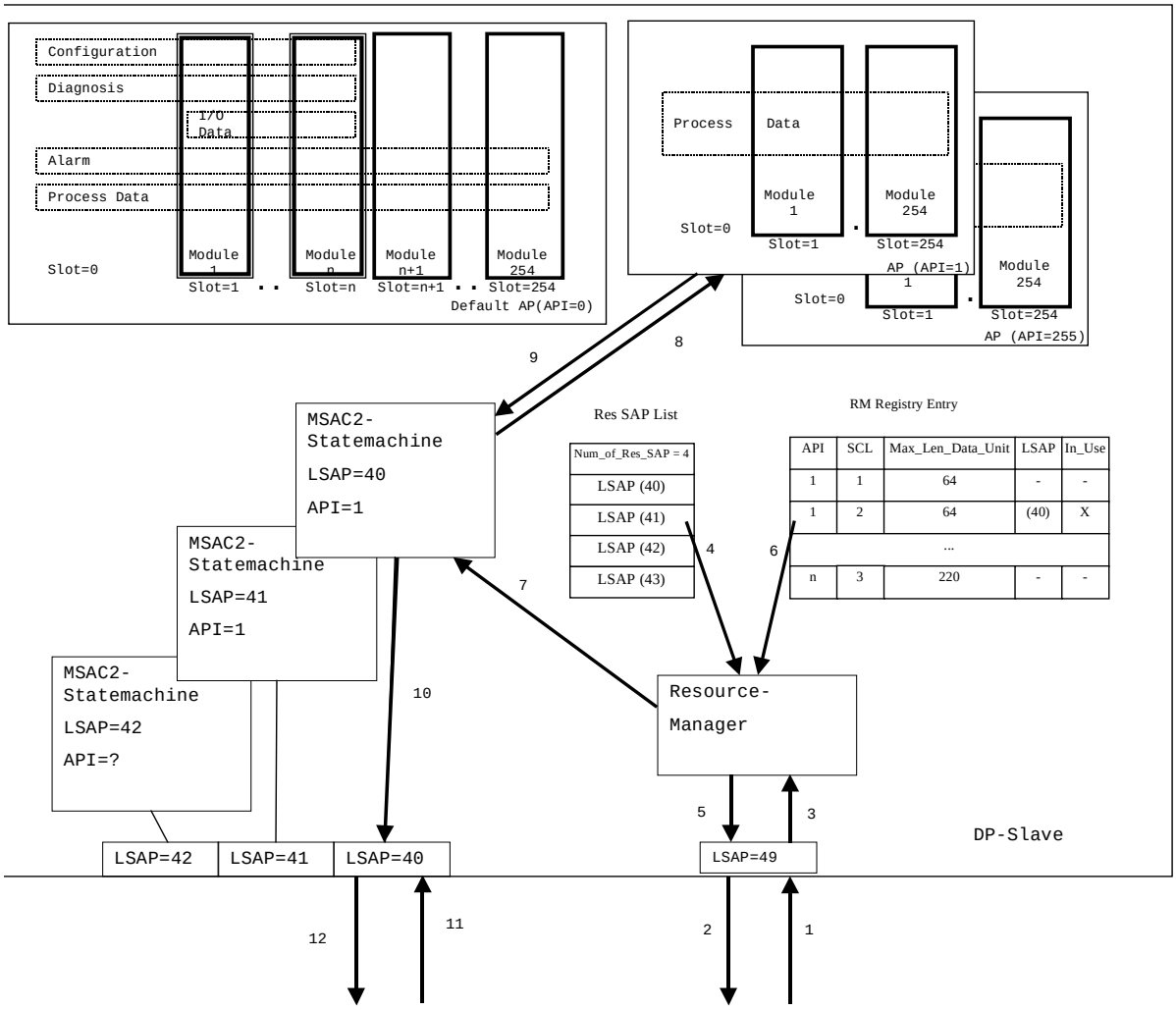

1 Initiate-REQ-PDU (DSAP=49)

2 RM-REQ-PDU (Server_SAP=next SAP not In_Use)

3 Initiate-REQ-PDU

4 Search of the next SAP not In_Use

5 Reply_Update.req(L_sdu=RM-REQ-PDU with next SAP not In_Use)

6 Check RM_Registry_Entry for API, In_Use=FALSE

7 MSAC2S_Initiate.req (Server_SAP=40)

8 MSAC2S_Initiate.ind (Server_SAP=40)

9 MSAC2S_Initiate.res (Server_SAP=40)

10 Reply_Update.req(L_sdu=Initiate-RES-PDU)

11 Polling with (L_sdu.len=0)

12 Initiate-RES-PDU

Figure 22 – Example for connection establishment on MS2(server-side)

The Resource Manager is responsible for the allocation of SAPs to incoming requests for a MS2 AR communication.

If a Res_SAP is available when an Initiate-REQ-PDU is received on the RM_SAP, the Slave responds with a RM-REQ-PDU.

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The only PDU which is accepted is an Initiate-REQ-PDU. The Resource Manager checks for an unused API/SCL in the RM_Registry and passes the Initiate-PDU with an Initiate to a MSAC2S State Machine.

If none of the entries in the RM_Registry fits to the requested API/SCL, the last SAP sent in the RM-REQ-PDU is temporarily used to send an Abort-REQ-PDU to the Master.

If no Res_SAP is available then the RM_SAP is deactivated.

If an MSAC2S State Machine indicates with anAbort.req that a connection has been closed, the corresponding entry in the RM_Registry is marked as unused and the corresponding DLSAP is released and can be used for further requests.

Local variables of the MSRM2S

List of RM entries

Figure 23 shows the structure of the RM entries as they are listed in the RM_Registry.

static part			**dynamic part**	
API	SCL	Max_Len_Data_Unit	SAP	In_Use

Figure 23 – Structure of RM entries in the RM_Registry

List of SSAPs

SSAP_Entry
(Unsigned8)

0..48

Stored_Req_Add,
Stored_Send_Timeout,
Stored_Features_Supported,
Stored_Profile_Features_Supported,
Stored_Profile_Ident_Number,
Stored_Add_Addr_Param
Storage of values of the last Initiate function (see part DP-Services).

RM_SAP
(constant)

Set to 49

Last_SAP
(Unsigned8)

0..48

SAP for previous established connection.

Server_SAP
(Unsigned8)

0..48

SAP which will be allocated to the next connection.

Macros

INITIATE-REQ-PDU-LEN
(

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48 {64 for linking device}

)

RMREQ-PDU-LEN
(

4

)

9.4.3 MSRM2S state table

Table 72 contains the complete description of the MSRM2S state machine.

Table 72 – MSRM2S state table

#	Current state	Event / condition => action	Next state
1	POWER-ON	MSRM2S_SInit.req =>RM_SAP:=49 Res_SAP_entry_Index:=1 Server_SAP:=Get_from_List_of_SSAPs() DMPMS_RSAP_ACTIVATE.req(SSAP=RM_SAP, Access=All, L_sdu_length_list=(<INITIATE-REQ-PDU-LEN>,0,<RMREQ-PDU-LEN>,0) Indication_Mode=Data)	WAIT-ACT
2	WAIT-ACT	DMPMS_RSAP_ACTIVATE.cnf(SSAP,M_status) /M_status=OK =>RM_SAP:=49 Res_SAP_entry_Index:=1 Server_SAP:=Get_from_List_of_SSAPs() DMPMS_REPLY_UPDATE.req(SSAP=RM_SAP, L_sdu=RM-REQ-PDU, Serv_class=Low, Transmit=Single)	INIT-WUPD
3	WAIT-ACT	DMPMS_RSAP_ACTIVATE.cnf(SSAP,M_status) /M_status=NO/IV =>MSRM2S_Fault.ind	POWER-ON
4	INIT-WUPD	DMPMS_REPLY_UPDATE.cnf (SSAP=RM_SAP, Serv_class=Low, L_status) /L_status=OK =>MSRM2S_SInit.cnf	OPEN
5	INIT-WUPD	DMPMS_REPLY_UPDATE.cnf (SSAP=RM_SAP, Serv_class=Low, L_status) /L_status= LS/IV/LR =>MSRM2S_Fault.ind	POWER-ON
6	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=RM_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu=Initiate-REQ-PDU && List_of_SSAPs<>empty =>Last_SAP := Server_SAP Stored_Req_Add:=Loc_add, Stored_Send_Timeout:= Send_Timeout Stored_Features_Supported:=Features_Supported Stored_Profile_Features_Supported:= Profile_Features_Supported Stored_Profile_Ident_Number:=Profile_Ident_Number Stored_Add_Addr_Param:= Add_Addr_Param Server_SAP:=Get_from_List_of_SSAPs() DMPMS_REPLY_UPDATE.req(SSAP=RM_SAP, L_sdu=RM-REQ-PDU, Serv_class=Low, Transmit=Single)	OW-UPDATE
7	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=RM_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu=Initiate-REQ-PDU && List_of_SSAPs=empty =>Stored_Req_Add:=Loc_add, Stored_Send_Timeout:= Send_Timeout Stored_Features_Supported:=Features_Supported Stored_Profile_Features_Supported:= Profile_Features_Supported Stored_Profile_Ident_Number:=Profile_Ident_Number Stored_Add_Addr_Param:= Add_Addr_Param DMPMS_SAP_DEACTIVATE.req(SSAP=RM_SAP)	OW-DEACT

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#	Current state	Event / condition => action	Next state
8	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=RM_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && (L_sdu<>Initiate-REQ-PDU) =>ignore Lsdu DMPMS_REPLY_UPDATE.req(SSAP=RM_SAP, L_sdu=RM-REQ-PDU, Serv_class=Low, Transmit=Single)	INIT-WUPD
9	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=RM_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=NO =>ignore Lsdu	OPEN
10	OPEN	MSRM2S_Reset.req =>for (all CRL entries with AR-Type=MS2) MSAC2S_Reset.req(Res_SAP=SSAP) endfor	RESET-AC2
11	OPEN	MSAC2S_Closed.ind(Res_SAP) =>Index := Search_in_List_of_RM_Entries(SAP:=Res_SAP, In_Use:=True)	AW-SEARCH
12	AW-SEARCH	/Index <> 0 =>List_of_RM_Entries.In_Use[Index]:=False Put_to_List_of_SSAPs(Stored_Res_SAP)	OPEN
13	AW-SEARCH	/Index = 0 =>MSRM2S_Fault.ind	POWER-ON
14	OW-UPDATE	DMPMS_REPLY_UPDATE.cnf (SSAP=RM_SAP, Serv_class=Low, L_status) /L_status=OK =>Index := Search_in_List_of_RM_Entries(API:=Add_Addr_Param.D_Addr.API, SCL:= Add_Addr_Param.D_Addr.SCL, In_Use:=False)	OW-SEARCH
15	OW-UPDATE	DMPMS_REPLY_UPDATE.cnf (SSAP=RM_SAP, Serv_class=Low, L_status) /L_status= LS/IV/LR =>MSRM2S_Fault.ind	POWER-ON
16	OW-SEARCH	/Index <> 0 =>List_of_RM_Entries.In_Use[Index]:=True List_of_RM_Entries.SAP[Index]:=Last_SAP Max_Len_Data_Unit:=List_of_RM_Entries.Max_Len_Data_Unit[Index] Send_Timeout:=Max(Stored_Send_Timeout, Stored_Min_Send_Timeout) MSAC2S_Initiate.req(Res_SAP=Last_SAP, Req_Add=Stored_Req_Add, Max_Len_Data_Unit, Send_Timeout, Features_Supported= Stored_Features_Supported, Profile_Features_Supported= Stored_Profile_Features_Supported, Profile_Ident_Number= Stored_Profile_Ident_Number, Add_Addr_Param= Stored_Add_Addr_Param)	OPEN
17	OW-SEARCH	/Index= 0 =>Send_Timeout:=Max(Stored_Send_Timeout, Stored_Min_Send_Timeout) MSAC2S_Abort.req(Res_SAP=Last_SAP, Req_Add, Subnet=NO, Instance=MSAC2, Reason_Code=ABT_IA, Send_Timeout)	OPEN
18	OW-DEACT	DMPMS_SAP_DEACTIVATE.cnf(SSAP,M_status) /M_status=OK =>Index := Search_in_List_of_RM_Entries(API:=Add_Addr_Param.D_Addr.API, SCL:= Add_Addr_Param.D_Addr.SCL, In_Use:=False)	CW-SEARCH
19	OW-DEACT	DMPMS_SAP_DEACTIVATE.cnf(SSAP,M_status) /M_status=NO/IV =>MSRM2S_Fault.ind	POWER-ON

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#	Current state	Event / condition => action	Next state
20	CW-SEARCH	/Index <> 0 =>List_of_RM_Entries.In_Use[Index]:=True List_of_RM_Entries.SAP[Index]:=Last_SAP Max_Len_Data_Unit:=List_of_RM_Entries.Max_Len_Data_Unit[Index] Send_Timeout:=Max(Stored_Send_Timeout, Stored_Min_Send_Timeout) MSAC2S_Initiate.req(Res_SAP=Last_SAP, Req_Add=Stored_Req_Add, Max_Len_Data_Unit, Send_Timeout, Features_Supported= Stored_Features_Supported, Profile_Features_Supported= Stored_Profile_Features_Supported, Profile_Ident_Number= Stored_Profile_Ident_Number, Add_Addr_Param= Stored_Add_Addr_Param)	CLOSED
21	CW-SEARCH	/Index = 0 =>Send_Timeout:=Max(Stored_Send_Timeout, Stored_Min_Send_Timeout) MSAC2S_Abort.req(Res_SAP=Last_SAP, Req_Add, Subnet=NO, Instance=MSAC2, Reason_Code=ABT_IA, Send_Timeout)	CLOSED
22	CLOSED	MSRM2S_Reset.req =>for (all CRL entries with AR-Type=MS2) MSAC2S_Reset.req(Res_SAP=SSAP) endfor	RESET-AC2
23	CLOSED	MSAC2S_Closed.ind(Res_SAP) =>Stored_Res_SAP:=Res_SAP Index := Search_in_List_of_RM_Entries(SAP:=Res_SAP, In_Use:=True)	REOW-SEARCH
24	REOW-SEARCH	/Index <> 0 =>List_of_RM_Entries.In_Use[Index]:=False Put_to_List_of_SSAPs(Stored_Res_SAP)	WAIT-ACT
25	REOW-SEARCH	/Index = 0 =>MSRM2S_Fault.ind	POWER-ON
26	RESET-AC2	for (all CRL entries with AR-Type=MS2) MSAC2S_Reset.cnf(Res_SAP=SSAP) endfor /M_status=OK =>MSRM2S_Reset.cnf	POWER-ON
27	ANY-STATE	MSAC2S_Fault.ind(Res_SAP) =>MSRM2S_Fault.ind	POWER-ON
28	ANY-STATE	unexpected DL reaction =>MSRM2S_Fault.ind	POWER-ON

9.5 MSAC2S

9.5.1 Primitive definitions

9.5.1.1 Primitives exchanged between MSAC2S and FSPMS

Table 73 shows the service primitives including their associated parameters issued by the FSPMS and received by the MSAC2S.

Table 73 – Primitives issued by FSPMS to MSAC2S

Primitive name	Source	Associated parameters	Functions
Initiate.rsp(+)	FSPMS	Res SAP, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	Refer to FAL Service Definition in IEC 61158-5-3
Initiate.rsp(-)	FSPMS	Res SAP, Error Decode, Error Code 1 Error Code 2	

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Primitive name	Source	Associated parameters	Functions
Read.rsp(+)	FSPMS	Res SAP, Length, Data	
Read.rsp(-)	FSPMS	Res SAP, Error Decode, Error Code 1 Error Code 2	
Write.rsp(+)	FSPMS	Res SAP, Length	
Write.rsp(-)	FSPMS	Res SAP, Error Decode, Error Code 1 Error Code 2	
Data Transport.rsp(+)	FSPMS	Res SAP, Length, Data	
Data Transport.rsp(-)	FSPMS	Res SAP, Error Decode, Error Code 1 Error Code 2	
Abort.req	FSPMS	Res SAP, Subnet, Instance, Reason Code	

Table 74 shows the service primitives including their associated parameters issued by the MSAC2S and received by the FSPMS.

Table 74 – Primitives issued by MSAC2S to FSPMS

Primitive name	Source	Associated parameters	Functions
Initiate.ind	MSAC2S	Res SAP, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	Refer to FAL Service Definition in IEC 61158-5-3
Abort.ind	MSAC2S	Res SAP, Locally Generated, Subnet, Instance, Reason Code, Additional Detail	
Read.ind	MSAC2S	Res SAP, Slot Number, Index, Length	
Write.ind	MSAC2S	Res SAP, Slot Number, Index, Length, Data	
Data Transport.ind	MSAC2S	Res SAP, Slot Number, Index, Length, Data	

9.5.1.2 Primitives exchanged between MSAC2S and MSRM2S

Table 75 shows the service primitives including their associated parameters issued by MSAC2S and received by the MSRM2S.

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Table 75 – Primitives issued by MSRM2S to MSAC2S

Primitive name	Source	Associated parameters	Functions
Reset.req	MSRM2S	Res SAP	Refer to FAL Service Definition in IEC 61158-5-3
Initiate.req	MSRM2S	Res SAP, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	
RM2_Abort.req	MSRM2S	Res SAP, Subnet, Instance, Reason Code	

Table 76 shows the service primitives including their associated parameters issued by MSAC2S and received by the MSRM2S.

Table 76 – Primitives issued by MSAC2S to MSRM2S

Primitive name	Source	Associated parameters	Functions
Reset.cnf	MSAC2S	Res SAP	Refer to FAL Service Definition in IEC 61158-5-3
Fault.ind	MSAC2S	Res SAP	
Closed.ind	MSAC2S	Res SAP	Signals the Termination of a MS2 Communication

9.5.1.3 Parameters of MSAC2S primitives

The parameters used with the primitives exchanged between the MSAC2S and FSPMS,MSRM2S are described in FAL Service Definition in IEC 61158-5-3. Additional parameters are described in Table 77.

Table 77 – Parameter used with primitives exchanged with MSAC2S

Parameter name	Description
Res SAP	This parameter conveys the SSAP for addressing of the various MS2 AR.

9.5.2 State machine description

In the state CLOSED the Initiate service is expected from the Resource Manager. Then the corresponding DLSAP is activated and the User gets the Initiate.ind. The User shall generate a MSAC2S_Initiate.rsp and the connection is established after the Master has fetched the response.

In the OPEN-state valid services (see macro <VALID_SERVICE>) are allowed. Only one request from the DP-master is processed simultaneously, otherwise the connection is aborted.

Both the DP-master and the DP-slave can close the connection using the Abort. The remote User gets an Abort.ind.

The connection monitoring is based on the U-Timer, F-Timer and I-Timer (see 6.9).

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Local variables of the MSAC2S

Server_SAP
(Unsigned8)

The used SAP for the MS2 connection.

U-Timer
(Unsigned16)

The U-Timer controls the reaction of the User after delivering an indication. If the U-Timer expires an Idle-PDU is created and transferred to the local DLL. The U-Timer is stopped when the User provides the response.

F-Timer
(Unsigned16)

The F-Timer controls the Master fetching the previously provided PDU. If the F-Timer expires an Abort is generated, transferred to the local DLL and the F-Timer starts again. The F-Timer is stopped as soon as the Master fetches the PDU.

I-Timer
(Unsigned16)

The I-Timer controls the next activity of the client after the Master has fetched the previous PDU. When the I-Timer expires an Abort is generated, transferred to the local DLL and the F-Timer starts. The I-Timer is stopped when the Master has sent the next request.

NOTE Only one of the timers described above is running at the same time.

Service_Header
(Unsigned8)

Contains the actual service header to check whether the User generates the correct response.

Return-State
INITIATE, VALID-SERVICE

This variable is used to store the state where to return after an idle cycle has been processed.

Go_Abort
(Boolean)

Local flag that indicates an abort reaction after finishing the present service response.

Service_Buffer
(Octet-String[244])

Local buffer that stores one complete Response-PDU (Initiate.rsp or <VALID_SERVICE>.rsp) during an outstanding Idle-RES-PDU.

Stored_Slot_Number
Actual value of the slot number

Stored_Index
Stored values of the parameters of Read/Write-services

Stored_Instance
Actual value of the instance (e.g. MSAC2)

Stored_Reason
Stored values of the parameters of MSAC2S_Abort-service

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INITIATE-REQ-PDU-LEN
(local constant)

PDU-size (the 4 Octet Header is excluded) set to 48 (64 respectively for links)

ABORT_PDU_LEN
(local constant)

Length of an Abort-REQ-PDU = 4

Macros

Read-REQ-PDU
This function will return True if the corresponding L_sdu is a valid Read-REQ-PDU

Write-REQ-PDU
This function will return True if the corresponding L_sdu is a valid Write-REQ-PDU

Data_Transport-REQ-PDU
This function will return True if the corresponding L_sdu is a valid Data_Transport-REQ-PDU

Abort-REQ-PDU
This function will return True if the corresponding L_sdu is a valid Abort-REQ-PDU

Idle-REQ-PDU
This function will return True if the corresponding L_sdu is a valid Idle-REQ-PDU

STORE_ABORT_PARAMETER
(

Stored-Instance=Instance

Stored-Reason_Code=Reason_Code

)

<VALID-SERVICE>
<

Service_Header=0x5E: Read

Service_Header=0x5F: Write

Service_Header=0x51: Data_Transport

>

VALID-SERVICE-REQ-PDU
(

(Read-REQ-PDU || Write-REQ-PDU || OR Data_Transport-REQ-PDU)

&& L_sdu.len >= 4

&& (L_sdu[1] = 0x5e || (L_sdu.len >= Length+4

&& Max_DLSDU_length_ind_low-4 >= Length)

)

9.5.3 MSAC2S state table

Table 78 contains the complete description of the MSAC2S state machine.

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Table 78 – MSAC2S state table

#	Current state	Event / condition => action	Next state
1	POWER-ON	=> Server_SAP:=Res_SAP	CLOSED
2	CLOSED	MSAC2S_Initiate.req(Res_SAP, Req_Add, Max_Len_Data_Unit, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => Service_Header:=0x57 F-Timer:=Send_Timeout U-Timer:=Send_Timeout I-Timer:=2*Send_Timeout Stored_Max_Len_Data_Unit:= Max(Max_Len_Data_Unit, INITIATE-REQ-PDU-LEN) clear Service_Buffer Go_Abort:=FALSE MSAC2_Initiate.ind(Req_Add, Res_SAP, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) DMPMS_RSAP_ACTIVATE.req(SSAP=Server_SAP, Access=Req_Add, L_sdu_length_list=(Stored_Max_Len_Data_Unit+4,0, Stored_Max_Len_Data_Unit+4,0) , Indication_Mode=Data)	SET-ACC-POS
3	CLOSED	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) => ignore	CLOSED
4	CLOSED	MSAC2S_RM2_Abort.req(Res_SAP, Req_Add, Subnet, Instance, Reason_Code, Send_Timeout) => F-Timer:=Send_Timeout STORE_ABORT_PARAMETER DMPMS_RSAP_ACTIVATE.req(SSAP=Server_SAP, Access=Req_add, L_sdu_length_list=(ABORT_PDU_LEN,0, ABORT_PDU_LEN,0) Indication_Mode=Data)	SET-ACC-FE
5	CLOSED	MSAC2S_XXX.rsp(+/-)(Res_SAP) => Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	CLOSED
6	CLOSED	MSAC2S_Initiate.rsp(+/-)(Res_SAP) => Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	CLOSED
7	CLOSED	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => ignore	CLOSED
8	SET-ACC-POS	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status = OK Start U-Timer	INITI-WRES
9	SET-ACC-POS	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status=NO/IV => MSAC2S_Fault.ind	POWER-ON
10	SET-ACC-FE	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status = OK => L_sdu:=Abort-REQ-PDU(with stored parameter) Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
11	SET-ACC-FE	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status=NO/IV => MSAC2S_Fault.ind	POWER-ON

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#	Current state	Event / condition => action	Next state
12	INITI-WRES	MSAC2S_Initiate.rsp(+)(Res_SAP) => L_sdu:=Initiate-RES-PDU(With Stored_MAx_Len_Data_Unit) Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	INITI-WUPD
13	INITI-WRES	MSAC2S_Initiate.rsp(-)(Res_SAP) => L_sdu:=Initiate-NRS-PDU Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
14	INITI-WRES	MSAC2S_XXX.rsp(+/-)(Res_SAP) => Reason_Code:=ABT_SE Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
15	INITI-WRES	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => L_sdu:=Abort-REQ-PDU Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
16	INITI-WRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Abort-REQ-PDU => Stop U-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=FALSE, (Subnet, Instance, Reason_Code) from Abort-REQ-PDU)	WAIT-DEACT
17	INITI-WRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /NOT(Abort-REQ-PDU) => Reason_Code:=ABT_FE Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
18	INITI-WRES	U-Timer expired => L_sdu:=Idle-REQ-PDU Return-State:=INITIATE Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	IDLE-WUPD
19	INITI-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /L_status=OK => ignore	INITI-SRES

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#	Current state	Event / condition => action	Next state
20	INITI-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /L_status= LS/IV/LR => Stop F-Timer Stop I-Timer MSAC2S_Fault.ind	POWER-ON
21	INITI-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len=0 && Go_Abort = FALSE => Stop F-Timer Start I-Timer	OPEN
22	INITI-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len=0 && Go_Abort = TRUE => L_sdu:=Abort-REQ-PDU(With Stored Parameter) Stop F-Timer Start I-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
23	INITI-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO/NO && L_sdu.len<>0 && Abort-REQ-PDU => Stop F-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=FALSE, (Subnet, Instance, Reason_Code) from Abort-REQ-PDU)	WAIT-DEACT
24	INITI-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len<>0 && NOT(Abort-REQ-PDU) => Reason_Code:=ABT_FE Stop F-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
25	INITI-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=NO && L_sdu.len<>0 && NOT(Abort-REQ-PDU) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_FE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	INITI-SRES
26	INITI-SRES	MSAC2S_XXX.rsp(+/-)(Res_SAP) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	INITI-SRES
27	INITI-SRES	MSAC2S_Initiate.rsp(+/-)(Res_SAP) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	INITI-SRES

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#	Current state	Event / condition => action	Next state
28	INITI-SRES	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => Go_Abort:=TRUE STORE_ABORT_PARAMETER	INITI-SRES
29	INITI-SRES	F-Timer expired => Reason_Code:=ABT_TO Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
30	IDLE-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /Status=OK	IDLE-SREQ
31	IDLE-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /L_status= LS/IV/LR => Stop F-Timer Stop I-Timer MSAC2S_Fault.ind	POWER-ON
32	IDLE-SREQ	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len=0 && Go_Abort = FALSE => Stop F-Timer Start I-Timer	W-IDLE-CON
33	IDLE-SREQ	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len=0 && Go_Abort = TRUE => L_sdu:=Abort-REQ-PDU(With Stored Parameter) Stop F-Timer Start I-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
34	IDLE-SREQ	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO/NO && L_sdu.len<>0 && Abort-REQ-PDU DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2_Abort.ind(Res_SAP=Server_SAP, Locally-Generated=FALSE, (Subnet, Instance, Reason_Code) from Abort-REQ-PDU) Stop F-Timer	WAIT-DEACT
35	IDLE-SREQ	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len<>0 && NOT(Abort-REQ-PDU) => Reason_Code:=ABT_FE Stop F-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
36	IDLE-SREQ	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=NO && L_sdu.len<>0 && NOT(Abort-REQ-PDU) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_FE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	IDLE-SREQ

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#	Current state	Event / condition => action	Next state
37	IDLE-SREQ	MSAC2S_XXX.rsp(+)(Res_SAP) /Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length && Service_Buffer empty => Service_Buffer:= <VALID-SERVICE>-RES-PDU(with Stored_Slot_Number,Stored_Index)	IDLE-SREQ
38	IDLE-SREQ	MSAC2S_XXX.rsp(-)(Res_SAP) /Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length && Service_Buffer empty => Service_Buffer:= <VALID-SERVICE>-NRS-PDU(with Stored_Slot_Number,Stored_Index)	IDLE-SREQ
39	IDLE-SREQ	MSAC2S_Initiate.rsp(+)(Res_SAP) /Service-Response fits stored Service_Header && Service_Buffer empty => Service_Buffer:= Initiate-RES-PDU	IDLE-SREQ
40	IDLE-SREQ	MSAC2S_Initiate.rsp(-)(Res_SAP) /Service-Response fits stored Service_Header && Service_Buffer empty => Service_Buffer:= Initiate-NRS-PDU	IDLE-SREQ
41	IDLE-SREQ	MSAC2S_XXX.rsp(+/-)(Res_SAP) /(NOT(Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length) || NOT(Service_Buffer empty)) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_RE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	IDLE-SREQ
42	IDLE-SREQ	MSAC2S_Initiate.rsp(+/-)(Res_SAP) /(NOT(Service-Response fits stored Service_Header) || NOT(Service_Buffer empty)) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_RE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	IDLE-SREQ
43	IDLE-SREQ	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => Go_Abort:=TRUE STORE_ABORT_PARAMETER	IDLE-SREQ
44	IDLE-SREQ	F-Timer expired => Reason_Code:=ABT_TO Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
45	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Idle-RES-PDU && Return-State=INITIATE && Go_Abort=FALSE && (Service_Buffer empty) => Stop I-Timer Start U-Timer	INITI-WRES

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#	Current state	Event / condition => action	Next state
46	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Idle-RES-PDU && Return-State=INITIATE && Go_Abort=FALSE && NOT(Service_Buffer empty) && Service_Buffer=Initiate-NRS-PDU => L_sdu:=Stored L_sdu from Service_Buffer clear Service_Buffer Stop I-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
47	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Idle-RES-PDU && Return-State=INITIATE && Go_Abort=FALSE && NOT(Service_Buffer empty) && Service_Buffer=Initiate-RES-PDU => L_sdu:=Stored L_sdu from Service_Buffer clear Service_Buffer Stop I-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	INITI-WUPD
48	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Idle-RES-PDU && Return-State=VALID-SERVICE && Go_Abort=FALSE && (Service_Buffer empty) => Stop I-Timer Start U-Timer	VS-WRES
49	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Idle-RES-PDU && Return-State=VALID-SERVICE && Go_Abort=FALSE && NOT(Service_Buffer empty) => L_sdu:=Stored L_sdu from Service_Buffer clear Service_Buffer Stop I-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	VS-WUPD
50	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Idle-RES-PDU && Go_Abort=TRUE => L_sdu:=Abort-REQ-PDU(with stored Parameter) DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
51	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Abort-REQ-PDU => Stop I-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=FALSE, (Subnet, Instance, Reason_Code) from Abort-REQ-PDU)	WAIT-DEACT
52	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /NOT(Abort-REQ-PDU || Idle-RES-PDU) => Reason_Code:=ABT_FE Stop I-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD

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#	Current state	Event / condition => action	Next state
53	W-IDLE-CON	MSAC2S_XXX.rsp(+)(Res_SAP) /Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length && Service_Buffer empty => Service_Buffer:= <VALID-SERVICE>-RES-PDU(with Stored_Slot_Number,Stored_Index)	W-IDLE-CON
54	W-IDLE-CON	MSAC2S_XXX.rsp(-)(Res_SAP) /Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length && Service_Buffer empty => Service_Buffer:= <VALID-SERVICE>-NRS-PDU (with Stored_Slot_Number,Stored_Index)	W-IDLE-CON
55	W-IDLE-CON	MSAC2S_XXX.rsp(+/-)(Res_SAP) /(NOT(Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length) || NOT(Service_Buffer empty)) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_RE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	W-IDLE-CON
56	W-IDLE-CON	MSAC2S_Initiate.rsp(+/-)(Res_SAP) /(NOT(Service-Response fits stored Service_Header) || NOT(Service_Buffer empty)) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_RE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	W-IDLE-CON
57	W-IDLE-CON	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => Go_Abort:=TRUE STORE_ABORT_PARAMETER	W-IDLE-CON
58	W-IDLE-CON	I-Timer expired => Reason_Code:=ABT_TO Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
59	SABORT-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /Status=OK	SABORT-SRES
60	SABORT-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /L_status= LS/IV/LR => Stop F-Timer Stop I-Timer MSAC2S_Fault.ind	POWER-ON
61	SABORT-SRES	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => ignore	SABORT-SRES
62	SABORT-SRES	MSAC2S_XXX.rsp(+/-)(Res_SAP) => Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-SRES
63	SABORT-SRES	MSAC2S_Initiate.rsp(+/-)(Res_SAP) => Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-SRES

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#	Current state	Event / condition => action	Next state
64	SABORT-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len=0 => Stop I-Timer Stop F-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP)	WAIT-DEACT
65	SABORT-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=NO && L_sdu.len<>0 => ignore	SABORT-SRES
66	SABORT-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len<>0 => ignore L_sdu Stop I-Timer Stop F-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP)	WAIT-DEACT
67	SABORT-SRES	I-Timer expired => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code=ABT_TO)	WAIT-DEACT
68	SABORT-SRES	F-Timer expired => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code=ABT_TO)	WAIT-DEACT
69	WAIT-DEACT	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status = OK => MSAC2S_Closed.ind(Res_SAP)	CLOSED
70	WAIT-DEACT	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status=NO/IV => MSAC2S_Fault.ind	POWER-ON
71	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /VALID-SERVICE-REQ-PDU => Service_Header:=Function_Num Stored_Slot_Number:=Slot_Number Stored_Index:=Index Stop I-Timer Start U-Timer MSAC2S_<VALID-SERVICE>.ind(Res_SAP=Server_SAP)	VS-WRES
72	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Idle-REQ-PDU {IDLE-PDU} => L_sdu:=Idle-RES-PDU Stop I-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	VS-WUPD
73	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Abort-REQ-PDU => Stop I-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=FALSE, (Subnet, Instance, Reason_Code) from Abort-REQ-PDU)	WAIT-DEACT

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#	Current state	Event / condition => action	Next state
74	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /NOT(VALID-SERVICE-REQ-PDU || (Abort-REQ-PDU) || (Idle-REQ-PDU)) => Reason_Code:=ABT_FE Stop I-Timer Start I-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
75	OPEN	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => L_sdu:=Abort-REQ-PDU Stop I-Timer Start I-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
76	OPEN	MSAC2S_Initiate.rsp(+/-)(Res_SAP) => Reason_Code:=ABT_SE Stop I-Timer Start I-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
77	OPEN	MSAC2S_XXX.rsp(+/-)(Res_SAP) => L_sdu:=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code=ABT_TO) Stop I-Timer Start I-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
78	OPEN	I-Timer expired => Reason_Code:=ABT_TO Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
79	VS-WRES	MSAC2S_XXX.rsp(+)(Res_SAP) /Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length => L_sdu:=<VALID-SERVICE>-RES-PDU(with Stored_Slot_Number,Stored_Index) Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	VS-WUPD
80	VS-WRES	MSAC2S_XXX.rsp(-)(Res_SAP) /Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length => L_sdu:=<VALID-SERVICE>-NRS-PDU Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	VS-WUPD

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#	Current state	Event / condition => action	Next state
81	VS-WRES	MSAC2S_Initiate.rsp(+/-)(Res_SAP) => Reason_Code:=ABT_SE Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
82	VS-WRES	MSAC2S_XXX.rsp(+/-)(Res_SAP) /NOT(Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length) => Reason_Code:=ABT_RE Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
83	VS-WRES	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => L_sdu:=Abort-REQ-PDU Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
84	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Abort-REQ-PDU => Stop U-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=FALSE, (Subnet, Instance, Reason_Code) from Abort-REQ-PDU)	WAIT-DEACT
85	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /NOT(Abort-REQ-PDU) => Reason_Code:=ABT_FE Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
86	VS-WRES	U-Timer expired => L_sdu:=Idle-REQ-PDU Return-State:=VALID-SERVICE Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	IDLE-WUPD
87	VS-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /Status=OK	VS-SRES
88	VS-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /L_status= LS/IV/LR => Stop F-Timer Stop I-Timer MSAC2S_Fault.ind	POWER-ON

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#	Current state	Event / condition => action	Next state
89	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len=0 && Go_Abort = FALSE Stop F-Timer Start I-Timer	OPEN
90	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len=0 && Go_Abort = TRUE => L_sdu:=Abort-REQ-PDU with stored Parameter Stop F-Timer Start I-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
91	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO/NO && L_sdu.len<>0 && Abort-REQ-PDU => Stop F-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=FALSE, (Subnet, Instance, Reason_Code) from Abort-REQ-PDU)	WAIT-DEACT
92	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len<>0 && NOT (Abort-REQ-PDU) => Reason_Code:=ABT_FE Stop F-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
93	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=NO && L_sdu.len<>0 && NOT(Abort-REQ-PDU) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_FE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	VS-SRES
94	VS-SRES	MSAC2S_XXX.rsp(+/-)(Res_SAP) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	VS-SRES
95	VS-SRES	MSAC2S_Initiate.rsp(+/-)(Res_SAP) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	VS-SRES
96	VS-SRES	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => Go_Abort:=TRUE STORE_ABORT_PARAMETER	VS-SRES

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#	Current state	Event / condition => action	Next state
97	VS-SRES	F-Timer expired => Reason_Code:=ABT_TO Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
98	ANY-STATE	unexpected DMPMS reaction => Stop U-Timer Stop F-Timer Stop I-Timer MSAC2S_Fault.ind	POWER-ON
99	DEACT-PON	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status = OK	POWER-ON
100	DEACT-PON	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status=NO/IV => MSAC2S_Fault.ind	POWER-ON
101	any state	MSAC2S_Reset.req(Res_SAP) => MSAC2S_Reset.cnf(Res_SAP)	POWER-ON

9.6 MSCS1S

9.6.1 Primitive definitions

9.6.1.1 Primitives exchanged between MSCS1S and FSPMS

Table 79 shows the service primitives including their associated parameters issued by MSCS1S and received by the FSPMS.

Table 79 – Primitives issued by MSCS1S to FSPMS

Primitive name	Source	Associated parameters	Functions
Set Time.ind	MSCS1S	AREP, Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour	Refer to FAL Service Definition in IEC 61158-5-3
Sync Interval Violation.ind	MSCS1S	AREP	

9.6.1.2 Parameter of MSCS1S primitives

The parameters used with the primitives exchanged between the FSPMS and the MSCS1S are described in FAL Service Definition in IEC 61158-5-3.

9.6.2 State machine description

This machine always remains in IDLE state. It receives Clock Value indications from the DMPMS. A Set Time indication will be issued on detection of the end of a valid Clock Synchronization sequence. Otherwise a Sync Interval Violation indication will be issued.

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Local variables of the MSCS1S

Time Last Rcvd
(Network Time)

This local variable contains the Clock_Value_Time_Event of the last valid received Clock Value indication.

Error
(Unsigned8)

This local variable is a counter for invalid Clock Synchronisation sequences. It will be reset to 0, when a Sync Interval Violation is indicated.

Macros of the MSCS1S:
SET_TIME_ATTRIBUTES
(

Local Time Diff :=CS_list.Clock_value_status.C*(-1)^CS_list.Clock_value_status.CV

Summertime := CS_list.Clock_value_status.SWT

Accuracy := CS_list.Clock_value_status.CR

Synchronisation Active := CS_list.Clock_value_status.SYF

Announcement Hour :=CS_list.Clock_value_status.ANH

)

9.6.3 MSCS1S state table

Table 80 contains the complete description of the MSCS1S state machine.

Table 80 – MSCS1S state table

#	Current state	Event / condition => action	Next state
1	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == SV && Error < 2 => Error := Error+1	Idle
2	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE != Time Last Rcvd && Error < 2 => Error := Error+1	Idle
3	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == SV && Error >= 2 => Error := 0 Sync Interval Violation.ind	Idle
4	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE != Time Last Rcvd && Error >= 2 => Error := 0 Sync Interval Violation.ind	Idle

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#	Current state	Event / condition => action	Next state
5	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE == Time Last Rcvd => Error := 0 Time Last Rcvd:= CS_list.Clock_Value_Time_Event Time Value := Time Last Rcvd + Receive Delay Time SET_TIME_ATTRIBUTES Set_Time.ind(Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour)	Idle

9.7 MSCY1M

9.7.1 Primitive definitions

9.7.1.1 Primitives exchanged between FSPMM1 and MSCY1M

Table 81 shows the service primitives including their associated parameters issued by the FSPMM1 and received by the MSCY1M.

Table 81 – Primitives issued by FSPMM1 to MSCY1M

Primitive name	Source	Associated parameters	Functions
MInit MS0.req	FSPMM1	Rem Add	Refer to FAL Service Definition in IEC 61158-5-3
Reset.req	FSPMM1	(none)	
Abort.req	FSPMM1	Rem Add, Subnet, Instance, Reason Code	
Start Slave Handler.req	FSPMM1	Rem Add	Start first Cycle of MSCY1M
Stop Slave Handler.req	FSPMM1	Rem Add	Stop processing of MSCY1M
Cont Slave Handler.req	FSPMM1	Rem Add, Output Clear	Start new Cycle of MSCY1M
Get Slave Diag.req	FSPMM1	Rem Add	Refer to FAL Service Definition in IEC 61158-5-3
Set Output.req	FSPMM1	Rem Add, Slot_Number Output Data	
Get Input.req	FSPMM1	Rem Add, Slot Number	

Table 82 shows the service primitives including their associated parameters issued by the MSCY1M and received by the FSPMM1.

Table 82 – Primitives issued by MSCY1M to FSPMM1

Primitive name	Source	Associated parameters	Functions
MInit MS0.cnf	MSCY1M	Rem Add	Refer to FAL Service Definition in IEC 61158-5-3
Reset.cnf	MSCY1M	(none)	
Start Slave Handler.cnf	MSCY1M	Rem Add	Start first Cycle of MSCY1M
Stop Slave Handler.cnf	MSCY1M	Rem Add	Stop processing of MSCY1M

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Primitive name	Source	Associated parameters	Functions
Cont Slave Handler.cnf	MSCY1M	Rem Add, Diag, No AClr	Start new Cycle of MSCY1M
Get Slave Diag.cnf(+)	MSCY1M	Rem Add, CREP, Diag Data	Refer to FAL Service Definition in IEC 61158-5-3
Get Slave Diag.cnf(-)	MSCY1M	Rem Add	
Set Output.cnf(+)	MSCY1M	Rem Add, Slot Number	
Set Output.cnf(-)	MSCY1M	Rem Add, Slot Number	
Get Input.cnf(+)	MSCY1M	Rem Add, Slot_Number, Input Data	
Get Input.cnf(-)	MSCY1M	Rem Add	
New Slave Diag.ind	MSCY1M	Rem Add	
New Input.ind	MSCY1M	Rem Add	
Started.ind	MSCY1M	Rem Add, Alarm Limit	
Stopped.ind	MSCY1M	Rem Add	
Fault.ind	MSCY1M	Rem Add	

9.7.1.2 Parameters of MSCY1M primitives

The parameters used with the primitives exchanged between the FSPMM1 and MSCY1M are described in Table 83.

Table 83 – Parameters used with primitives exchanged between FSPMM1 and MSCY1M

Parameter name	Description
Rem Add	This parameter is used to identify the DP-slave which is assigned to that communication relation.
Output Clear	This parameter indicates to the MSCY1M state machine that the Outputs shall be cleared.
Diag	This parameter indicates to the FSPMM1 state machine that no Data Exchange was processed in the preceding cycle or the Slave was deactivated.
No Aclr	This parameter indicates to the FSPMM1 state machine that the corresponding DP-slave is operated in the non Autoclear-Mode (this DP-slave has no influence to the Masters State (OPERATE or CLEAR).

Other parameters used with the primitives exchanged between the FSPMM1 and the MSCY1M are described in FAL Service Definition in IEC 61158-5-3.

9.7.2 State machine description

For each possible DP-slave a State Machine MSCY1M (Slave-Handler) is established and started by a superior State Machine, the FSPMM1. The remote address of the Slave (Rem_Add) is used as a local reference for MSCY1M.

The Slave-Handler manages the individual states for every DP-slave. The following main states will be distinguished:

– diagnostic,

– parameterisation,

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– configuration,

– data exchange.

Sl_Para_Exist
Access: -r

Local information indicating whether or not a Slave parameter set of the associated Rem_Add exists.

SPara
Access:-r/-w

Any Information from ARL/CRL related to this DP-slave.

BOutput
Access: -r

Local storage of Output data for the DP-slave.

BInput
Access: -w

Local storage of Input data for the DP-slave.

BDiag
Access: -r/-w

Local storage of Diagnostic information of the DP-slave.

MSCY1M changes the following flags of the diagnostic information:

Invalid_Slave_Response

Station_Non_Existent

Deactivated

DTrans
This variable is mapped on the Data Transfer List attribute of CR-List.

Access: –r/-w

The user data exchange mode between the DP-master (Class 1) and its assigned DP-slaves is supervised on the Master side. This means it is checked whether a user data transfer to the associated DP-slaves was executed within the last DP cycle or a diagnostic cycle, after which the directly following Slave state is again the data transfer state. Any other following state forces the associated bit of the Slave to be cleared.

SDiag
This variable is mapped on the System Diagnosis List attribute of CR-List.

Access: -r/-w

It is set while the MSCY1M state machine of an activated Slave is not able to establish the connection to the Slave without errors. E. g. it is set if a Slave does not respond, if he responds with a negative DL confirmation or if he does not respond with the correct number of input data during Data_Exchange. The bit is reset after the connection could be established without any error. It is also reset if the Slave is deactivated by the User or if the MSCY1M State Machine is stopped

Local variables

Delay_Count
(Unsigned8)

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The Delay_Count is used to count the number of Slave_Diag.cnf in the state DIAG2 while Diag_Data.Prm_Req is still set (Slow Slave). The Delay_Count is initialized with the value of SPara.Diag_Upd_Delay.

Range: 0 to 15 (extendible up to 255)

MSAL1M_Started
(Boolean)

This variable is used to store the information whether the MSAL1M State Machine is started (True) or not (False).

Wait_for_Start_con
(Boolean)

This variable is used to store the information whether a Start.req has not yet been confirmed by the MSAL1M State Machine (True) or not (False).

Go-Abort
(Boolean)

This variable is used to store the information that an error occurred forcing the MSCY1M State Machine to abort the connection.

Macros

CHANGE_DIAG_IND
(

MSCY1M_New Slave Diag.ind(Rem_Add)

if (MSAL1M_Started = TRUE)

  MSAL1M_Change Diag.req(Rem_Add)

)

GO_ABORT
(

 DTrans = 0

 Go_Abort = TRUE

 BInp = Nil

)

START_MSAL1M
(

if ((SPara.DPV1_Supported= TRUE)

 && (Wait_for_Start_con = FALSE)

  && (MSAL1M_Started = FALSE))

    MSAL1M_Start.req(Rem_Add),

    MSAL1M_Started = TRUE,

    MSAC1M_Start.req(Rem_Add)

)

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9.7.3 MSCY1M state table

Table 84 contains the complete description of the MSCY1M state machine.

Table 84 – MSCY1M state table

#	Current state	Event / condition => action	Next state
1	POWER-ON	MSCY1M MInit MS0.req (Rem Add) => BDiag := NIL, SDiag := 0, DTrans := 0 Go_Abort := FALSE MSAL1M_Started := FALSE ExtPrmBsy:= FALSE MSCY1M MInit MS0.cnf(Rem Add)	STOP
2	STOP	MSCY1M Abort.req (Rem Add) => ignore	STOP
3	STOP	MSAL1 Abort.ind (Rem_Add) => ignore	STOP
4	STOP	MSCY1M Start Slave Handler.req (Rem Add) /Sl_Para_Exist = FALSE || SPara.Active = FALSE => MSCY1M Start Slave Handler.cnf(Rem Add)	DEACT
5	STOP	MSCY1M Start Slave Handler.req (Rem Add) /Sl_Para_Exist = TRUE && SPara.Active = TRUE => SDiag := 1, BInput := Nil, BOutput := Nil BDiag.Deactivated := FALSE BDiag.Station_Non_Existent := TRUE MSCY1M Start Slave Handler.cnf(Rem Add)	DIAG1
6	STOP	MSCY1M Get Slave Diag.req (Rem Add) => MSCY1M Get Slave Diag.cnf(-) (Rem Add)	STOP
7	STOP	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => MSCY1M Set Output.cnf(-) (Rem Add, Slot Number)	STOP
8	STOP	MSCY1M Get Input.req (Rem Add, Slot_Number) => MSCY1M Get Input.cnf(-) (Rem Add)	STOP
9	DEACT	MSCY1M Abort.req (Rem Add) => ignore	DEACT
10	DEACT	MSAL1 Abort.ind (Rem_Add) => ignore	DEACT
11	DEACT	MSCY1M Stop Slave Handler.req (Rem Add) => MSCY1M Stop Slave Handler.cnf(Rem Add)	STOP

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#	Current state	Event / condition => action	Next state
12	DEACT	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Sl_Para_Exist = FALSE || SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DEACT
13	DEACT	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Sl_Para_Exist = TRUE && SPara.Active = TRUE => SDiag := 1, BInput := Nil, BOutput := Nil BDiag.Deactivated := FALSE BDiag.Station_Non_Existent := TRUE DMPMM1 Slave Diag.req (Rem Add)	WDIAG1
14	DEACT	MSCY1M Get Slave Diag.req (Rem Add) => MSCY1M Get Slave Diag.cnf(-) (Rem Add)	DEACT
15	DEACT	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => MSCY1M Set Output.cnf(-) (Rem Add, Slot Number)	DEACT
16	DEACT	MSCY1M Get Input.req (Rem Add, Slot_Number) => MSCY1M Get Input.cnf(-) (Rem Add)	DEACT
17	DIAG1	MSCY1M Abort.req (Rem Add) => ignore	DIAG1
18	DIAG1	MSAL1 Abort.ind (Rem_Add) => ignore	DIAG1
19	DIAG1	MSCY1M Stop Slave Handler.req (Rem Add) => BDiag.Deactivated := TRUE, SDiag := 0 MSCY1M Stop Slave Handler.cnf(Rem Add)	STOP
20	DIAG1	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) => ExtPrmBsy:=FALSE DMPMM1 Slave Diag.req (Rem Add)	WDIAG1
21	DIAG1	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	DIAG1
22	DIAG1	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	DIAG1
23	DIAG1	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	DIAG1
24	WDIAG1	MSCY1M Abort.req (Rem Add) => ignore	WDIAG1
25	WDIAG1	MSAL1 Abort.ind (Rem_Add) => ignore	WDIAG1
26	WDIAG1	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WDIAG1
27	WDIAG1	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WDIAG1

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#	Current state	Event / condition => action	Next state
28	WDIAG1	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WDIAG1
29	WDIAG1	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE BDiag.Deactivated := TRUE, SDiag := 0 MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DEACT
30	WDIAG1	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE BDiag.Deactivated := TRUE, SDiag := 0 MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DEACT
31	WDIAG1	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status=NA => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
32	WDIAG1	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status=RE/RS/RR/UE/NR => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Invalid_Slave_Response := TRUE BDiag.Station_Non_Existent := FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
33	WDIAG1	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status=DS => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
34	WDIAG1	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && Diag_Data.Master_Lock = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag := Diag_Data MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
35	WDIAG1	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && Diag_Data.Master_Lock = FALSE && Diag_Data.Master_Add <> invalid && SPara.Prm_Data.DPV1_Enable=TRUE && SPara.DPV1_Supported=TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag := Diag_Data MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	UNLCK
36	WDIAG1	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && Diag_Data.Master_Lock = FALSE && (Diag_Data.Master_Add = invalid || SPara.Prm_Data.DPV1_Enable=FALSE || SPara.DPV1_Supported=FALSE) => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr SPara.New_Prm := FALSE BDiag := Diag_Data, CHANGE_DIAG_IND MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	PRM
37	PRM	MSCY1M Abort.req (Rem Add) => ignore	PRM
38	PRM	MSAL1 Abort.ind (Rem_Add) => ignore	PRM

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#	Current state	Event / condition => action	Next state
39	PRM	MSCY1M Stop Slave Handler.req (Rem Add) => BDiag.Deactivated := TRUE, SDiag := 0 MSCY1M Stop Slave Handler.cnf(Rem Add)	STOP
40	PRM	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) / ExtPrmBsy=FALSE => Prm_Data := SPara .Prm_Data Prm_Data.Lock_Req := TRUE Prm_Data.Unlock_Req := FALSE DMPMM1 Set Prm.req (Rem Add, Prm Data)	WPRM
41	PRM	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	PRM
42	PRM	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	PRM
43	PRM	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	PRM
44	WPRM	MSCY1M Abort.req (Rem Add) => ignore	WPRM
45	WPRM	MSAL1 Abort.ind (Rem_Add) => ignore	WPRM
46	WPRM	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WPRM
47	WPRM	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WPRM
48	WPRM	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WPRM
49	WPRM	DMPMM1 Set Prm.cnf(+) (Rem Add) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	UNLCK
50	WPRM	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	UNLCK
51	WPRM	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = DS => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	PRM
52	WPRM	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1

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#	Current state	Event / condition => action	Next state
53	WPRM	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = RE/RS/RR/UE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Invalid_Slave_Response := TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
54	WPRM	DMPMM1 Set Prm.cnf(+) (Rem Add) /SPara.Active = TRUE && ExtPrmFlag = FALSE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	CFG
55	CFG	MSCY1M Abort.req (Rem Add) => ignore	CFG
56	CFG	MSAL1 Abort.ind (Rem_Add) => ignore	CFG
57	CFG	MSCY1M Stop Slave Handler.req (Rem Add) => Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	SUNLCK
58	CFG	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) => Cfg_Data:=SPara .Cfg_Data DMPMM1 Chk Cfg.req (Rem Add, Cfg Data)	WCFG
59	CFG	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	CFG
60	CFG	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	CFG
61	CFG	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	CFG
62	WCFG	MSCY1M Abort.req (Rem Add) => ignore	WCFG
63	WCFG	MSAL1 Abort.ind (Rem_Add) => ignore	WCFG
64	WCFG	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WCFG
65	WCFG	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WCFG
66	WCFG	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WCFG
67	WCFG	DMPMM1 Chk Cfg.cnf(+) (Rem Add) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	UNLCK

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#	Current state	Event / condition => action	Next state
68	WCFG	DMPMM1 Chk Cfg.cnf(-) (Rem Add, Status) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	UNLCK
69	WCFG	DMPMM1 Chk Cfg.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = DS => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	CFG
70	WCFG	DMPMM1 Chk Cfg.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
71	WCFG	DMPMM1 Chk Cfg.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = RE/RS/RR/UE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Invalid_Slave_Response := TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
72	WCFG	DMPMM1 Chk Cfg.cnf(+) (Rem Add) /SPara.Active = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSAL1M_Started := FALSE Delay_Count := SPara .Diag_Upd_Delay Wait_for_Start_con := FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
73	DIAG2	MSCY1M Abort.req (Rem Add) => GO_ABORT	DIAG2
74	DIAG2	MSAL1 Start.cnf (Rem Add) => Wait_for_Start_con:=FALSE MSCY1M_Started.ind(Rem_Add)	DIAG2
75	DIAG2	MSAL1 Abort.ind (Rem_Add) => GO_ABORT	DIAG2
76	DIAG2	MSCY1M Stop Slave Handler.req (Rem Add) /SPara.DPV1_Supported = FALSE => Go_Abort := FALSE, BInput := Nil DTrans := 0 Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	SUNLCK
77	DIAG2	MSCY1M Stop Slave Handler.req (Rem Add) /SPara.DPV1_Supported = TRUE => Go_Abort := FALSE, BInput := Nil DTrans := 0 MSAL1 Stop.req (Rem Add)	WSTPCS
78	DIAG2	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort = FALSE && Wait_for_Start_con = FALSE => DMPMM1 Slave Diag.req (Rem Add)	WDIAG2
79	DIAG2	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort = FALSE && Wait_for_Start_con = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2

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#	Current state	Event / condition => action	Next state
80	DIAG2	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort=TRUE && SPara.DPV1_Supported = FALSE => Go_Abort := FALSE No_AClr := SPara_.Ignore_AClr OR NOT SPara.Active Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	WUNLCK
81	DIAG2	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort=TRUE && SPara.DPV1_Supported = TRUE => Go_Abort := FALSE, Diag := TRUE No_AClr := SPara_.Ignore_AClr OR NOT SPara.Active MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr) MSAL1 Stop.req (Rem Add)	WSTPCC
82	DIAG2	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	DIAG2
83	DIAG2	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	DIAG2
84	DIAG2	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	DIAG2
85	WDIAG2	MSCY1M Abort.req (Rem Add) => GO_ABORT	WDIAG2
86	WDIAG2	MSAL1 Abort.ind (Rem_Add) => GO_ABORT	WDIAG2
87	WDIAG2	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WDIAG2
88	WDIAG2	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WDIAG2
89	WDIAG2	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WDIAG2
90	WDIAG2	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=FALSE BDiag := Diag_Data, GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
91	WDIAG2	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = FALSE => GO_ABORT, Diag:=FALSE, No_AClr:=FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
92	WDIAG2	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = DS => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2

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#	Current state	Event / condition => action	Next state
93	WDIAG2	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA && SPara_.NA_To_Abort = FALSE => Diag:=TRUE,No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE SDiag := 1, DTrans := 0 MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
94	WDIAG2	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA && SPara_.NA_To_Abort = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr, BDiag.Station_Non_Existent := TRUE, SDiag := 1, GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
95	WDIAG2	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = RE/RS/RR/UE/NR => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr, BDiag.Station_Non_Existent := TRUE, BDiag.Invalid_Slave_Response := TRUE, SDiag := 1, GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
96	WDIAG2	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && (Diag_Data.Prm_Req = TRUE || Diag_Data.Master_Lock = TRUE) && Delay_Count > 0 => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr Delay_Count := Delay_Count-1, BDiag := Diag_Data BInput := 0, SDiag := 1, DTrans := 0 MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
97	WDIAG2	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && (Diag_Data.Prm_Req = TRUE || Diag_Data.Master_Lock = TRUE) && Delay_Count = 0 => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag := Diag_Data, SDiag := 1, GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
98	WDIAG2	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && Diag_Data.Prm_Req = FALSE && Diag_Data.Master_Lock = FALSE && Diag_Data.Station_Not_Ready = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr SDiag := 1, DTrans := 0, BInput := Nil BDiag := Diag_Data MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
99	WDIAG2	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && Diag_Data.Prm_Req = FALSE && Diag_Data.Master_Lock = FALSE && Diag_Data.Station_Not_Ready = FALSE && Diag_Data.Stat_Diag = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr START_MSAL1M, SDiag := 1, DTrans := 0 BInput := Nil, BDiag := Diag_Data MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
100	WDIAG2	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && Diag_Data.Prm_Req = FALSE && Diag_Data.Master_Lock = FALSE && Diag_Data.Station_Not_Ready = FALSE && Diag_Data.Stat_Diag=FALSE && DTrans = 0 => Diag:=TRUE, No_AClr:=TRUE SDiag := Diag_Data.Ext_Diag, Delay_Count := 0 BDiag := Diag_Data, START_MSAL1M, CHANGE_DIAG_IND MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA

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#	Current state	Event / condition => action	Next state
101	WDIAG2	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && Diag_Data.Prm_Req = FALSE && Diag_Data.Master_Lock = FALSE && Diag_Data.Station_Not_Ready = FALSE && Diag_Data.Stat_Diag = FALSE && DTrans = 1 => Diag:=TRUE, No_AClr:=TRUE SDIAG := Diag_Data.Ext_Diag, CHANGE_DIAG_IND BDiag := Diag_Data MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
102	DATA	MSCY1M Abort.req (Rem Add) => GO_ABORT	DATA
103	DATA	MSAL1 Start.cnf (Rem Add) => Wait_for_Start_con := FALSE, START_MSAL1M MSCY1M_Started.ind(Rem_Add)	DATA
104	DATA	MSAL1 Abort.ind (Rem_Add) => GO_ABORT	DATA
105	DATA	MSCY1M Stop Slave Handler.req (Rem Add) /SPara.DPV1_Supported = FALSE => Go_Abort := FALSE, BInput := Nil DTrans := 0 Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	SUNLCK
106	DATA	MSCY1M Stop Slave Handler.req (Rem Add) /SPara.DPV1_Supported = TRUE => Go_Abort := FALSE, BInput :=Nil, DTrans := 0 MSAL1 Stop.req (Rem Add)	WSTPCS
107	DATA	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort = FALSE && Wait_for_Start_con = FALSE && Output_Clear = TRUE && ((SPara.DPV1_Supported = FALSE && SPara.New_Prm = FALSE) || SPara.DPV1_Supported = TRUE) && SPara.Fail_Safe = FALSE => Outp_Data:=0 DMPMM1 Data Exchange.req (Rem Add, Outp Data)	WDATA
108	DATA	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort = FALSE && Wait_for_Start_con = FALSE && Output_Clear = TRUE && ((SPara.DPV1_Supported = FALSE && SPara.New_Prm = FALSE) || SPara.DPV1_Supported = TRUE) && SPara.Fail_Safe = TRUE => Outp_Data.len:=0 DMPMM1 Data Exchange.req (Rem Add, Outp Data)	WDATA
109	DATA	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort = FALSE && Wait_for_Start_con = FALSE && Output_Clear = FALSE && ((SPara.DPV1_Supported = FALSE && SPara.New_Prm = FALSE) || SPara.DPV1_Supported = TRUE) => Outp_Data:=BOutput DMPMM1 Data Exchange.req (Rem Add, Outp Data)	WDATA
110	DATA	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort = FALSE && SPara.DPV1_Supported = FALSE && SPara.New_Prm = TRUE => Prm_Data := SPara .Prm_Data Prm_Data.Lock_Req := TRUE Prm_Data.Unlock_Req := FALSE DMPMM1 Set Prm.req (Rem Add, Prm Data)	WDATA
111	DATA	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort = FALSE && Wait_for_Start_con = TRUE => Diag:=TRUE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA

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#	Current state	Event / condition => action	Next state
112	DATA	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort=TRUE && (SPara.DPV1_Supported = FALSE|| SPara_PrmCmd_Supported = TRUE) => Go_Abort := FALSE, Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	WUNLCK
113	DATA	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort=TRUE && SPara.DPV1_Supported = TRUE && SPara_PrmCmd_Supported = FALSE => Go_Abort := FALSE, Diag := TRUE No_AClr := SPara_.Ignore_AClr OR NOT SPara.Active MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr) MSAL1 Stop.req (Rem Add)	WSTPCC
114	DATA	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	DATA
115	DATA	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	DATA
116	DATA	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	DATA
117	WDATA	MSCY1M Abort.req (Rem Add) => GO_ABORT	WDATA
118	WDATA	MSAL1 Abort.ind (Rem_Add) => GO_ABORT	WDATA
119	WDATA	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WDATA
120	WDATA	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WDATA
121	WDATA	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WDATA
122	WDATA	DMPMM1 Data Exchange.cnf(+) (Rem Add, Diag Flag, Inp Data) /SPara.Active = FALSE => GO_ABORT, Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
123	WDATA	DMPMM1 Data Exchange.cnf(-) (Rem Add, Status) /SPara.Active = FALSE => GO_ABORT, Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
124	WDATA	DMPMM1 Data Exchange.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = DS => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr DTrans := 0, BInput := Nil MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA

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#	Current state	Event / condition => action	Next state
125	WDATA	DMPMM1 Data Exchange.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA && SPara_.NA_To_Abort = FALSE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE, SDiag := 1 MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
126	WDATA	DMPMM1 Data Exchange.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status=NA && SPara_.NA_To_Abort = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE, SDiag := 1 GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
127	WDATA	DMPMM1 Data Exchange.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = RE/RS/RR/UE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Invalid_Slave_Response := TRUE BDiag.Station_Non_Existent := FALSE SDiag := 1, GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
128	WDATA	DMPMM1 Data Exchange.cnf(+) (Rem Add, Diag Flag, Inp Data) /SPara.Active = TRUE && Diag_Flag = FALSE && Inp_Data.len = Exp_Inp_Len => Diag:=FALSE, No_AClr:=TRUE BDiag.Station_Non_Existent := FALSE BInput := Inp_Data, DTrans := 1 SDiag := BDiag.Ext_Diag MSCY1M_New_Input.ind(Rem_Add) MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
129	WDATA	DMPMM1 Data Exchange.cnf(+) (Rem Add, Diag Flag, Inp Data) /SPara.Active = TRUE && Inp_Data.len <> Exp_Inp_Len && (Inp_Data.len <> 1 ‖ Exp_Inp_Len <> 0 ‖ Diag_Flag = FALSE) => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Invalid_Slave_Response := TRUE BDiag.Station_Non_Existent := FALSE SDiag := 1, GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
130	WDATA	DMPMM1 Data Exchange.cnf(+) (Rem Add, Diag Flag, Inp Data) /SPara.Active = TRUE && Diag_Flag = TRUE && Inp_Data.len = Exp_Inp_Len => Diag:=FALSE, No_AClr:=TRUE BDiag.Station_Non_Existent := FALSE BInput := Inp_Data, DTrans := 1 SDiag := BDiag.Ext_Diag MSCY1M_New_Input.ind(Rem_Add) MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
131	WDATA	DMPMM1 Data Exchange.cnf(+) (Rem Add, Diag Flag, Inp Data) /SPara.Active = TRUE && Diag_Flag = TRUE && Inp_Data.len = 1 && Exp_Inp_Len = 0 => Diag:=FALSE, No_AClr:=TRUE BDiag.Station_Non_Existent := FALSE, DTrans := 1 SDiag := BDiag.Ext_Diag MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
132	WDATA	DMPMM1 Set Prm.cnf(+) (Rem Add) /SPara.Active = FALSE => GO_ABORT, Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
133	WDATA	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = FALSE => GO_ABORT, Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA

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#	Current state	Event / condition => action	Next state
134	WDATA	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = DS => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
135	WDATA	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA && SPara_.NA_To_Abort = FALSE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE, SDiag := 1 MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
136	WDATA	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA && SPara_.NA_To_Abort = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE, SDiag := 1 GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
137	WDATA	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = RE/RS/RR/UE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Invalid_Slave_Response := TRUE BDiag.Station_Non_Existent := FALSE SDiag := 1, GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
138	WDATA	DMPMM1 Set Prm.cnf(+) (Rem Add) /SPara.Active = TRUE => Diag:=TRUE, No_AClr:=TRUE SPara.New_Prm := FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
139	UNLCK	MSCY1M Abort.req (Rem Add) => ignore	UNLCK
140	UNLCK	MSAL1 Abort.ind (Rem_Add) => ignore	UNLCK
141	UNLCK	MSCY1M Stop Slave Handler.req (Rem Add) => Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	SUNLCK
142	UNLCK	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) => Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	WUNLCK
143	UNLCK	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	UNLCK
144	UNLCK	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	UNLCK
145	UNLCK	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	UNLCK
146	WUNLCK	MSCY1M Abort.req (Rem Add) => ignore	WUNLCK

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#	Current state	Event / condition => action	Next state
147	WUNLCK	MSAL1 Abort.ind (Rem_Add) => ignore	WUNLCK
148	WUNLCK	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WUNLCK
149	WUNLCK	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WUNLCK
150	WUNLCK	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WUNLCK
151	WUNLCK	DMPMM1 Set Prm.cnf(+) (Rem Add) /SPara.Active = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
152	WUNLCK	DMPMM1 Set Prm.cnf(+) (Rem Add) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE, SDiag := 0 BDiag.Deactivated := TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DEACT
153	WUNLCK	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
154	WUNLCK	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE, SDiag := 0 BDiag.Deactivated := TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DEACT
155	SUNLCK	MSCY1M Abort.req (Rem Add) => ignore	SUNLCK
156	SUNLCK	MSAL1 Abort.ind (Rem_Add) => ignore	SUNLCK
157	SUNLCK	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	SUNLCK
158	SUNLCK	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	SUNLCK
159	SUNLCK	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	SUNLCK
160	SUNLCK	DMPMM1 Set Prm.cnf(+) (Rem Add) => SDiag := 0, BDiag.Deactivated := TRUE MSCY1M Stop Slave Handler.cnf(Rem Add)	STOP
161	SUNLCK	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) => SDiag := 0, BDiag.Deactivated := TRUE MSCY1M Stop Slave Handler.cnf(Rem Add)	STOP

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#	Current state	Event / condition => action	Next state
162	WSTPCC	MSAL1 Start.cnf (Rem Add) => MSAL1M_Started := FALSE	WSTPCC
163	WSTPCC	MSAL1 Stop.cnf (Rem Add) /MSAL1M_Started = TRUE => MSCY1M Stopped.ind (Rem Add)	UNLCK
164	WSTPCC	MSAL1 Stop.cnf (Rem Add) /MSAL1M_Started = FALSE => ignore	UNLCK
165	WSTPCC	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr OR NOT SPara.Active MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	WSTPCC
166	WSTPCC	MSCY1M Abort.req (Rem Add) => ignore	WSTPCC
167	WSTPCC	MSAL1 Abort.ind (Rem_Add) => ignore	WSTPCC
168	WSTPCC	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WSTPCC
169	WSTPCC	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WSTPCC
170	WSTPCC	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WSTPCC
171	WSTPCS	MSAL1 Start.cnf (Rem Add) => MSAL1M_Started := FALSE	WSTPCS
172	WSTPCS	MSAL1 Stop.cnf (Rem Add) /MSAL1M_Started = TRUE => Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE MSCY1M Stopped.ind (Rem Add) DMPMM1 Set Prm.req (Rem Add, Prm Data)	SUNLCK
173	WSTPCS	MSAL1 Stop.cnf (Rem Add) /MSAL1M_Started = FALSE => Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	SUNLCK
174	WSTPCS	MSCY1M Abort.req (Rem Add) => ignore	WSTPCS
175	WSTPCS	MSAL1 Abort.ind (Rem_Add) => ignore	WSTPCS
176	WSTPCS	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WSTPCS

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#	Current state	Event / condition => action	Next state
177	WSTPCS	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WSTPCS
178	WSTPCS	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WSTPCS
179	ANY-STATE	MSCY1M Reset.req (Rem Add) => MSCY1M Reset.cnf (Rem Add)	POWER-ON
180	WPRM	DMPMM1 Set Prm.cnf(+) (Rem Add) /SPara.Active = TRUE && ExtPrmFlag = TRUE => ExtPrmBsy:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	PRM
181	PRM	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) / ExtPrmBsy=TRUE => Prm_Data := SPara .ExtPrm_Data DMPMM1 Set ExtPrm.req (Rem Add, Prm Data)	WPRM
182	WPRM	DMPMM1 Set ExtPrm.cnf(+) (Rem Add) /SPara.Active = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_Aclr, ExtPrmBsy:=FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	CFG
183	WPRM	DMPMM1 Set ExtPrm.cnf(+) (Rem Add) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE, ExtPrmBsy:=FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	UNLCK
184	WPRM	DMPMM1 Set ExtPrm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = DS => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	PRM
185	WPRM	DMPMM1 Set ExtPrm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE, ExtPrmBsy:=FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
186	WPRM	DMPMM1 Set ExtPrm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = RE/RS/RR/UE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Invalid_Slave_Response := TRUE, ExtPrmBsy:=FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1

9.8 MSAL1M

9.8.1 Primitive definitions

9.8.1.1 Primitives exchanged between FSPMM1 and MSAL1M

Table 85 shows the service primitives including their associated parameters issued by the FSPMM1 and received by the MSAL1M.

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Table 85 – Primitives issued by FSPMM1 to MSAL1M

Primitive name	Source	Associated parameters	Functions
MInit.req	FSPMM1	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Reset.req	FSPMM1	(none)	—
Abort.req	FSPMM1	(none)	—

Table 86 shows the service primitives including their associated parameters issued by the MSAL1M and received by the FSPMM1.

Table 86 – Primitives issued by MSAL1M to FSPMM1

Primitive name	Source	Associated parameters	Functions
MInit.cnf	MSAL1M	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Reset.cnf	MSAL1M	(none)	—
Fault.ind	MSAL1M	(none)	—
Started.ind	MSAL1M	Alarm Limit	—
Stopped.ind	MSAL1M	(none)	—
Alarm Notification.ind	MSAL1M	Slot Number, Alarm Type, Seq Nr, Add Ack, Alarm Specifier, Alarm Data	—

9.8.1.2 Primitives exchanged between MSCY1M and MSAL1M

Table 87 shows the service primitives including their associated parameters issued by the MSCY1M and received by the MSAL1M.

Table 87 – Primitives issued by MSCY1M to MSAL1M

Primitive name	Source	Associated parameters	Functions
Start.req	MSCY1M	Rem Add	Start MS1-processing
Stop.req	MSCY1M	Rem Add	Stop MS1-processing
Change Diag.req	MSCY1M	Rem Add, Diag Data	Indicates change of diagnosis

Table 88 shows the service primitives including their associated parameters issued by the MSAL1M and received by the MSCY1M.

Table 88 – Primitives issued by MSAL1M to MSCY1M

Primitive name	Source	Associated parameters	Functions
Abort.ind	MSAL1M	Rem Add	MSAL1 detected an error
Start.cnf	MSAL1M	Rem Add	Start completed
Stop.cnf	MSAL1M	Rem Add	Stop completed

9.8.1.3 Parameters of MSAL1M primitives

The parameters used with the primitives exchanged between the MSAL1M and MSCY1M are described in Table 89.

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Table 89 – Parameter used with primitives exchanged between MSAL1M and MSCY1M

Parameter name	Description
Rem Add	This parameter conveys the DL address of the assigned DP-slave.
Diag Data	This parameter conveys the new diagnosis information of a DP-slave

9.8.2 State machine description

The Alarm State Machine of a DP-master (Class 1) handles alarm messages, which have been indicated by a DP-slave.

When started the State Machine waits for being started by MSCY1M. The Start.req follows, when the assigned DP-slave has reached the state DATA-EXCH. MSAL1M will be stopped by MSCY1M if the corresponding DP-slave leaves the state DATA-EXCH.

The service Slave_Diag.cnf provides new Diag_Data to MSCY1M. MSCY1M copies the diagnosis information into the User data interface. Additionally MSCY1M hands over an Alarm in Ext_Diag_Data to MSAL1M.

Alarm-Requests are indicated to the User. The User has to confirm the Alarm-Indications with the service Alarm_Ack.

The MSAC1 State Machine indicates the termination of the alarm sequence with the service primitive Alarm_Ack.cnf.

Two types of alarm handling are provided by a DP-master (Class 1) the type mode and the sequence mode. Depending on the chosen mode the number of outstanding alarms per DP-slave differs. In type mode one pending alarm per type and per DP-slave is allowed. 6 different alarm types are defined. In sequence mode the alarm type is irrelevant. Only the number of simultaneously processed alarms for each DP-slave is limited to a value between 2 and 32.

Local variables

Alarm_Sequence
(Boolean)

This variable indicates whether:

only one alarm of a specific alarm type can be active at one time (type mode: Alarm_Sequence=False) or

several alarms (2 to 32) of any type can be active at one time (sequence mode: Alarm_Sequence=True).

Alarm_State_Table
(Unsigned8)

The Alarm_State_Table is a two dimensional array with 7 * 32 elements. Each element within the array stores information about the actual state of any alarm. The array is indexed with the alarm class calculated from the Alarm_Type and the Seq_Nr of the alarm.

Range
Table 90 shows the possible values for the actual states of alarms in the Alarm_State_Table.

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Table 90 – Possible values in the Alarm_State_Table

Value	Meaning
idle	No service is being processed according to the actual index.
w_res	Wait for MSAL1_Alarm.res according to the actual index.
w_req	For this index (Alarm_Type,Seq_Nr) an Alarm_Acknowledge is stored in the Alarm_Ack_FIFO and MSAL1M waits for another MSAC1M_Alarm_Ack.cnf.
w_con	Wait for MSAC1M_Alarm_Ack.cnf according to the actual index.

Alarm_Limit
(Unsigned8)

This variable indicates the maximum number of parallel alarms of each Slave.

Range: 7..Bus_Para.Alarm_Max

Alarm_Decode
(Array 0..7 of Unsigned8)

Table for Decoding the number of parallel alarms.

Range:

Alarm_Decode[0]= 1
Alarm_Decode[1]= 2
Alarm_Decode[2]= 4
Alarm_Decode[3]= 8
Alarm_Decode[4]=12
Alarm_Decode[5]=16
Alarm_Decode[6]=24
Alarm_Decode[7]=32

Actual_Max_Alarm_Len
(Unsigned8)

Actual_Max_Alarm_Len contains the actual maximum length of an Alarm.

Range: 4..64

Alarm_Count
(Unsigned8)

This counter contains the number of alarms which have actually been sent by the Slave. The counter is only used in the sequence mode.

Range: 0..32

Waiting_For_Alarm_Ack
(Boolean)

This variable shows, whether the Alarm State Machine is actually waiting for the confirmation of any alarm acknowledge (True) or not (False).

Alarm_Ack_FIFO
The Alarm_Ack_FIFO is used to store the Alarm_Ack which are still to be sent. Each element of this alarm acknowledge FIFO has 3 Unsigned8 entries: Alarm_Type, Slot_Number and Seq_Nr. The FIFO shall be able to hold up to 32 respectively Bus_Para.Alarm_Max entries.

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Alarm_Ack_FIFO_Filled
(Boolean)

This variable indicates whether the Alarm_Ack_FIFO contains at least one entry (True) or it is empty (False). The value of the variable is adapted with each access to the FIFO.

Act_Alarm_PDU
(Octet-String)

The structure Act_Alarm_PDU is temporarily used to store one Alarm while being evaluated.

Stored_Alarm_PDU
(Octet-String)

The structure Stored_Alarm_PDU is used to store exactly one Alarm-PDU. Up to one Alarm-PDU shall be saved locally during waiting for MSAC1M_Alarm_Ack.cnf of the according Seq_Nr, because only one channel for alarm acknowledges exists.

Actual_Enabled_Alarms
(Bitarea[0..7])

This variable indicates the type of alarms which are actually supported by the Master.

Bit 0 = reserved
Bit 1 = reserved
Bit 2 = Update_Alarm
Bit 3 = Status_Alarm
Bit 4 = Manufacturer_Specific_Alarm
Bit 5 = Diagnostic_Alarm
Bit 6 = Process_Alarm
Bit 7 = Pull_Plug_Alarm

Functions

Fill_Alarm_State_Table(State)
This function sets each entry of the two dimensional Alarm_State_Table to the given initial value of State. Valid parameters for State are idle, w_res, w_req and w_con. The function has no return value.

Reset_Alarm_Ack_FIFO()
This function resets the FIFO for alarm acknowledges. During this function all entries are cleared and the variable Alarm_Ack_FIFO_Filled is thereby set to False. The function has no return value.

Store_To_Alarm_Ack_FIFO(Alarm_Type, Slot_Number, Seq_Nr)
By means of this function one set of the 3 alarm recognition parameters Alarm_Type, Slot_Number and Seq_Nr is stored from the given parameters into the Alarm_Ack_FIFO. The function has no return value.

Load_From_Alarm_Ack_FIFO(Alarm_Type, Slot_Number, Seq_Nr)
By means of this function one set of the 3 alarm recognition parameters Alarm_Type, Slot_Number and Seq_Nr is read from the Alarm_Ack_FIFO and stored into the given parameters. The function has no return value.

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AcIs(Alarm_Type)
This function calculates the Alarm_Type related index as return value as follows:

```
if (Alarm_Type = 1) return 0
if (Alarm_Type = 2) return 1
if (Alarm_Type = 3) return 2
if (Alarm_Type = 4) return 3
if (Alarm_Type = 5) return 4
if (Alarm_Type = 6) return 5
if (Alarm_Type >= 32) && (Alarm_Type <= 126) return 6
```

Macros
ALARM_ENABLED

```
(
((Alarm_Type=3 OR Alarm_Type=4)
&& Actual_Enabled_Alarms[7]=TRUE)
|| ((Alarm_Type=2) && Actual_Enabled_Alarms[6]=TRUE)
|| ((Alarm_Type=1) && Actual_Enabled_Alarms[5]=TRUE)
|| ((Alarm_Type>=32 && Alarm_Type<=126)
&& Actual_Enabled_Alarms[4]=TRUE)
|| ((Alarm_Type=5) && Actual_Enabled_Alarms[3]=TRUE)
|| ((Alarm_Type=6) && Actual_Enabled_Alarms[2]=TRUE)
)
```

9.8.3 MSAL1M state table

Table 91 contains the complete description of the MSAL1M state machine.

Table 91 – MSAL1M state table

#	Current state	Event / condition => action	Next state
1	POWER-ON	MSAL1M_Minit_MS1.req(Rem_Add) =>MSAL1M_Minit_MS1.cnf(Rem_Add)	WSTART
2	POWER-ON	MSAL1M_Abort.req(Rem_Add) =>ignore	POWER-ON
3	POWER-ON	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) =>MSAL1M_Alarm_Ack.cnf(-)(Rem_Add, Status:=Not_Initialized)	POWER-ON
4	WSTART	MSAL1M_Start.req(Rem_Add) /Alarm_Mode = 0 =>Alarm_Sequence := False Alarm_Limit := 7 Actual_Enabled_Alarms := Enabled_Alarms Actual_Max_Alarm_Len := Max_Alarm_Len Fill_Alarm_State_Table(idle) Reset_Alarm_Ack_FIFO() Alarm_Count := 0 Clear Stored_Alarm_PDU Waiting_For_Alarm_Ack := False MSAL1M_Started.ind(Rem_Add, Alarm_Limit) MSAL1M_Start.cnf(Rem_Add)	W-DIA-EVENT

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#	Current state	Event / condition => action	Next state
5	WSTART	MSAL1M_Start.req(Rem_Add) /Alarm_Mode <> 0 =>Alarm_Sequence := True Alarm_Limit := min(Bus_Para.Alarm_Max, Alarm_Decode[Alarm_Mode]) Actual_Enabled_Alarms := Enabled_Alarms Actual_Max_Alarm_Len := Max_Alarm_Len Fill_Alarm_State_Table(idle) Reset_Alarm_Ack_FIFO() Alarm_Count := 0 Clear Stored_Alarm_PDU Waiting_For_Alarm_Ack := False MSAL1M_Started.ind(Rem_Add, Alarm_Limit) MSAL1M_Start.cnf(Rem_Add)	W-DIA-EVENT
6	WSTART	MSAL1M_Stop.req(Rem_Add) =>MSAL1M_Fault.ind	POWER-ON
7	WSTART	MSAL1M_Change_Diag.req(Rem_Add, Diag_Block) =>MSAL1M_Fault.ind	WSTART
8	WSTART	MSAL1M_Abort.req(Rem_Add) =>ignore	WSTART
9	WSTART	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) =>MSAL1M_Alarm_Ack.cnf(-)(Rem_Add, Status:=Not_Started)	WSTART
10	WSTART	MSAC1M_Alarm_Ack.cnf(+)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) =>MSAL1M_Fault.ind	POWER-ON
11	W-DIA-EVENT	MSAL1M_Minit_MS1.req(Rem_Add) =>MSAL1M_Fault.ind	POWER-ON
12	W-DIA-EVENT	MSAL1M_Abort.req(Rem_Add) =>MSAL1M_Abort.ind(Rem_Add)	WSTART
13	W-DIA-EVENT	MSAL1M_Start.req(Rem_Add) =>MSAL1M_Fault.ind	POWER-ON
14	W-DIA-EVENT	MSAL1M_Stop.req(Rem_Add) =>MSAL1M_Stopped.ind(Rem_Add) MSAL1M_Stop.cnf(Rem_Add)	WSTART
15	W-DIA-EVENT	MSAL1M_Change_Diag.req(Rem_Add, Diag_Block) =>Act_Alarm_PDU := Alarm-PDU	CHK-DIA-ALARM
16	W-DIA-EVENT	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) /ALARM_ENABLED(Alarm_Type) = False =>MSAL1M_Alarm_Ack.cnf(-)(Rem_Add, Status:=Not_Enabled)	W-DIA-EVENT
17	W-DIA-EVENT	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) /ALARM_ENABLED(Alarm_Type) = True && Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] <> w_res =>MSAL1M_Alarm_Ack.cnf(-)(Rem_Add, Status:=Alarm_Not_Pending)	W-DIA-EVENT
18	W-DIA-EVENT	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) /ALARM_ENABLED(Alarm_Type) = True && Alarm_Sequence = False && Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] = w_res && Waiting_For_Alarm_Ack = False =>Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] := w_con Waiting_For_Alarm_Ack := True MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr)	W-DIA-EVENT

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#	Current state	Event / condition => action	Next state
19	W-DIA-EVENT	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) /ALARM_ENABLED(Alarm-PDU.Alarm_Type) = True && Alarm_Sequence = False && Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] = w_res && Waiting_For_Alarm_Ack = True =>Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] := w_req Store_To_Alarm_Ack_FIFO(Alarm_Type, Slot_Number, Seq_Nr)	W-DIA-EVENT
20	W-DIA-EVENT	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) /ALARM_ENABLED(Alarm_Type) = True && Alarm_Sequence = True && Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] = w_res && Waiting_For_Alarm_Ack = False =>Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] := w_con Alarm_Count := Alarm_Count-1 Waiting_For_Alarm_Ack := True MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr)	W-DIA-EVENT
21	W-DIA-EVENT	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) /ALARM_ENABLED(Alarm_Type) = True && Alarm_Sequence = True && Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] = w_res && Waiting_For_Alarm_Ack = True =>Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] := w_req Store_To_Alarm_Ack_FIFO(Alarm_Type, Slot_Number, Seq_Nr)	W-DIA-EVENT
22	W-DIA-EVENT	MSAC1M_Alarm_Ack.cnf(+)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Waiting_For_Alarm_Ack = False =>MSAL1M_Fault.ind	POWER-ON
23	W-DIA-EVENT	MSAC1M_Alarm_Ack.cnf(+)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Waiting_For_Alarm_Ack = True && Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] <> w_con =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART
24	W-DIA-EVENT	MSAC1M_Alarm_Ack.cnf(+)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Waiting_For_Alarm_Ack = True && Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] = w_con =>Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] := idle Waiting_For_Alarm_Ack := False MSAL1M_Alarm_Ack.cnf(+)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr)	SEND-NEXT-ALARM
25	CHK-DIA-ALARM	/Act_Alarm_PDU not present =>ignore	W-DIA-EVENT
26	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = False =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART
27	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = False && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = w_res/w_req =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART

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#	Current state	Event / condition => action	Next state
28	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = False && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = w_con && Stored_Alarm_PDU present =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART
29	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = False && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = idle =>Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] := w_res MSAL1M_Alarm_Notification.ind(Rem_Add, Alarm_Type:=Act_Alarm_PDU.Alarm_Type, Slot_Number:=Act_Alarm_PDU.Slot_Number, Seq_Nr:=Act_Alarm_PDU.Seq_Nr, Alarm_Specifier:=Act_Alarm_PDU.Alarm_Specifier, Add_Ack:=Act_Alarm_PDU.Add_Ack, Alarm_Data:=Act_Alarm_PDU.Diagnostic_User_Data)	W-DIA-EVENT
30	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = False && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = w_con && Stored_Alarm_PDU not present =>Stored_Alarm_PDU := Act_Alarm_PDU	W-DIA-EVENT
31	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = True && Alarm_Count >= Alarm_Limit =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART
32	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = True && Alarm_Count < Alarm_Limit && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = w_res/w_req =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART
33	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = True && Alarm_Count < Alarm_Limit && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = idle =>Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] := w_res Alarm_Count := Alarm_Count+1 MSAL1M_Alarm_Ack.ind(Rem_Add, Alarm_Type:=Act_Alarm_PDU.Alarm_Type, Slot_Number:=Act_Alarm_PDU.Slot_Number, Seq_Nr:=Act_Alarm_PDU.Seq_Nr, Alarm_Specifier:=Act_Alarm_PDU.Alarm_Specifier, Add_Ack:=Act_Alarm_PDU.Add_Ack, Alarm_Data:=Act_Alarm_PDU.Diagnostic_User_Data)	W-DIA-EVENT

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#	Current state	Event / condition => action	Next state
34	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = True && Alarm_Count < Alarm_Limit && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = w_con && Stored_Act_Alarm_PDU present =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART
35	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = True && Alarm_Count < Alarm_Limit && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = w_con && Stored_Alarm_PDU not present =>Stored_Alarm_PDU := Act_Alarm_PDU Alarm_Count := Alarm_Count+1	W-DIA-EVENT
36	SEND-NEXT-ALARM	/Stored_Alarm_PDU not present =>ignore	READ-NEXT-ACK
37	SEND-NEXT-ALARM	/Stored_Alarm_PDU present =>Alarm_State_Table[Acls(Stored_Alarm_PDU.Alarm_Type), Stored_Alarm_PDU.Seq_Nr] := w_res Clear Stored_Alarm_PDU MSAL1M_Alarm_Notification.ind(Rem_Add, Alarm_Type:=Stored_Alarm_PDU.Alarm_Type, Slot_Number:=Stored_Alarm_PDU.Slot_Number, Seq_Nr:=Stored_Alarm_PDU.Seq_Nr, Alarm_Specifier:=Stored_Alarm_PDU.Alarm_Specifier, Add_Ack:=Stored_Alarm_PDU.Add_Ack, Alarm_Data:=Stored_Alarm_PDU.Diagnostic_User_Data)	READ-NEXT-ACK
38	READ-NEXT-ACK	/Alarm_Ack_FIFO_Filled = False =>ignore	W-DIA-EVENT
39	READ-NEXT-ACK	/Alarm_Ack_FIFO_Filled = True =>Load_From_Alarm_Ack_FIFO(New_Alarm_Type, New_Slot_Number, New_Seq_Nr)	SEND-NEXT-ACK
40	SEND-NEXT-ACK	/Alarm_State_Table[Acls(New_Alarm_Type), New_Seq_Nr] <> w_req =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART
41	SEND-NEXT-ACK	/Alarm_State_Table[Acls(New_Alarm_Type), New_Seq_Nr] = w_req =>Alarm_State_Table[Acls(New_Alarm_Type), New_Seq_Nr] := w_con Alarm_Count := Alarm_Count-1 Waiting_For_Alarm_Ack := True MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number:=New_Slot_Number, Alarm_Type:=New_Alarm_Type, Seq_Nr:=New_Seq_Nr)	W-DIA-EVENT
42	ANY-STATE	MSAL1M_Reset.req(Rem_Add) =>MSAL1M_Reset.cnf(Rem_Add)	POWER-ON

9.9 MSAC1M

9.9.1 Primitive definitions

9.9.1.1 Primitives exchanged between FSPMM1 and MSAC1M

Table 92 shows the service primitives including their associated parameters issued by the FSPMM1 and received by the MSAC1M.

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Table 92 – Primitives issued by FSPMM1 to MSAC1M

Primitive name	Source	Associated parameters	Functions
Read.req	FSPMM1	Rem Add, Slot Number, Index, Length	
Write.req	FSPMM1	Rem Add, Slot Number, Index, Length, Data	
Alarm Ack.req	FSPMM1	Rem Add, Slot Number, Alarm Type, Seq Nr	

Table 93 shows the service primitives including their associated parameters issued by the MSAC1M and received by the FSPMM1.

Table 93 – Primitives issued by MSAC1M to FSPMM1

Primitive name	Source	Associated parameters	Functions
Reject.ind	MSAC1M	Rem Add, Status	
Read.cnf(+)	MSAC1M	Rem Add, Length, Data	
Read.cnf(-)	MSAC1M	Rem Add, Error Decode, Error Code 1 Error Code 2	
Write.cnf(+)	MSAC1M	Rem Add, Length	
Write.cnf(-)	MSAC1M	Rem Add, Error Decode, Error Code 1 Error Code 2	
Alarm Ack.cnf(+)	MSAC1M	Rem Add, Slot Number, Alarm Type, Seq Nr	
Alarm Ack.cnf(-)	MSAC1M	Rem_Add, Slot Number, Alarm Type, Seq Nr	

9.9.1.2 Primitives exchanged between MSAC1M and MSAL1M

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Table 94 shows the service primitives including their associated parameters issued by MSAL1M and received by the MSAC1M.

Table 94 – Primitives issued by MSAL1M to MSAC1M

Primitive name	Source	Associated parameters	Functions
SInit MSAC1.req	MSAL1M	Rem Add	Refer to FAL Service Definition in IEC 61158-5-3
Reset.req	MSAL1M	Rem Add	
Start.req	MSAL1M	Rem Add	Start MS1-processing
Stop.req	MSAL1M	Rem Add	Stop MS1-processing

Table 95 shows the service primitives including their associated parameters issued by MSAC1M and received by the MSAL1M.

Table 95 – Primitives issued by MSAC1M to MSAL1M

Primitive name	Source	Associated parameters	Functions
SInit MSAC1.cnf	MSAC1M	Rem Add	Refer to FAL Service Definition in IEC 61158-5-3
Reset.cnf	MSAC1M	Rem Add	
Start.cnf	MSAC1M	Rem Add	Start completed
Stop.cnf	MSAC1M	Rem Add	Stop completed
Fault.ind	MSAC1M	(none)	
Abort.ind	MSAC1M	Rem Add	MSAC1 detected an error

9.9.1.3 Parameters of MSAL1M primitives

The parameters used with the primitives exchanged between the MSAL1M and MSCY1M are described in Table 96.

Table 96 – Parameter used with primitives exchanged between MSAL1M and MSCY1M

Parameter name	Description
Rem Add	This parameter conveys the DL address of the assigned DP-slave.

9.9.2 State machine description

The MSAC1M State Machine has the three states POWER-ON, CLOSED and OPEN. With the Init.req from the FSPMM1, the State Machine is initialized and changes to CLOSED. The state transition from CLOSED to OPEN is caused by the Start.req from the Slave-Handler (MSCY1M). The Slave-Handler is calling this service as soon as the DP-slave has entered the DATA-EXCH-state. When the DP-slave leaves the DATA-EXCH-state, the Stop.req service is called and the MSAC1M State Machine changes from OPEN to CLOSED. A Read/_Write request with an illegal parameter or a parallel service request while the last Read/Write is still being processed, is rejected to the User with a Reject.ind. An Alarm_Ack.req containing illegal service parameters or a parallel Alarm_Ack.req while the last Alarm_Ack.req is still being processed, is causing a state transition to POWER-ON and a Fault.ind to the FSPMM1.

The MSAC1M State Machine takes into account that the Alarm_Ack can be handled either on the SAP 51 as the Read/Write-service or on SAP 50.

The responses for Read and Write services are monitored by means of C1 Timer.

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MSAC1M_Alarm_Ack is handled on the same SAP as MSAC1M_Read/Write.

If an MSAC1M_Alarm_Ack is requested by the MSAL1M State Machine or a Read/_Write is requested by the User while no service is being processed, the service request is passed directly to the DL. If an Alarm_Ack.req is requested and a Read/Write is being processed, the Alarm_Ack.req is stored and sent as soon as the confirmation of the Read/Write is received. When a Read/Write.req is requested and an Alarm_Ack is being processed, the Read/Write is stored and sent as soon as the confirmation of the Alarm_Ack is received.

When recognizing an error while a service request is being processed, the MSAC1M State Machine

– aborts the MS0 connection by indicating a Abort.ind to the MSCY1S,
– deletes an eventually stored service,
– informs the User with a Reject.ind in case of an outstanding Read/_Write service, and
– changes from state OPEN to CLOSE.
– When a Stop.req is requested by the Slave-Handler, the MSAC1M first waits for an eventually outstanding DATA-REPLY.cnf. After this the Stop.req will be processed. A Read/_Write-confirmation is passed to the User and a possibly stored Alarm_Ack.req is deleted. In case of an Alarm_Ack confirmation, this confirmation is ignored, and a possibly outstanding Read/_Write is deleted and the User is informed with a Reject.ind. After that, the Stop.cnf is passed to the Slave-Handler and the MSAC1M State Machine changes from state OPEN to CLOSE.

MSAC1M_Alarm_Ack is handled on SAP 50

When an Alarm_Ack is requested by the MSAL1M State Machine or a Read/_Write service is requested by the User, the service request is passed directly to the DL.

When recognizing an error while a service request is being processed on the other SAP, the MSAC1M State Machine

– waits for the confirmation of the service on the other SAP,
– then aborts the MSCY1M connection by indicating a Abort.ind to the Slave-Handler MSCY1S,
– informs the User with a Reject.ind in case of an outstanding _Read/_Write service, and
– changes from state OPEN to CLOSE.

When a Stop.req is requested by the Slave-Handler, the MSAC1M first waits for eventually outstanding DL-DATA-REPLY.cnf. After this the Stop.req will be processed. An outstanding MSAC1M_Read/_Write confirmation is passed to the User and an outstanding Alarm_Ack confirmation is ignored. Then the Stop.cnf is passed to the Slave-Handler and the MSAC1M State Machine changes from state OPEN to CLOSE.

Local Variables

Go_Abort
(Boolean)

This variable is set TRUE if the Stop.req is in use.

Internal_Abort
(Boolean)

This variable is set TRUE if an error in the Slave response occurs.

Max_Data_Length
(Unsigned8)

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This variable defines the maximum size of MS1-PDU for all DP-slaves.

Alarm_DSAP
(Unsigned8)

This variable contains the DSAP the Alarm_Ack is sent to.

Service_Header
(Unsigned8)

This variable contains the Function_Num of the MS1-Service actually sent to the DSAP 51.

Service_Buffer
(Octet-String)

This variable contains a Read or Write Request-PDU if an Alarm_Ack is in use (DSAP 51).

Alarm_Buffer
(Octet-String)

This variable contains an Alarm_Ack if a Read or Write Request-PDU is in use (DSAP 51).

Src
(Unsigned8)

This variable contains the number of the actual processed Read or Write Services (only 0 or 1 is possible).

Arc
(Unsigned8)

This variable contains the number of the actual Alarm_Ack Services (only 0 or 1 is possible)

Stop_Pending
(Boolean)

This variable is set TRUE if a Stop.cnf is pending.

Start_C1_Monitoring
(Boolean)

This variable is set TRUE if the user issues a Read or Write request service primitive. It is used to distinguish the first polling from later ones, and to start the C1 Timer for monitoring the user response.

C1_Timer_Expired
(Boolean)

This variable is set TRUE if the C1 Timer expires. With the next confirmation it is used to abort the connection if no response is available. It is only relevant if at least one polling for the response has been issued.

C1_Timer
Timer with 10 ms base

This timer is used to monitor the response of the DP-slave according the values specified in the GSD of the DP-slave (stored in the CRL). The function Start C1 Timer starts or restarts this timer with the value C1_Response_Timeout taken from the appropriate CRL entry. The function Stop C1 Timer stops the operation no matter of it was running before.

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Macros and Replacements

<REQPARAM>

<
XXX=Read : Slot_Number, Index, Length
XXX=Write : Slot_Number, Index, Length, Data
>

<VALID_SERVICE_FUNCTION_NUM>

<
XXX=Read : 0x5E
XXX=Write : 0x5F
>

<LOAD_SERVICE_BUFFER>

<
XXX=Read : Service_Buffer[1]=0x5E
Service_Buffer[2]=Slot_Number
Service_Buffer[3]=Index
Service_Buffer[4]=Length
XXX=Write : Service_Buffer[1]=0x5F
Service_Buffer[2]=Slot_Number
Service_Buffer[3]=Index
Service_Buffer[4]=Length
Service_Buffer[5..Length+4]=Data
>

<LOAD_ALARM_BUFFER>

<
Alarm_Buffer[1]=0x5C
Alarm_Buffer[2]=Slot_Number
Alarm_Buffer[3]=Alarm_Type
Alarm_Buffer[4]=Seq_Nr*8
>

IS_VALID_SERVICE_REQ

(
Length ≤ Max_Data_Length
)

IS_VALID_SERVICE_RES_PDU

(
L_sdu[1] = Service_Buffer[1]
&& L_sdu.len ≥ 4

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&& (L_sdu[1] <> 0x5E || L_sdu.len ≥ L_sdu[4]+4)
&& Max_Data_Length ≥ L_sdu[4]
)

IS_VALID_SERVICE_NRS_PDU

(
L_sdu[1] = (Service_Buffer[1]+0x80)
&& L_sdu.len = 4
)

IS_ALARM_ACK_PDU

(
L_sdu[2..4] = Alarm_Buffer[2..4]
&& (L_sdu[1] AND 0x7F = (Service_Buffer[1])
&& L_sdu.len = 4
)

<VALID_SERVICE>

<
Service_Header=0x5E : MSAC1M_Read
Service_Header=0x5F : MSAC1M_Write
>

<VALID_SERVICE_RES_PARAM>

<
Service_Header=0x5E : Length=L_sdu[4],
Data=L_sdu[5..Length+4]
Service_Header=0x5F : Length=L_sdu[4]
>

<VALID_SERVICE_NRS_PARAM>

<
Error_Decode=L_sdu[2],
Error_Code_1=L_sdu[3],
Error_Code_2=L_sdu[4],
>

REJECT_VALID_SERVICE

(
if (Stop_Pending=True)
MSAC1M_Reject.ind(Rem_Add, Status=REJ_SE)
else
if.(Go_Abort=True)
MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT)
else
if (Src <> 0)

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```
  MSAC1M_Reject.ind(Rem_Add, Status=REJ_PS)
else
if (Length<=Max_Data_Length)
  MSAC1M_Reject.ind(Rem_Add, Status=REJ_LE)
else
  MSAC1M_Reject.ind(Rem_Add, Status=REJ_IV)
)
```

CONTINUE_VALID_SERVICE

```
(
if (Src <> 0 && Alarm_Dsap=51)
  Service_Header = Service_Buffer[1]
  Start_C1_Monitoring = TRUE
  DMPMM1_DATA_REPLY.req(SSAP=51, DSAP=51,
   Rem_Add,L_sdu=Service_Buffer, Serv_class=Low)
)
```

CONTINUE_ALARM_ACK

```
(
if (Arc <> 0 && Alarm_Dsap=51)
  Service_Header = Alarm_Buffer[1]
  DMPMM1_DATA_REPLY.req(SSAP=51, DSAP=51, Rem_Add,
   L_sdu=Alarm_Buffer, Serv_class=Low)
)
```

IS_INVALID_SERVICE_RES

```
(
 (L_status = DL &&
 (L_sdu[1]<> Service_Header || L_sdu.len<4) &&
 (L_sdu[1]<> (Service_Header+0x80) || L_sdu.len<> 4)
 ) ||
 L_status = DS/UE/RS/RDL/NA/RR/LR/DH/RDH
)
```

IS_INVALID_ALARM_ACK_RES

```
(
 (L_status = DL &&
 (L_sdu[1..4]<> Alarm_Buffer[1..4] || L_sdu.len<> 4)
 ) ||
 L_status = DS/UE/RS/RDL/NA/RR/LR/DH/RDH
)
```

CHECK_STOP_PENDING

```
(
if (Stop_Pending = TRUE)
```

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MSAC1M_Stop.cnf(Rem_Add)
else
MSAC1M_Abort.ind(Rem_Add)
)

9.9.3 MSAC1M state table

Table 97 contains the complete description of the MSAC1M state machine.

Table 97 – MSAC1M state table

#	Current state	Event / condition => action	Next state
1	POWER-ON	MSAC1M_MInit_MSAC1.req(Rem_Add) => MSAC1M_MInit_MSAC1.cnf(Rem_Add)	CLOSED
2	CLOSED	MSAC1M_Start.req(Rem_Add) => Alarm_Buffer := empty Service_Buffer := empty Stop_Pending := False Go_Abort := False Start_C1_Monitoring := FALSE C1_Timer_Expired := FALSE Src := 0 Arc := 0 Service_Header := 0 Max_Data_Length := Max_Channel_Data_Length if (Extra_Alarm_Sap=FALSE) (Alarm_Dsap:=51) ELSE (Alarm_Dsap:=50) MSAC1M_Start.cnf(Rem_Add)	OPEN
3	CLOSED	MSAC1M_Stop.req(Rem_Add) => MSAC1M_Stop.cnf(Rem_Add)	CLOSED
4	CLOSED	MSAC1M_XXX.req(Rem_Add, <REQPARAM>) => MSAC1M_Reject.ind(Rem_Add, Status:=REJ_SE)	CLOSED
5	CLOSED	MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) => ignore	CLOSED
6	CLOSED	DMPMM1_DATA_REPLY.cnf(SSAP, DSAP, Rem_Add, L_sdu, Serv_class, L_status) => MSAC1M_Fault.ind(Rem_Add)	POWER-ON
7	OPEN	MSAC1M_Start.req(Rem_Add) => MSAC1M_Fault.ind(Rem_Add)	POWER-ON
8	OPEN	MSAC1M_Stop.req(Rem_Add) /Arc = 0 && Src = 0 => MSAC1M_Stop.cnf(Rem_Add)	CLOSED
9	OPEN	MSAC1M_Stop.req(Rem_Add) /Arc <> 0 || Src <> 0 => Stop_Pending:=True	OPEN

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#	Current state	Event / condition => action	Next state
10	OPEN	MSAC1M_XXX.req(Rem_Add, <REQPARAM>) /Src = 0 && Stop_Pending = False && Go_Abort = False && IS_VALID_SERVICE_REQ && (Arc = 0 || Alarm_Dsap <> 51) => Service_Header := <VALID_SERVICE_FUNCTION_NUM> Src := Src+1 Start_C1_Monitoring:=TRUE <LOAD_SERVICE_BUFFER> DMPMM1_DATA_REPLY.req(SSAP:=51, DSAP:=51, Rem_Add, L_sdu:=Service_Buffer, Serv_class:=Low)	OPEN
11	OPEN	MSAC1M_XXX.req(Rem_Add, <REQPARAM>) /Src = 0 && Stop_Pending = False && Go_Abort = False && IS_VALID_SERVICE_REQ && Arc <> 0 && Alarm_Dsap = 51 => Src := Src+1 <LOAD_SERVICE_BUFFER>	OPEN
12	OPEN	MSAC1M_XXX.req(Rem_Add, <REQPARAM>) /Src <> 0 || Stop_Pending = True || Go_Abort = True || NOT (IS_VALID_SERVICE_REQ) => REJECT_VALID_SERVICE	OPEN
13	OPEN	MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Arc = 0 && Stop_Pending = False && Go_Abort = False && Alarm_Dsap <> 51 => Arc := Arc+1 <LOAD_ALARM_BUFFER> DMPMM1_DATA_REPLY.req(SSAP:=51, DSAP:=Alarm_Dsap, Rem_Add, L_sdu:=Alarm_Buffer, Serv_class:=Low))	OPEN
14	OPEN	MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Arc = 0 && Stop_Pending = False && Go_Abort = False && Src = 0 && Alarm_Dsap = 51 => Arc := Arc+1 DMPMM1_DATA_REPLY.req(SSAP:=51, DSAP:=Alarm_Dsap, Rem_Add, L_sdu:=Alarm_Buffer, Serv_class:=Low))	OPEN
15	OPEN	MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Arc = 0 && Stop_Pending = False && Go_Abort = False && Src <> 0 && Alarm_Dsap = 51 => Arc := Arc+1 <LOAD_ALARM_BUFFER>	OPEN
16	OPEN	MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Arc=0 && (Stop_Pending = True || Go_Abort = True) => ignore	OPEN
17	OPEN	MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Arc <> 0 => DMPMM1_Fault.ind(Rem_Add, Status:=MSAC1_Fault)	POWER-ON
18	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_RES_PDU && Src <> 0 && L_sdu[1] = Service_Header && Stop_Pending = False && Go_Abort = False => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 CONTINUE_ALARM_ACK MSAC1_<VALID_SERVICE>.cnf(+)(Rem_Add, <VALID_SERVICE_RES_PARAM>)	OPEN

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#	Current state	Event / condition => action	Next state
19	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_RES_PDU && Src <> 0 && L_sdu[1] = Service_Header && Stop_Pending = True && (Arc=0 || Alarm_Dsap=51) => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 Arc := 0 MSAC1_<VALID_SERVICE>.cnf(+)(Rem_Add, <VALID_SERVICE_RES_PARAM>) MSAC1M_Stop.cnf(Rem_Add)	CLOSED
20	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_RES_PDU && Src <> 0 && L_sdu[1] = Service_Header && Stop_Pending = True && Arc <> 0 && Alarm_Dsap <> 51 => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 MSAC1_<VALID_SERVICE>.cnf(+)(Rem_Add, <VALID_SERVICE_RES_PARAM>)	OPEN
21	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_RES_PDU && Src <> 0 && L_sdu[1] = Service_Header && Stop_Pending = False && Go_Abort = True => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 MSAC1_<VALID_SERVICE>.cnf(+)(Rem_Add, <VALID_SERVICE_RES_PARAM>) MSAC1M_Abort.ind(Rem_Add)	CLOSED
22	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_NRS_PDU && Src <> 0 && L_sdu[1] = (Service_Header+0x80) && Stop_Pending = False && Go_Abort = False => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 CONTINUE_ALARM_ACK MSAC1_<VALID_SERVICE>.cnf(-)(Rem_Add, <VALID_SERVICE_NRS_PARAM>)	OPEN
23	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_NRS_PDU && Src <> 0 && L_sdu[1] = (Service_Header+0x80) && Stop_Pending = True && (Arc=0 || Alarm_Dsap=51) => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 Arc := 0 MSAC1_<VALID_SERVICE>.cnf(-)(Rem_Add, <VALID_SERVICE_NRS_PARAM>) MSAC1M_Stop.cnf(Rem_Add)	CLOSED
24	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_NRS_PDU && Src <> 0 && L_sdu[1] = (Service_Header+0x80) && Stop_Pending = True && Arc <> 0 && Alarm_Dsap <> 51 => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 MSAC1_<VALID_SERVICE>.cnf(-)(Rem_Add, <VALID_SERVICE_NRS_PARAM>)	OPEN

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#	Current state	Event / condition => action	Next state
25	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_NRS_PDU && Src <> 0 && L_sdu[1] = (Service_Header+0x80) && Stop_Pending = False && Go_Abort = True => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 MSAC1_<VALID_SERVICE>.cnf(-)(Rem_Add, <VALID_SERVICE_NRS_PARAM>) MSAC1M_Abort.ind(Rem_Add)	CLOSED
26	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_ALARM_ACK_PDU && Arc <> 0 && L_sdu[1]=Service_Buffer[1] && (Alarm_Dsap<>51 || L_sdu[1]=Service_Header) && Stop_Pending = False && Go_Abort = False => Arc := 0 CONTINUE_VALID_SERVICE MSAC1S_Alarm_Ack.cnf(+)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr)	OPEN
27	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_ALARM_ACK_PDU && Arc <> 0 && L_sdu[1]=(Service_Buffer[1] OR 0x80) && (Alarm_Dsap<>51 || L_sdu[1]=Service_Header) && Stop_Pending = False && Go_Abort = False => Arc := 0 CONTINUE_VALID_SERVICE MSAC1S_Alarm_Ack.cnf(-)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr)	OPEN
28	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_ALARM_ACK_RES_PDU && Arc <> 0 && (Alarm_Dsap<>51 || L_sdu[1]=Service_Header) && Stop_Pending = True && Src = 0 => Arc := 0 MSAC1M_Stop.cnf(Rem_Add)	CLOSED
29	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_ALARM_ACK_PDU && Arc <> 0 && Alarm_Dsap = 51 && L_sdu[1] = Service_Header && Stop_Pending = True && Src <> 0 => Arc := 0 Src := 0 MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT) MSAC1M_Stop.cnf(Rem_Add)	CLOSED
30	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_ALARM_ACK_PDU && Arc <> 0 && Alarm_Dsap <> 51 && Stop_Pending = True && Src <> 0 => Arc := 0	OPEN
31	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_ALARM_ACK_PDU && Arc <> 0 && (Alarm_Dsap<>51 || L_sdu[1]=Service_Header) && Stop_Pending = False && Go_Abort = True => Arc := 0 MSAC1M_Abort.ind(Rem_Add)	CLOSED

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#	Current state	Event / condition => action	Next state
32	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Src <> 0 && Service_Header <> Alarm_Ack && Stop_Pending = False && Go_Abort = False && Start_C1_Monitoring = TRUE => StartTimer C1() Start_C1_Monitoring = FALSE DMPMM1_DATA_REPLY.req(SSAP=51, DSAP, Rem_Add, L_sdu.len=0, Serv_class=Low)	OPEN
33	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Src <> 0 && Service_Header <> Alarm_Ack && Stop_Pending = False && Go_Abort = False && Start_C1_Monitoring = FALSE && C1_Timer_Expired = FALSE => DMPMM1_DATA_REPLY.req(SSAP=51, DSAP, Rem_Add, L_sdu.len=0, Serv_class=Low)	OPEN
34	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Src <> 0 && Service_Header <> Alarm_Ack && Stop_Pending = False && Go_Abort = False && Start_C1_Monitoring = FALSE && C1_Timer_Expired = TRUE => C1_Timer_Expired = FALSE Src:=0 MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT) MSAC1M_Abort.ind(Rem_Add)	CLOSED
35	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Src <> 0 && Service_Header <> Alarm_Ack && Stop_Pending = True && (Arc=0 || Alarm_Dsap=51) => Src := 0 Arc := 0 MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT) MSAC1M_Stop.cnf(Rem_Add)	CLOSED
36	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Src <> 0 && Service_Header <> Alarm_Ack && Stop_Pending = True && Arc <> 0 && Alarm_Dsap <> 51 => Src := 0 MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT)	OPEN
37	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Src <> 0 && Service_Header <> Alarm_Ack && Stop_Pending = False && Go_Abort = True => Src := 0 MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT) MSAC1M_Abort.ind(Rem_Add)	CLOSED
38	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Arc <> 0 && (Service_Header=Alarm_Ack || Alarm_Dsap<>51) && Stop_Pending = False && Go_Abort = False => DMPMM1_DATA_REPLY.req(SSAP=51, DSAP, Rem_Add, L_sdu.len=0, Serv_class=Low)	OPEN
39	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Arc <> 0 && (Service_Header=Alarm_Ack || Alarm_Dsap<>51) && Stop_Pending = True && Src = 0 => Arc := 0 MSAC1M_Stop.cnf(Rem_Add)	CLOSED

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#	Current state	Event / condition => action	Next state
40	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Arc <> 0 && Service_Header = Alarm_Ack && Alarm_Dsap = 51 && Stop_Pending = True && Src <> 0 => Arc := 0 Src := 0 MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT) MSAC1M_Stop.cnf(Rem_Add)	CLOSED
41	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Arc <> 0 && Alarm_Dsap <> 51 && Stop_Pending = True && Src <> 0 => Arc := 0	OPEN
42	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Arc <> 0 && (Service_Header=Alarm_Ack || Alarm_Dsap<>51) && Stop_Pending = False && Go_Abort = True => Arc := 0 MSAC1M_Abort.ind(Rem_Add)	CLOSED
43	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /IS_INVALID_SERVICE_RES && Src <> 0 && Service_Header <> Alarm_Ack && (Arc=0 || Alarm_Dsap=51) => Src := 0 Arc := 0 CHECK_STOP_PENDING MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT)	CLOSED
44	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /IS_INVALID_SERVICE_RES && Src <> 0 && Service_Header <> Alarm_Ack && Arc <> 0 && Alarm_Dsap <> 51 => Src := 0 if Stop_Pending := False Go_Abort := True MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT)	OPEN
45	OPEN	C1 Timer expired => C1_Timer_Expired := TRUE	OPEN
46	CLOSED	C1 Timer expired => no action	CLOSED

9.10 MMAC1

9.10.1 Primitive definitions

9.10.1.1 Primitives exchanged between FSPMM1 and MMAC1

Table 98 shows the service primitives including their associated parameters issued by the FSPMM1 and received by the MMAC1.

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Table 98 – Primitives issued by FSPMM1 to MMAC1

Primitive name	Source	Associated parameters	Functions
SInit MM.req	FSPMM1	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Reset.req	FSPMM1	(none)	
Abort.req	FSPMM1	(none)	
Get Master Diag.rsp(+)	FSPMM1	Diagnosis Data	
Get Master Diag.rsp(-)	FSPMM1	Status	
Start Seq.rsp(+)	FSPMM1	Max Len Data Unit	
Start Seq.rsp(-)	FSPMM1	Status	
Download.rsp(+)	FSPMM1	(none)	
Download.rsp(-)	FSPMM1	Status	
Upload.rsp(+)	FSPMM1	Data	
Upload.rsp(-)	FSPMM1	Status	
End Seq.rsp(+)	FSPMM1	(none)	
End Seq.rsp(-)	FSPMM1	Status	
Act Param.rsp(+)	FSPMM1	(none)	
Act Param.rsp(-)	FSPMM1	Status	

Table 99 shows the service primitives including their associated parameters issued by the MMAC1 and received by the FSPMM1.

Table 99 – Primitives issued by MMAC1 to FSPMM1

Primitive name	Source	Associated parameters	Functions
SInit MM.cnf	MMAC1	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Reset.cnf	MMAC1	(none)	
Abort.ind	MMAC1	(none)	
Fault.ind	MMAC1	(none)	
Get Master Diag.ind	MMAC1	MDiag Identifier	
Start Seq.ind	MMAC1	Area Code, Timeout	
Download.ind	MMAC1	Area Code, Add Offset, Data	
Upload.ind	MMAC1	Area Code, Add Offset, Data Len	
End Seq.ind	MMAC1	(none)	
Act Param.ind	MMAC1	Area Code, Activate	
Act Para Brct.ind	MMAC1	Area Code	

9.10.1.2 Parameters of MMAC1 primitives

The parameters used with the primitives exchanged between the FSPMM1 and the MMAC1 are described in FAL Service Definition in IEC 61158-5-3.

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9.10.2 State machine description

The following MMAC1 state machine for Master-Master communication describes the responder side. Normally, this means a DP-interface of an automation device such as a Programmable Logic Controller.

After Reset, the MMAC1 changes to the “POWER-ON" state and waits for initialisation.

The state machine remains in the state “WAIT-REQ" as long as it receives a valid request from Layer 2. After issuing this request to the User, the state machine remains in the “WAIT-RES" state until the User offers the response. After storing the response, data collection is monitored. If a service-sequence is executed, MMAC1 is waiting for the next service request in the state “WAIT-SEQ-REQ".

At any time, maximally one request shall be in execution.

Local Variables

T1
(Unsigned16)

Time in which a Master (Class 2) shall receive at latest a response from the Master (Class 1).

T2
(Unsigned16)

Time that can elapse during the execution of a service-sequence between response and the following request.

Client_Add
(Unsigned8)

Address of the DP-master (Class 2) just communicating with.

Service-Header
(Octet-String of the length 4)

Intermediate memory for the first four octets of the last request.

Sequence_Mode
(Boolean)

Indicates that a service-sequence is just in execution. During a service-sequence the DP-master (Class 1) is reserved for the respective DP-master (Class 2).

9.10.3 MMAC1 state table

Table 100 contains the complete description of the MMAC1 state machine.

Table 100 – MMAC1 state table

#	Current state	Event / condition => action	Next state
1	POWER-ON	MMAC1_Minit_MM.req =>MMAC1_Minit_MM.cnf	WAIT-REQ
2	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 =>ignore	WAIT-REQ

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#	Current state	Event / condition => action	Next state
3	WAIT-REQ	MMAC1_XXX.rsp =>MMAC1_Reject.ind(Reason:=REJ_PS)	WAIT-REQ
4	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=2 && L_sdu[1]=0x41 =>Service_Header:=L_sdu[1-2] Client_Add:=Loc_add MMAC1_Get_Master_Diag.ind(Identifier:=L_sdu[2]) DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=Loc_add, Indication_Mode:=Unchanged)	WAIT-PROT
5	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=4 && L_sdu[1]=0x42 =>Sequence_Mode:=True Service_Header:=L_sdu[1-4] T2:=L_sdu[3-4] Client_Add:=Loc_add MMAC1_Start_Seq.ind(Req_Add:=Loc_add, Area_Code:=L_sdu[2], Timeout:=L_sdu[3-4]) DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=Loc_add, Indication_Mode:=Unchanged)	WAIT-PROT
6	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len>=5 && L_sdu[1]=0x43 =>Service_Header:=L_sdu[1-4] Client_Add:=Loc_add MMAC1_Download.ind(Req_Add:=Loc_add, Area_Code:=L_sdu[2], Address_Offset:=L_sdu[3-4], Data:=L_sdu[5-L_sdu.len]) DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=Loc_add, Indication_Mode:=Unchanged)	WAIT-PROT
7	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=5 && L_sdu[1]=0x44 =>Service_Header:=L_sdu[1-4] Client_Add:=Loc_add MMAC1_Upload.ind(Req_Add:=Loc_add, Area_Code:=L_sdu[2], Address_Offset:=L_sdu[3-4], Data_Length:=L_sdu[5]) DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=Loc_add, Indication_Mode:=Unchanged)	WAIT-PROT
8	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=1 && L_sdu[1]=0x45 =>Client_Add:=Loc_add DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=Loc_add, Indication_Mode:=Unchanged)	END-SEQ-PROT
9	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=3 && L_sdu[1]=0x47 =>Service_Header:=L_sdu[1-3] Client_Add:=Loc_add MMAC1_Act_Param.ind(Area_Code:=L_sdu[2], Activate:=L_sdu[3]) DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=Loc_add, Indication_Mode:=Unchanged)	WAIT-PROT
10	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /invalid MMAC-REQ-PDU =>Client_Add:=Loc_add DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=Loc_add, Indication_Mode:=Unchanged)	ERR-PROT
11	WAIT-REQ	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=2 && L_sdu[1]=0x46 =>MMAC1_Act_Para_Brct.ind(Area_Code:=L_sdu[2])	WAIT-REQ

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#	Current state	Event / condition => action	Next state
12	WAIT-REQ	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len<>2 || L_sdu[1]<>0x46 =>ignore	WAIT-REQ
13	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 =>ignore	WAIT-REQ
14	WAIT-SEQ-REQ	MMAC1_xxx.rsp =>Sequence_Mode:=False Stop T2 DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=All, Indication_Mode:=Unchanged)	WAIT-UNPROT
15	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=2 && L_sdu[1]=0x41 =>Service_Header:=L_sdu[1-2] Stop T2 MMAC1_Get_Master_Diag.ind(Identifier:=L_sdu[2])	WAIT-RES
16	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=4 && L_sdu[1]=0x42 =>Sequence_Mode:=False Stop T2 DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu[1]:=0xC9, Serv_class:=Low, Transmit:=Single) {SE error code}	WAIT-UPD
17	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len>=5 && L_sdu[1]=0x43 =>Service_Header:=L_sdu[1-4] Stop T2 MMAC1_Download.ind(Req_Add:=Loc_add, Area_Code:=L_sdu[2], Address_Offset:=L_sdu[3-4], Data:=L_sdu[5-L_sdu.len])	WAIT-RES
18	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=5 && L_sdu[1]=0x44 =>Service_Header:=L_sdu[1-4] Stop T2 MMAC1_Upload.ind(Req_Add:=Loc_add, Area_Code:=L_sdu[2], Address_Offset:=L_sdu[3-4], Data_Length:=L_sdu[5])	WAIT-RES
19	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=1 && L_sdu[1]=0x45 =>Sequence_Mode:=False Service_Header:=L_sdu[1] Stop T2 MMAC1_End_Seq.ind(Req_Add:=Loc_add)	WAIT-RES
20	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=3 && L_sdu[1]=0x47 =>Service_Header:=L_sdu[1-3] Stop T2 MMAC1_Act_Param.ind(Area_Code:=L_sdu[2], Activate:=L_sdu[3])	WAIT-RES
21	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /invalid MMAC-REQ-PDU && Sequence_Mode=True =>Sequence_Mode:=False Stop T2 DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu[1]:=0xC1, Serv_class:=Low, Transmit:=Single) {FE error code}	WAIT-UPD
22	WAIT-SEQ-REQ	T2 expired =>Sequence_Mode:=False DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=All, Indication_Mode:=Unchanged)	WAIT-UNPROT

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#	Current state	Event / condition => action	Next state
23	WAIT-SEQ-REQ	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class) /L_sdu.len=2 && Loc_add=Client_Add && L_sdu[1]=0x46 =>MMAC1_Act_Para_Brct.ind(Area_Code:=L_sdu[2])	WAIT-SEQ-REQ
24	WAIT-SEQ-REQ	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class) /L_sdu.len<>2 || Loc_add<>Client_Add || L_sdu[1]<>0x46 =>ignore	WAIT-SEQ-REQ
25	END-SEQ-PROT	DMPMM1_RSAP_ACTIVATE.cnf(SSAP=54, M_status) /M_status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu[1]:=0xC9, Serv_class:=Low, Transmit:=Single) {SE error code}	WAIT-UPD
26	ERR-PROT	DMPMM1_RSAP_ACTIVATE.cnf(SSAP=54, M_status) /M_status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu[1]:=0xC1, Serv_class:=Low, Transmit:=Single) {FE error code}	WAIT-UPD
27	WAIT-PROT	DMPMM1_RSAP_ACTIVATE.cnf(SSAP=54, M_status) /M_status=OK	WAIT-RES
28	WAIT-RES	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Sequence_Mode=False || Client_Add<>Loc_add || L_sdu.len=0 =>ignore	WAIT-RES
29	WAIT-RES	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Sequence_Mode=True && Client_Add=Loc_add && L_sdu.len>0 =>Sequence_Mode:=False ignore L_sdu	WAIT-RES
30	WAIT-RES	MMAC1_Get_Master_Diag.rsp(Status, Diagnostic_Data) /Service_Header[1]=0x41 && Status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu:=(Service_Header, Diagnostic_Data), Serv_class:=Low, Transmit:=Single)	WAIT-UPD
31	WAIT-RES	MMAC1_Start_Seq.rsp(Status, Max_Length_Data_Unit) /Service_Header[1]=0x42 && Status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu:=(Service_Header, Max_Length_Data_Unit), Serv_class:=Low,Transmit:=Single)	WAIT-UPD
32	WAIT-RES	MMAC1_Download.rsp(Status) /Service_Header[1]=0x43 && Status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu:=Service_Header, Serv_class:=Low,Transmit:=Single)	WAIT-UPD
33	WAIT-RES	MMAC1_Upload.rsp(Status, Data) /Service_Header[1]=0x44 && Status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu:=(Service_Header, Data), Serv_class:=Low,Transmit:=Single)	WAIT-UPD
34	WAIT-RES	MMAC1_End_Seq.rsp(Status) /Service_Header[1]=0x45 && Status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu:=Service_Header, Serv_class:=Low,Transmit:=Single)	WAIT-UPD
35	WAIT-RES	MMAC1_Act_Param.rsp(Status) /Service_Header[1]=0x47 && Status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu:=Service_Header, Serv_class:=Low,Transmit:=Single)	WAIT-UPD
36	WAIT-RES	MMAC1_xxx.rsp(Status) /Service_Header[1]=Service_Code && Status <> OK =>Start T1 DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu[1]:=Status, Serv_class:=Low, Transmit:=Single)	WAIT-UPD
37	WAIT-RES	MMAC1_XXX.rsp(Status) /Service_Header[1]<>Service_Code =>Sequence_Mode:=False DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu[1]:=0xC6, Serv_class:=Low, Transmit:=Single) {RE}	WAIT-UPD

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#	Current state	Event / condition => action	Next state
38	WAIT-UPD	DMPMM1_REPLY_UPDATE.cnf(SSAP=54, Serv_class, L_status) /Status=OK =>Start T1	WAIT-IND
39	WAIT-UPD	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Loc_add<>Client_Add && Update_status=NO =>ignore	WAIT-UPD
40	WAIT-UPD	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Loc_add=Client_Add && L_sdu.len>0 && Update_status=NO =>Sequence_Mode := False ignore L_sdu	WAIT-UPD
41	WAIT-UPD	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO/HI =>MMAC1_Fault.ind	POWER-ON
42	WAIT-UPD	DMPMM1_REPLY_UPDATE.cnf(SSAP=54) /Status=NO/IV =>MMAC1_Fault.ind	POWER-ON
43	WAIT-UPD	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /(Update_status=LO/HI) || (Update_status=NO && L_sdu.len=0) =>MMAC1_Fault.ind	POWER-ON
44	WAIT-UPD	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class) /L_sdu.len=2 && L_sdu[1]=0x46 && (Sequence_Mode=False || Loc_add=Client_Add) =>MMAC1_Act_Para_Brct.ind(Area_Code:=L_sdu[2])	WAIT-UPD
45	WAIT-UPD	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class) /L_sdu.len<>2 || L_sdu[1]<>0x46 || Sequence_Mode=True || Loc_add<>Client_Add =>ignore	WAIT-UPD
46	WAIT-IND	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Loc_add<>Client_Add && Update_status=NO =>ignore	WAIT-IND
47	WAIT-IND	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO/HI && Loc_add<>Client_Add =>stop T1 MMAC1_Fault.ind	POWER-ON
48	WAIT-IND	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /(Update_status=LO && Loc_add<>Client_Add) ||(Update_status=NO && L_sdu.len=0) || (Update_status=HI) =>MMAC1_Fault.ind	POWER-ON
49	WAIT-IND	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Loc_add=Client_Add && L_sdu.len>0 && Update_status=NO =>Sequence_Mode = False ignore L_sdu	WAIT-IND
50	WAIT-IND	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && Sequence_Mode=False && Loc_add = Client_Add =>ignore L_sdu, if existent Stop T1 DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=All, Indication_Mode:=Unchanged)	WAIT-UNPROT

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#	Current state	Event / condition => action	Next state
51	WAIT-IND	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && Sequence_Mode=True && L_sdu.len=0 && Loc_add = Client_Add =>Stop T1 Start T2	WAIT-SEQ-REQ
52	WAIT-IND	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && Sequence_Mode=True && L_sdu.len>0 && Loc_add = Client_Add =>Sequence_Mode:=False ignore L_sdu, if existent STOP T1 DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=All, Indication_Mode:=Unchanged)	WAIT-UNPROT
53	WAIT-IND	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class) /L_sdu.len=2 && L_sdu[1]=0x46 && (Sequence_Mode=False || Loc_add=Client_Add) =>MMAC1_Act_Para_Brct.ind(Area_Code:=L_sdu[2])	WAIT-IND
54	WAIT-IND	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class) /L_sdu.len<>2 || L_sdu[1]<>0x46 || (Sequence_Mode=True && Loc_add<>Client_Add) =>ignore	WAIT-IND
55	WAIT-IND	T1 expired =>Sequence_Mode:=False DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu.len:=0, Serv_class:=Low, Transmit:=Single)	WAIT-DEL
56	WAIT-DEL	DMPMM1_REPLY_UPDATE.cnf(SSAP=54) /L_status=OK =>DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=All, Indication_Mode:=Unchanged)	WAIT-UNPROT
57	ANY-STATE	MMAC1_Reset.req =>Stop T1 MMAC1_Reset.cnf	POWER-ON

9.11 MSCS1M

9.11.1 Primitive definitions

9.11.1.1 Primitives exchanged between MSCS1M and FSPMM1

Table 101 shows the service primitives including their associated parameters issued by the FSPMM1 and received by the MSCS1M.

Table 101 – Primitives issued by FSPMM1 to MSCS1M

Primitive name	Source	Associated parameters	Functions
Set Time.req	FSPMM1	AREP, Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour	Refer to FAL Service Definition in IEC 61158-5-3

Table 102 shows the service primitives including their associated parameters issued by the MSCS1M and received by the FSPMM1.

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Table 102 – Primitives issued by MSCS1M to FSPMM1

Primitive name	Source	Associated parameters	Functions
Set Time.ind	MSCS1M	AREP, Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour	Refer to FAL Service Definition in IEC 61158-5-3
Set Time.cnf	MSCS1M	AREP, Status	
Sync Interval Violation.ind	MSCS1M	AREP	

9.11.1.2 Parameter of MSCS1M primitives

The parameters used with the primitives exchanged between the FSPMM1 and the MSCS1M are described in FAL Service Definition in IEC 61158-5-3.

9.11.2 State machine description

In IDLE state this machine waits either for a Clock Value indication from a valid Time master conveyed by DMPMM1 to enter StopTM state and deactivate the own Time master capability or for a Set Time request from the local user conveyed by the FSPMM1 to enter WTEc state and become an active Time master.

In the states WTEc and WCVc the machine issues a clock synchronisation sequence. On completion of this sequence a Set Time confirmation is issued and the machine returns to IDLE. In case of an interruption of the sequence by a valid Clock Value indication the machine brances to StopTM state and the Time master capability becomes inactive.

The StopTM state will be left, if no valid clock synchronisation sequence is detected.

Local variables of the MSCS1M

Time Last Rcvd
(Network Time)

This local variable contains the Clock_Value_Time_Event of the last valid received Clock Value indication.

Error
(Unsigned8)

This local variable is a counter for invalid Clock Synchronisation sequences. It will be reset to 0, when a Sync Interval Violation is indicated.

Clock
(Network Time)

This Variable is used to hold the time value between issuing a Time Event service request and receiving the corresponding Time Event service confirmation.

T_State
(Compound)

This local variable is used for internal storage of service parameters for clock synchronisation.

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T_Last
(Network Time)

This local variable is used for internal storage of the Time Value of the last valid clock synchronisation sequence. It is used to check the validity of subsequent clock synchronisations.

Macros of the MSCS1M:

SET_TIME_ATTRIBUTES

(
Local Time Diff :=CS_list.Clock_value_status.C * (-1)^CS_list.Clock_value_status.CV
Summertime := CS_list.Clock_value_status.SWT
Accuracy :=CS_list.Clock_value_status.CR
Synchronisation Active := CS_list.Clock_value_status.SYF
Announcement Hour :=CS_list.Clock_value_status.ANH
)

GET_TIME_ATTRIBUTES

(
CS_list.Clock_value_status.C * (-1)^CS_list.Clock_value_status.CV :=Local Time Diff
CS_list.Clock_value_status.SWT := Summertime
CS_list.Clock_value_status.CR := Accuracy
CS_list.Clock_value_status.SYF := Synchronisation Active
CS_list.Clock_value_status.ANH := Announcement Hour
)

9.11.3 MSCS1M state table

Table 103 contains the complete description of the MSCS1M state machine.

Table 103 – MSCS1M state table

#	Current state	Event / condition => action	Next state
1	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == SV && Error < 2 => Error := Error+1	Idle
2	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE != Time Last Rcvd && Error < 2 => Time Last Rcvd:= CS_list.Clock_Value_Time_Event Error := Error+1	Idle
3	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == SV && Error >= 2 => Error := 0 Sync Interval Violation.ind	Idle

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#	Current state	Event / condition => action	Next state
4	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE != Time Last Rcvd && Error >= 2 => Time Last Rcvd:= CS_list.Clock_Value_Time_Event Error := 0 Sync Interval Violation.ind	Idle
5	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE == Time Last Rcvd && !(Time_Master_Addr < TS) => ignore	Idle
6	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE == Time Last Rcvd && Time_Master_Addr < TS => Error := 0 Time Last Rcvd:= CS_list.Clock_Value_Time_Event Time Value := Time Last Rcvd + Receive Delay Time Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour from CS-list.Clock_Value_Status Set_Time.ind(Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour)	StopTM
7	Idle	Set_Time.req(Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour) => T_State from Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour Clock:=Time Value CS-TIME_EVENT.req()	WTEc
8	WTEc	CS-TIME-EVENT.cnf (Send_Delay_Time, DL_status) /DL_status = OK => CS_list.Clock_Value_Previous_TE:= T_Last T_Last:= Clock + Send_Delay_Time CS_list.Clock_Value_Time_Event:= T_Last DL-CS-CLOCK-VALUE.req (CS_list)	WCVc
9	WTEc	CS-TIME-EVENT.cnf (Send_Delay_Time, DL_status) /DL_status != OK => Status:= DL_Status Set_Time.cnf(Status)	Idle
10	WTEc	Set_Time.req(Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour) => Status:= SV Set_Time.cnf(Status)	WTEc
11	WCVc	CS-CLOCK-VALUE.cnf (DL_status) => Status:= DL_Status Set_Time.cnf(Status)	Idle
12	WCVc	Set_Time.req(Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour) => Status:= SV Set_Time.cnf(Status)	WCVc

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#	Current state	Event / condition => action	Next state
13	StopTM	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == SV && Error < 2 => Error := Error+1	StopTM
14	StopTM	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE != Time Last Rcvd && Error < 2 => Time Last Rcvd:= CS_list.Clock_Value_Time_Event Error := Error+1	StopTM
15	StopTM	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == SV && Error >= 2 => Error := 0 Sync Interval Violation.ind	Idle
16	StopTM	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE != Time Last Rcvd && Error >= 2 => Time Last Rcvd:= CS_list.Clock_Value_Time_Event Error := 0 Sync Interval Violation.ind	Idle
17	StopTM	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE == Time Last Rcvd && Time_Master_Addr < TS => Error := 0 Time Last Rcvd:= CS_list.Clock_Value_Time_Event Time Value := Time Last Rcvd + Receive Delay Time Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour from CS-list.Clock_Value_Status Set_Time.ind(Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour)	StopTM
18	StopTM	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE == Time Last Rcvd && !(Time_Master_Addr < TS) => ignore	StopTM
19	StopTM	Set_Time.req(Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour) => Status:= SV Set_Time.cnf(Status)	StopTM

9.12 MSAC2M

9.12.1 Primitive definitions

9.12.1.1 Primitives exchanged between FSPMM2 and MSAC2M

Table 104 shows the service primitives including their associated parameters issued by FSPMM2 and received by the MSAC2M.

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Table 104 – Primitives issued by FSPMM2 to MSAC2M

Primitive name	Source	Associated parameters	Functions
MInit MS2.req	FSPMM2	C_Ref	Refer to FAL Service Definition in IEC 61158-5-3
Reset.req	FSPMM2	(none)	
Abort.req	FSPMM2	C_Ref	
Initiate.req	FSPMM2	C_Ref, Send Timeout, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	
Read.req	FSPMM2	C_Ref, Slot Number, Index, Length	
Write.req	FSPMM2	C_Ref, Slot Number, Index, Length, Data	
Data Transport.req	FSPMM2	C_Ref, Slot Number, Index, Length, Data	

Table 105 shows the service primitives including their associated parameters issued by the MSAC2M and received by the FSPMM2.

Table 105 – Primitives issued by MSAC2M to FSPMM2

Primitive name	Source	Associated parameters	Functions
MInit MS2.cnf	MSAC2M	C_Ref	
Reset.cnf	MSAC2M	(none)	
Initiate.cnf(+)	MSAC2M	C_Ref, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	
Initiate.cnf(-)	MSAC2M	C_Ref, Error Decode, Error Code 1 Error Code 2	
Read.cnf(+)	MSAC2M	C_Ref, Length, Data	
Read.cnf(-)	MSAC2M	C_Ref, Error Decode, Error Code 1 Error Code 2	
Write.cnf(+)	MSAC2M	C_Ref, Length	
Write.cnf(-)	MSAC2M	C_Ref, Error Decode, Error Code 1 Error Code 2	

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Primitive name	Source	Associated parameters	Functions
Data Transport.cnf(+)	MSAC2M	C_Ref, Length, Data	
Data Transport.cnf(-)	MSAC2M	C_Ref, Error Decode, Error Code 1 Error Code 2	
Reject.ind	MSAC2M	C_Ref, Reason Code	
Abort.ind	MSAC2M	C_Ref, Locally_Generated, Subnet, Instance, Reason_Code, Abort_Detail	
Fault.ind	MSAC2M	C_Ref	

9.12.1.2 Parameters of MSAC2M primitives

The parameters used with the primitives exchanged between the FSPMM2 and the MSAC2M are described in FAL Service Definition in IEC 61158-5-3. Additional parameters are described in Table 106.

Table 106 – Parameters used with primitives exchanged with MSAC2M

Parameter name	Description
C_Ref	Local identifier of a MSAC2 state machine

9.12.2 State machine description

On POWER-ON each MSAC2M State Machine waits for initialisation.

In the state CLOSED the Initiate service called from the AP-Context is expected and sent to the DP-slave. In the state START-POLL-RES the Master is waiting for the positive Initiate.cnf and makes the transition into the state OPEN.

In the OPEN-state the services Read, Write and Data_Transport are allowed. The State Machine controls that only one request from the User is processed simultaneously, otherwise the connection is aborted.

The connection can be aborted by the User of the Master or by the User of the Slave. It is aborted automatically if a protocol error is detected.

Local Variables

Client_SAP
(Unsigned8)

The SAP used for the connection.

Server_SAP
(Unsigned8)

The SAP used for the connection at the server side.

Server_Add
(Unsigned8)

The DL address (0-126) of the remote server.

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S-Timer
(Unsigned16)

This timer monitors the sending of service request PDUs on the connection if no service is outstanding. The S-Timer expires if no service request PDU has been sent during the S-Timer interval. In this case an Idle-REQ-PDU will be sent.

R-Timer
(Unsigned16)

This Timer monitors the liveliness of the connection if there is an outstanding service response. The R-Timer expires if no service response or IDLE-PDU during the R-Timer interval has been received. In this case the connection will be aborted. The R-Timer interval is 3 times the S-Timer interval.

Service-Header
Local buffer for the Function_Num of the last transmitted request.

Go_Abort
(Boolean)

Local flag that indicates an abort reaction after receiving the remote response.

Service_Buffer
(Octet-String[255])

Local buffer that stores one complete service during an outstanding Idle-RES-PDU.

Macros
;XXX handles Data_Transport, Read and Write Services.

<REQPARAM>

<
XXX=Read : Slot_Number, Index, Length
XXX=Write :Slot_Number, Index, Length, Data
XXX=Data_Transport : Slot_Number, Index, Length, Data
>

<VALID_SERVICE_FUNCTION_NUM>

<
XXX=Read : 0x5E
XXX=Write : 0x5F
XXX=Data_Transport : 0x51
>

<LOAD_SERVICE_BUFFER>

<
XXX=Read : Service_Buffer[1]=0x5E
Service_Buffer[2]=Slot_Number
Service_Buffer[3]=Index
Service_Buffer[4]=Length
XXX=Write : Service_Buffer[1]=0x5F
Service_Buffer[2]=Slot_Number
Service_Buffer[3]=Index

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Service_Buffer[4]=Length
Service_Buffer[5..Length+4]=Data
XXX=Data_Transport : Service_Buffer[1]=0x51
Service_Buffer[2]=Slot_Number
Service_Buffer[3]=Index
Service_Buffer[4]=Length
Service_Buffer[5..Length+4]=Data
>

VALID_SERVICE

(
Length ≤ Max_Data_Length
)

VALID_SERVICE_RES_PDU

(
L_sdu[1] = Service_Buffer[1] &&
L_sdu.len ≥ 4 &&
(L_sdu[1] <> 0x5E || L_sdu.len ≥ L_sdu[4]+4) &&
Max_Data_Length ≥ L_sdu[4]
)

VALID_SERVICE_NRS_PDU

(
L_sdu[1] = (Service_Buffer[1]+0x80) &&
L_sdu.len = 4
)

<VALID_SERVICE>

<
Service_Header=0x5E : Read
Service_Header=0x5F : Write
Service_Header=0x51 : Data_Transport
>

<VALID_SERVICE_RES_PARAM>

<
Service_Header=0x5E : Length=L_sdu[4],
Data=L_sdu[5..Length+4]
Service_Header=0x5F : Length=L_sdu[4]
Service_Header=0x51 : Length=L_sdu[4],
Data=L_sdu[5..Length+4]
>

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<VALID_SERVICE_NRS_PARAM>

<

Error_Decode=L_sdu[2],

Error_Code_1=L_sdu[3],

Error_Code_2=L_sdu[4],

>

VALID_SERVICE_REQ_PDU

(

(Read-REQ-PDU) ||

(Write-REQ-PDU) ||

(Data_Transport-REQ-PDU)

)

VALID_SERVICE_RES_PDU

(

(Read-RES-PDU) ||

(Write-RES-PDU) ||

(Data_Transport-RES-PDU)

)

VALID_SERVICE_NRS_PDU

(

(Read-NRS-PDU) ||

(Write-NRS-PDU) ||

(Data_Transport-NRS-PDU)

)

STORE_ABORT_PARAMETER

(

Stored-Subnet=Subnet

Stored-Instance=Instance

Stored-Reason_Code=Reason_Code

)

9.12.3 MSAC2M state table

Table 107 contains the complete description of the MSAC2M state machine.

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Table 107 – MSAC2M state table

#	Current state	Event / condition => action	Next state
1	POWER-ON	MSAC2M_Minit_MS2.req(C_Ref) => Stored_RM_SAP := 49 Stored_C_Ref := C_Ref Stored_Max_Local_Data_Length := Max_Local_Data_Length Client_SAP := 50 MSAC2M_Minit_MS2.cnf(C_Ref)	CLOSED
2	CLOSED	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => Server_Add := Rem_Add S-Timer := Send_Timeout R-Timer := 3*Send_Timeout Go_Abort := FALSE Service_Buffer := empty store Initiate-REQ-PDU Start S-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=STORED_RM_SAP, Rem_Add:=Server_Add, L_sdu:=Initiate-REQ-PDU, Serv_class:=Low)	START-POLL-RMREQ
3	CLOSED	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
4	CLOSED	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
5	CLOSED	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = IV/LS => ignore	CLOSED
6	START-POLL-RMREQ	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = RM-REQ-PDU && S-Timer >= Send_Timeout && Go_Abort = FALSE => Stored_Server_SAP := Server_SAP Stop S-Timer Start R-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu.len:=0, Serv_class:=Low)	START-POLL-RES
7	START-POLL-RMREQ	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = RM-REQ-PDU && Go_Abort = TRUE => Stored_Server_SAP := Server_SAP Stop S-Timer Start R-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu.len:=0, Serv_class:=Low)	START-POLL-RES

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#	Current state	Event / condition => action	Next state
8	START-POLL-RMREQ	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = RM-REQ-PDU && S-Timer < Send_Timeout => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_STO, Additional_Detail:=Send_Timeout, STORE_ABORT_PARAMETER Stored_Server_SAP := Server_SAP Go_Abort := TRUE Stop S-Timer Start R-Timer MSAC2M_Abort.ind (C_Ref, Locally_Generated, Subnet, Instance, Reason_Code, Additional_Detail) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu.len:=0, Serv_class:=Low)	START-POLL-RES
9	START-POLL-RMREQ	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu <> RM-REQ-PDU => Stop S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_FE) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
10	START-POLL-RMREQ	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = RR && Go_Abort = FALSE => DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=STORED_RM_SAP, Rem_Add:=Server_Add, L_sdu:=stored Initiate-REQ-PDU, Serv_class:=Low)	START-POLL-RMREQ
11	START-POLL-RMREQ	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu,Serv_class=Low, L_Status) /L_status = RR && Go_Abort = TRUE => Stop S-Timer MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
12	START-POLL-RMREQ	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = RS/NR/RDL/RDH/LR/NA/DH/DS/UE => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=FALSE, Instance:=DLL, Reason_Code:=L_status ignore L_sdu if present Stop S-Timer MSAC2M_Abort.ind (C_Ref, Locally_Generated, Subnet, Instance, Reason_Code) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
13	START-POLL-RMREQ	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => Go_Abort := TRUE STORE_ABORT_PARAMETER	START-POLL-RMREQ
14	START-POLL-RMREQ	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE, Go_Abort := TRUE STORE_ABORT_PARAMETER MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	START-POLL-RMREQ

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#	Current state	Event / condition => action	Next state
15	START-POLL-RMREQ	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE, Go_Abort := TRUE STORE_ABORT_PARAMETER MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	START-POLL-RMREQ
16	START-POLL-RMREQ	S-Timer expired => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_TO)	FINAL-WAIT-CON
17	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = RS/NR => DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu.len:=0, Serv_class:=Low)	START-POLL-RES
18	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Initiate-RES-PDU && Go_Abort = FALSE => Stored_Max_Data_Lenth := Max_Len_Data_Unit Stop R-Timer Start S-Timer MSAC2M_Initiate.cnf(+, C_Ref:=Stored_C_Ref, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param)	OPEN
19	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Initiate-RES-PDU && Go_Abort = TRUE => Stop R-Timer Start S-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU with stored Parameter, Serv_class:=Low)	END-POLL-RES
20	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DS/UE => Stop R-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:=L_status) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
21	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = RDL/NA/LR/DH/RDH/RR => ignore L_sdu if present Stop R-Timer Start S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:= L_status) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
22	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Abort-REQ-PDU => Stop R-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=FALSE, Subnet, Instance, Reason_Code) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED

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#	Current state	Event / condition => action	Next state
23	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = (Initiate-NRS-PDU) && Go_Abort = FALSE => Stop R-Timer MSAC2M_Initiate.cnf(-,C_Ref:=Stored_C_Ref, Error_Decode,Error_Code_1,Error_Code_2) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
24	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = (Initiate-NRS-PDU) && Go_Abort = TRUE => Stop R-Timer MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
25	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && NOT (L_sdu = Initiate-RES-PDU || L_sdu = (Initiate-NRS-PDU) || L_sdu = Abort-REQ-PDU || L_sdu = Idle-REQ-PDU) => ignore L_sdu Stop R-Timer Start S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_RE) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
26	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Idle-REQ-PDU && Go_Abort = FALSE => Stop R-Timer Start R-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Idle-RES-PDU, Serv_class:=Low)	START-POLL-RES
27	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Idle-REQ-PDU && Go_Abort = TRUE => Stop R-Timer Start S-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU with stored Parameter, Serv_class:=Low)	END-POLL-RES
28	START-POLL-RES	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE, Go_Abort := TRUE STORE_ABORT_PARAMETER MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	START-POLL-RES
29	START-POLL-RES	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => Go_Abort := TRUE STORE_ABORT_PARAMETER	START-POLL-RES
30	START-POLL-RES	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE, Go_Abort := TRUE STORE_ABORT_PARAMETER MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	START-POLL-RES

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#	Current state	Event / condition => action	Next state
31	START-POLL-RES	R-Timer expired => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_TO, STORE_ABORT_PARAMETER Start S-Timer MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	END-WAIT-CON
32	OPEN	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) /Length <= (Stored_Max_Data_Length) && Length <= (Stored_Max_Local_Data_Length) => Service_Header := Function_Num Stop S-Timer Start R-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=VALID_SERVICE_REQ_PDU, Serv_class:=Low)	VALID-SERVICE-POLL-RES
33	OPEN	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) /Length > (Stored_Max_Data_Length) || Length > (Stored_Max_Local_Data_Length) => MSAC2M_Reject.ind(C_Ref:=Stored_C_Ref, Reason_Code:=REJ_LE)	OPEN
34	OPEN	S-Timer expired => Start R-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L-sdu:=Idle-REQ-PDU, Serv_class:=Low)	IDLE-POLL-RES
35	OPEN	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => Stop S-Timer Start S-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
36	OPEN	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => Stop S-Timer Start S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
37	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = NR => DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu.len:=0, Serv_class:=Low)	VALID-SERVICE-POLL-RES
38	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Idle-REQ-PDU => Stop R-Timer Start R-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Idle-RES-PDU, Serv_class:=Low)	VALID-SERVICE-POLL-RES
39	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = VALID_SERVICE_RES_PDU && Function_Num = Service_Header && Go_Abort = FALSE => Stop R-Timer Start S-Timer MSAC2M_<VALID_SERVICE>.cnf(+, C_Ref:=Stored_C_Ref, <VALID_SERVICE_RES_PARAM>)	OPEN

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#	Current state	Event / condition => action	Next state
40	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = VALID_SERVICE_NRS_PDU && Function_Num = (Service_Header+0x80) && Go_Abort = FALSE => Stop R-Timer Start S-Timer MSAC2M_<VALID_SERVICE>.cnf(-, C_Ref:=Stored_C_Ref, Rem_Add, <VALID_SERVICE_NRS_PARAM>)	OPEN
41	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && NOT(Abort-REQ-PDU) && Go_Abort = TRUE => ignore L_sdu Stop R-Timer Start S-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU with stored Parameter, Serv_class:=Low)	END-POLL-RES
42	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DS/UE/RS => Stop R-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:=L_status) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
43	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && Go_Abort = FALSE && NOT(L_sdu = VALID_SERVICE_RES_PDU && (Function_Num = Service_Header)) && NOT(L_sdu = VALID_SERVICE_NRS_PDU && (Function_Num = (Service_Header+0x80))) && NOT(L_sdu = Abort-REQ-PDU) && NOT(L_sdu = Idle-REQ-PDU) => Stop R-Timer Start S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_RE) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
44	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = RDL/NA/RR/LR/DH/RDH => ignore L_sdu if present Stop R-Timer Start S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:=L_status) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
45	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Abort-REQ-PDU => Stop R-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=FALSE, Subnet, Instance, Reason_Code) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
46	VALID-SERVICE-POLL-RES	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) => MSAC2M_Reject.ind(C_Ref:=Stored_C_Ref, Reason_Code:=REJ_PS)	VALID-SERVICE-POLL-RES

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#	Current state	Event / condition => action	Next state
47	VALID-SERVICE-POLL-RES	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE, Go_Abort := TRUE STORE_ABORT_PARAMETER MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	VALID-SERVICE-POLL-RES
48	VALID-SERVICE-POLL_RES	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => Go_Abort := TRUE STORE_ABORT_PARAMETER	VALID-SERVICE-POLL-RES
49	VALID-SERVICE-POLL-RES	R-Timer expired => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_TO, STORE_ABORT_PARAMETER Start S-Timer MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	END-WAIT-CON
50	END-WAIT-CON	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /(L_status = DL && L_sdu <> Abort-REQ-PDU) || (L_status = NR) => Stop S-Timer Start S-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU with stored Parameter, Serv_class:=Low)	END-POLL-RES
51	END-WAIT-CON	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DS/UE/RS/RDL/NA/RR/LR/RDH/DH => C_Ref:=Stored_C_Ref , Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:=L_status Stop S-Timer MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	CLOSED
52	END-WAIT-CON	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Abort-REQ-PDU => Stop S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=FALSE, Subnet, Instance, Reason_Code) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
53	END-WAIT-CON	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE)	END-WAIT-CON
54	END-WAIT-CON	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE)	END-WAIT-CON
55	END-WAIT-CON	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE)	END-WAIT-CON
56	END-WAIT-CON	S-Timer expired => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code := ABT_OC)	FINAL-WAIT-CON

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#	Current state	Event / condition => action	Next state
57	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = NR => DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu.len:=0, Serv_class:=Low)	IDLE-POLL-RES
58	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Idle-RES-PDU && Service_Buffer = empty && Go_Abort = FALSE => Stop R-Timer Start S-Timer	OPEN
59	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Idle-RES-PDU && Service_Buffer <> empty && Go_Abort = FALSE => Service_Header:= Service_Buffer[1] Service_Buffer:=empty Stop R-Timer Start R-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Service_Buffer, Serv_class:=Low)	VALID-SERVICE-POLL-RES
60	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Idle-RES-PDU && Go_Abort = TRUE => Stop R-Timer Start S-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU with stored Parameter, Serv_class:=Low)	END-POLL-RES
61	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Abort-REQ-PDU => Stop R-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=FALSE, Subnet, Instance, Reason_Code) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
62	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu <> Idle-RES-PDU && L_sdu <> Abort-REQ-PDU => Stop R-Timer Start S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_RE) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
63	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DS/UE/RS => Stop R-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:=L_status) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED

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#	Current state	Event / condition => action	Next state
64	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = RDL/NA/RR/LR/DH/RDH => ignore L_sdu if present Stop R-Timer Start S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:=L_status) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
65	IDLE-POLL-RES	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) /Length <= (Stored_Max_Data_Length) && Length <= (Stored_Max_Local_Data_Length) && Service_Buffer = empty => <LOAD_SERVICE_BUFFER>	IDLE-POLL-RES
66	IDLE-POLL-RES	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) /(Length > (Stored_Max_Data_Length) || Length > (Stored_Max_Local_Data_Length)) && Service_Buffer = empty => MSAC2M_Reject.ind(C_Ref:=Stored_C_Ref, Reason_Code:=REJ_LE)	IDLE-POLL-RES
67	IDLE-POLL-RES	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) //Service_Buffer <> empty => MSAC2M_Reject.ind(C_Ref:=Stored_C_Ref, Reason_Code:=REJ_PS)	IDLE-POLL-RES
68	IDLE-POLL-RES	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE, Go_Abort := TRUE STORE_ABORT_PARAMETER MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	IDLE-POLL-RES
69	IDLE-POLL_RES	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => Go_Abort:=TRUE STORE_ABORT_PARAMETER	IDLE-POLL-RES
70	IDLE-POLL-RES	R-Timer expired => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_TO, STORE_ABORT_PARAMETER Start S-Timer MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	END-WAIT-CON
71	END-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = NR => Stop S-Timer MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
72	END-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL => Stop S-Timer ignore L_sdu MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED

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#	Current state	Event / condition => action	Next state
73	END-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DS/UE/RS/RDL/NA/RR/LR/RDH/DH => ignore L_sdu if present Stop S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:=L_status) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
74	END-POLL-RES	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE)	END-POLL-RES
75	END-POLL-RES	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE)	END-POLL-RES
76	END-POLL-RES	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => ignore	END-POLL-RES
77	END-POLL-RES	S-Timer expired => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code := ABT_OC)	FINAL-WAIT-CON
78	FINAL-WAIT-CON	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status <> IV/LS => ignore L_sdu if present MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
79	FINAL-WAIT-CON	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_OC)	FINAL-WAIT-CON
80	FINAL-WAIT-CON	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_OC)	FINAL-WAIT-CON
81	FINAL-WAIT-CON	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_OC)	FINAL-WAIT-CON
82	ANY-STATE	MSAC2M_Reset.req => Stop R-Timer Stop S-Timer MSAC2M_Reset.cnf	POWER-ON

9.13 MMAC2

9.13.1 Primitive definitions

9.13.1.1 Primitives exchanged between MMAC2 and FSPMM2

Table 108 shows the service primitives including their associated parameters issued by the FSPMM2 and received by the MMAC2.

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Table 108 – Primitives issued by FSPMM2 to MMAC2

Primitive name	Source	Associated parameters	Functions
MInit MM.req	FSPMM2	Max Local Data Length	
Reset.req	FSPMM2	(none)	
Abort.req	FSPMM2	(none)	
Get Master Diag.req	FSPMM2	Rem Add, MDiag Identifier	
Start Seq.req	FSPMM2	Rem Add, Area Code, Timeout	
Download.req	FSPMM2	Rem Add, Area Code, Add Offset, Data	
Upload.req	FSPMM2	Rem Add, Area Code, Add Offset, Data Len	
End Seq.req	FSPMM2	Rem Add	
Act Param.req	FSPMM2	Rem Add, Area Code, Activate	
Act Para Brct.req	FSPMM2	Rem Add, Area Code	

Table 109 shows the service primitives including their associated parameters issued by the MMAC2 and received by the FSPMM2.

Table 109 – Primitives issued by MMAC2 to FSPMM2

Primitive name	Source	Associated parameters	Functions
MInit MM.cnf	MMAC2		
Reset.cnf	MMAC2	(none)	
Get Master Diag.cnf(+)	MMAC2	Rem Add, Diagnosis Data	
Get Master Diag.cnf(-)	MMAC2	Rem Add, Status	
Start Seq.cnf(+)	MMAC2	Rem Add, Max Len Data Unit	
Start Seq.cnf(-)	MMAC2	Rem Add, Status	
Download.cnf(+)	MMAC2	Rem Add	
Download.cnf(-)	MMAC2	Rem Add, Status	
Upload.cnf(+)	MMAC2	Rem Add, Data	
Upload.cnf(-)	MMAC2	Rem Add, Status	
End Seq.cnf(+)	MMAC2	Rem Add	
End Seq.cnf(-)	MMAC2	Rem Add, Status	
Act Param.cnf(+)	MMAC2	Rem Add	
Act Param.cnf(-)	MMAC2	Rem Add, Status	

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Primitive name	Source	Associated parameters	Functions
Act Para Brct.cnf(+)	MMAC2	Rem Add	
Act Para Brct.cnf(-)	MMAC2	Rem Add, Status	
Abort.ind	MMAC2	Rem Add	
Fault.ind	MMAC2	(none)	

9.13.1.2 Parameters of MMAC2 primitives

The parameters used with the primitives exchanged between MMAC2 and FSPMM2 are described in FAL Service Definition in IEC 61158-5-3. Additional parameters are described in Table 110.

Table 110 – Parameters used with primitives exchanged with MMAC2

Parameter name	Description
Rem_Add	DL Address of the remote station

9.13.2 State machine description

The state machine for Master-Master communication specifies the requester side. Typically, these are programming or diagnostic devices.

After reset, the MMAC2 changes to the “POWER-ON" state and waits for initialisation by the User.

The state machine resumes as long in the “WAIT-REQ" state as it receives a valid request from the User. After this request was sent, the state machine remains in the “WAIT-RES" state, until the service is terminated successfully or incorrectly.

At any time, maximally one service request is in execution.

Local Variables

T1
(Unsigned16)

Time which can elapse at most between a request and the receipt of the associated response.

Server_Add
(Unsigned8)

Address of the DP-master (Class 1) just communicating with.

Service-Header
(Octet-String of length 4)

Intermediate memory for the first four octets of the last request.

Srv_lst
This list is used to hold all information which are necessary for the service SAP_ACTIVATE.

Upload_Data_Len
(Unsigned8)

This parameter specifies the length of the requested data.

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9.13.3 MMAC2 state table

Table 111 contains the complete description of the MMAC2 state machine.

Table 111 – MMAC2 state table

#	Current state	Event / condition => action	Next state
1	POWER-ON	MMAC2_Minit_MM.req =>MMAC2_Minit_MM.cnf	WAIT-REQ
2	WAIT-REQ	MMAC2_Get_Master_Diag.req(Rem_Add,Identifier) =>Service_Header[1]:=0x41 Service_Header[2]:=Identifier Server_Add:=Rem_Add Start T1 DMPMM2_DATA_REPLY.req(SSAP:=54, DSAP:=54, Rem_add:=Rem_Add, L_sdu:=Service_Header, Serv_class:=Low)	WAIT-RES
3	WAIT-REQ	MMAC2_Start_Seq.req(Rem_Add,Area_Code,Timeout) =>Service_Header[1]:=0x42 Service_Header[2]:=Area_Code Service_Header[3-4]:=Timeout Server_Add:=Rem_Add Start T1 DMPMM2_DATA_REPLY.req(SSAP:=54, DSAP:=54, Rem_add:=Rem_Add, L_sdu:=Service_Header, Serv_class:=Low)	WAIT-RES
4	WAIT-REQ	MMAC2_Download.req(Rem_Add,Area_Code,Add_Offset,Data) =>Service_Header[1]:=0x42 Service_Header[2]:=Area_Code Service_Header[3-4]:=Add_Offset Server_Add:=Rem_Add Start T1 DMPMM2_DATA_REPLY.req(SSAP:=54, DSAP:=54, Rem_add:=Rem_Add, L_sdu:=(Service_Header,Data), Serv_class:=Low)	WAIT-RES
5	WAIT-REQ	MMAC2_Upload.req(Rem_Add,Area_Code,Add_Offset, Data_Len) =>Service_Header[1]:=0x44 Service_Header[2]:=Area_Code Service_Header[3-4]:=Add_Offset Upload_Data_Len := Data_Len Server_Add:=Rem_Add Start T1 DMPMM2_DATA_REPLY.req(SSAP:=54, DSAP:=54, Rem_add:=Rem_Add, L_sdu:=(Service_Header,Data_Len), Serv_class:=Low)	WAIT-RES
6	WAIT-REQ	MMAC2_End_Seq.req(Rem_Add) =>Service_Header[1]:=0x45 Server_Add:=Rem_Add Start T1 DMPMM2_DATA_REPLY.req(SSAP:=54, DSAP:=54, Rem_add:=Rem_Add, L_sdu:=Service_Header[1], Serv_class:=Low)	WAIT-RES
7	WAIT-REQ	MMAC2_Act_Param.req(Rem_Add, Area_Code, Activate) =>Service_Header[1]:=0x47 Service_Header[2]:=Area_Code Service_Header[3]:=Activate Server_Add:=Rem_Add Start T1 DMPMM2_DATA_REPLY.req(SSAP:=54, DSAP:=54, Rem_add:=Rem_Add, L_sdu:=Service_Header[1-3], Serv_class:=Low)	WAIT-RES
8	WAIT-REQ	MMAC2_Act_Para_Brct.req(Rem_Add, Area_Code) =>DMPMM2_DATA.req(SSAP:=54, DSAP:=54, Rem_add:=Rem_Add, L_sdu:=(0x46,Area_Code), Serv_class:=Low)	WAIT-CON
9	WAIT-CON	MMAC2_XXX.req =>MMAC2_Reject.ind(Rem_Add,Reason_Code:=REJ_CO)	WAIT-CON
10	WAIT-CON	DMPMM2_DATA.cnf(SSAP=54, DSAP=54, Rem_Add, Serv_Class, L_status) /L_status=OK/DS =>MMAC2_Act_Para_Brct.cnf(Rem_Add,Status:=L_status)	WAIT-REQ
11	WAIT-RES	MMAC2_XXX.req =>MMAC2_Reject.ind(Rem_Add,Reason_Code:=REJ_PS)	WAIT-RES

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#	Current state	Event / condition => action	Next state
12	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=NR =>DMPMM2_DATA_REPLY.req(SSAP:=54, DSAP:=54, Rem_add:=Server_Add, L_sdu.len:=0, Serv_class:=Low)	WAIT-RES
13	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=IV/LS =>MMAC2_Fault.ind	POWER-ON
14	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DS/NA/UE/RR/RS && Service_Header[1]=0x41 =>Stop T1 MMAC2_Get_Master_Diag.cnf(Rem_Add, Status:=L_status, Diagnostic_Data:=L_sdu)	WAIT-REQ
15	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DS/NA/UE/RR/RS && Service_Header[1]=0x42 =>Stop T1 MMAC2_Start_Seq.cnf(Rem_Add, Status:=L_status)	WAIT-REQ
16	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DS/NA/UE/RR/RS && Service_Header[1]=0x43 =>Stop T1 MMAC2_Download.cnf(Rem_Add, Status:=L_status)	WAIT-REQ
17	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DS/NA/UE/RR/RS && Service_Header[1]=0x44 =>Stop T1 MMAC2_Upload.cnf(Rem_Add, Status:=L_status)	WAIT-REQ
18	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DS/NA/UE/RR/RS && Service_Header[1]=0x45 =>Stop T1 MMAC2_End_Seq.cnf(Rem_Add, Status:=L_status)	WAIT-REQ
19	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DS/NA/UE/RR/RS && Service_Header[1]=0x47 =>Stop T1 MMAC2_Act_Param.cnf(Rem_Add, Status:=L_status)	WAIT-REQ
20	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=RDL/RDH && Service_Header[1]=0x41 =>Stop T1 MMAC2_Get_Master_Diag.cnf(Rem_Add, Status:=RR)	WAIT-REQ
21	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=RDL/RDH && Service_Header[1]=0x42 =>Stop T1 MMAC2_Start_Seq.cnf(Rem_Add, Status:=RR)	WAIT-REQ
22	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=RDL/RDH && Service_Header[1]=0x43 =>Stop T1 MMAC2_Download.cnf(Rem_Add, Status:=RR)	WAIT-REQ
23	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=RDL/RDH && Service_Header[1]=0x44 =>Stop T1 MMAC2_Upload.cnf(Rem_Add, Status:=RR)	WAIT-REQ

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#	Current state	Event / condition => action	Next state
24	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=RDL/RDH && Service_Header[1]=0x45 =>Stop T1 MMAC2_End_Seq.cnf(Rem_Add, Status:=RR)	WAIT-REQ
25	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=RDL/RDH && Service_Header[1]=0x47 =>Stop T1 MMAC2_Act_Param.cnf(Rem_Add, Status:=RR)	WAIT-REQ
26	WAIT-RES	T1 expired /Service_Header[1]=0x41 =>MMAC2_Get_Master_Diag.cnf(Rem_Add, Status:=TO)	TIMO
27	WAIT-RES	T1 expired /Service_Header[1]=0x42 =>MMAC2_Start_Seq.cnf(Rem_Add, Status:=TO)	TIMO
28	WAIT-RES	T1 expired /Service_Header[1]=0x43 =>MMAC2_Download.cnf(Rem_Add, Status:=TO)	TIMO
29	WAIT-RES	T1 expired /Service_Header[1]=0x44 =>MMAC2_Upload.cnf(Rem_Add, Status:=TO)	TIMO
30	WAIT-RES	T1 expired /Service_Header[1]=0x45 =>MMAC2_End_Seq.cnf(Rem_Add, Status:=TO)	TIMO
31	WAIT-RES	T1 expired /Service_Header[1]=0x47 =>MMAC2_Act_Param.cnf(Rem_Add, Status:=TO)	TIMO
32	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]=FE/NE/AD/EA/LE/RE/IP && Service_Header[1]=0x41 =>Stop T1 MMAC2_Get_Master_Diag.cnf(Rem_Add, Status:=L_sdu[1])	WAIT-REQ
33	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]=FE/NE/AD/EA/LE/RE/IP/NI/SE/SC && Service_Header[1]=0x42 =>Stop T1 MMAC2_Start_Seq.cnf(Rem_Add, Status:=L_sdu[1])	WAIT-REQ
34	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]=FE/NE/AD/EA/LE/RE/NC/SC/NI && Service_Header[1]=0x43 =>Stop T1 MMAC2_Download.cnf(Rem_Add, Status:=L_sdu[1])	WAIT-REQ
35	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]=FE/NE/AD/EA/LE/RE/NI/SC && Service_Header[1]=0x44 =>Stop T1 MMAC2_Upload.cnf(Rem_Add, Status:=L_sdu[1])	WAIT-REQ
36	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]=FE/NE/AD/EA/LE/RE/NI/SE && Service_Header[1]=0x45 =>Stop T1 MMAC2_End_Seq.cnf(Rem_Add, Status:=L_sdu[1])	WAIT-REQ

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#	Current state	Event / condition => action	Next state
37	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]=FE/NE/AD/EA/LE/RE/IP/SC/NI/DI && Service_Header[1]=0x47 =>Stop T1 MMAC2_Act_Param.cnf(Rem_Add, Status:=L_sdu[1])	WAIT-REQ
38	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DH/LR || L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/IP && Service_Header[1]=0x41 && (L_sdu.len<3 || L_sdu[1-2]<>Service_Header[1-2]) =>Stop T1 MMAC2_Get_Master_Diag.cnf(Rem_Add, Status:=RE)	WAIT-REQ
39	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DH/LR || L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/IP/NI/SE/SC && Service_Header[1]=0x42 && (L_sdu.len<>5 || L_sdu[1-4]<>Service_Header[1-4]) =>Stop T1 MMAC2_Start_Seq.cnf(Rem_Add, Status:=RE)	WAIT-REQ
40	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DH/LR || L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/NC/SC/NI && Service_Header[1]=0x43 && (L_sdu[1-4]<>Service_Header[1-4] || L_sdu.len<>4) =>Stop T1 MMAC2_Download.cnf(Rem_Add, Status:=RE)	WAIT-REQ
41	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DH/LR || L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/NI/SC && Service_Header[1]=0x44 && (L_sdu.len<5 || L_sdu[1-4]<>Service_Header[1-4] || L_sdu.len> Upload_Data_Len +4) =>Stop T1 MMAC2_Upload.cnf(Rem_Add, Status:=RE)	WAIT-REQ
42	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DH/LR || L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/NI/SE && Service_Header[1]=0x45 && (L_sdu[1]<>Service_Header[1] || L_sdu.len<>1) =>Stop T1 MMAC2_End_Seq.cnf(Rem_Add, Status:=RE)	WAIT-REQ
43	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DH/LR || L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/IP/SC/NI/DI && Service_Header[1]=0x47 && (L_sdu[1-3]<>Service_Header[1-3] || L_sdu.len<>3) =>Stop T1 MMAC2_Act_Param.cnf(Rem_Add, Status:=RE)	WAIT-REQ
44	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/IP && Service_Header[1]=0x41 && (L_sdu.len>=3 && L_sdu[1-2]=Service_Header[1-2]) =>Stop T1 MMAC2_Get_Master_Diag.cnf(Rem_Add, Status:=OK, Diagnostic_Data:=L_sdu[3-L_sdu.len])	WAIT-REQ

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#	Current state	Event / condition => action	Next state
45	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/IP/NI/SE/SC && Service_Header[1]=0x42 && (L_sdu.len=5 && L_sdu[1-4]=Service_Header[1-4]) =>Stop T1 MMAC2_Start_Seq.cnf(Rem_Add, Status :=OK, Max_Length_Data_Unit:=L_sdu[5])	WAIT-REQ
46	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/NC/SC/NI && Service_Header[1]=0x43 && (L_sdu[1-4]=Service_Header[1-4] && L_sdu.len=4) =>Stop T1 MMAC2_Download.cnf(Rem_Add, Status:=OK)	WAIT-REQ
47	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/NI/SC && Service_Header[1]=0x44 && (L_sdu.len>=5 && L_sdu[1-4]=Service_Header[1-4] && L_sdu.len<= Upload_Data_Len +4) =>Stop T1 MMAC2_Upload.cnf(Rem_Add, Status:=OK,Data:=L_sdu[5-L_sdu.len])	WAIT-REQ
48	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/NI/SE && Service_Header[1]=0x45 && (L_sdu[1]=Service_Header[1] && L_sdu.len=1) =>Stop T1 MMAC2_End_Seq.cnf(Rem_Add, Status:=OK)	WAIT-REQ
49	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/IP/SC/NI/DI && Service_Header[1]=0x47 && (L_sdu=Service_Header && L_sdu.len=3) =>Stop T1 MMAC2_Act_Param.cnf(Rem_Add, Status:=OK)	WAIT-REQ
50	TIMO	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status)	WAIT-REQ
51	TIMO	MMAC2_XXX.req =>MMAC2_Reject.ind(Rem_Add,Reason_Code:=REJ_CO)	TIMO
52	any state	unexpected DL reaction =>Stop T1 MMAC22_Fault.ind	POWER-ON
53	any state	MMAC2_Reset.req =>Stop T1	WAIT-REQ

10 DLL mapping protocol machines (DMPMs)

10.1 DMPMS

10.1.1 Primitive definitions

10.1.1.1 Primitives exchanged between DMPMS and FSPMS

Table 112 shows the service primitives including their associated parameters issued by the FSPMS and received by the DMPMS.

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Table 112 – Primitives issued by FSPMS to DMPMS

Primitive name	Source	Associated parameters	Functions
SInit DLL.req	FSPMS	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Reset.req	FSPMS	(none)	

Table 113 shows the service primitives including their associated parameters issued by the DMPMS and received by the FSPMS.

Table 113 – Primitives issued by DMPMS to FSPMS

Primitive name	Source	Associated parameters	Functions
SInit DL.cnf	DMPMS	Loc_Station_Address	Refer to FAL Service Definition in IEC 61158-5-3
Reset.cnf	DMPMS	(none)	
Fault.ind	DMPMS	(none)	

10.1.1.2 Primitives exchanged between DMPMS and MSCY1S

Table 114 shows the service primitives including their associated parameters issued by the MSCY1S and received by the DMPMS.

Table 114 – Primitives issued by MSCY1S to DMPMS

Primitive name	Source	Associated parameters	Functions
Slave Init req	MSCY1S	(none)	Initialising of the resorces used by DP
Slave Deact.req	MSCY1S	(none)	Deactivation of LSAPs for MS0, MS1
Enter.req	MSCY1S	(none)	Preparing the DLL resources for Data Exchange
Leave.req	MSCY1S	(none)	Release the DLL resources for Data Exchange
Set minTsdr.req	MSCY1S	MinTsdr	Change of the minTsdr Parameter in DLL
Slave Diag Upd.req	MSCY1S	Diag Data, Reference	Setup of the DL update buffer for Diagnosis
Data Exchange Upd.req	MSCY1S	Diag Flag, Inp Data	Transfer of the Inp Data buffer to the DL update buffer
RD Outp Upd.req	MSCY1S	Outp Data	Setup a copy of the Outp Data buffer
RD Inp Upd.req	MSCY1S	Inp Data	Setup a copy of the Inp Data buffer
Get Cfg Upd.req	MSCY1S	Cfg Data	Setting of configuration data

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Table 115 shows the service primitives including their associated parameters issued by the DMPMS and received by the MSCY1S.

Table 115 – Primitives issued by DMPMS to MSCY1S

Primitive name	Source	Associated parameters	Functions
Slave Init.cnf	DMPMS	(none)	Success of Initialisation
Reset.cnf	DMPMS	(none)	Termination of Reset service
Slave Deact.cnf	DMPMS	(none)	Success of deactivation of LSAPs for MS0, MS1
Set Slave Add.ind	DMPMS	New Slave Add, Ident Number, No Add Chg, Rem Slave Data	Change of the DL address of a DP-slave. Setting of remanent Slave Data.
Slave Diag.ind	DMPMS	Req Add, Reference	A DP-master fetches diagnosis information.
Set Prm.ind	DMPMS	Req Add, Prm Data	Parameter data are delivered to the DP-slave. The parameterization is first done in the start-up phase and is also while the DP-slave is in the Data Exchang mode.
Chk Cfg.ind	DMPMS	Req Add, Cfg Data	Received configuration data to the DP-slave for checking. They contain the format of input and output areas as well as the information about the data consistency.
Data Exchange.ind	DMPMS	Outp Data	Transmits output data to a DP-slave and requests input data.
Global Control.ind	DMPMS	Control Command, Group Select	Control Command accepted only from DP master (Class1) to which this Slave is assigned. Master reports his Operation Mode with this command.

10.1.1.3 Primitives exchanged between DMPMS and SSCY1S

Table 116 shows the service primitives including their associated parameters issued by the DMPMS and received by the SSCY1S.

Table 116 – Primitives issued by DMPMS to SSCY1S

Primitive name	Source	Associated parameters	Functions
DX_Entered.ind	DMPMS	Rem_add, Status	entered the DATA-EXCH mode
DX_Broadcast.ind	DMPMS	Rem_add, Data	Broadcast received

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10.1.1.4 Primitives exchanged between DMPMS and MSAC1S, MSRM2S, MSAC2S

Table 117 shows the service primitives including their associated parameters issued by the MSAC1S, MSRM2S and MSAC2S and received by the DMPMS.

Table 117 – Primitives issued by MSAC1S, MSRM2S, MSAC2S to DMPMS

Primitive name	Source	Associated parameters	Functions
RSAP_ACTIVATE.req	MSAC1S, MSRM2S, MSAC2S	SSAP, Access, L_sdu_length_list, Indication_Mode	Activates local SAP
SAP_DEACTIVATE.req	MSAC1S, MSRM2S, MSAC2S	SSAP	Deactivates local SAP
REPLY_UPDATE.req	MSAC1S, MSRM2S, MSAC2S	SSAP, L_sdu, Serv_class, Transmit	Write Data in the Update Buffer for Transmission

Table 118 shows the service primitives including their associated parameters issued by the DMPMS and received by the MSAC1S, MSRM2S and MSAC2S.

Table 118 – Primitives issued by DMPMS to MSAC1S, MSRM2S, MSAC2S

Primitive name	Source	Associated parameters	Functions
RSAP_ACTIVATE.cnf	DMPMS	SSAP, M_Status	Activation finished
SAP_DEACTIVATE.cnf	DMPMS	SSAP, M_Status	Deactivation finished
REPLY_UPDATE.cnf	DMPMS	SSAP, Serv_class, L_status	Update finished
DATA_REPLY.ind	DMPMS	SSAP, DSAP, Rem_Add, L_sdu, Serv_class, Loc_Add, Update_status	Data/Request received

10.1.1.5 Primitives exchanged between DMPMS and MSCS1S

Table 119 shows the service primitives including their associated parameters issued by DMPMS and received by the MSCS1S.

Table 119 – Primitives issued by DMPMS to MSCS1S

Primitive name	Source	Associated parameters	Functions
CS_CLOCK_VALUE.ind	DMPMS	Time_master_addr CS_list, CS_status, Receive_delay_time	Indicates receiving of a clock message

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10.1.1.6 Primitives exchanged between DMPMS and DL

Table 120 shows the service primitives including their associated parameters issued by the DMPMS and received by the DL.

Table 120 – Primitives issued by DMPMS to DL

Primitive name	Source	Associated parameters	Functions
DL-REPLY-UPDATE.req	DMPMS	Service_class, S_SAP_index, DLSDU, Transmit_strategy, Reference	
DLM-RESET.req	DMPMS	(none)	
DLM-SET-VALUE.req	DMPMS	Variable_name(1 to n), Desired_value (1 to n)	
DLM-DLSAP-ACTIVATE.req	DMPMS	S_SAP_index, Access, Service_list	
DLM-DLSAP-ACTIVATE-RESPONDER.req	DMPMS	S_SAP_index, Access, DLSDU_length_list, Indication_mode, Publisher_enabled	
DLM-DLSAP-ACTIVATE-SUBSCRIBER.req	DMPMS	S_SAP_index, DLSDU_length_list	
DLM-DLSAP-DEACTIVATE.req	DMPMS	S_SAP_index	

Table 121 shows the service primitives including their associated parameters issued by the DL and received by the DMPMS.

Table 121 – Primitives issued by DL to DMPMS

Primitive name	Source	Associated parameters	Functions
DL-DATA.ind	DL	Service_class, D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU	Refer to DL Service Definition in IEC 61158-3-3
DL-DATA-REPLY.ind	DL	Service_class, D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU, Update_Status Reference	
DL-MCT-DATA-REPLY.ind	DL	Service_class, D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU, Update_Status Reference	
DL-REPLY-UPDATE.cnf	DL	Service_class, S_SAP_index, DL_status	

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Primitive name	Source	Associated parameters	Functions
DL-DXM-REPLY.ind	DL	D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU	
DL-CS-CLOCK-VALUE.ind	DL	D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU, Receive_delay_time, CS_Status	
DLM-RESET.cnf	DL	DLM_Status	
DLM-SET-VALUE.cnf	DL	Current_value (1 to n), DLM_status	
DLM-DLSAP-ACTIVATE.cnf	DL	S_SAP_index, DLM_status	
DLM-DLSAP-ACTIVATE-RESPONDER.cnf	DL	S_SAP_index, DLM_status	
DLM-DLSAP-ACTIVATE-SUBSCRIBER.cnf	DL	S_SAP_index, DLM_status	
DLM-DLSAP-DEACTIVATE.cnf	DL	S_SAP_index, DLM_status	

10.1.1.7 Parameters of DMPMS primitives

The parameters used with the primitives exchanged between DMPMS and other state machines of the Slave AL are described in Table 122.

Table 122 – Parameters used with primitives exchanged with DMPMS

Parameter name	Description
MasterAdd	This parameter conveys the DL address of the assigned DP-master.
Input Data Len	This parameter is used to setup the length of Input Data for this Slave.
Output Data Len	This parameter is used to setup the length of Output Data for this Slave.
Min Tsdr	This parameter conveys the value of the DLL variable minTsdr.
Diag Data	This parameter conveys the Diagnosis-RES-PDU
Diag Flag	This parameter indicates that a DP-slave has new Diag Data
Inp Data	This parameter conveys the DataExchange-RES-PDU
Outp Data	This parameter conveys the DataExchange-REQ-PDU
Cfg Data	This parameter conveys the Chk_Cfg-REQ-PDU
New Slave Add	This parameter conveys the new DL address for this DP-slave.
Ident Number	This parameter conveys the device type identifier for this DP-slave.
No Add Chg	This parameter indicates that there is no further address change allowed.
Rem Slave Data	This parameter conveys remanent parameter for this DP-slave.
Req Add	This parameter conveys the DL address of the initiator of this service.
Prm Data	This parameter conveys the Set_Prm-REQ-PDU.
Control Command	This parameter conveys the sync, freeze actions and the state of the DP-master.
Group Select	This parameter determines which groups shall be addressed by this command.
SSAP	Local Identifier for Service Access Point
Access	Defines the use of a SAP for one or several Remote Address (Stations)

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Parameter name	Description
L_sdu_length_list	Defines the maximum length of incoming or outgoing L_sdu
Indication_Mode	Defines the Mode for Indication of poll-sequences without user data
Serv_class	Indicates priority of the service
M_status	Status of the service execution
L_status	Status of the service execution
Transmit	Defines the operation mode of the update buffer (single = buffer is transmitted once)
Rem_Add	DL Address of the remote station
Loc_Add	DL Address of this station
Update_status	Indicates the transmission of an update buffer
Reference	Handle to identify diagnosis data
Data	This parameter conveys the data
Time_master_addr	DL address of the active Time Master
CS_list	List of Time Value at the transmission of this service (Clock_value_time_event), Time Value at the previous transmission (Clock_value_previous_TE) and status information related to the clock value (Clock_value_status)
CS_status	Indicates the success or failure of the Clock Synchronisation sequence
Receive_delay_time	Time expired between receipt of the Time_Event and the invocaton of that service primitive

10.1.2 State machine description

The DMPMS (DL Mapping Protocol Machine) makes the connection between the MS0-, MS1-, MS2-related Protocol Machines and Layer 2. All services are mapped by the DMPMS to the DL and its management services of Layer 2. The DMPMS delivers the necessary Layer 2 parameters of the function call (SSAP, DSAP, Serv_class, ...) for Layer 2, receives the confirmations and indications from Layer 2 and passes them to the MS0-, MS1-, MS2-related Protocol Machines.

Local Variables

Loc_Station_Address
(Unsigned8)

Local variable for the intermediate storage of the own station address which was delivered with the last Set_Value.

Prev_Diag_Flag
(Boolean)

Indicates the state of the Diag_Flag at the last Data_Exchange_Update.req. By means of this flag it is detected whether a high prior update is present.

10.1.3 DMPMS state table

Table 123 contains the complete description of the DMPMS state machine.

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Table 123 – DMPMS state table

#	Current state	Event / condition => action	Next state
1	PON	DMPMS_SInit_DLL.req(Bus Para) => Act_cnt := 0 DLM_SET_VALUE.req(Variable_name1:= “TS “, Variable_name2:= “Data_rate “, Variable_name3:= “TSL “, Variable_name4:= “min TSDR ", Desired_Value1:= Bus_Para.TS Desired_Value2:= Bus_Para.Data_rate, Desired_Value3:= Bus_Para.TSL, Desired_Value4:= 11)	DLM-SET-VALUE
2	DLM-SET-VALUE	DLM_SET_VALUE.cnf(DLM_status(1-5) /DLM_status(1-4)=OK => no action DMPMS_SInit_DLL.cnf	RUN
3	RUN	DMPMS_Enter.req => DMPMS_ActivateControl := DMPMS_Enter Status:=TRUE DMPMS_DX_Entered.ind (0..125, Status)	DLM-CHECK-RSAP-ACT
4	RUN	DMPMS_Slave_Init.req /ActivateRSAPFromCRList(DMPMS_ActivateControl)=TRUE => DMPMS_ActivateControl := DMPMS_Init DLSAP_ACTIVATE_RESPONDER.req(S_SAP_index:=CREP.DSAP, Access:=CREP.Rem Add, DLSDU_length_list:=BuildRSAPServiceListFromCR(), Indication_mode:=CREP.Indication Mode, Publisher_enabled:=FALSE)	DLM-ACT-RSAP
5	DLM-CHECK-RSAP-ACT	/ActivateRSAPFromCRList(DMPMS_ActivateControl)=TRUE => DLSAP_ACTIVATE_RESPONDER.req(S_SAP_index:=CREP.DSAP, Access:=CREP.Rem Add, DLSDU_length_list:=BuildRSAPServiceListFromCR(), Indication_mode:=CREP.Indication Mode, Publisher_enabled:= CREP.Publisher_enabled)	DLM-ACT-RSAP
6	DLM-CHECK-RSAP-ACT	/ActivateRSAPFromCRList(DMPMS_ActivateControl)=FALSE && DMPMS_ActivateControl=DMPMS_Init => DMPMS_Slave_Init.cnf	RUN
7	DLM-CHECK-RSAP-ACT	/ActivateRSAPFromCRList(DMPMS_ActivateControl)=FALSE && DMPMS_ActivateControl=DMPMS_Enter => DLSAP_ACTIVATE.req(S_SAP_index:=58, Access:=CREP.Rem_Add, (Service_activate:=SDN, Role_in_service:=Responder, DLSDU_length_list:=(0,2,0,0)))	DLM-ACT-SAP
8	DLM-ACT-RSAP	DLSAP_ACTIVATE_RESPONDER.cnf(SSAP, DLM_status) /DLM_status=OK	DLM-CHECK-RSAP-ACT
9	DLM-ACT-SAP	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=OK && EnableSubscriber() = FALSE => Prev_Diag_Flag := False	RUN

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#	Current state	Event / condition => action	Next state
10	RUN	DMPMS_Leave.req => DMPMS_DeactControl:=DMPMS_Leave Status:=FALSE DMPMS_DX_Entered.ind (0..125, Status)	CHECK-SAP-DEACT
11	RUN	DMPMS_Slave_Deact.req => DMPMS_DeactControl:=DMPMS_Deact	CHECK-SAP-DEACT
12	CHECK-SAP-DEACT	/DeactivateSAPFromCRList(DMPMS_DeactControl)=TRUE => DLSAP_DEACTIVATE.req(S_SAP_index:=CREP.DSAP)	SAP-DEACT
13	CHECK-SAP-DEACT	/DeactivateSAPFromCRList(DMPMS_DeactControl)=FALSE => DMPMS_Slave_Deact.cnf	RUN
14	SAP-DEACT	DLSAP_DEACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=OK	CHECK-SAP-DEACT
15	RUN	DMPMS_Data_Exchange_Upd.req(Diag_Flag, Inp_Data) /Diag_Flag = False && Prev_Diag_Flag = False && Inp_Data.len > 0 => DL_REPLY_UPDATE.req(S:SAP_index:=NIL, DLSDU:=Inp_Data, Service_Class:=Low, Transmit_startegy:=Multiple, Reference:=Act_cnt)	RUN
16	RUN	DMPMS_Data_Exchange_Upd.req(Diag_Flag, Inp_Data) /Diag_Flag = False && Prev_Diag_Flag = False && Inp_Data.len = 0 => no action	RUN
17	RUN	DMPMS_Data_Exchange_Upd.req(Diag_Flag, Inp_Data) /Diag_Flag = False && Prev_Diag_Flag = True && Inp_Data.len > 0 => Prev_Diag_Flag := False DL_REPLY_UPDATE.req(S_SAP_index:=NIL, DLSDU:=Inp_Data, Service_Class:=Low, Transmit_strategy:=Multiple, Reference:=Act_cnt) DL_REPLY_UPDATE.req(S_SAP_index:=NIL, DLSDU:=NULL-PDU, Service_Class:=High, Transmit_strategy:=Single, Reference:=Act_cnt)	RUN
18	RUN	DMPMS_Data_Exchange_Upd.req(Diag_Flag, Inp_Data) /Diag_Flag = False && Prev_Diag_Flag = True && Inp_Data.len = 0 => Prev_Diag_Flag := False DL_REPLY_UPDATE.req(S_SAP_index:=NIL, DLSDU:=NULL-PDU, Service_Class:=High, Transmit_strategy:=Single, Reference:=Act_cnt)	RUN
19	RUN	DMPMS_Data_Exchange_Upd.req(Diag_Flag, Inp_Data) /Diag_Flag = True && Inp_Data.len > 0 => Prev_Diag_Flag := True DL_REPLY_UPDATE.req(S_SAP_index:=NIL, DLSDU:=Inp_Data, Service_Class:=High, Transmit_strategy:=Multiple, Reference:=Act_cnt)	RUN
20	RUN	DMPMS_Data_Exchange_Upd.req(Diag_Flag, Inp_Data) /Diag_Flag = True && Inp_Data.len = 0 => Prev_Diag_Flag := True DL_REPLY_UPDATE.req(S_SAP_index:=NIL, DLSDU:=ZERO-PDU, Service_Class:=High, Transmit_strategy:=Multiple, Reference:=Act_cnt)	RUN
21	RUN	DL_MCT_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Update_status, Reference) /D_SAP_index=NIL => DMPMS_Data_Exchange.ind(Outp_Data:=DLSDU)	RUN

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#	Current state	Event / condition => action	Next state
22	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=NIL => DMPMS_Data_Exchange.ind(Outp_Data:=DLSDU)	RUN
23	RUN	DMPMS_Slave_Diag_Upd.req(Diag_Data, Reference) => Act_cnt := Reference DL_REPLY_UPDATE.req(S_SAP_index:=60, DLSDU:=Diag_Data, Service_Class:=Low, Transmit_strategy:=Multiple, Reference:=Act_cnt)	RUN
24	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=60 => Act_cnt := Reference DMPMS_Slave_Diag.ind(Req_Add:=S_addr, Reference := Act_cnt)	RUN
25	RUN	DMPMS_Get_Cfg_Upd.req(Cfg_Data) => DL_REPLY_UPDATE.req(S_SAP_index:=59, DLSDU:=Cfg_Data, Service_class:=Low, Transmit_strategy:=Multiple, Reference:=Act_cnt)	RUN
26	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=59 => no action	RUN
27	RUN	DL_DATA.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class) / D_SAP_index=58 && DLSDU = Global_Control-REQ-PDU => DMPMS_Global_Control.ind(Control_Command:=Global_Control-REQ-PDU.Control_Command, Group_Select:=Global_Control-REQ-PDU.Group_Select)	RUN
28	RUN	DL_DATA.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class) / D_SAP_index=58 && DLSDU <> Global_Control-REQ-PDU => no action	RUN
29	RUN	DMPMS_RD_Inp_Upd.req(Inp_Data) /Inp_Data.len > 0 => DL_REPLY_UPDATE.req(S_SAP_index:=56, DLSDU:=Inp_Data, Service_Class:=Low, Transmit_strategy:=Multiple, Reference:=Act_cnt)	RUN
30	RUN	DMPMS_RD_Inp_Upd.req(Inp_Data) /Inp_Data.len = 0 => no action	RUN
31	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=56 => no action	RUN
32	RUN	DMPMS_RD_Outp_Upd.req(Outp_Data) /Outp_Data.len > 0 => DL_REPLY_UPDATE.req(S_SAP_index:=57, DLSDU:=Outp_Data, Service_Class:=Low, Transmit_strategy:=Multiple, Reference:=Act_cnt)	RUN
33	RUN	DMPMS_RD_Outp_Upd.req(Outp_Data) /Outp_Data.len = 0 => no action	RUN

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#	Current state	Event / condition => action	Next state
34	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=57 => no action	RUN
35	RUN	DMPMS_RSAP_ACTIVATE.req(SSAP, Access, L_sdu_length_list, Indication_Mode) => DLSAP_ACTIVATE_RESPONDER.req(S_SAP_index:=SSAP, Access:=Access, DLSDU_length_list:=L_sdu_length_list, Indication_mode:=Indication_Mode, Publisher_enabled:=FALSE)	DLM-PASS-ACT
36	DLM-PASS-ACT	DLSAP_ACTIVATE_RESPONDER.cnf(SSAP, DLM_status) => DMPMS_RSAP_ACTIVATE.cnf(SSAP:=S_SAP_index, M_Status:=DLM_status)	RUN
37	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index<52 => DMPMS_DATA_REPLY.ind(SSAP:=S_SAP_index, DSAP:=D_SAP_index, Rem_Add:=D_addr, L_sdu:=DLSDU, Serv_class:=Service_class, Loc_Add:=S_addr, Update_status:=Update_status)	RUN
38	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=55 && DLSDU=Set_Slave_Add-REQ-PDU => DMPMS_Set_Slave_Add.ind(New_Slave_Add:=Set_Slave_Add-REQ-PDU.New_Slave_Add, Ident_Number:=Set_Slave_Add-REQ-PDU.Ident_Number, No_Add_Chg:=Set_Slave_Add-REQ-PDU.No_Add_Chg, Rem_Slave_Data:=Set_Slave_Add-REQ-PDU.Rem_Slave_Data)	RUN
39	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=55 && DLSDU<>Set_Slave_Add-REQ-PDU => no action	RUN
40	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=62 => DMPMS_Chk_Cfg.ind(Req_Add:=S_addr, Cfg_Data:=DLSDU)	RUN
41	RUN	DMPMS_Set_minTsdr.req(minTsdr) /MinTsdr = 0 => no action	RUN
42	RUN	DMPMS_Set_minTsdr.req(minTsdr) /minTsdr > 0 => DLM_SET_VALUE.req(Variable_name1:=”minTSDR”, Desired_value1:=minTsdr)	SMINTSDR
43	SMINTSDR	DLM_SET_VALUE.cnf(DLM_status) /DLM_Status=OK => no action	RUN
44	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=61 => DMPMS_Set_Prm.ind(Req_Add:=S_add, Prm_Data:=DLSDU)	RUN
45	RUN	DMPMS_SAP_DEACTIVATE.req(SSAP) => DLSAP_DEACTIVATE.req(S_SAP_index:=SSAP)	DLM-PASS-DEACT
46	DLM-PASS-DEACT	DLSAP_DEACTIVATE.cnf(S_SAP_index, DLM_status) => DMPMS_SAP_DEACTIVATE.cnf(SSAP:=S_SAP_index, M_Status:=DLM_status)	RUN

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#	Current state	Event / condition => action	Next state
47	RUN	DMPMS_REPLY_UPDATE.req(SSAP, L_sdu, Serv_class, Transmit) /SSAP<52 => DL_REPLY_UPDATE.req(S_SAP_index:=SSAP, DLSDU:=L_sdu, Service_class:=Serv_class, Transmit_strategy:=Transmit, Reference:=Act_cnt)	RUN
48	RUN	DL_REPLY_UPDATE.cnf(S_SAP_index, Service_class, DL_status) /S_SAP_index<52 => DMPMS_REPLY_UPDATE.cnf(SSAP:=S_SAP_index, Serv_class:=Service_class, L_status:=DL_status)	RUN
49	any state	DMPMS_Reset.req => DLM_RESET.req	WAIT-RESET
50	WAIT-RESET	DLM_RESET.cnf(DLM_status) /DLM_status=OK => DMPMS_Reset.cnf	PON
51	RUN	DL_REPLY_UPDATE.cnf(S_SAP_index, Service_class, DL_status) /(S_SAP_index=NIL || S_SAP_index=62 || S_SAP_index=61 || S_SAP_index=60 || S_SAP_index=59 || S_SAP_index=57 || S_SAP_index=56) && DL_status=OK => no action	RUN
52	any state	DL_CS_CLOCK_VALUE.ind (D_addr, D_SAP_index, S_addr, S_SAP_index, CS_list, CS_Status, Receive_delay_time) => CS_CLOCK_VALUE.ind (Time_master_addr := S_addr, CS_list, CS_Status, Receive Delay Time := Receive_delay_time)	SAME
53	any state	DLM_SET_VALUE.cnf(DLM_status) /DLM_status=NO/IV => DMPMS_Fault.ind	PON
54	any state	DLSAP_ACTIVATE_RESPONDER.cnf(SSAP, DLM_status) /DLM_status=NO/IV => DMPMS_Fault.ind	PON
55	any state	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=NO/IV => DMPMS_Fault.ind	PON
56	any state	DLSAP_DEACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=NO/IV => DMPMS_Fault.ind	PON
57	any state	DL_REPLY_UPDATE.cnf(S_SAP_index, Service_class, DL_status) /DL_status=LS/LR/IV => DMPMS_Fault.ind	PON
58	any state	unexpected DL-primitive /D_SAP_index>54 => DMPMS_Fault.ind	PON
59	any state	unknown DL-primitive /D_SAP_index>54 => DMPMS_Fault.ind	PON
60	any state	unexpected DLM-primitive => DMPMS_Fault.ind	PON
61	any state	unknown DLM-primitive => DMPMS_Fault.ind	PON

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#	Current state	Event / condition => action	Next state
62	RUN	DL_DXM_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU) /IsFilterEntryExistent(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class) =TRUE => Rem_Add:=Publisher Address Data:=DLSDU DMPMS_DX_Broadcast.ind (Rem_Add, Data)	RUN
63	RUN	DL_DXM_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU) /IsFilterEntryExistent(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class) =FALSE => no action	RUN
64	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=53 => DMPMS_Set_Ext_Prm.ind(Req_Add:=S_add, Prm_Data:=DLSDU)	RUN
65	DLM-ACT-SAP	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=OK && EnableSubscriber() = TRUE => DLSAP_ACTIVATE_SUBSCRIBER.req(S_SAP_index:=NIL, DLSDU_length_list:=(244,244))	DLM-ACT-SUB
66	DLM-ACT-SAP	DLSAP_ACTIVATE_SUBSCRIBER.cnf(S_SAP_index, DLM_status) /DLM_status=OK => Prev_Diag_Flag := False	RUN

10.1.4 Functions

Table 124 contains the functions used by the DMPMS, their arguments and their descriptions.

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Table 124 – Functions used by the DMPMS

Function name	Description
DeactivateSAPFromCRList (DMPMS_DeactControl)	This function checks the CRL DP-slave if there are CRL entries that belongs to MS0-AR and which SSAP has not been deactivated with the DLM-SAP-DEACTIVATE.req service primitive yet. A) If DMPMS_DeactControl=DMPMS_Deact and if there exist one of the following CRL entries that has not been deactivated yet: Entries with DSAP=NIL or DSAP=58 or DSAP=57 or DSAP=56 or DSAP=62 or DSAP=61 or DSAP=60 or DSAP=59 or DSAP=55 then it returns TRUE and sets the local context according to the current CREP. B) If DMPMS_DeactControl=DMPMS_Leave and if there exist one of the following CRL entries that has not been deactivated yet: Entries with DSAP=NIL or DSAP=58 or DSAP=57 or DSAP=56 then it returns TRUE and sets the local context according to one not activated CREP. C) Otherwise it returns FALSE.
ActivateRSAPFromCRList (DMPMS_ActivateControl)	This function checks the CRL DP-slave if there are CRL entries that belongs to MS0-AR and which SSAP has not been activated with the DLM-RSAP-ACTIVATE.req service primitive yet. A) If DMPMS_ActivateControl=DMPMS_Init and if there exist one of the following CRL entries that has not been activated yet: Entries with DSAP=62 or DSAP=61 or DSAP=60 or DSAP=59 or DSAP=55 then it returns TRUE and sets the local context according to the current CREP. B) If DMPMS_ActivateControl=DMPMS_Enter and if there exist one of the following CRL entries that has not been activated yet: Entries with DSAP=NIL or DSAP=58 or DSAP=57 or DSAP=56 than it returns TRUE and sets the local context according to one not activated the current CREP. C) Otherwise it returns FALSE.
BuildRSAPServiceListFrom CR()	This function builds the Service_list parameter for DL-RSAP-ACTIVATE.req primitive from the current CRL context. It returns DLSDU_length_list.Max_DLSDU_length_req_low = CREP.Max L_sdu Length Req Low DLSDU_length_list.Max_DLSDU_length_req_high = CREP.Max L_sdu Length Req High DLSDU_length_list.Max_DLSDU_length_ind/con_low =CREP.Max L_sdu Length Ind Low DLSDU_length_list.Max_DLSDU_length_ind/con_high = CREP.Max L_sdu Length Ind High
IsFilterEntryExistent(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class)	This function checks the CRL DP-slave if there are CRL entries that belongs to MS0-AR which contain DXB-Link entries . A) If (S_SAP_Index && D_SAP_Index)=NIL and (Service_class=R-Brct) and if there exist one entry with (DLSDU = Input Data Length Publisher && S_addr =Publisher Address): than it returns TRUE and sets the local context according to the current CREP. B) Otherwise it returns FALSE.
BuildServiceListFromCR()	This function builds the Service_list parameter for DLSAP-ACTIVATE.req primitive from the current CRL context. A) If Enable Publisher = TRUE && EnableSubscriber() =FALSE it returns Service_list.Service_activate[1] = SRD(R-Brct) Service_list.Role_in_Service[1] = Initiator Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=0 B) If Enable Publisher = FALSE && EnableSubscriber() =TRUE it returns Service_list.Service_activate[1] = SRD(R-Brct) Service_list.Role_in_Service[1] = Responder Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=244 C)If Enable Publisher = TRUE && EnableSubscriber() =TRUE it returns Service_list.Service_activate[1] = SRD(R-Brct) Service_list.Role_in_Service[1] = Both Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=244

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Function name	Description
EnableSubscriber()	This function checks the CRL DP-slave if there are CRL entries that belongs to MS0-AR which contain DXB-Link entries . A) If there exist at least one entry: than it returns TRUE and sets the local context according to the current CREP. B) Otherwise it returns FALSE.

10.2 DMPMM1

10.2.1 Primitive definitions

10.2.1.1 Primitives exchanged between FSPMM1 and DMPMM1

Table 125 shows the service primitives including their associated parameters issued by the FSPMM1 and received by the DMPMM1.

Table 125 – Primitives issued by FSPMM1 to DMPMM1

Primitive name	Source	Associated parameters	Functions
MInit DLL.req	FSPMM1	Bus Para	Refer to FAL Service Definition in IEC 61158-5-3
Reset.req	FSPMM1	(none)	
Global Control.req	FSPMM1	Control Command, Group Select	
Set Bus Par.req	FSPMM1	Bus Para	
Delete SC.req	FSPMM1	Address	
Read Value.req	FSPMM1	Variable	

Table 126 shows the service primitives including their associated parameters issued by the DMPMM1 and received by the FSPMM1.

Table 126 – Primitives issued by DMPMM1 to FSPMM1

Primitive name	Source	Associated parameters	Functions
MInit DLL.cnf	DMPMM1	(none)	Refer to FAL Service Definition in IEC 61158-5-3
Reset.cnf	DMPMM1	(none)	
Global Control.cnf(+)	DMPMM1	(none)	
Global Control.cnf(-)	DMPMM1	Status	
Set Bus Par.cnf	DMPMM1	Status	
Delete SC.cnf	DMPMM1	Status	
Read Value.cnf	DMPMM1	Value, Status	
Fault.ind	DMPMM1	(none)	
Event.ind	DMPMM1	Event, Add Info	

10.2.1.2 Primitives exchanged between MSCY1M and DMPMM1

Table 127 shows the service primitives including their associated parameters issued by the MSCY1M and received by the DMPMM1.

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Table 127 – Primitives issued by MSCY1M to DMPMM1

Primitive name	Source	Associated parameters	Functions
Slave Diag.req	MSCY1M	Rem Add	Fetch Diagnosis of a DP-slave
Set Prm.req	MSCY1M	Rem Add, Prm Data	Parameter data are delivered to the DP-slave. The parameterization is first done in the start-up phase and also while the DP-slave is in the Data Exchang mode.
Set ExtPrm.req	MSCY1M	Rem Add, Prm Data	Parameter data are delivered to the DP-slave. The parameterization is first done in the start-up phase and also while the DP-slave is in the Data Exchang mode.
Chk Cfg.req	MSCY1M	Rem Add, Cfg Data	Send configuration data to the DP-slave for checking. They contain the format of input and output areas as well as the information about the data consistency.
Data Exchange.req	MSCY1M	Rem Add, Outp Data	Transmits output data to a DP-slave and requests input data.

Table 128 shows the service primitives including their associated parameters issued by the DMPMM1 and received by the MSCY1M.

Table 128 – Primitives issued by DMPMM1 to MSCY1M

Primitive name	Source	Associated parameters	Functions
Slave Diag.cnf(+)	DMPMS	Rem Add, Diag Data	Get Diagnosis from a DP-slave.
Slave Diag.cnf(-)	DMPMS	Rem Add, Status	This primitive is used to convey a Slave Diag negative confirmation to DMPMM..
Set Prm.cnf(+)	DMPMS	Rem Add	Parametrisation successfully transmitted, the parameters are not checked.
Set Prm.cnf(-)	DMPMS	Rem Add, Status	This primitive is used to convey a Set Prm (Parameter Setting) negative confirmation to DMPMM.
Set ExtPrm.cnf(+)	DMPMS	Rem Add	Parametrisation successfully transmitted, the parameters are not checked.
Set ExtPrm.cnf(-)	DMPMS	Rem Add, Status	This primitive is used to convey a Set ExtPrm (Parameter Setting) negative confirmation to DMPMM.
Chk Cfg.cnf(+)	DMPMS	Rem Add	Configuration data successfully transmitted, the parameters are not checked.
Chk Cfg.cnf(-)	DMPMS	Rem Add, Status	This primitive is used to convey a Chk Cfg (configuration Check) negative confirmation to DMPMM.
Data Exchange.cnf(+)	DMPMS	Rem Add, Diag Flag, Inp Data	Get Input Data and Diag lag from a DP-slave
Data Exchange.cnf(-)	DMPMS	Rem Add, Status	This primitive is used to convey a Data Exchange negative confirmation to DMPMS.

10.2.1.3 Primitives exchanged between DMPMM1and MSAL1M, MSAC1M

Table 129 shows the service primitives including their associated parameters issued by MSAL1M and MSAC1M and received by the DMPMM1.

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Table 129 – Primitives issued by MSAL1M, MSAC1M to DMPMM1

Primitive name	Source	Associated parameters	Functions
DATA_REPLY.req	MSAL1M, MSAC1M	SSAP, DSAP, Rem_Add, L_sdu, Serv_class	Send Service

Table 130 shows the service primitives including their associated parameters issued by the DMPMM1 and received by the MSAL1M and MSAC1M.

Table 130 – Primitives issued by DMPMM1 to MSAL1M, MSAC1M

Primitive name	Source	Associated parameters	Functions
DATA_REPLY.cnf	DMPMM1	SSAP, DSAP, Rem_Add, L_sdu, Serv_class, L_status	Send Service executed

10.2.1.4 Primitives exchanged between DMPMM1 and MMAC1

Table 131 shows the service primitives including their associated parameters issued by MMAC1 and received by the DMPMM1.

Table 131 – Primitives issued by MMAC1 to DMPMM1

Primitive name	Source	Associated parameters	Functions
RSAP_ACTIVATE.req	MMAC1	SSAP, Access, L_sdu_length_list, Indication_Mode	Activates local SAP
REPLY_UPDATE.req	MMAC1	SSAP, L_sdu, Serv_class, Transmit	Write Data in the Update Buffer for Transmission

Table 132 shows the service primitives including their associated parameters issued by the DMPMM1 and received by the MMAC1.

Table 132 – Primitives issued by DMPMM1 to MMAC1

Primitive name	Source	Associated parameters	Functions
RSAP_ACTIVATE.cnf	DMPMM1	SSAP, M_Status	Activation finished
REPLY_UPDATE.cnf	DMPMM1	SSAP, Serv_class, L_status	Update finished
DATA.ind	DMPMM1	SSAP, DSAP, Rem_Add, L_sdu, Serv_class,	Data/Request received
DATA_REPLY.ind	DMPMM1	SSAP, DSAP, Rem_Add, L_sdu, Serv_class, Update_status	Data/Request received

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10.2.1.5 Primitives exchanged between DMPMM1 and MSCS1M

Table 133 shows the service primitives including their associated parameters issued by MSCS1M and received by the DMPMM1.

Table 133 – Primitives issued by MSCS1M to DMPMM1

Primitive name	Source	Associated parameters	Functions
CS_TIME_EVENT.req	FSPMM1	(none)	Refer to DL Service Definition in IEC 61158-3-3
CS_CLOCK_VALUE.req	FSPMM1	CS_list	

Table 134 shows the service primitives including their associated parameters issued by the DMPMM1 and received by the MSCS1M.

Table 134 – Primitives issued by DMPMM1 to MSCS1M

Primitive name	Source	Associated parameters	Functions
CS_CLOCK_VALUE.ind	DMPMM1	Time_master_addr CS_list Receive Delay Time CS_status	Refer to DL Service Definition in IEC 61158-3-3
CS_TIME_EVENT.cnf	DMPMM1	Send_delay_time, Status	
CS_CLOCK_VALUE.cnf	DMPMM1	Status	

10.2.1.6 Primitives exchanged between DMPMM1 and DL

Table 135 shows the service primitives including their associated parameters issued by the DMPMM1 and received by the DL.

Table 135 – Primitives issued by DMPMM1 to DL

Primitive name	Source	Associated parameters	Functions
DL-DATA.req	DMPMM1	Service_class, D_addr, D_SAP_index, S_SAP_index, DLSDU	Refer to DL Service Definition in IEC 61158-3-3
DL-DATA-REPLY.req	DMPMM1	Service_class, D_addr, D_SAP_index, S_SAP_index, DLSDU	
DL-REPLY-UPDATE.req	DMPMM1	Service_class, S_SAP_index, DLSDU, Transmit_strategy	
DLM-RESET.req	DMPMM1	(none)	
DLM-SET-VALUE.req	DMPMM1	Variable_name(1 to n), Desired_value (1 to n)	
DLM-GET-VALUE.req	DMPMM1	Variable_name(1 to n)	
DLSAP-ACTIVATE.req	DMPMM1	S_SAP_index, Access, Service_list	

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Primitive name	Source	Associated parameters	Functions
DLSAP-ACTIVATE-RESPONDER.req	DMPMM1	S_SAP_index, Access, DLSDU_length_list, Indication_mode, Publisher_enabled	
DLSAP-DEACTIVATE.req	DMPMM1	S_SAP_index	
DL-CS_TIME_EVENT.req	DMPMM1	D_addr, D_SAP_index, S_SAP_index	
DL-CS_CLOCK_VALUE.req	DMPMM1	D_addr, D_SAP_index, S_SAP_index, DLSDU	

Table 136 shows the service primitives including their associated parameters issued by the DL and received by the DMPMM1.

Table 136 – Primitives issued by DL to DMPMM1

Primitive name	Source	Associated parameters	Functions
DL-DATA.cnf	DL	Service_class, D_addr, D_SAP_index, S_SAP_index, DL_status	Refer to DL Service Definition in IEC 61158-3-3
DL-DATA-REPLY.cnf	DL	Service_class, D_addr, D_SAP_index, S_SAP_index, DLSDU, DL_status	
DL-DATA.ind	DL	Service_class, D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU	
DL-DATA-REPLY.ind	DL	Service_class, D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU, Update_Status	
DL-REPLY-UPDATE.cnf	DL	Service_class, S_SAP_index, DL_status	
DLM-RESET.cnf	DL	DLM_Status	
DLM-SET-VALUE.cnf	DL	Current_value (1 to n), DLM_status	
DLM-GET-VALUE.cnf	DL	Current_value (1 to n), DLM_status (1 to n)	
DLM-EVENT.ind	DL	Event/Fault	
DLSAP-ACTIVATE.cnf	DL	S_SAP_index, DLM_status	
DLSAP-ACTIVATE-RESPONDER.cnf	DL	S_SAP_index, DLM_status	
DLSAP-DEACTIVATE.cnf	DL	S_SAP_index, DLM_status	

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Primitive name	Source	Associated parameters	Functions
DL-CS_CLOCK_VALUE.ind	DL	D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU, Receive_delay_time, CS_Status	
DL-CS_TIME_EVENT.cnf	DL	Send_delay_time, Status	
DL-CS_CLOCK_VALUE.cnf	DL	Status	

10.2.1.7 Parameters of DMPMM1 primitives

The parameters used with the primitives exchanged between DMPMM1 and the other state machines of the Master (Class 1) AL are described in Table 137.

Table 137 – Parameters used with primitives exchanged with DMPMM1

Parameter name	Description
Input Data Len	This parameter is used to setup the length of Input Data for this Slave.
Output Data Len	This parameter is used to setup the length of Output Data for this Slave.
Min Tsdr	This parameter conveys the value of the DLL variable minTsdr.
Rem Add	This parameter conveys the DL address of the receiver of this service.
Diag Data	This parameter conveys the Diagnosis-RES-PDU
Diag Flag	This parameter indicates that a DP-slave has new Diag Data
Prm Data	This parameter conveys the Set_Prm-REQ-PDU.
Cfg Data	This parameter conveys the Chk_Cfg-REQ-PDU
Inp Data	This parameter conveys the DataExchange-RES-PDU
Outp Data	This parameter conveys the DataExchange-REQ-PDU
Status	This parameter contains the cause of a negative confirmation-
SSAP	Local Identifier for Service Access Point
DSAP	Identifier for the remote Service Access Point
Access	Defines the use of a SAP for one or several Remote Address (Stations)
L_sdu_length_list	Defines the maximum length of incoming or outgoing L_sdu
Indication_Mode	Defines the Mode for Indication of poll-sequences without user data
Serv_class	Indicates priority of the service
M_status	Status of the service execution
L_status	Status of the service execution
L_sdu	Defines the DP PDU to be transmitted
Transmit	Defines the operation mode of the update buffer (single = buffer is transmitted once)
Rem_Add	DL Address of the remote station
Update_status	Indicates the transmission of an update buffer
Time_master_addr	DL address of the active Time Master
CS_list	List of Time Value at the transmission of this service (Clock_value_time_event), Time Value at the previous transmission (Clock_value_previous_TE) and status information related to the clock value (Clock_value_status)
CS_status	Indicates the success or failure of the Clock Synchronisation sequence
Receive_delay_time	Time expired between receipt of the Time_Event and the invocaton of that service primitive

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Table 138 shows the possible values of the parameter Status and the corresponding source entities.

Table 138 – Possible values of status

Value	Meaning	Source
DS	Local-DLL/PHY Entity is not in logical token-ring or disconnected from line	Local DLL
NA	Negative ack, no reaction from remote station	Local DLL
NR	No Response data	Remote DLL
OK	Acknowledgement positive	Local DLL Remote DLL
RE	Format-Error in a Response-DLPDU	Local DMPM
RR	Resources of the remote-DLL Entity not sufficient or not available	Remote DLL
RS	Service or remote-address at remote-LSAP or remote-LSAP not activated; remote-station is no DP-Station remote-station is not yet ready for these functions remote-station is associated with another Requester optional service not available	Remote DLL
UE	Remote-MMAC/DLL interface error	Remote DLL

10.2.2 State machine description

The DMPMM1 makes the connection between the MS0, MS1, MM1, MM2 specific parts and Layer 2. Services are mapped by the DMPMM1 to the DL and management of Layer 2. The DMPMM1 delivers the necessary Layer 2 parameters of the function call (SSAP, DSAP, Serv_class, ...) for Layer 2, receives the confirmations and indications from Layer 2 and passes them to the MS0, MS1, MM1/2-Handler.

Local Variables

Act_Max_Diag_Len
(Unsigned8)

Contains the maximal length of the diagnostic information which can be stored locally.

Range: 6 .. 244

Loc_Station_Address
(Unsigned8)

Local variable for the intermediate storage of the own station address which has been transferred with the last Set_Bus_Par.

Range: 0 .. 125

Srv_lst
This list is used to store all information which are necessary for the service SAP_ACTIVATE.

Act_msac1m_Max_L_sdu_len
(Unsigned8)

This variable is used to store the actual value of the parameter Max_L_sdu_len locally.

Range: 0 .. 240

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10.2.3 DMPMM1 state table

Table 139 contains the complete description of the DMPMM1 state machine.

Table 139 – DMPMM1 state table

#	Current State	Event /Condition =>Action	Next State

1	PON	DMPMM1_Minit_DLL.req(Bus_Para)
		=>
		if (Isochronous Mode = Not Synchronized)
		IsoM On:=FALSE
		DLSDU:= NIL-SDU
		else
		IsoM On:=TRUE
		DL IsoM On:=FALSE
		DLSDU:=Global_Control-REQ-PDU(Control_Command:= 2, Group_Select:=Group_8)
		endif
		
		DLM_SET_VALUE.req(MSAP_0 ,
		Variable_name1:= "TS ",
		Variable_name2:= "Baud_rate ",
		Variable_name3:= "TSL ",
		Variable_name4:= "min TSDR ",
		Variable_name5:= "max TSDR ",
		Variable_name6:= "TQUI ",
		Variable_name7:= "TSET ",
		Variable_name8:= "TTR ",
		Variable_name9:= "G ",
		Variable_name10:= "HSA ",
		Variable_name11:= "max_retry_limit ",
		Variable_name12:= "in_ring_desired",
		Variable_name13:= "SYNCHT",
		Variable_name14:="maxTsh",
		Variable_name15:="Tct",
		Desired_Value1:= Bus_Para.TS,
		Desired_Value2:= Bus_Para.Baud_rate,
		Desired_Value3:= Bus_Para.TSL,
		Desired_Value4:= Bus_Para.min TSDR,
		Desired_Value5:= Bus_Para.max TSDR,
		Desired_Value6:= Bus_Para.TQUI,
		Desired_Value7:= Bus_Para.TSET,
		Desired_Value8:= Bus_Para.TTR,
		Desired_Value9:= Bus_Para.G,
		Desired_Value10:= Bus_Para.HSA,
		Desired_Value11:= Bus_Para.max_retry_limit,
		Desired_Value12:= TRUE,
		Desired_Value13:= DLSDU,
		Desired_Value14:= maxTsh,
		Desired_Value15:= Tct)
			SET-VALUE

2	PON	DLM_RESET.cnf(DLM_status) /DLM_status=OK => DMPMM1_Reset.cnf	PON
3	SET-VALUE	DLM_SET_VALUE.cnf(DLM_status(1-15)) /DLM_status(1-15)=OK => DLSAP_ACTIVATE.req(S_SAP_index:=SSAP, Access:=All, Service_list:=BuildServiceListFromCR())	SAP-ACT
4	SAP-ACT	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=OK && ActivateSAPFromCRList()=TRUE => DLSAP_ACTIVATE.req(S_SAP_index:=SSAP, Access:=All, Service_list:=BuildServiceListFromCR())	SAP-ACT
5	SAP-ACT	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=OK && ActivateSAPFromCRList()=FALSE => DLSAP_ACTIVATE_RESPONDER.req(S_SAP_index:=54, Access:=All, DLSDU_length_list:=BuildLengthListFromCR())	RSAP-ACT

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#	Current State	Event /Condition =>Action	Next State
6	RSAP-ACT	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=OK => DMPMM2_Minit_DLL.cnf	RUN

7	RUN	DMPMM1_Set_Bus_Par.req(Bus_Para)
		=>
		if (Isochron Mode = Not Synchronized)
		IsoM On:=FALSE
		DLSDU:= NIL-SDU
		else
		IsoM On:=TRUE
		DL IsoM On:=FALSE
		DLSDU:=Global_Control-REQ-PDU(Control_Command:= 2,
		Group_Select:=Group_8)
		endif
		
		DLM_SET_VALUE.req(MSAP_0 ,
		Variable_name1:= "TS ",
		Variable_name2:= "Baud_rate ",
		Variable_name3:= "TSL ",
		Variable_name4:= "min TSDR ",
		Variable_name5:= "max TSDR ",
		Variable_name6:= "TQUI ",
		Variable_name7:= "TSET ",
		Variable_name8:= "TTR ",
		Variable_name9:= "G ",
		Variable_name10:= "HSA ",
		Variable_name11:= "max_retry_limit ",
		Variable_name12:= "in_ring_desired",
		Variable_name13:= "SYNCHT",
		Variable_name14:="maxTsh",
		Variable_name15:="Tct",
		Desired_Value1:= Bus_Para.TS,
		Desired_Value2:= Bus_Para.Baud_rate,
		Desired_Value3:= Bus_Para.TSL,
		Desired_Value4:= Bus_Para.min TSDR,
		Desired_Value5:= Bus_Para.max TSDR,
		Desired_Value6:= Bus_Para.TQUI,
		Desired_Value7:= Bus_Para.TSET,
		Desired_Value8:= Bus_Para.TTR,
		Desired_Value9:= Bus_Para.G,
		Desired_Value10:= Bus_Para.HSA,
		Desired_Value11:= Bus_Para.max_retry_limit,
		Desired_Value12:= TRUE,
		Desired_Value13:= DLSDU,
		Desired_Value14:= maxTsh,
		Desired_Value15:= Tct)
			SV1

8	SV1	DLM_SET_VALUE.cnf(DLM_status(1-15)) /DLM_status(1-15)=OK => DMPMM1_Set_Bus_Par.cnf(+)	RUN
9	RUN	DMPMM1_Delete_SC.req(Address) => DLM_SET_VALUE.req(Variable_name1:="DLPDU_Sent_Count", Index1:=Address, Variable_name2:="Error_Count", Index2:=Address, Desired_Value1:=0, Desired_Value2:=0)	SV2
10	SV2	DLM_SET_VALUE.cnf(DLM_status(1-2)) /DLM_status(1-2)=OK => DMPMM1_Delete_SC.cnf(+)	RUN
11	RUN	DMPMM1_Read_Value.req(Variable) => DLM_GET_VALUE.req(Variable_name1:=Variable)	RUN

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#	Current State	Event /Condition =>Action	Next State
12	RUN	DLM_GET_VALUE.cnf(Current_Value (1), DLM_status(1)) /DLM_status(1)=OK/NO => DMPMM1_Read_Value.cnf(Status:=DLM_status(1),Value:=Current_Value (1))	RUN
13	RUN	DLM_EVENT.ind(Event/Fault, Tsh)/Event/Fault<>Synch_Delay &&Event/Fault<>Synch=>DMPMM1_Event.ind(Event:=Event/Fault)	RUN
14	RUN	DLM_EVENT.ind(Event/Fault, Tsh) /Event/Fault=Synch_Delay => DMPMM1_SYNCH_Delayed.ind(TSH:=Tsh)	RUN
15	RUN	DLM_EVENT.ind(Event/Fault, Tsh) /Event/Fault=Synch => DMPMM1_SYNCH.ind	RUN
16	RUN	DMPMM1_RSAP_ACTIVATE.req(SSAP, Access, L_sdu_length_list, Indication_Mode) => DLSAP_ACTIVATE_RESPONDER.req(S_SAP_index:=SSAP, Access:=Access, DLSDU_length_list:= L_sdu_length_list, Indication_mode:= Indication_Mode)	RUN
17	RUN	DLSAP_ACTIVATE_RESPONDER.cnf(SSAP, DLM_status) /SSAP = 54 && DLM_status=OK => DMPMM1_RSAP_ACTIVATE.cnf(SSAP:=SSAP,DLM_status)	RUN
18	RUN	DMPMM1_REPLY_UPDATE.req(SSAP, L_sdu, Serv_class, Transmit) => DL_REPLY_UPDATE.req(S_SAP_index:=SSAP, DLSDU:=L_sdu, Service_class:=Serv_class, Transmit_strategy:=Transmit)	RUN
19	RUN	DL_REPLY_UPDATE.cnf(S_SAP_index, Service_class, DL_status) => DMPMM1_REPLY_UPDATE.cnf (SSAP:=S_SAP_index, Serv_class:=Service_class, L_status:=DL_status)	RUN
20	RUN	DMPMM1_DATA_REPLY.req (SSAP, DSAP, Rem_Add, L_sdu, Serv_class) => DL_DATA_REPLY.req (S_SAP_index:=SSAP, D_SAP_index:=DSAP, S_addr:=Rem_Add, DLSDU:=L_sdu, Service_class:=Serv_class)	RUN
21	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index<>62 && S_SAP_index<>NIL && DL_status<>LS/IV => DMPMM1_DATA_REPLY.cnf (SSAP:=S_SAP_index, DSAP:=D_SAP_index, Rem_Add:=S_addr, L_sdu:=DLSDU, Serv_class:=Service_class, L_status:=DL_status)	RUN
22	RUN	DL_DATA.ind(S_SAP_index, D_SAP_index, D_addr, S_Addr, DLSDU, Service_class) => DMPMM1_DATA.ind (SSAP:=S_SAP_index, DSAP:=D_SAP_index, Rem_Add:=S_addr, L_sdu:=DLSDU, Serv_class:=Service_class)	RUN
23	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status) => DMPMM1_DATA_REPLY.ind(SSAP:=S_SAP_index, DSAP:=D_SAP_index, Rem_Add:=S_addr, L_sdu:=DLSDU, Serv_class:=Service_class, Update_status:=Update_status)	RUN
24	RUN	DMPMM1_Data_Exchange.req(Rem_Add, Outp_Data) /GetCRAttribute(PublisherFlag) = TRUE => DL_MCT_DATA_REPLY.req(S_SAP_index:=NIL, D_SAP_index:=NIL, D_addr:=Rem_Add, DLSDU:=Outp_Data, Service_class:=High)	RUN
25	RUN	DMPMM1_Data_Exchange.req(Rem_Add, Outp_Data) /GetCRAttribute(PublisherFlag)=FALSE => DL_DATA_REPLY.req(S_SAP_index:=NIL, D_SAP_index:=NIL, D_addr:=Rem_Add,DLSDU:=Outp_Data, Service_class:=High)	RUN

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#	Current State	Event /Condition =>Action	Next State
26	RUN	DL_MCT_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=NR => DMPMM1_Data_Exchange.cnf(+)(Rem_Add:=S_addr, Diag_Flag:=False, Inp_Data.len:=0)	RUN
27	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=NR => DMPMM1_Data_Exchange.cnf(+)(Rem_Add:=S_addr, Diag_Flag:=False, Inp_Data.len:=0)	RUN
28	RUN	DL_MCT_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=DL => DMPMM1_Data_Exchange.cnf(+)(Rem_Add:=S_addr, Diag_Flag:=False, Inp_Data:=DLSDU)	RUN
29	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=DL => DMPMM1_Data_Exchange.cnf(+)(Rem_Add:=S_addr, Diag_Flag:=False, Inp_Data:=DLSDU)	RUN
30	RUN	DL_MCT_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=DH => DMPMM1_Data_Exchange.cnf(+)(Rem_Add:=S_addr, Diag_Flag:=True, Inp_Data:=DLSDU)	RUN
31	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=DH => DMPMM1_Data_Exchange.cnf(+)(Rem_Add:=S_addr, Diag_Flag:=True, Inp_Data:=DLSDU)	RUN
32	RUN	DL_MCT_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=DS/UE/RS/NA => DMPMM1_Data_Exchange.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
33	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=DS/UE/RS/NA => DMPMM1_Data_Exchange.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
34	RUN	DL_MCT_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=RR/RDL/RDH => DMPMM1_Data_Exchange.cnf(-)(Rem_Add:=S_addr, Status:=RR)	RUN
35	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=RR/RDL/RDH => DMPMM1_Data_Exchange.cnf(-)(Rem_Add:=S_addr, Status:=RR)	RUN
36	RUN	DMPMM1_Slave_Diag.req(Rem_Add) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=60, S_addr:=Rem_Add,DLSDU:=ZERO-PDU, Service_class:=High)	RUN

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#	Current State	Event /Condition =>Action	Next State
37	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DL && DLSDU.len >= 6 && DLSDU.len <= Act_Max_Diag_Len && (Diagnosis-RES-PDU.Diag_Master_Add=255 || Diagnosis-RES-PDU.Diag_Master_Add=Loc_Station_Address) => DMPMM1_Slave_Diag.cnf(+)(Rem_Add:=S_addr, Diag_Data:=DLSDU)	RUN
38	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DL && DLSDU.len > Act_Max_Diag_Len && (Diagnosis-RES-PDU.Diag_Master_Add<>255 && Diagnosis-RES-PDU.Diag_Master_Add<>Loc_Station_Address) => cut Diagnosis-RES-PDU until Act_Max_Diag_Len Diagnosis-RES-PDU.Station_status_3.Ext_Diag_Overflow:=1 Diagnosis-RES-PDU.Station_status_1.Master_Lock := 1 DMPMM1_Slave_Diag.cnf(+)(Rem_Add:=S_addr, Diag_Data:=Diagnosis-RES-PDU)	RUN
39	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DL && DLSDU.len > Act_Max_Diag_Len && (Diagnosis-RES-PDU.Diag_Master_Add=255 || Diagnosis-RES-PDU.Diag_Master_Add=Loc_Station_Address) => cut Diagnosis-RES-PDU until Act_Max_Diag_Len Diagnosis-RES-PDU.Station_status_3.Ext_Diag_Overflow:=1 DMPMM1_Slave_Diag.cnf(+)(Rem_Add:=S_addr, Diag_Data:=Diagnosis-RES-PDU)	RUN
40	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=60 && L_status=DL && DLSDU.len >= 6 && DLSDU.len <= Act_Max_Diag_Len && (Diagnosis-RES-PDU.Diag_Master_Add<>255 && Diagnosis-RES-PDU.Diag_Master_Add<>Loc_Station_Address) => Diagnosis-RES-PDU.Station_status_1.Master_Lock := 1 DMPMM1_Slave_Diag.cnf(+)(Rem_Add:=S_addr, Diag_Data:=Diagnosis-RES-PDU)	RUN
41	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DL && DLSDU.len < 6 => DMPMM1_Slave_Diag.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
42	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DH/RDL/RDH => DMPMM1_Slave_Diag.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
43	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DS/UE/RS/NA/NR/RR => DMPMM1_Slave_Diag.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
44	RUN	DMPMM1_Global_Control.req(Rem_Add, Control_Command, Group_Select) /Isochron Mode Supp = FALSE || Isochron Mode = Not Synchronized || Group_Select <> 0 || Control_Command&2=2 && DL IsoM On=FALSE || Control_Command&2=0 && DL IsoM On=TRUE => DL_DATA.req(S_SAP_index:=62, D_SAP_index:=58, D_addr:=Rem_Add,DLSDU:=Global_Control-REQ-PDU,Service_class:=High)	RUN

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#	Current State	Event /Condition =>Action	Next State

45	RUN	DMPMM1_Global_Control.req(Rem_Add, Control_Command, Group_Select)
		/Isochron Mode Supp = TRUE && Isochron Mode <>Not Synchronized &&
		Group_Select=0 && Control_Command&2=0 && DL IsoM On=FALSE
		=>
		DL IsoM On:=TRUE
		Control_Command:=0
		if(IsoM Sync)
		Control_Command.Sync:=1
		endif
		if(IsoM Freeze)
		Control_command.Freeze:=1
		endif
		DLSDU:=Global_Control-REQ-PDU(Control_Command, Group_Select:=Group_8)
		DL_DATA.req(S_SAP_index:=62, D_SAP_index:=58, D_addr:=Rem_Add,
		DLSDU:=Global_Control-REQ-PDU,
		Service_class:=High)
		DLM_SET_VALUE.req(Variable_name1:="SYNCHT",
		Variable_name2:="maxTsh",
		Variable_name3:="Tct",
		Desired_Value1:=DLSDU,
		Desired_Value2:=maxTsh,
		Desired_Value3:=Tct)
			RUN

46	RUN	DMPMM1_Global_Control.req(Rem_Add, Control_Command, Group_Select) /Isochron Mode Supp = TRUE && Isochron Mode <>Not Synchronized && Group_Select=0 && Control_Command&2=2 && DL IsoM On=TRUE => DL IsoM On:=FALSE DLSDU:=Global_Control-REQ-PDU(Control_Command:= 2, Group_Select:=Group_8) DL_DATA.req(S_SAP_index:=62, D_SAP_index:=58, D_addr:=Rem_Add, DLSDU:=Global_Control-REQ-PDU, Service_class:=High) DLM_SET_VALUE.req(Variable_name1:="SYNCHT", Variable_name2:="maxTsh", Variable_name3:="Tct", Desired_Value1:=DLSDU, Desired_Value2:=maxTsh, Desired_Value3:=Tct)	RUN
47	RUN	DL_DATA.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=58 && DL_status=OK/DS => DMPMM1_Global_Control.cnf(Rem_Add:=S_addr, Status:=DL_status)	RUN
48	RUN	DMPMM1_Chk_Cfg.req(Rem_Add, Cfg_Data) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=62, S_addr:=Rem_Add, DLSDU:=Cfg_Data, Service_class:=High)	RUN
49	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=62 && DL_status=NR => DMPMM1_Chk_Cfg.cnf(+)(Rem_Add:=S_addr)	RUN
50	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=62 && DL_status=DS/NA/RS/RR/UE => DMPMM1_Chk_Cfg.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
51	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=62 && DL_status=RDL/RDH/DL/DH => DMPMM1_Chk_Cfg.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
52	RUN	DMPMM1_Set_Prm.req(Rem_Add, Prm_Data) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=61, S_addr:=Rem_Add, DLSDU:=Prm_Data, Service_class:=High)	RUN

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#	Current State	Event /Condition =>Action	Next State
53	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=61 && DL_status=NR => DMPMM1_Set_Prm.cnf(+)(Rem_Add:=S_addr)	RUN
54	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=61 && DL_status=DS/NA/RS/RR/UE => DMPMM1_Set_Prm.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
55	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=61 && DL_status=RDL/RDH/DL/DH => DMPMM1_Set_Prm.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
56	RUN	DMPMM1_CS_TIME_EVENT.req => D_addr=127, D_SAP_index=CS, S_SAP_index=CS DL_CS_TIME_EVENT.req(D_addr, D_SAP_index, S_SAP_index)	RUN
57	RUN	DL_CS_TIME_EVENT.cnf (D_addr, D_SAP_index, S_SAP_index, Send_delay_time, DL_status) => Send_Delay_Time=Send_delay_time, DL_Status=DL_status DMPMM1_CS_TIME_EVENT.cnf (Send_Delay_Time, DL_Status)	RUN
58	RUN	DMPMM1_CS_CLOCK_VALUE.req (Clock Value Time Event, Clock Value previous TE, Clock Value Status) => D_addr=127, D_SAP_index=CS, S_SAP_index=CS, DLSDU=Clock Value Time Event, Clock Value previous TE, Clock Value Status DL_CS_CLOCK_VALUE.req (D_addr, D_SAP_index, S_SAP_index, DLSDU)	RUN
59	RUN	DL_CS_CLOCK_VALUE.cnf (D_addr, D_SAP_index, S_SAP_index, DL_status) => DL_Status=DL_status DMPMM1_CS_CLOCK_VALUE.cnf (DL_Status)	RUN
60	RUN	DL_CS_CLOCK_VALUE.ind (D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU, Receive_delay_time, CS_Status) => Time_Master_Addr=S_addr, CS_list=DLSDU, CS_status=CS_Status, Receive_Delay_Time=Receive_delay_time) DMPMM1_CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time)	RUN
61	RUN	DMPMM1_Set_ExtPrm.req(Rem_Add, Prm_Data) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=53, S_addr:=Rem_Add,DLSDU:=Prm_Data, Service_class:=High)	RUN
62	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=53 && DL_status=NR => DMPMM1_Set_ExtPrm.cnf(+)(Rem_Add:=S_addr)	RUN
63	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=53 && DL_status=DS/NA/RS/RR/UE => DMPMM1_Set_ExtPrm.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
64	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=53 && DL_status=RDL/RDH/DL/DH => DMPMM1_Set_ExtPrm.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
65	RUN	DLM_SET_VALUE.cnf(DLM_status(1-3)) /DLM_status(1-3)=OK => no action	RUN

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#	Current State	Event /Condition =>Action	Next State
66	RUN	DLM_SET_VALUE.cnf(DLM_status(1)) /DLM_status(1)=OK => no action	RUN
67	any state	DMPMM1_Reset.req => DLM_RESET.req(DLMSAP_0)	PON
68	any state	DLM_RESET.cnf(DLM_status) /DLM_status=OK => DMPMM1_Reset.cnf	PON
69	any state	inadmissible or unknown DL primitive => DMPMM1_Fault.ind	PON

10.2.4 Functions

Table 140 contains the functions used by the DMPMM1, their arguments and their descriptions.

Table 140 – Functions used by the DMPMM1

Function name	Description
ActivateSAPFrom CRList()	This function checks the CRL DP-master (Class 1) if there are CRL entries which SSAP has not been activated with the DLAP-ACTIVATE.req service primitive yet. A) If there exist one of the following CRL entries that has not been activated yet: Entries with SSAP=NIL or SSAP=62 or SSAP=51 or SSAP=54 than it returns TRUE and sets the local context according to the current CREP. B) Otherwise it returns FALSE.
BuildServiceListFrom CR()	This function builds the Service_list parameter for DLSAP-ACTIVATE.req primitive from the current CRL context. A) If SSAP = NIL(MS0) it returns Service_list.Service_activate[1] = SRD Service_list.Role_in_Service[1] = Initiator Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=244 B) If SSAP = 62(MS0) it returns Service_list.Service_activate[1] = SRD Service_list.Role_in_Service[1] = Initiator Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=0 Service_list.Service_activate[2] = SDN Service_list.Role_in_Service[2] = Initiator Service_list.DLSDU_length_list[2].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[2].Max_DLSDU_length_req_high=2 Service_list.DLSDU_length_list[2].Max_DLSDU_length_ind/cnf_low=0 Service_list.DLSDU_length_list[2].Max_DLSDU_length_ind/cnf_high=0 C) If SSAP = 51(MS1) it returns Service_list.Service_activate[1] = SRD Service_list.Role_in_Service[1] = Initiator Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=0 D) If SSAP = 54(MM) it returns Service_list.Service_activate[1] = SDN Service_list.Role_in_Service[1] = Receiver Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=4 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=0

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Function name	Description
BuildLengthFromCR()	This function builds the Service_list parameter for DLSAP-ACTIVATE-RESPONDER.req primitive from the current CRL context. DLSDU_length_list.Max_DLSDU_length_req_low = 244 DLSDU_length_list.Max_DLSDU_length_req_high = 0 DLSDU_length_list.Max_DLSDU_length_ind_low =244 DLSDU_length_list.Max_DLSDU_length_ind_high = 0

10.3 DMPMM2

10.3.1 Primitive definitions

10.3.1.1 Primitives exchanged between FSPMM2 and DMPMM2

Table 141 shows the service primitives including their associated parameters issued by the FSPMM2 and received by the DMPMM2.

Table 141 – Primitives issued by FSPMM2 to DMPMM2

Primitive name	Source	Associated parameters	Functions
MInit DLL.req	FSPMM2	Bus Para	Refer to FAL Service Definition in IEC 61158-5-3 and in IEC 61158-3-3
Reset.req	FSPMM2	(none)	
Read Slave Diag.req	FSPMM2	Rem Add	
Read Output.req	FSPMM2	Rem Add	
Read Input.req	FSPMM2	Rem Add	
Get Cfg.req	FSPMM2	Rem Add	
Set Slave Add.req	FSPMM2	Rem Add, New Slave Add, Ident Number, No Add Chg, Rem Slave Data	

Table 142 shows the service primitives including their associated parameters issued by the DMPMM2 and received by the FSPMM2.

Table 142 – Primitives issued by DMPMM2 to FSPMM2

Primitive name	Source	Associated parameters	Functions
MInit DLL.cnf	DMPMM2	(non)	Refer to FAL Service Definition in IEC 61158-5-3
Reset.cnf	DMPMM2	(none)	
Read Slave Diag.cnf(+)	DMPMM2	Rem Add, Diag Data	
Read Slave Diag.cnf(-)	DMPMM2	Rem Add, Status	
Get Cfg.cnf(+)	DMPMM2	Rem Add, Cfg Data	
Get Cfg.cnf(-)	DMPMM2	Rem Add Status	
Read Output.cnf(+)	DMPMM2	Rem Add, Output Data	
Read Output.cnf(-)	DMPMM2	Rem Add, Status	
Read Input.cnf(+)	DMPMM2	Rem Add, Input Data	

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Primitive name	Source	Associated parameters	Functions
Read Input.cnf(-)	DMPMM2	Rem Add, Status	
Set Slave Add.cnf(+)	DMPMM2	Rem Add	
Set Slave Add.cnf(-)	DMPMM2	Rem Add, Status	
Event.ind	DMPMM2	Event, Add Info	
Fault.ind	DMPMM2	Rem Add	

10.3.1.2 Primitives exchanged between DMPMM2 and MSAC2M

Table 143 shows the service primitives including their associated parameters issued by the MSAC2M and received by the DMPMM2.

Table 143 – Primitives issued by MSAC2M to DMPMM2

Primitive name	Source	Associated parameters	Functions
DATA_REPLY.req	MSAC2M	SSAP, DSAP, Rem_Add, L_sdu, Serv_class	Send Service

Table 144 shows the service primitives including their associated parameters issued by the DMPMM2 and received by the MSAC2M.

Table 144 – Primitives issued by DMPMM2 to MSAC2M

Primitive name	Source	Associated parameters	Functions
DATA_REPLY.cnf	DMPMM2	SSAP, DSAP, Rem_Add, L_sdu, Serv_class, L_status	Send Service executed

10.3.1.3 Primitives exchanged between DMPMM2 and MMAC2

Table 145 shows the service primitives including their associated parameters issued by the MMAC2 and received by the DMPMM2.

Table 145 – Primitives issued by MMAC2 to DMPMM2

Primitive name	Source	Associated parameters	Functions
DATA_REPLY.req	MMAC2	SSAP, DSAP, Rem_Add, L_sdu, Serv_class	Send Service
DATA.req	MMAC2	SSAP, DSAP, Rem_Add, L_sdu, Serv_class	Send Service

Table 146 shows the service primitives including their associated parameters issued by the DMPMM2 and received by the MMAC2.

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Table 146 – Primitives issued by DMPMM2 to MMAC2

Primitive name	Source	Associated parameters	Functions
DATA_REPLY.cnf	DMPMM2	SSAP, DSAP, Rem_Add, L_sdu, Serv_class, L_status	Send Service executed
DATA.cnf	DMPMM2	SSAP, DSAP, Rem_Add, Serv_class, L_status	Send Service executed

10.3.1.4 Primitives exchanged between DMPMM2 and DL

Table 147 shows the service primitives including their associated parameters issued by the DMPMM2 and received by the DL.

Table 147 – Primitives issued by DMPMM2 to DL

Primitive name	Source	Associated parameters	Functions
DL-DATA.req	DMPMM2	Service_class, D_addr, D_SAP_index, S_SAP_index, DLSDU	Refer to DL Service Definition in IEC 61158-3-3
DL-DATA-REPLY.req	DMPMM2	Service_class, D_addr, D_SAP_index, S_SAP_index, DLSDU	
DLM-RESET.req	DMPMM2	(none)	
DLM-SET-VALUE.req	DMPMM2	Variable_name(1 to n), Desired_value (1 to n)	
DLSAP-ACTIVATE.req	DMPMM2	S_SAP_index, Access, Service_list	
DLSAP-DEACTIVATE.req	DMPMM2	S_SAP_index	

Table 148 shows the service primitives including their associated parameters issued by the DL and received by the DMPMM2.

Table 148 – Primitives issued by DL to DMPMM2

Primitive name	Source	Associated parameters	Functions
DL-DATA.cnf	DL	Service_class, D_addr, D_SAP_index, S_SAP_index, DL_status	Refer to DL Service Definition in IEC 61158-3-3
DL-DATA-REPLY.cnf	DL	Service_class, D_addr, D_SAP_index, S_SAP_index, DLSDU, DL_status	
DLM-RESET.cnf	DL	DLM_Status	

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Primitive name	Source	Associated parameters	Functions
DLM-SET-VALUE.cnf	DL	Current_value (1 to n), DLM_status	
DLM-EVENT.ind	DL	Event/Fault	
DLSAP-ACTIVATE.cnf	DL	S_SAP_index, DLM_status	
DLSAP-DEACTIVATE.cnf	DL	S_SAP_index, DLM_status	

10.3.1.5 Parameters of FSPMM2 primitives

The parameters used with the primitives exchanged between DMPMM2 and FSPMM2 are described in FAL Service Definition in IEC 61158-5-3. Additional parameters are described in Table 149.

Table 149 – Parameters used with primitives exchanged with DMPMM2

Parameter name	Description
SSAP	Local Identifier for Service Access Point
DSAP	Identifier for the remote Service Access Point
Serv_class	Indicates priority of the service
L_status	Status of the service execution
L_sdu	Defines the DP PDU to be transmitted
Rem_Add	DL Address of the remote station

10.3.2 State machine description

The DMPMM2 makes the connection between the MS0,MS2,MM1/2 specific parts and Layer 2. Services are mapped by the DMPMM2 to the DL and management of Layer 2. The DMPMM2 delivers the necessary Layer 2 parameters of the function call (SSAP, DSAP, Serv_class, ...) for Layer 2, receives the confirmations and indications from Layer 2 and passes them to the MS0,MS2-Handler.

10.3.3 DMPMM2 state table

Table 150 contains the complete description of the DMPMM2 state machine.

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Table 150 – DMPMM2 state Table

#	Current state	Event / condition => action	Next state
1	PON	DMPMM2_Minit_DLL.req(Bus_Para) => DLM_SET_VALUE.req(Variable_name1:= “TS “, Variable_name2:= “Data_rate “, Variable_name3:= “TSL “, Variable_name4:= “min TSDR “, Variable_name5:= “max TSDR “, Variable_name6:= “TQUI “, Variable_name7:= “TSET “, Variable_name8:= “TTR “, Variable_name9:= “G “, Variable_name10:= “HSA “, Variable_name11:= “max_retry_limit “, Variable_name12:= “in_ring_desired”, Desired_Value1:= Bus_Para.TS Desired_Value2:= Bus_Para.Data_rate, Desired_Value3:= Bus_Para.TSL, Desired_Value4:= Bus_Para.min TSDR, Desired_Value5:= Bus_Para.max TSDR, Desired_Value6:= Bus_Para.TQUI, Desired_Value7:= Bus_Para.TSET, Desired_Value8:= Bus_Para.TTR, Desired_Value9:= Bus_Para.G, Desired_Value10:= Bus_Para.HSA, Desired_Value11:= Bus_Para.max_retry_limit, Desired_Value12:= TRUE)	SET-VALUE
2	PON	DLM_RESET.cnf(DLM_status) /DLM_status=OK => DMPMM2_Reset.cnf	PON
3	SET-VALUE	DLM_SET_VALUE.cnf(DLM_status(1-11)) /DLM_status(1-11)=OK => no action	SAP-CHECK
4	SAP-CHECK	spontaneous /ActivateSAPFromCRList()=TRUE => DLSAP_ACTIVATE.req(S_SAP_index:=SSAP, Access:=All, Service_list:=BuildServiceListFromCR())	SAP-ACT
5	SAP-CHECK	spontaneous /ActivateSAPFromCRList()=FALSE => DMPMM2_Minit_DLL.cnf	RUN
6	SAP-ACT	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=OK => no action	SAP-CHECK
7	RUN	DLM_EVENT.ind(Event/Fault, Add_info) => DMPMM2_Event.ind(Event:=Event/Fault, Add_Info:=Add_info)	RUN
8	RUN	DMPMM2_Read_Slave_Diag.req(Rem_Add) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=60, S_addr:=Rem_Add, DLSDU.len:=0, Service_class:=High)	RUN
9	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DL && DLSDU.len >= 6 => DMPMM2_Read_Slave_Diag.cnf(+)(Rem_Add:=S_addr, Diag_Data:=DLSDU)	RUN

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#	Current state	Event / condition => action	Next state
10	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DL && DLSDU < 6 => DMPMM2_Read_Slave_Diag.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
11	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DH/RDL/RDH => DMPMM2_Read_Slave_Diag.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
12	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DS/UE/RS/NA/NR/RR => DMPMM2_Read_Slave_Diag.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
13	RUN	DMPMM2_Get_Cfg.req(Rem_Add) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=59, S_addr:=Rem_Add, DLSDU.len:=0, Service_class:=High)	RUN
14	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=59 && DL_status=DL => DMPMM2_Get_Cfg.cnf(+)(Rem_Add:=S_addr, Cfg_Data:=DLSDU)	RUN
15	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=59 && DL_status=DS/UE/RS/NA/NR/RR => DMPMM2_Get_Cfg.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
16	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=59 && DL_status=DH/RDL/RDH => DMPMM2_Get_Cfg.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
17	RUN	DMPMM2_Read_Input.req(Rem_Add) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=56, S_addr:=Rem_Add, DLSDU.len:=0, Service_class:=High)	RUN
18	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=56 && DL_status=DL => DMPMM2_Read_Input.cnf(+)(Rem_Add:=S_addr, Inp_Data:=DLSDU)	RUN
19	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=56 && DL_status=DS/UE/RS/NA/NR/RR => DMPMM2_Read_Input.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
20	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=56 && DL_status=DH/RDL/RDH => DMPMM2_Read_Input.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
21	RUN	DMPMM2_Read_Output.req(Rem_Add) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=57, S_addr:=Rem_Add, DLSDU.len:=0, Service_class:=High)	RUN
22	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=57 && DL_status=DL => DMPMM2_Read_Output.cnf(+)(Rem_Add:=S_addr, Outp_Data:=DLSDU)	RUN

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#	Current state	Event / condition => action	Next state
23	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=57 && DL_status=DS/UE/RS/NA/NR/RR => DMPMM2_Read_Output.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
24	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=57 && DL_status=DH/RDL/RDH => DMPMM2_Read_Output.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
25	RUN	DMPMM2_Set_Slave_Add.req(Rem_Add, New_Slave_Add, Ident_Number, No_Add_Chg, Rem_Slave_Data) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=55, S_addr:=Rem_Add, DLSDU:=Set_Slave_Add-REQ-PDU, Service_class:=High)	RUN
26	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=55 && DL_status=NR => DMPMM2_Set_Slave_Add.cnf(+)(Rem_Add:=S_addr)	RUN
27	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=55 && DL_status=DS/UE/RR/RS/NA => DMPMM2_Set_Slave_Add.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
28	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=55 && DL_status=RDL/RDH/DL/DH => DMPMM2_Set_Slave_Add.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
29	RUN	DMPMM2_DATA_REPLY.req (SSAP, DSAP, Rem_Add, L_sdu, Serv_class) => DL_DATA_REPLY.req (S_SAP_index:=SSAP, D_SAP_index:=DSAP, S_addr:=Rem_Add, DLSDU:=L_sdu, Service_class:=Serv_class)	RUN
30	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index<>62 && DL_status<>LS/IV/LR => DMPMM2_DATA_REPLY.cnf (SSAP:=S_SAP_index, DSAP:=D_SAP_index, Rem_Add:=S_addr, L_sdu:=DLSDU, Serv_class:=Service_class, L_status:=DL_status)	RUN
31	RUN	DMPMM2_DATA.req (SSAP, DSAP, Rem_Add, L_sdu, Serv_class) => DL_DATA.req (S_SAP_index:=SSAP, D_SAP_index:=DSAP, S_addr:=Rem_Add, DLSDU:=L_sdu, Service_class:=Serv_class)	RUN
32	RUN	DL_DATA.cnf(S_SAP_index, D_SAP_index, S_addr, Service_class, DL_status) /DL_status<>LS/IV/LR => DMPMM2_DATA.cnf (SSAP:=S_SAP_index, DSAP:=D_SAP_index, Rem_Add:=S_addr, Serv_class:=Service_class, L_status:=DL_status)	RUN
33	any state	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status<>OK => DMPMM2_Fault.ind	PON
34	any state	DLM_SET_VALUE.cnf(DLM_status(1-11)) /NOT (DLM_status(1-11)=OK) => DMPMM2_Fault.ind	PON

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#	Current state	Event / condition => action	Next state
35	any state	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /DL_status=LS/IV/LR => DMPMM2_Fault.ind	RUN
36	any state	inadmissible or unknown DL primitive => DMPMM2_Fault.ind	RUN
37	any state	DL_DATA.cnf(S_SAP_index, D_SAP_index, S_addr, Service_class, DL_status) /DL_status=LS/IV/LR => DMPMM2_Fault.ind	PON
38	any state	DMPMM2_Reset.req => DLM_RESET.req	PON

10.3.4 Functions

Table 151 contains the functions used by the DMPMM2, their arguments and their descriptions.

Table 151 – Functions used by DMPMM2

Function name	Description
ActivateSAPFromCRList()	This function checks the CRL DP-master (Class 2) if there are CRL entries which SSAP has not been activated with the DLM-SAP-ACTIVATE.req service primitive yet. A) If there exist one of the following CRL entries that has not been activated yet: Entries with SSAP=62 or SSAP=50 or SSAP=54 than it returns TRUE and sets the local context according to the current CREP. B) Otherwise it returns FALSE.
BuildServiceListFromCR()	This function builds the Service_list parameter for DLSAP-ACTIVATE.req primitive from the current CRL context. A) If SSAP = 62(MS0) it returns Service_list.Service_activate[1] = SRD Service_list.Role_in_Service[1] = Initiator Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=0 B) If SSAP = 50(MS2) it returns Service_list.Service_activate[1] = SRD Service_list.Role_in_Service[1] = Initiator Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=0 C) If SSAP = 54(MM) it returns Service_list.Service_activate[1] = SRD Service_list.Role_in_Service[1] = Initiator Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=0 Service_list.Service_activate[2] = SDN Service_list.Role_in_Service[2] = Initiator Service_list.DLSDU_length_list[2].Max_DLSDU_length_req_low=2 Service_list.DLSDU_length_list[2].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[2].Max_DLSDU_length_ind/cnf_low=0 Service_list.DLSDU_length_list[2].Max_DLSDU_length_ind/cnf_high=0

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11 Parameters for a DP-slave

Table 152 contains limitations for datarate-depending AL timing parameters of Slaves.

Table 152 – Bus parameter/reaction times for a DP-slave

Datarate (kbit/s)	≤ 187,5	500	1 500	3 000	6 000	12 000
Min_Slave_Interval (ms)	≤ 20	≤ 6	≤ 2	≤ 1,5	≤ 1	≤ 0,6
Send_Timeout (sec) (1)	4	2	1	1	1	1
MS1_Timeout (sec) (2)	40	20	10	10	10	10

NOTE 1 The parameter Send_Timeout represents a performance feature of a DP-slave implementation. Each DP-slave implementation has to ensure that the parameter Send_Timeout reaches the smallest value that is possible.

NOTE 2 The parameter MS1_Timeout represents a performance feature of a DP-slave. Each DP-slave implementation has to ensure that the parameter MS1_Timeout reaches the smallest value that is possible.

Another performance feature for a DP-slave implementation is the time Min_Slave_Interval. Each DP-slave implementation has to ensure that the Min_Slave_Interval reaches the smallest possible value. This means, that in a DP-System with more than ten stations the Min_Slave_Interval shall not be the dominant factor for the cycle time.

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Bibliography

IEC 61158-1:2014, *Industrial communication networks – Fieldbus specifications – Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series*

IEC 61784-1, *Industrial communication networks – Profiles – Part 1: Fieldbus profiles*

IEC 61784-2, *Industrial communication networks – Profiles – Part 2: Additional fieldbus profiles for real-time networks based on ISO/IEC 8802-3*

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SOMMAIRE

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

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RÉSEAUX DE COMMUNICATION INDUSTRIELS – SPÉCIFICATIONS DES BUS DE TERRAIN –

Partie 6-3: Spécification du protocole de la couche application – Éléments de type 3

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La Norme internationale CEI 61158-6-3 a été établie par le sous-comité 65C: Réseaux industriels, du comité d'études 65 de la CEI: Mesure, commande et automation dans les processus industriels.

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Cette troisième édition annule et remplace la deuxième édition, parue en 2010. Cette édition constitue une révision technique.

Les modifications majeures par rapport à l'édition précédente sont énumérées ci-dessous:

- corrections dans le Tableau 4, le Tableau 5, le Tableau 6 et le Tableau 7;
- références supplémentaires pour les types de données;
- diagrammes d'états corrigés dans le Tableau 91 et le Tableau 97;
- macro START_MSAL1M mise à jour;
- corrections orthographiques et grammaticales.

Le texte de cette norme est issu des documents suivants:

FDIS	Rapport de vote
65C/764/FDIS	65C/774/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à l'approbation de cette norme.

Cette publication a été rédigée selon les Directives ISO/CEI, Partie 2.

Une liste de toutes les parties de la série CEI 61158, publiées sous le titre général *Réseaux de communication industriels – Spécifications des bus de terrain*, peut être consultée sur le site web de la CEI.

Le comité a décidé que le contenu de cette publication ne sera pas modifié avant la date de stabilité indiquée sur le site web de la CEI sous "http://webstore.iec.ch" dans les données relatives à la publication recherchée. À cette date, la publication sera:

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- amendée.

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INTRODUCTION

La présente partie de la CEI 61158 fait partie d'une série élaborée pour faciliter l'interconnexion des composants de systèmes d'automatisation. Elle est liée à d'autres normes de la série telle que définie par le modèle de référence des bus de terrain "à trois couches" décrit dans la CEI 61158-1.

Le protocole application fournit le service application en utilisant les services disponibles de la liaison de données ou autre couche immédiatement inférieure. Le but principal de la présente norme est de fournir un ensemble de règles pour la communication exprimées en termes de procédures devant être accomplies par des entités d'application (AE) d'homologues au moment de la communication. Ces règles pour la communication visent à fournir une base solide pour le développement et de servir une diversité de besoins:

- comme un guide pour les réalisateurs et les concepteurs;
- pour une utilisation dans les essais et achats d'équipements;
- comme partie intégrante d'un accord pour l'admission de systèmes dans l'environnement de systèmes ouverts;
- comme affinement pour la compréhension de communications prioritairess au sein de l'OSI (Open Systems Interconnexion, c'est-à-dire Interconnexion des systèmes ouverts).

La présente norme est concernée, en particulier, par la communication et l'interfonctionnement des capteurs, des effecteurs et autres appareils d'automatisation. Grâce à l'utilisation de la présente norme conjointement à d'autres normes positionnées dans les modèles de référence de l'OSI ou de bus de terrain, n'importe quelle combinaison de systèmes autrement incompatibles peut fonctionner.

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RÉSEAUX DE COMMUNICATION INDUSTRIELS – SPÉCIFICATIONS DES BUS DE TERRAIN –

Partie 6-3: Spécification du protocole de la couche application – Éléments de type 3

1 Domaine d'application

1.1 Généralités

La Couche application de bus de terrain (FAL, Fieldbus Application Layer) fournit aux programmes d'utilisateur un moyen d'accéder à l'environnement de communication du bus de terrain. À cet égard, la FAL peut être vue comme une "fenêtre entre des programmes d'application correspondants".

La présente norme fournit les éléments communs pour les communications de messagerie de base prioritaire et non prioritaire entre des programmes d'application dans un environnement d'automatisation et le matériau spécifique au bus de terrain de Type 3. Le terme "prioritaire" sert à représenter la présence d'une fenêtre temporelle, dans les limites de laquelle il faut qu'une ou plusieurs actions spécifiées soient parachevées avec un certain niveau défini de certitude. Le manquement à parachever les actions spécifiées dans les limites de la fenêtre temporelle risque d'entraîner la défaillance des applications qui demandent ces actions, avec le risque concomitant pour l'équipement, l'installation et éventuellement pour la vie humaine.

La présente norme définit de manière abstraite le comportement visible de l'extérieur fourni par la couche application de bus de terrain Type 3 en termes

a) de la syntaxe abstraite définissant les unités de données de protocole de couche application acheminées entre les entités d'application engagées dans une communication,

b) de la syntaxe de transfert définissant les unités de données de protocole de couche application acheminées entre les entités d'application engagées dans une communication,

c) du diagramme d'états de contexte application définissant le comportement de service application visible entre des entités d'application engagées dans une communication, et

d) des diagrammes d'états de Relation entre applications définissant le comportement de communication visible entre des entités d'application engagées dans une communication.

Le but de la présente norme est de définir le protocole fourni pour

a) définir la représentation câblée des primitives de service spécifiées dans la CEI 61158-5-3, et

b) définir le comportement visible de l'extérieur qui est associé à leur transfert.

La présente norme spécifie le protocole de la couche application des réseaux de terrain de Type 3, en conformité avec le Modèle de référence de base de l'OSI (ISO/CEI 7498-1) et la Structure de la couche application de l'OSI (ISO/CEI 9545).

Les services et protocoles de la FAL sont fournis par des entités d'application (AE, "Application Entity") de la FAL contenues dans les processus application. L'AE de la FAL se compose d'un jeu d'éléments de service application (ASE, "Application Service Element") orientés objet et d'une entité de gestion de couche (LME, "Layer Management Entity") qui gère l'AE. Les ASE fournissent des services de communication qui fonctionnent sur un jeu de classes d'objets de processus application (APO, "Application process object") connexes. L'un des ASE de la FAL est un ASE de gestion qui fournit un jeu commun de services pour la gestion des instances de classes de la FAL.

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Bien que ces services spécifient, du point de vue des applications, la manière dont la demande et les réponses sont émises et délivrées, ils n'incluent pas une spécification de ce que les applications qui demandent et qui répondent sont supposées en faire. À savoir, les aspects comportementaux des applications ne sont pas spécifiés; seule une définition des demandes et réponses qu'elles peuvent envoyer/recevoir est spécifiée. Cela permet une plus grande flexibilité aux utilisateurs de la FAL pour normaliser un tel comportement d'objet. En plus de ces services, certains services d'appui sont également définis dans la présente norme pour fournir l'accès à la FAL afin de maîtriser certains aspects de son fonctionnement.

1.2 Spécifications

L'objet principal de la présente norme est de spécifier la syntaxe et le comportement du protocole de couche application qui achemine les services de couche application définis dans la CEI 61158-5-3.

Un objectif secondaire est de fournir des trajets de migration à partir de protocoles de communication industriels préexistants. C'est ce dernier objectif qui donne naissance à la diversité des protocoles normalisés dans des parties des sous-parties de la CEI 61158-6.

1.3 Conformité

La présente norme ni ne spécifie de mises en œuvre individuelles ou de produits individuels ni ne contraint les mises en œuvre d'entités de couche application au sein des systèmes d'automatisation industriels.

Il n’est pas défini de conformité d'équipement à la présente norme de définition des services de couche application. À la place, la conformité est obtenue par la mise en œuvre de cette spécification de protocole de couche application.

2 Références normatives

Les documents suivants sont cités en référence de manière normative, en intégralité ou en partie, dans le présent document et sont indispensables pour son application. Pour les références datées, seule l’édition citée s’applique. Pour les références non datées, la dernière édition du document de référence s’applique (y compris les éventuels amendements).

NOTE Toutes les parties de la série CEI 61158, ainsi que la CEI 61784-1 et la CEI 61784-2 font l'objet d'une maintenance simultanée. Les références croisées à ces documents dans le texte se rapportent par conséquent aux éditions datées dans la présente liste de références normatives.

CEI 61158-3-3:2014, *Réseaux de communication industriels – Spécifications des bus de terrain – Partie 3-3 : Définition des services de la couche liaison de données – Éléments de type 3*

CEI 61158-4-3:2014, *Réseaux de communication industriels – Spécifications des bus de terrain – Partie 4-3 : Spécification du protocole de la couche liaison de données – Éléments de type 3*

CEI 61158-5-3:2014, *Réseaux de communication industriels – Spécifications des bus de terrain – Partie 5-3 : Définition des services de la couche application – Éléments de type 3*

CEI 61158-5-10:2014, *Réseaux de communication industriels – Spécifications des bus de terrain – Partie 5-10 : Définition des services de la couche application – Éléments de type 10*

CEI 61158-6-10:2014, *Réseaux de communication industriels – Spécifications des bus de terrain – Partie 6-10 : Spécification du protocole de la couche application – Éléments de type 10*

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ISO/CEI 7498-1, *Technologies de l'information – Interconnexion de systèmes ouverts (OSI) – Modèle de référence de base: Le modèle de base*

ISO/CEI 8822, *Technologies de l'information – Interconnexion de systèmes ouverts – Définition du service de présentation*

ISO/IEC 8824-1, *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation* (disponible en anglais seulement)

ISO/CEI 9545, *Technologies de l'information – Interconnexion de systèmes ouverts (OSI) – Structure de la couche Application*

ISO/CEI 10731, *Technologies de l'information – Interconnexion de systèmes ouverts – Modèle de référence de base – Conventions pour la définition des services OSI*

IEEE 754, *IEEE Standard for Floating-Point Arithmetic,* available at <http://www.ieee.org>

3 Termes, définitions, abréviations, symboles et conventions

Pour les besoins du présent document, les termes, définitions, abréviations, symboles et conventions suivants s'appliquent.

3.1 Termes et définitions référencés

3.1.1 Termes de l'ISO/CEI 7498-1

Pour les besoins du présent document, les termes suivants tels que définis dans l'ISO/CEI 7498-1 s'appliquent:

a) entité d'application
b) processus application
c) unité de données de protocole application
d) élément de service application
e) invocation d'entité d'application
f) invocation de processus application
g) transaction d'application
h) système ouvert réel
i) syntaxe de transfert

3.1.2 Termes de l'ISO/CEI 8822

Pour les besoins du présent document, les termes suivants tels que définis dans l'ISO/CEI 8822 s'appliquent:

a) syntaxe abstraite
b) contexte de présentation

3.1.3 Termes de l'ISO/CEI 9545

Pour les besoins du présent document, les termes suivants tels que définis dans l'ISO/CEI 9545 s'appliquent:

a) association d'applications
b) contexte d'application
c) nom de contexte d'application

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d) invocation d'entité d'application
e) type d'entité d'application
f) invocation de processus application
g) type de processus application
h) élément de service d'application
i) élément de service de contrôle d'application

3.1.4 Termes de l'ISO/CEI 8824-1

Pour les besoins du présent document, les termes suivants tels que définis dans l'ISO/CEI 8824-1 s'appliquent:

a) identificateur d'objet
b) type

3.1.5 Termes de la couche liaison de données de bus de terrain

Pour les besoins du présent document, les termes suivants tels que définis dans la CEI 61158-3-3 et dans la CEI 61158-4-3 s'appliquent.

a) Temps de liaison de données
b) Politique de programmation de liaison de données
c) DLCEP
d) DLC
e) Mode orienté connexion de liaison de données
f) DLPDU
g) DLSDU
h) DLSAP
i) liaison
j) adresse réseau
k) adresse de nœud
l) nœud
m) programmé

3.2 Définitions supplémentaires

3.2.1
protection d'accès
limitation de l'utilisation d'un objet d'application à un seul client

3.2.2
table d'affectation d'adresse
mapping du stockage d'objets de données E/S internes du client avec les objets de données d'entrée et de sortie décentralisées

3.2.3
voie
simple liaison physique ou logique d'un objet d'application d'entrée ou de sortie d'un serveur au processus

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3.2.4
diagnostic lié à une voie
informations concernant un élément spécifique d'un objet d'application d'entrée ou de sortie, fournies à des fins de maintenance

EXEMPLE: validité des données

3.2.5
vérification de configuration
comparaison de la structuration attendue de l'objet de données E/S côté client avec la structuration effective de l'objet de données E/S côté serveur dans la phase démarrage

3.2.6
défaut de configuration
différence inacceptable entre la structuration attendue de l'objet de données E/S et la structuration effective de l'objet de données E/S, telle que détectée par le serveur

3.2.7
identificateur de configuration
représentation d'une partie des données E/S d'un seul module d'entrée et/ou de sortie d'un serveur

3.2.8
diagnostic lié à l'identificateur de configuration
comprend toutes les données spécifiques à un module disponibles au niveau du serveur à des fins de maintenance

3.2.9
commandes de contrôle
appels à action transférés d'un client à un serveur pour effacer les sorties, geler les entrées et/ou synchroniser les sorties

3.2.10
cohérence de données
moyen pour une émission et un accès cohérents de l'objet de données d'entrée ou de sortie entre client et serveur et au sein d'un client et d'un serveur

3.2.11
Data-eXchange-Broadcast
DXB
service pour l'acheminement d'informations entre le maître DP (Classe 1) et les esclaves DP assignés déclenchant la fonctionnalité Publisher et Subscriber (éditeur et abonné) dans les esclaves DP

3.2.12
adresse DL par défaut
valeur 126 comme valeur initiale pour l'adresse DL, qu'il faut changer (par exemple: attribution d'une adresse DL par le biais du bus de terrain) avant le fonctionnement avec le maître DP (classe 1)

3.2.13
diagnostic lié à un appareil
comprend toutes les données liées à l'esclave DP entier disponible au niveau du serveur à des fins de maintenance

3.2.14
informations de diagnostic
toutes les données disponibles au niveau du serveur à des fins de maintenance

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3.2.15
regroupement d'informations de diagnostic
informations de diagnostic système qui sont regroupées du côté client

3.2.16
maître DP (Classe 1)
appareil de commande qui commande plusieurs esclaves DP (appareils de terrain)

Note 1 à l'article: Il s'agit habituellement d'un appareil de commande programmable ou d'un système de commande distribué.

3.2.17
maître DP (Classe 2)
appareil de commande qui gère des données de configuration (jeux de paramètres) et des données de diagnostic d'un maître DP (Classe 1), et qui accomplit en plus toutes les capacités de communication d'un maître DP (Classe 1)

3.2.18
esclave DP
appareil de terrain qui peut être affecté à un maître DP (Classe 1) comme fournisseur pour un échange cyclique de données E/S; en outre, des fonctions et alarmes acycliques peuvent être fournies

3.2.19
demande de DXB
demande de service d'échange cyclique de données avec un service DL spécifique entre le maître DP (Classe 1) et les esclaves DP assignés déclenchant la fonctionnalité Publisher (éditeur) dans les esclaves DP

3.2.20
réponse de DXB
réponse de service d'échange cyclique de données envoyée à l'adresse de diffusion (=127) et non à l'adresse individuelle du demandeur ((maître DP (Classe 1))

3.2.21
freeze
fonction au niveau des esclaves DP pour le transfert simultané de données entre l'objet de données d'entrée et le processus

3.2.22
groupe
ensemble des esclaves DP qui accomplissent une fonction Freeze (geler) ou Sync (synchroniser)

3.2.23
données E/S
objet désigné pour être transféré de façon cyclique à des fins de traitement

3.2.24
ident number
type d'appareil maître DP (Classe 1) ou esclave DP

3.2.25
indice
adresse d'un objet au sein d'un processus application

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3.2.26
mode isochrone
mode de fonctionnement spécial d'un système DP qui implique tant un cycle DP constant avec un programme fixe de services DP cycliques et acycliques que la synchronisation de l'application dans le maître DP (Classe 1) et les esclaves DP avec ce cycle DP constant

3.2.27
jeu de paramètres de maître
données de configuration et de paramétrisation de tous les esclaves DP qui sont assignés au maître DP correspondant et aux paramètres de bus

3.2.28
module
unité adressable à l'intérieur de l'esclave DP

3.2.29
données de processus
objet(s) déjà prétraité(s) et transféré(s) de façon acyclique à des fins d'informations ou de traitement ultérieur

3.2.30
éditeur
rôle d'un point d'extrémité de CR qui émet des APDU sur le bus de terrain en vue de leur consommation par un ou plusieurs abonnés

Note 1 à l'article: Un éditeur peut ne pas connaître l'identité ou le nombre d'abonnés et il peut éditer ses APDU en utilisant une CR spécialisée.

3.2.31
configuration réelle
structure des données d'entrée et sortie de l'esclave DP, y compris la définition de la cohérence des données

3.2.32
abonné
rôle d'un CREP dans lequel il reçoit des unités APDU produites par un éditeur

3.2.33
position
adresse d'un module au sein d'un esclave DP

3.2.34
sync
fonction au niveau des esclaves DP pour le transfert simultané de données entre l'objet de données de sortie et le processus

3.3 Abréviations et symboles

Ack	Acknowledgment (acquittement)
Add	Address (adresse)
AP	Application Process (Processus application)
APDU	Application Protocol Data Unit (Unité de données de protocole d'application)
API	Application Process Identifier (Identificateur de processus application)
AR	Application Relationship (Relation entre applications)
AREP	Application Relationship End Point (Point d'extrémité de relation entre applications)
ARL	Application Relationship List (Liste de relations entre applications)
ASE	Application Service Element (Élément de service d'application)
Cfg	Configuration
cnf	primitive "confirmation"

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CREP	Communication Relationship End Point (Point d'extrémité de relation de communication)
CRL	Communication Relationship List (Liste de relations de communication)
D_	Destination
DLL	Data Link Layer (Couche liaison de données)
DLM	Data Link-management (Gestion de liaison de données)
DLSAP	Data link Service Access Point (Point d'accès au service liaison de données)
DLSDU	Data-link Service data unit (Unité de données de service de liaison de données)
DMPM	Data Link Mapping Protocol Machine (Machine protocolaire de mapping de liaison de données)
DMPMM1	Data Link Mapping Protocol Machine DP-master (Classe 1) (Maître DP (classe 1) de Machine protocolaire de mapping de liaison de données)
DMPMM2	Data Link Mapping Protocol Machine DP-master (Classe 2) (Maître DP (classe 2) de Machine protocolaire de mapping de liaison de données)
DMPMS	Data Link Mapping Protocol Machine DP-slave (Esclave DP de Machine protocolaire de mapping de liaison de données)
DSAP	Destination Service Access Point (Point d'accès au service de destination)
DXB	Data eXchange Broadcast (Diffusion d'échange de données)
FAL	Fieldbus application layer (Couche application de bus de terrain)
FIFO	First-In First-Out (Premier entré, premier sorti)
FSPMM1	FAL Service Protocol Machine DP-master (Classe 1) (Machine protocolaire de services de la FAL Maître DP)
FSPMM2	FAL Service Protocol Machine DP-master (Classe 2) (Machine protocolaire de services de la FAL Maître DP)
FSPMS	FAL Service Protocol Machine DP-slave (Machine protocolaire de services de la FAL Esclave DP)
HSA	Highest Station Address (Adresse de station la plus élevée)
I&M	Profil d'identification et de maintenance
ID	Identificateur
CEI	Commission Électrotechnique Internationale
ind	primitive "indication"
Inp	Input (Entrée)
ISO	Organisation internationale de normalisation
IsoM	Isochronous Mode (mode isochrone)
L_sdu	Link Service Data Unit (Unité de données de service de liaison)
lsb	least significant bit (bit de poids faible)
msb	most significant bit (bit de poids fort)
OSI	Open Systems Interconnection (interconnexion des systèmes ouverts)
Outp	Output (Sortie)
Param	Paramètre
PDU	Protocol Data Unit (Unité de données de protocole)
RD_	Read (Lecture)
Rem	Remote (distant)
Req	Request (Demande, utilisée pour indiquer un type d'APDU)
req	primitive "request"
REQ	Demande pour indiquer une PDU de demande
RES	Réponse pour indiquer une PDU de réponse
RM	Resource Manager (Gestionnaire de ressources)
RPL_UPD	Reply Update (Mise à jour de réponse)
Rsp	Response (Réponse, utilisée pour indiquer un type d'APDU)
rsp	response primitive (primitive "réponse")
S_	Source
SAP	Service Access Point (Point d'accès au service)
SCL	Security Level (Niveau de sécurité)
SD	Start Delimiter (Délimiteur de début)
SDN	Send Data with no Acknowledge (Envoyer des données sans acquittement)
SDR	Station Delay Responder (Répondeur à retard de poste)
Seq	Séquence
Src	Source
SRD	Send and Request Data with Reply (Données d'envoi et de demande avec réponse)

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SSAP	Source Service Access Point (Point d'accès aux services de source)
TR	Technical Report (Rapport technique)
USIF	User Interface (Interface utilisateur)
WD	Watchdog (chien de garde)

3.4 Conventions

3.4.1 Concept général

La couche FAL est définie comme un jeu d'éléments ASE orientés objet. Chaque ASE est spécifiée dans un paragraphe distinct. Chaque spécification d'ASE est constituée de trois parties, à savoir ses définitions de classe, ses services et sa spécification de protocole. Les deux premières figurent dans la CEI 61158-5-3. La spécification de protocole pour chaque ASE est définie dans la présente norme.

Les définitions de classe définissent les attributs pris en charge par chaque ASE. Les attributs sont accessibles à partir des instances de la classe utilisant les services d'ASE de gestion ("Management") spécifiés dans la norme CEI 61158-5-3. La spécification de services définit les services qui sont fournis par l'ASE.

La présente norme utilise les conventions descriptives données dans l'ISO/CEI 10731.

3.4.2 Conventions de syntaxe abstraite

Les PDU sont décrites sous la forme d'octets ou de groupes d'octets.

a) Les groupes d'octets séparés par une virgule apparaissent dans l'ordre dans lequel ils sont transférés.
Si des octets facultatifs ne sont pas présents, les octets suivants apparaissent sans trous;

b) Si des octets ou groupes d'octets sont regroupés à l'intérieur d'accolades "{ }", l'ordre est arbitraire;

c) Si des octets ou groupes d'octets sont repérés par un "*", ils peuvent apparaître plus d'une fois.
S'ils sont utilisés à l'intérieur d'une section d'accolades "{ }", ils peuvent apparaître mélangés à d'autres octets ou à un autre groupe d'octets de cette section;

d) Des octets peuvent être regroupés ou les valeurs peuvent être attribuées à l'intérieur de parenthèses "( )";

e) Si des octets ou groupes d'octets sont regroupés à l'intérieur de crochets "[ ]", le groupe peut être omis;

f) Des APDU complexes peuvent être construites au moyen de substitutions (sous-structures);

g) Les sélections exclusives d'octets ou de groupes d'octets sont séparées par un caret "^".

NOTE 1 Exemple formel de PDU

AP_PDU=Octet1,OctetGroup1,[Octet2],[Octet3],{[OctGroup2*],OctetGroup3^Octet4}
Selon ceci, les variantes suivantes sont valides sur le fil (non exhaustives):

Variante 1: Octet1, OctetGroup1, Octet2, Octet3, OctetGroup2, OctetGroup3

Variante 2: Octet1, OctetGroup1, Octet2, Octet3, OctetGroup2, OctetGroup2, OctetGroup2, OctetGroup3

Variante 3: Octet1, OctetGroup1, OctetGroup2, OctetGroup2, OctetGroup2, OctetGroup3, OctetGroup2

Variante 4: Octet1, OctetGroup1, OctetGroup2, OctetGroup3, OctetGroup2, OctetGroup2, OctetGroup2, OctetGroup2

Variante 5: Octet1, OctetGroup1, Octet3, Octet4

NOTE 2 L'ordre arbitraire implique que les groupes d'octets sont caractérisés par un en-tête spécial qui est décrit dans le cadre des règles de codage.

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NOTE 3 La syntaxe des APDU implique que conformément à la DLSDU maximale, une APDU ne doit pas dépasser 244 octets au total.

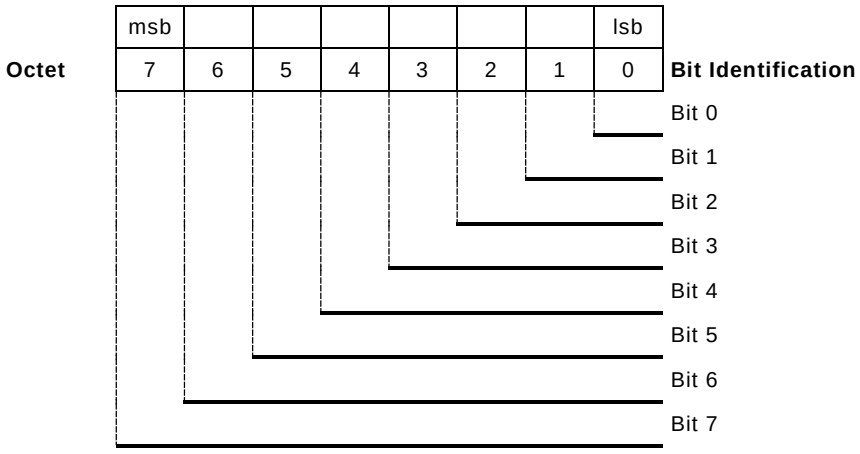
3.4.3 Convention pour le codage des bits et octets réservés

Le terme "reserved" (réservé) peut être utilisé pour décrire les bits dans les octets ou les octets entiers. Il convient que tous les bits ou octets qui sont réservés soient mis à zéro du côté envoi et ils ne doivent pas être soumis à l'essai du côté réception, sauf si cela est énoncé de façon explicite ou si les bits ou octets réservés sont vérifiés par un diagramme d'états.

Le terme "reserved" (réservé) peut aussi être utilisé pour indiquer que certaines valeurs dans la plage d'un paramètre sont réservées pour des extensions futures. Dans ce cas, il convient de ne pas utiliser les valeurs réservées du côté d'envoi et elles ne doivent pas être soumises à l'essai du côté réception, sauf si cela est énoncé de façon explicite ou si les valeurs réservées sont vérifiées par un diagramme d'états.

3.4.4 Conventions pour les codages communs des octets de champs spécifiques

Les APDU peuvent contenir des champs spécifiques qui contiennent des informations d'une manière primitive et condensée. Ces champs doivent être codés dans l'ordre conforme à la Figure 1.



Légende

Anglais	Français
Bit identification	Identification des bits

Figure 1 – Structure commune des champs spécifiques

– Des bits peuvent être regroupés en groupe de bits. Chaque bit ou groupe de bits doit être adressé par son Bit Identification (identification de bit) (par exemple: Bit 0, Bit 1 à 4). La position dans un octet doit être conforme à la figure ci-dessus. Des pseudonymes peuvent être utilisés pour chaque bit ou groupe de bits ou bien ils peuvent être marqués comme étant réservés. Le regroupement de bits pris séparément doit être dans l'ordre croissant sans trous. Les valeurs d'un groupe de bits peuvent être représentées comme des valeurs binaires, décimales ou hexadécimales. Cette valeur doit être seulement valide pour les bits regroupés et peut seulement représenter l'octet tout entier si tous les 8 bits sont regroupés. Les valeurs décimales ou hexadécimales doivent être transformées en valeurs binaires afin que le bit ayant le numéro de groupe le plus élevé représente le msb concernant les bits groupés.

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EXEMPLE 1: Description et relation pour l'octet de champ spécifique

Bit 0: réservé.

Bit 1-3: Reason_Code La valeur décimale 2 pour le Reason_Code signifie "erreur générale"

Bit 4-7: doit toujours être mis à 1.

L'octet qui est construit conformément à la description ci-dessus ressemble à ce qui suit:

(msb) Bit 7 = 1,

Bit 6 = 1,

Bit 5 = 1,

Bit 4 = 1,

Bit 3 = 0,

Bit 2 = 1,

Bit 1 = 0,

(lsb) Bit 0 = 0.

La combinaison de bits "0-1-0" pour les bits 1 à 3 est égale à la valeur décimale 2.

3.5 Conventions utilisées dans les diagrammes d'états

3.5.1 Conventions dans les diagrammes d'états

Les séquences de protocole sont décrites au moyen de diagrammes d'états.

Dans les diagrammes d'états, les états sont représentés sous forme de boîtes, tandis que les transitions d'états sont montrées comme des flèches. Les noms des états et des transitions du diagramme d'états correspondent aux noms dans l'énumération textuelle des transitions d'états.

L'énumération textuelle des transitions d'état est structurée comme suit (voir aussi le Tableau 1).

a) La première colonne contient le nom de la transition.

b) La deuxième colonne définit l'état courant.

c) La troisième colonne contient un événement facultatif suivi de Conditions commençant par une barre oblique "/" comme premier caractère de ligne et, pour finir, suivi par les Actions commençant par un "=>" comme premier caractère de ligne.

d) La dernière colonne contient l'état suivant.

e) Si l'événement se produit et les conditions sont remplies, la transition se lance, c'est-à-dire que les actions sont exécutées et il y a entrée dans l'état suivant.

La présentation d'un Diagramme est montrée dans le Tableau 1. La signification des éléments d'une Description de diagramme d'états est montrée dans le Tableau 2.

Tableau 1 – Éléments de description de diagramme d'états

#	État courant	Événement ou condition => action	État suivant

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Tableau 2 – Description d'éléments de diagramme d'états

Élément de description	Signification
État courant état suivant	Nom des états donnés.
#	Nom ou numéro de la transition d'état.
Événement	Nom ou description de l'événement.
/Condition	Expression booléenne. Le symbole "\" qui précède ne fait pas partie de la condition.
=>Action	Liste des assignations et invocations de service ou de fonction. Le symbole "=>" qui précède ne fait pas partie de l'action.

Les conventions utilisées dans les diagrammes d'états sont montrées dans le Tableau 3.

Tableau 3 – Conventions utilisées dans les diagrammes d'états

Convention	Signification
:=	La valeur d'un élément à gauche est remplacée par la valeur d'un élément à droite. Si un élément à droite est un paramètre, il provient de la primitive montrée comme un événement d'entrée.
xxx	Un nom de paramètre. Exemple: Identifier := reason signifie que la valeur d'un paramètre 'reason' est attribuée à un paramètre appelé 'Identifier.'
"xxx"	Indique une valeur fixe. Exemple: Identifier := "abc" signifie que la valeur "abc" est attribuée à un paramètre nommé 'Identifier.'
=	Une condition logique pour indiquer qu'un élément à gauche est égal à un élément à droite.
<	Une condition logique pour indiquer qu'un élément à gauche est inférieur à un élément à droite.
>	Une condition logique pour indiquer qu'un élément à gauche est supérieur à un élément à droite.
<>	Une condition logique pour indiquer qu'un élément à gauche n'est pas égal à un élément à droite.
&&	"AND" (c'est-à-dire: ET) logique
||	"OR" (c'est-à-dire: OU) logique

for (Identifier := start_value to end_value)
actions
endfor
	Cette construction permet l'exécution d'une séquence d'actions dans une boucle au sein d'une même transition. La boucle est exécutée pour toutes les valeurs de start_value à end_value.

If (condition)
 	
actions
else
actions
	Cette construction permet l'exécution d'autres actions qui dépendent d'une certaine condition (susceptible d'être la valeur d'un identificateur ou le résultat d'une action précédente) au sein d'une transition.
	Les sections commençant par "else" peuvent être omises s'il n'y a pas d'action lorsque la condition n'est pas remplie.

Il est fortement recommandé aux lecteurs de se référer aux paragraphes concernant les définitions des attributs AREP et CREP, aux fonctions locales et aux définitions des FAL-PDU pour appréhender les diagrammes d'états de protocole. Les lecteurs sont censés avoir une connaissance suffisante de ces définitions et celles-ci sont utilisées sans autres explications.

En outre, les éléments de description suivants sont utilisés:

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Caractères génériques dans les noms

name_XXX: "XXX" est utilisé comme chaîne générique pour tous les noms commençant par "name".

L'utilisation typique d'un caractère générique l'est pour un Event (événement). Dans ce contexte, il y a autant de transitions d'états qu'il existe d'événements possibles pour ce caractère générique.

Macro conditionnelle

<CONDITIONAL -MACRO-NAME>

<

CONDITION1: macrobody1

CONDITION2: macrobody2

...

>

CONDITION1, CONDITION2, etc. définissent tous les cas possibles pour la macro conditionnelle. L'expression "CONDITIONAL-MACRO-NAME" sert de réceptacle pour le "macrocode" dépendant du résultat de la condition.

Macro de remplacement

<REPLACEMENT-MACRO-NAME>

<

XXX= Name1 : macrobody1

XXX= Name2 : macrobody2

...

>

Name1, Name2, etc. définissent tous les cas possibles pour la macro de remplacement. L'expression "REPLACEMENT-MACRO-NAME" sert de réceptacle pour le "macrocode" dépendant de la valeur de l'utilisation courante du caractère générique XXX.

Exemple:
<SERVICE_REQ_PARA>
<
XXX=Read: Para1, Para2
XXX=Write: Para1, Para2, Para3
>
lorsqu'elle est appelée dans
MSAB_XXX.req(<SERVICE_REQ_PARA>)
elle donnera
MSAB_Read.req(Para1, Para2) ou MSAB_Write.req(Para1, Para2, Para3)

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4 Description de la syntaxe de FAL

4.1 Syntaxe abstraite des APDU

Le Tableau 4 définit la syntaxe abstraite des PDU de couche application de DP appelées "des APDU". L'ordre défini des octets doit être utilisé pour acheminer les APDU.

Tableau 4 – Syntaxe d'une APDU

Nom d'APDU	Structure d'une APDU
DataExchange-REQ-PDU	[Outp_Data*]
DataExchange-RES-PDU	[Inp_Data*]
RD_Input-RES-PDU	[Inp_Data*]
RD_Output-RES-PDU	[Outp_Data*]
Chk_Cfg-REQ-PDU	{[Identifier_Format*], [Special_Identifier_Format*]^ [Extended_Special_Identifier_Format*]}
Get_Cfg-RES-PDU	{[Identifier_Format*], [Special_Identifier_Format*]^[Extended_Special_Identifier_Format*]}
Set_Prm-REQ-PDU	Station_status, WD_Fact_1, WD_Fact_2, min_TSDR, Ident_Number, Group_Ident, User_Prm_Data
Set_Ext_Prm-REQ-PDU	Structured_Prm_Data*
Diagnosis-RES-PDU	Station_status_1, Station_status_2, Station_status_3, Diag_Master_Add, Ident_Number, {[Device_Related_Diagnosis*]^([Alarm], [Status*],[Modul_Status],[DXB_Link_Status], { [Red_Status] ^[PrmCmdAck]}), [Identifier_Related_Diagnosis], [Channel_Related_Diagnosis*], [Revision_Number]} Le champ Device_Related_Diagnosis peut être présent si DPV1=FALSE, autrement si DPV1=TRUE, il ne doit pas être présent. Dans ce cas, les champs Alarm, Status, Modul_Status peuvent être présents.
Set_Slave_Add-REQ-PDU	New_Slave_Add, Ident_Number, No_Add_Chg, [Rem_Slave_Data*]
Global_Control-REQ-PDU	Control_Command, Group_Select
Clock-Value-PDU	Clock_value_time_event, Clock_value_previous_TE, Clock_value_status1, Clock_value_status2
Initiate-REQ-PDU	Function_Num(0x57), reserved (3 Octets), Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param
Initiate-RES-PDU	Function_Num(0x57), Max_Len_Data_Unit, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param
Initiate-NRS-PDU	Function_Num(0xD7), Error_Decode, Error_Code_1, Error_Code_2
Abort-REQ-PDU	Function_Num(0x58), Subnet, Instance_Reason_Code
Read-REQ-PDU	Function_Num(0x5E), Slot_Number, Index (0 .. 254), Length
Read-RES-PDU	Function_Num(0x5E), Slot_Number, Index (0 .. 254), Length, [Data*]
Read-NRS-PDU Pull-NRS-PDU	Function_Num(0xDE), Error_Decode, Error_Code_1, Error_Code_2
Write-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (0 .. 254), Length, [Data*]
Write-RES-PDU	Function_Num(0x5F), Slot_Number, Index (0 .. 254), Length
Write-NRS-PDU Initiate_Load_NRS-PDU Push-NRS-PDU Terminate_Load-NRS-PDU Start-NRS-PDU Stop-NRS-PDU Resume-NRS-PDU Reset-NRS-PDU Call-NRS-PDU Get_FI_State-NRS-PDU	Function_Num(0xDF), Error_Decode, Error_Code_1, Error_Code_2
Alarm_Ack-REQ-PDU	Function_Num(0x5C), Slot_Number, Alarm_Type, Alarm_Specifier

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Nom d'APDU	Structure d'une APDU
Alarm_Ack-RES-PDU	Function_Num(0x5C), Slot_Number, Alarm_Type, Alarm_Specifier
Alarm_Ack-NRS-PDU	Function_Num(0xDC), Error_Decode, Error_Code_1, Error_Code_2
Idle-REQ-PDU	Function_Num(0x48)
Idle-RES-PDU	Function_Num(0x48)
Data_Transport-REQ-PDU	Function_Num(0x51), Slot_Number, Index, Length, [Data*]
Data_Transport-RES-PDU	Function_Num(0x51), Slot_Number, Index, Length, [Data*]
Data_Transport-NRS-PDU	Function_Num(0xD1), Error_Decode, Error_Code_1, Error_Code_2
Initiate_Load-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x00), Options, LR_Index, LR_Length, Intersegment_Request_Timeout, [User_Specific]
Initiate_Load-RES-PDU	Function_Num(0x5E), Slot_Number, Index (255), Length, Extended_Function_Num (0x00), Max_Segment_Length, LR_Index, LR_Length, Max_Response_Delay
Push-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x01), Options, Sequence_Number, LR_Data
Pull-REQ-PDU	Function_Num(0x5E), Slot_Number, Index (255), Length
Pull-RES-PDU	Function_Num(0x5E), Slot_Number, Index (255), Length, Extended_Function_Num (0x02), Options, Sequence_Number, LR_Data
Terminate_Load-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x03), reserved (1 octet), reserved (2 Octets),
Start-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x04), reserved (1 octet), FI_Index, [Execution_Argument]
Stop-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x05), reserved (1 octet), FI_Index
Resume-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x06), reserved (1 octet), FI_Index, [Execution_Argument]
Reset-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x07), reserved (1 octet), FI_Index
Call-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x08), Entity Number, FI_Index (=0…64999), [Execution_Argument] Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x08), Entity Number, FI_Index (=65000..65199), [IMData_Execution_Argument]
Call-RES-PDU	Function_Num(0x5E), Slot_Number, Index (255), Length, Extended_Function_Num (0x08), Entity Number, FI_Index (=0…64999), [Result_Argument] Function_Num(0x5E), Slot_Number, Index (255), Length, Extended_Function_Num (0x08), Entity Number, FI_Index (=65000…65199), [IMData_Result_Argument]
Get_FI_State-REQ-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length, Extended_Function_Num (0x09), reserved (1 octet), FI_Index
Get_FI_State-RES-PDU	Function_Num(0x5E), Slot_Number, Index (255), Length, Extended_Function_Num (0x09), reserved (1 octet), FI_Index, FI_State
Push-RES-PDU Terminate_Load-RES-PDU Start-RES-PDU Stop-RES-PDU Resume-RES-PDU Reset-RES-PDU	Function_Num(0x5F), Slot_Number, Index (255), Length
RM-REQ-PDU	Function_Num(0x56), Server_SAP, Send_Timeout
Get_Master_Diag-REQ-PDU	Function_Num(0x41), MDiag_Identifier
Get_Master_Diag-RES-PDU	Function_Num(0x41), MDiag_Identifier(=0..125), Diagnosis-RES-PDU Function_Num(0x41), MDiag_Identifier(=126), System_Diagnosis Function_Num(0x41), MDiag_Identifier(=127), Master_Status Function_Num(0x41), MDiag_Identifier(=128), Data_Transfer_List
Start_Seq-REQ-PDU	Function_Num(0x42), Area_CodeUpDownload, Timeout

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Nom d'APDU	Structure d'une APDU
Start_Seq-RES-PDU	Function_Num(0x42), Area_CodeUpDownload, Timeout, Max_Len_Data_Unit
Download-REQ-PDU	Function_Num(0x43), Area_CodeUpDownload(=0..125), Add_Offset, DP_Slave_Parameter_Set Function_Num(0x43), Area_CodeUpDownload(=127), Add_Offset, Bus_Parameter_Set Function_Num(0x43), Area_CodeUpDownload(=129), Add_Offset, Statistic_Counters Function_Num(0x43), Area_CodeUpDownload(=136 to 139), Add_Offset, Master_Parameter_Set
Download-RES-PDU	Function_Num(0x43), Area_CodeUpDownload, Add_Offset
Upload-REQ-PDU	Function_Num(0x44), Area_CodeUpDownload, Add_Offset, Data_Len
Upload-RES-PDU	Function_Num(0x44), Area_CodeUpDownload(=0..125), Add_Offset, DP_Slave_Parameter_Set Function_Num(0x44), Area_CodeUpDownload(=127), Add_Offset, Bus_Parameter_Set Function_Num(0x44), Area_CodeUpDownload(=129), Add_Offset, Statistic_Counters Function_Num(0x43), Area_CodeUpDownload(=136 to 139), Add_Offset, Master_Parameter_Set
End_Seq-REQ-PDU	Function_Num(0x45)
End_Seq-RES-PDU	Function_Num(0x45)
Act_Para_Brct-REQ-PDU	Function_Num(0x46), Area_CodeActBrct
Act_Param-REQ-PDU	Function_Num(0x47), Area_CodeAct, Activate
Act_Param-RES-PDU	Function_Num(0x47), Area_CodeAct, Activate
ZERO-PDU	Octet1(0)
NULL-PDU	
NOTE 1 Si une APDU est constituée seulement d'octets de données utilisateur, la distinction est faite en utilisant des points d'accès au service de couche liaison de données différents (voir Machines protocolaires). NOTE 2 Une ZERO-PDU (c'est-à-dire: PDU zéro) contient un seul octet avec tous les bits mis à zéro. Cette APDU est utilisée pour indiquer le diagnostic à partir d'un appareil sans entrées. NOTE 3 Une NULL-PDU (c'est-à-dire: PDU vide) ne contient pas d'octets. Elle est utilisée pour ne présenter aucune DLSDU à la couche liaison de données.	

Le Tableau 5 définit des structures pour les substitutions des éléments des structures d'APDU montrées dans le Tableau 4.

Tableau 5 – Substitutions

Nom de substitution	Structure
Identifier_Format	Cfg_Identifier
Special_Identifier_Format	Special_Cfg_Identifier, [Length_Octet] , [Length_Octet], [Manufacturer_Specific_Data*] Les champs Length_Octet doivent toujours commencer par les champs qui indiquent des données de sortie, si elles sont présentes.
Extended_Special_Identifier_Format	Special_Cfg_Identifier,[Extended_Length_Octet], [Extended_Length_Octet], [Data_Type*], [Manufacturer_Specific_Data*] Les champs Extended_Length_Octet doivent toujours commencer par les champs qui indiquent des données de sortie, si elles sont présentes. Le champ Data_Type ne doit être omis que dans le cas d'une position vide. Autrement, il doit être présent en rapport avec les champs Length.
Device_Related_Diagnosis	Header_Octet, Diagnosis_User_Data*
Identifier_Related_Diagnosis	Header_Octet, Identifier_Diagnosis_Data_Array
Channel_Related_Diagnosis	Identifier_Number, (Channel_Number, Type_of_Diagnosis)*

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Nom de substitution	Structure
Alarm	Header_Octet, Alarm_Type, Slot_Number, Alarm_Specifier, [Diagnosis_User_Data*]
Status	Header_Octet, Status_Type, Slot_Number, Status_Specifier, Diagnosis_User_Data*]
Modul_Status	Header_Octet, Status_Type(=Modul_Status), Slot_Number(=0), Status_Specifier, Modul_Status_Array
DXB_Link_Status	Header_Octet, Status_Type(=DXB_Link_Status), Slot_Number(=0), Status_Specifier, (Publisher_Address, Publisher_Status)*
PrmCmdAck	Header_Octet, Status_Type(=PrmCmdAck), Slot_Number(=0), Status_Specifier, Function, Red_Status1, Red_Status2, Red_Status3
Red_Status	Header_Octet, Status_Type(=Red_Status), Slot_Number(=0), Status_Specifier, Function, Red_Status1, Red_Status2, Red_Status3
User_Prm_Data	[DPV1_Status_1, DPV1_Status_2, DPV1_Status_3], [Structured_Prm_Data*] ^ [User_Prm_Data_Element*] Special case DPV1=FALSE: [User_Prm_Data_Element*] Special case DPV1=TRUE and DPV1_Status_3.Prm_Structure=FALSE: DPV1_Status_1, DPV1_Status_2, DPV1_Status_3, [User_Prm_Data_Element*] Special case DPV1=TRUE and DPV1_Status_3.Prm_Structure=TRUE: DPV1_Status_1, DPV1_Status_2, DPV1_Status_3, Structured_Prm_Data* Les champs DPV1_Status_1, DPV1_Status_2 et DPV1_Status_3 doivent être présents si DPV1=TRUE. Structured_Prm_Data doit être présent si DPV1_Status_3.Prm_Structure est TRUE, autrement il ne doit pas être utilisé.
Structured_Prm_Data	Structure_Length, Structure_Type, Slot_Number, reserved (1 octet), User_Prm_Data_Element* Special Case DXB LinkTable: Structure_Length, Structure_Type(=3), Slot_Number(=0), reserved (1 octet), Version(=1), (Publisher_Addr, Publisher_Length, Sample_Offset, Sample_Length)* Special Case DXB-Subscribertable: Structure_Length, Structure_Type(=7), Slot_Number(=0), reserved (1 octet), Version(=1), (Publisher_Addr, Publisher_Length, Sample_Offset, Dest_Slot_Number, Offset_Data_Area, Sample_Length)* Special Case IsoM Parameter: Structure_Length, Structure_Type(=4), Slot_Number(=0), reserved (1 octet), Version(=1), TBASE_DP, TDP, TMAPC, TBASE_IO, TI, TO, TDX, TPLL_W, TPLL_D Special Case PrmCmd: Structure_Length, Structure_Type(=2), Slot_Number(=0), Specifier, Function, Properties, Output_Hold_Time Special Case Time AR Parameter: Structure_Length, Structure_Type(=8), Slot_Number(=0), reserved (1 octet), Clock Sync Interval, [CS Delay Time] Special Case F-Parameter: Structure_Length, Structure_Type(=5), Slot_Number, reserved (1 octet), User_Prm_Data*
Features_Supported	Features_Supported_1, Features_Supported_2
Profile_Features_Supported	Profile_Features_Supported_1, Profile_Features_Supported_1

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Nom de substitution	Structure
Add_Addr_Param	S_Type, S_Len, D_Type, D_Len, S_API, S_SCL, [S_Network_Address], [S_MAC_Address], D_API, D_SCL, [D_Network_Address], [D_MAC_Address]
Master_Status	USIF_State, Ident_Number, Hardware_Release_DP, Firmware_Release_DP, Hardware_Release_User, Firmware_Release_User, reserved (9 Octets)
DP_Slave_Parameter_Set	Slave_Para_Len, Sl_Flag, Slave_Type, Max_Diag_Data_Len, Max_Alarm_Len, Max_Channel_Data_Length, Diag_Upd_Delay, Alarm_Mode, Add_Sl_Flag, MS1_Timeout, reserved (4 Octets), Prm_Data_Len, Prm_Data, Cfg_Data_Len, Cfg_Data, Add_Tab_Len, Add_Tab, Slave_User_Data_Len, Slave_User_Data, Ext_Prm_Data_Len, [Ext_Prm_Data]
Bus_Parameter_Set	Bus_Para_Len, DL_Add, Data_rate, T_{SL}, min T_{SDR}, max T_{SDR}, T_{QUI}, T_{SET}, T_{TR}, G, HSA, max_retry_limit, Bp_Flag, Min_Slave_Interval, Poll_Timeout, Data_Control_Time, Alarm_Max, Max_User_Global_Control, reserved (4 Octets), Master_User_Data_Len, Master_Class2_Name, Master_User_Data*, T_{CT}, maxT_{SH}
Master_Parameter_Set	Bus_Parameter_Set, DP_Slave_Parameter_Set*
Statistic_Counters	Counter_Group*
Counter_Group	si Add_Offset 0..126: DLPDU_sent_count(Add_Offset), Error_count(Add_Offset) si Add_Offset 127: SD_sent_count, SD_error_count
Add_Tab	[Number_of_Entries], [Add_Tab_Entry_Header, I/O_Data_Length, IO_Config_Address, Host_Address]*
IMData_Execution_Argument	[I&M1] ^ [I&M2] ^ [I&M3] ^ [I&M4] ^ [I&M_Profile_Specific_x] ^ [I&M_Manufacturer_Specific_x]
IMData_Result_Argument	I&M0 ^ [I&M1] ^ [I&M2] ^ [I&M3] ^ [I&M4] ^ [I&M_Profile_Specific_x] ^ [I&M_Manufacturer_Specific_x]
I&M0	IM_Header, IM_Manufacturer_ID, OrderID, IM_Serial_Number, IM_Hardware_Revision, IM_Software_Revision, IM_Revision_Counter, IM_Profile_ID, IM_Profile_Specific_Type, IM_Version, IM_Supported
I&M1	IM_Header, IM_Tag_Function, IM_Tag_Location
I&M2	IM_Header, IM_Date
I&M3	IM_Header, IM_Descriptor
I&M4	IM_Header, IM_Signature
I&M_Profile_Specific_x	IM_Header, IM_Profile_Specific_Data
IM_Version	IM_Version_Major, IM_Version_Minor
IM_Software_Revision	SWRevisionPrefix, IM_SWRevision_Functional_Enhancement, IM_SWRevision_Bug_Fix, IM_SWRevision_Internal_Change
NOTE Le DP_Slave_Parameter_Set et le Bus_Parameter_Set peuvent dépasser la taille maximale d'APDU jusqu'à une taille de 64 Kilooctets. L'acheminement des données est donc segmenté au moyen d'une fenêtre adressée par le paramètre Add_Offset.	

4.2 Types de données

4.2.1 Notation pour le type Boolean (booléen)

Boolean ::= BOOLEAN -- TRUE si la valeur n'est pas zéro.

-- FALSE si la valeur est zéro.

4.2.2 Notation pour le type Integer (entier)

Integer8 ::= INTEGER (-128..+127) -- range -2^7 <= I <= 2^7-1

Integer16 ::= INTEGER (-32768..+32767) -- range -2^{15} <= I <= 2^{15}-1

Integer32 ::= INTEGER -- range -2^{31} <= I <= 2^{31}-1

Integer64 ::= INTEGER -- range -2^{63} <= I <= 2^{63}-1

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4.2.3 Notation pour le type Unsigned (non signé)

Unsigned8 ::= INTEGER (0..255) -- range 0 <= I <= 2^8-1

Unsigned16 ::= INTEGER (0..65535) -- range 0 <= I <= 2^{16}-1

Unsigned32 ::= INTEGER -- range 0 <= I <= 2^{32}-1

Unsigned64 ::= INTEGER -- range 0 <= I <= 2^{64}-1

4.2.4 Notation pour le type Floating Point (virgule flottante)

Floating32 ::= BIT STRING SIZE (4) -- Single precision (en simple précision) de l'IEEE 754

Floating64 ::= BIT STRING SIZE (8) -- Double precision (en double précision) de l'IEEE 754

4.2.5 Notation pour le type OctetString (chaîne d'octets)

OctetString ::= OCTET STRING -- Pour utilisation générique

4.2.6 Notation pour le type VisibleString (chaîne visible)

VisibleString2 ::= VISIBLE STRING -- Pour utilisation générique

4.2.7 Notation pour le type BinaryDate (date binaire)

BinaryDate ::= OctetString7

4.2.8 Notation pour le type TimeOfDay (heure du jour)

TimeOfDay avec indication de date ::= OctetString6

TimeOfDay sans indication de date ::= OctetString4

4.2.9 Notation pour le type TimeDifference (différence horaire)

TimeDifference avec indication de date ::= OctetString6

TimeDifference sans indication de date ::= OctetString4

4.2.10 Notation pour le type Network Time (temps réseau)

Network Time ::= OctetString8

4.2.11 Notation pour le type Network Time Difference (différence de temps réseau)

Network Time Difference ::= OctetString8

5 Syntaxe de transfert

5.1 Codage des types de données de base

5.1.1 Codage d'une valeur Boolean (booléenne)

a) Le codage d'une valeur Boolean doit être primitif. Les ContentsOctets doivent consister en un seul octet.

b) Si la valeur booléenne est FALSE, ContentsOctets doit être 0 (zéro). Si la valeur booléenne est TRUE, ContentsOctets doit être 0xff.

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5.1.2 Codage d'une valeur Integer

a) Le codage d'une valeur Integer de longueur fixe des types Integer8, Integer16 et Integer32 doit être primitif et les ContentsOctets doivent respectivement consister exactement en un octet, deux octets et quatre octets.

b) Les ContentsOctets doivent être un nombre binaire en complément à deux égal à la valeur entière et consister en les bits 7 à 0 du premier octet, suivis des bits 7 à 0 du deuxième octet, suivis des bits 7 à 0 de chaque octet à tour de rôle jusqu'au dernier octet inclus des ContentsOctets.

NOTE La valeur du nombre binaire en complément à deux est dérivée de la numérotation des bits dans les ContentsOctets, en commençant par le bit 0 du dernier octet comme bit zéro et en terminant la numérotation par le bit 7 du premier octet. Chaque bit se voit attribuer une valeur numérique de 2^N, où N est sa position dans la séquence de numérotation ci-dessus. La valeur du nombre binaire en complément à deux est obtenue en ajoutant les valeurs numériques attribuées à chaque bit pour les bits qui sont mis à un, à l'exclusion du bit 7 du premier octet, puis en réduisant la valeur par la valeur numérique attribuée au bit 7 du premier octet si ce bit est mis à 1.

5.1.3 Codage d'une valeur Unsigned

a) Le codage d'une valeur Unsigned de longueur fixe des types Unsigned8, Unsigned16 et Unsigned32 doit être primitif et les ContentsOctets doivent respectivement consister exactement en un octet, deux octets et quatre octets.

b) Les ContentsOctets doivent être un nombre binaire égal à la valeur Unsigned et consister en les bits 7 à 0 du premier octet, suivis des bits 7 à 0 du deuxième octet, suivis des bits 7 à 0 de chaque octet à tour de rôle jusqu'au dernier octet inclus des ContentsOctets.

NOTE La valeur du nombre binaire est dérivée de la numérotation des bits dans les ContentsOctets, en commençant par le bit 0 du dernier octet comme bit zéro et en terminant la numérotation par le bit 7 du premier octet. Chaque bit se voit attribuer une valeur numérique de 2^N, où N est sa position dans la séquence de numérotation ci-dessus. La valeur du nombre binaire est obtenue en ajoutant les valeurs numériques attribuées à chaque bit pour les bits qui sont mis à un.

5.1.4 Codage d'une valeur en Virgule Flottante

a) Le codage d'une valeur Floating32 doit être primitif et les ContentsOctets doivent consister exactement en quatre octets.

b) Les ContentsOctets doivent contenir des valeurs en virgule flottante définies conformément à l'IEEE 754. Le signe est codé dans le bit 7 du premier octet. Il est suivi de l'exposant commençant à partir du bit 6 du premier octet et ensuite de la mantisse commençant à partir du bit 6 du deuxième octet pour le type Floating32.

5.1.5 Codage d'une valeur Visible String

a) Le codage d'une valeur VisibleString de longueur variable doit être primitif.

b) Il n'y a pas de champ Length; la longueur est codée implicitement.

c) Les ContentsOctets doivent être une séquence d'octets. L'élément de chaîne le plus à gauche est codé dans le premier octet, suivi du deuxième octet, suivi de chaque octet à tour de rôle jusqu'au dernier octet inclus comme le plus à droite des ContentsOctets.

5.1.6 Codage d'une valeur Octet String

a) Le codage d'une longueur OctetString de longueur variable doit être primitif.

b) Il n'y a pas de champ Length; la longueur est codée implicitement.

c) Les ContentsOctets doivent être une séquence d'octets. L'élément de chaîne le plus à gauche est codé dans le premier octet, suivi du deuxième octet, suivi de chaque octet à tour de rôle jusqu'au dernier octet inclus comme le plus à droite des ContentsOctets.

5.1.7 Codage d'une valeur BinaryDate

Le codage d'une valeur BinaryDate dans le cadre de la CEI 61158-6-10 s'applique.

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5.1.8 Codage d'une valeur TimeOfDay avec et sans valeur d'indication de date

Le codage d'une valeur TimeOfDay avec et sans valeur d'indication de date dans le cadre de la CEI 61158-6-10 s'applique.

5.1.9 Codage d'une valeur Time Difference avec et sans indication de date

Le codage d'une valeur Time Difference avec et sans indication de date dans le cadre de la CEI 61158-6-10 s'applique.

5.1.10 Codage d'une valeur Network Time

Le codage d'une valeur Network Time dans le cadre de la CEI 61158-6-10 s'applique.

Codage d'une valeur Network Time Difference

Le codage d'une valeur Network Time Difference dans le cadre de la CEI 61158-6-10 s'applique.

5.1.11 Codage d'une valeur Null

a) Le codage d'une valeur NULL doit être primitif.

b) Le ContentsOctet doit être omis.

5.2 Section de codage relative aux PDU d'échange de données

5.2.1 Généralités

La CEI 61158-5-10, Article 5, s'applique.

NOTE Les types de données avec longueur variable (Visible String, Octet String, TimeOfDay, Time Difference) pour Inp_Data ou Outp_Data ne sont présents qu'une seule fois dans DataExchange-RES-PDU ou DataExchange-REQ-PDU. Les données utilisateur correspondent au contenu de Configuration-PDU.

5.2.2 Codage du champ Outp_Data

Par exemple, l'un des types de données suivants doit être utilisé pour chaque champ Outp_Data:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.2.3 Codage du champ Inp_Data

Par exemple, l'un des types de données suivants doit être utilisé pour chaque champ Inp_Data:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.3 Section de codage relative aux PDU d'échange de diagnostic d'esclave

5.3.1 Codage du champ Station_status_1

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: Diag.Station_Non_Existent
Doit être mis à zéro dans le cas de Diagnoses-RES-PDU

Valeur (0): signifie FALSE si Get_Master_Diag-RES-PDU

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Valeur (1): signifie TRUE si Get_Master_Diag-RES-PDU

Bit 1: Diag.Station_Not_Ready
FALSE (0)

TRUE (1)

Bit 2: Diag.Cfg_Fault (Configuration Fault, défaut de configuration)
FALSE (0)

TRUE (1)

Bit 3: Diag.Ext_Diag (Extended Diagnosis, diagnostic étendu)
FALSE (0): signifie que l'appareil est en état diagnostic

TRUE (1): signifie que l'appareil n'est PAS en état diagnostic

Il convient de définir ce bit par FALSE si aucune condition d'erreur n'existe. Si défini par TRUE, la raison doit en être indiquée dans Device Related Diagnosis, Identifier Related Diagnosis, ou bien Channel Related Diagnosis.

Bit 4: Diag.Not_Supported
FALSE (0)

TRUE (1)

Bit 5: Diag.Invalid_Slave_Response
Doit être mis à zéro si Diagnoses-RES-PDU

Valeur (0): signifie FALSE si Get_Master_Diag-RES-PDU

Valeur (1): signifie TRUE si Get_Master_Diag-RES-PDU

Bit 6: Diag.Prm_Fault (Parameter Fault, défaut de paramètre)
FALSE (0), TRUE (1)

Bit 7: Diag.Master_Lock
Doit être mis à zéro si Diagnoses-RES-PDU

Valeur (0): signifie FALSE si Get_Master_Diag-RES-PDU

Valeur (1): signifie TRUE si Get_Master_Diag-RES-PDU

5.3.2 Codage du champ Station_status_2

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: Diag.Prm_Req (Parameterization Requested, paramétrisation demandée)
FALSE (0)

TRUE (1)

Bit 1: Diag.Stat_Diag (Static Diagnosis, diagnostic statique)
FALSE (0)

TRUE (1)

Bit 2: DP (DP Protocol, protocole de DP)
Doit toujours être mis à 1

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Bit 3: Diag.WD_On (Watchdog on, chien de garde actif)
FALSE (0)

TRUE (1)

Bit 4: Diag.Freeze_Mode
FALSE (0)

TRUE (1)

Bit 5: Diag.Sync_Mode (Synchronisation Mode, mode synchronisation)
FALSE (0)

TRUE (1)

Bit 6: réservé
Bit 7: Diag.Deactivated
Doit être mis à zéro si Diagnoses-RES-PDU

Valeur (0): signifie FALSE si Get_Master_Diag-RES-PDU

Valeur (1): signifie TRUE si Get_Master_Diag-RES-PDU

5.3.3 Codage du champ Station_status_3

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 6: réservés
Bit 7: Diag.Ext_Diag_Overflow (Overflow of extended Diagnosis, débordement de diagnostic étendu)
FALSE (0)

TRUE (1)

5.3.4 Codage du champ Diag_Master_Add

Ce champ doit être codé comme un type de données Unsigned8 avec les valeurs suivantes:

Décimal (0 à 125)
désigne l'adresse du maître DP (Classe 1) qui a paramétré cet esclave DP

Décimal (255)
signifie que l'esclave DP n'a pas été paramétré ou a subi une paramétrisation non valide.

Décimal (126 à 254)
non autorisée

5.3.5 Codage du champ Ident_Number

Ce champ doit être codé comme un type de données Unsigned16.

5.3.6 Codage du champ Header_Octet

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 5: Block_Length
Il doit contenir la longueur du bloc de diagnostic conformément aux valeurs du Tableau 6. Le Header_Octet lui-même doit toujours être compté.

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Tableau 6 – Plage de Block_Length

Valeur (décimale)	Signification
2 à 63	Device Related Diagnosis (Diagnostic relatif à l'appareil) au format de diagnostic de base
2 à 32	Identifier Related Diagnosis (Diagnostic lié à l'identificateur)
4 à 63	Device Related Diagnosis (Diagnostic relatif à l'appareil) en format de diagnostic DPV1

NOTE Les diagnostics relatifs à l'identificateur (Identifier Related Diagnoses) sont limités à 32 car les identificateurs eux-mêmes sont limités à 244.

Bits 6 à 7: Selection
La Sélection doit contenir les valeurs conformes au Tableau 7.

Tableau 7 – Plage de sélection

Valeur (décimale)	Signification
0	Device Related Diagnosis (Diagnostic relatif à l'appareil)
1	Identifier Related Diagnosis (Diagnostic lié à l'identificateur)
2	Channel Related Diagnosis (Diagnostic lié à la voie)
3	Revision_Number

5.3.7 Codage du champ Alarm_Type

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 6: Alarm_Type
Le Alarm_Type doit contenir les valeurs conformes au Tableau 8.

Tableau 8 – Plage d'Alarm_Type

Valeur (décimale)	Signification
0	reserved (réservées)
1	Diagnostic_Alarm
2	Process_Alarm
3	Pull_Alarm
4	Plug_Alarm
5	Status_Alarm
6	Update_Alarm
7 – 31	reserved (réservées)
32 – 126	spécifique constructeur
127	reserved (réservées)

Bit 7: doit être zéro (identifiant Alarm)
Décimal (0): signifie Alarme

5.3.8 Codage du champ Status_Type

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

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Bits 0 à 6: Status_Type
Le Status_Type doit contenir des valeurs conformes au Tableau 9.

Tableau 9 – Plage de valeurs Status_Type

Valeur (décimale)	Signification
0	reserved (réservées)
1	Status_Message
2	Modul_Status
3	DXB_Link_Status
4 à 29	reserved (réservées)
30	PrmCmdAck
31	Red_Status
32 à 126	Spécifique constructeur
127	reserved (réservées)

Bit 7: doit être 1 (identifiant Status)
Décimal (1): signifie Status

5.3.9 Codage du champ Slot_Number

Ce champ doit être codé comme un type de données Unsigned8. La valeur doit être comprise dans la plage 0 à 254. La valeur 255 est réservée.

5.3.10 Codage du champ Alarm_Specifier

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 1: Alarm_Specifier
Ce groupe de bits doit contenir le spécificateur d'alarme avec les valeurs conformes au Tableau 10.

Tableau 10 – Alarm_Specifier

Valeur (décimale)	Signification	Commentaire
0	Aucune différenciation supplémentaire	—
1	Error apparaît et Slot perturbé	la position génère une alarme en raison d'une erreur
2	Error disparaît et Slot est correct	la position génère une alarme et indique que la position n'a pas d'autres erreurs
3	Error disparaît et Slot reste perturbé	la position génère une alarme et indique que la position a encore d'autres erreurs

Bit 2: Additional_Acknowledge
Valeur (0): signifie qu'aucune connaissance supplémentaire n'est utilisée

Valeur (1): signifie qu'une connaissance supplémentaire est utilisée

Bits 3 à 7: Sequence_Number
La plage de valeurs doit être de 0 à 31 (décimale).

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5.3.11 Codage du champ Status_Specifier

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 1: Status_Specifier
Décimal (0): signifie pas de différenciation plus poussée

Décimal (1): signifie que le statut apparaît

Décimal (2): signifie que le statut disparaît

Décimal (3): reserved (réservé)

Bits 2 à 7: réservés

5.3.12 Codage du champ Diagnosis_User_Data

L'un des types de données suivants doit être utilisé pour chaque champ Diagnosis_User_Data:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.3.13 Codage du champ Modul_Status_Array

Le champ Modul_Status_Array est une matrice d'octets qui doit contenir au moins un et au maximum 61 octets appelés Modul_Status_Octet. Un Modul_Status_Octet doit consister en au moins un et au maximum 4 statuts de module appelés Modul_Status_Entry_1 à Modul_Status_Entry_4 codés en deux bits chacun. Par conséquent, le numéro de Modul_Status_Octet correspond au nombre de modules configurés dans l'appareil et doit être calculé comme suit:

a) $N = 1$ si $M_{\text{le plus grand}} \leq 4$

b) $N = M_{\text{le plus grand}}$ DIV 4 +1 si $M_{\text{le plus grand}}$ MOD 4 $\neq 0$

c) $N = M_{\text{le plus grand}}$ DIV 4 si $M_{\text{le plus grand}}$ MOD 4 = 0

où

N est le nombre d'octets Modul_Status_Octet ou le nombre d'éléments de la matrice,

$M_{\text{le plus grand}}$ est le plus grand numéro des modules configurés dans l'appareil (maximum 244).

Le dernier Modul_Status_Octet (octet N) ne peut pas contenir toutes les 4 entrées de statut de module. Si $M_{\text{le plus grand}}$ MOD 4 $\neq 0$, l'octet N n'est pas complètement rempli et les bits restants doivent être mis à zéro et appelés "Padding Bits" (bits de bourrage).

Les statuts des modules de l'appareil doivent être structurés dans l'ordre croissant sans trous. Le statut du numéro de module un est toujours dans le Modul_Status_Entry_1 du Modul_Status_Octet numéro un. Le codage d'un Modul_Status_Octet doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

NOTE Le terme "modules configurés" s'adresse aux modules physiques ou virtuels d'un appareil qui ont eu un champ de format connexe dans Chk_Cfg-REQ-PDU. Les modules qui ne font pas partie de la configuration sont purement locaux et ne sont donc pas liés au champ Modul_Status_Array.

Bits 0 à 1: Modul_Status_Entry_1
Il doit contenir le statut de module d'un module configuré avec le numéro qui respecte m MOD 4 = 1. Des bits de bourrage ne doivent pas être utilisés ici.

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Bits 2 à 3: Modul_Status_Entry_2
Il doit contenir le statut de module d'un module configuré avec le numéro qui respecte m MOD 4 = 2. Dans les autres cas, les bits de bourrage (00 binaires) doivent être utilisés.

Bits 4 à 5: Modul_Status_Entry_3
Il doit contenir le statut de module d'un module configuré avec le numéro qui respecte m MOD 4 = 3. Dans les autres cas, les bits de bourrage (00 binaires) doivent être utilisés.

Bits 6 à 7: Modul_Status_Entry_4
Ces 2 bits doivent contenir le statut de module d'un module configuré avec le numéro qui respecte m MOD 4 = 0. Dans les autres cas, les bits de bourrage (00 binaires) doivent être utilisés.

où
m est le numéro du module courant comprenant $1 \leq m \leq N$.

La Figure 2 illustre la disposition des champs Modul_Status_Entry_(1 à 4) comme exemple d'un appareil avec 6 modules configurés.

	Bit Number							
	7	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Modul_ Status_ Octet 1	status module number 4		status module number 3		status module number 2		status module number 1	
Modul_ Status_ Octet 2	Padding Bits		Padding Bits		status module number 6		status module number 5	
	Modul_Status_Entry_4		Modul_Status_Entry_3		Modul_Status_Entry_2		Modul_Status_Entry_1	

Légende

Anglais	Français
Bit Number	Numéro de bit
module number n	module numéro n
Padding Bits	Bits de bourrage

Figure 2 – Exemple de Modul_Status_Array

Chaque entrée Modul_Status_Entry_1 à Modul_Status_Entry_4 doit contenir le statut de module conforme au Tableau 11.

Tableau 11 – Plage de Modul_Status_Entry (1 à 4)

Valeur (décimale)	Signification
0	données valides
1	données non valides: les données du module correspondant ne sont pas valides en raison d'une erreur (par exemple: court-circuit)
2	données non valides/mauvais module: les données du module correspondant ne sont pas valides, en raison d'un mauvais module en place
3	données non valides/pas de module: les données du module correspondant ne sont pas valides car il n'y a pas de module en place

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5.3.14 Codage du champ Identifier_Diagnosis_Data_Array

Le champ Identifier_Diagnosis_Data_Array est une matrice d'octets qui doit contenir au moins un et au maximum 31 octets appelés Identifier_Diagnosis_Data_Octet. Un champ Identifier_Diagnosis_ Data_Octet doit être constitué d'au minimum une et au maximum 8 entrées de référence, désignées de Identifier_Diagnosis_Entry_1 à Identifier_Diagnosis_Entry_8. Par conséquent, le numéro de Identifier_Diagnosis_Data_Octet correspond au nombre de modules configurés dans l'appareil et doit être calculé comme suit:

a) $N = 1$ si $M_{\text{le plus grand}} \leq 8$

b) $N = M_{\text{le plus grand}}$ DIV 8 +1 si $M_{\text{le plus grand}}$ MOD 4 $\neq 0$

c) $N = M_{\text{le plus grand}}$ DIV 8 si $M_{\text{le plus grand}}$ MOD 4 = 0

où

N est le nombre d'octets Identifier_Diagnosis_Data_Octet ou le nombre d'éléments de la matrice,

$M_{\text{le plus grand}}$ est le plus grand numéro des modules configurés dans l'appareil (maximum 244).

Le dernier Identifier_Diagnosis_Data_Octet (octet N) ne peut pas contenir toutes les 8 entrées de diagnostic. Si $M_{\text{le plus grand}}$ MOD 8 $\neq$0, l'octet N n'est pas complètement rempli et les bits restants doivent être mis à zéro et appelés "Padding Bits" (bits de bourrage).

NOTE Le terme DIV signifie la division sans reste. Le terme MOD signifie le reste de la division.

Les diagnostics d'identificateur des modules de l'appareil doivent être structurés dans l'ordre croissant sans trous. Le diagnostic d'identificateur du module numéro un est toujours placé dans l'Identifier_Diagnosis_Entry_1 de l'Identifier_Diagnosis_Data_Octet numéro un. Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: Identifier_Diagnosis_Entry_1
Ce bit doit être mis à un si le module avec le numéro qui respecte m MOD 8 = 1 indique le diagnostic; autrement, il doit être mis à zéro. Un bit de bourrage ne doit pas être utilisé ici.

Bit 1: Identifier_Diagnosis_Entry_2
Ce bit doit être mis à un si le module avec le numéro qui respecte m MOD 8 = 2 indique le diagnostic; autrement, il doit être mis à zéro. Un bit de bourrage doit être utilisé s'il n'y a aucun module configuré.

Bit 2: Identifier_Diagnosis_Entry_3
Ce bit doit être mis à un si le module avec le numéro qui respecte m MOD 8 = 3 indique le diagnostic; autrement, il doit être mis à zéro. Un bit de bourrage doit être utilisé s'il n'y a aucun module configuré.

Bit 3: Identifier_Diagnosis_Entry_4
Ce bit doit être mis à un si le module avec le numéro qui respecte m MOD 8 = 4 indique le diagnostic; autrement, il doit être mis à zéro. Un bit de bourrage doit être utilisé s'il n'y a aucun module configuré.

Bit 4: Identifier_Diagnosis_Entry _5
Ce bit doit être mis à un si le module avec le numéro qui respecte m MOD 8 = 5 indique le diagnostic; autrement, il doit être mis à zéro. Un bit de bourrage doit être utilisé s'il n'y a aucun module configuré.

Bit 5: Identifier_Diagnosis_Entry _6
Ce bit doit être mis à un si le module avec le numéro qui respecte m MOD 8 = 6 indique le diagnostic; autrement, il doit être mis à zéro. Un bit de bourrage doit être utilisé s'il n'y a aucun module configuré.

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Bit 6: Identifier_Diagnosis_Entry _7
Ce bit doit être mis à un si le module avec le numéro qui respecte m MOD 8 = 7 indique le diagnostic; autrement, il doit être mis à zéro. Un bit de bourrage doit être utilisé s'il n'y a aucun module configuré.

Bit 7: Identifier_Diagnosis_Entry_8
Ce bit doit être mis à un si le module avec le numéro qui respecte m MOD 8 = 0 indique le diagnostic; autrement, il doit être mis à zéro. Un bit de bourrage doit être utilisé s'il n'y a aucun module configuré.

où m est le numéro du module courant avec $1 \leq m \leq N$.

5.3.15 Codage du champ Identifier_Number

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 5: Identifier_Number
Les valeurs 0 à 63 (en décimal) sont valides.

Bits 6 à 7: Selection
La Sélection doit contenir la valeur Channel Related Diagnosis conforme au Tableau 7.

5.3.16 Codage du champ Channel_Number

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 5: Channel_Number
Les valeurs 0 à 63 (en décimal) sont valides.

Bits 6 à 7: Input_Output_Selection
Le Input_Output_Selection doit être mis comme indiqué dans le Tableau 12.

Tableau 12 – Input_Output_Selection

Valeur (décimale)	Signification
0	reserved (réservées)
1	Input (entrée)
2	Output (sortie)
3	Input and output (entrée et sortie)

5.3.17 Codage du champ Type_of_Diagnosis

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 4: Error_Type
L'Error_Type doit être positionné comme montré dans le Tableau 13.

Tableau 13 – Type d'erreur

Valeur (décimale)	Signification
0 à 31	Le codage du champ ChannelErrorType dans le cadre de la CEI 61158-6-10 s'applique.

Bits 5 à 7: Channel_Type
Le Channel_Type doit être mis comme indiqué dans le Tableau 14.

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Tableau 14 – Channel_Type

Valeur (décimale)	Signification
0	Non spécifique, peut être utilisé pour n'importe quel type
1	1 bit
2	2 bit.
3	4 bit
4	Octet
5	Mot
6	2 mots
7	Reserved (réservé)

5.3.18 Codage du champ Revision_Number

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 5: Revision_Number
Les valeurs 1 à 63 (en décimal) sont valides.

Bits 6 à 7: Selection
La Sélection doit contenir la valeur Revision_Number conforme au Tableau 7.

5.3.19 Codage du champ Publisher_Address

Ce champ doit être codé comme un type de données Unsigned8. La plage de valeurs doit être de 0 à 125. Ce paramètre doit contenir l'adresse de l'esclave DP servant d'éditeur.

5.3.20 Codage du champ Publisher_Status

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 7: Link_Status
FALSE (0): erreur ou inactif au cours de la dernière période de surveillance

TRUE (1) signifie "aucune erreur et actif"

Bit 6: Link_Error
FALSE (0): signifie aucune erreur

TRUE (1): signifie erreur de longueur

Bits 0 à 5: réservés

5.3.21 Codage du champ RedSpecifier

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 1: Status_Specifier
Décimal (0): signifie pas de différenciation plus poussée

Décimal (1, 2 et 3): reserved (réservé)

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Bits 3 à 7: Seq Number
Contient le numéro de séquence du dernier PrmCmd traité

5.3.22 Codage du champ Function

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: réservé

Bit 1: Primary
FALSE (0) signifie qu'aucune demande Primary n'a été exécutée en dernier

TRUE (1) signifie qu'une demande Primary a été exécutée en dernier

Bit 2: Start MS1
FALSE (0) signifie qu'aucune demande Start MS1 n'a été exécutée en dernier

TRUE (1) signifie qu'une demande Start MS1 a été exécutée en dernier

Bit 3: Stop MS1
FALSE (0) signifie qu'aucune demande Stop MS1 n'a été exécutée en dernier

TRUE (1) signifie qu'une demande Stop MS1 a été exécutée en dernier

Bit 4: Check_Properties
FALSE (0) signifie qu'aucune demande Check_Properties n'a été exécutée en dernier

TRUE (1) signifie qu'une demande Check_Properties a été exécutée en dernier

Bit 5: réservé

Bit 6: MasterStateClear
FALSE (0) signifie qu'aucune demande MasterStateClear n'a été exécutée en dernier

TRUE (1) signifie qu'une demande MasterStateClear a été exécutée en dernier

Bit 7: réservé

5.3.23 Codage du champ Red_Status1

Ce champ représente le statut du composant qui a envoyé le statut. Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: Backup
FALSE (0) signifie que le composant n'est pas dans l'état Backup (secours)

TRUE (1) signifie que le composant est dans l'état Backup

Bit 1: Primary
FALSE (0) signifie que le composant n'est pas dans l'état Primary (primaire)

TRUE (1) signifie que le composant est dans l'état Primary

Bit 2: HW-Defect
FALSE (0) signifie qu'il n'a pas de Hardware Defect (défaut de matériel)

TRUE (1) signifie que le composant a un Hardware Defect

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Bit 3: DataExchange
FALSE (0) signifie que le composant n'est pas dans l'état DataExchange (échange de données)

TRUE (1) signifie que le composant est dans l'état DataExchange

Bit 4: Fail Safe
FALSE (0) signifie que le composant n'est pas dans l'état Fail Safe (à sécurité intégrée)

TRUE (1) signifie que le composant est dans l'état Fail Safe

Bit 5: DatarateSet
FALSE (0) signifie qu'il n'a pas de Datarate (débit de données) mis

TRUE (1) signifie que le composant a un Datarate (débit de données) mis

Bit 6: TohStarted
FALSE (0) signifie qu'il n'a pas de Toh lancé

TRUE (1) signifie que le composant a un Toh lancé

Bit 7: réservé

5.3.24 Codage du champ Red_Status2

Ce champ représente le statut d'un composant partenaire du composant qui a envoyé le statut. Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: Backup
FALSE (0) signifie que le composant n'est pas dans l'état Backup (secours)

TRUE (1) signifie que le composant est dans l'état Backup

Bit 1: Primary
FALSE (0) signifie que le composant n'est pas dans l'état Primary (primaire)

TRUE (1) signifie que le composant est dans l'état Primary

Bit 2: HW-Defect
FALSE (0) signifie qu'il n'a pas de Hardware Defect (défaut de matériel)

TRUE (1) signifie que le composant a un Hardware Defect

Bit 3: DataExchange
FALSE (0) signifie que le composant n'est pas dans l'état DataExchange (échange de données)

TRUE (1) signifie que le composant est dans l'état DataExchange

Bit 4: Fail Safe
FALSE (0) signifie que le composant n'est pas dans l'état Fail Safe (à sécurité intégrée)

TRUE (1) signifie que le composant est dans l'état Fail Safe

Bit 5: DatarateSet
FALSE (0) signifie qu'il n'a pas de Datarate (débit de données) mis

TRUE (1) signifie que le composant a un Datarate (débit de données) mis

Bit 6: TohStarted
FALSE (0) signifie qu'il n'a pas de Toh lancé

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TRUE (1) signifie que le composant a un Toh lancé

Bit 7: réservé

5.3.25 Codage du champ Red_Status3

Ce champ doit être codé comme un type de données Unsigned8. Les valeurs sont Spécifiques à l'utilisateur.

5.4 Section de codage relative à la PDU de paramétrisation

5.4.1 Codage du champ Station_status

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: réservé

Bit 1: réservé

Bit 2: réservé

Bit 3: WD_On (Watchdog on, chien de garde activé)
FALSE (0)

TRUE (1)

Bit 4: Freeze_Req
FALSE (0): le mode Freeze n'est pas demandé.

TRUE (1): le mode Freeze est demandé.

Bit 5: Sync_Req
FALSE (0): le mode Sync n'est pas demandé.

TRUE (1): mode Sync demandé.

Bit 6: Unlock_Req
Doit être utilisé comme décrit dans le Tableau 15.

Bit 7: Lock_Req
Doit être utilisé comme décrit dans le Tableau 15.

Tableau 15 – Spécification des bits Lock_Req et Unlock_Req

Bit 7	Bit 6	Signification
0	0	Le paramètre min T_{SDR} peut être modifié. Tous les autres paramètres restent inchangés.
0	1	L'esclave DP est déverrouillé pour les autres maîtres.
1	0	L'esclave DP est verrouillé pour les autres maîtres, tous les paramètres sont acceptés (exception: min T_{SDR} = 0)
1	1	L'esclave DP est déverrouillé pour les autres maîtres.

5.4.2 Codage du champ WD_Fact_1

Ce champ doit être codé comme un type de données Unsigned8 avec la plage de valeurs suivante:

Décimal 1 à 255

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5.4.3 Codage du champ WD_Fact_2

Ce champ doit être codé comme un type de données Unsigned8 avec la plage de valeurs suivante:

Décimal 1 à 255

Le temps du chien de garde (T_{WD}) doit être calculé en utilisant la formule (1):

$$T_{WD} = WD\_Fact\_1 \times WD\_Fact\_2 \times WD\_Base \quad (1)$$

où

T_{WD}	est le temps du chien de garde
WD_Fact_1	est le premier facteur à multiplier par la base de temps
WD_Fact_2	est le second facteur à multiplier par la base de temps
WD_Base	est la base de temps (1 ms ou 10 ms) dérivée de DPV1_Status_1.WD_Base_1ms. S'il n'existe pas de DPV1_Status_1.WD_Base_1ms, 10 ms sont utilisées comme base de temps.

5.4.4 Codage du champ min_T_{SDR}

Ce champ doit être codé comme un type de données Unsigned8 avec la plage de valeurs suivante:

Décimal(0 à max T_{SDR} (voir Partie 4)) si opération DP

Décimal(0): signifie que la valeur courante reste inchangée

5.4.5 Codage du champ Group_Ident

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: Group_1

Bit 1: Group_2

Bit 2: Group_3

Bit 3: Group_4

Bit 4: Group_5

Bit 5: Group_6

Bit 6: Group_7

Bit 7: Group_8

Chacun des bits ci-dessus doit être mis à un si l'appareil appartient au numéro de groupe indiqué. Autrement, il doit être mis à zéro.

NOTE Un appareil peut n'appartenir à aucun groupe (Group_Ident=decimal(0)) ou appartenir à tous les groupes (Group_Ident=decimal(255)).

5.4.6 Codage du champ User_Prm_Data_Element

L'un des types de données suivants doit être utilisé pour chaque champ User_Prm_Data_Element:

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Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.4.7 Codage du champ DPV1_Status_1

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: réservé

Bit 1: réservé

Bit 2: WD_Base_1ms
Valeur (0): la base de temps du chien de garde est égale à 10 millisecondes.

Valeur (1): la base de temps du chien de garde est égale à 1 milliseconde.

Bits 3 à 4: réservés

Bit 5: Publisher_Enable
FALSE (0): Éditeur désactivé

TRUE (1): Éditeur activé

Bit 6: Fail_Safe
FALSE (0): Fail_Safe désactivé

TRUE (1): Fail_Safe activé

Bit 7: DPV1_Enable
FALSE (0): DPV1 désactivé

TRUE (1): DPV1 activé

5.4.8 Codage du champ DPV1_Status_2

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: Check_Cfg_Mode
FALSE (0): vérification normale (restreinte)

TRUE (1): vérification Spécifique à l'utilisateur (plus flexible)

Bit 1: réservé

Bit 2: Enable_Update_Alarm
FALSE (0): Update_Alarm désactivé

TRUE (1): Update_Alarm activé

Bit 3: Enable_Status_Alarm
FALSE (0): Status_Alarm désactivé

TRUE (1): Status_Alarm activé

Bit 4: Enable_Manufacturer_Specific_Alarm
FALSE (0): Manufacturer_Specific_Alarm désactivé

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TRUE (1): Manufacturer_Specific_Alarm activé

Bit 5: Enable_Diagnostic_Alarm
FALSE (0): Diagnostic_Alarm désactivé

TRUE (1): Diagnostic_Alarm activé

Bit 6: Enable_Process_Alarm
FALSE (0): Process_Alarm désactivé

TRUE (1): Process_Alarm activé

Bit 7: Enable_Pull_Plug_Alarm
FALSE (0): Pull_Plug_Alarm désactivé

TRUE (1): Pull_Plug_Alarm activé

5.4.9 Codage du champ DPV1_Status_3

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 2: Alarm_Mode
Décimal(0): 1 alarme de chaque type

Décimal(1): 2 alarmes au total

Décimal(2): 4 alarmes au total

Décimal(3): 8 alarmes au total

Décimal(4): 12 alarmes au total

Décimal(5): 16 alarmes au total

Décimal(6): 24 alarmes au total

Décimal(7): 32 alarmes au total

Bit 3: Prm_Structure
FALSE (0): Prm_Structure désactivé

TRUE (1): Prm_Structure activé

Bit 4: IsoM_Req
FALSE (0): IsoM_Req désactivé

TRUE (1): IsoM_Req activé

Bits 5 à 6: réservés

Bit 7: PrmCmd
FALSE (0): PrmCmd désactivé

TRUE (1): PrmCmd activé

5.4.10 Codage du champ Structure_Length

Ce champ doit être codé comme un type de données Unsigned8 avec la plage de valeurs suivante:

Décimal 5 à 244, 255

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Le champ Structure_Length contient le nombre d'octets, y compris lui-même. Une valeur de 255 signifie que tous les éléments du Prm_User_Data suivant cet élément appartiennent à cette structure.

5.4.11 Codage du champ Structure_Type

Ce champ doit être codé comme un type de données Unsigned8 avec la plage de valeurs suivante:

Décimal 0 à 1: réservés

Décimal 2: PrmCmd

Décimal 3: DXB Linktable

Décimal 4: IsoM Parameter

Décimal 5: F-Parameter (paramètre F)

Décimal (6): reserved (réservé)

Décimal 7: DXB Subscribertable (table d'abonnés DXB)

Décimal 8: Time AR Parameter

Décimal 9 à 31: réservés

Décimal 32 à 128: Manufacturer Specific (Spécifique au constructeur)

Décimal 129: User Prm Data

Décimal 130 à 255: réservés

5.4.12 Codage du champ Version

Ce champ doit être codé comme un type de données Unsigned8 avec la plage de valeurs suivante:

Décimal 0: reserved (réservé)

Décimal 1: Version 1

Décimal 2 à 255: réservés

5.4.13 Codage du champ Publisher_Addr

Ce champ doit être codé comme un type de données Unsigned8 avec la plage de valeurs suivante:

Décimal 0 à 125, 128

Décimal 126, 127, 129 à 255: réservés

Dans le cas de DXB-Subscribertable, la valeur 128 indique une entrée pour le maître DP (Classe 1).

5.4.14 Codage du champ Publisher_Length

Ce champ doit être codé comme un type de données Unsigned8 avec la plage de valeurs suivante:

Décimal 1 à 244

Décimal 0, 245 à 255: réservés

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Dans le cas d'une entrée Master Data dans DXB-Subscribertable, la valeur de ce champ n'est pas pertinente et doit être mise à 0.

5.4.15 Codage du champ Sample_Offset

Ce champ doit être codé comme un type de données Unsigned8 avec la plage de valeurs suivante:

Décimal 0 à 243

Décimal 244 à 255: réservés

5.4.16 Codage du champ Sample_Length

Ce champ doit être codé comme un type de données Unsigned8 avec la plage de valeurs suivante:

Décimal 1 à 244

Décimal 0, 245 à 255: réservés

5.4.17 Codage du champ Dest_Slot_Number

Ce champ doit être codé comme un type de données Unsigned8 avec la plage de valeurs suivante:

Décimal 1 à 244

Décimal 0, 245 à 255: réservés

5.4.18 Codage du champ Offset_Data_Area

Ce champ doit être codé comme un type de données Unsigned8 avec la plage de valeurs suivante:

Décimal 0 à 244

Décimal 245 à 255: réservés

5.4.19 Codage du champ T_{BASE_DP}

Ce champ doit être codé comme un type de données Unsigned32 avec les valeurs autorisées en décimal 375, 750, 1 500 (valeur par défaut), 3 000, 6 000, 12 000. Toutes les autres valeurs sont réservées.

5.4.20 Codage du champ T_{DP}

Ce champ doit être codé comme un type de données Unsigned16 avec la plage de valeurs de 154 à 2^{16}-1.

5.4.21 Codage du champ T_{MAPC}

Ce champ doit être codé comme un type de données Unsigned8.

5.4.22 Codage du champ T_{BASE_IO}

Ce champ doit être codé comme un type de données Unsigned32 avec les valeurs autorisées en décimal 375, 750, 1 500 (valeur par défaut), 3 000, 6 000, 12 000. Toutes les autres valeurs sont réservées.

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5.4.23 Codage du champ T_I

Ce champ doit être codé comme un type de données Unsigned16.

5.4.24 Codage du champ T_O

Ce champ doit être codé comme un type de données Unsigned16.

5.4.25 Codage du champ T_{DX}

Ce champ doit être codé comme un type de données Unsigned32.

5.4.26 Codage du champ T_{PLL_W}

Ce champ doit être codé comme un type de données Unsigned16 avec la plage de valeurs de 1 à 2^{16}-1.

5.4.27 Codage du champ T_{PLL_D}

Ce champ doit être codé comme un type de données Unsigned16 avec la plage de valeurs de 0 à 2^{16} -1.

5.4.28 Codage du champ Specifier

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 1: Specifier (spécificateur)
Décimal (0): signifie pas de différenciation plus poussée.

Bits 3 à 7: Seq Number
Contient le numéro de séquence du PrmCmd.

5.4.29 Codage du champ Function

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: réservé

Bit 1: Primary
FALSE (0): signifie qu'aucune demande Primary n'est demandée

TRUE (1): signifie qu'une demande Primary est demandée

Bit 2: Start MS1
FALSE (0): signifie qu'aucune demande Start MS1 n'est demandée

TRUE (1): signifie qu'une demande Start MS1 est demandée

Bit 3: Stop MS1
FALSE (0): signifie qu'aucune demande Stop MS1 n'est demandée

TRUE (1): signifie qu'une demande Stop MS1 est demandée

Bit 4: Check_Properties
FALSE (0): signifie qu'aucune demande Check_Properties n'est demandée

TRUE (1): signifie qu'une demande Check_Properties est demandée

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Bit 5: réservé

Bit 6: MasterStateClear
FALSE (0): signifie que le MasterState est Operate

TRUE (1): signifie que MasterState est Clear

Bit 7: réservé

5.4.30 Codage du champ Properties

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: Primary
FALSE (0): signifie qu'aucune demande Primary n'est utilisée

TRUE (1): signifie qu'une demande Primary est utilisée

Bit 1: Start Stop MS1
FALSE (0): signifie qu'aucune demande Start Stop MS1 n'est utilisée

TRUE (1): signifie qu'une demande Start Stop MS1 est utilisée

Bit 2: AddressChange
FALSE (0): signifie qu'aucun Address Change n'est requis avec le rôle Primary/Backup

TRUE (1): signifie qu'Address Change (changement d'adresse) est requis avec le rôle Primary/Backup

Bit 3: AddressOffset
FALSE (0): signifie qu'Address Offset est 0

TRUE (1): signifie qu'Address Offset (décalage d'adresse) est 64

Bits 4 à 7: réservés

5.4.31 Codage du champ Output Hold Time

Ce champ doit être codé comme un type de données Unsigned16 avec la plage de valeurs de 0 à 2^{16}-1.

5.4.32 Codage du champ Clock Sync Interval

Ce champ doit être codé comme un type de données Unsigned16 avec la plage de valeurs de 0 à 2^{16}-1.

5.4.33 Codage du champ CS Delay Time

Ce champ doit être codé comme un type de données Network Time Difference.

5.5 Section de codage relative aux PDU de configuration

5.5.1 Codage du champ Cfg_Identifier

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 3: Data_Length
Décimal(0): signifie 1 octet ou 1 mot conformément à Length_Format

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Décimal(1): signifie 2 octets ou 2 mots conformément à Length_Format

Décimal(2): signifie 3 octets ou 3 mots conformément à Length_Format

Décimal(3): signifie 4 octets ou 4 mots conformément à Length_Format

Décimal(4): signifie 5 octets ou 5 mots conformément à Length_Format

...

Décimal(15): signifie 16 octets ou 16 mots conformément à Length_Format

Bits 4 à 5: Input_Output_Selection
Décimal(0): ne doit pas être utilisé ici, signifie un format d'identificateur spécial

Décimal (1): signifie entrée

Décimal (2): signifie sortie

Décimal (3): signifie entrée et sortie

Bit 6: Length_Format
Valeur(0): signifie structure d'octet utilisée

Valeur(1): signifie structure de mot utilisée (octet de poids fort transféré le premier, gros boutiste)

Bit 7: Consistency
Valeur(0): signifie cohérence d'octet ou de mot

Valeur(1): signifie cohérence sur toute la longueur

5.5.2 Codage du champ Special_Cfg_Identifier

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 3: Length_of_Manufacturer_Specific_Data
Les informations relatives à la longueur en octets des données spécifiques au constructeur doivent être dépendantes de l'utilisation dans Chk_Cfg-REQ-PDU ou Get_Cfg-RES-PDU comme montré dans le Tableau 16 et le Tableau 17. Les champs de type de données doivent toujours être comptés, s'ils sont présents.

Bits 4 et 5: doivent être mis à zéro (décimaux)

Bits 6 à 7: Input_Output_Selection
Décimal(0): signifie position vide, absence de données d'entrée ou de sortie pour ce module

Décimal(1): signifie qu'un octet de longueur pour les données d'entrée suit

Décimal(2): signifie qu'un octet de longueur pour les données de sortie suit

Décimal(3): signifie qu'un octet de longueur pour les données de sortie suivi d'un octet de longueur pour les données d'entrée suit

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Tableau 16 – Plage de Length_of_Manufacturer_Specific_Data si elle est utilisée dans Chk_Cfg-REQ-PDU

Valeur (décimale)	Signification
0	Aucune donnée spécifique au constructeur ne suit; aucune donnée dans Real_Cfg_Data.
1 à 14	Des données de longueur spécifiée spécifiques au constructeur suivent; elles doivent être identiques aux données dans Real_Cfg_Data.
15	Aucune donnée spécifique au constructeur ne suit; la vérification peut être omise.

Tableau 17 – Plage de Length_of_Manufacturer_Specific_Data si elle est utilisée dans Get_Cfg-RES-PDU

Valeur (décimale)	Signification
0	Aucune donnée spécifique au constructeur ne suit.
1 à 14	Des données de longueur spécifiée spécifiques au constructeur suivent.
15	Non autorisées.

5.5.3 Codage des champs Length_Octet

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 5: Data_Length
Décimal(0): signifie 1 octet ou 1 mot conformément à Length_Format

Décimal(1): signifie 2 octets ou 2 mots conformément à Length_Format

...

Décimal(63): signifie 64 octets ou 64 mots conformément à Length_Format

Bit 6: Length_Format
Valeur(0): signifie structure d'octet utilisée

Valeur(1): signifie structure de mot utilisée (octet de poids fort transféré le premier, gros boutiste)

Bit 7: Consistency
Valeur(0): signifie cohérence d'octet ou de mot

Valeur(1): signifie cohérence sur toute la longueur indiquée dans Data_Length

5.5.4 Codage du champ Manufacturer_Specific_Data

L'un des types de données suivants doit être utilisé pour chaque champ Manufacturer_Specific_Data:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.5.5 Codage du champ Extended_Length_Octet

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

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Bits 0 à 5: Data_Length
Décimal(0): signifie 1 octet

Décimal(1): signifie 2 octets

Décimal(2): signifie 3 octets

Décimal(3): signifie 4 octets

Décimal(4): signifie 5 octets

...

Décimal(63): signifie 64 octets

Bit 6: Format
Ce bit doit être mis à zéro, ce qui signifie qu'une structure d'octet est utilisée.

Bit 7: Consistency
Ce bit doit être mis à un, ce qui signifie la cohérence sur toute la longueur.

5.5.6 Codage du champ Data_Type

Ce champ doit être codé comme un type de données Unsigned8 avec des valeurs conformes au Tableau 18.

Tableau 18 – Types de données

Nom de Data type	Code / DataLength	Remarque
Voir la CEI 61158-5-10, Article 5		

Le codage Spécifique à l'utilisateur (valeur>=128) ne doit être utilisé dans aucune combinaison avec le codage spécifique de type (valeur<=70) dans un Chk_Cfg-REQ-PDU ou Get_Cfg-REQ-PDU.

Les séquences de types de données doivent être codées comme une liste de simples types de données. La somme des longueurs des types de données doit correspondre à la longueur des données d'entrée ou de sortie.

Les types de données avec longueur variable (visible string, octet string, time of day, time difference) doivent être manipulés comme un élément simple, et non en une séquence.

5.6 Section de codage relative aux PDU de commande globale

5.6.1 Codage du champ Control_Command

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: réservé

Bit 1: Clear_Data
Valeur(0): pas de commande

Valeur(1): vider la sortie (mettre les données de sortie dans un état de sécurité)

Bit 2: UnFreeze
Valeur(0): pas de commande

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Valeur(1): annule la commande Freeze

Bit 3: Freeze
Valeur(0): pas de commande

Valeur(1): valeurs d'entrée freez

Le Tableau 19 illustre la signification et la priorité des bits 2 à 3.

Tableau 19 – Spécification des bits pour Un-/Freeze

Bit 2	Bit 3	Signification
0	0	aucune fonction
0	1	la fonction est activée
1	0	la fonction est désactivée
1	1	la fonction est désactivée

Bit 4: Unsync
Valeur(0): pas de commande

Valeur(1): annule la commande Sync

Bit 5: Sync
Valeur(0): pas de commande

Valeur(1): synchroniser les valeurs de sortie

Le Tableau 20 illustre la signification et la priorité des bits 4 à 5.

Tableau 20 – Spécification des bits pour Un-/Sync

Bit 4	Bit 5	Signification
0	0	aucune fonction
0	1	la fonction est activée
1	0	la fonction est désactivée
1	1	la fonction est désactivée

Bit 6: réservé

Bit 7: réservé

5.6.2 Codage du champ Group_Select

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: Group_1

Bit 1: Group_2

Bit 2: Group_3

Bit 3: Group_4

Bit 4: Group_5

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Bit 5: Group_6

Bit 6: Group_7

Bit 7: Group_8

Chacun des bits ci-dessus doit être mis à un si la commande de commandes appartient au numéro de groupe indiqué. Autrement, il doit être mis à zéro. Zéro signifie que tous les esclaves attribués doivent exécuter la Control Command (commande de commandes).

NOTE Une commande de commandes peut n'appartenir à aucun groupe (Group_Ident=decimal(0)) ou appartenir à tous les groupes (Group_Ident=decimal(255)).

5.7 Section de codage relative aux clock-value-PDU

5.7.1 Codage du champ Clock_value_time_event

Le codage de ce champ doit être comme le type de données Network Time avec la longueur fixe de 8.

5.7.2 Clock_value_previous_TE

Le codage de ce champ doit être comme le type de données Network Time avec la longueur fixe de 8.

5.7.3 Codage du champ Clock_value_status1

Le codage de ce champ doit être conforme à 3.4, avec C et CV mis en correspondance avec le paramètre local time diff dans le service de temps établi. Les bits pris séparément doivent avoir la signification suivante:

Bit 0: réservé

Bit 1: réservé

Bits 2 à 6: CV (Correction Value, valeur de correction)
Valeur (0): 0 min

Valeur (1): 30 min

Valeur (2): 60 min

Valeur (3): 90 min

...

Valeur (31): 930 min

Bit 7: C (Signe de CV)
Valeur (0): CV à ajouter à Time

Valeur (1): CV à retrancher de Time

5.7.4 Codage du champ Clock_value_status2

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: SYF (Synchronisation fault, défaut de synchronisation)
Valeur (0): Clock_value_time_event est synchronisé

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Valeur (1): Clock_value_time_event n'est pas synchronisé (avec d'autres horloges dans le système)

Bit 1: réservé

Bit 2: réservé

Bits 3 à 4: CR (Accuracy, exactitude)
Valeur (0): 1 ms

Valeur (1): 10 ms

Valeur (2): 100 ms

Valeur (3): 1 s

Bit 5: réservé

Bit 6: SWT (Summer/Winter-Time, Heure d'été/hiver)
Valeur (0): Winter Time (Heure d'hiver)

Valeur (1): Summer Time (Heure d'été)

Bit 7: ANH (Announcement Hour, heure d'annonce)
Valeur (0): Aucun changement programmé au cours de la prochaine heure

Valeur (1): Un changement de SWT se produit au cours de la prochaine heure.

5.8 Section de codage relative à l'identification de fonction et aux erreurs

5.8.1 Codage du champ Function_Num

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir les significations suivantes. La signification du champ complet est définie dans le Tableau 21.

Bits 0 à 4: Function_Code / Error_Code
Ces bits contiennent le Function_Code ou l'Error_Code correspondant au DLPDU_Selector. Le Function_Code doit être mis conformément au Tableau 21.

Bits 5 à 6: PDU_Identifier
Ces deux bits doivent être mis à 2 (décimal) pour indiquer une DP-PDU.

Bit 7: DLPDU_Selector
Valeur(0): signifie une DLPDU de demande ou une DLPDU de réponse positive

Valeur(1): signifie erreur ou DLPDU de réponse négative

Le champ Function_Num est transféré dans la DLPDU de demande et de réponse. Si le service est traité correctement, le bit 7 de Function_Num dans l'APDU de réponse doit être mis à zéro. En cas d'erreur, une DLPDU d'erreur est transférée. Dans cette APDU, Function_Num contient un code d'erreur et le bit 7 doit être mis à un.

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Tableau 21 – Codage de Function_Code/ Function_Num

DLPDU_ Selector (décimal)	PDU_ Identifier (décimal)	Function_Code (décimal)	Signification	Champ complet: Function_Num (hexadécimal)
0	2	0	reserved (réservées)	0x40
0	2	1	Get_Master_Diag	0x41
0	2	2	Start_Seq	0x42
0	2	3	Download	0x43
0	2	4	Upload	0x44
0	2	5	End_Seq	0x45
0	2	6	Act_Para_Brct	0x46
0	2	7	Act_Param	0x47
0	2	8	Idle	0x48
0	2	9 à 16	reserved (réservées)	0x49 à 0x50
0	2	17	Data_Transport	0x51
0	2	18 à 21	reserved (réservées)	0x52 à 0x55
0	2	22	RM	0x56
0	2	23	Initiate	0x57
0	2	24	Abort	0x58
0	2	25	reserved (réservées)	0x59
0	2	26	reserved (réservées)	0x5A
0	2	27	reserved (réservées)	0x5B
0	2	28	Alarm_Ack	0x5C
0	2	29	reserved (réservées)	0x5D
0	2	30	Read	0x5E
0	2	31	Write	0x5F

Le Error_Code doit être mis conformément au Tableau 22.

Tableau 22 – Codage d'Error_Code / Function_Num

DLPDU_ Selector (décimal)	PDU_ Identifier (décimal)	Error_Code (décimal)	Signification	Champ complet: Function_Num (hexadécimal)
1	2	0	reserved (réservées)	0xC0
1	2	1	FE	0xC1
1	2	2	NI	0xC2
1	2	3	AD	0xC3
1	2	4	EA	0xC4
1	2	5	LE	0xC5
1	2	6	RE	0xC6
1	2	7	IP	0xC7
1	2	8	SC	0xC8
1	2	9	SE	0xC9
1	2	10	NE	0xCA

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DLPDU_ Selector (décimal)	PDU_ Identifier (décimal)	Error_Code (décimal)	Signification	Champ complet: Function_Num (hexadécimal)
1	2	11	DI	0xCB
1	2	12	NC	0xCC
1	2	13	TO	0xCD
1	2	14	CA	0xCE
1	2	15 à 16	reserved (réservées)	0xCF à 0xD0
1	2	17	Erreur Data_Transport	0xD1
1	2	18 à 22	reserved (réservées)	0xD2 à 0xD6
1	2	23	Erreur d'Initiate	0xD7
1	2	24	reserved (réservées)	0xD8
1	2	25	reserved (réservées)	0xD9
1	2	26	reserved (réservées)	0xDA
1	2	27	reserved (réservées)	0xDB
1	2	28	Erreur d'Alarm_Ack	0xDC
1	2	29	reserved (réservées)	0xDD
1	2	30	Erreur de Read	0xDE
1	2	31	Erreur de Write	0xDF

5.8.2 Codage du champ Error_Decode

Le codage de ce champ doit être comme celui du type de données Unsigned8 et les valeurs doivent être mises conformément au Tableau 23.

Tableau 23 – Valeurs d'Error_Decode

Valeur (décimale)	Signification
0 à 127	reserved (réservées)
128 =	DPV1
129 à 253 =	reserved (réservées)
254 à 255 =	PROFILE_SPECIFIC

Le champ Error_Decode définit la signification des Octets Error_Code_x suivants. Les valeurs d'Error_Decode PROFILE_SPECIFIC indiquent que les paramètres Error_Code_x doivent être mis tels que définis dans les protocoles correspondants:

PROFILE_SPECIFIC

Error_Code_1= issu de la spécification de profil

Error_Code_2= issu de la spécification de profil

5.8.3 Codage du champ Error_Code_1

Si le champ Error_Decode = DPV1

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

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Bits 0 à 3: Error_Code
Les valeurs doivent être mises conformément à la colonne Error_Code du Tableau 24.

Bits 4 à 7: Error_Class
Les valeurs doivent être mises conformément à la colonne Error_Class du Tableau 24.

Tableau 24 – Codage d'Error_Code_1 à DPV1

Error_Class (décimal)	Signification	Error_Code (décimal)
0 à 9	non spécifiée	non spécifié [a]
10	application	0 = erreur de lecture 1 = erreur d'écriture 2 = échec du module 3 à 6 = non spécifié 7 = indisponible 8 = conflit de version 9 = fonction non prise en charge 10 à 15 = Spécifique à l'utilisateur
11	accès	0 = index non valide 1 = erreur de longueur d'écriture 2 = position non valide 3 = conflit de type 4 = zone non valide 5 = conflit d'état 6 = accès refusé 7 = plage non valide 8 = paramètre non valide 9 = type non valide 10= secours 11 à 15 = Spécifique à l'utilisateur
12	ressource	0 = read constrain conflict (conflit de contrainte en lecture) 1 = write constrain conflict (conflit de contrainte en écriture) 2 = resource busy (ressource occupée) 3 = resource unavailable (ressource non disponible) 4 à 7 = not specified (non spécifiée) 8 à 15 = Spécifique à l'utilisateur
13 à 15	Spécifique à l'utilisateur	

[a] Les valeurs non spécifiées sont utilisées pour desservir d'anciens codes et sont destinées à être transmises inchangées à l'application.

Si le champ Error_Decode = PROFILE_SPECIFIC

Error_Code_1= issu de la spécification de profil, a besoin d'être spécifié dans la définition de profil.

5.8.4 Codage du champ Error_Code_2

Si le champ Error_Decode = DPV1

Le codage de ce champ doit être comme celui du type de données Unsigned8. Les valeurs sont Spécifiques à l'utilisateur.

Si le champ Error_Decode = PROFILE_SPECIFIC

Error_Code_2= issu de la spécification de profil, a besoin d'être spécifié dans la définition de profil.

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5.9 Section de codage relative à la PDU de diagnostic de maître

5.9.1 Codage du champ MDiag_Identifier

Le codage de ce champ doit être comme celui du type de données Unsigned8 et les valeurs doivent être mises conformément au Tableau 25:

Tableau 25 – Valeurs de MDiag_Identifier

Valeur (décimale)	Signification
0 à 125	Diag_Data de l'esclave DP
126	System_Diagnostis
127	Master_Status
128	Data_Transfer_List
129 à 255	reserved (réservées)

5.9.2 Codage du champ System_Diagnosis

Le codage de ce champ doit être comme le type de données Octet String avec la longueur fixe de 16. Les 16 octets de System_Diagnosis doivent être codés comme suit:

Octet 1
Le bit 0 doit être mis à un si le numéro de poste 0 a rapporté un diagnostic; autrement, il doit être mis à zéro.

Le bit 1 doit être mis à un si le numéro de poste 1 a rapporté un diagnostic; autrement, il doit être mis à zéro.

Le bit 2 doit être mis à un si le numéro de poste 2 a rapporté un diagnostic; autrement, il doit être mis à zéro.

Le bit 3 doit être mis à un si le numéro de poste 3 a rapporté un diagnostic; autrement, il doit être mis à zéro.

Le bit 4 doit être mis à un si le numéro de poste 4 a rapporté un diagnostic; autrement, il doit être mis à zéro.

Le bit 5 doit être mis à un si le numéro de poste 5 a rapporté un diagnostic; autrement, il doit être mis à zéro.

Le bit 6 doit être mis à un si le numéro de poste 6 a rapporté un diagnostic; autrement, il doit être mis à zéro.

Le bit 7 doit être mis à un si le numéro de poste 7 a rapporté un diagnostic; autrement, il doit être mis à zéro.

Octet 2
Le bit 0 doit être mis à un si le numéro de poste 8 a rapporté un diagnostic; autrement, il doit être mis à zéro.

Le bit 1 doit être mis à un si le numéro de poste 9 a rapporté un diagnostic; autrement, il doit être mis à zéro.

etc.

Octet 16
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Le bit 5 doit être mis à un si le numéro de poste 125 a rapporté un diagnostic; autrement, il doit être mis à zéro.

Les Bits 6 et 7 doivent être mis à zéro (non utilisés).

5.9.3 Codage du champ USIF_State

Ce champ doit être codé comme un type de données Unsigned8. Les valeurs suivantes sont définies:

Valeur(0x40): doit être mise si le mode de fonctionnement du maître DP (Classe 1) est STOP

Valeur(0x80): doit être mise si le mode de fonctionnement du maître DP (Classe 1) est CLEAR

Valeur(0xC0): doit être mise si le mode de fonctionnement du maître DP (Classe 1) est OPERATE

5.9.4 Codage du champ Hardware_Release_DP

Ce champ doit être codé comme un type de données Unsigned8.

5.9.5 Codage du champ Firmware Release_DP

Ce champ doit être codé comme un type de données Unsigned8.

5.9.6 Codage du champ Hardware_Release_User

Ce champ doit être codé comme un type de données Unsigned8.

5.9.7 Codage du champ Firmware Release_User

Ce champ doit être codé comme un type de données Unsigned8.

5.9.8 Codage du champ Data_Transfer_List

Le codage de ce champ doit être comme le type de données Octet String avec la longueur fixe de 16. Les 16 octets de Data_Transfer_List doivent être codés comme suit:

Octet 1
Le bit 0 doit être mis à un si l'échange de données s'est accompli avec le numéro de poste 0; autrement, il doit être mis à zéro.

Le bit 1 doit être mis à un si l'échange de données s'est accompli avec le numéro de poste 1; autrement, il doit être mis à zéro.

Le bit 2 doit être mis à un si l'échange de données s'est accompli avec le numéro de poste 2; autrement, il doit être mis à zéro.

Le bit 3 doit être mis à un si l'échange de données s'est accompli avec le numéro de poste 3; autrement, il doit être mis à zéro.

Le bit 4 doit être mis à un si l'échange de données s'est accompli avec le numéro de poste 4; autrement, il doit être mis à zéro.

Le bit 5 doit être mis à un si l'échange de données s'est accompli avec le numéro de poste 5; autrement, il doit être mis à zéro.

Le bit 6 doit être mis à un si l'échange de données s'est accompli avec le numéro de poste 6; autrement, il doit être mis à zéro.

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Le bit 7 doit être mis à un si l'échange de données s'est accompli avec le numéro de poste 7; autrement, il doit être mis à zéro.

Octet 2
Le bit 0 doit être mis à un si l'échange de données s'est accompli avec le numéro de poste 8; autrement, il doit être mis à zéro.

Le bit 1 doit être mis à un si l'échange de données s'est accompli avec le numéro de poste 9; autrement, il doit être mis à zéro.

etc.

Octet 16
.

.

Le bit 5 doit être mis à un si l'échange de données s'est accompli avec le numéro de poste 125; autrement, il doit être mis à zéro.

Les Bits 6 et 7 doivent être mis à zéro (non utilisés).

5.10 Section de codage relative aux PDU upload/download/act para

5.10.1 Codage du champ Area_Code_UpDownload

Le codage de ce champ doit être comme celui du type de données Unsigned8 et les valeurs doivent être mises conformément au Tableau 26.

Tableau 26 – Valeurs d'Area_Code_UpDownload

Valeur (décimale)	Signification
0 à 125	Jeu de paramètres d'esclave DP (voir le champ DP_Slave_Parameter_Set)
126	reserved (réservées)
127	Jeu de paramètres de Bus (voir le champ Bus_Parameter_Set)
128	reserved (réservées)
129	compteurs statistiques (voir le champ Statistic_Counter)
130 à 135	reserved (réservées)
136 à 139	Jeu de paramètres de maître (voir le champ Master_Parameter_Set)
140 à 254	reserved (réservées)
255	Aucune protection d'accès locale dans Start_Seq-REQ-PDU ou Start_Seq-RES-PDU

5.10.2 Codage du champ Timeout

Le codage de ce champ doit être comme celui du type de données Unsigned16 et la base de temps pour le temporisateur doit être de 1 ms.

5.10.3 Codage du champ Max_Len_Data_Unit

Le codage de ce champ doit être comme celui du type de données Unsigned8 et la valeur pour Max_Len_Data_Unit doit être située dans la plage de 1 à 240.

NOTE La valeur minimale pour Max_Len_Data_Unit est 68 en cas d'Initiate-RES_PDU.

5.10.4 Codage du champ Add_Offset

Le codage de ce champ doit être comme celui du type de données Unsigned16.

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5.10.5 Codage du champ Data

L'un des types de données suivants doit être utilisé pour chaque champ Data:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.10.6 Codage du champ Data_Len

Le codage de ce champ doit être comme celui du type de données Unsigned8 et la valeur pour Data_Len doit être située dans la plage de 1 à 240.

5.10.7 Codage du champ Area_CodeActBrct

Le codage de ce champ doit être comme celui du type de données Unsigned8 et les valeurs doivent être mises conformément au Tableau 27.

Tableau 27 – Valeurs d'Area_CodeActBrct

Valeur (décimale)	Signification
0 à 126	reserved (réservées)
127	Bus_parameter set
128 à 129	reserved (réservées)
130 à 135	reserved (réservées)
136 à 139	Jeu de paramètres de maître
140 à 254	reserved (réservées)
255	reserved (réservées)

5.10.8 Codage du champ Area_CodeAct

Le codage de ce champ doit être comme celui du type de données Unsigned8 et les valeurs doivent être mises conformément au Tableau 28.

Tableau 28 – Valeurs d'Area_CodeAct

Valeur (décimale)	Signification
0 à 125	Jeu de paramètres d'esclave DP Le fanion Active dans le jeu de paramètres d'esclave DP du maître DP (Classe 1) est influencé en conséquence. L'esclave DP concerné prend part au mode d'échange cyclique de données ou est retiré de ce mode et n'est plus adressé.
126	reserved (réservées)
127	Jeu de paramètres de bus
128	mode de fonctionnement
129	reserved (réservées)
130 à 135	reserved (réservées)
136 à 139	Jeu de paramètres de maître
140 à 255	reserved (réservées)

5.10.9 Codage du champ Activate

Ce champ doit être codé comme un type de données Unsigned8 conformément au Tableau 29.

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Tableau 29 – Valeurs d'Activate

Valeur (hexadécimale)	Signification
0x80	signifie activer le jeu de paramètres d'esclave DP si le champ Area_CodeAct est 0.. 125
0x00	signifie désactiver si le champ Area_CodeAct est 0.. 125
0xFF	signifie activer le jeu de paramètre de bus si le champ Area_CodeAct est 127
0x40	signifie mettre le mode de fonctionnement à STOP si le champ Area_CodeAct est 128
0x80	signifie mettre le mode de fonctionnement à CLEAR si le champ Area_CodeAct est 128
0xC0	signifie mettre le mode de fonctionnement à OPERATE si le champ Area_CodeAct est 128

5.11 Section de codage relative au jeu de paramètres de bus

5.11.1 Codage du champ Bus_Para_Len

Ce champ doit contenir la longueur de Bus_Para, y compris le champ Bus_Para_Len lui-même. Ce champ doit être codé comme un type de données Unsigned16. La plage de valeurs doit être de 66 à 2^{16}-1.

5.11.2 Codage du champ DL_Add

Ce champ doit être codé comme un type de données Unsigned8. La plage de valeurs doit être de 0 à 125. Ce paramètre doit contenir la propre adresse du maître DP.

5.11.3 Codage du champ Data_rate

Ce champ doit être codé comme un type de données Unsigned8. Les valeurs doivent être mises comme montré dans le Tableau 30:

Tableau 30 – Valeurs de Data_rate

Valeur (décimale)	Signification
0	9,6 kbit/s
1	19,2 kbit/s
2	93,75 kbit/s
3	187,5 kbit/s
4	500 kbit/s
5	reserved (réservées)
6	1 500 kbit/s
7	3 000 kbit/s
8	6 000 kbit/s
9	12 000 kbit/s
10	31,25 kbit/s
11	45,45 kbit/s
12 à 255	reserved (réservées)

5.11.4 Codage des champs T_{SL}, min T_{SDR}, max T_{SDR}

Ces paramètres sont décrits dans la CEI 61158-3-3. Le codage de ces champs doit être comme celui du type de données Unsigned16.

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5.11.5 Codage des champs T_{QUI}, T_{SET}, G, HSA, max_retry_limit

Ces paramètres sont décrits dans la CEI 61158-3-3. Le codage de ces champs doit être comme celui du type de données Unsigned18.

5.11.6 Codage du champ T_{TR} (Target Token Rotation time - temps de rotation du jeton cible)

Ce champ est décrit dans la CEI 61158-3-3. Le codage de ce champ doit être comme celui du type de données Unsigned32.

5.11.7 Codage du champ Bp_Flag (Busparameter flag, fanion Busparameter)

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 2: réservés

Bits 3 à 4: Isochronous Mode
Décimal (0): Not Synchronized

Décimal (1): Buffered Synchronized

Décimal (2): Enhanced Synchronized

Décimal (3): reserved (réservé)

Bit 5: IsoM Sync
Ce bit doit être mis à un si le maître DP (Classe 1) doit envoyer un Global_Control-REQ-PDU avec Control Command Sync en cas de fonctionnement isochrone. Autrement, ce bit doit être mis à zéro.

Bit 6: IsoM Freeze
Ce bit doit être mis à un si le maître DP (Classe 1) doit envoyer un Global_Control-REQ-PDU avec Control Command Freeze en cas de fonctionnement isochrone. Autrement, ce bit doit être mis à zéro.

Bit 7: Error_Action_Flag
Ce bit doit être mis à un si le maître DP (Classe 1) doit changer le mode de fonctionnement en cas d'erreur. Autrement, ce bit doit être mis à zéro.

5.11.8 Codage du champ Min_Slave_Interval

Le codage de ce champ doit être comme celui du type de données Unsigned16 avec la plage de données de 1 à 2^{16}-1 et la base de temps pour le temporisateur doit être de 100 µs.

5.11.9 Codage du champ Poll_Timeout

Le codage de ce champ doit être comme celui du type de données Unsigned16 avec la plage de valeurs de 1 à 2^{16}-1 et la base de temps pour le temporisateur doit être 1 ms.

5.11.10 Codage du champ Data_Control_Time

Le codage de ce champ doit être comme celui du type de données Unsigned16 avec la plage de valeurs de 1 à 2^{16}-1 et la base de temps pour le temporisateur doit être 10 ms.

5.11.11 Codage du champ Alarm_Max

Le codage de ce champ doit être comme celui du type de données Unsigned8 avec la plage de valeurs de 7 à 32.

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5.11.12 Codage du champ Max_User_Global_Control

Le codage de ce champ doit être comme celui du type de données Unsigned8 avec la plage de valeurs de 1 à 255. La valeur Zéro est réservée.

NOTE Ce paramètre définit le nombre maximal de demandes Global_Control qui peuvent être lancées simultanément par l'Utilisateur. Le paramètre décrit l'aptitude du maître DP. Une valeur commode dans la pratique pour Max_User_Global_Control est 16. Pour chacun des 8 groupes d'esclaves, une commande SYNC et une commande FREEZE peuvent être lancées simultanément.

5.11.13 Codage du champ Master_User_Data_Len

Ce champ doit contenir la longueur de Master_User_Data, y compris le champ Master_User_Data_Len lui-même. Ce champ doit être codé comme un type de données Unsigned16. La plage de valeurs doit être de 2 à (2^{16}-1).

5.11.14 Codage du champ Master_Class2_Name

Le codage de ce champ doit être comme le type de données Visible String avec la longueur fixe de 32.

5.11.15 Codage du champ Master_User_Data

L'un des types de données suivants doit être utilisé pour chaque champ Master_User_Data:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.11.16 Codage du champ T_{CT}

Le codage de ce champ doit être comme celui du type de données Unsigned32 avec la plage de valeurs de 1 à 2^{24}−1.

5.11.17 Codage du champ $maxT_{SH}$

Le codage de ce champ doit être comme celui du type de données Unsigned8 avec la plage de valeurs de 1 à 2^{8}-1.

5.12 Section de codage relative au jeu de paramètres d'esclave

5.12.1 Codage du champ Slave_Para_Len

Le codage de ce champ doit être comme celui du type de données Unsigned16 et la valeur pour le Slave_Para_Len doit être dans la plage de 0 à 2^{16}−1.Ce paramètre doit contenir la longueur de Slave_Para, y compris le paramètre de longueur "length" lui-même. Un jeu de paramètres d'esclave DP peut être supprimé en mettant le Slave_Para_Len à zéro.

5.12.2 Codage du champ Sl_Flag (slave flag, fanion esclave)

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: réservé

Bit 1: Extra_Alarm_SAP
Ce bit doit être mis si le maître DP (Classe 1) doit accuser réception des alarmes via SAP 50. Dans les autres cas, si le DP maître (Classe 1) accuse réception des alarmes via SAP 51, ce bit ne doit pas être mis.

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Bit 2: DPV1_Data_Types
Ce bit doit être mis si des types de données étendus sont utilisés dans la configuration (Extended_Special_Identifier_Format). Autrement, si seuls les types octet ou word sont utilisés avec Identifier_Format ou Special_Identifier_Format, ce bit ne peut pas être mis.

Bit 3: DPV1_Supported
Ce bit doit être mis pour activer les extensions DPV1. Autrement, les extensions doivent être désactivées.

Bit 4: Publisher_Enable
Ce bit doit être mis pour activer la fonction d'éditeur. Autrement, la fonction d'éditeur doit être désactivée.

Bit 5: Fail_Safe
Ce bit doit être mis pour forcer le maître DP (Classe 1) pour acheminer une NULL-PDU au cours du mode de fonctionnement "Clear". Autrement, les données avec la valeur zéro sont envoyées au cours du mode "Clear".

Bit 6: New_Prm
Ce bit doit être mis pour forcer le maître DP (Classe 1) à acheminer une nouvelle Set_Prm-REQ-PDU au cours de la phase de transfert de données. Autrement, ce bit doit être mis à zéro.

Bit 7: Active
Ce bit doit être mis pour forcer le maître DP (Classe 1) à activer l'esclave DP correspondant. Autrement, ce bit doit être mis à zéro.

5.12.3 Codage du champ Slave_Type

Ce champ doit être codé comme un type de données Unsigned8 avec des valeurs conformes au Tableau 31:

Tableau 31 – Valeurs de Slave_Type

Valeur (décimale)	Signification
0	DP-slave ["Esclave DP"]
1 à 15	reserved (réservées)
16 à 255	spécifique au constructeur

5.12.4 Codage du champ Max_Diag_Data_Len

Ce champ doit être codé comme un type de données Unsigned8 et avec des valeurs dans la plage de 6 à 244.

5.12.5 Codage du champ Max_Alarm_Len

Ce champ doit être codé comme un type de données Unsigned8 et avec des valeurs dans la plage de 4 à Min(Max_Diag_Data_Len-6, 64).

5.12.6 Codage du champ Max_Channel_Data_Length

Ce champ doit être codé comme un type de données Unsigned8 et avec des valeurs dans la plage de 4 à 244.

NOTE Ce paramètre définit la taille maximale d'APDU pour les esclaves DP correspondants sur la MS1-AR.

5.12.7 Codage du champ Diag_Upd_Delay

Ce champ doit être codé comme un type de données Unsigned8 et avec des valeurs dans la plage de 0 à 15 (extensible jusqu'à 255).

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NOTE Le paramètre est utilisé pour compter le nombre de Slave_Diag.cnf dans l'état DIAG2 pendant que Diag_Data.Prm_Req est encore mis (pour les esclaves avec rendement réduit).

5.12.8 Codage du champ Alarm_Mode

Ce paramètre spécifie le nombre maximal d'alarmes actives possibles.

Ce champ doit être codé comme un type de données Unsigned8 avec des valeurs conformes au Tableau 32:

Tableau 32 – Valeurs d'Alarm_Mode

Valeur (décimale)	Signification
0	1 alarme de chaque type
1	2 alarmes au total
2	4 alarmes au total
3	8 alarmes au total
4	12 alarmes au total
5	16 alarmes au total
6	24 alarmes au total
7	32 alarmes au total

5.12.9 Codage du champ Add_Sl_Flag

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: NA_To_Abort
Ce bit doit être mis si le maître DP (Classe 1) doit poursuivre l'échange de données au cas où l'esclave DP correspondant ne répond pas. Autrement, ce bit ne doit pas être mis.

Bit 1: Ignore_AClr
Ce bit doit être mis si le maître DP (Classe 1) doit exclure du comportement "autoclear" (autoeffacement) l'esclave DP correspondant. Autrement, ce bit ne doit pas être mis.

Bits 2 à 7: réservés

5.12.10 Codage du champ MS1_Timeout

Ce champ doit être codé comme un type de données Unsigned16 avec des valeurs de la plage décimale 1 à $2^{16}-1$. La valeur 0 est réservée mais peut être utilisée pour les valeurs de sauvegarde.

5.12.11 Codage du champ Prm_Data_Len

Ce paramètre contient la longueur de Prm_Data, y compris le paramètre de longueur "length".

Ce champ doit être codé comme un type de données Unsigned16 et avec des valeurs dans la plage de 9 à 246.

5.12.12 Codage du champ Prm_Data

Ce champ doit être codé comme un Set_Prm-REQ-PDU.

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5.12.13 Codage du champ Cfg_Data_Len

Ce paramètre contient la longueur de Cfg_Data, y compris le paramètre de longueur "length".

Ce champ doit être codé comme un type de données Unsigned16 et avec des valeurs dans la plage de 3 à 246.

5.12.14 Codage du champ Cfg_Data

Ce champ doit être codé comme un Chk_Cfg-REQ-PDU.

5.12.15 Codage du champ Add_Tab_Len

Ce paramètre contient la longueur de Add_Tab, y compris le paramètre de longueur "length".

Ce champ doit être codé comme un type de données Unsigned16 et avec des valeurs de la plage 2 à $2^{16}-31$.

5.12.16 Codage du champ Number_of_Entries

Ce champ contient le nombre d'entrées dans la table d'adresses.

Ce champ doit être codé comme un type de données Unsigned16 et avec des valeurs dans la plage de 1 à 488.

NOTE Ce paramètre contient le nombre d'entrées dans la table d'affectation d'adresses dans l'hôte à l'esclave DP adressé. Au maximum 488 entrées par esclave DP sont autorisées (un maximum de 244 chaînes de configurations doublé pour les entrées et les sorties est possible).

5.12.17 Codage du champ Add_Tab_Entry_Header

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: IO_Selection
Ce bit doit être mis si les adresses suivantes appartiennent à la partie de sortie. Autrement, ce bit ne doit pas être mis et les adresses suivantes appartiennent à la partie d'entrée.

Bit 1: Address_Format_Selection
Ce bit doit être mis à un si les adresses suivantes sont codées comme Unsigned32. Ce bit doit être mis à zéro si les adresses suivantes sont codées comme Unsigned16.

Bits 2 à 7: réservés

5.12.18 Codage du champ I/O_Data_Length

Ce champ doit être codé comme un type de données Unsigned8 et avec des valeurs dans la plage de 1 à 244.

5.12.19 Codage du champ I/O_Config_Address

Ce champ représente l'adresse locale de l'identificateur de configuration correspondant.

Ce champ doit être codé comme un type de données Unsigned16 si le bit Address_Format_Selection dans le champ Add_Tab_Entry_Header est mis à zéro.

Ce champ doit être codé comme un type de données Unsigned32 si le bit Address_Format_Selection dans le champ Add_Tab_Entry_Header est mis à un.

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5.12.20 Codage du champ Host_Address

Ce champ représente l'adresse locale des données d'entrée ou de sortie correspondantes.

Ce champ doit être codé comme un type de données Unsigned16 si le bit Address_Format_Selection dans le champ Add_Tab_Entry_Header est mis à zéro.

Ce champ doit être codé comme un type de données Unsigned32 si le bit Address_Format_Selection dans le champ Add_Tab_Entry_Header est mis à un.

5.12.21 Codage du champ Slave_User_Data_Len

Ce paramètre contient la longueur de Slave_User_Data, y compris le paramètre de longueur "length".

Ce champ doit être codé comme un type de données Unsigned16 et avec des valeurs de la plage 2 à $2^{16}-31$.

5.12.22 Codage du champ Slave_User_Data

L'un des types de données suivants doit être utilisé pour chaque champ Slave_User_Data:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.12.23 Codage du champ Ext_Prm_Data_Len

Ce paramètre contient la longueur d'Ext_Prm_Data, y compris le paramètre de longueur "length" (2 octets).

Ce champ doit être codé comme un type de données Unsigned16 et avec des valeurs dans la plage de 2 (aucun Ext_Prm_Data ne suit) et de 7 à 246.

5.12.24 Codage du champ Ext_Prm_Data

Ce champ doit être codé comme un Set_Ext_Prm-REQ-PDU.

5.13 Section de codage relative aux compteurs statistiques

5.13.1 Codage du champ DLPDU_sent_count and SD_count

Le codage de ce champ doit être comme celui du type de données Unsigned32.

5.13.2 Codage du champ Error_count and SD_error_count

Le codage de ce champ doit être comme celui du type de données Unsigned16.

5.14 Section de codage relative à la PDU d'établissement d'adresse esclave

5.14.1 Codage du champ New_Slave_Add

Ce champ doit être codé comme un type de données Unsigned8 avec des valeurs dans la plage 0 à 125.

5.14.2 Codage du champ No_Add_Change

Ce champ doit être codé comme un type de données Boolean. La valeur TRUE doit être utilisée pour indiquer que le changement de l'adresse est possible une seule fois. La valeur

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FALSE doit être utilisée pour indiquer que le changement de l'adresse est possible plus d'une fois.

5.14.3 Codage du champ Rem_Slave_Data

L'un des types de données suivants doit être utilisé pour chaque champ Rem_Slave _Data:

Boolean, Integer, Unsigned, Floating Point, Visible String, Octet String, Date, TimeOfDay, Time-Difference.

5.15 Section de codage relative aux PDU initiate/abort

5.15.1 Codage du champ Features_Supported_1

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: Read_Write
Ce bit doit être mis pour indiquer que les services Read et Write sur MS2-AR sont pris en charge.

NOTE Read et Write sont obligatoires sur MS2-AR.

Bits 1 à 7: réservés

5.15.2 Codage du champ Features_Supported_2

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 7: réservés

5.15.3 Codage du champ Profile_Features_Supported_1

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 7: définis par profil

Ce champ doit être mis à zéro (décimal) si aucun profil n'est utilisé. Autrement, la valeur doit être prise dans la spécification de profil appropriée.

5.15.4 Codage du champ Profile_Features_Supported_2

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 7: définis par profil

Ce champ doit être mis à zéro (décimal) si aucun profil n'est utilisé. Autrement, la valeur doit être prise dans la spécification de profil appropriée.

5.15.5 Codage du champ Profile_Ident_Number

Le codage de ce champ doit être comme celui du type de données Unsigned16. La valeur zéro doit être mise si aucun profil n'est utilisé. Autrement, la valeur doit être prise dans la spécification de profil appropriée.

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5.15.6 Codage du champ S_Type (source type, type de source)

Le codage de ce champ doit être comme celui du type de données Unsigned8. La valeur zéro doit être mise pour indiquer l'utilisation du format d'adresse courte. La valeur un doit être mise pour indiquer l'utilisation du format d'adresse longue. Les autres valeurs sont réservées.

NOTE Les termes source et destination appartiennent toujours au sens de déplacement de la PDU utilisée.

5.15.7 Codage du champ D_Type (destination type, type de destination)

Le codage de ce champ doit être comme celui du type de données Unsigned8. La valeur zéro doit être mise pour indiquer l'utilisation du format d'adresse courte. La valeur un doit être mise pour indiquer l'utilisation du format d'adresse longue. Les autres valeurs sont réservées.

5.15.8 Codage du champ S_Len (source length, longueur de source)

Ce champ doit être codé comme un type de données Unsigned8.

5.15.9 Codage du champ D_Len (destination length, longueur de destination)

Ce champ doit être codé comme un type de données Unsigned8.

5.15.10 Codage du champ S_API (source application identifier, identificateur d'application source)

Ce champ doit être codé comme un type de données Unsigned8.

5.15.11 Codage du champ D_API (destination application identifier, identificateur d'application destination)

Ce champ doit être codé comme un type de données Unsigned8.

5.15.12 Codage du champ S_SCL (source security level, niveau de sécurité de source)

Ce champ doit être codé comme un type de données Unsigned8. La valeur zéro doit être mise pour indiquer qu'aucun niveau d'accès n'est utilisé.

5.15.13 Codage du champ D_SCL (destination security level, niveau de sécurité de destination)

Ce champ doit être codé comme un type de données Unsigned8. La valeur zéro doit être mise pour indiquer qu'aucun niveau d'accès n'est utilisé.

5.15.14 Codage du champ S_Network_Address

Le champ doit être seulement présent si le champ S_Type est mis à un.

Le codage de ce champ doit être comme le type de données Octet String avec la longueur fixe de 6.

5.15.15 Codage du champ D_Network_Address

Le champ doit être seulement présent si le champ D_Type est mis à un.

Le codage de ce champ doit être comme le type de données Octet String avec la longueur fixe de 6.

5.15.16 Codage du champ S_MAC_Address

Le champ doit être seulement présent si le champ S_Type est mis à un.

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Le codage de ce champ doit être comme celui du type de données Octet String.

5.15.17 Codage du champ D_MAC_Address

Le champ doit être seulement présent si le champ D_Type est mis à un.

Le codage de ce champ doit être comme celui du type de données Octet String.

5.15.18 Codage du champ Send_Timeout

Ce champ doit être codé comme un type de données Unsigned16. La base de temps pour le temporisateur doit être de 10 ms. Les valeurs doivent être mises à partir de la plage de 1 à $2^{16}-1$.

5.15.19 Codage du champ Server_SAP

Ce champ doit être codé comme un type de données Unsigned8. Les valeurs doivent être mises à partir de la plage de 0 à 48.

5.15.20 Codage du champ Subnet

Le codage de ce champ doit être comme celui du type de données Unsigned8 et les valeurs doivent être mises conformément au Tableau 33.

Tableau 33 – Valeurs de Subnet

Valeur (décimale)	Signification
0	signifie aucun sous-réseau
1	signifie sous-réseau local
2	signifie sous-réseau distant
3 à 255	reserved (réservées)

5.15.21 Codage du champ Instance_Reason_Code

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bits 0 à 3: Reason Code (Code de cause)
Les valeurs doivent être mises conformément au Tableau 34 si l'instance est mise à DLL.

Tableau 34 – Valeurs de code de cause si l'instance est DLL

Valeur (décimale)	Signification
1	UE (pour sa signification, voir la CEI 61158-3-3)
2	RR (pour sa signification, voir la CEI 61158-3-3)
3	RS (pour sa signification, voir la CEI 61158-3-3)
9	NR (pour sa signification, voir la CEI 61158-3-3)
10	DH (pour sa signification, voir la CEI 61158-3-3)
11	LR (pour sa signification, voir la CEI 61158-3-3)
12	RDL (pour sa signification, voir la CEI 61158-3-3)
13	RDH (pour sa signification, voir la CEI 61158-3-3)
14	DS (pour sa signification, voir la CEI 61158-3-3)
15	NA (pour sa signification, voir la CEI 61158-3-3)

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Les valeurs doivent être mises conformément au Tableau 35 si l'instance est mise à MS2.

Tableau 35 – Valeurs de code de cause si l'instance est MS2

Valeur (décimale)	Signification
1	ABT_SE signifie erreur de séquence
2	ABT_FE signifie APDU de demande non valide reçue
3	ABT_TO signifie connexion temporisée
4	ABT_RE signifie APDU de réponse non valide reçue
5	ABT_IV signifie service non valide issu de l'Utilisateur
6	ABT_STO signifie que la valeur demandée de Send_Timeout était trop courte
7	ABT_IA signifie informations d'adresses complémentaires non valides
8	ABT_OC signifie S-Timer a expiré, l'APDU de réponse n'a pas encore été envoyée

Bits 4 à 5: Instance
Les valeurs doivent être mises comme suit:

Décimal (0): DLL

Décimal (1): MS2

Décimal (2): USER

Décimal (3): reserved (réservé)

Bits 6 à 7: réservés

5.16 Section de codage relative aux PDU read/write/data transport

5.16.1 Codage du champ Index

Ce champ doit être codé comme un type de données Unsigned8 avec des valeurs dans la plage 0 à 255.

5.16.2 Codage du champ Length

Ce champ contient le nombre d'octets du champ Data.

Ce champ doit être codé comme un type de données Unsigned8 avec des valeurs dans la plage 0 à 240.

5.17 Section de codage relative aux PDU région de charge et invocation de fonction

5.17.1 Codage du champ Extended_Function_Num

Outre le champ Function_Num, tel que décrit en 5.8.1, ce champ spécifie la fonction de service Load Region (région de charge) ou Function Invocation (invocation de fonction).

Le codage de ce champ doit être comme celui du type de données Unsigned8 et les valeurs doivent être mises conformément au Tableau 36:

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Tableau 36 – Valeurs d'Extended_Function_Num

Valeur (décimale)	Signification
0	Initiate_Load
1	Push (Pousser)
2	Pull
3	Terminate (Mettre fin)
4	Start
5	Stop
6	Resume
7	Reset
8	Call
9	Get_FI_State
10 à 255	reserved (réservées)

5.17.2 Codage du champ Options

Le codage de ce champ doit être conforme à 3.4 et les bits pris séparément doivent avoir la signification suivante:

Bit 0: More_follows
Ce bit est seulement valide pour l'APDU Push et l'APDU Pull. Ce bit doit être mis si la séquence Load Region n'est pas finie et des APDU Push ou des APDU Pull suivent. Ce bit doit être réinitialisé si la séquence Load Region est finie et aucune APDU Push ou APDU Pull ne suit.

Pour l'APDU Initiate_Load APDU, ce bit doit être réinitialisé.

Bits 1 à 6: réservés

Bit 7: Pull / Push
Ce bit est seulement valide dans l'APDU Initiate_Load. Ce bit doit être mis, si la séquence Pull LR est initialisée. Ce bit doit être réinitialisé, si une séquence Push LR est initialisée.

Pour l'APDU Push et l'APDU Pull, ce bit doit être réinitialisé.

5.17.3 Codage du champ Sequence_Number

Ce champ doit être codé comme un type de données Unsigned32.

5.17.4 Codage du champ LR_Data

Ce champ doit être codé comme un type de données Octet String.

5.17.5 Codage du champ Max_Segment_Length

Ce champ doit être codé comme un type de données Unsigned8.

5.17.6 Codage du champ LR_Index

Ce champ doit être codé comme un type de données Unsigned16.

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5.17.7 Codage du champ LR_Length

Ce champ doit être codé comme un type de données Unsigned32.

5.17.8 Codage du champ Max_Response_Delay

Ce champ doit être codé comme un type de données Unsigned16.

5.17.9 Codage du champ Intersegment_Request_Timeout

Ce champ doit être codé comme un type de données Unsigned16.

5.17.10 Codage du champ User_Specific

Ce champ contient des informations Spécifiques à l'utilisateur, par exemple, le format de LR_Data.

Ce champ doit être codé comme un type de données Octet String.

5.17.11 Codage du champ FI_Index

Ce champ doit être codé comme un type de données Unsigned16 avec des valeurs conformes au Tableau 37.

Tableau 37 – Valeurs de FI_Index

Valeur (décimale)	Signification
0 à 32 767	Indices réservés pour une utilisation spécifique au constructeur
32 768 à 64 999	Indices réservés aux services du système Profibus
65 000 à 65 199	Indices réservés aux services Identification et Maintenance (I&M)

5.17.12 Codage du champ Entity Number

Ce champ doit être codé comme un type de données Unsigned8.

La signification de ce paramètre est spécifique à un profil. S'il n'est pas utilisé, il doit être mis à 0.

5.17.13 Codage du champ Execution_Argument

Ce champ doit être codé comme un type de données Octet String.

5.17.14 Codage du champ Result_Argument

Ce champ doit être codé comme un type de données Octet String.

5.17.15 Codage du champ FI_State

Ce champ contient l'état de l'entité Function Invocation. Le codage de ce champ doit être comme celui du type de données Unsigned8 et les valeurs doivent être mises conformément au Tableau 38:

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Tableau 38 – Valeurs de FI_State

Valeur (décimale)	Signification
0	IDLE
1	STARTING
2	RUNNING
3	STOPPING
4	STOPPED
5	RESUMING
6	UNRUNNABLE
7	RESETTING
8	WAIT-SET-IN-USE
9	WAIT-SET-IN-USE-2
10	WAIT-DEL-IN-USE
11	WAIT-DEL-IN-USE-2
12	EXEC-ERR
13	EXEC-TERM
14 à 255	reserved (réservées)

Ce champ doit être codé comme un type de données OctetString avec 10 octets. La valeur doit être mise à "manufacturer specific" (spécifique au constructeur) et doit être remplie avec 0 si elle est plus courte que 16.

5.17.16 Codage du champ IMData_Execution_Argument

5.17.16.1 Généralités

Ce champ contient l'IMData_Execution_Argument du CALL-REQ-PDU, codés selon le Tableau 39.

Tableau 39 – IMData_Execution_Argument

IMData_Execution_Argument	Référence
IM_Header	Voir 5.17.16.2
IM_Profile_Specific_Data	Voir 5.17.16.3
I&M_Manufacturer_Specific_x	Voir 5.17.16.4
IM_Date	Voir le champ IM_Date dans le cadre de la CEI 61158-6-10
IM_Descriptor	Voir le champ IM_Descriptor dans le cadre de la CEI 61158-6-10
IM_Signature	Voir le champ IM_Signature dans le cadre de la CEI 61158-6-10
IM_Tag_Function	Voir le champ IM_Tag_Function dans le cadre de la CEI 61158-6-10
IM_Tag_Location	Voir le champ IM_Tag_Location dans le cadre de la CEI 61158-6-10
IM_Manufacturer_ID	Voir le champ VendorID dans le cadre de la CEI 61158-6-10

5.17.16.2 Codage du champ IM_Header

Ce champ doit être codé comme un type de données OctetString avec 10 octets. La valeur doit être mise à "manufacturer specific" (spécifique au constructeur) et doit être remplie avec 0x00 si elle est plus courte que 16.

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5.17.16.3 Codage du champ IM_Profile_Specific_Data

Ce champ doit être codé comme un type de données OctetString avec 54 octets. La valeur doit être mise à "profile specific" (spécifique à un profil) et doit être remplie avec 0x00 si elle est plus courte que 54.

5.17.16.4 Codage du champ I&M_Manufacturer_Specific_x

Ce champ doit être codé comme un type de données OctetString avec 64 octets. La valeur doit être mise à "manufacturer specific" (spécifique au constructeur) et doit être remplie avec 0x00 si elle est plus courte que 64.

5.17.17 Codage du champ IMData_Result_Argument

Ce champ contient l'IMData_Result_Argument du CALL-RES-PDU, codés selon le Tableau 40.

Tableau 40 – IMData_Result_Argument

IMData_Result_Argument	Référence
IM_Header	Voir 5.17.16.2
IM_Profile_Specific_Data	Voir 5.17.16.3
I&M_Manufacturer_Specific_x	Voir 5.17.16.4
IM_Date	Voir le champ IM_Date dans le cadre de la CEI 61158-6-10
IM_Descriptor	Voir le champ IM_Descriptor dans le cadre de la CEI 61158-6-10
IM_Signature	Voir le champ IM_Signature dans le cadre de la CEI 61158-6-10
IM_Tag_Function	Voir le champ IM_Tag_Function dans le cadre de la CEI 61158-6-10
IM_Tag_Location	Voir le champ IM_Tag_Location dans le cadre de la CEI 61158-6-10
IM_Manufacturer_ID	Voir le champ VendorID dans le cadre de la CEI 61158-6-10
IM_Hardware_Revision	Voir le champ IM_Hardware_Revision dans le cadre de la CEI 61158-6-10
IM_Profile_ID	Voir le champ IM_Profile_ID dans le cadre de la CEI 61158-6-10
IM_Profile_Specific_Type	Voir le champ IM_Profile_Specific_Type dans le cadre de la CEI 61158-6-10
IM_Revision_Counter	Voir le champ IM_Revision_Counter dans le cadre de la CEI 61158-6-10
IM_Serial_Number	Voir le champ IM_Serial_Number dans le cadre de la CEI 61158-6-10
IM_Supported	Voir le champ IM_Supported dans le cadre de la CEI 61158-6-10
IM_SWRevision_Bug_Fix	Voir le champ IM_SWRevision_Bug_Fix dans le cadre de la CEI 61158-6-10
IM_SWRevision_Functional_Enhancement	Voir le champ IM_SWRevision_Functional_Enhancement dans le cadre de la CEI 61158-6-10
IM_SWRevision_Internal_Change	Voir le champ IM_SWRevision_Internal_Change dans le cadre de la CEI 61158-6-10
IM_Version_Major	Voir le champ IM_Version_Major dans le cadre de la CEI 61158-6-10
IM_Version_Minor	Voir le champ IM_Version_Minor dans le cadre de la CEI 61158-6-10
OrderID	Voir le champ OrderID dans le cadre de la CEI 61158-6-10
SWRevisionPrefix	Voir le champ SWRevisionPrefix dans le cadre de la CEI 61158-6-10

5.18 Exemples de RES-PDU de diagnostic

La Figure 3 illustre un exemple pour une APDU de diagnostic avec un message de statut relatif à un appareil, une alarme de processus relatif à un appareil et un diagnostic lié à un identificateur.

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bits	7	6	5	4	3	2	1	0	
octets									
1	0	0	0	0	0	1	1	1	Headeroctet: device related diagnostic
2	1	0	0	0	0	0	0	1	Status_Type: Status_Message
3	0	0	0	0	0	0	1	0	Slot_Number: 2 (sensor A)
4	0	0	0	0	0	0	0	0	Specifier: no further differentiation
5	0	0	0	0	0	1	0	1	Diagnostic_User_Data: 5 (average temperature)
6									Diagnostic_User_Data: temperature
7									value (Unsigned16)
8	0	0	0	0	1	0	0	1	Headeroctet: device related diagnostic
9	0	0	0	0	0	0	1	0	Alarm_Type: Process_Alarm
10	0	0	0	0	0	0	1	1	Slot_Number: 3 (valve B)
11	0	0	0	0	0	0	0	1	Specifier: alarm appears
12	0	1	0	1	0	0	0	0	Diagnostic_User_Data: 0x50 (upper limit exceeded pressure)
13									Diagnostic_User_Data: time stamp
14									(Time_of_day = 4 octets)
15									
16									
17	0	1	0	0	0	0	1	0	Headeroctet: identifier related diagnostic
18	0	0	0	0	0	1	0	1	1st identifier Number with diagnosis
	msb								

Légende

Anglais	Français
Headeroctet: device related diagnostic	Headeroctet: diagnostic lié à un appareil
Slot_Number: 2 (sensor A)	Slot_Number: 2 (capteur A)
Specifier: no further differentiation	Specifier: pas de différenciation plus poussée
Diagnostic_User_Data: 5 (average temperature)	Diagnostic_User_Data: 5 (température moyenne)
Diagnostic_User_Data: temperature	Diagnostic_User_Data: température
Slot_Number: 3 (valve B)	Slot_Number: 3 (soupape B)
Specifier: alarm appears	Specifier: apparition de l'alarme
Diagnostic_User_Data: 0x50 (upper limit exceeded pressure)	Diagnostic_User_Data: 0x50 (limite supérieure dépassée, en pression)
Diagnostic_User_Data: time stamp	Diagnostic_User_Data: horodatage
Headeroctet: identifier related diagnostic	Headeroctet: diagnostic lié à un identificateur
1st identifier Number with diagnosis	Premier numéro d'identificateur avec diagnostic

Figure 3 – Exemple d'Ext_Diag_Data en cas de format de diagnostic DPV1 avec PDU d'alarme et de statut

Partie textuelle correspondante
Attributions de texte pour le capteur A et la soupape B

Unit_Diag_Area = 24-27

Valeur(1) = "Température minimale"

Valeur(2) = "Température maximale"

Valeur(5) = "Température moyenne"

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Unit_Diag_Area_End

Unit_Diag_Area = 28-31

Valeur(1) = "Limite inférieure dépassée, en pression"

Valeur(5) = "Limite supérieure dépassée, en pression"

Unit_Diag_Area_End

Unit_Diag_Area = 8-15

Valeur(2) = "capteur A"

Valeur(3) = "soupape B"

Unit_Diag_Area_End

Unit_Diag_Area = 16-17

Valeur(1) = "alarme/statut apparaissant"

Valeur(2) = "alarme/statut disparaissant"

Unit_Diag_Area_End

Comme ces définitions sont utilisées aussi bien pour les alarmes que pour les messages de statut, il convient que leurs valeurs soient différentes. Cela signifie qu'il convient que des valeurs différentes pour les alarmes et les messages de statut soient utilisées à la même position dans le champ de diagnostic.

La Figure 4 illustre un exemple pour une APDU de diagnostic avec un diagnostic spécifique à l'utilisateur et relatif à un appareil, un diagnostic lié à un identificateur et un diagnostic lié à une voie.

bits	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**	
octets 1	0	0	0	0	0	1	0	0	device related diagnostic:
2	device specific								meaning of the bits is defined
3	diagnostic field								manufacturer specific
4	of length 3								
5	0	1	0	0	0	1	0	0	identifier related diagnostic:
6	0	0	0	0	0	0	0	1	identifier number 0 has diagnostic
7	0	0	0	1	0	0	0	0	identifier number 12 has diagnostic
8	0	0	0	0	0	1	0	0	identifier number 18 has diagnostic
9	1	0	0	0	0	0	0	0	channel related diagnostic: identifier number 0
10	0	0	0	0	0	0	1	0	channel 2
11	0	0	1	0	0	1	0	0	overload, channel bit organized
12	1	0	0	0	1	1	0	0	identifier number 12
13	0	0	0	0	0	1	1	0	channel 6
14	1	0	1	0	0	1	1	1	upper limit value exceeded, channel word organized
	msb								

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Légende

Anglais	Français
device related diagnostic	diagnostic lié à un appareil
meaning of the bits is defined	la signification des bits est définie
manufacturer specific	spécifique au constructeur
device specific diagnostic field of length 3	champ de diagnostic de longueur 3 spécifique à un appareil
identifier related diagnostic	diagnostic lié à l'identificateur
identifier number n has diagnostic	l'identificateur numéro n a un diagnostic
channel related diagnostic: identifier number 0	diagnostic lié à une voie: identificateur numéro 0
channel 2	Voie 2
overload, channel bit organized	surcharge, bit de voie organisé
identifier number 12	identificateur numéro 12
upper limit value exceeded, channel word organized	valeur de limite supérieure dépassée, mot de voie organisé

Figure 4 – Exemple d'Ext_Diag_Data en cas de format de diagnostic de base

5.19 Exemple de Chk_Cfg-REQ-PDU

La Figure 5 illustre un exemple pour une APDU Chk_Cfg avec un format d'identificateur spécial.

bits	7	6	5	4	3	2	1	0	
octets 1	1	1	0	0	0	0	1	1	input/output, 3 octets manufacturer specific data
2	1	1	0	0	1	1	1	1	consistency, output, 16 words
3	1	1	0	0	0	1	1	1	consistency, input, 8 words
4	manufacturer								
5	specific								
6	data								
	msb								

Légende

Anglais	Français
input/output, 3 octets manufacturer specific data	entrée/sortie, 3 octets de données spécifiques au constructeur
consistency, output, 16 words	cohérence, sortie, 16 mots
consistency, input, 8 words	cohérence, entrée, 8 mots
Manufacturer specific data	Données spécifiques au constructeur

Figure 5 – Exemple de format d'identificateur spécial

5.20 Exemples de Chk_Cfg-REQ-PDU avec types de données DPV1

Les types de données sont codés dans la partie spécifique au constructeur.

Les simples types de données sont codés dans un octet qui contient le code du type de donnée.

Les séquences de types de données sont codées comme une liste de simples types de données. Il faut que la somme des longueurs des types de données corresponde à la

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longueur des données d'entrée ou de sortie. Les types de données avec longueur variable (visible string, octet string, time of day, time difference) peuvent être manipulés comme un élément simple, et non en une séquence. Des commentaires peuvent être ajoutés à la fin de la liste des types de données.

La Figure 6 montre le format d'identificateur spécial pour un bloc d'entrées analogiques contenant une valeur (Floating Point), un Statut (Unsigned8) et des Commentaires (3 Octets).

bits	7	6	5	4	3	2	1	0	
octets 1	0	1	0	0	0	1	0	1	Manufacturer-specific format
2	1	0	0	0	0	1	0	0	Consistency, 5 Octets (Input)
3	0	0	0	0	1	0	0	0	Data type Floating Point
4	0	0	0	0	0	1	0	1	Data type Unsigned8
5	Manufacturer								Comment
6	Specific								Comment
7	Data								Comment
	msb								

Légende

Anglais	Français
Manufacturer-specific format	Format spécifique au constructeur
Consistency, 5 Octets (Input)	Cohérence, 5 Octets (Entrée)
Data type Floating Point	Type de données "Floating Point"
Data type Unsigned8	Type de données "Unsigned8"
Comment	Commentaire
Manufacturer specific data	Données spécifiques au constructeur

Figure 6 – Exemple de format d'identificateur spécial avec types de données

La Figure 7 montre le format d'identificateur spécial pour un bloc d'entrées analogiques où la valeur de sortie peut être relue en différé.

La représentation de ce bloc de sorties analogiques est structurée comme suit:

a) Valeur de sortie (Floating Point)
b) Statut de la sortie (Unsigned8)
c) Valeur relue en différé (Floating Point)
d) Statut relu en différé (Unsigned8)
e) Commentaire (1 octet)

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bits	7	6	5	4	3	2	1	0	
octets									
1	1	1	0	0	0	1	0	1	Manufacturer-specific format
2	1	0	0	0	0	1	0	0	Consistency, 5 Octets (Output)
3	1	0	0	0	0	1	0	0	Consistency, 5 Octets (Input)
4	0	0	0	0	1	0	0	0	Data Type Floating Point
5	0	0	0	0	0	1	0	1	Data Type Unsigned8
6	0	0	0	0	1	0	0	0	Data Type Floating Point
7	0	0	0	0	0	1	0	1	Data Type Unsigned8
8	1	1	1	1	0	0	0	0	Comment
	msb								

Légende

Anglais	Français
Manufacturer-specific format	Format spécifique au constructeur
Consistency, 5 Octets (Output)	Cohérence 5 Octets (Sortie)
Consistency, 5 Octets (Input)	Cohérence, 5 Octets (Entrée)
Data Type Floating Point	Type de données "Floating Point"
Data Type Unsigned8	Type de données "Unsigned8"
Data Type Floating Point	Type de données "Floating Point"
Data Type Unsigned8	Type de données "Unsigned8"
Comment	Commentaire

Figure 7 – Exemple de format d'identificateur spécial avec types de données

La Figure 8 montre le format d'identificateur spécial pour une position vide avec un commentaire de 3 octets.

La représentation de cette position vide est structurée comme suit:

a) position vide

b) commentaire (3 octets)

bits	7	6	5	4	3	2	1	0	
octets									
1	0	0	0	0	0	0	1	1	Manufacturer-specific format
2	1	1	1	1	0	0	0	0	Comment
3	1	1	1	1	0	1	0	0	Comment
4	1	1	1	1	0	0	1	0	Comment
	msb								

Légende

Anglais	Français
Manufacturer-specific format	Format spécifique au constructeur
Comment	Commentaire

Figure 8 – Exemple de position vide avec types de données

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La Figure 9 montre l'utilisation du format d'identificateur spécial pour un appareil à plusieurs variables qui utilise le codage spécifique à l'utilisateur au lieu de types de données dans le champ data type.

La représentation de cet appareil à plusieurs variables est structurée comme suit:

a) Entrée analogique (AI, Analog Input)

b) Sortie discrète (DO, Discrete Output) avec point de consigne (SP_D) et relecture différée (READBACK_D)

bits	7	6	5	4	3	2	1	0	Multi variable device, AI and DO
octets 1	0	1	0	0	0	0	1	0	**Analog Input** Special Config Identifier for the example AI (0x42)
2	1	0	0	0	0	1	0	0	Extended Length Octet for input (0x84)
3	1	0	0	0	0	0	0	1	User specific instead of data type >128 (e.g block code for AI 0x81)
4	1	1	1	1	0	0	0	1	User specific (e.g. Identification of cyclic parameter for AI 0x81)
5	1	1	0	0	0	0	1	0	**Discrete Output** Special Config Identifier for the example DO (0xC2)
6	1	0	0	0	0	0	0	1	Extended Length Octet for output (0x81)
7	1	0	0	0	0	0	0	1	Extended Length Octet for input (0x81)
8	1	0	0	0	0	1	0	0	User specific instead of data type >128 (e.g. block code for DO 0x84)
9	1	0	0	0	0	0	1	1	User specific instead of data type >128 (e.g. Identification of cyclic parameter for DO with SP_D and READBACK_D 0x83)
	msb								

Légende

Anglais	Français
Multi variable device, AI and DO	Appareil à plusieurs variables, AI et DO
Analog Input Special Config Identifier for the example AI (0x42)	**Entrée analogique** Special Config Identifier pour l'AI en exemple (0x42)
Extended Length Octet for input (0x84)	Extended Length Octet pour l'entrée (0x84)
User specific instead of data type >128 (e.g block code for AI 0x81)	Spécifique à l'utilisateur au lieu du type de données >128 (par exemple: code de blocs pour AI 0x81)
User specific (e.g. Identification of cyclic parameter for AI 0x81)	Spécifique à l'utilisateur (par exemple: Identification de paramètre cyclique pour AI 0x81)
Discrete Output Special Config Identifier for the example DO (0xC2)	**Sortie discrète** Special Config Identifier pour la DO en exemple (0xC2)
Extended Length Octet for output (0x81)	Extended Length Octet pour la sortie (0x81)
Extended Length Octet for input (0x81)	Extended Length Octet pour l'entrée (0x81)
User specific instead of data type >128 (e.g. block code for DO 0x84)	Spécifique à l'utilisateur, au lieu du type de données >128 (par exemple: code de blocs pour DO 0x84)
User specific instead of data type >128 (e.g. Identification of cyclic parameter for DO with SP_D and READBACK_D 0x83)	Spécifique à l'utilisateur, au lieu de type de données >128 (par exemple: Identification de paramètre cyclique pour DO avec SP_D et READBACK_D 0x83)

Figure 9 – Exemple d'appareil à plusieurs variables avec des blocs de fonctions AI et DO

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5.21 Exemple de structure de Data_Unit pour Data_Exchange

La structure de la Data_Unit pour le service Data_Exchange est définie par les identificateurs qui sont transmis à l'esclave DP avec le service Chk_Cfg à la configuration.

L'exemple suivant illustre comment les données dans la Data_Unit sont transférées aux identificateurs donnés. La Figure 10 montre les données qui doivent être envoyées par Data_Exchange et leur ordre tel que défini par le service Chk_Cfg.

1. ID	**2. ID**	**3. ID**	**4. ID**	**5. ID**	**6. ID**	**7. ID**	
1 B_I	1 W_I	2 W_O	2 B_IO	1 B_O	2 W_I	3 W_A	

Figure 10 – Identificateurs (ID)

La Figure 11 montre le type et la longueur des données correspondant à leurs identificateurs et le sens de leur transfert, c'est-à-dire si elles sont entrées ou sorties.

1 B_I: 1 Octet d'entrée;
1 B_O: 1 Octet de sortie;
2 B_IO: 2 Octets d'entrée et de sortie
1 W_I: 1 mot d'entrée
1 W_O: 1 mot de sortie
etc.

Figure 11 – Liste d'identificateurs

La séquence des données dans la Data_Unit est montrée à la Figure 12.

	Data_Exchange.req									**Data_Exchange.res**								
	msb									**msb**								
Bit	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**		Bit	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
octets										octets								
1	Word_high					(3. ID)				1	Data					(1. ID)		
2	Word_low					(3. ID)				2	Word_high					(2. ID)		
3	Data					(4. ID)				3	Word_low					(2. ID)		
4	Data					(4. ID)				4	Data					(4. ID)		
5	Data					(5. ID)				5	Data					(4. ID)		
6	1.Word_high					(7. ID)				6	1.Word_high					(6. ID)		
7	1.Word_low					(7. ID)				7	1.Word_low					(6. ID)		
8	2.Word_high					(7. ID)				8	2.Word_high					(6. ID)		
9	2.Word_low					(7. ID)				9	2.Word_low					(6. ID)		
10	3.Word_high					(7. ID)				10	etc.							
11	3.Word_low					(7. ID)				11								
12	etc.									12								
…										…								
n										n								

Figure 12 – Structure de la Data_Unit pour la DLPDU de demande et de réponse

Pour l'identificateur de configuration "empty slot" (position vide), aucune donnée n'est transférée dans la Data_Unit.

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6 Diagrammes d'états de protocole FAL

6.1 Structure globale

6.1.1 Fieldbus Service Protocol Machines (FSPM)

Les Diagrammes d'états FSPM (Fieldbus Service Protocol Machines "machines protocolaires des services de bus de terrain") coordonnent les diagrammes d'états sous-jacents utilisés pour le traitement des divers services et relations entre applications.

Il y a un diagramme d'états pour chaque type d'appareil (FSPMS pour esclave DP, FSPMM1 pour maître DP (Classe 1) et FSPMM2 pour maître DP (Classe 2)).

6.1.2 Cyclique Maître vers Esclave (MS0)

Les Diagrammes d'états MSCY1 sont chargés du transfert cyclique de données entre le maître DP (Classe 1) et un esclave DP (MSCY1M/MSCY1S). Cela comprend la paramétrisation, la configuration, le diagnostic et l'échange de données ainsi que les commandes de commandes globales (Global Control). Il y a un MSCY1S pour un esclave DP et jusqu'à 125 MSCY1M pour un maître DP (Classe 1). Pour s'abonner à des objets de données d'entrée, un esclave DP utilise jusqu'à 125 SSCY1S.

6.1.3 Acyclique Maître (classe 1) vers Esclave (MS1)

Les Diagrammes d'états MSAC1 (MSAC1M, MSAC1S) sont chargés du transfert acyclique de données entre le maître DP (Classe 1) et un esclave DP. La relation de communications MS1 est couplée à la relation de communications cycliques et traite les services Read, Write et Alarm Ack ainsi que les services Load Region et Function Invocation.

En outre, le diagramme d'états MSAL1M est utilisé pour gérer les alarmes au niveau du maître DP.

Il y a un MSAC1S pour un esclave DP et jusqu'à 125 MSAC1M/MSAL1M pour un maître DP (Classe 1).

6.1.4 Acyclique Maître (classe 2) vers Esclave (MS2)

Les Diagrammes d'états MS2 (MSAC2M, MSRM2S, MSAC2S) sont chargés du transfert acyclique de données entre le maître DP (Classe 2) et un esclave DP. La relation de communications MS2 traite les services Read, Write et Data_Transport ainsi que les services Load Region et Function Invocation.

Le gestionnaire de ressources Maître Esclave (MSRM2S "Master Slave Resource Manager") est chargé de l'attribution d'un DLSAP et des sources connexes à chaque relation de communications MSAC2 établie dans l'esclave DP. Le Master Slave Resource Manager lance en outre le diagramme d'états MSAC2S approprié.

Au maître DP (Classe 2), il existe un nombre arbitraire de diagrammes d'états MSAC2M. Le nombre maximal de diagrammes d'états MSAC2M est donné par le nombre maximal d'esclaves DP (=125), chaque esclave DP fournissant le nombre maximal de CR MS2 (=49).

6.1.5 Synchronisation des horloges entre le maître et les esclaves (MS3)

Grâce aux diagrammes d'états MSCS1, la synchronisation des horloges peut être accomplie entre le maître DP (Classe 1) et les esclaves DP.

Il y a tout au plus un diagramme d'états au niveau du maître DP (Classe 1) et un au niveau de l'esclave DP.

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6.1.6 Transfert acyclique de maître à maître (MM1/MM2)

Grâce aux diagrammes d'états MMAC (Master Master acyclic), le Master_Diag, le Master Parameter Set, le Slave Parameter Set, le Bus Parameter Set peuvent être transférés entre le maître DP (Classe 1) et le maître DP (Classe 2).

Il y a tout au plus un diagramme d'états au niveau du maître DP (Classe 1) et un au niveau du maître DP (Classe 2).

6.1.7 Machines protocolaires de mapping DLL (DMPM)

Les machines protocolaires de mapping DLL (DMPM) connectent les autres diagrammes d'états et la Couche 2. La DMPM assure la coordination de tous les diagrammes d'états concernant la configuration et le traitement des erreurs Data Link Layer Usage (Utilisation de couche liaison de données). Les fonctions sont mappées par la DMPM vers les services DLL et DLM de la Couche 2. La DMPM génère les paramètres de Couche 2 nécessaires du service, reçoit les confirmations et les indications de la Couche 2 et les transmet à l'utilisateur DMPM approprié.

Il y a un diagramme d'états pour chaque type d'appareil (FSPMS pour esclave DP, FSPMM1 pour maître DP (Classe 1) et FSPMM2 pour maître DP (Classe 2)).

Interface entre DMPM et Couche 2

La DMPM est placée directement sur l'interface Utilisateur de DLL – DLL et sur l'interface Utilisateur de DLMS – DLM comme décrit dans les définitions des services de couche liaison de données (se référer à la définition des services dans la CEI 61158-3-3).

Pour le mapping des fonctions DMPM sur la couche 2, La DMPM utilise les services suivants:

a) Services DLL
   Send and Request Data with Reply (SRD)
   Send Data with No Acknowledge (SDN)
   Send and Request Data with Multicast Reply (MSRD)
   Clock Synchronization (CS)
b) Services DLM
   Reset
   Set Value
   Get Value
   Event
   SAP Activate
   SAP Activate Responder
   SAP Deactivate

6.2 Attribution des diagrammes d'états à des appareils

Le Tableau 41 montre l'attribution de diagrammes d'états à des appareils. Certains diagrammes d'états sont toujours requis et sont donc repérés par la lettre 'M' (mandatory - obligatoire), les autres sont repérés par 'O' (optional - facultatif). Les Remarques montrent les options dans les diagrammes obligatoires.

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Tableau 41 – Attribution des diagrammes d'états

Type de l'appareil	Diagramme	Obligatoire/ facultatif	Remarques
DP-slave ["Esclave DP"]	FSPMS	M	La gestion des alarmes est facultative
	MSCY1S	M	
	SSCY1S	O	
	MSAC1S	O	
	MSAC2S	O	
	MSRM2S	O	
	DMPMS	M	
DP-master (Class 1) ["Maître DP (Classe 1)"]	FSPMM1	M	
	MSCY1M	M	
	MSAL1M	O	
	MSAC1M	O	
	MMAC1	O	
	DMPMM1	M	
DP-master (Class 2) ["Maître DP (Classe 2)"]	FSPMM2	M	
	MSAC2M	O	
	MMAC2	O	
	DMPMM2	M	

6.3 Vue d'ensemble d'un esclave DP

La Figure 13 illustre la structure générale de l'AL d'un esclave DP en montrant ses diagrammes d'états et les services qu'ils utilisent.

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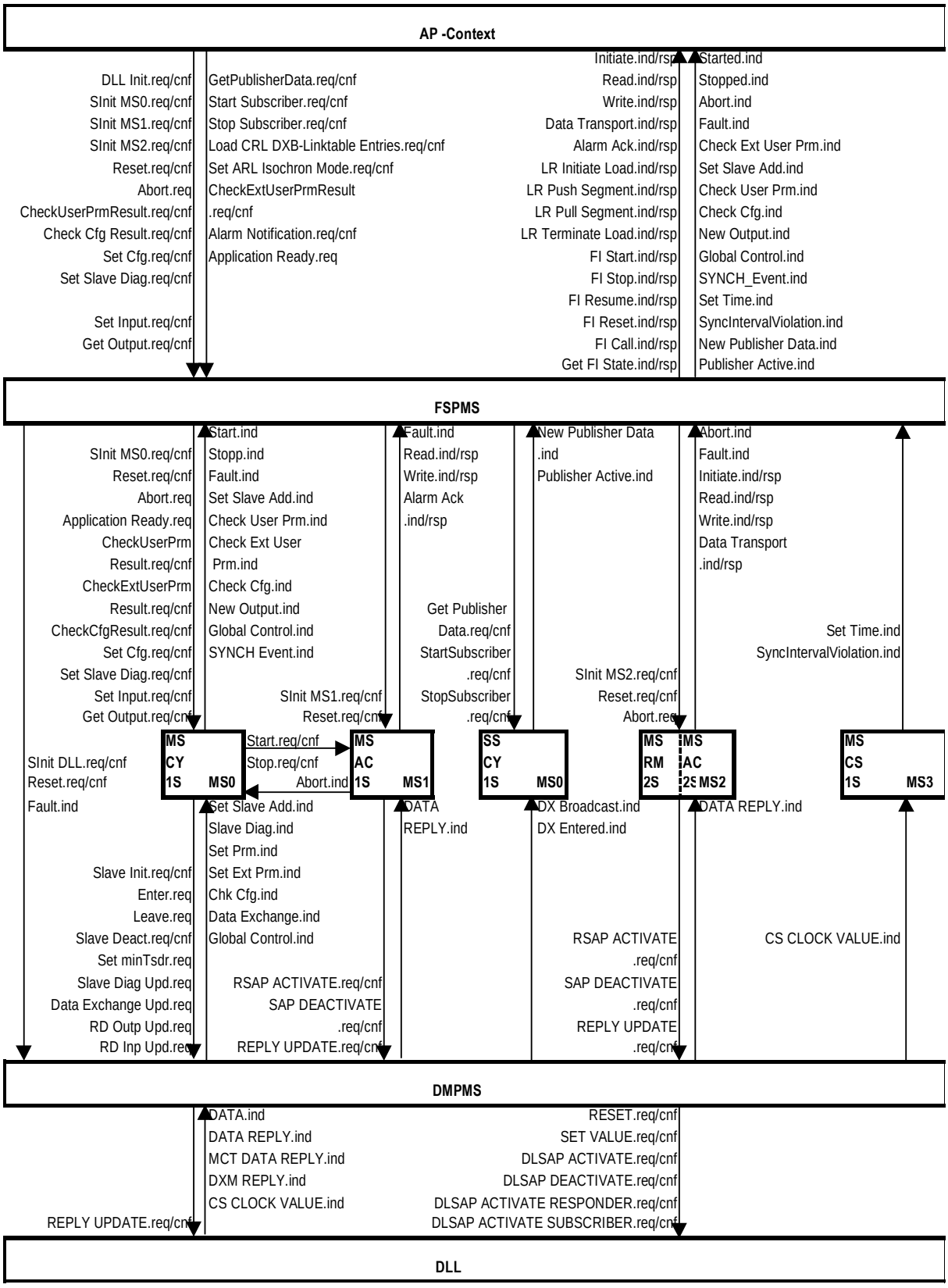

Figure 13 – Structuration des machines protocolaires et des couches adjacentes dans un esclave DP

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6.4 Vue d'ensemble de maître DP (Classe 1)

La Figure 14 illustre la structure générale de l'AL d'un maître DP (Classe 1) en montrant ses diagrammes d'états et les services qu'ils utilisent.

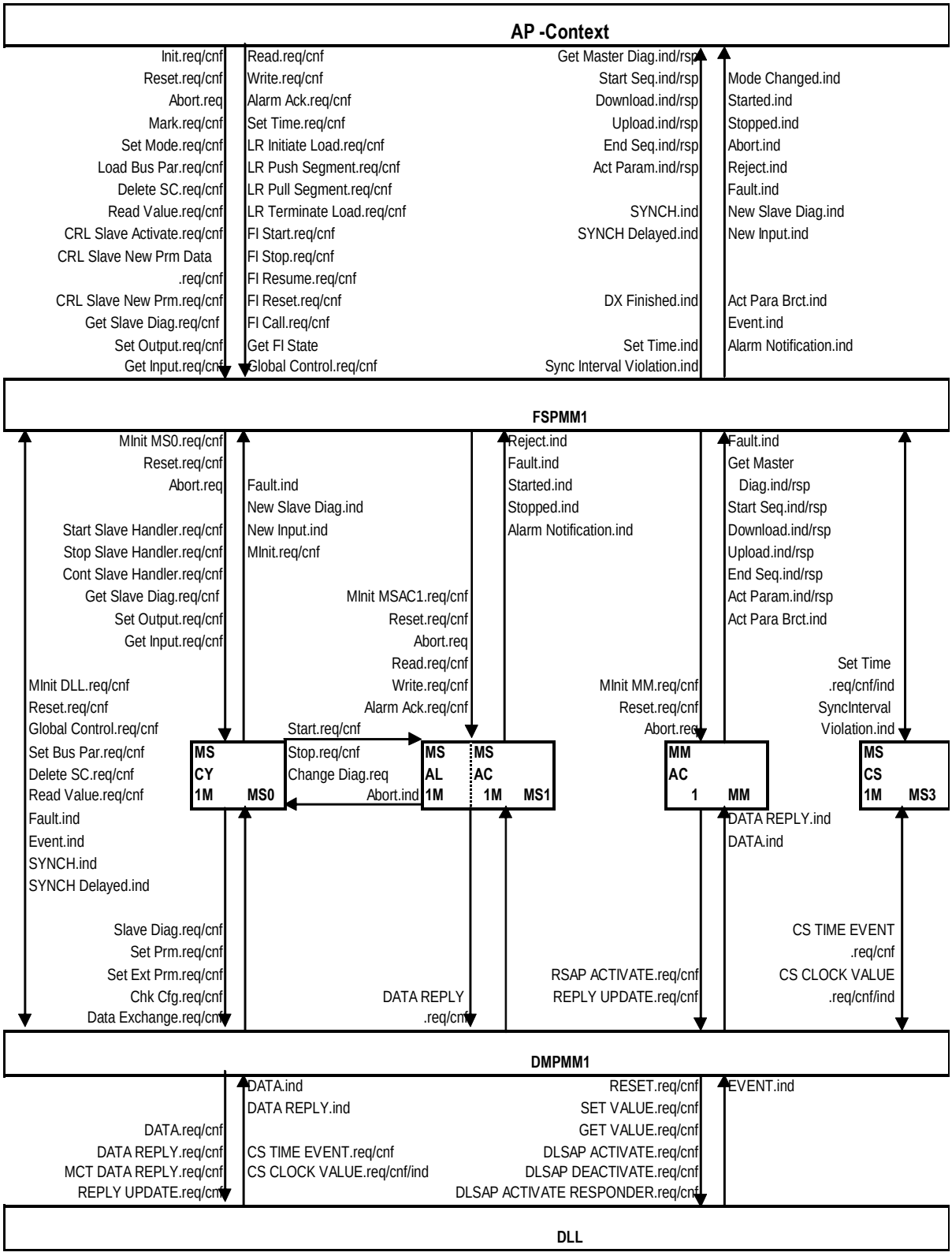

Figure 14 – Structuration des machines protocolaires et des couches adjacentes dans un maître DP (classe 1)

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6.5 Vue d'ensemble de maître DP (Classe 2)

La Figure 15 illustre la structure générale de l'AL d'un maître DP (Classe 2) en montrant ses diagrammes d'états et les services utilisés.

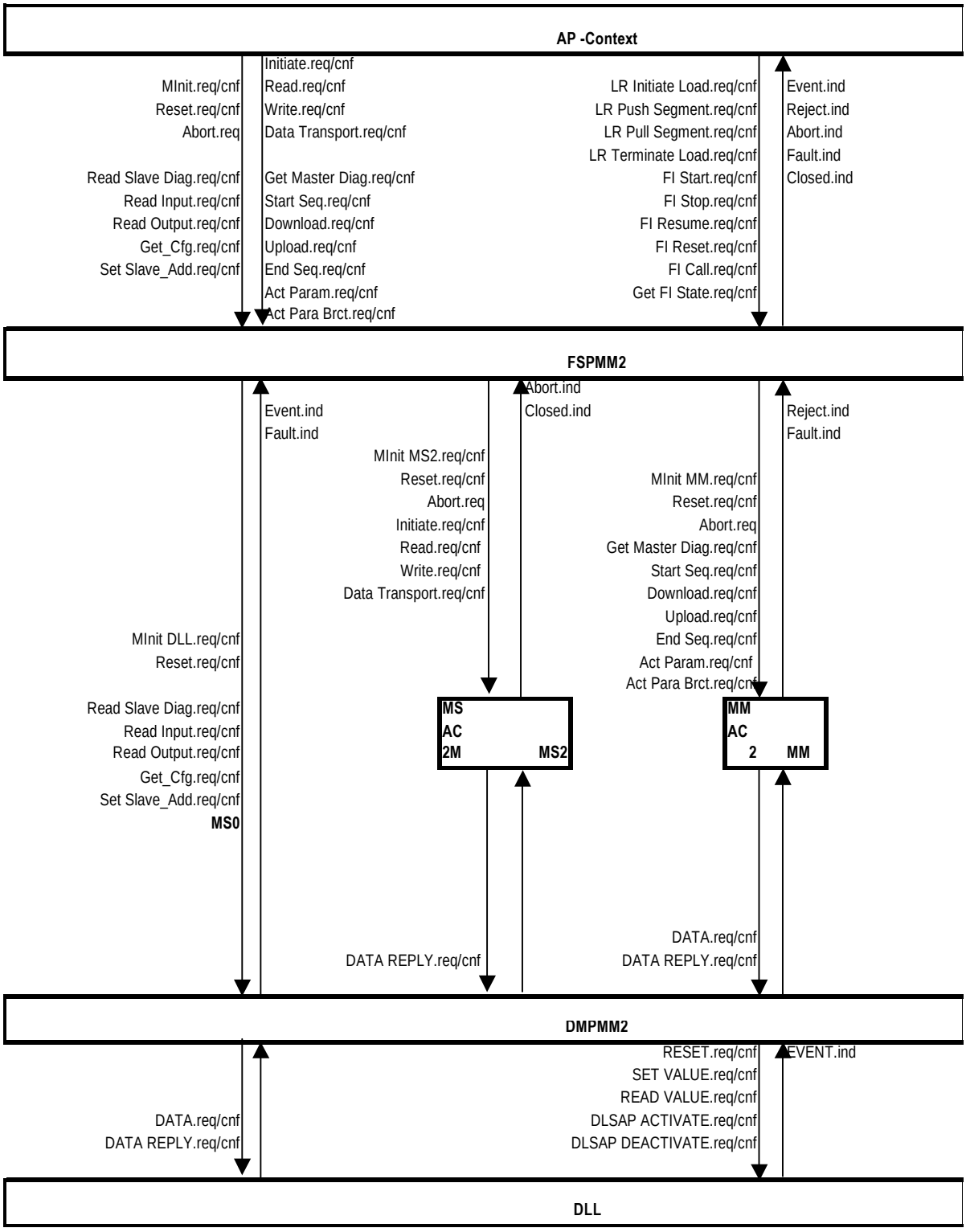

Figure 15 – Structuration des machines protocolaires et des couches adjacentes dans un maître DP (classe 2)

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6.6 Communication cyclique entre maître DP (Classe 1) et esclave DP

La communication entre maître DP et esclave DP est établie avec la séquence montrée à la Figure 16:

Si le maître DP souhaite communiquer avec un esclave DP, le maître DP demande les Diag_Data de l'esclave DP, afin de vérifier que l'esclave DP est prêt pour l'opération.

Cette demande de diagnostic est répétée jusqu'à ce que l'esclave DP réponde avec les données demandées.

Si l'esclave DP répond avec les informations de diagnostic demandées, le maître DP vérifie si un autre maître DP occupe cet esclave DP. Si tel n'est pas le cas, l'esclave DP est paramétré et configuré (Set_Prm / Chk_Cfg).

Ensuite, le maître DP demande de nouveau les données de diagnostic à l'esclave DP. Les messages suivants peuvent se produire:

- Erreur de paramétrisation ou de configuration
- L'esclave DP est occupé avec un autre maître DP
- Diagnostics d'Utilisateur Statique, pas de transfert de données normal possible (par exemple: la procédure de démarrage du DP s'est correctement exécutée, mais une paramétrisation externe est en attente)
- L'esclave DP n'est pas prêt pour l'opération

Dans les cas a) et b), le maître DP retourne à l'état de départ et vérifie de nouveau que l'esclave DP est prêt pour l'opération.

Dans les cas c) et d), le maître DP demande les informations de diagnostic provenant de l'esclave DP jusqu'à ce que les messages mentionnés disparaissent.

Si aucun message d'erreur n'apparaît, le maître DP démarre l'échange de données à destination de l'esclave DP. Les données d'entrée et de sortie sont transférées à destination et en provenance de l'esclave DP. Le maître DP (Classe 1) indique pour la première fois son propre mode de fonctionnement aux esclaves DP.

DP-master (Class 1)					DP-slave		
	MSCY1M	MSInt	DL		DL	WD MSCY1S	
	/*Startup of Master*/					/*Slave offline*/	
Start_SH->							
(SH=Slave Handler)		-					
	(Slave Diag)->	|				<-SET_VALUE (Initialize DLL)	
		|		SRD.req ->			
	(NA)<-	|					<-MS0_Init
<-		|				<-RSAP_ACTIVATE	
		|					
Cont_SH->		|				<- (Slave Diag-RES-PDU)	
		-				Master_Add = invalid	
	(Slave Diag)->	|				->	
		|		SRD.req ->			
		|		<-(Data)			
	(SlaveDiag-RES-PDU)<-	|					

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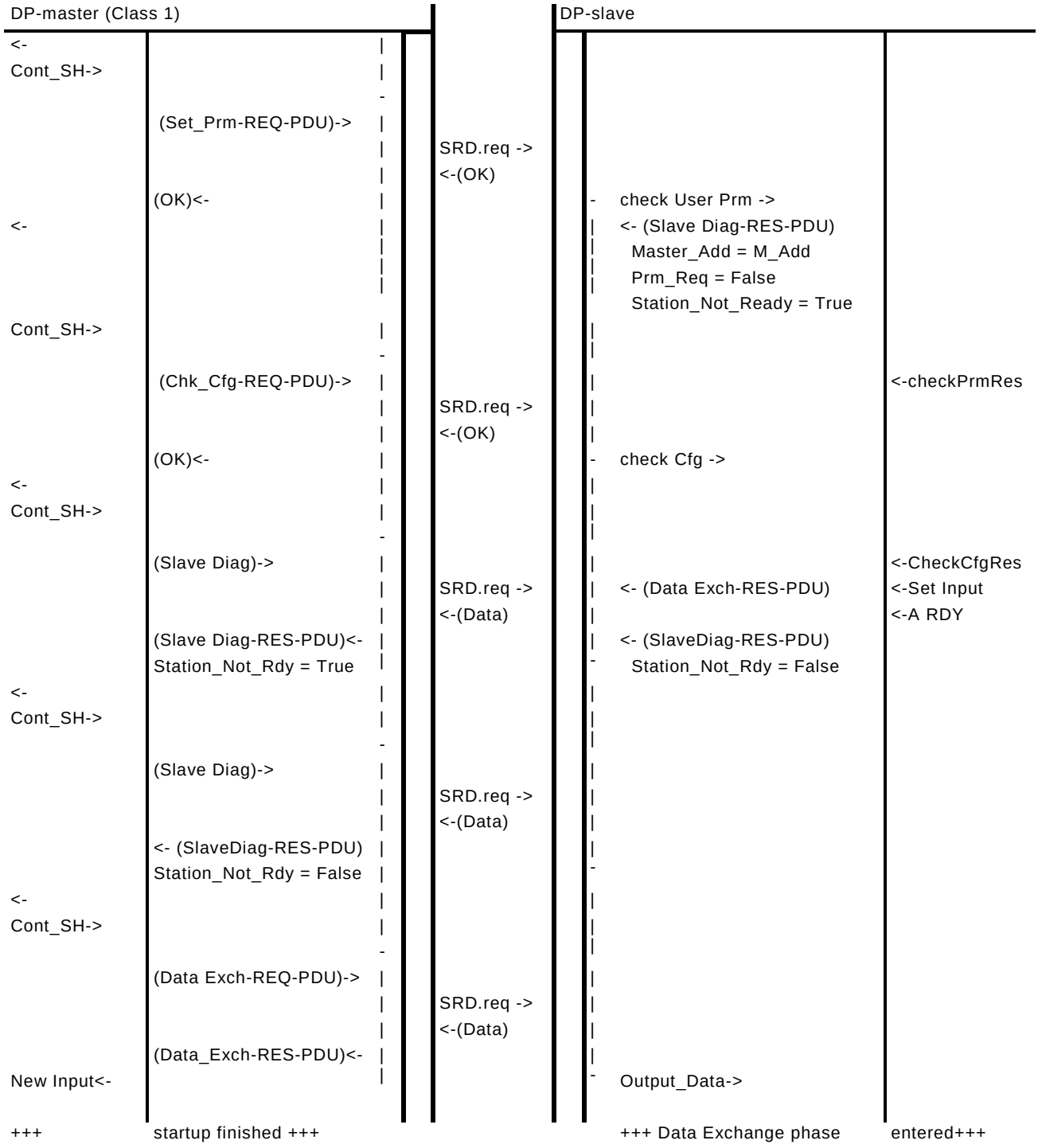

Légende

Anglais	Français
DP-master (Class 1)	DP-master (Class 1) ["Maître DP (Classe 1)"]
DP-slave	DP-slave ["Esclave DP"]
Start_SH-> (SH=Slave Handler)	Start_SH-> (SH=Slave Handler, descripteur d'esclave)
/*Startup of Master*/	/*Démarrage du Maître*/
/*Slave offline*/	/*Esclave hors ligne*/
<-SET_VALUE (Initialize DLL)	<-SET_VALUE (Initialisation de la DLL)
startup finished	démarrage terminé

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Anglais	Français
Data Exchange phase	Phase échange de données
entered	engagée

Figure 16 – Séquence de communication entre un maître DP et un esclave DP

6.7 Communication acyclique entre maître DP (Classe 2) et maître DP (Classe 1)

La communication entre maître DP (Classe 2) et maître DP (Classe 1) est gérée d'une manière fixe (Request-Poll-Response "demande-sondage-réponse"), voir la Figure 17, avec une exception.

Cette exception est la fonction Act_Para_Brct, qui est transférée comme une multidiffusion du maître DP (Classe 2) vers le maître DP (Classe 1) correspondant.

La communication est toujours lancée par le maître DP (Classe 2). Le maître DP (Classe 2) envoie une demande au maître DP (Classe 1) et attend la réponse. Le service est traité par le MMAC2 du maître DP (Classe 2). Après réception de la réponse, le maître DP (Classe 2) peut faire une nouvelle demande.

À un instant donné, le maître DP (Classe 1) peut seulement communiquer avec un seul maître DP (Classe 2).

La communication du maître DP est déclenchée par un xxx.req provenant du maître DP (Classe 2). Le MMAC1 transmet cette demande à la couche 2 et vérifie le statut après réception de la réponse de DMPM. Si le statut de la réponse est NR (pas de données de réponse), il continue avec un nouveau SRD sans L_sdu pour obtenir des données de réponse. Cette procédure est répétée par le maître DP (Classe 2) jusqu'à

l'apparition d'une réponse erronée,

ou la réception d'une SRD_RES_PDU avec des données de réponse,

ou l'expiration du temporisateur (Timer) T1.

Le résultat est alors transmis à l'utilisateur du maître DP (Classe 2).

Le temporisateur T1 est démarré après réception du xxx.req dans le MMAC2 du maître DP (Classe 2) et est arrêté après émission du xxx.cnf. La valeur chargée dans le temporisateur T1 dépend du paramètre DLL et de la performance du maître DP (Classe 1).

Le répondeur (maître DP (Classe 1)) attend une demande après une réinitialisation. Si le MMAC1 du maître DP (Classe 1) reçoit une demande valide, cette demande est transmise à l'utilisateur par le xxx.ind correspondant. À cet instant, une protection d'accès était établie au point d'accès au service local (SAP) pour la communication avec le maître DP (Classe 2). Ceci est nécessaire pour s'assurer que les données de réponse sont envoyées au bon maître DP (Classe 2).

Après réception de la réponse provenant de l'utilisateur (xxx.rsp), les données de réponse sont transmises avec un REPLY_UPDATE.req au DMPM. En outre, un temporisateur est lancé et commande la demande pour la réponse. Si le temporisateur expire et les données de réponse ne sont toujours pas récupérées par le maître DP (Classe 2), le MMAC1 supprime les données de réponse, car le MMAC1 présume que le maître DP (Classe 2) n'est plus disponible. Dans ce cas, la protection d'accès pour le maître DP (Classe 2) est annulée. Il en est également ainsi dans le cas d'une seule transaction si un DATA_REPLY.ind indique que les données de réponse sont recherchées par le maître DP (Classe 2). La valeur chargée dans le temporisateur du maître DP (Classe 1) dépend du paramètre DL et de la performance du maître DP (Classe 2).

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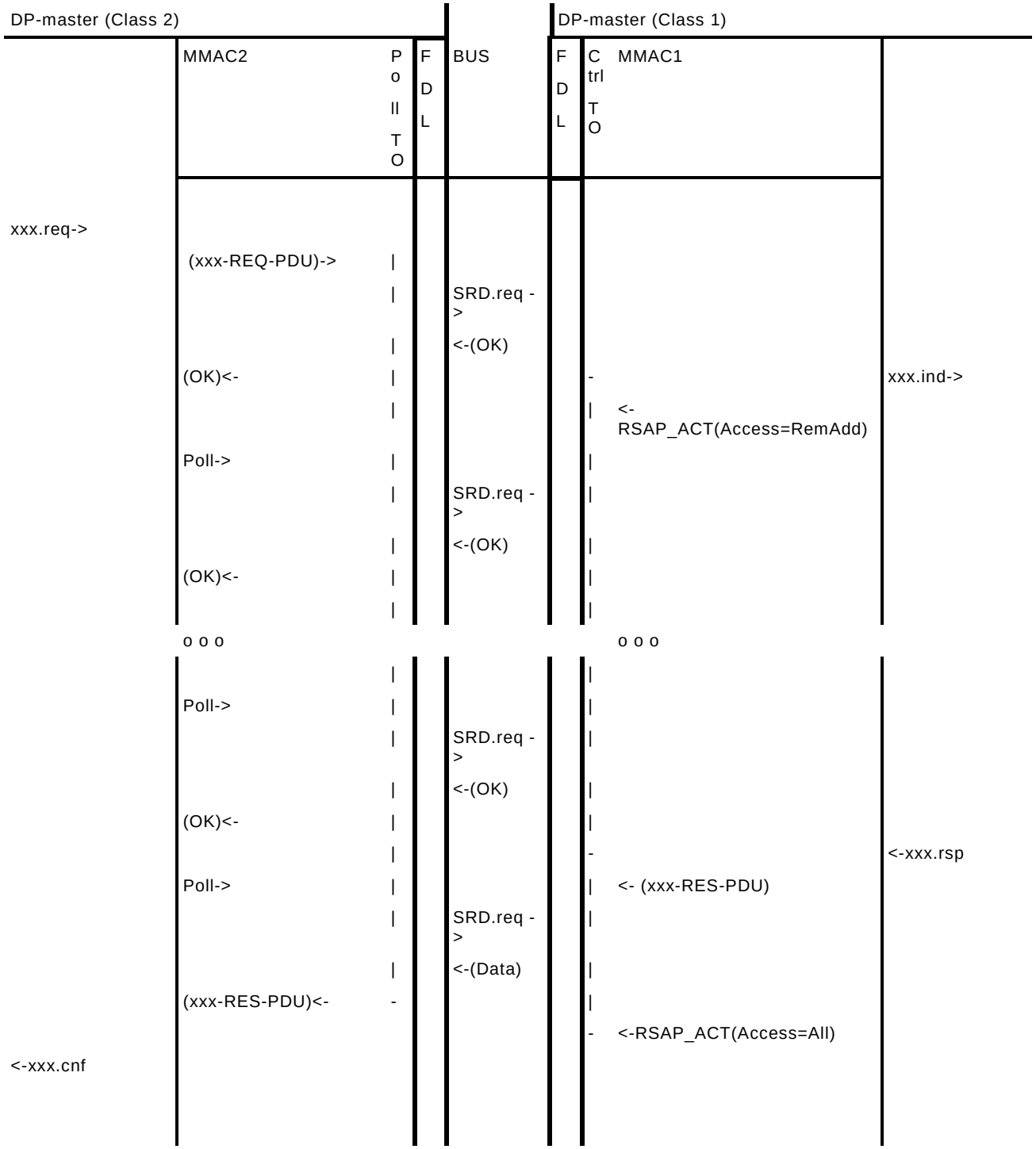
Dans le cas d'une communication Maître-Maître, une séquence de demandes peut être mise entre parenthèses. Par conséquent, la protection d'accès est établie par le "Start_Seq" et libérée par l'"End_Seq". Afin d'éviter les erreurs, le temps entre deux demandes est surveillé. La valeur pour la surveillance du temps est ajoutée à la demande Start_Seq. Avec le Start_Seq.req, l'utilisateur peut, en plus, envoyer un code de zone. Avec ce code de zone au début d'une séquence, une zone peut être réservée au niveau de l'utilisateur dans le maître DP (Classe 1).



Légende

Anglais	Français
DP-master (Class 2)	DP-master (Class 2) ["Maître DP (Classe 2)"]
DP-master (Class 1)	DP-master (Class 1) ["Maître DP (Classe 1)"]

Figure 17 – Séquence de communication entre un maître DP (classe 2) et un maître DP (classe 1)

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6.8 Communication acyclique entre maître DP (Classe 1) et esclave DP

La communication acyclique entre maître DP (Classe 1) et esclave DP est gérée d'une manière fixe (Request-Poll-Response "demande-sondage-réponse") sur la Relation entre applications MS1, voir la Figure 18.

La communication est toujours lancée par le maître DP (Classe 1). La connexion est établie si l'AR de la communication cyclique MS0 est entrée dans le mode d'échange de données. Le maître DP (Classe 1) émet une demande et effectue un sondage pour une réponse.

La communication est déclenchée par un xxx.req provenant du maître DP (Classe 1). Le MSAC1M transmet cette demande à la couche 2 et vérifie le statut après réception de la réponse de DMPMM1. Si le statut de la réponse est NR (pas de données de réponse), il continue avec un nouveau SRD avec une NULL-PDU pour obtenir des données de réponse. Cette procédure est répétée par le maître DP (Classe 1) jusqu'à

– l'apparition d'une réponse erronée,
– ou la réception d'une SRD_RES_PDU avec des données de réponse.

Le résultat est alors transmis à l'utilisateur du maître DP (Classe 1) au moyen d'un xxx.cnf correspondant.

Le répondeur (esclave DP) attend une réponse. Si le MSAC1S de l'esclave DP reçoit une demande valide, cette demande est transmise à l'utilisateur par le xxx.ind correspondant.

Après réception de la réponse provenant de l'utilisateur (xxx.rsp), les données de réponse sont transmises avec un REPLY_UPDATE.req au DMPMS.

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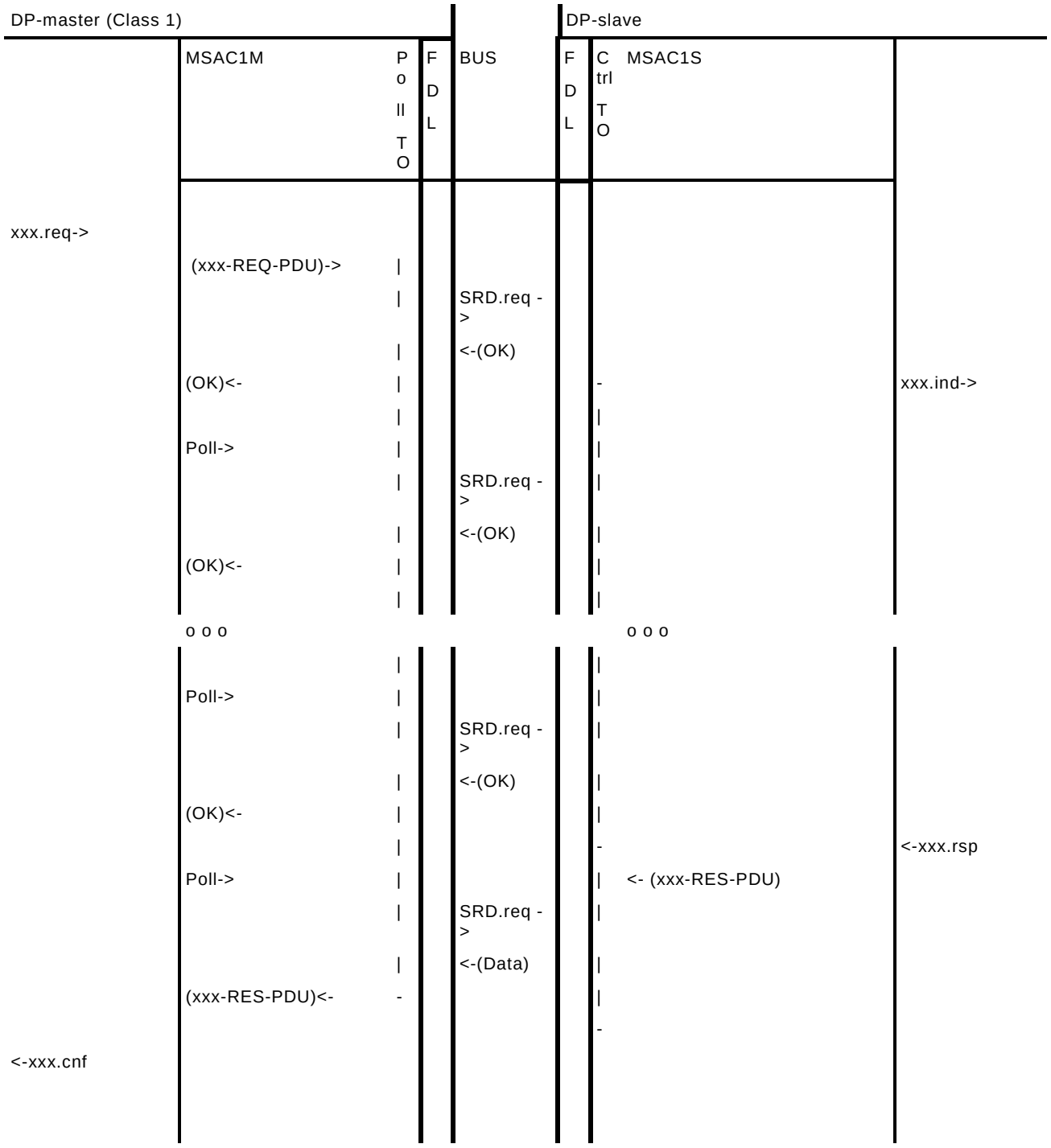

Légende

Anglais	Français
DP-master (Class 1)	DP-master (Class 1) ["Maître DP (Classe 1)"]
DP-slave	DP-slave ["Esclave DP"]

Figure 18 – Séquence de communication acyclique entre un maître DP (classe 1) et un esclave DP

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6.9 Surveillance d'une relation entre applications

6.9.1 Surveillance de MS0 – AR

6.9.1.1 Généralités

Dans les systèmes de commande industriels, il y a un besoin de vérifier le fonctionnement correct de chaque pièce individuelle. Dans un tel système, une défaillance de support ou un défaut dans un maître de bus ne doit pas entraîner des erreurs dans les appareils périphériques. Dans les cas susmentionnés, un appareil périphérique doit commuter à un état de sécurité. En outre, il faut que l'utilisateur d'un maître de bus (Classe 1) soit informé des pannes d'émission après une certaine durée.

6.9.1.2 Intervalle de commande au niveau de l'esclave DP

Commande de chien de garde

Ce temporisateur, redémarré par des demandes reçues côté maître de bus, met les sorties d'un esclave de bus à l'état de sécurité après expiration du temporisateur.

Règles d'émission de Check User Prm Result.req et Check Cfg Result.req

L'ordre d'émission de ces primitives doit être l'ordre d'invocation des primitives Check User Prm.ind et Check Cfg Result.ind par le MSCY1S.

6.9.1.3 Intervalles de commande au niveau du maître DP (Classe 1)

Min_Slave_Interval

Ce temps de surveillance spécifie la plus petite durée admissible entre deux cycles de sondage d'esclave. Cela assure que la séquence des demandes de fonction issues du maître de bus peut être gérée par l'esclave de bus. Cette durée est satisfaite par le maître de bus (Classe 1) pour chaque fonction maître-esclave, avec l'exception de la fonction Global_Control. Pour la fonction Global_Control, l'utilisateur a la responsabilité de la conformité au Min_Slave_Interval.

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Data_Control_Time

Le Data_Control_Time définit le temps dans lequel un maître DP (Classe 1) vérifie le transfert de données vers ses esclaves DP associés. De surcroît, en la moitié de cette durée, le maître DP (Classe 1) indique son mode de fonctionnement au moyen d'un service Global Control aux esclaves DP dédiés.

Le jeu de paramètres de maître contient le Data_Control_Time.

Règle

$$T_{WD} > T_{TR} \quad (2)$$

$$T_{WD} > \text{Min\_Slave\_Interval} \quad (3)$$

$$\text{Data\_Control\_Time} \geq 6 \cdot T_{WD} \quad (4)$$

6.9.2 Surveillance de MS2 – AR

L'objectif de la surveillance de connexion est de détecter la défaillance du partenaire de communication. Des PDU Idle (de repos) sont échangées pour redéclencher le temporisateur de surveillance du partenaire de communication.

Le cycle de service Idle déclenché par un maître de bus est appelé Master-Idle. Le cycle de service Idle déclenché par l'esclave est appelé Slave-Idle.

Toutes les séquences de surveillance et de repos sont commandées par une seule base de temps "Send Timeout".

Send_Timeout

Chaque relation de communications MSAC2 est surveillée par un temporisateur Timer (Send_Timeout).

Si ce Timer expire, le maître de bus (Classe 2) abandonne la relation de communications MSAC2. En outre, il faut que l'utilisateur d'un maître de bus (Classe 2) soit informé.

Il faut que ce Timer soit installé selon

a) la charge du réseau
b) le nombre de connexions parallèles par maître DP

Règle

$$T_{\text{Envoi\_TO(TS)}} \geq \left(\sum ATCyc\right) \times \text{Num\_de\_max}(TS) \quad (5)$$

où

ATCyc signifie le retard de toutes les activités d'un cycle de jeton,

Num_of_max signifie nombre de connexions acycliques maximal.

NOTE Le paramètre Send_Timeout dans le service Initiate est codé comme une valeur entière non signée, chaque unité représente 10 ms. En raison des erreurs de Timer et des arrondis de nombres entiers, le prochain nombre entier possible plus un est à utiliser comme Send_Timeout.

Il est supposé qu'une seule interaction acyclique est exécutée dans un cycle de jeton en chaque maître DP. Si plus d'une peut être exécutée, le Send_TO peut être divisé par le nombre d'interactions acycliques par cycle de jeton

La Figure 19 montre un exemple pour l'établissement d'une connexion MS2 entre un Maître (Classe 2) et un Esclave. La surveillance des connexions démarre immédiatement après cela.

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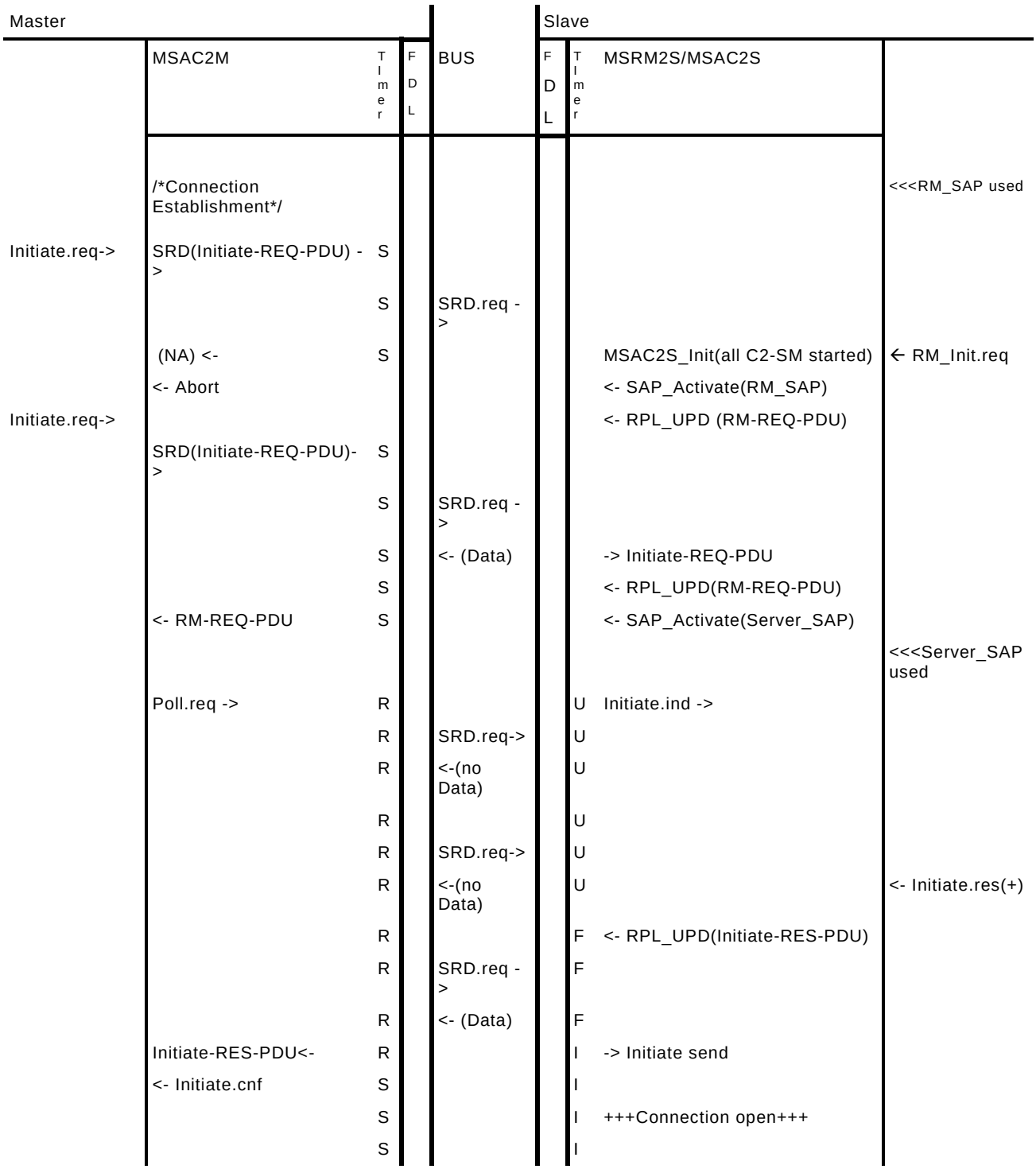

Légende

Anglais	Français
Master	Maître
Slave	Esclave
/*Connection Establishment*/	/*Établissement de connexion*/
+++Connection open+++	+++Connexion ouverte+++

Figure 19 – Exemple de l'établissement d'une connexion sur MS2

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Phase a) Surveillance de connexion pendant l'attente de réponse de service MS2 en cours ou fonctionnement de Master-Idle:

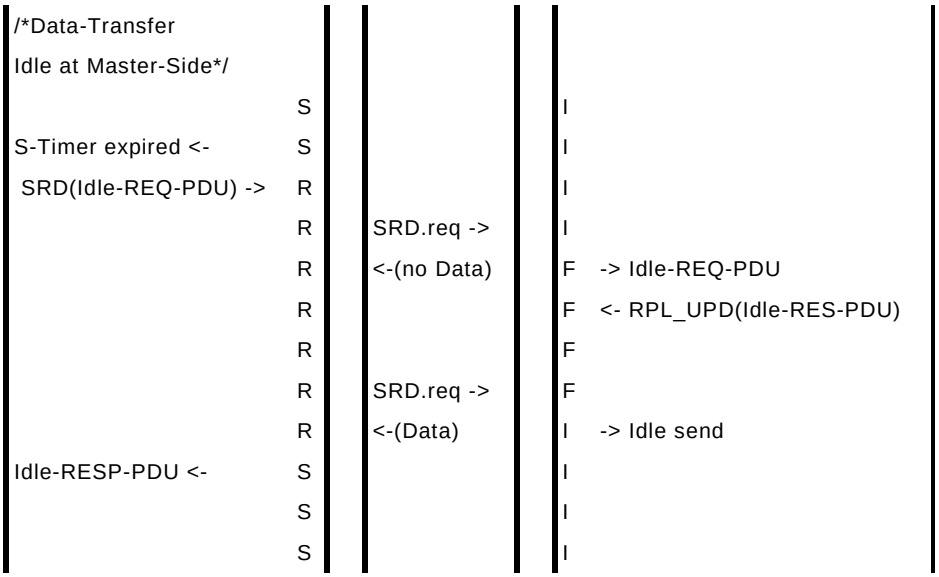
Le maître DP démarre le R-Timer (temporisateur de réception "receive timer") lorsque la demande de service MS2 est transférée vers la DLL locale. Le R-Timer surveille le MSAC2S distant et la DLL locale.

Le R-Timer est arrêté si une réponse est reçue ou redémarré si une demande de Slave-Idle est reçue. La surveillance de connexion abandonne la connexion si une confirmation négative de DL apparaît ou le R-Timer expire.

L'esclave démarre l'U-Timer (temporisateur de réponse d'utilisateur "user response timer") lorsqu'une indication de service confirmé est transmise à l'utilisateur. L'U-Timer est arrêté lorsque l'utilisateur fournit la réponse de service. Si l'U-Timer expire une demande de Slave-Idle est envoyée pour redéclencher le R-Timer de surveillance du Maître.

L'esclave DP démarre le F-Timer (temporisateur de réponse de recherche "fetch response timer") lorsqu'une réponse de service ou une demande de Slave-Idle est transmise à la DLL locale. Le F-Timer est arrêté lorsque le maître a récupéré la PDU. Si le F-Timer expire, la surveillance de connexion abandonne la connexion.

La surveillance de connexion de phase a) est montrée à la Figure 20.



Légende

Anglais	Français
/*Data-Transfer Idle at Master-Side*/	/*Transfert de données au repos côté Maître*/
S-Timer expired	S-Timer expiré

Figure 20 – Au repos côté maître sur MS2

Phase b) Surveillance de connexion sans réponse de service en cours:

Le maître de bus démarre le S-Timer (temporisateur d'envoi "send timer") si une PDU de réponse ou une Idle-PDU est reçue. Le S-Timer est arrêté si une demande de service est fournie par l'utilisateur. Si le S-Timer expire, une demande de Master-Idle est envoyée pour arrêter l'I-Timer de surveillance de l'Esclave.

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Au cours de l'attente de réponses Master-Idle, la surveillance de connexion est gérée comme décrit dans la Phase a).

L'Esclave démarre l'I-Timer (temporisateur d'indication "indication timer") lorsque le tampon de mise à jour de réponses a été récupéré par le Maître. L'I-Timer est arrêté si une demande de Master-Idle ou une indication de service est reçue. Si l'I-Timer expire, la surveillance de connexion abandonne la connexion.

Le Maître surveille l'émission de l'Abort-REQ-PDU. Le Maître démarre le S-Timer lorsqu'un Abort.req est transféré à la DLL locale. Le S-Timer est arrêté lorsque l'Abort.req est envoyé. Si le S-Timer expire, la connexion est fermée et l'utilisateur est informé par un MSAC2M_Closed.ind.

L'Esclave surveille la recherche de l'Abort-REQ-PDU par le Maître. L'Esclave démarre le F-Timer lorsqu'un Abort.req est transféré à la DL locale. Le F-Timer est arrêté si le Maître a récupéré l'Abort-REQ-PDU. Si le F-Timer expire, le Server_SAP est désactivé et la connexion est fermée.

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La surveillance de connexion de phase b) est montrée à la Figure 21.

Master					Slave			
	MSAC2M	Timer	FDL	BUS	FDL	Timer	MSRM2S/MSAC2S	
	/*Data-Transfer Idle at Slave-Side*/							
Read.req->		S				I		
	SRD(Read-REQ-PDU)->	R				I		
		R		SRD.req ->		I		
		R		<-(no Data)			-> Read-REQ-PDU	
	Poll.req ->	R				U	Read.ind ->	
		R		SRD.req ->		U		
		R		<-(no Data)		U		
		R				U	-> U-Timer expired	
		R				F	<- RPL_UPD(Idle-REQ-PDU)	
		R				F		
		R		SRD.req ->		F		
		R		<-(Data)		I	-> Idle send	
	Idle-REQ-PDU<-	R				I		
	SRD(Idle-RES-PDU) ->	R				I		
		R		SRD.req ->		I		
		R		<-(no Data)		U	-> Idle-RES-PDU	
		R				U		
		R		SRD.req ->		U		<- Read.res
		R		<-(no Data)		F	<- RPL_UPD(Read-RES-PDU)	
		R				F		
		R		SRD.req ->		F		
		R		<-(Data)		I	-> Response send	
	Read-RES-PDU <-	R				I		
	<- Read.cnf	S				I		
		S				I		

Légende

Anglais	Français
Master	Maître
Slave	Esclave
/*Data-Transfer Idle at Slave-Side*/	/*Transfert de données au repos côté Esclave*/

Figure 21 – Au repos côté esclave sur MS2

7 Diagramme d’états AP-Context (contexte d'AP)

Aucun diagramme d’états AP-Context n'est défini pour ce protocole.

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8 Machines protocolaires de services de la FAL (FSPM)

8.1 FSPMS

8.1.1 Définitions des primitives

8.1.1.1 Primitives échangées entre FSPMS et AP-Context

Le Tableau 42 montre les primitives de service, y compris leurs paramètres associés, émises par l'AP-Context et reçues par la FSPMS.

Tableau 42 – Primitives émises par l'AP-Context vers la FSPMS

Nom de primitive	Source	Paramètres associés	Fonctions
DLL Init DP slave.req	AP-Context	Bus Para	Se référer à Définition des services de la couche application, Bus de terrain de Type 3, CEI 61158-5-3
SInit MS0.req	AP-Context	AREP	
SInit MS1.req	AP-Context	AREP	
SInit MS2.req	AP-Context	AREP	
Reset DP slave.req	AP-Context	(aucun)	
Abort.req	AP-Context	AREP, Subnet, Instance, Reason Code	
DP slave Application Ready.req	AP-Context	AREP	
Check User Prm Result.req	AP-Context	AREP, Prm_OK	
Check Ext User Prm Result	AP-Context	AREP, Ext_Prm_OK	
Check Cfg Result.req	AP-Context	AREP, Cfg_OK, Input Data Len, Output Data Len	
Set Cfg.req	AP-Context	AREP, Cfg Data	
Set Slave Diag.req	AP-Context	AREP, Ext Diag Overflow, Ext Diag Flag, Ext Diag Data	
Set Input.req	AP-Context	AREP, Input Data	
Get Output.req	AP-Context	AREP	
Alarm Notification.req	AP-Context	AREP, Slot Number, Alarm Type, Seq Nr, Add Ack, Alarm Specifier, Alarm Data	
Initiate.rsp(+)	AP-Context	AREP, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	

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Nom de primitive	Source	Paramètres associés	Fonctions
Initiate.rsp(-)	AP-Context	AREP, Error Decode, Error Code 1 Error Code 2	
Read.rsp(+)	AP-Context	AREP, Length, Data	
Read.rsp(-)	AP-Context	AREP, Error Decode, Error Code 1 Error Code 2	
Write.rsp(+)	AP-Context	AREP, Length	
Write.rsp(-)	AP-Context	AREP, Error Decode, Error Code 1 Error Code 2	
Data Transport.rsp(+)	AP-Context	AREP, Length, Data	
Data Transport.rsp(-)	AP-Context	AREP, Error Decode, Error Code 1 Error Code 2	
Alarm Ack.rsp(+)	AP-Context	AREP, Slot Number, Alarm Type, Seq Nr	
Alarm Ack.rsp(-)	AP-Context	AREP, Slot Number, Alarm Type, Seq Nr	
Load ARL DP slave.req	AP-Context	Min Send Timeout, List of Resource Manager Entries, List of S_SAP_indices, List of ARL Entries	
Get ARL DP slave.req	AP-Context	(aucun)	
Load CRL DP slave.req	AP-Context	List of CRL Entries	
Get CRL DP slave.req	AP-Context	(aucun)	
Set ARL Isochronous Mode.req	AP-Context	Isochronous Mode	
Get Publisher Data.req	AP-Context	AREP, CREP	
Start Subscriber.req	AP-Context	AREP, CREP	
Stop Subsciber.req	AP-Context	AREP, CREP	
Load CRL DXB-Linktable Entries.req	AP-Context	AREP, DXB-Linktable	
Initiate Load.rsp(+)	AP-Context	AREP, Actual LR Size, Max Response Delay, Max Segment Length User Specific	
Initiate Load.rsp(-)	AP-Context	AREP, Error Code	

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Nom de primitive	Source	Paramètres associés	Fonctions
Pull Segment.rsp(+)	AP-Context	AREP, Segment Length, Segment Number, More Follows, Data	
Pull Segment.rsp(-)	AP-Context	AREP, Error Code	
Push Segment.rsp(+)	AP-Context	AREP	
Push Segment.rsp(-)	AP-Context	AREP, Error Code	
Terminate Load.rsp(+)	AP-Context	AREP	
Terminate Load.rsp(-)	AP-Context	AREP, Error Code	
Start.rsp(+)	AP-Context	AREP	
Start.rsp(-)	AP-Context	AREP Error Code	
Stop.rsp(+)	AP-Context	AREP	
Stop.rsp(-)	AP-Context	AREP Error Code	
Resume.rsp(+)	AP-Context	AREP	
Resume.rsp(-)	AP-Context	AREP Error Code	
Reset.rsp(+)	AP-Context	AREP	
Reset.rsp(-)	AP-Context	AREP Error Code	
Call.rsp(+)	AP-Context	AREP Result Argument	
Call.rsp(-)	AP-Context	AREP Error Code	
Get FI State.rsp(+)	AP-Context	AREP FI State	
Get FI State.rsp(-)	AP-Context	AREP Error Code	

Le Tableau 43 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMS et reçues par l'AP-Context.

Tableau 43 – Primitives émises par la FSPMS vers l'AP-Context

Nom de primitive	Source	Paramètres associés	Fonctions
Sinit DLL.cnf	FSPMS	(aucun)	Se référer à Définition des services de la couche application, Bus de terrain de Type 3, CEI 61158-5-3
Sinit MS0.cnf	FSPMS	AREP	
Sinit MS1.cnf	FSPMS	AREP	
Sinit MS2.cnf	FSPMS	AREP	
Reset.cnf	FSPMS	(aucun)	
Check User Prm Result.cnf(+)	FSPMS	AREP	
Check User Prm Result.cnf(-)	FSPMS	AREP, Status	
Check Ext User Prm Result.cnf(+)	FSPMS	AREP	
Check Ext User Prm Result.cnf(-)	FSPMS	AREP, Status	

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Nom de primitive	Source	Paramètres associés	Fonctions
Check Cfg Result.cnf(+)	FSPMS	AREP	
Check Cfg Result.cnf(-)	FSPMS	AREP, Status	
Set Cfg.cnf(+)	FSPMS	AREP	
Set Cfg.cnf(-)	FSPMS	AREP	
Set Slave Diag.cnf	FSPMS	AREP	
Set Input.cnf(+)	FSPMS	AREP	
Set Input.cnf(-)	FSPMS	AREP	
Get Output.cnf(+)	FSPMS	AREP, Output Data, Clear Flag, New Flag	
Get Output.cnf(-)	FSPMS	AREP	
Started.ind	FSPMS	AREP, Actual Enabled Alarms, Alarm Sequence, Alarm Limit	
Stopped.ind	FSPMS	AREP	
Abort.ind	FSPMS	AREP, Locally Generated, Subnet, Instance, Reason Code, Additional Detail	
Fault.ind	FSPMS	AREP	
Alarm Reject.ind	FSPMS	AREP, Slot Number, Alarm Type, Seq Nr	
Set Slave Add.ind	FSPMS	AREP, New Slave Add, Ident Number, No Add Chg, Rem Slave Data	
Check User Prm.ind	FSPMS	AREP, User Prm Data	
Check Ext User Prm.ind	FSPMS	AREP, Ext User Prm Data	
Check Cfg.ind	FSPMS	AREP, Cfg Data	
New Output.ind	FSPMS	AREP, Output Data, Clear Flag	
Global Control.ind	FSPMS	AREP, Clear Command, Sync Command, Freeze Command, Group Select	
Initiate.ind	FSPMS	AREP, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	
Read.ind	FSPMS	AREP, Slot Number, Index, Length	

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Nom de primitive	Source	Paramètres associés	Fonctions
Write.ind	FSPMS	AREP, Slot Number, Index, Length, Data	
Data Transport.ind	FSPMS	AREP, Slot Number, Index, Length, Data	
Alarm Ack.ind	FSPMS	AREP, Slot Number, Alarm Type, Seq Nr	
Load ARL DP slave.cnf(+)	FSPMS	(aucun)	
Load ARL DP slave.cnf(-)	FSPMS	Status	
Get ARL DP slave.cnf(+)	FSPMS	Min Send Timeout, List of Resource Manager Entries, List of S_SAP_indices, List of ARL Entries	
Get ARL DP slave.cnf(-)	FSPMS	Status	
Load CRL DP slave.cnf(+)	FSPMS	(aucun)	
Load CRL DP slave.cnf(-)	FSPMS	Status	
Get CRL DP slave.cnf(+)	FSPMS	List of CRL Entries	
Get CRL DP slave.cnf(-)	FSPMS	Status	
Set ARL Isochronous Mode.cnf(+)	FSPMS		
Set ARL Isochronous Mode.cnf(-)	FSPMS	Status	
SYNCH Event.ind	FSPMS	AREP, Status	
Publisher Active.ind	FSPMS	AREP, CREP, Status	
New Publisher Data.ind	FSPMS	AREP, CREP	
Get Publisher Data.cnf(+)	FSPMS	AREP, CREP, Data, New Flag	
Get Publisher Data.cnf(-)	FSPMS	AREP, CREP	
Start Subsciber.cnf(+)	FSPMS	AREP, CREP	
Start Subscriber.cnf(-)	FSPMS	AREP, CREP	
Stop Subscriber.cnf(+)	FSPMS	AREP, CREP	
Stop Subscriber.cnf(-)	FSPMS	AREP, CREP	
Load CRL DXB-Linktable Entries.cnf(+)	FSPMS	AREP	
Load CRL DXB-Linktable Entries.cnf(-)	FSPMS	AREP	

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Nom de primitive	Source	Paramètres associés	Fonctions
Set Time.ind	FSPMS	AREP, Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour	
Sync Interval Violation.ind	FSPMS	AREP	
Initiate Load.ind	FSPMS	AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request Timeout User Specific	
Pull Segment.ind	FSPMS	AREP, Slot Number, LR Index, Segment Length	
Push Segment.ind	FSPMS	AREP, Slot Number LR Index, Segment Length Segment Number, More Follows, Data	
Terminate Load.ind	FSPMS	AREP Slot Number LR Index	
Start.ind	FSPMS	AREP Slot Number FI Index Execution Argument	
Stop.ind	FSPMS	AREP Slot Number FI Index	
Resume.ind	FSPMS	AREP Slot Number FI Index Execution Argument	
Reset.ind	FSPMS	AREP Slot Number FI Index	
Call.ind	FSPMS	AREP Slot Number Entity Number FI Index Execution Argument	
Get FI State	FSPMS	AREP Slot Number FI Index	

8.1.1.2 Paramètres des primitives de FSPMS

Les paramètres utilisés avec les primitives échangées entre la FSPMS et l'AP-Context sont décrits dans "Définition des services de la FAL, Bus de terrain de Type 3" (voir la CEI 61158-5-3).

8.1.2 Description de diagramme d'états

Ce Diagramme est utilisé pour coordonner les interactions entre l'AP-Context (Contexte d'AP) et les DMPMS, MSCY1S, MSAC1S, MSRM2S et MSAC2S. Comme les alarmes exigent la prise en charge de plusieurs diagrammes d'états, les alarmes sont gérées par ce diagramme.

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Avec le SInit_MS1.req, les variables locales des diagrammes d'états sont mises aux valeurs de démarrage et les diagrammes d'états MSAC1 sont initialisés.

Lorsque le MSCY1S entre dans l'état d'échange de données "Data-Exchange-State" (ce qui est signalé par un start.ind), des messages d'alarme peuvent être générés par l'utilisateur.

Le traitement parallèle des messages d'alarme est limité par:

a) le nombre des classes d'alarme "Alarm_Class" (Alarm_Sequence = False)

b) le nombre des Alarmes acceptées par le Maître (Alarm_Sequence = True)

c) le nombre des Alarmes gérées par cet Esclave (Alarm_Sequence = True).

Les alarmes peuvent être traitées uniquement si l'Alarm_Class appropriée est activée par le maître DP. Une alarme produite par une Alarm_Notification est émise par le biais d'un diagnostic (MSCY1S) vers un maître DP (Classe 1). L'acquittement est reçu par un service Alarm Ack traité par le MSAC1S.

Le diagramme d'états a besoin des variables locales qui sont décrites ci-dessous. En outre, le diagramme utilise des fonctions et des macros qui sont énumérées en 8.1.4.

Variables locales

Alarm_Sequence
(Boolean)
Cette variable indique si,

a) une seule alarme d'une Alarm_Class spécifique peut être active à un instant donné (Alarm_Sequence = False), ou

b) plusieurs alarmes (2 à 32) de n'importe quel type peuvent être actives à un instant donné (Alarm_Sequence = True).

Initial_Alarm_Sequence
(Boolean)

Cette variable stocke la capacité de base de l'Esclave.

Outstanding_Alarm_TABLE
(Array 0…7, 0…31 of Alarm_Status, Alarm_Type)

Alarm_Status: pending, not_pending

Alarm_Type: 1 à 6, 32 à 126

L'Alarm_State_Table est une matrice bidimensionnelle ayant 7 * 32 éléments. Chaque élément de la matrice stocke des informations relatives à l'état actuel de n'importe quelle alarme. La matrice est adressée avec l'Alarm_Class calculée à partir de l'Alarm_Type et du Seq_Nr de l'alarme.

Alarm_Max
(Unsigned8)

Cette variable indique le nombre maximal d'alarmes parallèles de cet Esclave.

Plage: 1 à 32

Alarm_Limit
(Unsigned8)

Cette variable contient le nombre maximal d'alarmes autorisées par la connexion Maître-Esclave réelle.

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Plage: 1 à 32

Alarm_Decode
(Array 0 à 7 de Unsigned8)

Décodage du nombre d'alarmes parallèles:

Alarm_Decode[0] = 1

Alarm_Decode[1] = 2

Alarm_Decode[2] = 4

Alarm_Decode[3] = 8

Alarm_Decode[4] = 12

Alarm_Decode[5] = 16

Alarm_Decode[6] = 24

Alarm_Decode[7] = 32

Alarm_Count
(Unsigned8)

Ce compteur contient le nombre d'alarmes (0 à 32) qui ont été réellement envoyées par l'esclave DP. Le compteur est uniquement utilisé dans le mode de séquence.

Plage: 0 à Alarm_Limit

Req_Alarm_FIFO
Le Req_Alarm_FIFO est utilisé pour stocker les alarmes qui sont encore à envoyer. Chaque élément consiste en une Alarm-PDU. Le FIFO doit pouvoir contenir jusqu'à 32 entrées Alarm_Max.

Actual_Enabled_Alarms

(Array of Bits)

Cette variable indique les types d'alarmes qui sont effectivement pris en charge par le Maître.

Bit 0 = réservé

Bit 1 = réservé

Bit 2 = Update_Alarm

Bit 3 = Status_Alarm

Bit 4 = Manufacturer_Specific_Alarm

Bit 5 = Diagnostic_Alarm

Bit 6 = Process_Alarm

Bit 7 = Pull_Plug_Alarm

Alarms_Supported
(Array of Bits)

Cette variable indique les types d'alarmes qui sont pris en charge par l'Esclave.

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Bit 0 = réservé

Bit 1 = réservé

Bit 2 = Update_Alarm

Bit 3 = Status_Alarm

Bit 4 = Manufacturer_Specific_Alarm

Bit 5 = Diagnostic_Alarm

Bit 6 = Process_Alarm

Bit 7 = Pull_Plug_Alarm

Local_Diag_Buffer
(Octet-String)

Cette variable locale est utilisée pour stocker les Diag-Data (données de dialogue), à l'exception des 6 premiers octets et les PDU d'alarme et de statut.

L_Ext_Diag_Flag
(Bit)

Cette variable locale est utilisée pour stocker l'Ext_Diag_Flag.

Stored_Diag
(Boolean)

Fanion qui indique que de nouvelles Diag_Data sont stockées dans le tampon Diag_Buffer pendant l'attente de l'émission d'un précédent diagnostic.

Diag_Buffer

(Octet-String)

Tampon pour stocker un Slave-Diagnostic(Identification-Related-Diagnosis, Channel-Related-Diagnosis, Revision_Number)

Index
(Structure of Alarm_Class, Seq_Nr)

Cet indice est utilisé pour adresser l'Alarm_Table en cours.

LR_State
(Unsigned8)

Cette variable stocke l'état de la séquence Load Region.

CurrentBuffer
(Array of structure Empty, WriteLength and Data)

Ce tampon stocke des APDU pour Load Region pour chaque AREP.

CurrentLoadType
(Unsigned8)

Cette variable stocke si une séquence Pull ou Push est active.

CurrentLRIndex
(Unsigned16)

Cette variable stocke le type LR.

8.1.3 Table d'états de FSPMS

Le Tableau 44 contient la description complète du diagramme d'états FSPMPS.

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Contraintes de traitement pour le mode isochrone:
Le temps entre l'émission du SYNCH.ind jusqu'aux demandes de service du MSCY1S à la DL doit être suffisamment court pour permettre à la MAC d'envoyer toutes les demandes issues de MSCY1S en un cycle.

La définition suivante pour un ensemble d'états est utilisée dans le Tableau 44.

t_state = W-START ou W-DIA-UPD ou W-FETCHED

Tableau 44 – Table d'états de FSPMS

#	État courant	Événement /Condition =>Action	État suivant
1	POWER-ON	Load ARL DP Slave.req (Min Send Timeout, List of Resource Manager Entries, List of S_SAP_indices, List of ARL Entries) /valid parameters => Load ARL DP Slave.cnf(+)	POWER-ON
2	POWER-ON	Load ARL DP Slave.req (Min Send Timeout, List of Resource Manager Entries, List of S_SAP_indices, List of ARL Entries) /invalid parameters => Status := NO Load ARL DP Slave.cnf(-) (Status)	POWER-ON
3	POWER-ON	Get ARL DP Slave.req /ARL loaded => Get ARL DP Slave.cnf(+) (Min Send Timeout, List of Resource Manager Entries, List of S_SAP_indices, List of ARL Entries)	POWER-ON
4	POWER-ON	Get ARL DP Slave.req /ARL not loaded => Status := NO Get ARL DP Slave.cnf(-) (Status)	POWER-ON
5	POWER-ON	Load CRL DP Slave.req (List of CRL Entries) /valid parameters => Load CRL DP Slave.cnf(+)	POWER-ON
6	POWER-ON	Load CRL DP Slave.req (List of CRL Entries) /invalid parameters => Status := NO Load CRL DP Slave.cnf(-) (Status)	POWER-ON
7	POWER-ON	Get CRL DP Slave.req /CRL loaded => Get CRL DP Slave.cnf(+) (List of CRL Entries)	POWER-ON
8	POWER-ON	Get CRL DP Slave.req /CRL not loaded => Status := NO Get CRL DP Slave.cnf(-) (Status)	POWER-ON
9	POWER-ON	FSPMS_SInit_MS1.req (AREP) /Alarm_Mode_Slave <> 0 => Alarm_Sequence := True Initial_Alarm_Sequence := Alarm_Sequence Alarm_Max := Alarm_Decode[Alarm_Mode_Slave] Alarm_Max := max(Alarm_Max, 7) Local_Diag_Buffer := Default_Ext_Diag_Data L_Ext_Diag_Flag := Default_Ext_Diag FILL (Outstanding_Alarm_TABLE.Alarm_Status, not_pending) Stored_Diag:=False Reset_Req_Alarm_FIFO() Act_Ref := 0 MSAC1_SInit_MS1.req	W-START-C1

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#	État courant	Événement /Condition =>Action	État suivant
10	POWER-ON	FSPMS_SInit_MS1.req (AREP) /Alarm_Mode_Slave = 0 => Alarm_Sequence := False Initial_Alarm_Sequence := Alarm_Sequence Alarm_Max := 7 Local_Diag_Buffer := Default_Ext_Diag_Data L_Ext_Diag_Flag := Default_Ext_Diag FILL(Outstanding_Alarm_TABLE.Alarm_Status, not_pending) Stored_Diag:=False Reset_Req_Alarm_FIFO() FSPMS_User_Reset:=False Act_Ref := 0 CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSAC1_SInit_MS1.req	W-START-C1
11	W-START-C1	MSAC1S_SInit_MS1.cnf => FSPMS_SInit_MS1.cnf(AREP)	W-START
12	W-START	FSPMS_Abort.req(AREP) /AREP.AR_Type=MS0 => CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSCY1S_Abort.req	W-START
13	W-START	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) => FSPMS_Alarm_Notification.cnf(-)(AREP, Alarm_Type, Slot_Number, Seq_Nr, Status=No_Start)	W-START
14	W-START	FSPMS_Set_Slave_Diag.req(AREP,Ext_Diag_Flag, Ext_Diag) => L_Ext_Diag_Flag := Ext_Diag_Flag L_Ext_Diag_Overflow := Ext_Diag_Overflow Local_Diag_Buffer := Ext_Diag Act_Ref := Act_Ref + 1 MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref) FSPMS_Set_Slave_Diag.cnf(AREP)	W-START
15	W-START	MSAC1S_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) => MSCY1S_Abort.req FSPMS_Abort.ind(AREP)	W-START
16	W-START	MSCY1S_Set_Slave_Diag.cnf(-) (Reference) => ignore	W-START
17	W-START	MSCY1S_Set_Slave_Diag.cnf(+) (Reference) => ignore	W-START
18	W-START	MSCY1S_Start.ind(Enabled_Alarms, Alarm_Mode_Master, Diag_Flag) /(Enabled Alarms & Alarms_Supported) = 0 => FSPMS DP Slave Started.ind(AREP,Actual_Enabled_Alarms, Alarm_Sequence, Alarm_Limit)	W-START

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#	État courant	Événement /Condition =>Action	État suivant
19	W-START	MSCY1S_Start.ind(Enabled_Alarms, Alarm_Mode_Master, Diag_Flag) / ((Enabled Alarms & Alarms_Supported) <> 0) && Alarm_Mode_Master <> 0 && Initial_Alarm_Sequence = TRUE && Diag_Flag=FALSE => Alarm_Sequence := True Actual_Enabled_Alarms := Enabled_Alarms Alarm_Limit := min(Alarm_Max, Alarm_Decode[Alarm_Mode_Master]) Alarm_Count := 0 FSPMS DP Slave Started.ind(AREP,Actual_Enabled_Alarms, Alarm_Sequence, Alarm_Limit)	W-DIA-UPD
20	W-START	MSCY1S_Start.ind(Enabled_Alarms, Alarm_Mode_Master, Diag_Flag) / ((Enabled Alarms & Alarms_Supported) <> 0) && Alarm_Mode_Master <> 0 && Initial_Alarm_Sequence =FALSE => MSCY1S_Abort.req	W-START
21	W-START	MSCY1S_Start.ind(Enabled_Alarms, Alarm_Mode_Master, Diag_Flag) / ((Enabled Alarms & Alarms_Supported) <> 0) && Alarm_Mode_Master = 0 && Diag_Flag=TRUE => Alarm_Sequence := False Actual_Enabled_Alarms := Enabled_Alarms FSPMS DP Slave Started.ind(AREP,Actual_Enabled_Alarms, Alarm_Sequence, Alarm_Limit)	W-FETCHED
22	W-START	MSCY1S_Start.ind(Enabled_Alarms, Alarm_Mode_Master, Diag_Flag) / ((Enabled Alarms & Alarms_Supported) <> 0) && Alarm_Mode_Master = 0 && Diag_Flag=FALSE => Alarm_Sequence := False Actual_Enabled_Alarms := Enabled_Alarms FSPMS DP Slave Started.ind(AREP,Actual_Enabled_Alarms, Alarm_Sequence, Alarm_Limit)	W-DIA-UPD
23	W-START	MSCY1S_Stop.ind => FSPMS_Stopped.ind(AREP)	W-START
24	W-DIA-UPD	FSPMS_Abort.req(AREP) /AREP.AR_Type=MS0 => Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending) CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSCY1S_Abort.req	RESET-P-LEAVE
25	W-DIA-UPD	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=FALSE => FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number, Seq_Nr, Status=Not_Enabled)	W-DIA-UPD
26	W-DIA-UPD	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=TRUE && Alarm_Count=Alarm_Limit => FSPMS_Alarm_Notification.cnf(-)(AREP, Alarm_Type, Slot_Number, Seq_Nr, Status=Limit_Expired)	W-DIA-UPD

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#	État courant	Événement /Condition =>Action	État suivant
27	W-DIA-UPD	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=TRUE && Alarm_Count<Alarm_Limit && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]=not_pending => Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]:=pending Outstanding_Alarm_TABLE.Alarm_Type[Acls(Alarm_Type),Seq_Nr]:=Alarm_Type Alarm_Count:=Alarm_Count+1 Ext_Diag_Flag:=L_Ext_Diag_Flag Ext_Diag_Overflow:=L_Ext_Diag_Overflow Ext_Diag:=(Local_Diag_Buffer, Alarm(Slot_Number,Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data)) Act_Ref := Act_Ref + 1 MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref) FSPMS_Alarm_Notification.cnf(+)(AREP,Alarm_Type, Slot_Number, Seq_Nr)	W-FETCHED
28	W-DIA-UPD	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=TRUE && Alarm_Count<Alarm_Limit && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]= pending => FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number, Seq_Nr, Status=Sequence_Nr_Pending)	W-DIA-UPD
29	W-DIA-UPD	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=FALSE && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]= pending => FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number, Seq_Nr, Status=Sequence_Nr_Pending)	W-DIA-UPD
30	W-DIA-UPD	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=FALSE && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]= not_pending => Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]:=pending Outstanding_Alarm_TABLE.Alarm_Type[Acls(Alarm_Type),Seq_Nr]:=Alarm_Type Ext_Diag_Flag:=L_Ext_Diag_Flag Ext_Diag_Overflow:=L_Ext_Diag_Overflow Ext_Diag:=(Local_Diag_Buffer, Alarm(Slot_Number,Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data)) Act_Ref := Act_Ref + 1 MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref) FSPMS_Alarm_Notification.cnf(+)(AREP,Alarm_Type, Slot_Number, Seq_Nr)	W-FETCHED
31	W-DIA-UPD	FSPMS_Set_Slave_Diag.req(AREP,Ext_Diag_Flag, Ext_Diag) => if (PrmCmdAck in Ext_Diag or Stored_PrmCmdAck != NULL) Stored_PrmCmdAck := PrmCmdAck, Ext_Diag.Red_Status := PrmCmdAck endif L_Ext_Diag_Flag := Ext_Diag_Flag L_Ext_Diag_Overflow := Ext_Diag_Overflow Local_Diag_Buffer := Ext_Diag Act_Ref := Act_Ref + 1 MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref) FSPMS_Set_Slave_Diag.cnf(AREP)	W-DIA-UPD
32	W-DIA-UPD	MSAC1S_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) /Alarm_Sequence=TRUE && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]=pending => Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr] := not_pending Alarm_Count:=Alarm_Count-1 FSPMS_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) MSAC1S_Alarm Ack.rsp(+) (Slot Number, Alarm Type, Seq Nr)	W-DIA-UPD

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#	État courant	Événement /Condition =>Action	État suivant
33	W-DIA-UPD	MSAC1S_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) /Alarm_Sequence=FALSE && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr] =pending => Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr] := not_pending FSPMS_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) MSAC1S_Alarm Ack.rsp(+) (Slot Number, Alarm Type, Seq Nr)	W-DIA-UPD
34	W-DIA-UPD	MSAC1S_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) /Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr] =not_pending => Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending) MSCY1S_Abort.req FSPMS_Abort.ind(AREP)	RESET-P-LEAVE
35	W-DIA-UPD	MSCY1S_Set_Slave_Diag.cnf(-) (Reference) => R_Cnt:=0 FSPMS DP Slave Fault.ind DMPMS_Reset.req MSCY1S_Reset.req MSAC1S_Reset.req MSRM2S_Reset.req	W-RESET
36	W-DIA-UPD	MSCY1S_Set_Slave_Diag.cnf(+) (Reference) /Reference < Act_Ref => ignore	W-DIA-UPD
37	—	—	—
38	W-DIA-UPD	MSCY1S_Start.ind(Enabled_Alarms, Alarm_Mode_Master, Diag_Flag) => MSCY1S_Abort.req	W-START
39	W-DIA-UPD	MSCY1S_Stop.ind => Alarm_Count:=0 Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending)	RESET-PENDING
40	RESET-PENDING	/Index.Seq_Nr <> 255 => Outstanding Alarm_TABLE.Alarm_Status[Index] := not_pending Alarm_Type := Outstanding_Alarm_TABLE.Alarm_Type[Acls(Alarm_Type),Seq_Nr] Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending) FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number=0, Index.Seq_Nr, Status=MSAL1S_Stopped)	RESET-PENDING
41	RESET-PENDING	/Index.Seq_Nr = 255 => Reset_Req_Alarm_FIFO() FSPMS DP Slave Stopped.ind(AREP)	W-START
42	RESET-P-LEAVE	/Index.Seq_Nr <> 255 => Outstanding Alarm_TABLE.Alarm_Status[Index] := not_pending Alarm_Type:= Outstanding_Alarm_TABLE.Alarm_Type[Acls(Alarm_Type),Seq_Nr] Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending) FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number=0, Index.Seq_Nr, Status=Stopped)	RESET-P-LEAVE
43	RESET-P-LEAVE	/Index.Seq_Nr = 255 => Reset_Req_Alarm_FIFO()	W-START

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#	État courant	Événement /Condition =>Action	État suivant
44	W-FETCHED	FSPMS_Abort.req(AREP) /AREP.AR_Type=MS0 && Alarm_Sequence=TRUE && Alarm_Count=0 => Stored_Diag:=False Ext_Diag_Flag:=L_Ext_Diag_Flag Ext_Diag_Overflow:=L_Ext_Diag_Overflow Ext_Diag:=(Local_Diag_Buffer)Act_Ref := Act_Ref + 1 CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref) MSCY1S_Abort.req	W-START
45	W-FETCHED	FSPMS_Abort.req(AREP) /AREP.AR_Type=MS0 && Alarm_Sequence=FALSE || Alarm_Count<>0 => Stored_Diag:=False Ext_Diag_Flag:=L_Ext_Diag_Flag Ext_Diag_Overflow:=L_Ext_Diag_Overflow Ext_Diag:=(Local_Diag_Buffer) Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending) Act_Ref := Act_Ref + 1 CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref) MSCY1S_Abort.req	RESET-P-LEAVE
46	W-FETCHED	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=FALSE => FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number, Seq_Nr, Status=Not_Enabled)	W-FETCHED
47	W-FETCHED	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=TRUE && Alarm_Count=Alarm_Limit => FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number, Seq_Nr, Status=Limit_Expired)	W-FETCHED
48	W-FETCHED	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=TRUE && Alarm_Count<Alarm_Limit && Outstanding_Alarm_TABLE.Alarm_Status[AclsAlarm_Type),Seq_Nr]=not_pending => Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]:=pending Alarm_Count:=Alarm_Count+1 Store_to_Req_Alarm_FIFO(Alarm(Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data)) FSPMS_Alarm_Notification.cnf(+)(AREP,Alarm_Type, Slot_Number, Seq_Nr)	W-FETCHED
49	W-FETCHED	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=TRUE && Alarm_Count<Alarm_Limit&& Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]= pending => FSPMS_Alarm_Notification.cnf(-)(AREP,Alarm_Type, Slot_Number, Seq_Nr, Status=Sequence_Nr_Pending)	W-FETCHED
50	W-FETCHED	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=FALSE && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]= pending => FSPMS_Alarm_Notification.cnf(-)(AREP, Alarm_Type, Slot_Number, Seq_Nr, Status=Sequence_Nr_Pending)	W-FETCHED

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#	État courant	Événement /Condition =>Action	État suivant
51	W-FETCHED	FSPMS_Alarm_Notification.req(AREP, Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data) /ALARM_ENABLED=TRUE && Alarm_Sequence=FALSE && Outstanding_Alarm_TABLE.Alarm_Status[AclsL(Alarm_Type),Seq_Nr]= not_pending => Outstanding_Alarm_TABLE.Alarm_Status[AclsL(Alarm_Type),Seq_Nr] := pending Outstanding_Alarm_TABLE.Alarm_Type[Acls(Alarm_Type),Seq_Nr] := Alarm_Type Store_to_Req_Alarm_FIFO(Alarm(Slot_Number, Alarm_Type, Seq_Nr, Add_Ack, Alarm_Specifier, Alarm_Data)) FSPMS_Alarm_Notification.cnf(+)(AREP,Alarm_Type, Slot_Number, Seq_Nr)	W-FETCHED
52	W-FETCHED	FSPMS_Set_Slave_Diag.req(AREP,Ext_Diag_Flag, Ext_Diag) => if (PrmCmdAck in Ext_Diag or Stored_PrmCmdAck != NULL) Stored_PrmCmdAck := PrmCmdAck, Ext_Diag.Red_Status := PrmCmdAck endif Stored_Diag := True L_Ext_Diag_Flag := Ext_Diag_Flag L_Ext_Diag_Overflow := Ext_Diag_Overflow Local_Diag_Buffer := Ext_Diag FSPMS_Set_Slave_Diag.cnf(AREP)	W-FETCHED
53	W-FETCHED	MSAC1S_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) /Alarm_Sequence=TRUE && Outstanding_Alarm_TABLE.Alarm_Status[Acls (Alarm_Type),Seq_Nr]=pending => Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]:=not_pending Alarm_Count:=Alarm_Count-1 FSPMS_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) MSAC1S_Alarm Ack.rsp(+) (Slot Number, Alarm Type, Seq Nr)	W-FETCHED
54	W-FETCHED	MSAC1S_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) /Alarm_Sequence=FALSE && Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]=pending => Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]:=not_pending FSPMS_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) MSAC1S_Alarm Ack.rsp(+) (Slot Number, Alarm Type, Seq Nr)	W-FETCHED
55	W-FETCHED	MSAC1S_Alarm_Ack.ind(Slot_Number, Alarm_Type, Seq_Nr) /Outstanding_Alarm_TABLE.Alarm_Status[Acls(Alarm_Type),Seq_Nr]=not_pending => Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending) MSCY1S_Abort.req FSPMS_Abort.ind(AREP)	RESET-P-LEAVE
56	W-FETCHED	MSCY1S_Set_Slave_Diag.cnf(-) (Reference) => R_Cnt:=0 FSPMS DP Slave Fault.ind DMPMS_Reset.req MSCY1S_Reset.req MSAC1S_Reset.req MSRM2S_Reset.req	W-RESET
57	W-FETCHED	MSCY1S_Set_Slave_Diag.cnf(+) (Reference) /Reference < Act_Ref => ignore	W-FETCHED
58	W-FETCHED	MSCY1S_Set_Slave_Diag.cnf(+) (Reference) /Reference >= Act_Ref => Stored_PrmCmdAck := NULL	CHK-TRANSMIT
59	W-FETCHED	MSCY1S_Start.ind(Enabled_Alarms, Alarm_Mode_Master, Diag_Flag) => MSCY1S_Abort.req	W-START

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#	État courant	Événement /Condition =>Action	État suivant
60	W-FETCHED	MSCY1S_Stop.ind /Alarm_Sequence=TRUE && Alarm_Count=0 => Stored_Diag:=False Ext_Diag_Flag:=L_Ext_Diag_Flag Ext_Diag_Overflow:=L_Ext_Diag_Overflow Ext_Diag:=(Local_Diag_Buffer) Act_Ref := Act_Ref + 1 CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref) FSPMS_Stopped.ind(AREP)	W-START
61	W-FETCHED	MSCY1S_Stop.ind /Alarm_Sequence=FALSE || Alarm_Count<>0 => Stored_Diag:=False Alarm_Count:=0 Index := Search_In_Outstanding_Alarm_TABLE(Alarm_Status:=pending) Ext_Diag_Flag:=L_Ext_Diag_Flag Ext_Diag_Overflow:=L_Ext_Diag_Overflow Ext_Diag:=(Local_Diag_Buffer) Act_Ref := Act_Ref + 1 CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref)	RESET-PENDING
62	CHK-TRANSMIT	/Req_Alarm_FIFO_state=empty &&Stored_Diag = FALSE	W-DIA-UPD
63	CHK-TRANSMIT	/Req_Alarm_FIFO_state=empty && Stored_Diag = TRUE=>Stored_Diag:=FalseExt_Diag_Flag:=L_Ext_Diag_FlagExt_Diag_Overflow:=L_Ext_Diag_OverflowExt_Diag:=(Local_Diag_Buffer)Act_Ref := Act_Ref + 1MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref)	W-FETCHED
64	CHK-TRANSMIT	/Req_Alarm_FIFO_state<>empty => Alarm:=Load_from_Req_Alarm_FIFO() Stored_Diag:=False Ext_Diag_Flag:=L_Ext_Diag_Flag Ext_Diag_Overflow:=L_Ext_Diag_Overflow Ext_Diag:=(Local_Diag_Buffer, Alarm) Act_Ref := Act_Ref + 1 MSCY1S_Set_Slave_Diag.req(Ext_Diag_Flag, Ext_Diag_Overflow, Ext_Diag, Reference := Act_Ref)	W-FETCHED
65	W-RESET	DMPMS_Reset.cnf /R_Cnt<3 => R_Cnt:=R_Cnt+1	W-RESET
66	W-RESET	MSCY1S_Reset.cnf /R_Cnt<3 => R_Cnt:=R_Cnt+1	W-RESET
67	W-RESET	MSAC1S_Reset.cnf /R_Cnt<3 => R_Cnt:=R_Cnt+1	W-RESET
68	W-RESET	MSRM2S_Reset.cnf /R_Cnt<3 => R_Cnt:=R_Cnt+1	W-RESET

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#	État courant	Événement /Condition =>Action	État suivant

69	W-RESET	DMPMS_Reset.cnf
		/R_Cnt>=3
		=>
		if (FSPMS_User_Reset=True)
		FSPMS_Reset DP Slave .cnf
		endif
			POWER-ON

70	W-RESET	MSCY1S_Reset.cnf
		/R_Cnt>=3
		=>
		if (FSPMS_User_Reset=True)
		FSPMS_Reset DP Slave .cnf
		endif
			POWER-ON

71	W-RESET	MSAC1S_Reset.cnf
		/R_Cnt>=3
		=>
		if (FSPMS_User_Reset=True)
		FSPMS_Reset DP Slave .cnf
		endif
			POWER-ON

72	W-RESET	MSRM2S_Reset.cnf /R_Cnt>=3 => if (FSPMS_User_Reset=True) FSPMS_Reset DP Slave .cnfendif	POWER-ON
73	any state	DMPMS_SYCL_Clock_Value.ind (Clock Value Time Event, Clock Value previous TE, Clock Value Status, Receive Delay Time, Src add Clk msg) => FSPMS_SYCL_Clock_Value.ind (AREP, Clock Value Time Event, Clock Value previous TE, Clock Value Status, Receive Delay Time, Src add Clk msg)	SAME
74	any state	DMPMS_Fault.ind => R_Cnt:=0 FSPMS DP Slave Fault.ind DMPMS_Reset.req MSCY1S_Reset.req MSAC1S_Reset.req MSRM2S_Reset.req	W-RESET
75	any state	MSAC1S_Fault.ind => R_Cnt:=0 FSPMS DP Slave Fault.ind DMPMS_Reset.req MSCY1S_Reset.req MSAC1S_Reset.req MSRM2S_Reset.req	W-RESET
76	any state	MSCY1S_Fault.ind => R_Cnt:=0 FSPMS DP Slave Fault.ind DMPMS_Reset.req MSCY1S_Reset.req MSAC1S_Reset.req MSRM2S_Reset.req	W-RESET
77	any state	MSRM2S_Fault.ind => R_Cnt:=0 FSPMS DP Slave Fault.ind DMPMS_Reset.req MSCY1S_Reset.req MSAC1S_Reset.req MSRM2S_Reset.req	W-RESET

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#	État courant	Événement /Condition =>Action	État suivant
78	any state	FSPMS_Reset DP Slave .req => R_Cnt:=0 FSPMS_User_Reset:=True DMPMS_Reset.req MSCY1S_Reset.req MSAC1S_Reset.req MSRM2S_Reset.req	W-RESET
79	W-FETCHED	Set_ARL_Isochron_Mode.req(Isochron_Mode) => Set_ARL_Isochron_Mode.cnf(+)	W-FETCHED
80	W-DIA-UPD	Set_ARL_Isochron_Mode.req(Isochron_Mode) => Set_ARL_Isochron_Mode.cnf(+)	W-DIA-UPD
81	W-START	Set_ARL_Isochron_Mode.req(Isochron_Mode) => Status:= NO Set_ARL_Isochron_Mode.cnf(-)(Status)	W-START
82	t-state	Load CRL DXB Linktable Entries.req(AREP, DXB-Linktable) /valid Parameters => Load CRL DXB Linktable Entries.cnf(+)	
83	t-state	Load CRL DXB Linktable Entries.req(AREP, DXB-Linktable) /invalid Parameters => Status:= NO Load CRL DXB Linktable Entries.cnf(-) (Status)	
84	t-state	FSPMS DLL Init DP Slave.req (Bus Para) => DMPMS_Sinit_DLL.req (Bus_Para)	SAME
85	t-state	FSPMS_SInit MS0.req (AREP) => MSCY1S_SInit MS0.req ( )	SAME
86	t-state	FSPMS_SInit MS2.req ( ) => MSRM2S_SInit MS2.req ( )	SAME
87	t-state	FSPMS_Abort.req (AREP, Subnet, Instance, Reason Code) /AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND MSAC2S_Abort.req (Subnet, Instance, Reason Code)	SAME
88	t-state	FSPMS_DP Slave Application Ready.req (AREP) /AREP.AR_Type=MS0 => MSCY1S_Application Ready.req ( )	SAME
89	t-state	FSPMS_Check User Prm Result.req (AREP, Prm_OK) /AREP.AR_Type=MS0 => MSCY1S_Check User Prm Result.req (Prm_OK)	SAME
90	t-state	FSPMS_Check Cfg Result.req (AREP, Cfg_OK, Input Data Len, Output Data Len) /AREP.AR_Type=MS0 => MSCY1S_Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len)	SAME
91	t-state	FSPMS_Set Cfg.req (AREP, Cfg Data) /AREP.AR_Type=MS0 => MSCY1S_Set Cfg.req (Cfg Data)	SAME
92	t-state	FSPMS_Set Input.req (AREP, Input Data) /AREP.AR_Type=MS0 => MSCY1S_Set Input.req (Input Data)	SAME

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#	État courant	Événement /Condition =>Action	État suivant
93	t-state	FSPMS_Get Output.req (AREP) /AREP.AR_Type=MS0 => MSCY1S_Get Output.req ( )	SAME
94	t-state	FSPMS_Initiate.rsp(+) (AREP, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param) /AREP.AR_Type=MS1 => MSAC2S_Initiate.rsp(+) (Res SAP, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param)	SAME
95	t-state	FSPMS_Initiate.rsp(-) (AREP, Error Decode, Error Code 1 Error Code 2) /AREP.AR_Type=MS2 => MSAC2S_Initiate.rsp(-) (Res SAP, Error Decode, Error Code 1 Error Code 2)	SAME
96	t-state	FSPMS_Read.rsp(+) (AREP, Length, Data) /AREP.AR_Type=MS1 => MSAC1S_Read.rsp(+) (Length, Data)	SAME
97	t-state	FSPMS_Read.rsp(+) (AREP, Length, Data) /AREP.AR_Type=MS2 => MSAC2S_Read.rsp(+) (Length, Data)	SAME
98	t-state	FSPMS_Read.rsp(-) (AREP, Error Decode, Error Code 1 Error Code 2) /AREP.AR_Type=MS1 => MSAC1S_Read.rsp(-) (Error Decode, Error Code 1 Error Code 2)	SAME
99	t-state	FSPMS_Read.rsp(-) (AREP, Error Decode, Error Code 1 Error Code 2) /AREP.AR_Type=MS2 => MSAC2S_Read.rsp(-) (Error Decode, Error Code 1 Error Code 2)	SAME
100	t-state	FSPMS_Write.rsp(+) (AREP, Length) /AREP.AR_Type=MS1 => MSAC1S_Write.rsp(+) (Length)	SAME
101	t-state	FSPMS_Write.rsp(+) (AREP, Length) /AREP.AR_Type=MS2 => MSAC2S_Write.rsp(+) (Length)	SAME
102	t-state	FSPMS_Write.rsp(-) (AREP, Error Decode, Error Code 1 Error Code 2) /AREP.AR_Type=MS1 => MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2)	SAME
103	t-state	FSPMS_Write.rsp(-) (AREP, Error Decode, Error Code 1 Error Code 2) /AREP.AR_Type=MS2 => MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2)	SAME
104	t-state	FSPMS_Data Transport.rsp(+) (AREP, Length, Data) /AREP.AR_Type=MS2 => MSAC2S_Data Transport.rsp(+) (Res SAP, Length, Data)	SAME
105	t-state	FSPMS_Data Transport.rsp(-) (AREP, Error Decode, Error Code 1 Error Code 2) /AREP.AR_Type=MS2 => MSAC2S_Data Transport.rsp(-) (Res SAP, Error Decode, Error Code 1 Error Code 2)	SAME
106	t-state	FSPMS_Alarm Ack.rsp(+) (AREP, Slot Number, Alarm Type, Seq Nr) /AREP.AR_Type=MS1 =>	SAME
107	t-state	FSPMS_Alarm Ack.rsp(-) (AREP, Slot Number, Alarm Type, Seq Nr) /AREP.AR_Type=MS1 =>	SAME

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#	État courant	Événement /Condition =>Action	État suivant
108	t-state	DMPMS_SInit DLL.cnf ( ) => FSPMS DLL Init DP Slave.cnf ( )	SAME
109	t-state	MSCY1S_SInit MS0.cnf ( ) => AREP=MS0-AR FSPMS_SInit MS0.cnf (AREP)	SAME
110	t-state	MSRM2S_SInit MS2.cnf ( ) => FSPMS_SInit MS2.cnf ( )	SAME
111	t-state	MSCY1S_Check User Prm Result.cnf(+) ( ) => AREP=MS0-AR FSPMS_Check User Prm Result.cnf(+) (AREP)	SAME
112	t-state	MSCY1S_Check User Prm Result.cnf(-) (Status) => AREP=MS0-AR FSPMS_Check User Prm Result.cnf(-) (AREP, Status)	SAME
113	t-state	MSCY1S_Check Cfg Result.cnf(+) ( ) => AREP=MS0-AR FSPMS_Check Cfg Result.cnf(+) (AREP)	SAME
114	t-state	MSCY1S_Check Cfg Result.cnf(-) (Status) => AREP=MS0-AR FSPMS_Check Cfg Result.cnf(-) (AREP, Status)	SAME
115	t-state	MSCY1S_Set Cfg.cnf(+) ( ) => AREP=MS0-AR FSPMS_Set Cfg.cnf(+) (AREP)	SAME
116	t-state	MSCY1S_Set Cfg.cnf(-) ( ) => AREP=MS0-AR FSPMS_Set Cfg.cnf(-) (AREP)	SAME
117	t-state	MSCY1S_Set Input.cnf(+) ( ) => AREP=MS0-AR FSPMS_Set Input.cnf(+) (AREP)	SAME
118	t-state	MSCY1S_Set Input.cnf(-) ( ) => AREP=MS0-AR FSPMS_Set Input.cnf(-) (AREP)	SAME
119	t-state	MSCY1S_Get Output.cnf(+) (Output Data, Clear Flag, New Flag) => AREP=MS0-AR FSPMS_Get Output.cnf(+) (AREP, Output Data, Clear Flag, New Flag)	SAME
120	t-state	MSCY1S_Get Output.cnf(-) ( ) => AREP=MS0-AR FSPMS_Get Output.cnf(-) (AREP)	SAME
121	t-state	MSCY1S_Set Slave Add.ind (New Slave Add, Ident Number, No Add Chg, Rem Slave Data) => AREP=MS0-AR FSPMS_Set Slave Add.ind (AREP, New Slave Add, Ident Number, No Add Chg, Rem Slave Data)	SAME
122	t-state	MSCY1S_Check User Prm.ind (User Prm Data) => AREP=MS0-AR FSPMS_Check User Prm.ind (AREP, User Prm Data)	SAME

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#	État courant	Événement /Condition =>Action	État suivant
123	t-state	MSCY1S_Check Cfg.ind (Check Cfg Mode, Cfg Data) => AREP=MS0-AR FSPMS_Check Cfg.ind (AREP, Check Cfg Mode, Cfg Data)	SAME
124	t-state	MSCY1S_New Output.ind (Clear Flag) => AREP=MS0-AR FSPMS_New Output.ind (AREP, Clear Flag)	SAME
125	t-state	MSCY1S_Global Control.ind (Clear Command, Sync Command, Freeze Command, Group Select) => AREP=MS0-AR FSPMS_Global Control.ind (AREP, Clear Command, Sync Command, Freeze Command, Group Select)	SAME
126	t-state	MSAC2S_Initiate.ind (Res SAP, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param) /SetContext(Res_SAP, Service)=TRUE => FSPMS_Initiate.ind (AREP, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param)	SAME
127	t-state	MSAC2S_Abort.ind (Res SAP, Locally Generated, Subnet, Instance, Reason Code, Additional Detail) /SetContext(Res_SAP, Service)=TRUE => CurrentBuffer[AREP].Empty:=TRUE LR_State[AREP]:=W-LR-IND FSPMS_Abort.ind (AREP, Locally Generated, Subnet, Instance, Reason Code, Additional Detail)	SAME
128	t-state	MSAC2S_Read.ind (Res SAP, Slot Number, Index, Length) /SetContext(Res_SAP, Service)=TRUE && Index<>255 => FSPMS_Read.ind (AREP, Slot Number, Index, Length)	SAME
129	t-state	MSAC1S_Read.ind (Res SAP, Slot Number, Index, Length) /SetContext(Res_SAP, Service)=TRUE && Index<>255 => FSPMS_Read.ind (AREP, Slot Number, Index, Length)	SAME
130	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /SetContext(Res_SAP, Service)=TRUE && Index<>255 => FSPMS_Write.ind (AREP, Slot Number, Index, Length, Data)	SAME
131	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /SetContext(Res_SAP, Service)=TRUE &&Index<>255 => FSPMS_Write.ind (AREP, Slot Number, Index, Length, Data)	SAME
132	t-state	MSAC2S_Data Transport.ind (Res SAP, Slot Number, Index, Length, Data) /SetContext(Res_SAP, Service)=TRUE => FSPMS_Data Transport.ind (AREP, Slot Number, Index, Length, Data)	SAME
133	t-state	FSPMS_Get_Publisher_Data.req (AREP, CREP) /AREP.AR_Type=MS0 => Rem_Add=CREP.Rem_Add SSCY1S_Get_Publisher_Data.req (Rem_Add)	SAME
134	t-state	FSPMS_Start_Subscriber.req (AREP, CREP) /AREP.AR_Type=MS0 => Rem_Add=CREP.Rem_Add SSCY1S_Start_Subscriber.req (Rem_Add)	SAME

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#	État courant	Événement /Condition =>Action	État suivant
135	t-state	FSPMS_Stop_Subscriber.req (AREP, CREP) /AREP.AR_Type=MS0 => Rem_Add=CREP.Rem_Add SSCY1S_Stop_Subscriber.req (Rem_Add)	SAME
136	t-state	FSPMS_Check_Ext_User_Prm_Result.req (AREP, Ext_Prm_OK) /AREP.AR_Type=MS0 => MSCY1S_Check_Ext_User_Prm_Result.req (Ext_Prm_OK)	SAME
137	t-state	SSCY1S_Get_Publisher_Data.cnf(+) (Rem_Add, Data, New_Flag) /SetContext(Rem_Add, Service)=TRUE => FSPMS_Get_Publisher_Data.cnf(+) (AREP, CREP, Data, New_Flag)	SAME
138	t-state	SSCY1S_Get_Publisher_Data.cnf(-) (Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMS_Get_Publisher_Data.cnf(-) (AREP, CREP)	SAME
139	t-state	SSCY1S_Start_Subscriber.cnf(+) (Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMS_Start_Subscriber.cnf(+) (AREP, CREP)	SAME
140	t-state	SSCY1S_Start_Subscriber.cnf(-) (Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMS_Start_Subscriber.cnf(-) (AREP, CREP)	SAME
141	t-state	SSCY1S_Stop_Subscriber.cnf(+) (Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMS_Stop_Subscriber.cnf(+) (AREP, CREP)	SAME
142	t-state	SSCY1S_Stop_Subscriber.cnf(-) (Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMS_Stop_Subscriber.cnf(-) (AREP, CREP)	SAME
143	t-state	SSCY1S_New_Publisher_Data.ind (Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMS_New_Publisher_Data.ind(AREP, CREP)	SAME
144	t-state	SSCY1S_Publisher_Active.ind (Rem_Add, Status) /SetContext(Rem_Add, Service)=TRUE => FSPMS_Publisher_Active.ind(AREP, CREP, Status)	SAME
145	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.IL.Extended_Function_Num=Initiate_Load) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length Current Load Type[AREP]:=Data.w.IL.Load_Type LR Index:=Data.w.IL.LR_Index Load Type:=Data.w.IL.Load_Type Load Image Size:=Data.w.IL.Load_Image_Size User Specific:=Data.w.IL.User_Specific Intersegment Request Timeout:=Data.w.IL.Intersegment_Request_Timeout FSPMS_Initiate_Load.ind (AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request Timeout, User Specific) LR_State[AREP]:=W-LR-RES	SAME

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146	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.IL.Extended_Function_Num=Initiate_Load) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length Current Load Type[AREP]:=Data.w.IL.Load_Type LR Index:=Data.w.IL.LR_Index Load Type:=Data.w.IL.Load_Type Load Image Size:=Data.w.IL.Load_Image_Size User Specific:=Data.w.IL.User_Specific Intersegment Request Timeout:=Data.w.IL.Intersegment_Request_Timeout FSPMS_Initiate_Load.ind (AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request Timeout, User Specific) LR_State[AREP]:=W-LR-RES	SAME
147	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.IL.Extended_Function_Num=Initiate_Load) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length CurrentLoadType[AREP]:=Data.w.IL.Load_Type CurrentLRIndex[AREP]:=Data.w.IL.LR_Index LR Index:=Data.w.IL.LR_Index Load Type:=Data.w.IL.Load_Type Load Image Size:=Data.w.IL.Load_Image_Size User Specific:=Data.w.IL.User_Specific Intersegment Request Timeout:=Data.w.IL.Intersegment_Request_Timeout FSPMS_Initiate_Load.ind (AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request Timeout, User Specific) LR_State[AREP]:=W-LR-RES	SAME
148	t-state	FSPMS_Initiate_Load.rsp(+) (AREP, Actual LR Size, Max Response Delay, Max Segment Length, User Specific) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].LR:=TRUE CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r.IL.Actual_LR_Size:=Actual LR Size CurrentBuffer[AREP].data.r.IL.Max_Response_Delay:=Max Response Delay CurrentBuffer[AREP].data.r.IL.Max_Segment_Length:=Max Segment Length CurrentBuffer[AREP].data.r.IL.User_Specific:=User Specific MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
149	t-state	FSPMS_Initiate_Load.rsp(+) (AREP, Actual LR Size, Max Response Delay, Max Segment Length, User Specific) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].LR:=TRUE CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r.IL.Actual_LR_Size:=Actual LR Size CurrentBuffer[AREP].data.r.IL.Max_Response_Delay:=Max Response Delay CurrentBuffer[AREP].data.r.IL.Max_Segment_Length:=Max Segment Length CurrentBuffer[AREP].data.r.IL.User_Specific:=User Specific MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
150	t-state	MSAC1S_Read.ind (Res SAP, Slot Number, Index, Length)/LR_State[AREP]==W-LR-IND&SetContext(Res_SAP, Service)=TRUE &&(Index=255 && CurrentBuffer[AREP].Empty=FALSE && CurrentBuffer[AREP].LR=FALSE)=>Data:=CurrentBuffer[AREP].dataLength:=sizeof(CurrentBuffer[AREP].data)MSAC1S_Read.rsp(+) (Length, Data)LR_State[AREP]:=W-LR-IND	SAME

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#	État courant	Événement /Condition =>Action	État suivant
151	t-state	MSAC1S_Read.ind (Res SAP, Slot Number, Index, Length) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && CurrentBuffer[AREP].Empty=FALSE && CurrentBuffer[AREP].LR=TRUE) => CurrentBuffer[AREP].Empty:=TRUE Data:=CurrentBuffer[AREP].data Length:=sizeof(CurrentBuffer[AREP].data) MSAC1S_Read.rsp(+) (Length, Data) LR_State[AREP]:=W-LR-IND	SAME
152	t-state	MSAC2S_Read.ind (Res SAP, Slot Number, Index, Length) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && CurrentBuffer[AREP].Empty=FALSE && CurrentBuffer[AREP].LR=FALSE) => Data:=CurrentBuffer[AREP].data Length:=sizeof(CurrentBuffer[AREP].data) MSAC2S_Read.rsp(+) (Length, Data) LR_State[AREP]:=W-LR-IND	SAME
153	t-state	MSAC2S_Read.ind (Res SAP, Slot Number, Index, Length) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && CurrentBuffer[AREP].Empty=FALSE && CurrentBuffer[AREP].LR=TRUE) => CurrentBuffer[AREP].Empty:=TRUE Data:=CurrentBuffer[AREP].data Length:=sizeof(CurrentBuffer[AREP].data) MSAC2S_Read.rsp(+) (Length, Data) LR_State[AREP]:=W-LR-IND	SAME
154	t-state	FSPMS_Initiate_Load.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
155	t-state	FSPMS_Initiate_Load.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
156	t-state	MSAC1S_Read.ind (Res SAP, Slot Number, Index, Length) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE &&(Index=255 && CurrentBuffer[AREP].Empty=TRUE && CurrentBuffer[AREP].LR=TRUE) => LR Index:=CurrentLRIndex[AREP] Segment Length:=Length FSPMS_Pull_Segment.ind (AREP, Slot Number, LR Index, Segment Length) LR_State[AREP]:=W-LR-RES	SAME

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#	État courant	Événement /Condition =>Action	État suivant
157	t-state	MSAC1S_Read.ind (Res SAP, Slot Number, Index, Length) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && CurrentBuffer[AREP].Empty=TRUE && CurrentBuffer[AREP].LR=FALSE) => Error Decode:=DPV1 Error Code 1 :=state conflict Error Code 2:=0 MSAC1S_Read.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-RES	SAME
158	t-state	MSAC2S_Read.ind (Res SAP, Slot Number, Index, Length) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && CurrentBuffer[AREP].Empty=TRUE && CurrentBuffer[AREP].LR=TRUE) => LR Index:=CurrentLRIndex[AREP] Segment Length:=Length FSPMS_Pull_Segment.ind (AREP, Slot Number, LR Index, Segment Length) LR_State[AREP]:=W-LR-RES	SAME
159	t-state	MSAC2S_Read.ind (Res SAP, Slot Number, Index, Length) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && CurrentBuffer[AREP].Empty=TRUE && CurrentBuffer[AREP].LR=FALSE) => Error Decode:=DPV1 Error Code 1 :=state conflict Error Code 2:=0 MSAC2S_Read.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-RES	SAME
160	t-state	FSPMS_Pull_Segment.rsp(+) (AREP, Segment Length, Segment Number, More Follows, Data) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Data.PULL.Extended_Function_Num=Pull Data.PULL.Sequence Number:=Segment Number Data.PULL.Options.More Follows:=More Follows Data.PULL.Region Data := Data Length:=6+Segment Length MSAC1S_Read.rsp(+) (Length, Data) LR_State[AREP]:=W-LR-IND	SAME
161	t-state	FSPMS_Pull_Segment.rsp(+) (AREP, Segment Length, Segment Number, More Follows, Data) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Data.PULL.Extended_Function_Num=Pull Data.PULL.Sequence Number:=Segment Number Data.PULL.Options.More Follows:=More Follows Data.PULL.Region Data := Data Length:=6+Segment Length MSAC2S_Read.rsp(+) (Length, Data) LR_State[AREP]:=W-LR-IND	SAME
162	t-state	FSPMS_Pull Segment.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Read.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME

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#	État courant	Événement /Condition =>Action	État suivant
163	t-state	FSPMS_Pull Segment.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Read.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
164	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.PUSH.Extended_Function_Num=Push) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length LR Index:=Data.PUSH.LR_Index Segment Length:=Length Segment Number:=Data.PUSH.Segment_Number More Follows:=Data.PUSH.More_Follows Data:=Data.PUSH.data FSPMS_Push_Segment.ind (AREP, Slot Number, LR Index, Segment Length, Segment Number, More Follows, Data) LR_State[AREP]:=W-LR-RES	SAME
165	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.PUSH.Extended_Function_Num=Push) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length LR Index:=Data.PUSH.LR_Index Segment Length:=Length Segment Number:=Data.PUSH.Segment_Number More Follows:=Data.PUSH.More_Follows Data:=Data.PUSH.data FSPMS_Push_Segment.ind (AREP, Slot Number, LR Index, Segment Length, Segment Number, More Follows, Data) LR_State[AREP]:=W-LR-RES	SAME
166	t-state	FSPMS_Push_Segment.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
167	t-state	FSPMS_Push_Segment.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => Length:=CurrentBuffer[AREP].WriteLength MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
168	t-state	FSPMS_Push_Segment.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME

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#	État courant	Événement /Condition =>Action	État suivant
169	t-state	FSPMS_Push_Segment.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
170	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.TL.Extended_Function_Num=Terminate_Load) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length LR Index:=Data.w.TL.LR_Index FSPMS_Terminate_Load.ind (AREP, Slot Number, LR Index) LR_State[AREP]:=W-LR-RES	SAME
171	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.TL.Extended_Function_Num=Terminate_Load) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length LR Index:=Data.w.TL.LR_Index FSPMS_Terminate_Load.ind (AREP, Slot Number, LR Index) LR_State[AREP]:=W-LR-RES	SAME
172	t-state	FSPMS_Terminate_Load.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].LR:=FALSE CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r:=NIL Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
173	t-state	FSPMS_Terminate_Load.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].LR:=FALSE CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r:=NIL Length:=CurrentBuffer[AREP].WriteLength MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
174	t-state	FSPMS_Terminate_Load.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME

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#	État courant	Événement /Condition =>Action	État suivant
175	t-state	FSPMS_Terminate_Load.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
176	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &CurrentBuffer[AREP].LR:=FALSE &&SetContext(Res_SAP, Service)=TRUE &&(Index=255 && Length >= 4) &&(Data.w.CALL.Extended_Function_Num=CALL) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.w.CALL.FI_Index Entity_Number :=Data.w.CALL. Entity_Number Execution Argument:=Data.w.CALL.Execution_Argument FSPMS_Call.ind (AREP, Slot Number, Entity_Number, FI Index, Execution Argument) LR_State[AREP]:=W-LR-RES	SAME
177	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &CurrentBuffer[AREP].LR:=True && SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.CALL.Extended_Function_Num=CALL) => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=state conflict Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
178	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &CurrentBuffer[AREP].LR:=FALSE && SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.CALL.Extended_Function_Num=CALL) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length Entity_Number :=Data.w.CALL. Entity_Number FI Index:=Data.w.CALL.FI_Index Execution Argument:=Data.w.CALL.Execution_Argument FSPMS_Call.ind (AREP, Slot Number, Entity_Number, FI Index, Execution Argument) LR_State[AREP]:=W-LR-RES	SAME
179	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &CurrentBuffer[AREP].LR:=True && SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.CALL.Extended_Function_Num=CALL) => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=state conflict Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME

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#	État courant	Événement /Condition =>Action	État suivant
180	t-state	FSPMS_Call.rsp(+) (AREP, Result Argument) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r.CALL.ResultArgument:=Result Argument Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
181	t-state	FSPMS_Call.rsp(+) (AREP, Result Argument) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r.CALL.ResultArgument:=Result Argument Length:=CurrentBuffer[AREP].WriteLength MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
182	t-state	FSPMS_Call.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
183	t-state	FSPMS_Call.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
184	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Start) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index Execution Argument:=Data.FIS.Execution_Argument FSPMS_Start.ind (AREP, Slot Number, FI Index, Execution Argument) LR_State[AREP]:=W-LR-RES	SAME
185	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Start) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index Execution Argument:=Data.FIS.Execution_Argument FSPMS_Start.ind (AREP, Slot Number, FI Index, Execution Argument) LR_State[AREP]:=W-LR-RES	SAME
186	t-state	FSPMS_Start.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME

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#	État courant	Événement /Condition =>Action	État suivant
187	t-state	FSPMS_Start.rsp(+) (AREP)/LR_State[AREP]==W-LR-RES&AREP.AR_Type=MS2=>Length:=CurrentBuffer[AREP].WriteLengthMSAC2S_Write.rsp(+) (Length)LR_State[AREP]:=W-LR-IND	SAME
188	t-state	FSPMS_Start.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
189	t-state	FSPMS_Start.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
190	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Stop) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index FSPMS_Stop.ind (AREP, Slot Number, FI Index) LR_State[AREP]:=W-LR-RES	SAME
191	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Stop) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index FSPMS_Stop.ind (AREP, Slot Number, FI Index) LR_State[AREP]:=W-LR-RES	SAME
192	t-state	FSPMS_Stop.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
193	t-state	FSPMS_Stop.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => Length:=CurrentBuffer[AREP].WriteLength MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
194	t-state	FSPMS_Stop.rsp(-) (AREP, Error Code)/LR_State[AREP]==W-LR-RES&AREP.AR_Type=MS1=>CurrentBuffer[AREP].Empty:=TRUEError Decode:=DPV1Error Code 1 :=Error CodeError Code 2:=0MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2)LR_State[AREP]:=W-LR-IND	SAME

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195	t-state	FSPMS_Stop.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
196	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Resume) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index Execution Argument:=Data.FIS.Execution_Argument FSPMS_Resume.ind (AREP, Slot Number, FI Index, Execution Argument) LR_State[AREP]:=W-LR-RES	SAME
197	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Resume) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index Execution Argument:=Data.FIS.Execution_Argument FSPMS_Resume.ind (AREP, Slot Number, FI Index, Execution Argument) LR_State[AREP]:=W-LR-RES	SAME
198	t-state	FSPMS_Resume.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
199	t-state	FSPMS_Resume.rsp(+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => Length:=CurrentBuffer[AREP].WriteLength MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
200	t-state	FSPMS_Resume.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
201	t-state	FSPMS_Resume.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME

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#	État courant	Événement /Condition =>Action	État suivant
202	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Reset) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index FSPMS_Reset.ind (AREP, Slot Number, FI Index) LR_State[AREP]:=W-LR-RES	SAME
203	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.FIS.Extended_Function_Num=Reset) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.FIS.FI_Index FSPMS_Reset.ind (AREP, Slot Number, FI Index) LR_State[AREP]:=W-LR-RES	SAME
204	t-state	FSPMS_Reset.rsp (+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
205	t-state	FSPMS_Reset.rsp (+) (AREP) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => Length:=CurrentBuffer[AREP].WriteLength MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
206	t-state	FSPMS_Reset.rsp (-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
207	t-state	FSPMS_Reset.rsp (-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC2S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
208	t-state	MSAC1S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.STATE.Extended_Function_Num=Get_State) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.w.STATE.FI_Index FSPMS_Get_FI_State.ind (AREP, Slot Number, FI Index) LR_State[AREP]:=W-LR-RES	SAME

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#	État courant	Événement /Condition =>Action	État suivant
209	t-state	MSAC2S_Write.ind (Res SAP, Slot Number, Index, Length, Data) /LR_State[AREP]==W-LR-IND &SetContext(Res_SAP, Service)=TRUE && (Index=255 && Length >= 4) && (Data.w.STATE.Extended_Function_Num=Get_State) => CurrentBuffer[AREP].Empty:=TRUE CurrentBuffer[AREP].WriteLength:=Length FI Index:=Data.w.STATE.FI_Index FSPMS_Get_FI_State.ind (AREP, Slot Number, FI Index) LR_State[AREP]:=W-LR-RES	SAME
210	t-state	FSPMS_Get_FI_State.rsp (+) (AREP, FI State) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r.STATE.FI_State:=FI State Length:=CurrentBuffer[AREP].WriteLength MSAC1S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
211	t-state	FSPMS_Get_FI_State.rsp (+) (AREP, FI State) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=FALSE CurrentBuffer[AREP].data.r.STATE.FI_State:=FI State Length:=CurrentBuffer[AREP].WriteLength MSAC2S_Write.rsp(+) (Length) LR_State[AREP]:=W-LR-IND	SAME
212	t-state	FSPMS_Get_FI_State.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS1 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME
213	t-state	FSPMS_Get_FI_State.rsp(-) (AREP, Error Code) /LR_State[AREP]==W-LR-RES &AREP.AR_Type=MS2 => CurrentBuffer[AREP].Empty:=TRUE Error Decode:=DPV1 Error Code 1 :=Error Code Error Code 2:=0 MSAC1S_Write.rsp(-) (Error Decode, Error Code 1 Error Code 2) LR_State[AREP]:=W-LR-IND	SAME

8.1.4 Fonctions

Le Tableau 45 contient les fonctions utilisées par la FSPMS, leurs arguments et leurs descriptions.

Tableau 45 – Fonctions utilisées par la FSPMS

Nom de fonction	Description
SetContext(Rem_Add, Service)	Cette fonction vérifie s'il existe une entrée saisie pour les entrées Rem_Add respectivement Res_SAP et le Service invoqué dans l'ARL et la CRL correspondante de l'esclave DP. A) S'il existe une entrée, elle retourne TRUE et règle le contexte local selon le CREP et l'AREP courants. B) Autrement, elle retourne FALSE.

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Nom de fonction	Description
FILL(Outstanding_Alarm_TABLE.Alarm_Status, State)	Cette fonction met chaque entrée saisie de l'Outstanding_Alarm_TABLE bidimensionnelle à la valeur initiale donnée de "State". Les paramètres valides pour State sont pending/not_pending. La fonction n'a pas de valeur de retour.
Search_In_Outstanding_Alarm_TABLE(Alarm_Status)	Cette fonction explore chaque entrée saisie de l'Outstanding_Alarm_TABLE bidimensionnelle pour trouver un Alarm_Status spécifique. La valeur de retour de cette fonction est un indice qui se réfère à une entrée saisie de l'Alarm_Table qui satisfait aux critères d'Alarm_Status pending/not_pending.
SReset_Req_Alarm_FIFO()	Cette fonction réinitialise le FIFO pour les alarmes pas encore envoyées. Au cours de cette fonction, toutes les entrées saisies sont effacées La fonction n'a pas de valeur de retour.
Store_To_Req_Alarm_FIFO(Alarm)	Au moyen de cette fonction, l'alarme est stockée dans le Req_Alarm_FIFO. La fonction n'a pas de valeur de retour.
Load_From_Req_Alarm_FIFO ()	Au moyen de cette fonction, une alarme est lue dans le Req_Alarm_FIFO. La valeur de retour est une alarme.
Req_Alarm_FIFO_state ()	Cette fonction vérifie le FIFO pour rechercher des alarmes pas encore envoyées. La fonction a les valeurs de retour empty/not_empty.
Acls(Alarm_Type)	Cette fonction calcule l'indice relatif à l'Alarm_Type comme valeur de retour comme suit: si (Alarm_Type = 1) retourner 0 si (Alarm_Type = 2) retourner 1 si (Alarm_Type = 3) retourner 2 si (Alarm_Type = 4) retourner 3 si (Alarm_Type = 5) retourner 4 si (Alarm_Type = 6) retourner 5 si (Alarm_Type >= 32) && (Alarm_Type <= 126) retourner 6
IsDynamicAttributeLoadable(Attribute)	Cette fonction vérifie l'ARL et la CRL si l'attribut donné est chargeable dans l'état courant. Pour l'attribut DXB-Linktable, la fonction retourne TRUE: si tous les éléments dans la DXB-Linktable ont un attribut correspondant dans la CRL et aucun des diagrammes d'états SSCY1S correspondants n'est dans l'état RUN.
SetDynamicAtrribute(Attribute)	Cette fonction stocke l'attribut donné dans l'ARL or CRL. Pour l'attribut DXB-Linktable, chaque entrée est stockée dans l'attribut CRL correspondant.

Macros

ALARM_ENABLED

```
(
((Alarm_Type=3 OR Alarm_Type=4) &&
Actual_Enabled_Alarms[7]=TRUE)
OR ((Alarm_Type=2) && Actual_Enabled_Alarms[6]=TRUE)
OR ((Alarm_Type=1) && Actual_Enabled_Alarms[5]=TRUE)
OR ((Alarm_Type>=32 && Alarm_Type<=126)
&& Actual_Enabled_Alarms[4]=TRUE)
OR ((Alarm_Type=5) && Actual_Enabled_Alarms[3]=TRUE)
OR ((Alarm_Type=6) && Actual_Enabled_Alarms[2]=TRUE)
)
```

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8.2 FSPMM1

8.2.1 Définitions des primitives

8.2.1.1 Primitives échangées entre AP-Context et FSPMM1

Le Tableau 46 montre les primitives de service, y compris leurs paramètres associés, émises par l'AP-Context et reçues par la FSPMM1.

Tableau 46 – Primitives émises par l'AP-Context vers la FSPMM1

Nom de primitive	Source	Paramètres associés	Fonctions
Init DP master Cl1.req	AP-Context	Bus Para	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3 et dans la CEI 61158-3-3
Reset DP master Cl1.req	AP-Context	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Load ARL DP master Cl1.req	AP-Context	Alarm Max, List of ARL Entries	
Get ARL DP master Cl1.req	AP-Context	(aucun)	
Load CRL DP master Cl1.req	AP-Context	Update, List of CRL Entries	
Get CRL DP master Cl1.req	AP-Context	(aucun)	
CRL Slave Activate.req	AP-Context	Activate	
CRL New Prm.req	AP-Context	New Prm	
CRL New Prm Data.req	AP-Context	Prm Data	
Abort DP master Cl1.req	AP-Context	AREP	
Mark DP master Cl1.req	AP-Context	AREP	
Set Mode DP master Cl1.req	AP-Context	AREP, USIF State	
Load Bus Par DP master Cl1.req	AP-Context	Bus Para	
Delete SC DP master Cl1.req	AP-Context	Address	
Read Value DP master Cl1.req	AP-Context	Variable	
Get Slave Diag.req	AP-Context	AREP, CREP	
Set Output.req	AP-Context	AREP, CREP, Slot Number, Output Data, Final	
Get Input.req	AP-Context	AREP, CREP, Slot Number	
Global Control.req	AP-Context	AREP, Sync Command, Freeze Command, Group Select	
Read.req	AP-Context	AREP, Slot Number, Index, Length	
Write.req	AP-Context	AREP, Slot Number, Index, Length, Data	

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Nom de primitive	Source	Paramètres associés	Fonctions
Alarm Ack.req(+)	AP-Context	AREP, Slot Number, Alarm Type, Seq Nr	
Get Master Diag.rsp(+)	AP-Context	AREP, Diagnosis Data	
Get Master Diag.rsp(-)	AP-Context	AREP, Status	
Start Seq.rsp(+)	AP-Context	AREP, Max Len Data Unit	
Start Seq.rsp(-)	AP-Context	AREP, Status	
Download.rsp(+)	AP-Context	AREP	
Download.rsp(-)	AP-Context	AREP, Status	
Upload.rsp(+)	AP-Context	AREP, Data	
Upload.rsp(-)	AP-Context	AREP, Status	
End Seq.rsp(+)	AP-Context	AREP	
End Seq.rsp(-)	AP-Context	AREP, Status	
Act Param.rsp(+)	AP-Context	AREP	
Act Param.rsp(-)	AP-Context	AREP, Status	
Set Time.req	AP-Context	AREP, Time Value Local Time Diff Summertime Accuracy Synchronisation Active Announcement Hour	
Initiate Load.req	AP-Context	AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request, Timeout User_Specific	
Pull Segment.req	AP-Context	AREP, Slot Number, LR Index, Segment Length	
Push Segment.req	AP-Context	AREP, Slot Number LR Index, Segment Length Segment Number, More Follows, Data	
Terminate Load.req	AP-Context	AREP Slot Number LR Index	
Start.req	AP-Context	AREP Slot Number FI Index Execution Argument	

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Nom de primitive	Source	Paramètres associés	Fonctions
Stop.req	AP-Context	AREP Slot Number FI Index	
Resume.req	AP-Context	AREP Slot Number FI Index Execution Argument	
Reset.req	AP-Context	AREP Slot Number FI Index	
Call.req	FSPMS	AREP Slot Number Entity Number FI Index Execution Argument	
Get_FI_State.req	FSPMS	AREP Slot Number FI Index	

Le Tableau 47 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMM1 et reçues par l'AP-Context.

Tableau 47 – Primitives émises par la FSPMM1 vers l'AP-Context

Nom de primitive	Source	Paramètres associés	Fonctions
Init DP master Cl1.cnf	FSPMM1	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset DP master Cl1.cnf	FSPMM1	(aucun)	
Load ARL DP master Cl1.cnf(+)	FSPMM1	(aucun)	
Load ARL DP master Cl1.cnf(-)	FSPMM1	Status	
Get ARL DP master Cl1.cnf(+)	FSPMM1	Alarm Max, List of ARL Entries	
Get ARL DP master Cl1.cnf(-)	FSPMM1	Status	
Load CRL DP master Cl1.cnf(+)	FSPMM1	(aucun)	
Load CRL DP master Cl1.cnf(-)	FSPMM1	Status	
Get CRL DP master Cl1.cnf(+)	FSPMM1	List of CRL Entries	
Get CRL DP master Cl1.cnf(-)	FSPMM1	Status	
CRL Slave Activate.cnf(+)	FSPMM1		
CRL Slave Activate.cnf(-)	FSPMM1	Status	
CRL New Prm.cnf(+)	FSPMM1		
CRL New Prm.cnf(-)	FSPMM1	Status	
CRL New Prm Data.cnf(+)	FSPMM1		
CRL New Prm Data.cnf(-)	FSPMM1	Status	
Mark DP master Cl1.cnf(+)	FSPMM1	AREP, Dia	
Mark DP master Cl1.cnf(-)	FSPMM1	AREP, Status	
Set Mode DP master Cl1.cnf(+)	FSPMM1	AREP, Bus Accessible	

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Nom de primitive	Source	Paramètres associés	Fonctions
Set Mode DP master Cl1.cnf(-)	FSPMM1	AREP, Bus Accessible	
Load Bus Par DP master Cl1.cnf	FSPMM1	Status	
Delete SC DP master Cl1.cnf	FSPMM1	Status	
Read Value DP master Cl1.cnf	FSPMM1	Value, Status	
Get Slave Diag.cnf(+)	FSPMM1	AREP, CREP, Diag Data	
Get Slave Diag.cnf(-)	FSPMM1	AREP, CREP	
Set Output.cnf(+)	FSPMM1	AREP, CREP, Slot Number	
Set Output.cnf(-)	FSPMM1	AREP, CREP, Slot Number, Status	
Get Input.cnf(+)	FSPMM1	AREP, CREP, Slot Number, Input Data	
Get Input.cnf(-)	FSPMM1	AREP, CREP, Slot Number, Status	
Global Control.cnf(+)	FSPMM1	AREP	
Global Control.cnf(-)	FSPMM1	AREP, Status	
Read.cnf(+)	FSPMM1	AREP, Length, Data	
Read.cnf(-)	FSPMM1	AREP, Error Decode, Error Code 1 Error Code 2	
Write.cnf(+)	FSPMM1	AREP, Length	
Write.cnf(-)	FSPMM1	AREP, Error Decode, Error Code 1 Error Code 2	
Alarm Ack.cnf(+)	FSPMM1	AREP, Slot Number, Alarm Type, Seq Nr	
Alarm Ack.cnf(-)	FSPMM1	AREP Slot Number, Alarm Type, Seq Nr	
Get Master Diag.ind	FSPMM1	AREP, Mdiag Identifier	
Start Seq.ind	FSPMM1	AREP, Area Code, Timeout	
Download.ind	FSPMM1	AREP, Area Code, Add Offset, Data	

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Nom de primitive	Source	Paramètres associés	Fonctions
Upload.ind	FSPMM1	AREP, Area Code, Add Offset, Data Len	
End Seq.ind	FSPMM1	AREP	
Act Param.ind	FSPMM1	AREP, Area Code, Activate	
Act Para Brct.ind	FSPMM1	AREP, Area Code	
New Slave Diag.ind	FSPMM1	AREP, CREP	
New Input.ind	FSPMM1	AREP	
Alarm Notification.ind	FSPMM1	AREP, Slot Number, Alarm Type, Seq Nr, Add Ack, Alarm Specifier, Alarm Data	
DP master Cl1 Mode Changed.ind	FSPMM1	AREP, USIF State	
DP master Cl1 Event.ind		Event, Add Info	
DP master Cl1 Started.ind	FSPMM1	AREP	
DP master Cl1 Stopped.ind	FSPMM1	AREP	
Abort.ind	FSPMM1	AREP	
DP master Cl1 Reject.ind	FSPMM1	AREP, Reason	
DP master Cl1 Fault.ind	FSPMM1	(aucun)	
SYNCH.ind	FSPMM1	AREP	
SYNCH Delayed.ind	FSPMM1	AREP, T_{SH}	
DX Finished.ind	FSPMM1	AREP	
Set Time.ind	FSPMM1	AREP, Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour	
Set Time.cnf	FSPMM1	AREP, Status	
Sync Interval Violation.ind	FSPMM1	AREP	
Initiate Load.cnf(+)	FSPMM1	AREP, Actual LR Size, Max Response Delay, Max Segment Length User Specific	
Initiate Load.cnf(-)	FSPMM1	AREP, Error Code	
Pull Segment.cnf(+)	FSPMM1	AREP, Segment Length, Segment Number, More Follows, Data	
Pull Segment.cnf(-)	FSPMM1	AREP, Error Code	

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Nom de primitive	Source	Paramètres associés	Fonctions
Push Segment.cnf(+)	FSPMM1	AREP	
Push Segment.cnf(-)	FSPMM1	AREP, Error Code	
Terminate Load.cnf(+)	FSPMM1	AREP	
Terminate Load.cnf(-)	FSPMM1	AREP, Error Code	
Start.cnf(+)	FSPMM1	AREP	
Start.cnf(-)	FSPMM1	AREP Error Code	
Stop.cnf(+)	FSPMM1	AREP	
Stop.cnf(-)	FSPMM1	AREP Error Code	
Resume.cnf(+)	FSPMM1	AREP	
Resume.cnf(-)	FSPMM1	AREP Error Code	
Reset.cnf(+)	FSPMM1	AREP	
Reset.cnf(-)	FSPMM1	AREP Error Code	
Call.cnf(+)	FSPMM1	AREP Result Argument	
Call.cnf(-)	FSPMM1	AREP Error Code	
Get FI State.cnf(+)	FSPMM1	AREP FI State	
Get FI State.cnf(-)	FSPMM1	AREP Error Code	

8.2.1.2 Paramètres des primitives de FSPMM1

Les paramètres utilisés avec les primitives échangées entre la FSPMM1 et l'AP-Context sont décrits dans "Définition des services de la FAL" (voir la CEI 61158-5-3).

8.2.2 Description de diagramme d'états

Ce Diagramme est utilisé pour coordonner les interactions entre l'AP-Context (Contexte d'AP) et les DMPMM1, MSCY1M, MSAC1M, MSAL1M et MMAC1. Sachant que la prise en charge de plusieurs diagrammes d'états pour la communication avec un esclave pris séparément ainsi que les contraintes de synchronisation du fonctionnement de l'esclave exigent une programmation cohérente, cette tâche est accomplie par la FSPMM1 également.

Pour chaque esclave DP, un jeu individuel de diagrammes d'états (MSCY1M, MSAL1M, MSAC1M) est établi et est commandé par le Scheduler (programmateur) dans le maître DP (Classe 1). Le Scheduler est commandé par l'AP-Context avec des services spéciaux. Les Slave-Handlers(MSCY1M), c'est-à-dire descripteurs d'esclaves, sont déclenchés séquentiellement à partir du FSPMS-Scheduler pour accomplir les actions nécessaires. La FSPMM1 notifie les modes de fonctionnement CLEAR et OPERATE en intervalles de temps fixes (Dx_Control_Timer) aux esclaves DP. Cela se produit également aux transitions d'états de FSPMM1.

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Le Scheduler fournit quatre modes de fonctionnement pour l'utilisateur:

OFFLINE

STOP

CLEAR

OPERATE

Variables locales

Go_AClr
(Boolean)

Variable d'état qui indique par la valeur True qu'après avoir fini le cycle esclave courant, il faut que la FSPMM1 mette de force tous les esclaves DP dans un état de sécurité (Scheduler-State = CLEAR).

Internal_Go_AClr
(Boolean)

Seulement après avoir fini le cycle esclave courant, il faut que la FSPMS aille à l'état CLEAR si Go_AClr est True. Au cours de chaque cycle, la variable d'état Internal_Go_AClr stocke la valeur réelle de Go_AClr. À la fin de chaque cycle, la valeur de l'Internal_Go_AClr est copiée dans Go_AClr.

Mark_Active
(Unsigned8)

Indique l'état de la fonction locale Mark (repérer).

Plage:

Les valeurs possibles sont:

0 => Mark n'est pas active

1 => Mark est active, mais pas encore en exécution

2 => Mark est active et en exécution

Diag_Active
(Boolean)

Utilisé pour stocker les informations si l'un au moins des esclaves DP n'est pas dans le mode d'échange de données (True). Les informations sont émises vers l'utilisateur avec Mark.cnf.

UGC_Count
(Unsigned8)

Des demandes de Global_Control de l'utilisateur sont possibles à tout moment au cours des modes de fonctionnement CLEAR et OPERATE de FSPMM1. Les confirmations de ces demandes sont transmises à l'utilisateur. La FSPMM1 utilise le service Global_Control pour envoyer des demandes de Global_Control cyclique avec son mode de fonctionnement réel à tous les esclaves DP assignés. Il faut que les confirmations des demandes de Global_Control cyclique soient utilisées par la FSPMM1. Il faut que la FSPMM1 sache quel Global_Control.cnf appartient à quel Global_Control.req appelé précédemment. Cette relation ne peut pas être résolue à l'aide des seuls services DL. Par conséquent, la FSPMM1 doit obtenir ces informations de relations en utilisant l'ordre séquentiel des confirmations de Global_Control reçues. Les compteurs UGC_Count et CGC_Count sont utilisés pour stocker des informations relatives à l'ordre des demandes et aussi des informations relatives à l'ordre des confirmations.

Avec le compteur UGC_Count, toutes les demandes de Global_Control d'utilisateur sont comptées par incréments. La valeur initiale est 0. Elle est décrémentée avec chaque

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Global_Control.cnf. En outre, le compteur est associé au paramètre Bus_Para.Max_User_Global_Control.

Plage: 0 .. Bus_Para.Max_User_Global_Control

CGC_Count
(Unsigned8)

Avec ce compteur, toutes les demandes de Global_Control cyclique sont comptées lorsqu'elles ont été lancées par le Scheduler. La valeur initiale est 0. Avec chaque nouvelle Global_Control.req cyclique, l'UGC_Count est incrémenté et sa valeur est copiée dans CGC_Count. UGC_Count est également décrémenté avec chaque nouvelle Global_Control.cnf. Si ce compteur atteint la valeur 1, la Global_Control.cnf réelle est une confirmation pour une Global_Control.req cyclique

Plage: 0 .. Bus_Para.Max_User_Global_Control

Bus_Accessible
(Boolean)

Indique l'état réel du système de bus. Si des services peuvent être envoyés, sa valeur est True.

Act_Rem_Add
(Unsigned8)

Cette variable stocke l'adresse de station réellement utilisée d'un esclave DP.

Plage: 0 .. 125

Act_msac1m_Max_L_sdu_len
(Unsigned8)

Cette variable est utilisée pour stocker la valeur effective du paramètre msac1m_Max_L_sdu_len.

Plage: 0 .. 240

User_Sched_Reset
(Boolean)

Cette variable indique si la réinitialisation réelle a été lancée par l'utilisateur (AP-Context) ou par n'importe quel autre diagramme d'états.

Act_New_Bus_Para
(Bus_Para)

Cette structure est utilisée pour sauvegarder un jeu réel de paramètres de bus transmis temporairement de l'AP-Context vers la FSPMM1.

DX_Lock
(Boolean)

Cette variable repère un cycle actif d'échange de données pour verrouiller le tampon de données et bloquer l'accès utilisateur. La valeur TRUE est mise lorsque la première Handler.req d'esclave continu est émise jusqu'à DX Finished.ind. La valeur reste FALSE jusqu'à ce que la SYNCH.ind suivante redémarre le cycle d'échange de données.

DX_Synch
(Boolean)

Cette variable repère l'intervalle entre une SYNCH.ind et le prochain cycle d'échange de données. La valeur TRUE est mise quand la SYNCH.ind est reçue jusqu'à ce que la première

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Continue Slave Handler.req soit émise. La valeur reste FALSE jusqu'à la prochaine SYNCH.ind.

Chg Buffer
(Boolean)

La valeur TRUE indique que les tampons des données d'entrée et de sortie ci-dessous doivent être modifiés avec la DX Finished.ind suivante. Elle reste FALSE jusqu'à réception de la Set Output.req (Final=TRUE) suivante.

Bfr_Set_Output
(Octet String)

Cette variable est un tampon local pour données de sortie qui appartiennent à l'application. Elle permet un accès asynchrone du processus application aux données de sortie dans le mode Buffered Synchronized. Le contenu du tampon est rafraîchi par la FSPMM1 lorsque le processus application a produit une Set Output.req (Final = TRUE) et la DX Finished.ind a été reçue. Le tampon peut être accessible de nouveau après la prochaine SYNCH.ind.

Bfr_Get_Input
(Octet String)

Cette variable est un tampon local pour données d'entrée qui appartiennent à l'application. Elle permet un accès asynchrone du processus application aux données d'entrée dans le mode Buffered Synchronized. Le rafraîchissement est effectué ensemble avec le Bfr_Set_Output.

Set_Output
(Octet String)

Cette variable est un tampon local pour les données de sortie qui appartiennent au réseau. Elle permet un accès asynchrone du processus application aux données de sortie dans le mode Buffered Synchronized. Le contenu du tampon est rafraîchi par la FSPMM1 lorsque le processus application a produit une Set Output.req (Final = TRUE) et la DX Finished.ind a été reçue. Le tampon peut être accessible de nouveau après la prochaine SYNCH.ind.

Get_Input
(Octet String)

Cette variable est un tampon local pour données d'entrée qui appartiennent au réseau. Elle permet un accès asynchrone du processus application aux données d'entrée dans le mode Buffered Synchronized. Le rafraîchissement est effectué ensemble avec le Bfr_Set_Output.

LR_State
(Array of Unsigned8)

Cette variable stocke l'état de la séquence Load Region du CREP correspondant.

CurrentExtendedFunctionNum
(Array of Unsigned 8)

Cette variable stocke le numéro de fonction étendu du service LR actuellement traité du CREP correspondant.

CurrentSlotNumber
(Array of Unsigned8)

Cette variable stocke le numéro de position du service LR actuellement traité du CREP correspondant.

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Timers

Min_Sl_Interval_Timer
Ce temporisateur surveille le temps minimal de contrôle d'accès des esclaves DP. Il est évalué uniquement dans les états CCLEAR et COPERATE du FSPMM1.

Dx_Control_Interval_Timer
Si ce temporisateur expire, le service de diffusion Global_Control est exécuté afin d'informer l'esclave DP si le maître DP (Classe 1) est dans l'état CLEAR ou OPERATE. Si le temporisateur expire et la confirmation du dernier Global_Control n'a pas encore été reçue, il s'est produit un problème d'accès au bus physique.

Macros

INDICATE_BUS_ACCESSIBILITY
If (Accessible = True) Bus_Accessible = True

8.2.3 Table d'états de FSPMM1

Le Tableau 48 contient la description complète du diagramme d'états FSPMM1.

La définition suivante pour un ensemble d'états est utilisée dans le Tableau 48.

t_state = STOP ou CLEAR ou OPERATE

Tableau 48 – Table d'états du FSPMM1

#	État courant	Événement /Condition =>Action	État suivant
1	POWER-ON	Load ARL DP Master Cl1.req (Alarm Max, List of ARL Entries) /valid parameters => Load ARL DP Master Cl1.cnf(+)	POWER-ON
2	POWER-ON	Load ARL DP Master Cl1.req (Alarm Max, List of ARL Entries) /invalid parameters => Status := NO Load ARL DP Master Cl1.cnf(-) (Status)	POWER-ON
3	POWER-ON	Get ARL DP Master Cl1.req /ARL loaded => Get ARL DP Master Cl1.cnf(+) (Alarm Max, List of ARL Entries)	POWER-ON
4	POWER-ON	Get ARL DP Master Cl1.req /ARL not loaded => Status := NO Get ARL DP Master Cl1.cnf(-) (Status)	POWER-ON
5	POWER-ON	Load CRL DP Master Cl1.req (List of CRL Entries) /valid parameters => Load CRL DP Master Cl1.cnf(+)	POWER-ON
6	POWER-ON	Load CRL DP Master Cl1.req (List of CRL Entries) /invalid parameters => Status := NO Load CRL DP Master Cl1.cnf(-) (Status)	POWER-ON
7	POWER-ON	Get CRL DP Master Cl1.req /CRL loaded => Get CRL DP Master Cl1.cnf(+) (List of CRL Entries)	POWER-ON

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#	État courant	Événement /Condition =>Action	État suivant
8	POWER-ON	Get CRL DP Master Cl1.req /CRL not loaded => Status := NO Get CRL DP Master Cl1.cnf(-) (Status)	POWER-ON
9	POWER-ON	FSPMM1_Init DP Master Cl1.req(Bus_Para) => User_Init:=TRUE USER_ChangedCritical_Para := FALSE DX_Lock := FALSE Chg_Buffer := FALSE Current Extended Function Num[CREP]:=No_Service LR_State[CREP]:=W-LR-REQ DMPMM1_Minit_DLL.req(Bus_Para)	INIT-DMPM
10	INIT-DMPM	DMPMM1_Minit_DLL.cnf => Act_Rem_Add := 0 MSAC1M_MInit_MSAC1.req(Rem_Add:=Act_Rem_Add)	INIT-AC1
11	—	—	—
12	INIT-AC1	MSAC1M_MInit_MSAC1.cnf(Rem_Add) /Act_Rem_Add<125 => Act_Rem_Add := Act_Rem_Add + 1 MSAC1M_MInit_MSAC1.req(Rem_Add:=Act_Rem_Add)	INIT-AC1
13	INIT-AC1	MSAC1M_MInit_MSAC1.cnf(Rem_Add) /Act_Rem_Add=125 => Act_Rem_Add := 0 MSAL1M_MInit.req(Rem_Add:=Act_Rem_Add)	INIT-AL1
14	INIT-AL1	MSAL1M_MInit.cnf(Rem_Add) /Act_Rem_Add<125 => Act_Rem_Add := Act_Rem_Add + 1 MSAL1M_MInit.req(Rem_Add:=Act_Rem_Add)	INIT-AL1
15	INIT-AL1	MSAL1M_MInit.cnf(Rem_Add) /Act_Rem_Add = 125 => Act_Rem_Add := 0 MSCY1M_Minit_MS0.req(Rem_Add:=Act_Rem_Add)	INIT-CY1
16	INIT-CY1	MSCY1M_Minit_MS0.cnf(Rem_Add) /Act_Rem_Add<125 => Act_Rem_Add := Act_Rem_Add + 1 MSCY1M_Minit_MS0.req(Rem_Add:=Act_Rem_Add)	INIT-CY1
17	INIT-CY1	MSCY1M_Minit_MS0.cnf(Rem_Add) /Act_Rem_Add=125 && IsARExistent(MM)=TRUE => MMAC1_Minit_MM.req	INIT-MM1

18	INIT-CY1	MSCY1M_Minit_MS0.cnf(Rem_Add)
		/Act_Rem_Add=125 && IsARExistent(MM)=FALSE &&
		USER_ChangedCritical_Para = FALSE
		=>
		Bus_accessible := FALSE
		if(USER_SetMode_Offline=FALSE)
		FSPMM1_Init DP Master Cl1.cnf
		else
		FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)
		USER_SetMode_Offline:=FALSE
		endif
			OFFLINE

19	INIT-CY1	MSCY1M_Minit_MS0.cnf(Rem_Add) /Act_Rem_Add=125 && IsARExistent(MM)=FALSE && USER_ChangedCritical_Para = TRUE => DMPMM1_Set_Bus_Par.req(Bus_Para:=Act_New_Bus_Para)	LDBP

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#	État courant	Événement /Condition =>Action	État suivant
20	INIT-MM1	MMAC1_Minit_MM.cnf /USER_ChangedCritical_Para = TRUE => DMPMM1_Set_Bus_Par.req(Bus_Para:=Act_New_Bus_Para)	LDBP

21	INIT-MM1	MMAC1_Minit_MM.cnf
		/USER_ChangedCritical_Para = FALSE
		=>
		Bus_accessible := FALSE
		if(USER_SetMode_Offline=FALSE)
		FSPMM1_Init DP Master Cl1.cnf
		else
		FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)
		USER_SetMode_Offline:=FALSE
		endif
			OFFLINE

22	OFFLINE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State <> Stop && USIF_State <> Offline => FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	OFFLINE
23	OFFLINE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Offline => FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)	OFFLINE
24	OFFLINE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Stop && Bus_Para invalid => FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	OFFLINE
25	OFFLINE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Stop && Bus_Para valid => Mark_Active := 0 Diag_Active := False DMPMM1_Set_Bus_Par.req(Bus_Para)	LDBP
26	OFFLINE	FSPMM1_Mark.req(AREP) => FSPMM1_Mark.cnf(-)(AREP, Status:=NO)	OFFLINE
27	OFFLINE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	OFFLINE
28	OFFLINE	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) => FSPMM1_Load_Bus_Par.cnf(-)(Status:=NO)	OFFLINE
29	OFFLINE	FSPMM1_Delete_SC DP Master Cl1.req(Address) => DMPMM1_Delete_SC.req(Address)	DELSC-OFF
30	OFFLINE	FSPMM1_Read_Value DP Master Cl1.req(Variable) => DMPMM1_Read_Value.req(Variable)	RDVAL-OFF
31	LDBP	DMPMM1_Set_Bus_Par.cnf /USER_ChangeCritical_Para = FALSE => FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)	STOP
32	LDBP	DMPMM1_Set_Bus_Par.cnf /USER_ChangeCritical_Para = TRUE => FSPMM1_Load_Bus_Para.cnf(+)	STOP
33	DELSC-OFF	DMPMM1_Delete_SC.cnf => FSPMM1_Delete_SC DP Master Cl1.cnf	OFFLINE
34	RDVAL-OFF	DMPMM1_Read_Value.cnf(Status,Value) => FSPMM1_Read_Value DP Master Cl1.cnf(Status, Value)	OFFLINE

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#	État courant	Événement /Condition =>Action	État suivant
35	STOP	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Offline => USER_SetMode_Offline:=TRUE	RESET
36	STOP	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Stop => FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)	STOP
37	STOP	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Operate => FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	STOP
38	STOP	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Clear => UGC_Count := 0 CGC_Count := 0 Bus_Acessible := True Go_AClr := Bus_Para.Error_Action_Flag Internal_Go_AClr := False Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) MSCY1M_Start_Slave_Handler.req(0 .. 125)	CLEAR
39	STOP	FSPMM1_Mark.req(AREP) => FSPMM1_Mark.cnf(-)(AREP, Status:=NO)	STOP
40	STOP	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	STOP
41	STOP	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /Bus_Para invalid => FSPMM1_Load_Bus_Par.cnf(-)(Status:=IV)	STOP
42	STOP	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /(Bus_Para valid) && (critical parameters unchanged) => DMPMM1_Set_Bus_Par.req(Bus_Para)	LDBP-ST-CPU
43	STOP	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /(Bus_Para valid) && (critical parameters changed) => Act_New_Bus_Para := Bus_Para User_ChangedCritical_Para := TRUE	RESET
44	STOP	FSPMM1_Delete_SC DP Master Cl1.req(Address) => DMPMM1_Delete_SC.req(Address)	DELSC-ST
45	STOP	FSPMM1_Read_Value DP Master Cl1.req(Variable) => DMPMM1_Read_Value.req(Variable)	RDVAL-ST
46	LDBP-ST-CPU	DMPMM1_Set_Bus_Par.cnf => FSPMM1_Load_Bus_Para.cnf(+)	STOP
47	DELSC-ST	DMPMM1_Delete_SC.cnf => FSPMM1_Delete_SC DP Master Cl1.cnf	STOP
48	RDVAL-ST	DMPMM1_Read_Value.cnf(Status,Value) => FSPMM1_Read_Value DP Master Cl1.cnf(Status, Value)	STOP
49	CLEAR	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Offline => FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	CLEAR

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#	État courant	Événement /Condition =>Action	État suivant
50	CLEAR	FSPMM1_Mark DP Master Cl1.req(AREP) /Mark_Active = 0 => Mark_Active := 1	CLEAR
51	CLEAR	FSPMM1_Mark DP Master Cl1.req(AREP) /Mark_Active <> 0 => FSPMM1_Mark.cnf(-)(AREP, Status:=NO)	CLEAR
52	CLEAR	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Stop && Mark_Active = 0 => Stop Dx_Control_Interval_Timer MSCY1M_Stop_Slave_Handler.req(0..125)	SLHSTP
53	CLEAR	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Stop && Mark_Active <> 0 => Mark_Active := 0 Stop Dx_Control_Interval_Timer FSPMM1_Mark.cnf(-)(AREP; Status:=NO) MSCY1M_Stop_Slave_Handler.req(0..125)	SLHSTP
54	CLEAR	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Clear => FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)	CLEAR
55	CLEAR	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Operate && Go_AClr = False && Internal_Go_AClr = False && CGC_Count > 0 => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2	SGC-CO-WGC
56	CLEAR	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Operate && Go_AClr = False && Internal_Go_AClr = False && CGC_Count = 0 => UGC_Count := UGC_Count+1 CGC_Count := UGC_Count Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2 DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=0, Group_Select:=0)	SGC-CO
57	CLEAR	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Operate && (Go_AClr = True || Internal_Go_AClr = True) => FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	CLEAR
58	CLEAR	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /NOT received all MSCY1M_Start_Slave_Handler.cnf => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	CLEAR
59	CLEAR	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /received all MSCY1M_Start_Slave_Handler.cnf && CGC_Count = 0 && UGC_Count >= Bus_Para.Max_User_Global_Control => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	CLEAR

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#	État courant	Événement /Condition =>Action	État suivant
60	CLEAR	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /received all MSCY1M_Start_Slave_Handler.cnf && CGC_Count = 0 && UGC_Count < Bus_Para.Max_User_Global_Control && (Isochronous Mode = Not Synchronized || Group_Select < 0x80) => UGC_Count := UGC_Count+1 DMPMM1_Global_Control.req(Rem_Add:=CREP.Rem_Add, Control_Command.1:=1, Group_Select)	CLEAR
61	CLEAR	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /received all MSCY1M_Start_Slave_Handler.cnf && CGC_Count > 0 && UGC_Count >= Bus_Para.Max_User_Global_Control+1 => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	CLEAR
62	CLEAR	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /received all MSCY1M_Start_Slave_Handler.cnf && CGC_Count > 0 && UGC_Count < Bus_Para.Max_User_Global_Control+1 && (Isochronous Mode = Not Synchronized || Group_Select < 0x80) => UGC_Count := UGC_Count+1 DMPMM1_Global_Control.req(Rem_Add:=CREP.Rem_Add, Control_Command.1:=1, Group_Select)	CLEAR
63	CLEAR	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 0 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	CLEAR
64	CLEAR	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := 0	CLEAR
65	CLEAR	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /received all MSCY1M_Start_Slave_Handler.cnf && CGC_Count = 0 && UGC_Count < Bus_Para.Max_User_Global_Control && Isochronous Mode = (Buffered Synchronized || Enhanced Synchronized) && Group_Select >= 0x80 => FSPMM1_Global_Control.cnf(-)(AREP, Status:=GE)	CLEAR
66	CLEAR	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /received all MSCY1M_Start_Slave_Handler.cnf && CGC_Count > 0 && UGC_Count < Bus_Para.Max_User_Global_Control+1 && Isochronous Mode = (Buffered Synchronized || Enhanced Synchronized) && Group_Select >= 0x80 => FSPMM1_Global_Control.cnf(-)(AREP, Status:=GE)	CLEAR
67	CLEAR	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count > 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := CGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	CLEAR

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#	État courant	Événement /Condition =>Action	État suivant
68	CLEAR	MSCY1M_Start_Slave_Handler.cnf(Rem_Add) /NOT received all MSCY1M_Start_Slave_Handler.cnf => ignore	CLEAR
69	CLEAR	MSCY1M_Start_Slave_Handler.cnf(Rem_Add) /received all MSCY1M_Start_Slave_Handler.cnf && Isochronous Mode = Not Synchronized => Internal_Go_AClr := False Start Min_Sl_Interval_Timer(Bus_Para.Min_Slave_Interval) Set_Mode.cnf(Status:=OK, Bus_Accessible) MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=True)	CLEAR
70	CLEAR	MSCY1M_Start_Slave_Handler.cnf(Rem_Add) /received all MSCY1M_Start_Slave_Handler.cnf && Isochronous Mode <> Not Synchronized => Internal_Go_AClr := False Set_Mode.cnf(Status:=OK, Bus_Accessible) MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=True)	CLEAR
71	CLEAR	DMPMM1_SYNCH.ind => FSPMM1_DP Master Cl1 Fault.ind	RESET
72	CLEAR	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /NOT received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 2 => Diag_Active := Diag_Active OR Diag Internal_Go_AClr := Internal_Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr)	CLEAR
73	CLEAR	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /NOT received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active <> 2 => Internal_Go_AClr := Internal_Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr)	CLEAR
74	CLEAR	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 0 => Internal_Go_AClr := Internal_Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) DX_Lock := FALSE	CCLEAR
75	CLEAR	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 1 => Mark_Active:=2 Diag_Active := False Internal_Go_AClr := Internal_Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) DX_Lock := FALSE	CCLEAR
76	CLEAR	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 2 => Diag_Active := Diag_Active OR Diag Internal_Go_AClr := Internal_Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) Mark_Active:=0 DX_Lock := FALSE FSPMM1_Mark.cnf(+)(AREP, Dia:=Diag_Active)	CCLEAR

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#	État courant	Événement /Condition =>Action	État suivant
77	CLEAR	Dx_Control_Interval_Timer expired /CGC_Count = 0 => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) UGC_Count := UGC_Count+1 CGC_Count := UGC_Count DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=2, Group_Select:=0)	CLEAR
78	CLEAR	Dx_Control_Interval_Timer expired /CGC_Count > 0 => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_Accessible := False	CLEAR
79	CLEAR	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /Bus_Para invalid => FSPMM1_Load_Bus_Par.cnf(-)(Status:=IV)	CLEAR
80	CLEAR	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /(Bus_Para valid) && (critical parameters changed) => FSPMM1_Load_Bus_Par.cnf(-)(Status:=NO)	CLEAR
81	CLEAR	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /(Bus_Para valid) && (critical parameters unchanged) => DMPMM1_Set_Bus_Par.req(Bus_Para)	LDBP-CL-CPU
82	CLEAR	FSPMM1_Delete_SC DP Master Cl1.req(Address) => DMPMM1_Delete_SC.req(Address)	DELSC-CL
83	CLEAR	FSPMM1_Read_Value DP Master Cl1.req(Variable) => DMPMM1_Read_Value.req(Variable)	RDVAL-CL
84	SLHSTP	MSCY1M_Stop_Slave_Handler.cnf(Rem_Add) /NOT received all MSCY1M_Stop_Slave_Handler.cnf => ignore	SLHSTP
85	SLHSTP	MSCY1M_Stop_Slave_Handler.cnf(Rem_Add) /received all MSCY1M_Stop_Slave_Handler.cnf => Set_Mode.cnf(Status:=OK, Bus_Accessible)	STOP
86	SGC-CO-WGC	Dx_Control_Interval_Timer expired => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_Accessible := False FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	CLEAR
87	SGC-CO-WGC	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count > 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := CGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	SGC-CO-WGC
88	SGC-CO-WGC	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 1 => INDICATE_BUS_ACCESSIBILITY CGC_Count := UGC_Count DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=0, Group_Select:=0)	SGC-CO
89	SGC-CO	Dx_Control_Interval_Timer expired => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_Accessible := False Set_Mode.cnf(Status:=OK, Bus_Accessible)	OPERATE

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#	État courant	Événement /Condition =>Action	État suivant
90	SGC-CO	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count > 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := CGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	SGC-CO
91	SGC-CO	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := 0 FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)	OPERATE
92	CCLEAR	Min_Sl_Interval_Timer expired => Go_AClr := Internal_Go_AClr Internal_Go_AClr := False Start Min_Sl_Interval_Timer(Bus_Para.Min_Slave_Interval) MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=True)	CLEAR
93	CCLEAR	DMPMM1_SYNCH.ind => DX_Lock := TRUE Output_Data = Set_Output MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=False) MSCY1M_Set_Output.req(Rem_Add:=0..125, Slot_Number:=ALL, Output_Data) MSCY1M_Get_Input.req(Rem_Add:=0..125, Slot_Number:=ALL) FSPMM1_SYNCH.ind (AREP)	CLEAR
94	LDBP-CL-CPU	DMPMM1_Set_Bus_Par.cnf => FSPMM1_Load_Bus_Para.cnf(+)	CLEAR
95	DELSC-CL	DMPMM1_Delete_SC.cnf => FSPMM1_Delete_SC DP Master Cl1.cnf	CLEAR
96	RDVAL-CL	DMPMM1_Read_Value.cnf(Status,Value) => FSPMM1_Read_Value DP Master Cl1.cnf(Status, Value)	CLEAR
97	OPERATE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State <> Clear && USIF_State <> Operate => FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	OPERATE
98	OPERATE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Operate => FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)	OPERATE
99	OPERATE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Clear && CGC_Count > 0 => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2)	SGC-OC-WGC
100	OPERATE	FSPMM1_Set_Mode.req(USIF_State) /USIF_State = Clear && CGC_Count = 0 => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2 UGC_Count := UGC_Count+1 CGC_Count := UGC_Count DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=2, Group_Select:=0)	SGC-OC
101	OPERATE	FSPMM1_Mark DP Master Cl1.req(AREP) /Mark_Active = 0 => Mark_Active := 1	OPERATE

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#	État courant	Événement /Condition =>Action	État suivant
102	OPERATE	FSPMM1_Mark DP Master Cl1.req(AREP) /Mark_Active <> 0 => FSPMM1_Mark.cnf(-)(AREP, Status:=NO)	OPERATE
103	OPERATE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /Control_Command.1 = 1 => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	OPERATE
104	OPERATE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /Control_Command.1 = 0 && CGC_Count = 0 && UGC_Count >= Bus_Para.Max_User_Global_Control => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	OPERATE
105	OPERATE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /Control_Command.1 = 0 && CGC_Count = 0 && UGC_Count < Bus_Para.Max_User_Global_Control && (Isochronous Mode = Not Synchronized || Group_Select < 0x80) => UGC_Count := UGC_Count+1 DMPMM1_Global_Control.req(Rem_Add:=CREP.Rem_Add, Control_Command.1:=0, Group_Select)	OPERATE
106	OPERATE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /Control_Command.1 = 0 && CGC_Count > 0 && UGC_Count >= Bus_Para.Max_User_Global_Control+1 => FSPMM1_Global_Control.cnf(-)(AREP, Status:=NO)	OPERATE
107	OPERATE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /Control_Command.1 = 0 && CGC_Count > 0 && UGC_Count < Bus_Para.Max_User_Global_Control+1 && (Isochronous Mode = Not Synchronized || Group_Select < 0x80) => UGC_Count := UGC_Count+1 DMPMM1_Global_Control.req(Rem_Add:=CREP.Rem_Add, Control_Command.1:=0, Group_Select)	OPERATE
108	OPERATE	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 0 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	OPERATE
109	OPERATE	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := 0	OPERATE
110	OPERATE	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count > 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := CGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	OPERATE

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#	État courant	Événement /Condition =>Action	État suivant
111	OPERATE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /Control_Command.1 = 0 && CGC_Count = 0 && UGC_Count < Bus_Para.Max_User_Global_Control && Isochronous Mode = (Buffered Synchronized || Enhanced Synchronized) && Group_Select >= 0x80 => FSPMM1_Global_Control.cnf(-)(AREP, Status:=GE)	OPERATE
112	OPERATE	FSPMM1_Global_Control.req(AREP, Sync_Command, Freeze_Command, Group_Select) /Control_Command.1 = 0 && CGC_Count > 0 && UGC_Count < Bus_Para.Max_User_Global_Control+1 && Isochronous Mode = (Buffered Synchronized || Enhanced Synchronized) && Group_Select >= 0x80 => FSPMM1_Global_Control.cnf(-)(AREP, Status:=GE)	OPERATE
113	OPERATE	DMPMM1_SYNCH.ind => FSPMM1_DP Master Cl1 Fault.ind	RESET
114	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /NOT received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 2 => Diag_Active:=Diag_Active OR Diag Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr)	OPERATE
115	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /NOT received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active <> 2 => Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr)	OPERATE
116	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 0 && (Isochronous Mode = Not Synchronized || Isochronous Mode = Enhanced Synchronized) => Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) DX_Lock := FALSE FSPMM1_DX_Finished.ind (AREP)	COPERATE
117	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 1 && (Isochronous Mode = Not Synchronized || Isochronous Mode = Enhanced Synchronized) => Mark_Active:=2 Diag_Active := False Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) DX_Lock := FALSE FSPMM1_DX_Finished.ind (AREP)	COPERATE

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#	État courant	Événement /Condition =>Action	État suivant
118	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 2 && (Isochronous Mode = Not Synchronized || Isochronous Mode = Enhanced Synchronized) => Diag_Active:=Diag_Active OR Diag Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) Mark_Active:=0 DX_Lock := FALSE FSPMM1_Mark.cnf(+)(AREP, Dia:=Diag_Active) DX_Finished.ind (AREP)	COPERATE
119	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 0 && Isochronous Mode = Buffered Synchronized => Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) DX_Lock := FALSE Chg_Bfr (Bfr_Get_Input, Get_Input) FSPMM1_DX_Finished.ind (AREP)	COPERATE
120	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 1 && Isochronous Mode = Buffered Synchronized => Mark_Active:=2 Diag_Active := False Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) DX_Lock := FALSE Chg_Bfr (Bfr_Get_Input, Get_Input) FSPMM1_DX_Finished.ind (AREP)	COPERATE
121	OPERATE	MSCY1M_Cont_Slave_Handler.cnf(Rem_Add, Diag, No_AClr) /received all MSCY1M_Cont_Slave_Handler.cnf && Mark_Active = 2 && Isochronous Mode = Buffered Synchronized => Diag_Active:=Diag_Active OR Diag Go_AClr := Go_AClr OR (Bus_Para.Error_Action_Flag AND NOT No_AClr) Mark_Active:=0 DX_Lock := FALSE FSPMM1_Mark.cnf(+)(AREP, Dia:=Diag_Active) DX_Finished.ind (AREP)	COPERATE
122	OPERATE	Dx_Control_Interval_Timer expired /CGC_Count = 0 => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) UGC_Count := UGC_Count+1 CGC_Count := UGC_Count DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=0, Group_Select:=0)	OPERATE
123	OPERATE	Dx_Control_Interval_Timer expired /CGC_Count > 0 => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_accessible := False	OPERATE
124	OPERATE	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /Bus_Para invalid => FSPMM1_Load_Bus_Par.cnf(-)(Status:=IV)	OPERATE
125	OPERATE	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /(Bus_Para valid) && (critical parameters changed) => FSPMM1_Load_Bus_Par.cnf(-)(Status:=NO)	OPERATE

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#	État courant	Événement /Condition =>Action	État suivant
126	OPERATE	FSPMM1_Load_Bus_Par DP Master Cl1.req(Bus_Para) /(Bus_Para valid) && (critical parameters unchanged) => DMPMM1_Set_Bus_Par.req(Bus_Para)	LDBP-OP-CPU
127	OPERATE	FSPMM1_Delete_SC DP Master Cl1.req(Address) => DMPMM1_Delete_SC.req(Address)	DELSC-OP
128	OPERATE	FSPMM1_Read_Value DP Master Cl1.req(Variable) => DMPMM1_Read_Value.req(Variable)	RDVAL-OP
129	SGC-OC-WGC	Dx_Control_Interval_Timer expired /Go_AClr = False => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_Accessible := False FSPMM1_Set_Mode DP Master Cl1.cnf(-)(AREP, Bus_accessible)	OPERATE
130	SGC-OC-WGC	Dx_Control_Interval_Timer expired /Go_AClr = True => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_Accessible := False	SGC-OC-WGC
131	SGC-OC-WGC	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count > 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := CGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	SGC-OC-WGC
132	SGC-OC-WGC	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 1 => INDICATE_BUS_ACCESSIBILITY CGC_Count := UGC_Count DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=2, Group_Select:=0)	SGC-OC
133	SGC-OC	Dx_Control_Interval_Timer expired /Go_AClr = False => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_Accessible := False Set_Mode.cnf(Status:=OK, Bus_Accessible)	CLEAR
134	SGC-OC	Dx_Control_Interval_Timer expired /Go_AClr = True => Start Dx_Control_Interval_Timer(Bus_Para.Data_Control_Time/2) Bus_Accessible := False FSPMM1_DP Master Cl1 Mode_Changed.ind(AREP, USIF_State:=Clear) MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=True)	CLEAR
135	SGC-OC	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count > 1 => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := CGC_Count-1 FSPMM1_Global_Control.cnf(+)(AREP)	SGC-OC
136	SGC-OC	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 1 && Go_AClr = False => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := 0 FSPMM1_Set_Mode DP Master Cl1.cnf(+)(AREP, Bus_accessible)	CLEAR

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137	SGC-OC	DMPMM1_Global_Control.cnf(Rem_Add, Status) /CGC_Count = 1 && Go_AClr = True => INDICATE_BUS_ACCESSIBILITY UGC_Count := UGC_Count-1 CGC_Count := 0 FSPMM1_DP Master Cl1 Mode_Changed.ind(AREP, USIF_State:=Clear) MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=True)	CLEAR
138	COPERATE	Min_Sl_Interval_Timer expired /Go_AClr = False => Start Min_Sl_Interval_Timer (Bus_Para.Min_Slave_Interval) MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=False)	OPERATE
139	COPERATE	Min_Sl_Interval_Timer expired /Go_AClr = True && CGC_Count > 0 => Start Dx_Control_Interval_Timer (Bus_Para.Data_Control_Time/2) Start Min_Sl_Interval_Timer (Bus_Para.Min_Slave_Interval)	SGC-OC-WGC
140	COPERATE	Min_Sl_Interval_Timer expired /Go_AClr = True && CGC_Count = 0 => Start Dx_Control_Interval_Timer (Bus_Para.Data_Control_Time/2) UGC_Count := UGC_Count+1 CGC_Count := UGC_Count Start Min_Sl_Interval_Timer (Bus_Para.Min_Slave_Interval) DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=2, Group_Select:=0)	SGC-OC
141	COPERATE	DMPMM1_SYNCH.ind /Go_AClr = False => DX_Lock := TRUE Output_Data = Set_Output MSCY1M_Cont_Slave_Handler.req(0..125, Output_Clear:=False) MSCY1M_Set_Output.req(Rem_Add:=0..125, Slot_Number:=ALL, Output_Data) MSCY1M_Get_Input.req(Rem_Add:=0..125, Slot_Number:=ALL) FSPMM1_SYNCH.ind (AREP)	COPERATE
142	COPERATE	DMPMM1_SYNCH.ind /Go_AClr = True && CGC_Count > 0 => Start Dx_Control_Interval_Timer (Bus_Para.Data_Control_Time/2) DX_Lock := TRUE Output_Data = Set_Output MSCY1M_Set_Output.req(Rem_Add:=0..125, Slot_Number:=ALL, Output_Data) MSCY1M_Get_Input.req(Rem_Add:=0..125, Slot_Number:=ALL) FSPMM1_SYNCH.ind (AREP)	COPERATE
143	COPERATE	DMPMM1_SYNCH.ind /Go_AClr = True && CGC_Count = 0 => Start Dx_Control_Interval_Timer (Bus_Para.Data_Control_Time/2) UGC_Count := UGC_Count+1 CGC_Count := UGC_Count DX_Lock := TRUE Output_Data = Set_Output DMPMM1_Global_Control.req(Rem_Add:=127, Control_Command:=2, Group_Select:=0) MSCY1M_Set_Output.req(Rem_Add:=0..125, Slot_Number:=ALL, Output_Data) MSCY1M_Get_Input.req(Rem_Add:=0..125, Slot_Number:=ALL) FSPMM1_SYNCH.ind (AREP)	COPERATE
144	LDBP-OP-CPU	DMPMM1_Set_Bus_Par.cnf => FSPMM1_Load_Bus_Para.cnf(+)	OPERATE
145	DELSC-OP	DMPMM1_Delete_SC.cnf => FSPMM1_Delete_SC DP Master Cl1.cnf	OPERATE

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#	État courant	Événement /Condition =>Action	État suivant
146	RDVAL-OP	DMPMM1_Read_Value.cnf(Status,Value) => FSPMM1_Read_Value DP Master Cl1.cnf(Status, Value)	OPERATE
147	RESET	 /spontanous => Act_Rem_Add := 0 MSCY1M_Reset.req(Act_Rem_Add)	RESET-MS0
148	RESET-MS0	MSCY1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add<125 => Act_Rem_Add := Act_Rem_Add+1 MSCY1M_Reset.req(Act_Rem_Add)	RESET-MS0
149	RESET-MS0	MSCY1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add=125 && IsARExistent(MS1)=TRUE => Act_Rem_Add := 0 MSAC1M_Reset.req(Act_Rem_Add)	RESET-MS1
150	RESET-MS0	MSCY1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add=125 && IsARExistent(MS1)=FALSE && && IsARExistent(MM1)=TRUE => MMAC1_Reset.req	RESET-MM1
151	RESET-MS0	MSCY1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add=125 && IsARExistent(MS1)=FALSE && && IsARExistent(MM1)=FALSE => DMPMM1_Reset.req	RESET-DMPM
152	RESET-MS1	MSAC1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add=125 => Act_Rem_Add := 0 MSAL1M_Reset.req(Act_Rem_Add)	RESET-MS1
153	RESET-MS1	MSAL1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add<125 => Act_Rem_Add := Act_Rem_Add + 1 MSAL1M_Reset.req(Act_Rem_Add)	RESET-MS1
154	RESET-MS1	MSAL1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add = 125 && IsARExistent(MM1)=TRUE => MMAC1_Reset.req	RESET-MM1
155	RESET-MS1	MSAL1M_Reset.cnf(Act_Rem_Add) /Act_Rem_Add = 125 && IsARExistent(MM1)=FALSE => DMPMM1_Reset.req	RESET-DMPM
156	RESET-MM1	MMAC1_Reset.cnf => DMPMM1_Reset.req	RESET-DMPM
157	RESET-DMPM	DMPMM1_Reset.cnf /USER_SetMode_Offline = TRUE || USER_ChangedCritical_Para = TRUE	INIT-DMPM

158	RESET-DMPM	DMPMM1_Reset.cnf
		/USER_SetMode_Offline = FALSE && USER_ChangedCritical_Para = FALSE
		=>
		if(USER_sched_Reset = TRUE)
		  FSPMM1_Reset DP Master Cl1.cnf
		endif
			POWER-ON

159	t state	FSPMM1_Abort DP Master Cl1.req(AREP) /AREP.AR_Type=MS0 => Current Extended Function Num[CREP]:=No_Service LR_State[CREP]:=W-LR-REQ MSCY1M_Abort.req(Rem_Add:=CREP.Rem_Add)	SAME

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#	État courant	Événement /Condition =>Action	État suivant
160	t state	FSPMM1_Abort DP Master Cl1.req(AREP) /AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=No_Service LR_State[CREP]:=W-LR-REQ MSAC1M_Abort.req(Rem_Add:=CREP.Rem_Add)	SAME
161	t state	FSPMM1_Abort DP Master Cl1.req(AREP) /AREP.AR_Type=MM1 => MMAC1_Abort.req(Rem_Add:=CREP.Rem_Add)	SAME
162	t state	FSPMM1_Get_Slave_Diag.req(AREP, CREP) /AREP.AR_Type=MS0 => MSCY1M_Get_Slave_Diag.req(CREP.Rem_Add)	SAME
163	t state	MSCY1M_Get_Slave_Diag.cnf(+)(Rem_Add, Diag_Data) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Get_Slave_Diag.cnf(+)(AREP, CREP, Diag_Data)	SAME
164	t state	MSCY1M_Get_Slave_Diag.cnf(-)(Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Get_Slave_Diag.cnf(-)(AREP, CREP)	SAME
165	t state	MSCY1M_Set_Output.cnf(+)(Rem_Add, Slot_Number) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = (Not Synchronized || Enhanced Synchronized) => FSPMM1_Set_Output.cnf(+)(AREP, CREP, Slot_Number)	SAME
166	t state	MSCY1M_Set_Output.cnf(-)(Rem_Add, Slot_Number) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = (Not Synchronized || Enhanced Synchronized) => Status := SC FSPMM1_Set_Output.cnf(-)(AREP, CREP, Slot_Number, Status)	SAME
167	t state	MSCY1M_Get_Input.cnf(+)(Rem_Add, Slot_Number, Input_Data) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = (Not Synchronized || Enhanced Synchronized) => FSPMM1_Get_Input.cnf(+)(AREP, CREP, Slot_Number, Input_Data)	SAME
168	t state	MSCY1M_Get_Input.cnf(-)(Rem_Add, Slot_Number) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = (Not Synchronized || Enhanced Synchronized) => Status := SC FSPMM1_Get_Input.cnf(-)(AREP, CREP, Slot_Number, Status)	SAME
169	t state	FSPMM1_Read.req(AREP, Slot_Number, Index, Length) /AREP.AR_Type=MS1 => MSAC1M_Read.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length)	SAME
170	t state	MSAC1M_Read.cnf(+)(Rem_Add, Length, Data) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Read.cnf(+)(AREP, Length, Data)	SAME
171	t state	MSAC1M_Read.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Read.cnf(-)(AREP, Rem_Add, Error_Decode, Error_Code_1, Error_Code_2)	SAME
172	t state	FSPMM1_Write.req(AREP, Slot_Number, Index, Length, Data) /AREP.AR_Type=MS1 => MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data)	SAME

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173	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Write.cnf(+)(AREP, Length)	SAME
174	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Write.cnf(-)(AREP, Rem_Add, Error_Decode, Error_Code_1, Error_Code_2)	SAME
175	t state	FSPMM1_Alarm_Ack.req(AREP, Slot_Number, Alarm_Type, Seq_Nr) /AREP.AR_Type=MS1 => MSAL1M_Alarm_Ack.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Alarm_Type, Seq_Nr)	SAME
176	t state	MSAL1M_Alarm_Ack.cnf(+)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Alarm_Ack.cnf(+)(AREP, Slot_Number, Alarm_Type,Seq_Nr)	SAME
177	t state	MSAL1M_Alarm_Ack.cnf(-)(Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Alarm_Ack.cnf(-)(AREP, Slot Number, Alarm Type,Seq Nr)	SAME
178	t state	FSPMM1_Get_Master_Diag.rsp(+)(AREP, Diagnosis_Data) /AREP.AR_Type=MM1 => MMAC1_Get_Master_Diag.rsp(Status:=OK, Diagnosis_Data)	SAME
179	t state	FSPMM1_Get_Master_Diag.rsp(-)(AREP, Status) /AREP.AR_Type=MM1 => MMAC1_Get_Master_Diag.rsp(Status)	SAME
180	t state	MMAC1_Get_Master_Diag.ind(Identifier) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Get_Master_Diag.ind(AREP, Mdiag_Identifier:=Identifier)	SAME
181	t state	FSPMM1_Start_Seq.rsp(+)(AREP, Max_Len_Data_Unit) /AREP.AR_Type=MM1 => MMAC1_Start_Seq.rsp(Status:=OK, Max_Length_Data_Unit)	SAME
182	t state	FSPMM1_Start_Seq.rsp(-)(AREP, Status) /AREP.AR_Type=MM1 => MMAC1_Start_Seq.rsp(Status)	SAME
183	t state	MMAC1_Start_Seq.ind(Req_Add, Area_Code, Timeout) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Start_Seq.ind(AREP, Area_Code, Timeout)	SAME
184	t state	FSPMM1_Download.rsp(+)(AREP) /AREP.AR_Type=MM1 => MMAC1_Download.rsp(Status:=OK)	SAME
185	t state	FSPMM1_Download.rsp(-)(AREP, Status) /AREP.AR_Type=MM1 => MMAC1_Download.rsp(Status)	SAME
186	t state	MMAC1_Download.ind(Req_Add, Area_Code, Address_Offset, Data) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Download.ind(AREP, Area_Code, Add_Offset, Data)	SAME

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#	État courant	Événement /Condition =>Action	État suivant
187	t state	FSPMM1_Upload.rsp(+)(AREP, Data) /AREP.AR_Type=MM1 => MMAC1_Upload.rsp(Status:=OK, Data)	SAME
188	t state	FSPMM1_Upload.rsp(-)(AREP, Status) /AREP.AR_Type=MM1 => MMAC1_Upload.rsp(Status)	SAME
189	t state	MMAC1_Upload.ind(Req_Add, Area_Code, Address_Offset, Data_Length) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Upload.ind(AREP, Area_Code, Add_Offset, Data_Len:=Data_Length)	SAME
190	t state	FSPMM1_End_Seq.rsp(+)(AREP) /AREP.AR_Type=MM1 => MMAC1_End_Seq.rsp(Status:=OK)	SAME
191	t state	FSPMM1_End_Seq.rsp(-)(AREP, Status) /AREP.AR_Type=MM1 => MMAC1_End_Seq.rsp(Status)	SAME
192	t state	MMAC1_End_Seq.ind(Req_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_End_Seq.ind(AREP)	SAME
193	t state	FSPMM1_Act_Param.rsp(+)(AREP) /AREP.AR_Type=MM1 => MMAC1_Act_Param.rsp(Status:=OK)	SAME
194	t state	FSPMM1_Act_Param.rsp(-)(AREP, Status) /AREP.AR_Type=MM1 => MMAC1_Act_Param.rsp(Status)	SAME
195	t state	MMAC1_Act_Param.ind(Area_Code, Activate) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Act_Param.ind(AREP, Area_Code, Activate)	SAME
196	t state	MMAC1_Act_Para_Brct.ind(Area_Code) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Act_Para_Brct.ind(AREP, Area_Code)	SAME
197	t state	MSAC1M_Reject.ind(Rem_Add, Status) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_DP Master Cl1 Reject.ind(AREP, Reason:=Status)	SAME
198	t state	MSAL1M_Started.ind(Rem_Add, Alarm_Limit) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_DP Master Cl1 Started.ind(AREP, Alarm_Limit)	SAME
199	t state	MSAL1M_Stopped.ind(Rem_Add) /SetContext(Rem_Add, Service)=TRUE => Current Extended Function Num[CREP]:=No_Service LR_State[CREP]:=W-LR-REQ FSPMM1_DP Master Cl1 Stopped.ind(AREP)	SAME
200	t state	MSAL1M_Alarm_Notification.ind(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr, Alarm_Specifier, Add_Ack, Alarm_Data) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_Alarm_Notification.ind(AREP, Alarm_Type, Slot_Number, Seq_Nr, Alarm_Specifier, Add_Ack, Alarm_Data)	SAME

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#	État courant	Événement /Condition =>Action	État suivant
201	t state	MSCY1M_New_Slave_Diag.ind(Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_New_Slave_Diag.ind(AREP, CREP)	SAME
202	t state	MSCY1M_New_Input.ind(Rem_Add) /SetContext(Rem_Add, Service)=TRUE => FSPMM1_New_Input.ind(AREP, CREP)	SAME
203	t state	FSPMM1_Set_Output.req(AREP, CREP, Slot_Number, Output_Data, Final) /AREP.AR_Type=MS0 && (DX_Lock || Chg_Buffer) => Status := SE FSPMM1_Set_Output.cnf(-)(AREP, CREP, Slot_Number, Status)	SAME
204	t state	FSPMM1_Get_Input.req(AREP, CREP, Slot_Number) /AREP.AR_Type=MS0 && (DX_Lock || Chg_Buffer) => Status := SE FSPMM1_Get_Input.cnf(-)(AREP, CREP, Slot_Number, Status)	SAME
205	t state	FSPMM1_Set_Output.req(AREP, CREP, Slot_Number, Output_Data, Final) /AREP.AR_Type=MS0 && !DX_Lock && !Chg_Buffer && Isochronous Mode <> Buffered Synchronized => MSCY1M_Set_Output.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Output_Data)	SAME
206	t state	FSPMM1_Get_Input.req(AREP, CREP, Slot_Number) /AREP.AR_Type=MS0 && !DX_Lock && !Chg_Buffer && Isochronous Mode <> Buffered Synchronized => MSCY1M_Get_Input.req(Rem_Add:=CREP.Rem_Add, Slot_Number)	SAME
207	t state	FSPMM1_Set_Output.req(AREP, CREP, Slot_Number, Output_Data, Final) /AREP.AR_Type=MS0 && !DX_Lock && !Chg_Buffer && Isochronous Mode = Buffered Synchronized => Bfr_Set_Output := Output_Data Chg_Buffer := Final FSPMM1_Set_Output.cnf(+)(AREP, CREP, Slot_Number)	SAME
208	t state	FSPMM1_Get_Input.req(AREP, CREP, Slot_Number) /AREP.AR_Type=MS0 && !DX_Lock && !Chg_Buffer && Isochronous Mode = Buffered Synchronized => Input_Data := Bfr_Get_Input FSPMM1_Get_Input.cnf(+)(AREP, CREP, Slot_Number, Input_Data)	SAME
209	t state	MSCY1M_Set_Output.cnf(+)(Rem_Add, Slot_Number) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = Buffered Synchronized =>	SAME
210	t state	MSCY1M_Set_Output.cnf(-)(Rem_Add, Slot_Number) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = Buffered Synchronized => Set_Output = Nil	SAME
211	t state	MSCY1M_Get_Input.cnf(+)(Rem_Add, Slot_Number, Input_Data) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = Buffered Synchronized && NOT received all MSCY1M_Get_Input.cnf => Get_Input = Input_Data	SAME

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#	État courant	Événement /Condition =>Action	État suivant
212	t state	MSCY1M_Get_Input.cnf(+)(Rem_Add, Slot_Number, Input_Data) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = Buffered Synchronized&& NOT received all MSCY1M_Get_Input.cnf => Chg_Buffer := FALSE Get_Input = Input_Data	SAME
213	t state	MSCY1M_Get_Input.cnf(-)(Rem_Add, Slot_Number) /SetContext(Rem_Add, Service)=TRUE && Isochronous Mode = Buffered Synchronized => Get_Input = Nil	SAME
214	ANY-STATE	DMPMM1_Event.ind(Event, Add_Info) => FSPMM1_DP Master Cl1 Event.ind(Event, Add_Info)	SAME
215	ANY-STATE	DMPMM1_SYNCH_Delayed.ind (TSH) => FSPMM1_SYNCH_Delayed.ind (AREP, TSH)	SAME
216	ANY-STATE	DMPMM1_Fault.ind => USER_sched_Reset := False FSPMM1_DP Master Cl1 Fault.ind	RESET
217	ANY-STATE	MSCY1M_Fault.ind => USER_sched_Reset := False FSPMM1_DP Master Cl1 Fault.ind	RESET
218	ANY-STATE	MSAL1M_Fault.ind => USER_sched_Reset := False FSPMM1_DP Master Cl1 Fault.ind	RESET
219	ANY-STATE	MSAC1M_Fault.ind => USER_sched_Reset := False FSPMM1_DP Master Cl1 Fault.ind	RESET
220	ANY-STATE	MMAC1_Fault.ind => USER_sched_Reset := False FSPMM1_DP Master Cl1 Fault.ind	RESET
221	ANY-STATE	FSPMM1_Reset DP Master Cl1.req => USER_sched_Reset := True	RESET
222	ANY-STATE	DMPMM1_SYCL_Time_Event.cnf (Send Delay Time, Status) => FSPMM1_SYCL_Time_Event.cnf (AREP, Send Delay Time, Status)	SAME
223	ANY-STATE	FSPMM1_SYCL_Time_Event.req (AREP) => DMPMM1_SYCL_Time_Event.req	SAME
224	ANY-STATE	FSPMM1_SYCL_Clock_Value.req (AREP, Clock Value Time Event, Clock Value previous TE, Clock Value Status) => DMPMM1_SYCL_Clock_Value.req (Clock Value Time Event, Clock Value previous TE, Clock Value Status)	SAME
225	ANY-STATE	DMPMM1_SYCL_Clock_Value.cnf (Status) => FSPMM1_SYCL_Clock_Value.cnf (AREP, Status)	SAME
226	ANY-STATE	DMPMM1_SYCL_Clock_Value.ind (Clock Value Time Event, Clock Value previous TE, Clock Value Status, Receive Delay Time, Src add Clk msg) => FSPMM1_SYCL_Clock_Value.ind (AREP, Clock Value Time Event, Clock Value previous TE, Clock Value Status, Receive Delay Time, Src add Clk msg)	SAME

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#	État courant	Événement /Condition =>Action	État suivant
227	t state	FSPMM1_Initiate_Load.req (AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request Timeout, User Specific) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Initiate_Load Current Slot Number[CREP]:=Slot Number Index:=255 Length:=10+sizeof(User Specific) Data.w.IL.Extended_Function_Num:=Initiate_Load Data.w.IL.LR_Index:=LR Index Data.w.IL.Load_Type:=Load Type Data.w.IL.Load_Image_Size:=Load Image Size Data.w.IL.User_Specific:=User Specific Data.w.IL.Intersegment_Request_Timeout:=Intersegment Request Timeout MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
228	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Initiate_Load => Slot_Number:=Current Slot Number[CREP] Index:=255 Length:=10 MSAC1M_Read.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length) LR_State[CREP]:=W-LR-CNF	SAME
229	t state	MSAC1M_Read.cnf(+)(Rem_Add, Length, Data) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Initiate_Load => Current Extended Function Num[CREP]=No_Service Actual LR Size:=Data.r.IL.Actual_LR_Size Max Response Delay:=Data.r.IL.Max_Response_Delay Max Segment Length:=Data.r.IL.Max_Segment_Length User Specific:=Data.r.IL.User_Specific FSPMM1_Initiate_Load.cnf(+) (AREP, Actual LR Size, Max Response Delay, Max Segment Length, User Specific) LR_State[CREP]:=W-LR-REQ	SAME
230	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Initiate_Load => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Initiate_Load.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
231	t state	FSPMM1_Pull_Segment.req (AREP, Slot Number, LR Index, Segment Length) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Pull Current LR Index[CREP]:=LR Index Index:=255 Length:=Segment Length MSAC1M_Read.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length) LR_State[CREP]:=W-LR-CNF	SAME

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#	État courant	Événement /Condition =>Action	État suivant
232	t state	MSAC1M_Read.cnf(+)(Rem_Add, Length, Data) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Pull => Current Extended Function Num[CREP]=No_Service Segment Number:=Data.PULL.Sequence Number More Follows:=Data.PULL.Options.More Follows Data:=Data.PULL.Region Data Segment Length:=Length-6 FSPMM1_Pull_Segment.cnf(+) (AREP, Segment Length, Segment Number, More Follows, Data) LR_State[CREP]:=W-LR-REQ	SAME
233	t state	MSAC1M_Read.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Pull => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Pull_Segment.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
234	t state	FSPMM1_Push_Segment.req (AREP, Slot Number, LR Index, Segment Length, Segment Number, More Follows, Data) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Push Current Slot Number[CREP]:=Slot Number Index:=255 Length:=6+Segment Length Data.PUSH.Extended_Function_Num:=Push Data.PUSH.LR_Index:=LR Index Data.PUSH.Segment_Number:=Segment Number Data.PUSH.Option.More_Follows:=More Follows Data.PUSH.Data:=Data MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
235	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Push => Current Extended Function Num[CREP]=No_Service Segment Number:=Data.PUSH.Sequence Number More Follows:=Data.PUSH.Options.More Follows Data:=Data.PUSH.Region Data Segment Length:=Length-6 FSPMM1_Push_Segment.cnf(+) (AREP) LR_State[CREP]:=W-LR-REQ	SAME
236	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Push => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Push_Segment.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME

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#	État courant	Événement /Condition =>Action	État suivant
237	t state	FSPMM1_Terminate_Load.req (AREP, Slot Number, LR Index) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Terminate_Load Current Slot Number[CREP]:=Slot Number Index:=255 Length:=6 Data.TL.Extended_Function_Num:=Terminate_Load Data.TL.LR_Index:=LR Index MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
238	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Terminate_Load => Current Extended Function Num[CREP]=No_Service FSPMM1_Terminate_Load.cnf(+) (AREP) LR_State[CREP]:=W-LR-REQ	SAME
239	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Terminate_Load => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Terminate_Load.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
240	t state	FSPMM1_Call.req (AREP, Slot Number, Entity Number, FI Index, Execution Argument) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Call Current Slot Number[CREP]:=Slot Number Index:=255 Length:=4+sizeof(Execution Argument) Data.w.CALL.Extended_Function_Num:=Call Data.w.CALL. Entity_Number:= Entity_Number Data.w.CALL.FI_Index:=FI Index Data.w.CALL.Execution_Argument:=Execution Argument MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
241	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Call => Slot_Number:=Current Slot Number[CREP] Index:=255 Length:=CREP.Max_PDU_Length MSAC1M_Read.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length) LR_State[CREP]:=W-LR-CNF	SAME
242	t state	MSAC1M_Read.cnf(+)(Rem_Add, Length, Data) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Call => Current Extended Function Num[CREP]=No_Service Result Argument:=Data.r.CALL.Result_Argument FSPMM1_Call.cnf(+) (AREP, Result Argument) LR_State[CREP]:=W-LR-REQ	SAME

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#	État courant	Événement /Condition =>Action	État suivant
243	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Call => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Call.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
244	t state	FSPMM1_Start.req (AREP, Slot Number, FI Index, Execution Argument) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Start Current Slot Number[CREP]:=Slot Number Index:=255 Length:=4+sizeof(Execution Argument) Data.FIS.Extended_Function_Num:=Start Data.FIS.FI_Index:=FI Index Data.FIS.Execution_Argument:=Execution Argument MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
245	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Start => Current Extended Function Num[CREP]=No_Service FSPMM1_Start.cnf(+) (AREP) LR_State[CREP]:=W-LR-REQ	SAME
246	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Start => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Start.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
247	t state	FSPMM1_Stop.req (AREP, Slot Number, FI Index) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Stop Current Slot Number[CREP]:=Slot Number Index:=255 Length:=4 Data.FIS.Extended_Function_Num:=Stop Data.FIS.FI_Index:=FI Index MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
248	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Stop => Current Extended Function Num[CREP]=No_Service FSPMM1_Stop.cnf(+) (AREP) LR_State[CREP]:=W-LR-REQ	SAME

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#	État courant	Événement /Condition =>Action	État suivant
249	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Stop => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Stop.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
250	t state	FSPMM1_Resume.req (AREP, Slot Number, FI Index, Execution Argument) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Resume Current Slot Number[CREP]:=Slot Number Index:=255 Length:=4+sizeof(Execution Argument) Data.FIS.Extended_Function_Num:=Resume Data.FIS.FI_Index:=FI Index Data.FIS.Execution_Argument:=Execution Argument MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
251	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Resume => Current Extended Function Num[CREP]=No_Service FSPMM1_Resume.cnf(+) (AREP) LR_State[CREP]:=W-LR-REQ	SAME
252	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Resume => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Resume.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
253	t state	FSPMM1_Reset.req (AREP, Slot Number, FI Index) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Reset Current Slot Number[CREP]:=Slot Number Index:=255 Length:=4 Data.FIS.Extended_Function_Num:=Reset Data.FIS.FI_Index:=FI Index MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
254	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Reset => Current Extended Function Num[CREP]=No_Service FSPMM1_Reset.cnf(+) (AREP) LR_State[CREP]:=W-LR-REQ	SAME

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#	État courant	Événement /Condition =>Action	État suivant
255	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Reset => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Reset.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME
256	t state	FSPMM1_Get_FI_State.req (AREP, Slot Number, FI Index) /LR_State[CREP]==W-LR-REQ &AREP.AR_Type=MS1 => Current Extended Function Num[CREP]:=Get_State Current Slot Number[CREP]:=Slot Number Index:=255 Length:=4 Data.w.STATE.Extended_Function_Num:=Get_State Data.w.STATE.FI_Index:=FI Index MSAC1M_Write.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length, Data) LR_State[CREP]:=W-LR-CNF	SAME
257	t state	MSAC1M_Write.cnf(+)(Rem_Add, Length) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Get_State => Slot_Number:=Current Slot Number[CREP] Index:=255 Length:=5 MSAC1M_Read.req(Rem_Add:=CREP.Rem_Add, Slot_Number, Index, Length) LR_State[CREP]:=W-LR-CNF	SAME
258	t state	MSAC1M_Read.cnf(+)(Rem_Add, Length, Data) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Get_State => Current Extended Function Num[CREP]=No_Service FI State:=Data.r.STATE.State FSPMM1_Get_FI_State.cnf (+) (AREP, FI State) LR_State[CREP]:=W-LR-REQ	SAME
259	t state	MSAC1M_Write.cnf(-)(Rem_Add, Error_Decode, Error_Code_1, Error_Code_2) /LR_State[CREP]==W-LR-CNF &SetContext(Rem_Add, Service)=TRUE && Current Extended Function Num[CREP]=Get_State => Current Extended Function Num[CREP]=No_Service Error Code:=Error_Code_1 FSPMM1_Get_State.cnf(-) (AREP, Error Code) LR_State[CREP]:=W-LR-REQ	SAME

8.2.4 Fonctions

Le Tableau 49 contient les fonctions utilisées par la FSPMM1, leurs arguments et leurs descriptions.

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Tableau 49 – Fonctions utilisées par la FSPMM1

Nom de fonction	Description
SetContext (Rem_Add, Service-Id)	Cette fonction vérifie s'il existe une entrée saisie pour les entrées Rem_Add respectivement Res_SAP et le Service dans l'ARL et la CRL correspondante du maître DP (Classe 1). A) S'il existe une entrée, elle retourne TRUE et règle le contexte local selon le CREP et l'AREP courants. B) Autrement, elle retourne FALSE.
IsARexistent (AR)	Cette fonction vérifie s'il existe une entrée avec ARtype=AR.
Chg_Bfr(Buffer1, Buffer 2)	Cette fonction échange Buffer 1 et Buffer 2.

8.3 FSPMM2

8.3.1 Définitions des primitives

8.3.1.1 Primitives échangées entre AP-Context et FSPMM2

Le Tableau 50 montre les primitives de service, y compris leurs paramètres associés, émises par l'AP-Context et reçues par la FSPMM2.

Tableau 50 – Primitives émises par l'AP-Context vers la FSPMM2

Nom de primitive	Source	Paramètres associés	Fonctions
Init DP master CI2.req	AP-Context	Bus Para	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3 et dans la CEI 61158-3-3
Reset DP master CI2.req	AP-Context	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Abort.req	AP-Context	AREP Subnet, Instance, Reason Code	
Read Slave Diag.req	AP-Context	AREP	
Read Output.req	AP-Context	AREP	
Read Input.req	AP-Context	AREP	
Get Cfg.req	AP-Context	AREP	
Set Slave Add.req	AP-Context	AREP, New Slave Add, Ident Number, No Add Chg, Rem Slave Data	
Initiate.req	AP-Context	AREP, Send Timeout, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	
Read.req	AP-Context	AREP, Slot Number, Index, Length	
Write.req	AP-Context	AREP, Slot Number, Index, Length, Data	

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Nom de primitive	Source	Paramètres associés	Fonctions
Data Transport.req	AP-Context	AREP, Slot Number, Index, Length, Data	
Get Master Diag.req	AP-Context	AREP, MDiag Identifier	
Start Seq.req	AP-Context	AREP, Area Code, Timeout	
Download.req	AP-Context	AREP, Area Code, Add Offset, Data	
Upload.req	AP-Context	AREP, Area Code, Add Offset, Data Len	
End Seq.req	AP-Context	AREP	
Act Param.req	AP-Context	AREP, Area Code, Activate	
Act Para Brct.req	AP-Context	AREP, Area Code	
Load ARL DP master Cl2.req	AP-Context	List of ARL Entries	
Get ARL DP master Cl2.req	AP-Context	(aucun)	
Load CRL DP master Cl2.req	AP-Context	List of CRL Entries	
Get CRL DP master Cl2.req	AP-Context	(aucun)	
Initiate Load.req	AP-Context	AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request, Timeout	
Pull Segment.req	AP-Context	AREP, Slot Number, LR Index, Segment Length	
Push Segment.req	AP-Context	AREP, Slot Number LR Index, Segment Length Segment Number, More Follows, Data	
Terminate Load.req	AP-Context	AREP Slot Number LR Index	
Start.req	AP-Context	AREP Slot Number FI Index Execution Argument	
Stop.req	AP-Context	AREP Slot Number FI Index	
Resume.req	AP-Context	AREP Slot Number FI Index Execution Argument	

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Nom de primitive	Source	Paramètres associés	Fonctions
Reset.req	AP-Context	AREP Slot Number FI Index	
Call.req	FSPMS	AREP Slot Number Entity Number FI Index Execution Argument	

Le Tableau 51 montre les primitives de service, y compris leurs paramètres associés, émises par l'AP-Context et reçues par la FSPMS.

Tableau 51 – Primitives émises par la FSPMM2 vers l'AP-Context

Nom de primitive	Source	Paramètres associés	Fonctions
Init DP master Cl2.cnf	FSPMM2	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.cnf	FSPMM2	(aucun)	
Read Slave Diag.cnf(+)	FSPMM2	AREP, Diag Data	
Read Slave Diag.cnf(-)	FSPMM2	AREP, Status	
Get Cfg.cnf(+)	FSPMM2	AREP, Cfg Data	
Get Cfg.cnf(-)	FSPMM2	AREP, Status	
Read Output.cnf(+)	FSPMM2	AREP, Output Data	
Read Output.cnf(-)	FSPMM2	AREP, Status	
Read Input.cnf(+)	FSPMM2	AREP, Input Data	
Read Input.cnf(-)	FSPMM2	AREP, Status	
Set Slave Add.cnf(+)	FSPMM2	AREP	
Set Slave Add.cnf(-)	FSPMM2	AREP, Status	
Initiate.cnf(+)	FSPMM2	AREP, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	
Initiate.cnf(-)	FSPMM2	AREP, Error Decode, Error Code 1 Error Code 2	
Read.cnf(+)	FSPMM2	AREP, Length, Data	
Read.cnf(-)	FSPMM2	AREP, Error Decode, Error Code 1 Error Code 2	
Write.cnf(+)	FSPMM2	AREP, Length	

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Nom de primitive	Source	Paramètres associés	Fonctions
Write.cnf(-)	FSPMM2	AREP, Error Decode, Error Code 1 Error Code 2	
Data Transport.cnf(+)	FSPMM2	AREP, Length, Data	
Data Transport.cnf(-)	FSPMM2	AREP, Error Decode, Error Code 1 Error Code 2	
Get Master Diag.cnf(+)	FSPMM2	AREP, Diagnosis Data	
Get Master Diag.cnf(-)	FSPMM2	AREP, Status	
Start Seq.cnf(+)	FSPMM2	AREP, Max Len Data Unit	
Start Seq.cnf(-)	FSPMM2	AREP, Status	
Download.cnf(+)	FSPMM2	AREP	
Download.cnf(-)	FSPMM2	AREP, Status	
Upload.cnf(+)	FSPMM2	AREP, Data	
Upload.cnf(-)	FSPMM2	AREP, Status	
End Seq.cnf(+)	FSPMM2	AREP	
End Seq.cnf(-)	FSPMM2	AREP, Status	
Act Param.cnf(+)	FSPMM2	AREP	
Act Param.cnf(-)	FSPMM2	AREP, Status	
Act Para Brct.cnf(+)	FSPMM2	AREP	
Act Para Brct.cnf(-)	FSPMM2	AREP, Status	
Event.ind	FSPMM2	Event, Add Info	
DP master Cl2 Reject.ind	FSPMM2	AREP, Reason	
Abort.ind	FSPMM2	AREP, Locally Generated, Subnet, Instance, Reason_Code, Additional_Detail	
DP master Cl2 Fault.ind	FSPMM2	(aucun)	
Load ARL DP master Cl2.cnf(+)	FSPMM2	(aucun)	
Load ARL DP master Cl2.cnf(-)	FSPMM2	Status	
Get ARL DP master Cl2.cnf(+)	FSPMM2	List of ARL Entries	
Get ARL DP master Cl2.cnf(-)	FSPMM2	Status	
Load CRL DP master Cl2.cnf(+)	FSPMM2	(aucun)	
Load CRL DP master Cl2.cnf(-)	FSPMM2	Status	
Get CRL DP master Cl2.cnf(+)	FSPMM2	List of CRL Entries	
Get CRL DP master Cl2.cnf(-)	FSPMM2	Status	

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Nom de primitive	Source	Paramètres associés	Fonctions
Initiate Load.cnf(+)	FSPMM2	AREP, Actual LR Size, Max Response Delay, Max Segment Length	
Initiate Load.cnf(-)	FSPMM2	AREP, Error Code	
Pull Segment.cnf(+)	FSPMM2	AREP, Segment Length, Segment Number, More Follows, Data	
Pull Segment.cnf(-)	FSPMM2	AREP, Error Code	
Push Segment.cnf(+)	FSPMM2	AREP	
Push Segment.cnf(-)	FSPMM2	AREP, Error Code	
Terminate Load.cnf(+)	FSPMM2	AREP	
Terminate Load.cnf(-)	FSPMM2	AREP, Error Code	
Start.cnf(+)	FSPMM2	AREP	
Start.cnf(-)	FSPMM2	AREP Error Code Function Invocation State	
Stop.cnf(+)	FSPMM2	AREP	
Stop.cnf(-)	FSPMM2	AREP Error Code Function Invocation State	
Resume.cnf(+)	FSPMM2	AREP	
Resume.cnf(-)	FSPMM2	AREP Error Code Function Invocation State	
Reset.cnf(+)	FSPMM2	AREP	
Reset.cnf(-)	FSPMM2	AREP Error Code	
Call.cnf(+)	FSPMM2	AREP Result Argument	
Call.cnf(-)	FSPMM2	AREP Result Argument Error Code	

8.3.1.2 Paramètres des primitives de FSPMM2

Les paramètres utilisés avec les primitives échangées entre la FSPMM2 et l'AP-Context sont décrits dans "Définition des services de la FAL" (voir la CEI 61158-5-3).

8.3.2 Description de diagramme d'états

Ce Diagramme est utilisé pour coordonner les interactions entre l'AP-Context (Contexte d'AP) et les DMPMM1, MSCY1M, MSAC1M, MSAL1M et MMAC1. Sachant que la prise en charge de plusieurs diagrammes d'états pour la communication avec un esclave pris séparément ainsi que les contraintes de synchronisation du fonctionnement de l'esclave exigent une programmation cohérente, cette tâche est accomplie par la FSPMM1 également.

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Variables locales

LR_State
(Array of Unsigned8)

Cette variable stocke l'état de la séquence Load Region de l'AREP correspondant.

CurrentExtendedFunctionNum
(Array of Unsigned 8)

Cette variable stocke le numéro de fonction étendu du service LR actuellement traité de l'AREP correspondant.

CurrentSlotNumber
(Array of Unsigned8)

Cette variable stocke le numéro de position du service LR actuellement traité de l'AREP correspondant.

8.3.3 Table d'états de FSPMM2

Le Tableau 52 contient la description complète du diagramme d'états FSPMM2.

Tableau 52 – Table d'états du FSPMM2

#	État courant	Événement /Condition =>Action	État suivant
1	POWER-ON	Load ARL DP master Cl2.req (List of ARL Entries) /paramètres valides => Load ARL DP master Cl2.cnf(+)	POWER-ON
2	POWER-ON	Load ARL DP master Cl2.req (List of ARL Entries) /paramètres non valides => Status := NO Load ARL DP master Cl2.cnf(-) (Status)	POWER-ON
3	POWER-ON	Get ARL DP master Cl2.req /ARL loaded => Get ARL DP master Cl2.cnf(+) (List of ARL Entries)	POWER-ON
4	POWER-ON	Get ARL DP master Cl2.req /ARL not loaded => Status := NO Get ARL DP master Cl2.cnf(-) (Status)	POWER-ON
5	POWER-ON	Load CRL DP master Cl2.req (List of CRL Entries) /paramètres valides => Load CRL DP master Cl2.cnf(+)	POWER-ON
6	POWER-ON	Load CRL DP master Cl2.req (List of CRL Entries) /paramètres non valides => Status := NO Load CRL DP master Cl2.cnf(-) (Status)	POWER-ON
7	POWER-ON	Get CRL DP master Cl2.req /CRL loaded => Get CRL DP master Cl2.cnf(+) (List of CRL Entries)	POWER-ON

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#	État courant	Événement /Condition =>Action	État suivant
8	POWER-ON	Get CRL DP master Cl2.req /CRL not loaded => Status := NO Get CRL DP master Cl2.cnf(-) (Status)	POWER-ON
9	PON	FSPMM2_Init DP master Cl2 .req(Bus_Para) => StoreNumberIssuedMInit() Current Extended Function Num[AREP]=No_Service LR_State[AREP]:=W-LR-REQ DMPMM2_Minit_DLL.req(Bus_Para) MMAC_MInit_MM.req MSAC2M_MInit_MS2.req(First_MS2_AREP ..Last_MS2_AREP)	INIT-DLM
10	INIT-DLM	DMPMM2_Minit_DLL.cnf => ignore	INIT-DLM
11	INIT-DLM	MMAC2_MInit_MM.cnf => ignore	INIT-DLM
12	INIT-DLM	MSAC2M_MInit_MS2.cnf (CREP) /IsLastWaitingMInit()=FALSE => ignore	INIT-DLM
13	INIT-DLM	MSAC2M_MInit_MS2.cnf (CREP) /IsLastWaitingMInit()=TRUE => FSPMM2_Init DP master Cl2 .cnf	RUN
14	RUN	Any FSPMM2.req /wrong AREP.AR_Type => ignore	RUN
15	RUN	Any MMAC1.cnf /SetContext(Rem_add, Service) = FALSE => ignore	RUN
16	RUN	Any MSAC2M.req /SetContext(CREP, Service) = FALSE => ignore	RUN
17	RUN	Any DMPMM2.req /SetContext(Rem_add, Service) = FALSE => ignore	RUN
18	RUN	FSPMM2_Abort.req(AREP, Subnet, Instance, Reason_Code) /AREP.AR_Type = MS0 => DMPMM2_Abort.req	RUN
19	RUN	FSPMM2_Abort.req(AREP, Subnet, Instance, Reason_Code) /AREP.AR_Type = MM1 => MMAC2_Abort.req	RUN
20	RUN	FSPMM2_Abort.req(AREP, Subnet, Instance, Reason_Code) /AREP.AR_Type = MS2 => Current Extended Function Num[AREP]=No_Service LR_State[AREP]:=W-LR-REQ MSAC2M_Abort.req(CREP, Subnet, Instance, Reason_Code)	RUN

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#	État courant	Événement /Condition =>Action	État suivant
21	RUN	MSAC2M_Abort.ind(CREP, Locally_Generated, Subnet, Instance, Reason_Code, Abort_Detail) /SetContext(CREP, Service) = TRUE => Current Extended Function Num[AREP]=No_Service LR_State[AREP]:=W-LR-REQ FSPMM2_Abort.ind(AREP, Locally Generated, Subnet, Instance, Reason Code, Additional Detail)	RUN
22	RUN	DMPMM2_Event.ind(Event, Add_info) => FSPMM2_Event.ind(Event=Event/Fault, Add_Info=Add_info)	RUN
23	RUN	FSPMM2_Read_Slave_Diag.req(AREP) /AREP.AR_Type = MS0 => DMPMM2_Read_Slave_Diag.req(CREP.Rem_Add)	RUN
24	RUN	DMPMM2_Read_Slave_Diag.cnf(+)(Rem_Add, Diag_Data) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Read_Slave_Diag.cnf(+)(AREP, Diag_Data)	RUN
25	RUN	DMPMM2_Read_Slave_Diag.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Read_Slave_Diag.cnf(-)(AREP, Status=Status)	RUN
26	RUN	FSPMM2_Get_Cfg.req(AREP) /AREP.AR_Type = MS0 => DMPMM2_Get_Cfg.req(CREP.Rem_Add)	RUN
27	RUN	DMPMM2_Get_Cfg.cnf(+)(Rem_Add, Cfg_Data) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Get_Cfg.cnf(+)(AREP, Cfg_Data)	RUN
28	RUN	DMPMM2_Get_Cfg.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Get_Cfg.cnf(-)(AREP, Status)	RUN
29	RUN	FSPMM2_Read_Input.req(AREP) /AREP.AR_Type = MS0 => DMPMM2_Read_Input.req(CREP.Rem_Add)	RUN
30	RUN	DMPMM2_Read_Input.cnf(+)(Rem_Add, Inp_Data) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Read_Input.cnf(+)(AREP, Inp_Data)	RUN
31	RUN	DMPMM2_Read_Input.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Read_Input.cnf(-)(AREP, Status)	RUN
32	RUN	FSPMM2_Read_Output.req(AREP) /AREP.AR_Type = MS0 => DMPMM2_Read_Output.req(CREP.Rem_Add)	RUN
33	RUN	DMPMM2_Read_Output.cnf(+)(Rem_Add, Outp_Data) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Read_Output.cnf(+)(AREP, Outp_Data)	RUN
34	RUN	DMPMM2_Read_Output.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Read_Output.cnf(-)(AREP, Status)	RUN

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#	État courant	Événement /Condition =>Action	État suivant
35	RUN	FSPMM2_Set_Slave_Add.req(AREP, New_Slave_Add, Ident_Number, No_Add_Chg, Rem_Slave_Data) /AREP.AR_Type = MS0 => DMPMM2_Set_Slave_Add.req(CREP.Rem_Add, New_Slave_Add, Ident_Number, No_Add_Chg, Rem_Slave_Data)	RUN
36	RUN	DMPMM2_Set_Slave_Add.cnf(+)(Rem_Add) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Set_Slave_Add.cnf(+)(AREP)	RUN
37	RUN	DMPMM2_Set_Slave_Add.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Set_Slave_Add.cnf(-)(AREP, Status=Status)	RUN
38	RUN	Any DMPMM2.req /SetContext(Rem_add, Service) = FALSE => ignore	RUN
39	RUN	FSPMM2_Initiate.req(AREP, Send Timeout, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param) /AREP.AR_Type = MS2 => MSAC2M_Initiate.req(CREP, Send Timeout, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param)	RUN
40	RUN	MSAC2M_Initiate.cnf(+)(CREP, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param) /SetContext(CREP, Service) = TRUE => FSPMM2_Initiate.cnf(+)(AREP, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param)	RUN
41	RUN	MSAC2M_Initiate.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /SetContext(CREP, Service) = TRUE => FSPMM2_Initiate.cnf(-)(AREP, Error Decode, Error Code 1, Error Code 2)	RUN
42	RUN	FSPMM2_Read.req(AREP, Slot Number, Index, Length) /AREP.AR_Type = MS2 => MSAC2M_Read.req(CREP, Slot Number, Index, Length)	RUN
43	RUN	MSAC2M_Read.cnf(+)(CREP, Length, Data) /SetContext(CREP, Service) = TRUE => FSPMM2_Read.cnf(+)(AREP, Length, Data)	RUN
44	RUN	MSAC2M_Read.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /SetContext(CREP, Service) = TRUE => FSPMM2_Read.cnf(-)(AREP, Error Decode, Error Code 1, Error Code 2)	RUN
45	RUN	FSPMM2_Write.req(AREP, Slot Number, Index, Length, Data) /AREP.AR_Type = MS2 => MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data)	RUN
46	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /SetContext(CREP, Service) = TRUE => FSPMM2_Write.cnf(+)(AREP, Length)	RUN
47	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /SetContext(CREP, Service) = TRUE => FSPMM2_Write.cnf(-)(AREP, Error Decode, Error Code 1, Error Code 2)	RUN

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#	État courant	Événement /Condition =>Action	État suivant
48	RUN	FSPMM2_Data_Transport.req(AREP, Slot Number, Index, Length, Data) /AREP.AR_Type = MS2 => MSAC2M_Data_Transport.req(CREP, Slot Number, Index, Length, Data)	RUN
49	RUN	MSAC2M_Data_Transport.cnf(+)(CREP, Length, Data) /SetContext(CREP, Service) = TRUE => FSPMM2_Data_Transport.cnf(+)(AREP, Length, Data)	RUN
50	RUN	MSAC2M_Data_Transport.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /SetContext(CREP, Service) = TRUE => FSPMM2_Data_Transport.cnf(-)(AREP, Error Decode, Error Code 1, Error Code 2)	RUN
51	RUN	MSAC2M_Closed.ind(CREP) /SetContext(CREP, Service) = TRUE => FSPMM2 DP master Cl2 _Closed.ind(AREP)	RUN
52	RUN	MMAC2_Reject.ind(Rem_Add, Reason_Code) /SetContext(Rem_add, Service) = TRUE => FSPMM2 DP master Cl2 _Reject.ind(AREP, Reason)	RUN
53	RUN	FSPMM2_Get_Master_Diag.req(AREP, MDiag Identifier) /AREP.AR_Type = MM1 => MMAC2_Get_Master_Diag.req(AREP, MDiag Identifier)	RUN
54	RUN	MMAC2_Get_Master_Diag.cnf(+)(Rem_Add, Diagnosis Data) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Get_Master_Diag.cnf(+)(AREP, Diagnosis Data)	RUN
55	RUN	MMAC2_Get_Master_Diag.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Get_Master_Diag.cnf(-)(AREP, Status)	RUN
56	RUN	FSPMM2_Start_Seq.req(AREP, Area Code, Timeout) /AREP.AR_Type = MM1 => MMAC2_Start_Seq.req(AREP, Area Code, Timeout)	RUN
57	RUN	MMAC2_Start_Seq.cnf(+)(Rem_Add, Max Len Data Unit) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Start_Seq.cnf(+)(AREP, Max Len Data Unit)	RUN
58	RUN	MMAC2_Start_Seq.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Start_Seq.cnf(-)(AREP, Status)	RUN
59	RUN	FSPMM2_End_Seq.req(AREP) /AREP.AR_Type = MM1 => MMAC2_End_Seq.req(AREP)	RUN
60	RUN	MMAC2_End_Seq.cnf(+)(Rem_Add) /SetContext(Rem_add, Service) = TRUE => FSPMM2_End_Seq.cnf(+)(AREP)	RUN
61	RUN	MMAC2_End_Seq.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_End_Seq.cnf(-)(AREP, Status)	RUN
62	RUN	FSPMM2_Download.req(AREP, Area Code, Add Offset, Data) /AREP.AR_Type = MM1 => MMAC2_Download.req(AREP, Area Code, Add Offset, Data)	RUN

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#	État courant	Événement /Condition =>Action	État suivant
63	RUN	MMAC2_Download.cnf(+)(Rem_Add) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Download.cnf(+)(AREP)	RUN
64	RUN	MMAC2_Download.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Download.cnf(-)(AREP, Status)	RUN
65	RUN	FSPMM2_Upload.req(AREP, Area Code, Add Offset, Data Len) /AREP.AR_Type = MM1 => MMAC2_Upload.req(AREP, Area Code, Add Offset, Data Len)	RUN
66	RUN	MMAC2_Upload.cnf(+)(Rem_Add, Data) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Upload.cnf(+)(AREP, Data)	RUN
67	RUN	MMAC2_Upload.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Upload.cnf(-)(AREP, Status)	RUN
68	RUN	FSPMM2_Act_Param.req(AREP, Area Code, Activate) /AREP.AR_Type = MM1 => MMAC2_Act_Param.req(AREP, Area Code, Activate)	RUN
69	RUN	MMAC2_Act_Param.cnf(+)(Rem_Add) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Act_Param.cnf(+)(AREP)	RUN
70	RUN	MMAC2_Act_Param.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Act_Param.cnf(-)(AREP, Status)	RUN
71	RUN	FSPMM2_Act_Param_Brct.req(AREP, Area Code) /AREP.AR_Type = MM2 => MMAC2_Act_Param_Brct.req(AREP, Area Code, Activate)	RUN
72	RUN	MMAC2_Act_Param_Brct.cnf(+)(Rem_Add) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Act_Param_Brct.cnf(+)(AREP)	RUN
73	RUN	MMAC2_Act_Param_Brct.cnf(-)(Rem_Add, Status) /SetContext(Rem_add, Service) = TRUE => FSPMM2_Act_Param_Brct.cnf(-)(AREP, Status)	RUN
74	tout état	DMPMM2_SYCL_Time_Event.cnf (Send Delay Time, Status) => FSPMM2_SYCL_Time_Event.cnf (AREP, Send Delay Time, Status)	SAME
75	tout état	FSPMM2_SYCL_Time_Event.req (AREP) => DMPMM2_SYCL_Time_Event.req	SAME
76	tout état	FSPMM2_SYCL_Clock_Value.req (AREP, Clock Value Time Event, Clock Value previous TE, Clock Value Status) => DMPMM2_SYCL_Clock_Value.req (Clock Value Time Event, Clock Value previous TE, Clock Value Status)	SAME
77	tout état	DMPMM2_SYCL_Clock_Value.cnf (Status) => FSPMM2_SYCL_Clock_Value.cnf (AREP, Status)	SAME

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#	État courant	Événement /Condition =>Action	État suivant
78	tout état	DMPMM2_SYCL_Clock_Value.ind (Clock Value Time Event, Clock Value previous TE, Clock Value Status, Receive Delay Time, Src add Clk msg) => FSPMM2_SYCL_Clock_Value.ind (AREP, Clock Value Time Event, Clock Value previous TE, Clock Value Status, Receive Delay Time, Src add Clk msg)	SAME
79	tout état	FSPMM2_Reset DP master Cl2 .req => StoreNumberIssuedResets() FSPMM2_UserReset = TRUE DMPMM2_Reset.req MMAC2_Reset.req MSAC2M_Reset.req(First_MS2_AREP ..Last_MS2_AREP)	WAIT-RESET
80	tout état	DMPMM2_Fault.ind => StoreNumberIssuedResets() FSPMM2_UserReset = FALSE DMPMM2_Reset.req MMAC2_Reset.req MSAC2M_Reset.req(First_MS2_AREP ..Last_MS2_AREP) FSPMM2 DP master Cl2 Fault.ind	WAIT-RESET
81	tout état	MMAC2_Fault.ind => StoreNumberIssuedResets() FSPMM2_UserReset = FALSE DMPMM2_Reset.req MMAC2_Reset.req MSAC2M_Reset.req(First_MS2_AREP ..Last_MS2_AREP) FSPMM2 DP master Cl2 Fault.ind	WAIT-RESET
82	WAIT-RESET	DMPMM2_Reset.cnf => no action	WAIT-RESET
83	WAIT-RESET	MMAC2_Reset.cnf => no action	WAIT-RESET
84	WAIT-RESET	MSAC2M_Reset.cnf (CREP) /IsLastWaitingReset()=FALSE => no action	WAIT-RESET
85	WAIT-RESET	MSAC2M_Reset.cnf (CREP) /IsLastWaitingReset()=TRUE AND FSPMM2_UserReset = TRUE => FSPMM2_Reset DP master Cl2 .cnf	PON
86	WAIT-RESET	MSAC2M_Reset.cnf (CREP) /IsLastWaitingReset()=TRUE AND FSPMM2_UserReset = FALSE => no action	PON
87	RUN	FSPMM2_Initiate_Load.req (AREP, Slot Number, LR Index, Load Type, Load Image Size, Intersegment Request Timeout, User Specific) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Initiate_Load Current Slot Number[AREP]:=Slot Number Index:=255 Length:=10+sizeof(User Specific) Data.w.IL.Extended_Function_Num:=Initiate_Load Data.w.IL.LR_Index:=LR Index Data.w.IL.Load_Type:=Load Type Data.w.IL.Load_Image_Size:=Load Image Size Data.w.IL.User_Specific:=User Specific Data.w.IL.Intersegment_Request_Timeout:=Intersegment Request Timeout MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN

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#	État courant	Événement /Condition =>Action	État suivant
88	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Initiate_Load => Slot_Number:=Current Slot Number[AREP] Index:=255 Length:=10 MSAC2M_Read.req(CREP, Slot Number, Index, Length) LR_State[AREP]:=W-LR-CNF	RUN
89	RUN	MSAC2M_Read.cnf(+)(CREP, Length, Data) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Initiate_Load => Current Extended Function Num[AREP]=No_Service Actual LR Size:=Data.r.IL.Actual_LR_Size Max Response Delay:=Data.r.IL.Max_Response_Delay Max Segment Length:=Data.r.IL.Max_Segment_Length User Specific:=Data.r.IL.User_Specific FSPMM2_Initiate_Load.cnf(+) (AREP, Actual LR Size, Max Response Delay, Max Segment Length, User Specific) LR_State[AREP]:=W-LR-REQ	RUN
90	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Initiate_Load => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Initiate_Load.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN
91	RUN	FSPMM2_Pull_Segment.req (AREP, Slot Number, LR Index, Segment Length) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Pull Current LR Index[AREP]:=LR Index Index:=255 Length:=Segment Length MSAC2M_Read.req(CREP, Slot Number, Index, Length) LR_State[AREP]:=W-LR-CNF	RUN
92	RUN	MSAC2M_Read.cnf(+)(CREP, Length, Data) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Pull => Current Extended Function Num[AREP]=No_Service Segment Number:=Data.PULL.Sequence Number More Follows:=Data.PULL.Options.More Follows Data:=Data.PULL.Region Data Segment Length:=Length-6 FSPMM2_Pull_Segment.cnf(+) (AREP, Segment Length, Segment Number, More Follows, Data) LR_State[AREP]:=W-LR-REQ	RUN
93	RUN	MSAC2M_Read.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(Service, Service)=TRUE && Current Extended Function Num[AREP]=Pull => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Pull_Segment.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN

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#	État courant	Événement /Condition =>Action	État suivant
94	RUN	FSPMM2_Push_Segment.req (AREP, Slot Number, LR Index, Segment Length, Segment Number, More Follows, Data) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Push Current Slot Number[AREP]:=Slot Number Index:=255 Length:=6+Segment Length Data.PUSH.Extended_Function_Num:=Push Data.PUSH.LR_Index:=LR Index Data.PUSH.Segment_Number:=Segment Number Data.PUSH.Option.More_Follows:=More Follows Data.PUSH.Data:=Data MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
95	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Push => Current Extended Function Num[AREP]=No_Service Segment Number:=Data.PUSH.Sequence Number More Follows:=Data.PUSH.Options.More Follows Data:=Data.PUSH.Region Data Segment Length:=Length-6 FSPMM2_Push_Segment.cnf(+) (AREP) LR_State[AREP]:=W-LR-REQ	RUN
96	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Push => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Push_Segment.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN
97	RUN	FSPMM2_Terminate_Load.req (AREP, Slot Number, LR Index) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Terminate_Load Current Slot Number[AREP]:=Slot Number Index:=255 Length:=6 Data.TL.Extended_Function_Num:=Terminate_Load Data.TL.LR_Index:=LR Index MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
98	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Terminate_Load => Current Extended Function Num[AREP]=No_Service FSPMM2_Terminate_Load.cnf(+) (AREP) LR_State[AREP]:=W-LR-REQ	RUN
99	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Terminate_Load => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Terminate_Load.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN

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#	État courant	Événement /Condition =>Action	État suivant
100	RUN	FSPMM2_Call.req (AREP, Slot Number, Entity Number, FI Index, Execution Argument) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Call Current Slot Number[AREP]:=Slot Number Index:=255 Length:=4+sizeof(Execution Argument) Data.w.CALL.Extended_Function_Num:=Call Data.w.CALL. Entity_Number:= Entity_Number Data.w.CALL.FI_Index:=FI Index Data.w.CALL.Execution_Argument:=Execution Argument MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
101	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Call => Slot_Number:=Current Slot Number[AREP] Index:=255 Length:=AREP.Max_PDU_Length MSAC2M_Read.req(CREP, Slot Number, Index, Length) LR_State[AREP]:=W-LR-CNF	RUN
102	RUN	MSAC2M_Read.cnf(+)(CREP, Length, Data) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Call => Current Extended Function Num[AREP]=No_Service Result Argument:=Data.r.CALL.Result_Argument FSPMM2_Call.cnf(+) (AREP, Result Argument) LR_State[AREP]:=W-LR-REQ	RUN
103	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Call => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Call.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN
104	RUN	FSPMM2_Start.req (AREP, Slot Number, FI Index, Execution Argument) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Start Current Slot Number[AREP]:=Slot Number Index:=255 Length:=4+sizeof(Execution Argument) Data.FIS.Extended_Function_Num:=Start Data.FIS.FI_Index:=FI Index Data.FIS.Execution_Argument:=Execution Argument MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
105	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Start => Current Extended Function Num[AREP]=No_Service FSPMM2_Start.cnf(+) (AREP) LR_State[AREP]:=W-LR-REQ	RUN

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#	État courant	Événement /Condition =>Action	État suivant
106	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Start => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Start.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN
107	RUN	FSPMM2_Stop.req (AREP, Slot Number, FI Index) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Stop Current Slot Number[AREP]:=Slot Number Index:=255 Length:=4 Data.FIS.Extended_Function_Num:=Stop Data.FIS.FI_Index:=FI Index MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
108	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Stop => Current Extended Function Num[AREP]=No_Service FSPMM2_Stop.cnf(+) (AREP) LR_State[AREP]:=W-LR-REQ	RUN
109	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Stop => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Stop.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN
110	RUN	FSPMM2_Resume.req (AREP, Slot Number, FI Index, Execution Argument) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Resume Current Slot Number[AREP]:=Slot Number Index:=255 Length:=4+sizeof(Execution Argument) Data.FIS.Extended_Function_Num:=Resume Data.FIS.FI_Index:=FI Index Data.FIS.Execution_Argument:=Execution Argument MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
111	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Resume => Current Extended Function Num[AREP]=No_Service FSPMM2_Resume.cnf(+) (AREP) LR_State[AREP]:=W-LR-REQ	RUN
112	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Resume => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Resume.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN

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#	État courant	Événement /Condition =>Action	État suivant
113	RUN	FSPMM2_Reset.req (AREP, Slot Number, FI Index) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Reset Current Slot Number[AREP]:=Slot Number Index:=255 Length:=4 Data.FIS.Extended_Function_Num:=Reset Data.FIS.FI_Index:=FI Index MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
114	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Reset => Current Extended Function Num[AREP]=No_Service FSPMM2_Reset.cnf(+) (AREP) LR_State[AREP]:=W-LR-REQ	RUN
115	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Reset => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Reset.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN
116	RUN	FSPMM2_Get_FI_State.req (AREP, Slot Number, FI Index) /LR_State[AREP]==W-LR-REQ &AREP.AR_Type=MS2 => Current Extended Function Num[AREP]:=Get_State Current Slot Number[AREP]:=Slot Number Index:=255 Length:=4 Data.w.STATE.Extended_Function_Num:=Get_State Data.w.STATE.FI_Index:=FI Index MSAC2M_Write.req(CREP, Slot Number, Index, Length, Data) LR_State[AREP]:=W-LR-CNF	RUN
117	RUN	MSAC2M_Write.cnf(+)(CREP, Length) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Get_State => Slot_Number:=Current Slot Number[AREP] Index:=255 Length:=5 MSAC2M_Read.req(CREP, Slot Number, Index, Length) LR_State[AREP]:=W-LR-CNF	RUN
118	RUN	MSAC2M_Read.cnf(+)(CREP, Length, Data) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Get_State => Current Extended Function Num[AREP]=No_Service FI State:=Data.r.STATE.State FSPMM2_Get_FI_State.cnf (+) (AREP, FI State) LR_State[AREP]:=W-LR-REQ	RUN

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#	État courant	Événement /Condition =>Action	État suivant
119	RUN	MSAC2M_Write.cnf(-)(CREP, Error Decode, Error Code 1, Error Code 2) /LR_State[AREP]==W-LR-CNF &SetContext(CREP, Service)=TRUE && Current Extended Function Num[AREP]=Get_State => Current Extended Function Num[AREP]=No_Service Error Code:=Error_Code_1 FSPMM2_Get_State.cnf(-) (AREP, Error Code) LR_State[AREP]:=W-LR-REQ	RUN

8.3.4 Fonctions

Le Tableau 53 contient les fonctions utilisées par la FSPMM2, leurs arguments et leurs descriptions.

Tableau 53 – Fonctions utilisées par la FSPMM2

Nom de fonction	Description
SetContext(Rem_Add/CREP, Service)	Cette fonction vérifie s'il existe une entrée saisie pour les entrées Rem_Add /CREP et Service dans l'ARL et la CRL correspondante du maître DP (Classe 2). A) S'il existe une entrée, elle retourne TRUE et règle le contexte local selon le CREP et l'AREP courants. B) Autrement, elle retourne FALSE.
IsLastWaitingReset()	Cette fonction retourne TRUE si toutes les confirmations de service Reset sont reçues; autrement, elle retourne FALSE.
StoreNumberIssuedResets()	Cette fonction stocke dans une variable locale le nombre de demandes de service Reset émises.
IsLastWaitingMInit()	Cette fonction retourne TRUE si toutes les confirmations de service MInit sont reçues; autrement, elle retourne FALSE.
StoreNumberIssuedMInit()	Cette fonction stocke dans une variable locale le nombre de demandes de service MInit émises.

9 Machines protocolaires de relation entre applications (ARPM)

9.1 MSCY1S

9.1.1 Définitions des primitives

9.1.1.1 Primitives échangées entre MSCY1S et FSPMS

Le Tableau 54 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMS et reçues par le MSCY1S.

Tableau 54 – Primitives émises par la FSPMS vers le MSCY1S

Nom de primitive	Source	Paramètres associés	Fonctions
SInit MS0.req	FSPMS	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.req	FSPMS	(aucun)	
Abort.req	FSPMS	(aucun)	
Application Ready.req	FSPMS	(aucun)	
Check User Prm Result.req	FSPMS	Prm_OK	

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Nom de primitive	Source	Paramètres associés	Fonctions
Check Ext User Prm Result.req	FSPMS	Ext_Prm_OK	
Check Cfg Result.req	FSPMS	Cfg_OK, Input Data Len, Output Data Len	
Set Cfg.req	FSPMS	Cfg Data	
Set Slave Diag.req	FSPMS	Ext Diag Flag, Ext Diag Overflow, Ext Diag Data	
Set Input.req	FSPMS	Input Data	
Get Output.req	FSPMS	(aucun)	

Le Tableau 55 montre les primitives de service, y compris leurs paramètres associés, émises par le MSCY1S et reçues par la FSPMS.

Tableau 55 – Primitives émises par le MSCY1S vers la FSPMS

Nom de primitive	Source	Paramètres associés	Fonctions
SInit MS0.cnf	MSCY1S	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.cnf	MSCY1S	(aucun)	
Check User Prm Result.cnf(+)	MSCY1S	(aucun)	
Check User Prm Result.cnf(-)	MSCY1S	Status	
Check Ext User Prm Result.cnf(+)	MSCY1S	(aucun)	
Check Ext User Prm Result.cnf(-)	MSCY1S	Status	
Check Cfg Result.cnf(+)	MSCY1S	(aucun)	
Check Cfg Result.cnf(-)	MSCY1S	Status	
Set Cfg.cnf(+)	MSCY1S	(aucun)	
Set Cfg.cnf(-)	MSCY1S	(aucun)	
Set Slave Diag.cnf(+)	MSCY1S	(aucun)	
Set Slave Diag.cnf(-)	MSCY1S	(aucun)	
Set Input.cnf(+)	MSCY1S	(aucun)	
Set Input.cnf(-)	MSCY1S	(aucun)	
Get Output.cnf(+)	MSCY1S	Output Data, Clear Flag, New Flag	
Get Output.cnf(-)	MSCY1S	(aucun)	
Start.ind	MSCY1S	Actual Enabled Alarms, Alarm Sequence, Alarm Limit	
Stop.ind	MSCY1S	(aucun)	
Fault.ind	MSCY1S	(aucun)	
Set Slave Add.ind	MSCY1S	New Slave Add, Ident Number, No Add Chg, Rem Slave Data	
Check User Prm.ind	MSCY1S	User Prm Data	
Check Ext User Prm.ind	MSCY1S	Ext User Prm Data	

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Nom de primitive	Source	Paramètres associés	Fonctions
Check Cfg.ind	MSCY1S	Check Cfg Mode, Cfg Data	
New Output.ind	MSCY1S	Clear Flag	
SYNCH Event.ind	MSCY1S	Status	
Global Control.ind	MSCY1S	Clear Command, Sync Command, Freeze Command, Group Select	

9.1.1.2 Paramètres des primitives de MSCY1S

Les paramètres utilisés avec les primitives échangées entre la FSPMS et le MSCY1S sont décrits dans "Définition des services de la FAL" (voir la CEI 61158-5-3).

9.1.2 Description de diagramme d'états

Le diagramme d'états MSCY1S gère les services suivants émis par le maître DP (Classe 1):

diagnostic,

paramétrisation,

configuration,

échange de données (cyclique).

Le diagramme d'états MSCY1S démarre (Start.req/cnf) et arrête (Stop.req/cnf) le diagramme d'états MSAC1S qui gère des services acycliques. Le diagramme d'états MSAC1S envoie une Abort.ind vers le diagramme d'états MSCY1S qui ferme aussi la connexion cyclique. Le diagramme d'états MSCY1S informe la FSPMS que le MSAC1S et le MSCY1S ont été démarrés (Start.ind) ou arrêtés (Stop.ind).

Si un Esclave ne met pas en œuvre les structures de paramétrisation DPV1_Status 1 à 3, les diagrammes d'états MSAL1S et MSAC1S, il convient de laisser vides les macros suivantes. Dans ce cas, la variable Operation_Mode reste à l'état V0:

PV0V0 doit retourner TRUE

OPERATION_MODE_OK doit retourner TRUE

NOPRMCMD doit retourner TRUE

ISO_MODE_OK doit retourner TRUE

STOP_ISOM

STOP_ASM

CHECK_ALARM_START

SET_OPERATION_MODE

SET_ALARM_CHKCFGM

EXE_PRM_CMD

START_C1

STOP_C1

START_C1_CON

STOP_C1_CON

Règles pour vérifier les données de paramétrisation

Les règles selon le Tableau 56 doivent être utilisées pour vérifier les octets DPV1_Status_1 à DPV1_Status_3 issus de la Set_Prm-REQ-PDU avec les capacités locales de l'esclave DP.

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Tableau 56 – Règles de vérification de DPV1_Status_1, DPV1_Status_2 et DPV1_Status_3

Bit(s) dans Set_Prm-REQ-PDU	Règles pour la vérification	
Bits réservés dans le champ DPV1_Status_1 (Bit 0, Bit 1, Bit 3, Bit 4)	Ces bits ne doivent pas être vérifiés (sans influence). => okay (c'est-à-dire: correct) pour toute combinaison	
Bit WD_Base_1ms dans le champ DPV1_Status_1	= FALSE(0): => okay	= TRUE (1) & WD_Base_1ms_supp = 1: => okay = TRUE (1) & WD_Base_1ms_supp = 0: => okay, mais l'esclave DP doit charger son WD-Timer local avec une valeur corrigée (basée sur la prochaine valeur possible avec la base de 10 ms)
Bit Publisher_Enable dans le champ DPV1_Status_1	= FALSE(0): => okay	= TRUE(1) & Publisher_supp = 1: => okay = TRUE(1) & Publisher_supp = 0: => Prm_Fault
Bit Fail_Safe dans le champ DPV1_Status_1	= FALSE(0) & Fail_Safe_required = 1: => Prm_Fault = FALSE(0) & Fail_Safe_required = 0: => okay	= TRUE(1) & Fail_Safe_supp = 1: => okay = TRUE(1) & Fail_Safe_supp = 0: => Prm_Fault
Bit DPV1_Enable dans le champ DPV1_Status_1	= FALSE(0) & C1_Read_Write_required=0: => okay = FALSE(0) & C1_Read_Write_required=1: => Prm_Fault	= TRUE(1) & C1_Read_Write_supp = 0: => Prm_Fault = TRUE(1) & C1_Read_Write_supp = 1: => okay, ouvrir la Relation entre applications MS1
Bit Check_Cfg_Mode dans le champ DPV1_Status_2	= 0 (vérification stricte): => okay Il faut que le processus application vérifie les données de la Chk_Cfg-REQ-PDU suivante de façon stricte (égalité).	= 1 (vérification plus souple): => okay; Il faut que le processus application vérifie les données de la Chk_Cfg-REQ-PDU suivante de façon plus souple (compatibilité).
Bit 1 réservé dans le champ DPV1_Status_2	= 0: => okay	= 1: => Prm_Fault
Bits Enable_xx_Alarm dans le champ DPV1_Status_2	= FALSE(0) & xx_Alarm_required = 1 & DPV1_Status_1.DPV1_Enable = FALSE (0): => Prm_Fault = FALSE(0) & xx_Alarm_required = 0 & DPV1_Status_1.DPV1_Enable = FALSE (0): => okay = FALSE(0) & xx_Alarm_required = 1 & DPV1_Status_1.DPV1_Enable = TRUE (1): => Prm_Fault = FALSE(0) & xx_Alarm_required = 0 & DPV1_Status_1.DPV1_Enable = TRUE (1): => okay	=TRUE(1) & DPV1_Status_1.DPV1_Enable = FALSE(0): => Prm_Fault =TRUE(1) & DPV1_Status_1.DPV1_Enable = TRUE (1): => okay
Bits Alarm_Mode dans le champ DPV1_Status_3	0 => okay	<>0 & Alarm_Sequence_Mode_count<>0: => okay <>0 & Alarm_Sequence_Mode_count=0: => Prm_Fault
Bit Prm_Structure dans le champ DPV1_Status_3	= FALSE(0) & Prm_Structure_required=FALSE: =>okay = FALSE(0) & Prm_Structure_required=TRUE: => Prm_Fault	= TRUE(1) & Prm_Structure_supp=TRUE: =>okay = TRUE(1) & Prm_Structure_supp=FALSE: => Prm_Fault

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Bit(s) dans Set_Prm-REQ-PDU	Règles pour la vérification	
Bit IsoM_Req dans le champ DPV1_Status_3	= FALSE(0) & Isochronous_Mode_required=FALSE: =>okay = FALSE(0) & Isochronous_Mode_required=TRUE: => Prm_Fault	= TRUE(1) & (Isochronous_Mode_supp = TRUE & DPV1_Status_1.Fail_Safe = TRUE & Group_Ident< 0x80 & Freeze_Req=0 & Sync_Req=0): => okay TRUE(1) & !(Isochronous_Mode_supp = TRUE & DPV1_Status_1.Fail_Safe = TRUE & Group_Ident< 0x80 & Freeze_Req=0 & Sync_Req=0): => Prm-Fault
Bit PrmCmd dans le champ DPV1_Status_3	= FALSE(0) & PrmCmd_required=FALSE: =>okay = FALSE(0) & PrmCmd_required=TRUE: => Prm_Fault	= TRUE(1) & (PrmCmd_supp = TRUE): => okay TRUE(1) & (PrmCmd_supp = FALSE): => Prm-Fault
Bits réservés (Bit 5 et Bit 6) dans le champ DPV1_Status_3	= 0: => okay	1: => Prm_Fault
NOTE Le tableau ci-dessus donne une vue d'ensemble complète de toutes les vérifications qui appartiennent au paramètre. Cependant, certaines d'entre elles peuvent être vérifiées en d'autres endroits du diagramme d'états.		

Comportement isochrone

Les appareils qui prennent en charge le fonctionnement isochrone doivent positionner les attributs AR concernés selon la configuration. Le bloc pour les paramètres isochrones appartient à l'application et fait partie des données utilisateur dans la Set_PrmREQPDU ou dans la Set_Ext_PrmREQPDU. Le maître DP met l'esclave DP dans le fonctionnement isochrone en mettant le bit IsoM_Req à TRUE. Lorsque le MSCY1S reçoit la Set_PrmREQPDU, il faut qu'il vérifie la condition suivante:

Si (Isochronous Mode = TRUE), alors Failsafe doit être mis et aucun groupe ne doit être mis concernant la Set_PrmREQPDU; autrement, les esclaves DP doivent générer un Prm_Fault et doivent quitter l'état d'échange de données "Data Exchange". Les esclaves DP qui ne prennent pas en charge le fonctionnement isochrone peuvent être intégrés dans un système de fonctionnement isochrone en sélectionnant "Group_8" pour ces esclaves DP seulement et en utilisant les commandes Sync et Freeze.

Si la condition ci-dessus est remplie, l'esclave DP fonctionne de façon isochrone. En plus de l'échange cyclique normal de données, le MSCY1S génère une SYNCH Event.ind avec le Status "IsoM Start" avec la réception de la première Global_Control-REQ-PDU, "IsoM SYNCH" avec les Global_Control-REQ-PDU suivantes et "IsoM Stop" lors de la réception de la Global_Control-REQ-PDU avec la commande de commandes "Clear" ou en quittant le cycle d'échange de données. Ce service déclenche la PLL du processus application. L'accès correct avec Get Input et Set Output du point de vue de l'application est surveillé avec l'aide de la PLL.

Comportement de redondance

Les appareils qui prennent en charge la redondance d'esclave doivent prendre en charge la PrmCmd. Cela permet à un maître DP (Classe 1) d'utiliser un esclave DP comme Primary ou Backup. En outre, le maître DP (Classe 1) peut arrêter et démarrer MS1 après une commutation du maître DP. Le MSCY1S fournit le mécanisme de base pour prendre en charge une structure de redondance dans l'Application.

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Variables locales

Act_Ref
Compteur pour numéros de référence pour les mises à jour de diagnostics.

Act_Cnt
Stockage pour numéro de référence des utilisateurs

Ref_Cnt
Stockage d'Act_Ref au diagnostic d'utilisateurs

B Sync
(Octet-String)

Stockage intermédiaire pour les sorties si l'esclave DP est exploité en mode Sync.

B Output
(Octet-String)

Données de sortie de l'esclave DP qui peuvent être récupérées par le service Get Output. Les exigences pour la cohérence telle que décrite dans les Cfg_Data doivent être prises en considération.

B Freeze
(Octet-String)

Stockage intermédiaire pour données d'entrée

B Input
(Octet-String)

Selon le type (voir la description de Cfg_Data), les données doivent être chargées de façon cohérente par le service Set Input ou peuvent être saisies librement.

B Real_Cfg
(Octet-String)

La configuration qui a été précédemment définie pour l'appareil ou la configuration qui a été déterminée dans le démarrage par l'appareil, respectivement. La structure des octets individuels correspond à la structure de Cfg_Data (->Chk_Cfg).

B User Prm
(Octet-String)

Stockage intermédiaire pour données User Prm.

B Ext User Prm
(Octet-String)

Stockage intermédiaire pour données Ext User Prm.

B Cfg
(Octet-String)

Stockage intermédiaire pour données Cfg

Diag
(Octet-String)

Stockage intermédiaire pour données Diag.

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Ext Diag Data
(Octet-String)

Stockage intermédiaire pour les Ext Diag Data, l'établissement de diagnostic par l'utilisateur.

Ext Diag Flag
(Boolean)

Stockage intermédiaire pour Ext Diag Flag, fanion qui indique un diagnostic utilisateur important.

Clear Command
Sync Command
Freeze Command
Stockage intermédiaire pour commandes de commandes globales.

Station_Address
(Unsigned8)

Propre adresse de poste qui peut être établie par le service "Set_Slave_Add" ou stockée localement.

Check_Prm_Add
(Unsigned8)

Adresse de poste de maîtres qui a invoqué le dernier service "Set_Prm ".

Check_Ext_Prm_Add
(Unsigned8)

Adresse de poste de maîtres qui a invoqué le dernier service "Set_Ext_Prm".

Check_Cfg_Add
(Unsigned8)

Adresse de poste de maîtres qui a invoqué le dernier service "Chk_Cfg".

Output Data Len
(Unsigned8)

Indique le nombre d'octets de sortie qui sont réellement utilisés.

Input Data Len
(Unsigned8)

Indique le nombre d'octets d'entrée qui sont réellement utilisés.

Real_No_Add_Chg
(Boolean)

Indique si un changement d'adresse est possible (FALSE) ou non. Peut être définie de façon statique ou stockée.

Active_Groups
(Unsigned8)

Contient le Group_Ident tel qu'établi par le biais de Set_Prm. Elle est utilisée à la Global_Control pour la décision si le poste est adressé.

Diag_Flag
(Boolean)

Ce fanion indique que le Maître doit être informé par une Reply-Update à haute priorité qu'un changement s'est produit dans les informations de diagnostic.

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Sync_Supp
(Boolean)

Indique que l'esclave DP prend effectivement en charge le mode Sync.

Freeze_Supp
(Boolean)

Indique que l'esclave DP prend effectivement en charge le mode Freeze.

Operation_Mode
(Boolean)

Fanion local qui stocke l'Operation_Mode établi par le service Set_Prm. Operation_Mode=V0 signifie que l'Esclave ne prend pas en charge les services acycliques sur MSAC1 et les alarmes.

Prm_Pending
(Unsigned8)

Fanion local qui indique que l'utilisateur traite encore le dernier appel de la fonction "Check UserPrm".

Ext_Prm_Pending
(Unsigned8)

Fanion local qui indique que l'utilisateur traite encore le dernier appel de la fonction "Check Ext_Prm".

Cfg_Pending
(Unsigned8)

Fanion local qui indique que l'utilisateur traite encore le dernier appel de la fonction "Check Cfg".

Input_Pending
(Unsigned8)

Fanion local qui indique que l'utilisateur n'a pas encore établi les données d'entrée.

New Output
(Unsigned8)

Fanion local qui indique qu'il y a des données de sortie (Output data) disponibles qui n'ont pas encore été récupérées avec "Get Output".

DX_Entered
(Boolean)

Fanion local qui est mis après que le diagramme d'états MSCY1S s'est mis dans le mode DATA-EXCH et au moins un service Data_Exchange a été parachevé.

Start_State
(Unsigned8)

Variable locale qui est utilisée pour stocker l'état du diagramme d'états MSAC1S.

Valeurs possibles pour Start_State:

Idle MSAC1S est fermé.

Run MSAC1S est ouvert.

B Start_Operation est lancé.

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E Stop_Operation est lancé.

BE Start_Operation est lancé, Stop_Operation est en file d'attente.

EB Stop_Operation est lancé, Start_Operation est en file d'attente.

BEB Start_Operation est lancé, Stop_Operation (premier) et Start_Operation (second) sont en file d'attente.

Safe_State
(Boolean)

Indique s'il faut que les sorties soient commutées vers l'état de sécurité.

Chk Cfg Mode
(Boolean)

Indique comment vérifier les données Cfg Data.

First Synch
(Boolean)

Cette variable locale est FALSE si le mode Isochronous a été activé et au moins une Global_Control-REQ-PDU avec Group Select (Group_8) a été reçue.

9.1.3 Table d'états de MSCY1S

Le Tableau 57 contient la description complète du diagramme d'états MSCY1S.

Tableau 57 – Table d'états du MSCY1S

#	État courant	Événement /Condition =>Action	État suivant
1	POWER-ON	MSCY1S SInit MS0.req () => Diag.Ext_Diag_Data := NIL Diag.Ext Diag Flag := FALSE B Real Cfg := Real Cfg Data Chk Cfg Mode := FALSE Sync Supp := Sync Supported Freeze Supp := Freeze Supported Diag.Ident Number := Ident Number Real No Add Chg := No Add Chg Act_Ref := 0 Act_Cnt := 0 Ref_Cnt := 0 DMPMS Slave Init.req ()	WAIT-INI-CON
2	POWER-ON	MSCY1S Abort.req () => ignore	POWER-ON
3	POWER-ON	MSCY1S Set Slave Diag.req (Ext Diag Flag, Ext Diag Overflow, Ext Diag Data, Reference) => Act_Cnt := Reference MSCY1S Set Slave Diag.cnf(-) (Reference := Act_Cnt)	POWER-ON
4	POWER-ON	MSCY1S Set Cfg.req (Cfg Data) => MSCY1S Set Cfg.cnf(-) ()	POWER-ON
5	POWER-ON	MSCY1S Get Output.req () => MSCY1S Get Output.cnf(-) ()	POWER-ON
6	POWER-ON	MSCY1S Set Input.req (Input Data) => MSCY1S Set Input.cnf(-) ()	POWER-ON

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#	État courant	Événement /Condition =>Action	État suivant
7	POWER-ON	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) => Status := Reset MSCY1S Check Cfg Result.cnf(-) (Status)	POWER-ON
8	POWER-ON	MSCY1S Application Ready.req() => ignore	POWER-ON
9	POWER-ON	MSCY1S Check User Prm Result.req (Prm_OK) => Status := Reset MSCY1S Check User Prm Result.cnf(-) (Status)	POWER-ON
10	POWER-ON	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) => Status := Reset MSCY1S Check Ext User Prm Result.cnf(-) (Status)	POWER-ON
11	WAIT-INI-CON	DMPMS Slave Init.cnf () => Operation Mode := V0 Start_State := Idle Safe_State:=TRUE Diag.Prm_Req := TRUE Diag.Cfg_Fault := FALSE Diag.Prm_Fault := FALSE Diag.Not_Supported := FALSE Diag.Master_Add := Invalid Diag.WD_On := FALSE Diag.Station_Not_Ready := TRUE Diag.Sync_Mode := FALSE Diag.Freeze_Mode := FALSE Diag.Stat_Diag := FALSE Diag.Ext_Diag_Overflow := FALSE B User Prm := NIL B Cfg := NIL Diag_Flag := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 Prm Structure = FALSE DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Get Cfg Upd.req (Cfg Data) MSCY1S SInit MS0.cnf ()	WAIT-PRM
12	WAIT-PRM	MSCY1S Abort.req () => ignore	WAIT-PRM
13	WAIT-PRM	MSCY1S Set Slave Diag.req (Ext Diag Flag, Ext Diag Overflow, Ext Diag Data, Reference) => Diag.Ext Diag Data := Ext Diag Data Diag.Ext Diag Flag := Ext Diag Flag Diag.Ext Diag Overflow := Ext Diag Overflow Diag Data := Diag Act_Ref := Act_Ref + 1 Act_Cnt := Reference Ref_Cnt := Act_Ref DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) MSCY1S Set Slave Diag.cnf(+) (Reference := Act_Cnt)	WAIT-PRM
14	WAIT-PRM	MSCY1S Set Cfg.req (Cfg Data) => DMPMS Get Cfg Upd.req (Cfg Data) MSCY1S Set Cfg.cnf(+) ()	WAIT-PRM
15	WAIT-PRM	MSCY1S Get Output.req () => MSCY1S Get Output.cnf(-) ()	WAIT-PRM
16	WAIT-PRM	MSCY1S Set Input.req (Input Data) => MSCY1S Set Input.cnf(-) ()	WAIT-PRM

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#	État courant	Événement /Condition =>Action	État suivant
17	WAIT-PRM	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 0 => Status := Not pending MSCY1S Check User Prm Result.cnf(-) (Status)	WAIT-PRM
18	WAIT-PRM	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 2 => Status := New Prm Prm_Pending := 1 User Parameter Data := B User Prm MSCY1S Check User Prm Result.cnf(-) (Status) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	WAIT-PRM
19	WAIT-PRM	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 1 => Prm_Pending := 0 MSCY1S Check User Prm Result.cnf(+)()	WAIT-PRM
20	WAIT-PRM	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 0 => Status := Not pending MSCY1S Check Cfg Result.cnf(-) (Status)	WAIT-PRM
21	WAIT-PRM	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 2 => Status := New Cfg Cfg_Pending := 1 Cfg Data := B Cfg MSCY1S Check Cfg Result.cnf(-) (Status) MSCY1S Check Cfg.ind (Cfg Data)	WAIT-PRM
22	WAIT-PRM	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 => Cfg_Pending := 0 MSCY1S Check Cfg Result.cnf(+) ()	WAIT-PRM
23	WAIT-PRM	MSCY1S Application Ready.req() => ignore	WAIT-PRM
24	WAIT-PRM	MSAC1S Abort.ind() => ignore	WAIT-PRM
25	WAIT-PRM	MSAC1S Start.cnf() => START_C1_CON	WAIT-PRM
26	WAIT-PRM	MSAC1S Stop.cnf() => Start_State := Idle	WAIT-PRM
27	WAIT-PRM	DMPMS Set Slave Add.ind(New Slave Add, Ident Number, No Add Chg, Rem Slave Data) /Real_No_Add_Chg = FALSE && Diag.Ident_Number = Ident_Number && New_Slave_Address <= 125 => MSCY1S Set Slave Add.ind (New Slave Add, Ident Number, No Add Chg, Rem Slave Data)	POWER-ON
28	WAIT-PRM	DMPMS Set Slave Add.ind(New Slave Add, Ident Number, No Add Chg, Rem Slave Data) /Real_No_Add_Chg = TRUE || Diag.Ident_Number <> Ident_Number || New_Slave_Add > 125 => ignore	WAIT-PRM
29	WAIT-PRM	DMPMS Slave Diag.ind(Req Add, Reference) => ignore	WAIT-PRM

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#	État courant	Événement /Condition =>Action	État suivant
30	WAIT-PRM	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Lock_Req = FALSE && Unlock_Req = FALSE => DMPMS Set minTsdr.req (MinTsdr)	WAIT-PRM
31	WAIT-PRM	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = TRUE => ignore	WAIT-PRM
32	WAIT-PRM	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Lock_Req = TRUE && Unlock_Req = FALSE && (Ident_Number <> Diag.Ident_Number || !OPERATION_MODE_OK || WD_On = TRUE && (WD_Fact_1=0 || WD_Fact_2=0)) => Diag.Prm_Fault := TRUE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
33	WAIT-PRM	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Lock_Req = TRUE && Unlock_Req = FALSE && Ident_Number = Diag.Ident_Number && OPERATION_MODE_OK && (WD_On = FALSE || (WD_Fact_1 > 0 && WD_Fact_2 > 0)) && (Freeze_Req = TRUE && Freeze Supp = FALSE || Sync_Req = TRUE && Sync Supp = FALSE || Prm_Data[1].0, .1, .2 = TRUE) => Diag.Not_Supported := TRUE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
34	WAIT-PRM	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len < 7 => ignore	WAIT-PRM
35	WAIT-PRM	DMPMS Set Prm.ind(Req Add, Prm Data) /PRM_OK && Prm_Pending = 0 => Diag.Master_Add := Req Add Check_Prm_Add := Req Add FirstSynch := TRUE SET_OPERATION_MODE SET_WD Active_Groups := Group_Ident Diag.Prm_Fault := FALSE Diag.Prm_Req := FALSE Diag.Not_Supported := FALSE Prm_Pending := 1 User Parameter Data := Prm Data.User Prm SET_ALARM_CHKCFGM Input_Pending := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	WAIT-CFG

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#	État courant	Événement /Condition =>Action	État suivant
36	WAIT-PRM	DMPMS Set Prm.ind(Req Add, Prm Data) /PRM_OK && Prm_Pending > 0 => Diag.Master_Add := Req Add Check_Prm_Add := Req Add FirstSynch := TRUE SET_OPERATION_MODE SET_WD Active_Groups := Group_Ident Diag.Prm_Fault := FALSE Diag.Prm_Req := FALSE Diag.Not_Supported := FALSE Prm_Pending := 2 B User Prm := Prm Data.User Prm SET_ALARM_CHKCFGM Input_Pending := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr)	WAIT-CFG
37	WAIT-PRM	DMPMS Chk Cfg.ind(Req Add, Cfg Data) => ignore	WAIT-PRM
38	WAIT-PRM	DMPMS Set Ext Prm.ind(Req_Add, Ext Prm Data) /Diag.Master_Add = Req_Add => ignore	WAIT-PRM
39	WAIT-PRM	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 0 => Status := Not pending MSCY1S Check Ext User Prm Result.cnf(-) (Status)	WAIT-PRM
40	WAIT-PRM	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 2 => Status := New Prm Prm_Pending := 1 Ext User Parameter Data := B Ext User Prm MSCY1S Check Ext User Prm Result.cnf(-) (Status) MSCY1S Check Ext User Prm.ind (Ext User Parameter Data)	WAIT-PRM
41	WAIT-PRM	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 1 => Ext_Prm_Pending := 0 MSCY1S Check Ext User Prm Result.cnf(+)()	WAIT-PRM
42	WAIT-CFG	MSCY1S Abort.req () => Operation_Mode := V0 Diag.Master_Add := invalid Diag.Prm_Req := TRUE Diag.Station_Not_Ready := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM

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#	État courant	Événement /Condition =>Action	État suivant
43	WAIT-CFG	MSCY1S Set Slave Diag.req (Ext Diag Flag, Ext Diag Overflow, Ext Diag Data, Reference) => Diag.Ext Diag Data := Ext Diag Data Diag.Ext Diag Flag := Ext Diag Flag Diag.Ext Diag Overflow := Ext Diag Overflow Diag Data := Diag Act_Ref := Act_Ref + 1 Act_Cnt := Reference Ref_Cnt := Act_Ref DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) MSCY1S Set Slave Diag.cnf(+) (Reference := Act_Cnt)	WAIT-CFG
44	WAIT-CFG	MSCY1S Set Cfg.req (Cfg Data) => DMPMS Get Cfg Upd.req (Cfg Data) MSCY1S Set Cfg.cnf(+) ()	WAIT-CFG
45	WAIT-CFG	MSCY1S Get Output.req () => MSCY1S Get Output.cnf(-) ()	WAIT-CFG
46	WAIT-CFG	MSCY1S Set Input.req (Input Data) /Input_Pending = FALSE => MSCY1S Set Input.cnf(-) ()	WAIT-CFG
47	WAIT-CFG	MSCY1S Set Input.req (Input Data) /Input_Pending = TRUE && Operation_Mode = V0 => Inp Data := Input Data Diag.Cfg_Fault := FALSE Diag_Flag := TRUE Diag.Stat_Diag := TRUE Diag.Station_Not_Ready := FALSE DX_Entered := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 MSCY1S Set Input.cnf(+) () DMPMS Enter.req (Master Add, Input Data Len, Output Data Len) DMPMS RD Inp Upd.req (Inp Data) DMPMS Data Exchange Upd.req (Diag Flag, Inp Data) DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	DATA-EXCH
48	WAIT-CFG	MSCY1S Set Input.req (Input Data) /Input_Pending = TRUE && Operation_Mode = V1 => B Input := Input Data START_C1 MSCY1S Set Input.cnf(+) ()	WAIT-CFG
49	WAIT-CFG	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 0 => Status := Not pending MSCY1S Check User Prm Result.cnf(-) (Status)	WAIT-CFG
50	WAIT-CFG	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 2 => Status := New Prm Prm_Pending := 1 User Parameter Data := B User Prm MSCY1S Check User Prm Result.cnf(-) (Status) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	WAIT-CFG
51	WAIT-CFG	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 1 && Diag.Master_Add <> Check_Prm_Add => Status := Inv Master Add Prm_Pending := 0 MSCY1S Check User Prm Result.cnf(-) (Status)	WAIT-CFG

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#	État courant	Événement /Condition =>Action	État suivant
52	WAIT-CFG	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 1 && Diag.Master_Add = Check_Prm_Add && Prm_OK = TRUE => Prm_Pending := 0 MSCY1S Check User Prm Result.cnf(+)()	WAIT-CFG
53	WAIT-CFG	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 1 && Diag.Master_Add = Check_Prm_Add && Prm_OK = FALSE => Prm_Pending := 0 Diag.Prm_Fault := TRUE Diag.Master_Add := Invalid Diag.Prm_Req := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 MSCY1S Check User Prm Result.cnf(+)() DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
54	WAIT-CFG	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 0 => Status := Not pending MSCY1S Check Cfg Result.cnf(-) (Status)	WAIT-CFG
55	WAIT-CFG	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 2 => Status := New Cfg Cfg_Pending := 1 Cfg Data := B Cfg MSCY1S Check Cfg Result.cnf(-) (Status) MSCY1S Check Cfg.ind (Cfg Data)	WAIT-CFG
56	WAIT-CFG	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add <> Check_Cfg_Add => Status := Inv Master Add Cfg_Pending := 0 MSCY1S Check Cfg Result.cnf(-) (Status)	WAIT-CFG
57	WAIT-CFG	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add = Check_Cfg_Add && Cfg_OK = TRUE && Input Data Len > 0 => Inp Data Len := Input Data Len Outp Data Len := Output Data Len Cfg_Pending := 0 Input_Pending := TRUE MSCY1S Check Cfg Result.cnf(+) ()	WAIT-CFG
58	WAIT-CFG	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add = Check_Cfg_Add && Cfg_OK = TRUE && Operation_Mode = V1 && Input Data Len = 0 => Inp Data Len := 0 Outp Data Len := Output Data Len Inp Data := NIL Cfg_Pending := 0 START_C1 MSCY1S Check Cfg Result.cnf(+) ()	WAIT-CFG

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#	État courant	Événement /Condition =>Action	État suivant
59	WAIT-CFG	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add = Check_Cfg_Add && Cfg_OK = TRUE && Operation_Mode = V0 && Input Data Len = 0 => Inp Data Len := 0 Outp Data Len := Output Data Len Inp Data := NIL Cfg_Pending := 0 Diag.Cfg_Fault := FALSE Diag_Flag := TRUE Diag.Stat_Diag := TRUE Diag.Station_Not_Ready := FALSE DX_Entered := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Enter.req DMPMS Data Exchange Upd.req (Diag Flag, Inp Data) DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) MSCY1S Check Cfg Result.cnf(+) ()	DATA-EXCH
60	WAIT-CFG	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add = Check_Cfg_Add && Cfg_OK = FALSE => Cfg_Pending := 0 Diag.Cfg_Fault := TRUE Diag.Prm_Req := TRUE Diag.Master_Add := Invalid StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) MSCY1S Check Cfg Result.cnf(+) ()	WAIT-PRM
61	WAIT-CFG	MSCY1S Application Ready.req() => ignore	WAIT-CFG
62	WAIT-CFG	MSAC1S Abort.ind() => ignore	WAIT-CFG
63	WAIT-CFG	MSAC1S Start.cnf() /Start_State <> B => START_C1_CON	WAIT-CFG
64	WAIT-CFG	MSAC1S Start.cnf() /Start_State = B => Diag.Cfg_Fault := FALSE Diag_Flag := TRUE Diag.Stat_Diag := TRUE Diag.Station_Not_Ready := FALSE DX_Entered := FALSE START_C1_CON Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Enter.req DMPMS RD Inp Upd.req (Inp Data) DMPMS Data Exchange Upd.req (Diag Flag, Inp Data) DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	DATA-EXCH
65	WAIT-CFG	MSAC1S Stop.cnf() => STOP_C1_CON	WAIT-CFG

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#	État courant	Événement /Condition =>Action	État suivant
66	WAIT-CFG	MSAC1S Abort.ind() => Operation_Mode := V0 Diag.Master_Add := invalid Diag.Prm_Req := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
67	WAIT-CFG	DMPMS Set Slave Add.ind(New Slave Add, Ident Number, No Add Chg, Rem Slave Data) => ignore	WAIT-CFG
68	WAIT-CFG	DMPMS Slave Diag.ind(Req Add, Reference) /Diag.Master_Add = Req_Add => TRIG_WD	WAIT-CFG
69	WAIT-CFG	DMPMS Slave Diag.ind(Req Add, Reference) /Diag.Master_Add <> Req_Add => ignore	WAIT-CFG
70	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = TRUE && Diag.Master_Add = Req_Add => Diag.Master_Add := invalid Diag.Prm_Req := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
71	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = TRUE && Diag.Master_Add <> Req_Add => ignore	WAIT-CFG
72	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = FALSE && Lock_Req = TRUE && Diag.Master_Add = Req_Add && (Ident_Number <> Diag.Ident_Number || OPERATION_MODE_OK = FALSE || WD_On = TRUE && (WD_Fact_1=0 || WD_Fact_2=0)) => Diag.Prm_Fault := TRUE Diag.Master_Add := Invalid Diag.Prm_Req := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM

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#	État courant	Événement /Condition =>Action	État suivant
73	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = FALSE && Lock_Req = TRUE && Diag.Master_Add = Req_Add && Ident_Number = Diag.Ident_Number && OPERATION_MODE_OK && (WD_On = FALSE || WD_Fact_1>0 && WD_Fact_2>0) && (Freeze_Req = TRUE && Freeze Supp = FALSE || Sync_Req = TRUE && Sync Supp = FALSE || Prm_Data[1].0, .1, .2 = TRUE) => Diag.Not_Supported := TRUE Diag.Master_Add := Invalid Diag.Prm_Req := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
74	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = FALSE && Lock_Req = TRUE && Diag.Master_Add <> Req_Add && (Ident_Number <> Diag.Ident_Number || OPERATION_MODE_OK = FALSE || WD_On = TRUE && (WD_Fact_1=0 || WD_Fact_2=0) || Freeze_Req = TRUE && Freeze Supp = FALSE || Sync_Req = TRUE && Sync Supp = FALSE || Prm_Data[1].0, .1, .2 = TRUE) => ignore	WAIT-CFG
75	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /PRM_OK && Prm_Pending = 0 => Diag.Master_Add := Req_Add Check_Prm_Add := Req Add SET_OPERATION_MODE SET_WD Active_Groups := Group_Ident Prm_Pending := 1 User Parameter Data := Prm Data.User Prm SET_ALARM_CHKCFGM Input_Pending := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	WAIT-CFG
76	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /PRM_OK && Prm_Pending > 0 => Diag.Master_Add := Req_Add Check_Prm_Add := Req Add SET_OPERATION_MODE SET_WD Active_Groups := Group_Ident Prm_Pending := 2 B User Prm := Prm Data.User Prm SET_ALARM_CHKCFGM Input_Pending := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr)	WAIT-CFG
77	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = FALSE && Lock_Req = FALSE => DMPMS Set minTsdr.req (MinTsdr)	WAIT-CFG

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#	État courant	Événement /Condition =>Action	État suivant
78	WAIT-CFG	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len < 7 => ignore	WAIT-CFG
79	WAIT-CFG	DMPMS Chk Cfg.ind(Req Add, Cfg Data) /Diag.Master_Add <> Req_Add => ignore	WAIT-CFG
80	WAIT-CFG	DMPMS Chk Cfg.ind(Req Add, Cfg Data) /Diag.Master_Add = Req_Add && Cfg_Pending = 0 => Cfg_Pending := 1 Check_Cfg_Add := Req Add TRIG_WD MSCY1S Check Cfg.ind (Check Cfg Mode, Cfg Data)	WAIT-CFG
81	WAIT-CFG	DMPMS Chk Cfg.ind(Req Add, Cfg Data) /Diag.Master_Add = Req_Add && Cfg_Pending > 0 => Cfg_Pending := 2 Check_Cfg_Add := Req Add B Cfg := Cfg Data TRIG_WD	WAIT-CFG
82	WAIT-CFG	WDTimer expired => Diag.Master_Add := invalid Diag.Prm_Req := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
83	WAIT-CFG	DMPMS Set Ext Prm.ind(Req_Add, Ext Prm Data) /Diag.Master_Add = Req_Add &&Ext_Prm_Pending = 0 => TRIG_WD Ext User Parameter Data := Ext User Prm Data Ext_Prm_Pending := 1 Check_Ext_Prm_Add := Req_Add MSCY1S Check Ext User Prm.ind (Ext User Parameter Data)	WAIT-CFG
84	WAIT-CFG	DMPMS Set Ext Prm.ind(Req_Add, Ext Prm Data) /Diag.Master_Add = Req_Add && Ext_Prm_Pending > 0 => TRIG_WD B Ext User Prm := Ext User Prm Data Ext_Prm_Pending := 2 Check_Ext_Prm_Add := Req_Add	WAIT-CFG
85	WAIT-CFG	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 0 => Status := Not pending MSCY1S Check Ext User Prm Result.cnf(-) (Status)	WAIT-CFG
86	WAIT-CFG	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 2 => Status := New Prm Ext_Prm_Pending := 1 Ext User Parameter Data := B Ext User Prm MSCY1S Check Ext User Prm Result.cnf(-) (Status) MSCY1S Check Ext User Prm.ind (Ext User Parameter Data)	WAIT-CFG

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#	État courant	Événement /Condition =>Action	État suivant
87	WAIT-CFG	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 1 && Diag.Master_Add <> Check_Ext_Prm_Add => Status := Inv Master Add Ext_Prm_Pending := 0 MSCY1S Check Ext User Prm Result.cnf(-) (Status)	WAIT-CFG
88	WAIT-CFG	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 1 && Diag.Master_Add = Check_Ext_Prm_Add && Ext_Prm_OK = TRUE => Ext_Prm_Pending := 0 MSCY1S Check Ext User Prm Result.cnf(+)()	WAIT-CFG
89	WAIT-CFG	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 1 && Diag.Master_Add = Check_Prm_Add && Ext_Prm_OK = FALSE => Ext_Prm_Pending := 0 Diag.Cfg_Fault := TRUE Diag.Master_Add := Invalid Diag.Prm_Req := TRUE StopTimer(WD) Diag.WD_On := FALSE STOP_C1 Diag Data := Diag Act_Ref := Act_Ref + 1 MSCY1S Check Ext User Prm Result.cnf(+)() DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
90	DATA-EXCH	MSCY1S Abort.req () => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
91	DATA-EXCH	MSCY1S Set Slave Diag.req (Ext Diag Flag, Ext Diag Overflow, Ext Diag Data, Reference) => Diag.Ext Diag Data := Ext Diag Data Diag.Ext Diag Flag := Ext Diag Flag Diag.Ext Diag Overflow := Ext Diag Overflow Diag Data := Diag Diag Flag := TRUE Act_Ref := Act_Ref + 1 Act_Cnt := Reference Ref_Cnt := Act_Ref DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Data Exchange Upd.req(Diag Flag, Inp Data)	DATA-EXCH
92	DATA-EXCH	MSCY1S Set Cfg.req (Cfg Data) => Diag.Cfg_Fault:=TRUE LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Get Cfg Upd.req (Cfg Data) MSCY1S Set Cfg.cnf(+) () DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
93	DATA-EXCH	MSCY1S Get Output.req () /DX_Entered = TRUE => Clear Flag := Safe_State New Flag := New Output New Output := FALSE Outp Data, Output Data := B Output DMPMS RD Outp Upd.req (Outp Data) MSCY1S Get Output.cnf(+) (Output Data, Clear Flag, New Flag)	DATA-EXCH
94	DATA-EXCH	MSCY1S Get Output.req () /DX_Entered = FALSE => MSCY1S Get Output.cnf(-) ()	DATA-EXCH

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#	État courant	Événement /Condition =>Action	État suivant
95	DATA-EXCH	MSCY1S Set Input.req (Input Data) /Diag.Freeze_Mode = FALSE => Inp Data, B Input := Input Data DMPMS Data Exchange Upd.req (Diag Flag, Inp Data) DMPMS RD Inp Upd.req (Inp Data) MSCY1S Set Input.cnf(+) ()	DATA-EXCH
96	DATA-EXCH	MSCY1S Set Input.req (Input Data) /Diag.Freeze_Mode = TRUE => B Freeze := Input Data MSCY1S Set Input.cnf(+) ()	DATA-EXCH
97	DATA-EXCH	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 0 => Status := Not pending MSCY1S Check User Prm Result.cnf(-) (Status)	DATA-EXCH
98	DATA-EXCH	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 2 => Status := New Prm Prm_Pending := 1 User Parameter Data := B User Prm MSCY1S Check User Prm Result.cnf(-) (Status) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	DATA-EXCH
99	DATA-EXCH	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 1 && Diag.Master_Add # Check_Prm_Add => Status := Inv Master Add Prm_Pending := 0 MSCY1S Check User Prm Result.cnf(-) (Status)	DATA-EXCH
100	DATA-EXCH	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 1 && Diag.Master_Add = Check_Prm_Add && Prm_OK = TRUE => Prm_Pending := 0 MSCY1S Check User Prm Result.cnf(+)()	DATA-EXCH
101	DATA-EXCH	MSCY1S Check User Prm Result.req (Prm_OK) /Prm_Pending = 1 && Diag.Master_Add = Check_Prm_Add && Prm_OK = FALSE => Diag.Prm_Fault := TRUE LEAVE-MASTER Prm_Pending := 0 Act_Ref := Act_Ref + 1 MSCY1S Check User Prm Result.cnf(+)() DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
102	DATA-EXCH	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 0 => Status := Not pending MSCY1S Check Cfg Result.cnf(-) (Status)	DATA-EXCH
103	DATA-EXCH	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 2 => Status := New Cfg Cfg_Pending := 1 Cfg Data := B Cfg MSCY1S Check Cfg Result.cnf(-) (Status) MSCY1S Check Cfg.ind (Cfg Data)	DATA-EXCH
104	DATA-EXCH	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add # Check_Cfg_Add => Status := Inv Master Add Cfg_Pending := 0 MSCY1S Check Cfg Result.cnf(-) (Status)	DATA-EXCH

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#	État courant	Événement /Condition =>Action	État suivant
105	DATA-EXCH	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add = Check_Cfg_Add && Cfg_OK = TRUE && Input Data Len = Inp Data Len && Output Data Len = Outp Data Len => Cfg_Pending := 0 MSCY1S Check Cfg Result.cnf(+) ()	DATA-EXCH
106	DATA-EXCH	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add = Check_Cfg_Add && Cfg_OK = TRUE && Input Data Len <> Inp Data Len && Output Data Len <> Outp Data Len => Diag.Cfg_Fault := TRUE LEAVE-MASTER Act_Ref := Act_Ref + 1 MSCY1S Check Cfg Result.cnf(+) () DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
107	DATA-EXCH	MSCY1S Check Cfg Result.req (Cfg_OK, Input Data Len, Output Data Len) /Cfg_Pending = 1 && Diag.Master_Add = Check_Cfg_Add && Cfg_OK = FALSE => Diag.Cfg_Fault := TRUE LEAVE-MASTER Act_Ref := Act_Ref + 1 MSCY1S Check Cfg Result.cnf(+) () DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
108	DATA-EXCH	MSCY1S Application Ready.req() /Diag.Stat_Diag = TRUE => Diag.Stat_Diag := FALSE Diag_Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Data Exchange Upd.req(Diag Flag, Inp Data)	DATA-EXCH
109	DATA-EXCH	MSCY1S Application Ready.req() /Diag.Stat_Diag = FALSE => ignore	DATA-EXCH
110	DATA-EXCH	MSAC1S Abort.ind() => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
111	DATA-EXCH	MSAC1S Start.cnf() /Start_State <> B => START_C1_CON	DATA-EXCH
112	DATA-EXCH	MSAC1S Start.cnf() /Start_State = B => START_C1_CON MSCY1S_Start.ind (Actual_Enabled_Alarms, Alarm_Sequence, Alarm_Limit)	DATA-EXCH
113	DATA-EXCH	MSAC1S Stop.cnf() /Start_State <> E => STOP_C1_CON	DATA-EXCH
114	DATA-EXCH	MSAC1S Stop.cnf() /Start_State = E => STOP_C1_CON MSCY1S_Stop.ind	DATA-EXCH
115	DATA-EXCH	DMPMS Set Slave Add.ind(New Slave Add, Ident Number, No Add Chg, Rem Slave Data) => ignore	DATA-EXCH

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#	État courant	Événement /Condition =>Action	État suivant
116	DATA-EXCH	DMPMS Slave Diag.ind(Req Add, Reference) /Diag.Master_Add = Req_Add && (Diag.Stat_Diag = TRUE || Reference < Ref_Cnt) => TRIG_WD	DATA-EXCH
117	DATA-EXCH	DMPMS Slave Diag.ind(Req Add, Reference) /Diag.Master_Add = Req_Add && Diag.Stat_Diag = FALSE && Reference >= Ref_Cnt => Diag Flag := FALSE TRIG_WD DMPMS Data Exchange Upd.req (Diag Flag, Inp Data) DMPMS RD Inp Upd.req (Inp Data) MSCY1S Set Slave Diag.cnf(+) (Reference := Act_Cnt)	DATA-EXCH
118	DATA-EXCH	DMPMS Slave Diag.ind(Req Add, Reference) /Diag.Master_Add <> Req_Add => ignore	DATA-EXCH
119	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Lock_Req = FALSE && Unlock_Req = FALSE => DMPMS Set minTsdr.req (MinTsdr)	DATA-EXCH
120	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = TRUE && Diag.Master_Add <> Req_Add => ignore	DATA-EXCH
121	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Unlock_Req = TRUE && Diag.Master_Add = Req_Add => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
122	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Lock_Req = TRUE && Unlock_Req = FALSE && Diag.Master_Add = Req_Add && (Ident_Number <> Diag.Ident_Number || !OPERATION_MODE_OK || WD_On && (WD_Fact_1=0 || WD_Fact_2=0)) => Diag.Prm_Fault := TRUE LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
123	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Lock_Req = TRUE && Unlock_Req = FALSE && Diag.Master_Add = Req_Add && Ident_Number = Diag.Ident_Number && OPERATION_MODE_OK && !WD_On || (WD_Fact_1>0 && WD_Fact_2>0) && (Freeze_Req && Freeze Supp = FALSE || Sync_Req && Sync Supp = FALSE || Prm_Data[1].0, .1, .2 = TRUE) => Diag.Not_Supported := TRUE LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
124	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len >= 7 && Lock_Req = TRUE && Unlock_Req = FALSE && Diag.Master_Add <> Req_Add && (Ident_Number <> Diag.Ident_Number || !OPERATION_MODE_OK || WD_On && (WD_Fact_1=0 || WD_Fact_2=0) || Freeze_Req && !Freeze Supp || Sync_Req && !Sync Supp || Prm_Data[1].0, .1, .2 = TRUE) => ignore	DATA-EXCH

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#	État courant	Événement /Condition =>Action	État suivant
125	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Diag.Master_Add = Req_Add && PRM_OK &&!PV0V0 && NOPRMCMD => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
126	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Diag.Master_Add = Req_Add && PRM_OK && !NOPRMCMD && Prm_Pending = 0 => SET_WD Active_Groups := Group_Ident EXE_PRM_CMD Prm_Pending := 1 Check_Prm_Add := Req Add User Parameter Data := Prm Data.User Prm Diag_Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	DATA-EXCH
127	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Diag.Master_Add = Req_Add && PRM_OK && !NOPRMCMD && Prm_Pending > 0 => SET_WD Active_Groups := Group_Ident EXE_PRM_CMD Prm_Pending := 2 Check_Prm_Add := Req Add B User Prm := Prm Data.User Prm Diag_Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr)	DATA-EXCH
128	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Diag.Master_Add = Req_Add && PRM_OK && NOPRMCMD && PV0V0 && Prm_Pending = 0 => SET_WD Active_Groups := Group_Ident Prm_Pending := 1 Check_Prm_Add := Req Add User Parameter Data := Prm Data.User Prm Diag_Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	DATA-EXCH
129	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Diag.Master_Add = Req_Add && PRM_OK && NOPRMCMD && PV0V0 && Prm_Pending > 0 =>SET_WD Active_Groups := Group_Iden tPrm_Pending := 2 Check_Prm_Add := Req Add B User Prm := Prm Data.User Prm Diag_Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr)	DATA-EXCH

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#	État courant	Événement /Condition =>Action	État suivant
130	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Diag.Master_Add <> Req_Add && PRM_OK && Prm_Pending = 0 => Diag.Sync_Mode := FALSE Diag.Freeze_Mode := FALSE Diag.Station_Not_Ready := TRUE Diag.Stat_Diag := FALSE SET_OPERATION_MODE SET_WD Active_Groups := Group_Ident Safe_State := TRUE Diag.Master_Add := Req_Add Check_Prm_Add := Req Add STOP_ASM STOP_C1 Prm_Pending := 1 User Parameter Data := Prm Data.User Prm SET_ALARM_CHKCFGM Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Leave.req DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr) MSCY1S Check User Prm.ind (Prm Structure, User Parameter Data)	WAIT-CFG
131	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Diag.Master_Add <> Req_Add && PRM_OK && Prm_Pending > 0 => Diag.Sync_Mode := FALSE Diag.Freeze_Mode := FALSE Diag.Station_Not_Ready := TRUE Diag.Stat_Diag := FALSE SET_OPERATION_MODE SET_WD Active_Groups := Group_Ident Safe_State := TRUE Diag.Master_Add := Req_Add Check_Prm_Add := Req Add STOP_ASM STOP_C1 Prm_Pending := 2 B User Prm := Prm Data.User Prm SET_ALARM_CHKCFGM Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Leave.req DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) DMPMS Set minTsdr.req (minTsdr)	WAIT-CFG
132	DATA-EXCH	DMPMS Set Prm.ind(Req Add, Prm Data) /Prm_Data.len < 7 => ignore	DATA-EXCH
133	DATA-EXCH	DMPMS Chk Cfg.ind(Req Add, Cfg Data) /Diag.Master_Add <> Req_Add => ignore	DATA-EXCH
134	DATA-EXCH	DMPMS Chk Cfg.ind(Req Add, Cfg Data) /Diag.Master_Add = Req_Add && Cfg_Pending = 0 => Cfg_Pending := 1 Check_Cfg_Add := Req Add TRIG_WD MSCY1S Check Cfg.ind (Check Cfg Mode, Cfg Data)	DATA-EXCH
135	DATA-EXCH	DMPMS Chk Cfg.ind(Req Add, Cfg Data) /Diag.Master_Add = Req_Add && Cfg_Pending > 0 => Cfg_Pending := 2 Check_Cfg_Add := Req Add B Cfg := Cfg Data TRIG_WD	DATA-EXCH

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#	État courant	Événement /Condition =>Action	État suivant
136	DATA-EXCH	DMPMS Data Exchange.ind(Outp Data) /Outp_Data.len > 0 && Outp_Data.len = Outp Data Len && Diag.Sync_Mode = FALSE => B Output := Outp Data TRIG_WD Safe_State := FALSE Clear Flag := FALSE New Output := TRUE CHECK_ALARM_START MSCY1S New Output.ind (Clear Flag)	DATA-EXCH
137	DATA-EXCH	DMPMS Data Exchange.ind(Outp Data) /Outp_Data.len > 0 && Outp_Data.len = Outp Data Len && Diag.Sync_Mode = TRUE => B Sync := Outp Data TRIG_WD Safe_State := FALSE CHECK_ALARM_START	DATA-EXCH
138	DATA-EXCH	DMPMS Data Exchange.ind(Outp Data) /Outp_Data.len = 0 && Outp Data Len = 0 => TRIG_WD CHECK_ALARM_START	DATA-EXCH
139	DATA-EXCH	DMPMS Data Exchange.ind(Outp Data) /Outp_Data.len <> Outp Data Len && (Outp_Data.len = 0 && Fail_Safe_supp) => TRIG_WD Safe_State := TRUE Clear Flag := TRUE New Output := TRUE CHECK_ALARM_START MSCY1S New Output.ind (Clear Flag)	DATA-EXCH
140	DATA-EXCH	DMPMS Data Exchange.ind(Outp Data) /Outp_Data.len <> Outp Data Len && (Outp_Data.len <> 0 || Fail_Safe_supp) => LEAVE-MASTERAct_Ref := Act_Ref + 1 Diag.Cfg_Fault := TRUE DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
141	DATA-EXCH	WDTimer expired => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
142	DATA-EXCH	DMPMS Global Control.ind(Control Command, Group Select) / (Control_Command.0, .6, .7 = TRUE) => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
143	DATA-EXCH	DMPMS Global Control.ind(Control Command, Group Select) /Group_Select <> 0 && ((Active_Groups & Group_Select) = 0) && ((Group_Select < 0x80) || Isochronous Mode = FALSE) && (Control_Command.0, .6, .7 = FALSE) => ignore	DATA-EXCH
144	DATA-EXCH	DMPMS Global Control.ind(Control Command, Group Select) /Control Command.Clear Command = FALSE && (Group_Select = 0 || (Active_Groups & Group_Select) <> 0 || ((Group_Select >= 0x80) && Isochronous Mode = TRUE)) && (Control_Command.0, .6, .7 = FALSE) => Clear Command := FALSE	CHECK-ISOM

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#	État courant	Événement /Condition =>Action	État suivant
145	DATA-EXCH	DMPMS Global Control.ind(Control Command, Group Select) /Control Command.Clear Command = TRUE && (Group_Select = 0 || (Active_Groups & Group_Select) <> 0 || ((Group_Select >= 0x80) && Isochronous Mode = TRUE)) && (Control_Command.0, .6, .7 = FALSE) => Clear Command := TRUE Clear Flag := TRUE New Output := TRUE Safe_State := TRUE	CHECK-ISOM
146	DATA-EXCH	DMPMS Set Ext Prm.ind(Req_Add, Ext Prm Data) /Diag.Master_Add = Req_Add => Diag.Prm_Fault := TRUE LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
147	DATA-EXCH	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 0 => Status := Not pending MSCY1S Check Ext User Prm Result.cnf(-) (Status)	DATA-EXCH
148	DATA-EXCH	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 2 => Status := New Prm Ext_Prm_Pending := 1 Ext_User Parameter Data := B Ext User Prm MSCY1S Check Ext User Prm Result.cnf(-) (Status) MSCY1S Check Ext User Prm.ind (Ext User Parameter Data)	DATA-EXCH
149	DATA-EXCH	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 1 && Diag.Master_Add <> Check_Ext_Prm_Add => Status := Inv Master Add Ext_Prm_Pending := 0 MSCY1S Check Ext User Prm Result.cnf(-) (Status)	DATA-EXCH
150	DATA-EXCH	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 1 && Diag.Master_Add = Check_Ext_Prm_Add && Ext_Prm_OK = TRUE => Ext_Prm_Pending := 0 MSCY1S Check Ext User Prm Result.cnf(+)()	DATA-EXCH
151	DATA-EXCH	MSCY1S Check Ext User Prm Result.req (Ext_Prm_OK) /Ext_Prm_Pending = 1 && Diag.Master_Add = Check_Ext_Prm_Add && Ext_Prm_OK = FALSE => Diag.Cfg_Fault := TRUE LEAVE-MASTER Ext_Prm_Pending := 0 Act_Ref := Act_Ref + 1 MSCY1S Check Ext User Prm Result.cnf(+)() DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM
152	CHECK-SYNC	/NOSYNC => Sync Command := 0	CHECK-FREEZE
153	CHECK-SYNC	/UNSYNC && Sync Supp = FALSE => Sync Command := 2	CHECK-FREEZE
154	CHECK-SYNC	/SYNC && Sync Supp = FALSE => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM

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#	État courant	Événement /Condition =>Action	État suivant
155	CHECK-SYNC	/UNSYNC && Sync Supp = TRUE && B Sync <> Nil => B Output := B Sync B Sync := Nil Sync Command := 2 Clear Flag := Safe_State New Outpu t := TRUE Diag.Sync_Mode := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 MSCY1S New Output.ind (Clear Flag) DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	CHECK-FREEZE
156	CHECK-SYNC	/UNSYNC && Sync Supp = TRUE && B Sync = Nil => Sync Command := 2 Clear Flag := Safe_State Diag.Sync_Mode := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	CHECK-FREEZE
157	CHECK-SYNC	/SYNC && Sync Supp = TRUE && Diag.Sync_Mode = FALSE => B Sync := Nil Sync Command := 1 Diag.Sync_Mode := TRUE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	CHECK-FREEZE
158	CHECK-SYNC	/SYNC && Sync Supp = TRUE && Diag.Sync_Mode = TRUE && B Sync <> Nil => B Output := B Sync B Sync := Nil Clear Flag := Safe State New Output := TRUE Sync Command := 1 MSCY1S New Output.ind (Clear Flag)	CHECK-FREEZE
159	CHECK-SYNC	/SYNC && Sync Supp = TRUE && Diag.Sync_Mode = TRUE && B Sync = Nil => Sync Command := 1	CHECK-FREEZE

160	CHECK-ISOM	/(Group_Select >= 0x80) && Isochronous Mode = TRUE
		=>
		if (FirstSynch = TRUE)
		Status:= IsoM Start
		FirstSynch:= FALSE
		else
		Status:=IsoM SYNCH
		endif
		MSCY1S SYNCH Event.ind(Status)
			CHECK-SYNC

161	CHECK-ISOM	/(Group_Select < 0x80) || Isochronous Mode = FALSE =>	CHECK-SYNC
162	CHECK-FREEZE	/NOFREEZE => Freeze Command := 0 MSCY1S Global Control.ind (Clear Command, Sync Command, Freeze Command)	DATA-EXCH
163	CHECK-FREEZE	/UNFREEZE && Freeze Supp = FALSE => Freeze Command := 2 MSCY1S Global Control.ind (Clear Command, Sync Command, Freeze Command)	DATA-EXCH
164	CHECK-FREEZE	/FREEZE && Freeze Supp = FALSE => LEAVE-MASTER Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref)	WAIT-PRM

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#	État courant	Événement /Condition =>Action	État suivant
165	CHECK-FREEZE	/UNFREEZE && Freeze Supp = TRUE && B Freeze <> Nil => Inp Data := B Freeze B Freeze := Nil Freeze Command := 2 Diag.Freeze_Mode := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Data Exchange Upd.req (Diag Flag, Inp Data) DMPMS RD Inp Upd.req (Inp Data) DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) MSCY1S Global Control.ind (Clear Command, Sync Command, Freeze Command)	DATA-EXCH
166	CHECK-FREEZE	/UNFREEZE && Freeze Supp = TRUE && B Freeze = Nil => Freeze Command := 2 Diag.Freeze_Mode := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) MSCY1S Global Control.ind (Clear Command, Sync Command, Freeze Command)	DATA-EXCH
167	CHECK-FREEZE	/FREEZE && Freeze Supp = TRUE && Diag.Freeze_Mode = FALSE => B Freeze := Nil Freeze Command := 1 Diag.Freeze_Mode := FALSE Diag Data := Diag Act_Ref := Act_Ref + 1 DMPMS Slave Diag Upd.req (Diag Data, Reference := Act_Ref) MSCY1S Global Control.ind (Clear Command, Sync Command, Freeze Command)	DATA-EXCH
168	CHECK-FREEZE	/FREEZE && Freeze Supp = TRUE && Diag.Freeze_Mode = TRUE && B Freeze <> Nil => Inp Data := B Freeze B Freeze := Nil Freeze Command := 1 DMPMS Data Exchange Upd.req (Diag Flag, Inp Data) DMPMS RD Inp Upd.req (Inp Data) MSCY1S Global Control.ind (Clear Command, Sync Command, Freeze Command)	DATA-EXCH
169	CHECK-FREEZE	/FREEZE && Freeze Supp = TRUE && Diag.Freeze_Mode = TRUE && B Freeze = Nil => Freeze Command := 1 MSCY1S Global Control.ind (Clear Command, Sync Command, Freeze Command)	DATA-EXCH
170	any state	MSCY1S Reset.req () => DMPMS Slave Deact.req ()	SL-DEACT
171	any state	DMPMS Set Ext Prm.ind(Req_Add, Ext Prm Data) /Diag.Master_Add <> Req_Add => ignore	SAME
172	SL-DEACT	DMPMS Slave Deact.cnf () => MSCY1S Reset.cnf ()	

9.1.4 Fonctions

Le Tableau 58 contient les fonctions utilisées par le MSCY1S et leurs descriptions.

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Tableau 58 – Fonctions utilisées par le MSCY1S1

Nom	Fonction
LEAVE-MASTER	Diag.Master_Add=invalid Diag.Sync_Mode=FALSE Diag.Freeze_Mode=FALSE Diag.Prm_Req=TRUE Diag.Station_Not_Ready=TRUE StopTimer(WD), Diag.WD_On=FALSE Diag.Stat_Diag=FALSE, Operation_Mode=V0 Safe_State=TRUE STOP_ASM, STOP_C1, STOP_ISOM DMPMS_Leave.Req Diag_Data=Diag
PRM_OK	Prm_Data.len>=7 && Lock_Req=TRUE && Unlock_Req=FALSE && Ident_Number=Diag.Ident_Number && (WD_On=FALSE || (WD_On=TRUE && WD_Fact_1>0 && WD_Fact_2>0)) && (Freeze_Req=FALSE || Freeze_Supported) && (Sync_Req=FALSE || Sync_Supported) && (Prm_Data[1].0, .1, .2=FALSE) && OPERATION_MODE_OK

SET_WD	if (WD_On=TRUE)
	StartTimer(WD),
	Diag.WD_On=TRUE)
	else
	StopTimer(WD),
	Diag.WD_On=FALSE
	endif

TRIG_WD	if (Diag.WD_On=TRUE)
	StartTimer(WD)
	endif

NOSYNC	Control_Command.Sync=0 && Control_Command.UnSync=0
SYNC	Control_Command.Sync=1 && Control_Command.UnSync=0
UNSYNC	Control_Command.UnSync=1
NOFREEZE	Control_Command.Freeze=0 && Control_Command.UnFreeze=0
FREEZE	Control_Command.Freeze=1 && Control_Command.UnFreeze=0
UNFREEZE	Control_Command.UnFreeze=1

STOP_ISOM	if(Isochronous Mode Supp = TRUE
	&& Isochronous Mode =TRUE
	&& First Synch = FALSE)
	MSCY1S SYNCH Event.ind(Status:= IsoM Stop)
	First Synch = TRUE
	endif

STOP_ASM	if (DX_Entered=TRUE)
	MSCY1S_Stop.ind
	endif

CHECK_ALARM_START	if (DX_Entered=FALSE && Diag.Stat_Diag=FALSE)
	DX_Entered=TRUE,
	MSCY1S_Start.ind(Actual_Enabled_Alarms, Alarm_Sequence, Alarm_Limit)
	endif

SET_OPERATION_MODE	if (Prm_Data.len >= 10 && DPV1_Enable=TRUE)
	Operation_Mode=V1
	else
	Operation_Mode=V0
	endif
	if (Prm_Data.len >= 10 && IsoM_Req =TRUE)
	Isochron_Mode=True
	else
	Isochron_Mode=FALSE
	endif

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Nom	Fonction
PV0V0	Operation_Mode = V0 && (Prm_Data.len < 10 || DPV1_Enable = FALSE)
OPERATION_MODE_OK	if (IsARexistent(MS1) && DPV1_Enable) further checks according the table “Rules for DPV1_Status_1, DPV1_Status_2, and DPV1_Status_3 check”
NOPRMCMD	!(DPV1_Status_3.PrmCmd = 1 && Prm_Data.len = 18 && PrmCmd_supp)

SET_ALARM_CHKCFGM	if (Prm_Data.len >=10 && DPV1_Enable=TRUE)
	Enabled_Alarms=DPV1_Status_2.2 - DPV1_Status_2.7
	else
	Enabled_Alarms=0
	endif
	if (Prm_Data.len >=10)
	Alarm_Mode_Master=DPV1_Status_3.0 - DPV1_Status_3.2,
	Chk Cfg Mode = DPV1_Status_2.0,
	Prm Structure = DPV1_Status_3.4,
	if (DPV1_Status3.PrmCmd&& Prm_Data.PrmCmd exist)
	EXE_PRM_CMD
	else
	Alarm_Mode_Master=0,
	Chk Cfg Mode = FALSE,
	Prm Structure = FALSE
	endif

EXE_PRM_CMD	if (PrmCmd.Function.Primary)
	Primary=TRUE,
	if(Start_State=B||Start_State=BEB||Start_State=EB||Start_State=Run)
	STOP_C1, START_C1
	else
	START_C1
	endif
	else
	Primary=FALSE
	endif
	if (PrmCmd.Function.Stop_MS1)
	if(Start_State=B||Start_State=BEB||Start_State=EB||Start_State=Run)
	STOP_C1
	endif
	endif
	if (PrmCmd.Function.Start_MS1)
	if(Start_State=E||Start_State=BE||Start_State=Idle)
	START_C1
	endif
	endif

START_C1	if (Start_State=Idle)
	MSAC1S_Start.req(Diag.Master_Add),
	Start_State=B
	endif
	if (Start_State=E)
	Start_State=EB
	endif
	if (Start_State=BE)
	Start_State=BEB
	endif

STOP_C1	if (Start_State=B)
	Start_State=BE
	endif
	if (Start_State=Run)
	MSAC1S_Stop.req,
	Start_State=E
	endif
	if (Start_State=EB)
	Start_State=E
	endif
	if (Start_State=BEB)
	Start_State=BE
	endif

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Nom	Fonction

START_C1_CON	if (Start_State=B)
	  Start_State=Run
	endif
	if (Start_State=BE)
	  MSAC1S_Stop.req, Start_State=E
	endif
	if (Start_State=BEB)
	  MSAC1S_Stop.req, Start_State=EB
	endif

STOP_C1_CON	if (Start_State=E)
	  Start_State=Idle
	endif
	if (Start_State=EB)
	  MSAC1S_Start.req(Diag.Master_Add),
	  Start_State=B
	endif

LEAVE-MASTER	Diag.Master_Add=invalid Diag.Sync_Mode=FALSE Diag.Freeze_Mode=FALSE Diag.Prm_Req=TRUE Diag.Station_Not_Ready=TRUE StopTimer(WD), Diag.WD_On=FALSE Diag.Stat_Diag=FALSE, Operation_Mode=V0 Safe_State=TRUE STOP_ASM, STOP_C1, STOP_ISOM DMPMS_Leave.Req Diag_Data=Diag

9.2 MSAC1S

9.2.1 Définitions des primitives

9.2.1.1 Primitives échangées entre la FSPMS et MSAC1S

Le Tableau 59 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMS et reçues par le MSAC1S.

Tableau 59 – Primitives émises par la FSPMS vers le MSAC1S

Nom de primitive	Source	Paramètres associés	Fonctions
SInit MS1.req	FSPMS	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.req	FSPMS	(aucun)	
Read.rsp(+)	FSPMS	Length, Data	
Read.rsp(-)	FSPMS	Error Decode, Error Code 1 Error Code 2	
Write.rsp(+)	FSPMS	Length	
Write.rsp(-)	FSPMS	Error Decode, Error Code 1 Error Code 2	
Alarm Ack.rsp(+)	FSPMS	Slot Number, Alarm Type, Seq Nr	
Alarm Ack.rsp(-)	FSPMS	(aucun)	

Le Tableau 60 montre les primitives de service, y compris leurs paramètres associés, émises par le MSAC1S et reçues par la FSPMS.

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Tableau 60 – Primitives émises par le MSAC1S vers la FSPMS

Nom de primitive	Source	Paramètres associés	Fonctions
SInit MS1.cnf	MSAC1S	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.cnf	MSAC1S	(aucun)	
Fault.ind	MSAC1S	(aucun)	
Read.ind	MSAC1S	Slot Number, Index, Length	
Write.ind	MSAC1S	Slot Number, Index, Length, Data	
Alarm Ack.ind	MSAC1S	Slot Number, Alarm Type, Seq Nr	

9.2.1.2 Primitives échangées entre MSAC1S et MSCY1S

Le Tableau 61 montre les primitives de service, y compris leurs paramètres associés, émises par le MSCY1S et reçues par le MSAC1S.

Tableau 61 – Primitives émises par le MSCY1S vers le MSAC1S

Nom de primitive	Source	Paramètres associés	Fonctions
Start.req	MSCY1S	Master Add	Démarrer le traitement des services acycliques
Stop.req	MSCY1S	(aucun)	Arrêter le traitement des services acycliques

Le Tableau 62 montre les primitives de service, y compris leurs paramètres associés, émises par le MSAC1S et reçues par le MSCY1S.

Tableau 62 – Primitives émises par le MSAC1S vers le MSCY1S

Nom de primitive	Source	Paramètres associés	Fonctions
Start.cnf	MSAC1S	(aucun)	MSAC1 est prêt à exécuter des services acycliques.
Stop.cnf	MSAC1S	(aucun)	MSAC1 est désactivé.
Abort.ind	MSAC1S	(aucun)	Arrêt de MSAC1 en raison d'une erreur de séquence ou en raison d'éléments de protocole erronés

9.2.1.3 Paramètres des primitives de MSAC1S

Les paramètres utilisés avec les primitives échangées entre la FSPMS et le MSAC1S sont décrits dans "Définition des services de la FAL" (voir la CEI 61158-5-3). Des paramètres supplémentaires sont décrits dans le Tableau 63.

Tableau 63 – Paramètres utilisés avec les primitives échangées entre le MSAC1S et le MSCY1S

Nom de paramètre	Description
MasterAdd	Ce paramètre achemine l'adresse DL du maître DP assigné.

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9.2.2 Description de diagramme d'états

Après mise sous tension, le MSAC1S attend le lancement au moyen de SInit MS1.

Dans l'état CLOSED, le service Start appelé depuis le MSCY1S est attendu. Puis la protection d'accès pour le SAP 51 (50) est activée au moyen de la fonction RSAP_ACTIVATE.

Lors de la réception de la confirmation, le diagramme d'états entre dans l'état OPEN. Dans cet état, les services Read, Write et Alarm_Ack sont autorisés. Une seule demande provenant du maître DP est traitée simultanément sur chaque SAP. En plus de Read/Write au niveau du SAP 51, un Alarm_Ack peut être exécuté au SAP 50.

Lorsqu'un service valide est invoqué par le maître DP, le MSAC1S indique cette primitive à l'AP-Context (Read/Write ou Alarm_Ack) et attend la réponse. Après réception de la réponse correspondante, le MSAC1S fournit cette PDU avec le tampon de mises à jour de SAP correspondant. Le service est fini après que le maître DP a récupéré la réponse.

Le service local Stop appelé depuis le MSCY1S ferme la connexion. Le SAP 51 (50) est désactivé et une réponse éventuellement stockée dans la DL est supprimée.

L'abandon de la connexion est indiqué au MSCY1S avec le service local Abort. Si l'utilisateur est toujours en train de traiter la réponse alors que la connexion est abandonnée, cette réponse doit être rejetée par l'utilisateur.

Variables locales du MSAC1S

Server_SAP
(Unsigned8)

Ce SAP (51) est utilisé pour les services MSAC1S_Read/_Write et MSAC1S_Alarm_Ack.

Alarm_SAP
(Unsigned8)

Ce SAP (50) est réservé pour les services MSAC1S_Alarm_Ack.

Res_SAP
(Unsigned8)

Variable contenant le SAP pour la réponse MSAC1S_Alarm_Ack.

Service_Header
(Unsigned8)

L'en-tête de service réel du service traité. Utilisé pour vérifier si l'utilisateur génère la réponse correcte.

AA_State
Les services MSAC1S_Alarm_Ack peuvent être exécutés simultanément avec les services MSAC1S_Read / MSAC1S_Write. Ainsi, l'état réel du traitement de MSAC1S_Alarm_Ack est stocké dans la variable AA_State:

Valeurs de l'AA_State:

Idle Aucun MSAC1S_Alarm_Ack en cours

WRes MSAC1S_Alarm_Ack.ind est envoyée au MSAL1S attendant une réponse.

Upd La réponse du MSAL1S est envoyée au tampon de mises à jour (Update-Buffer).

SRes La réponse est stockée – dans l'attente du prochain sondage du maître DP.

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VS_Upd
Indique si une réponse est envoyée à l'Update-Buffer.

9.2.3 Table d'états de MSAC1S

Le Tableau 64 contient la description complète du diagramme d'états MSAC1S.

Tableau 64 – Table d'états de MSAC1S

#	État courant	Événement /Condition =>Action	État suivant
1	POWER-ON	MSAC1S_SInit_MS1.req => Server_SAP:=51 Alarm_SAP:=50 MSAC1S_SInit_MS1.cnf	CLOSED
2	POWER-ON	MSAC1S_Reset.req => MSAC1S_Reset.cnf	POWER-ON
3	POWER-ON	MSAC1S_Alarm_Ack.rsp(+) (Alarm_Type, Slot_Number, Seq_Nr) => MSAC1S_Fault.ind	POWER-ON
4	POWER-ON	MSAC1S_Alarm_Ack.rsp(-) () => MSAC1S_Fault.ind	POWER-ON
5	CLOSED	MSAC1S_Start.req(Master_Add) => DMPMS_RSAP_ACTIVATE.req(SSAP=Server_SAP, Access=Master_Add, L_sdu_length_list=Nil,Indication_Mode=Unchanged)	SET-ACC51
6	CLOSED	MSAC1S_Stop.req => MSAC1S_Stop.cnf	CLOSED
7	SET-ACC51	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status = OK => DMPMS_RSAP_ACTIVATE.req(SSAP=Alarm_SAP, Access=Master_Add, L_sdu_length_list=Nil,Indication_Mode=Unchanged)	SET-ACC50
8	SET-ACC51	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status=NO/IV => MSAC1S_Fault.ind	POWER-ON
9	SET-ACC50	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Alarm_SAP,M_status) /M_status = OK => AA_State:=Idle VS_Upd:=False MSAC1S_Start.cnf	OPEN
10	SET-ACC50	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Alarm_SAP,M_status) /M_status=NO/IV => MSAC1S_Fault.ind	POWER-ON
11	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON
12	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON

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#	État courant	Événement /Condition =>Action	État suivant
13	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Read-REQ-PDU( ) => Service_Header:=Function_Num MSAC1S_Read.ind(Req_Add=Loc_add, Slot_Number,Index,Length)	VS-WRES
14	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Write-REQ-PDU( ) && L_sdu.len >= (Length+4) => Service_Header:=Function_Num MSAC1S_Write.ind(Req_Add=Loc_add, Slot_Number,Index,Length,Data)	VS-WRES
15	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Alarm_Ack-REQ-PDU( ) => AA_State:=WRes Res_SAP:=Server_SAP MSAC1S_Alarm_Ack.ind(Alarm_Type, Slot_Number,Seq_Nr)	AA-WRES
16	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Alarm_Ack-REQ-PDU( ) => AA_State:=WRes Res_SAP:=Alarm_SAP MSAC1S_Alarm_Ack.ind(Alarm_Type, Slot_Number,Seq_Nr)	AA-WRES
17	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /NOT(Read-REQ-PDU( ) || Write-REQ-PDU( ) && (L_sdu.len >= Length+4) || Alarm_Ack-REQ-PDU( )) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
18	OPEN	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /NOT(Alarm_Ack-REQ-PDU( )) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
19	OPEN	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) => MSAC1S_Fault.ind	POWER-ON
20	OPEN	MSAC1S_Read.rsp(+)(Length, Data) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
21	OPEN	MSAC1S_Read.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
22	OPEN	MSAC1S_Write.rsp(+)(Length) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
23	OPEN	MSAC1S_Write.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
24	OPEN	MSAC1S_Alarm_Ack.rsp(+) (Alarm_Type, Slot_Number, Seq_Nr) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51

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#	État courant	Événement /Condition =>Action	État suivant
25	OPEN	MSAC1S_Alarm_Ack.rsp(-) () => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
26	OPEN	MSAC1S_Stop.req => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP)	STOP-DEA51
27	OPEN	MSAC1S_Start.req(Master_Add) => MSAC1S_Fault.ind	POWER-ON
28	OPEN	MSAC1S_SInit_MS1.req => MSAC1S_Fault.ind	POWER-ON
29	OPEN	MSAC1S_Reset.req => MSAC1S_Reset.cnf	POWER-ON
30	VS-WRES	MSAC1S_Read.rsp(+)(Length, Data) /Service_Header=0x5E && Max_DLSDU_Length_Req_Low>=(Length+4) => VS_Upd:=True L_sdu:=Read-RES-PDU DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low,Transmit=Single)	VS-SRES
31	VS-WRES	MSAC1S_Read.rsp(+)(Length, Data) /Service_Header=0x5E && Max_DLSDU_Length_Req_Low<(Length+4) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
32	VS-WRES	MSAC1S_Write.rsp(+)(Length) /Service_Header=0x5F => VS_Upd:=True L_sdu:=Write-RES-PDU DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low,Transmit=Single)	VS-SRES
33	VS-WRES	MSAC1S_Read.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) /Service_Header=0x5E => VS_Upd:=True L_sdu:=Read-NRS-PDU DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low,Transmit=Single)	VS-SRES
34	VS-WRES	MSAC1S_Write.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) /Service_Header=0x5F => VS_Upd:=True L_sdu:=Write-NRS-PDU DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low,Transmit=Single)	VS-SRES
35	VS-WRES	MSAC1S_Read.rsp(+)(Length, Data) /Service_Header<>0x5E => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
36	VS-WRES	MSAC1S_Read.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) /Service_Header<>0x5E => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
37	VS-WRES	MSAC1S_Write.rsp(+)(Length) /Service_Header<>0x5F => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51

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#	État courant	Événement /Condition =>Action	État suivant
38	VS-WRES	MSAC1S_Write.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) /Service_Header<>0x5F => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
39	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON
40	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON
41	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
42	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Alarm_Ack-REQ-PDU( ) && AA_State=Idle => AA_State:=WRes Res_SAP:=Alarm_SAP MSAC1S_Alarm_Ack.ind(Alarm_Type, Slot_Number,Seq_Nr)	VS-WRES
43	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && L_sdu.len=0 && AA_State=SRes => AA_State:=Idle	VS-WRES
44	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /NOT((Alarm_Ack-REQ-PDU( ) && AA_State=Idle) || (Update_status=LO && L_sdu.len=0 && AA_State=SRes)) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
45	VS-WRES	MSAC1S_Start.req(Master_Add) => MSAC1S_Fault.ind	POWER-ON
46	VS-WRES	MSAC1S_Stop.req => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP)	STOP-DEA51
47	VS-WRES	MSAC1S_Alarm_Ack.rsp(+) (Alarm_Type, Slot_Number, Seq_Nr) /AA_State<>WRes => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
48	VS-WRES	MSAC1S_Alarm_Ack.rsp(-) () /AA_State<>WRes => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
49	VS-WRES	MSAC1S_Alarm_Ack.rsp(+) (Alarm_Type, Slot_Number, Seq_Nr) /AA_State=WRes => AA_State:=Upd DMPMS_REPLY_UPDATE.req(SSAP=Res_SAP, L_sdu=Alarm_Ack-RES-PDU, Serv_class=Low,Transmit=Single)	VS-WRES

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#	État courant	Événement /Condition =>Action	État suivant
50	VS-WRES	MSAC1S_Alarm_Ack.rsp(-) () /AA_State=WRes => AA_State:=Upd DMPMS_REPLY_UPDATE.req(SSAP=Res_SAP, L_sdu=Alarm_Ack-NRS-PDU, Serv_class=Low,Transmit=Single)	VS-WRES
51	VS-WRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Alarm_SAP,Serv_class,L_status) /L-status=OK && AA_State=Upd => AA_State:=SRes	VS-WRES
52	VS-WRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Alarm_SAP,Serv_class,L_status) /L-status=OK && AA_State<>Upd => MSAC1S_Fault.ind	POWER-ON
53	VS-WRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) /L_status=LS/IV/LR => MSAC1S_Fault.ind	POWER-ON
54	VS-WRES	MSAC1S_SInit_MS1.req => MSAC1S_Fault.ind	POWER-ON
55	VS-WRES	MSAC1S_Reset.req => MSAC1S_Reset.cnf	POWER-ON
56	VS-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) /L-status=OK && VS_Upd=True => VS_Upd:=False	VS-SRES
57	VS-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) /L_status=LS/IV/LR => MSAC1S_Fault.ind	POWER-ON
58	VS-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) /L-status=OK && VS_Upd=False => MSAC1S_Fault.ind	POWER-ON
59	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON
60	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON
61	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && L_sdu.len=0 && AA_State=Idle&& VS_Upd=False	OPEN
62	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && L_sdu.len=0 && AA_State=WRes && VS_Upd=False	AA-WRES
63	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && L_sdu.len=0 && (AA_State=SRes|| AA_State=Upd) && VS_Upd=False	AA-SRES
64	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && VS_Upd=True => MSAC1S_Fault.ind	POWER-ON

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#	État courant	Événement /Condition =>Action	État suivant
65	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len<>0 => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
66	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Alarm_Ack-REQ-PDU( ) && AA_State=Idle => AA_State:=WRes Res_SAP:=Alarm_SAP MSAC1S_Alarm_Ack.ind(Alarm_Type, Slot_Number,Seq_Nr)	VS-SRES
67	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && L_sdu.len=0 && AA_State=SRes => AA_State:=Idle	VS-SRES
68	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /NOT((Alarm_Ack-REQ-PDU( ) && AA_State=Idle) || (Update_status=LO && L_sdu.len=0 && AA_State=SRes)) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
69	VS-SRES	MSAC1S_Start.req(Master_Add) => MSAC1S_Fault.ind	POWER-ON
70	VS-SRES	MSAC1S_Stop.req => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP)	STOP-DEA51
71	VS-SRES	MSAC1S_Read.rsp(+)(Length, Data) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
72	VS-SRES	MSAC1S_Read.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
73	VS-SRES	MSAC1S_Write.rsp(+)(Length) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
74	VS-SRES	MSAC1S_Write.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
75	VS-SRES	MSAC1S_Alarm_Ack.rsp(+) (Alarm_Type, Slot_Number, Seq_Nr) /AA_State<>WRes => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
76	VS-SRES	MSAC1S_Alarm_Ack.rsp(-) () /AA_State<>WRes => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
77	VS-SRES	MSAC1S_Alarm_Ack.rsp(+) (Alarm_Type, Slot_Number, Seq_Nr) /AA_State=WRes => AA_State:=Upd DMPMS_REPLY_UPDATE.req(SSAP=Res_SAP, L_sdu=Alarm_Ack-RES-PDU, Serv_class=Low,Transmit=Single)	VS-SRES

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#	État courant	Événement /Condition =>Action	État suivant
78	VS-SRES	MSAC1S_Alarm_Ack.rsp(-) () /AA_State=WRes => AA_State:=Upd DMPMS_REPLY_UPDATE.req(SSAP=Res_SAP, L_sdu=Alarm_Ack-NRS-PDU, Serv_class=Low,Transmit=Single)	VS-SRES
79	VS-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Alarm_SAP,Serv_class,L_status) /L-status=OK && AA_State=Upd => AA_State:=SRes	VS-SRES
80	VS-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Alarm_SAP,Serv_class,L_status) /L-status=OK && AA_State<>Upd => MSAC1S_Fault.ind	POWER-ON
81	VS-SRES	MSAC1S_SInit_MS1.req => MSAC1S_Fault.ind	POWER-ON
82	VS-SRES	MSAC1S_Reset.req => MSAC1S_Reset.cnf	POWER-ON
83	AA-WRES	MSAC1S_Alarm_Ack.rsp(+) (Alarm_Type, Slot_Number, Seq_Nr) => AA_State:=Upd L_sdu:=Alarm_Ack-RES-PDU DMPMS_REPLY_UPDATE.req(SSAP=Res_SAP, L_sdu, Serv_class=Low,Transmit=Single)	AA-SRES
84	AA-WRES	MSAC1S_Alarm_Ack.rsp(-) () => AA_State:=Upd L_sdu:=Alarm_Ack-NRS-PDU DMPMS_REPLY_UPDATE.req(SSAP=Res_SAP, L_sdu, Serv_class=Low,Transmit=Single)	AA-SRES
85	AA-WRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) => MSAC1S_Fault.ind	POWER-ON
86	AA-WRES	MSAC1S_Read.rsp(+)(Length, Data) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
87	AA-WRES	MSAC1S_Read.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
88	AA-WRES	MSAC1S_Write.rsp(+)(Length) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
89	AA-WRES	MSAC1S_Write.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
90	AA-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON
91	AA-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON

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#	État courant	Événement /Condition =>Action	État suivant
92	AA-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
93	AA-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Read-REQ-PDU( ) && Res_SAP=Alarm_SAP => Service_Header:=Function_Num MSAC1S_Read.ind(Req_Add=Loc_add, Slot_Number,Index,Length)	VS-WRES
94	AA-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Write-REQ-PDU( ) && Res_SAP=Alarm_SAP => Service_Header:=Function_Num MSAC1S_Write.ind(Req_Add=Loc_add, Slot_Number,Index,Length,Data)	VS-WRES
95	AA-WRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /NOT(Write-REQ-PDU( ) || Read-REQ-PDU( )) || Res_SAP=Server_SAP => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
96	AA-WRES	MSAC1S_Start.req(Master_Add) => MSAC1S_Fault.ind	POWER-ON
97	AA-WRES	MSAC1S_Stop.req => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP)	STOP-DEA51
98	AA-WRES	MSAC1S_Reset.req => MSAC1S_Reset.cnf	POWER-ON
99	AA-WRES	MSAC1S_SInit_MS1.req => MSAC1S_Fault.ind	POWER-ON
100	AA-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Alarm_SAP,Serv_class,L_status) /L-status=OK && AA_State=Upd && Res_SAP=Alarm_SAP => AA_State:=SRes	AA-SRES
101	AA-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) /L_status=LS/IV/LR => MSAC1S_Fault.ind	POWER-ON
102	AA-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Alarm_SAP,Serv_class,L_status) /L-status=OK &&(AA_State<>Upd || Res_SAP<>Alarm_SAP) => MSAC1S_Fault.ind	POWER-ON
103	AA-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) /L-status=OK && AA_State=Upd && Res_SAP=Server_SAP => AA_State:=SRes	AA-SRES
104	AA-SRES	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP,Serv_class,L_status) /L-status=OK && (AA_State<>Upd || Res_SAP<>Server_SAP) => MSAC1S_Fault.ind	POWER-ON
105	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON

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#	État courant	Événement /Condition =>Action	État suivant
106	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 && Update_status=NO => MSAC1S_Fault.ind	POWER-ON
107	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && L_sdu.len=0 && AA_State=SRes => AA_State:=Idle	OPEN
108	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Alarm_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /(Update_status<>LO || AA_State<>SRes) && Res_SAP=Alarm_SAP => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
109	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && L_sdu.len=0 && AA_State=SRes => AA_State:=Idle	OPEN
110	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /(Update_status<>LO || L_sdu.len<>0 || AA_State<>SRes) && Res_SAP=Server => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
111	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Read-REQ-PDU( ) && RES_SAP=ALARM_SAP => Service_Header:=Function_Num MSAC1S_Read.ind(Req_Add=Loc_add, Slot_Number,Index,Length)	VS-WRES
112	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Write-REQ-PDU( ) && RES_SAP=ALARM_SAP => Service_Header:=Function_Num MSAC1S_Write.ind(Req_Add=Loc_add, Slot_Number,Index,Length,Data)	VS-WRES
113	AA-SRES	DMPMS_DATA_REPLY.ind(SSAP,DSAP=Server_SAP,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /NOT(Write-REQ-PDU( ) || Read-REQ-PDU( )) && RES_SAP=ALARM_SAP => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
114	AA-SRES	MSAC1S_Start.req(Master_Add) => MSAC1S_Fault.ind	POWER-ON
115	AA-SRES	MSAC1S_Stop.req => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP)	STOP-DEA51
116	AA-SRES	MSAC1S_Read.rsp(+)(Length, Data) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
117	AA-SRES	MSAC1S_Read.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
118	AA-SRES	MSAC1S_Write.rsp(+)(Length) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51

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#	État courant	Événement /Condition =>Action	État suivant
119	AA-SRES	MSAC1S_Write.rsp(-)(Error_Decode, Error_Code_1, Error_Code_2) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
120	AA-SRES	MSAC1S_Alarm_Ack.rsp (Alarm_Type, Slot_Number, Seq_Nr) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
121	AA-SRES	MSAC1S_Alarm_Ack.rsp (Alarm_Type, Slot_Number, Seq_Nr) => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC1S_Abort.ind	ERR-DEA51
122	AA-SRES	MSAC1S_SInit_MS1.req => MSAC1S_Fault.ind	POWER-ON
123	AA-SRES	MSAC1S_Reset.req => MSAC1S_Reset.cnf	POWER-ON
124	STOP-DEA51	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status = OK => DMPMS_SAP_DEACTIVATE.req(SSAP=Alarm_SAP)	STOP-DEA50
125	STOP-DEA51	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status=NO/IV => MSAC1S_Fault.ind	POWER-ON
126	STOP-DEA50	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Alarm_SAP,M_status) /M_status = OK => MSAC1S_Stop.cnf	CLOSED
127	STOP-DEA50	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Alarm_SAP,M_status) /M_status=NO/IV => MSAC1S_Fault.ind	POWER-ON
128	ERR-DEA51	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status = OK => DMPMS_SAP_DEACTIVATE.req(SSAP=Alarm_SAP)	ERR-DEA50
129	ERR-DEA51	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status=NO/IV => MSAC1S_Fault.ind	POWER-ON
130	ERR-DEA50	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Alarm_SAP,M_status) /M_status = OK	CLOSED
131	ERR-DEA50	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Alarm_SAP,M_status) /M_status=NO/IV => MSAC1S_Fault.ind	POWER-ON

9.2.4 Fonctions

Le Tableau 65 contient les fonctions utilisées par le MSAC1S, leurs arguments et leurs descriptions.

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Tableau 65 – Fonctions utilisées par le MSAC1S

Nom de fonction	Description
Read-REQ-PDU ( )	Cette fonction retourne TRUE si la L_sdu correspondante est une Read-REQ-PDU valide. (L_sdu.len >= 4 && L_sdu[1] = 0x5E)
Write-REQ-PDU ( )	Cette fonction retourne TRUE si la L_sdu correspondante est une Write-REQ-PDU valide. (L_sdu.len >= 4 && L_sdu[1] = 0x5F)
Alarm_Ack-REQ-PDU ( )	Cette fonction retourne TRUE si la L_sdu correspondante est une Alarm_Ack-REQ-PDU valide. (L_sdu.len >= 4 && L_sdu[1] = 0x5C)

9.3 SSCY1S

9.3.1 Définitions des primitives

9.3.1.1 Primitives échangées entre SSCY1S et FSPMS

Le Tableau 66 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMS et reçues par le SSCY1S.

Tableau 66 – Primitives émises par la FSPMS vers le SSCY1S

Nom de primitive	Source	Paramètres associés	Fonctions
Get Publisher Data.req	FSPMS	Rem_Add	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Start Subscriber.req	FSPMS	Rem_Add	
Stop Subscriber.req	FSPMS	Rem_Add	

Le Tableau 67 montre les primitives de service, y compris leurs paramètres associés, émises par le SSCY1S et reçues par la FSPMS.

Tableau 67 – Primitives émises par le SSCY1S vers la FSPMS

Nom de primitive	Source	Paramètres associés	Fonctions
Get Publisher Data.cnf(+)	SSCY1S	Rem_Add, Data, New Flag	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Get Publisher Data.cnf(-)	SSCY1S	Rem_Add	
Start Subscriber.cnf(+)	SSCY1S	Rem_Add	
Start Subscriber.cnf(-)	SSCY1S	Rem_Add	
Stop Subscriber.cnf(+)	SSCY1S	Rem_Add	
Stop Subscriber.cnf(-)	SSCY1S	Rem_Add	
New Publisher Data.ind	SSCY1S	Rem_Add	
Publisher Active.ind	SSCY1S	Rem_Add, Status	

9.3.1.2 Paramètre des primitives de SSCY1S

Les paramètres utilisés avec les primitives échangées entre la FSPMS et le SSCY1S sont décrits dans "Définition des services de la FAL" (voir la CEI 61158-5-3).

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9.3.2 Description de diagramme d'états

Après mise sous tension, le SSCY1S attend le lancement au moyen de DMPMS DX Entered.ind avec le Status TRUE. Il indique que le MSCY1S est ouvert pour l'échange de données par le maître DP associé.

Dans le service W-START, le service Start Subscriber appelé depuis la FSPMS est attendu. Lors de la réception de cet événement, la transition initialise toutes les variables locales et entre dans l'état RUN. De surcroît, le temporisateur de surveillance local avec la valeur WD (MSCY1S) est démarré.

Lors de la réception d'une DMPMS DX Broadcast.ind avec des données d'éditeur dans l'état OPEN, les données échantillons conformes au tableau de filtrage sont stockées. De surcroît, les fanions locaux New Data et New Stat sont mis à TRUE et une nouvelle Publisher Data.ind est émise vers la FSPMS. L'application récupère les données échantillons avec la primitive de service "request" Get Publisher Data.

Lorsque le temporisateur de surveillance expire, le statut est vérifié et le temporisateur est redémarré. Si le statut courant (New Stat) diffère du statut (Status) du dernier intervalle, le changement est indiqué à l'application au moyen de la primitive de service "indication" Publisher Active. Par conséquent, chaque changement de statut de "active" à "passive" est rapporté à l'application. L'application peut arrêter la procédure d'abonnement en envoyant une demande de service Stop Subscriber qui remet le diagramme d'états à W-START.

Dans tous les cas, lorsqu'une DMPMS DX Entered .ind avec statut FALSE (MSCY1S quitte l'échange de données) est invoquée, le diagramme d'états est remis à POWER ON.

Variables locales du SSCY1S

Status
(Boolean)

Cette variable locale est TRUE si l'éditeur était actif au cours de la dernière période WD. Cela signifie que le mode échange de donnée était engagé, l'abonné avait démarré et au moins une DXB avait été reçue au cours du précédent intervalle WD. Autrement, elle est FALSE.

New_Stat
(Boolean)

Cette variable locale est TRUE si l'éditeur est actif. Cela signifie que le mode échange de donnée est engagé, l'abonné a démarré et au moins une DXB a été reçue au cours du l'intervalle WD courant. Autrement, elle est FALSE.

New Data
(Boolean)

Cette variable est TRUE si de nouvelles données sont arrivées et ne sont pas récupérées par la primitive de service Get Publisher Data. Autrement, elle est FALSE.

Sample Data
(Octet-String)

Le tampon de données pour les données d'éditeur.

9.3.3 Table d'états de SSCY1S

Le Tableau 68 contient la description complète du diagramme d'états SSCY1S.

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Tableau 68 – Table d'états de SSCY1S

#	État courant	Événement /Condition =>Action	État suivant
1	POWER-ON	SSCY1S_Start_Subscriber.req (Rem_Add) => SSCY1S_Start_Subscriber.cnf (-) (Rem_Add)	POWER-ON
2	POWER-ON	SSCY1S_Stop_Subscriber.req (Rem_Add) => SSCY1S_Stop_Subscriber.cnf (-) (Rem_Add)	POWER-ON
3	POWER-ON	SSCY1S_Get_Publisher_Data.req (Rem_Add) => SSCY1S_Get_Publisher_Data.cnf (-) (Rem_Add)	POWER-ON
4	POWER-ON	DMPMS_DX_Broadcast.ind (Rem_Add, Data) => ignore	POWER-ON
5	POWER-ON	DMPMS_DX_Entered.ind (Rem_Add, Status) /Status =>	W-START
6	W-START	SSCY1S_Start_Subscriber.req (Rem_Add) => SET_WD, New_Stat := FALSE New_Data := FALSE, Sample_Data := 0 SSCY1S_Start_Subscriber.cnf (+) (Rem_Add)	RUN
7	W-START	SSCY1S_Stop_Subscriber.req (Rem_Add) => SSCY1S_Stop_Subscriber.cnf (-) (Rem_Add)	W-START
8	W-START	SSCY1S_Get_Publisher_Data.req (Rem_Add) => SSCY1S_Get_Publisher_Data.cnf (-) (Rem_Add)	W-START
9	W-START	DMPMS_DX_Broadcast.ind (Rem_Add, Data) => ignore	W-START
10	RUN	SSCY1S_Start_Subscriber.req (Rem_Add) => SSCY1S_Start_Subscriber.cnf (-) (Rem_Add)	RUN
11	RUN	SSCY1S_Stop_Subscriber.req (Rem_Add) => StopTimer(WD) SSCY1S_Stop_Subscriber.cnf (+) (Rem_Add)	W-START
12	RUN	SSCY1S_Get_Publisher_Data.req (Rem_Add) => Data := Sample_Data, New_Flag := New_Data, New_Data := FALSE SSCY1S_Get_Publisher_Data.cnf (+) (Rem_Add, Data, New_Flag)	RUN
13	RUN	DMPMS_DX_Broadcast.ind (Rem_Add, Data) => New_Stat := TRUE, New_Data := TRUE, Sample_Data := Filter (Data) SSCY1S_New_Publisher_Data.ind (Rem_Add)	RUN
14	RUN	WDTimer expired /New_Stat => TRIG_WD, New_Stat := FALSE SSCY1S_Publisher_Active.ind (Rem_Add, Status)	RUN

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#	État courant	Événement /Condition =>Action	État suivant
15	RUN	WDTimer expired /!New_Stat => TRIG_WD, New_Stat := FALSE	RUN
16	any	DMPMS_DX_Entered.ind (Rem_Add, Status) /!Status => StopTimer(WD), Publisher Address := 127, Status := FALSE, New_Stat := FALSE SSCY1S_Publisher_Active.ind (Rem_Add, Status)	POWER-ON

9.3.4 Fonctions

Le Tableau 69 contient les fonctions utilisées par le SSCY1S, leurs arguments et leurs descriptions.

Tableau 69 – Fonctions utilisées par le SSCY1S

Nom de fonction	Description
Filter(Data)	Cette fonction retourne des données échantillons (Octet-String) extraites à partir de Data conformément au décalage et à la longueur contenus dans les attributs de liaison DXB.

SET_WD	if (WD Enabled = TRUE)
	  StartTimer (WD)
	else
	  StopTimer (WD)

TRIG_WD	if (WD Enabled = TRUE) StartTimer (WD)

9.4 MSRM2S

9.4.1 Définitions des primitives

9.4.1.1 Primitives échangées entre MSRM2S et FSPMS

Le Tableau 70 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMS et reçues par le MSRM2S.

Tableau 70 – Primitives émises par la FSPMS vers le MSRM2S

Nom de primitive	Source	Paramètres associés	Fonctions
SInit MS2.req	FSPMS	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.req	FSPMS	(aucun)	

Le Tableau 71 montre les primitives de service, y compris leurs paramètres associés, émises par le MSRM2S et reçues par la FSPMS.

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Tableau 71 – Primitives émises par le MSRM2S vers la FSPMS

Nom de primitive	Source	Paramètres associés	Fonctions
SInit MS2.cnf	MSRM2S	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.cnf	MSRM2S	(aucun)	
Fault.ind	MSRM2S	(aucun)	

9.4.1.2 Paramètre des primitives de MSRM2S

Aucun paramètre n'est associé aux primitives.

9.4.2 Description de diagramme d'états

Pour la communication acyclique, les DSAP sont alloués de manière dynamique par le dit Resource Manager (RM, gestionnaire de ressources) de l'esclave DP.

Le Resource Manager (RM "Gestionnaire de ressources") coordonne les ressources de communication pour l'AR MS2 de l'esclave DP. Les principales caractéristiques du RM sont décrites dans la séquence suivante (voir Figure 22).

– Le maître DP demande une connexion de communication au moyen du service Initiate (DSAP 49). Si plusieurs processus application sont utilisés dans l'esclave DP, ces processus application peuvent être adressés par le biais d'un Application Process Identifier (API "Identificateur de processus application").

– Le RM de l'esclave DP fournit un SAP non utilisé (SAP 0 à 48). Les SAP possibles sont définis localement dans la Res_SAP_List.

– Le RM répond immédiatement à l'Initiate.req par la RM_REQ-PDU contenant le SAP non utilisé correspondant.

– Les étapes ultérieures suivant l'Initiate.req (Initiate.res, Read, Write, Abort) sont gérées par le diagramme d'états MSAC2S correspondant.

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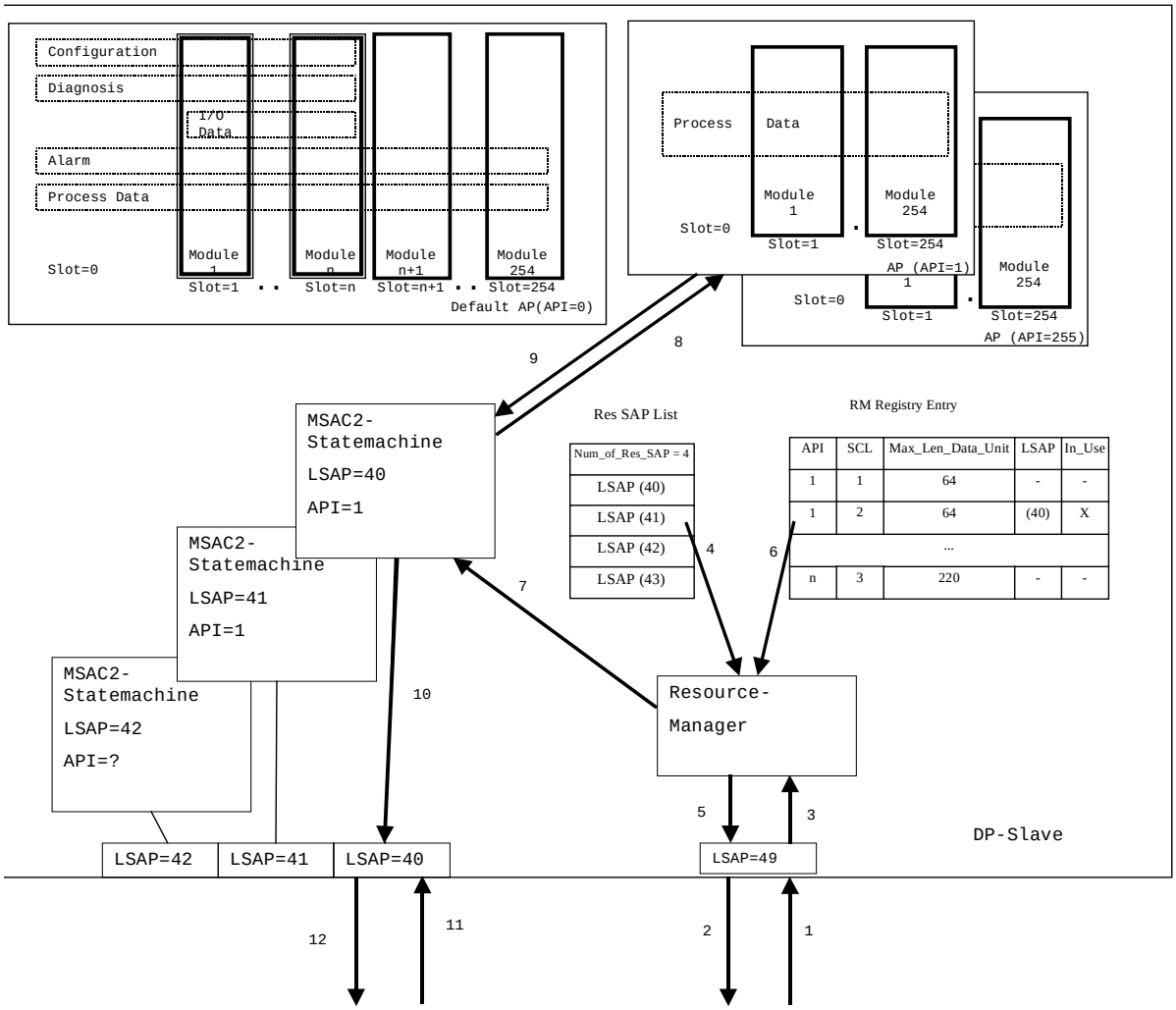

1 Initiate-REQ-PDU (DSAP=49)

2 RM-REQ-PDU (Server_SAP=next SAP not In_Use)

3 Initiate-REQ-PDU

4 Recherche du prochain SAP not In_Use

5 Reply_Update.req(L_sdu=RM-REQ-PDU avec next SAP not In_Use)

6 Vérification de RM_Registry_Entry pour l'API, In_Use=FALSE

7 MSAC2S_Initiate.req (Server_SAP=40)

8 MSAC2S_Initiate.ind (Server_SAP=40)

9 MSAC2S_Initiate.res (Server_SAP=40)

10 Reply_Update.req(L_sdu=Initiate-RES-PDU)

11 Interrogation avec (L_sdu.len=0)

12 Initiate-RES-PDU

Légende

Anglais	Français
Configuration	Configuration
Diagnosis	Diagnostic
Alarm	Alarme
Process Data	Données de processus
I/O Data	Données d'E-S
Slot	Position

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Anglais	Français
Default AP	Programme d'application par défaut
MSAC2 Statemachine	Diagramme d'états MSAC2
Resource Manager	Gestionnaire de ressources
DP slave	Esclave DP

Figure 22 – Exemple de l'établissement d'une connexion sur MS2 (côté serveur)

Le Resource Manager a la responsabilité de l'allocation des SAP aux demandes entrantes pour une communication AR MS2.

Si un Res_SAP est disponible lorsqu'une Initiate-REQ-PDU est reçue sur le RM_SAP, l'Esclave répond par une RM-REQ-PDU.

La seule PDU qui est acceptée est une Initiate-REQ-PDU. Le Resource Manager recherche un API/SCL non utilisé dans le RM_Registry et transmet l'Initiate-PDU avec un Initiate à un diagramme d'états MSAC2S.

Si aucune des entrées dans le RM_Registry n'est adaptée à l'API/SCL demandé, le dernier SAP envoyé dans la RM-REQ-PDU est temporairement utilisé pour envoyer une Abort-REQ-PDU au Maître.

Si aucun Res_SAP n'est disponible, le RM_SAP est désactivé.

Si un diagramme d'états MSAC2S indique par une Abort.req qu'une connexion a été fermée, l'entrée correspondante dans le RM_Registry est marquée comme non utilisée et le DLSAP correspondant est libéré et peut être utilisé pour des demandes ultérieures.

Variables locales du MSRM2S

Liste des entrées RM

La Figure 23 montre la structure d'entrées RM telles qu'elles sont énumérées dans le RM_Registry.

static	**part**		**dynamic**	**part**
API	SCL	Max_Len_Data_Unit	SAP	In_Use

Légende

Anglais	Français
Static Part	Composant statique
Dynamic part	Composant dynamique

Figure 23 – Structure des entrées RM dans le RM_Registry

Liste des SSAP

SSAP_Entry
(Unsigned8)

0 à 48

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Stored_Req_Add,
Stored_Send_Timeout,
Stored_Features_Supported,
Stored_Profile_Features_Supported,
Stored_Profile_Ident_Number,
Stored_Add_Addr_Param
Stockage de valeurs de la dernière fonction Initiate (voir la partie DP-Services).

RM_SAP
(constant)

Mis à 49

Last_SAP
(Unsigned8)

0 à 48

SAP pour une précédente connexion établie.

Server_SAP
(Unsigned8)

0 à 48

SAP qui est alloué à la prochaine connexion.

Macros

INITIATE-REQ-PDU-LEN
(

48 {64 pour appareil de liaison}

)

RMREQ-PDU-LEN
(

4

)

9.4.3 Table d'états de MSRM2S

Le Tableau 72 contient la description complète du diagramme d'états MSRM2S.

Tableau 72 – Table d'états de MSRM2S

#	État courant	Événement /Condition =>Action	État suivant
1	POWER-ON	MSRM2S_SInit.req =>RM_SAP:=49 Res_SAP_entry_Index:=1 Server_SAP:=Get_from_List_of_SSAPs() DMPMS_RSAP_ACTIVATE.req(SSAP=RM_SAP, Access=All, L_sdu_length_list=(<INITIATE-REQ-PDU-LEN>,0,<RMREQ-PDU-LEN>,0) Indication_Mode=Data)	WAIT-ACT

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#	État courant	Événement /Condition =>Action	État suivant
2	WAIT-ACT	DMPMS_RSAP_ACTIVATE.cnf(SSAP,M_status) /M_status=OK =>RM_SAP:=49 Res_SAP_entry_Index:=1 Server_SAP:=Get_from_List_of_SSAPs() DMPMS_REPLY_UPDATE.req(SSAP=RM_SAP, L_sdu=RM-REQ-PDU, Serv_class=Low, Transmit=Single)	INIT-WUPD
3	WAIT-ACT	DMPMS_RSAP_ACTIVATE.cnf(SSAP,M_status) /M_status=NO/IV =>MSRM2S_Fault.ind	POWER-ON
4	INIT-WUPD	DMPMS_REPLY_UPDATE.cnf (SSAP=RM_SAP, Serv_class=Low, L_status) /L_status=OK =>MSRM2S_SInit.cnf	OPEN
5	INIT-WUPD	DMPMS_REPLY_UPDATE.cnf (SSAP=RM_SAP, Serv_class=Low, L_status) /L_status= LS/IV/LR =>MSRM2S_Fault.ind	POWER-ON
6	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=RM_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu=Initiate-REQ-PDU && List_of_SSAPs<>empty =>Last_SAP := Server_SAP Stored_Req_Add:=Loc_add, Stored_Send_Timeout:= Send_Timeout Stored_Features_Supported:=Features_Supported Stored_Profile_Features_Supported:= Profile_Features_Supported Stored_Profile_Ident_Number:=Profile_Ident_Number Stored_Add_Addr_Param:= Add_Addr_Param Server_SAP:=Get_from_List_of_SSAPs() DMPMS_REPLY_UPDATE.req(SSAP=RM_SAP, L_sdu=RM-REQ-PDU, Serv_class=Low, Transmit=Single)	OW-UPDATE
7	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=RM_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu=Initiate-REQ-PDU && List_of_SSAPs=empty =>Stored_Req_Add:=Loc_add, Stored_Send_Timeout:= Send_Timeout Stored_Features_Supported:=Features_Supported Stored_Profile_Features_Supported:= Profile_Features_Supported Stored_Profile_Ident_Number:=Profile_Ident_Number Stored_Add_Addr_Param:= Add_Addr_Param DMPMS_SAP_DEACTIVATE.req(SSAP=RM_SAP)	OW-DEACT
8	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=RM_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && (L_sdu<>Initiate-REQ-PDU) =>ignore Lsdu DMPMS_REPLY_UPDATE.req(SSAP=RM_SAP, L_sdu=RM-REQ-PDU, Serv_class=Low, Transmit=Single)	INIT-WUPD
9	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=RM_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=NO =>ignore Lsdu	OPEN
10	OPEN	MSRM2S_Reset.req =>for (all CRL entries with AR-Type=MS2) MSAC2S_Reset.req(Res_SAP=SSAP) endfor	RESET-AC2
11	OPEN	MSAC2S_Closed.ind(Res_SAP) =>Index := Search_in_List_of_RM_Entries(SAP:=Res_SAP, In_Use:=True)	AW-SEARCH
12	AW-SEARCH	/Index <> 0 =>List_of_RM_Entries.In_Use[Index]:=False Put_to_List_of_SSAPs(Stored_Res_SAP)	OPEN
13	AW-SEARCH	/Index = 0 =>MSRM2S_Fault.ind	POWER-ON

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#	État courant	Événement /Condition =>Action	État suivant
14	OW-UPDATE	DMPMS_REPLY_UPDATE.cnf (SSAP=RM_SAP, Serv_class=Low, L_status) /L_status=OK =>Index := Search_in_List_of_RM_Entries(API:=Add_Addr_Param.D_Addr.API, SCL:= Add_Addr_Param.D_Addr.SCL, In_Use:=False)	OW-SEARCH
15	OW-UPDATE	DMPMS_REPLY_UPDATE.cnf (SSAP=RM_SAP, Serv_class=Low, L_status) /L_status= LS/IV/LR =>MSRM2S_Fault.ind	POWER-ON
16	OW-SEARCH	/Index <> 0 =>List_of_RM_Entries.In_Use[Index]:=True List_of_RM_Entries.SAP[Index]:=Last_SAP Max_Len_Data_Unit:=List_of_RM_Entries.Max_Len_Data_Unit[Index] Send_Timeout:=Max(Stored_Send_Timeout, Stored_Min_Send_Timeout) MSAC2S_Initiate.req(Res_SAP=Last_SAP, Req_Add=Stored_Req_Add, Max_Len_Data_Unit, Send_Timeout, Features_Supported= Stored_Features_Supported, Profile_Features_Supported= Stored_Profile_Features_Supported, Profile_Ident_Number= Stored_Profile_Ident_Number, Add_Addr_Param= Stored_Add_Addr_Param)	OPEN
17	OW-SEARCH	/Index= 0 =>Send_Timeout:=Max(Stored_Send_Timeout, Stored_Min_Send_Timeout) MSAC2S_Abort.req(Res_SAP=Last_SAP, Req_Add, Subnet=NO, Instance=MSAC2, Reason_Code=ABT_IA, Send_Timeout)	OPEN
18	OW-DEACT	DMPMS_SAP_DEACTIVATE.cnf(SSAP,M_status) /M_status=OK =>Index := Search_in_List_of_RM_Entries(API:=Add_Addr_Param.D_Addr.API, SCL:= Add_Addr_Param.D_Addr.SCL, In_Use:=False)	CW-SEARCH
19	OW-DEACT	DMPMS_SAP_DEACTIVATE.cnf(SSAP,M_status) /M_status=NO/IV =>MSRM2S_Fault.ind	POWER-ON
20	CW-SEARCH	/Index <> 0 =>List_of_RM_Entries.In_Use[Index]:=True List_of_RM_Entries.SAP[Index]:=Last_SAP Max_Len_Data_Unit:=List_of_RM_Entries.Max_Len_Data_Unit[Index] Send_Timeout:=Max(Stored_Send_Timeout, Stored_Min_Send_Timeout) MSAC2S_Initiate.req(Res_SAP=Last_SAP, Req_Add=Stored_Req_Add, Max_Len_Data_Unit, Send_Timeout, Features_Supported= Stored_Features_Supported, Profile_Features_Supported= Stored_Profile_Features_Supported, Profile_Ident_Number= Stored_Profile_Ident_Number, Add_Addr_Param= Stored_Add_Addr_Param)	CLOSED
21	CW-SEARCH	/Index = 0 =>Send_Timeout:=Max(Stored_Send_Timeout, Stored_Min_Send_Timeout) MSAC2S_Abort.req(Res_SAP=Last_SAP, Req_Add, Subnet=NO, Instance=MSAC2, Reason_Code=ABT_IA, Send_Timeout)	CLOSED
22	CLOSED	MSRM2S_Reset.req =>for (all CRL entries with AR-Type=MS2) MSAC2S_Reset.req(Res_SAP=SSAP) endfor	RESET-AC2
23	CLOSED	MSAC2S_Closed.ind(Res_SAP) =>Stored_Res_SAP:=Res_SAP Index := Search_in_List_of_RM_Entries(SAP:=Res_SAP, In_Use:=True)	REOW-SEARCH
24	REOW-SEARCH	/Index <> 0 =>List_of_RM_Entries.In_Use[Index]:=False Put_to_List_of_SSAPs(Stored_Res_SAP)	WAIT-ACT
25	REOW-SEARCH	/Index = 0 =>MSRM2S_Fault.ind	POWER-ON
26	RESET-AC2	for (all CRL entries with AR-Type=MS2) MSAC2S_Reset.cnf(Res_SAP=SSAP) endfor /M_status=OK =>MSRM2S_Reset.cnf	POWER-ON

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#	État courant	Événement /Condition =>Action	État suivant
27	ANY-STATE	MSAC2S_Fault.ind(Res_SAP) =>MSRM2S_Fault.ind	POWER-ON
28	ANY-STATE	unexpected DL reaction =>MSRM2S_Fault.ind	POWER-ON

9.5 MSAC2S

9.5.1 Définitions des primitives

9.5.1.1 Primitives échangées entre MSAC2S et FSPMS

Le Tableau 73 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMS et reçues par le MSAC2S.

Tableau 73 – Primitives émises par la FSPMS vers le MSAC2S

Nom de primitive	Source	Paramètres associés	Fonctions
Initiate.rsp(+)	FSPMS	Res SAP, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Initiate.rsp(-)	FSPMS	Res SAP, Error Decode, Error Code 1 Error Code 2	
Read.rsp(+)	FSPMS	Res SAP, Length, Data	
Read.rsp(-)	FSPMS	Res SAP, Error Decode, Error Code 1 Error Code 2	
Write.rsp(+)	FSPMS	Res SAP, Length	
Write.rsp(-)	FSPMS	Res SAP, Error Decode, Error Code 1 Error Code 2	
Data Transport.rsp(+)	FSPMS	Res SAP, Length, Data	
Data Transport.rsp(-)	FSPMS	Res SAP, Error Decode, Error Code 1 Error Code 2	
Abort.req	FSPMS	Res SAP, Subnet, Instance, Reason Code	

Le Tableau 74 montre les primitives de service, y compris leurs paramètres associés, émises par le MSAC2S et reçues par la FSPMS.

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Tableau 74 – Primitives émises par le MSAC2S vers la FSPMS

Nom de primitive	Source	Paramètres associés	Fonctions
Initiate.ind	MSAC2S	Res SAP, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Abort.ind	MSAC2S	Res SAP, Locally Generated, Subnet, Instance, Reason Code, Additional Detail	
Read.ind	MSAC2S	Res SAP, Slot Number, Index, Length	
Write.ind	MSAC2S	Res SAP, Slot Number, Index, Length, Data	
Data Transport.ind	MSAC2S	Res SAP, Slot Number, Index, Length, Data	

9.5.1.2 Primitives échangées entre MSAC2S et MSRM2S

Le Tableau 75 montre les primitives de service, y compris leurs paramètres associés, émises par le MSAC2S et reçues par le MSRM2S.

Tableau 75 – Primitives émises par le MSRM2S vers le MSAC2S

Nom de primitive	Source	Paramètres associés	Fonctions
Reset.req	MSRM2S	Res SAP	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Initiate.req	MSRM2S	Res SAP, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	
RM2_Abort.req	MSRM2S	Res SAP, Subnet, Instance, Reason Code	

Le Tableau 76 montre les primitives de service, y compris leurs paramètres associés, émises par le MSAC2S et reçues par le MSRM2S.

Tableau 76 – Primitives émises par le MSAC2S vers le MSRM2S

Nom de primitive	Source	Paramètres associés	Fonctions
Reset.cnf	MSAC2S	Res SAP	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Fault.ind	MSAC2S	Res SAP	
Closed.ind	MSAC2S	Res SAP	Signale la fin d'une communication MS2.

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9.5.1.3 Paramètres des primitives de MSAC2S

Les paramètres utilisés avec les primitives échangées entre le MSAC2S et FSPMS, MSRM2S sont décrits dans "Définition des services de la FAL" (voir la CEI 61158-5-3). Des paramètres supplémentaires sont décrits dans le Tableau 77.

Tableau 77 – Paramètres utilisés avec des primitives échangées avec MSAC2S

Nom de paramètre	Description
Res SAP	Ce paramètre achemine le SSAP pour l'adressage des diverses AR MS2.

9.5.2 Description de diagramme d'états

Dans l'état CLOSED, le service Initiate est attendu en provenance du Ressource Manager. Le DLSAP correspondant est ensuite activé et l'utilisateur reçoit l'Initiate.ind. L'utilisateur doit générer une MSAC2S_Initiate.rsp et la connexion est établie une fois que le Maître a récupéré la réponse.

Dans l'état OPEN, les services valides (voir macro <VALID_SERVICE>) sont autorisés. Une seule demande provenant du maître DP est traitée simultanément; autrement, la connexion est abandonnée.

Le maître DP et aussi l'esclave DP peuvent fermer la connexion en utilisant le service Abort. L'utilisateur distant récupère une Abort.ind.

La surveillance de connexion est basée sur U-Timer, F-Timer et I-Timer (voir 6.9).

Variables locales du MSAC2S

Server_SAP
(Unsigned8)

Le SAP utilisé pour la connexion MS2.

U-Timer
(Unsigned16)

L'U-Timer commande la réaction de l'utilisateur après avoir délivré une indication. Si l'U-Timer expire, une Idle-PDU est créée et transférée à la DLL locale. L'U-Timer est arrêté lorsque l'utilisateur fournit la réponse.

F-Timer
(Unsigned16)

Le F-Timer commande le Maître recherchant la PDU précédemment fournie. Si le F-Timer expire, un Abort est généré, transféré à la DLL locale et le F-Timer redémarre. Le F-Timer est arrêté dès que le Maître récupère la PDU.

I-Timer
(Unsigned16)

L'I-Timer commande la prochaine activité du client après que le Maître a récupéré la PDU précédente. Lorsque l'I-Timer expire, un Abort est généré, transféré à la DLL locale et le F-Timer démarre. L'I-Timer est arrêté lorsque le Maître a envoyé la prochaine demande.

NOTE Un seul des temporisateurs décrits ci-dessus fonctionne à la fois.

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Service_Header
(Unsigned8)

Contient l'en-tête de service réel pour vérifier si l'utilisateur génère la réponse correcte.

Return-State
INITIATE, VALID-SERVICE

Cette variable est utilisée pour stocker l'état auquel retourner après qu'un cycle de repos a été traité.

Go_Abort
(Boolean)

Fanion local qui indique une réaction d'abandon après avoir terminé la présente réponse de service.

Service_Buffer
(Octet-String[244])

Tampon local qui stocke une Response-PDU complète (Initiate.rsp ou <VALID_SERVICE>.rsp) pendant une Idle-RES-PDU en cours.

Stored_Slot_Number
Valeur réelle du numéro de position

Stored_Index
Valeurs stockées des paramètres de services Read/Write

Stored_Instance
Valeur réelle de l'instance (par exemple: MSAC2)

Stored_Reason
Valeurs stockées des paramètres de service MSAC2S_Abort

INITIATE-REQ-PDU-LEN
(constante locale)

Taille de PDU (non compris l'en-tête de 4 octets) mise à 48 (64 respectivement pour les liaisons)

ABORT_PDU_LEN
(constante locale)

Longueur d'une Abort-REQ-PDU = 4

Macros

Read-REQ-PDU
Cette fonction retourne True si la L_sdu correspondante est une Read-REQ-PDU valide.

Write-REQ-PDU
Cette fonction retourne TRUE si la L_sdu correspondante est une Write-REQ-PDU valide.

Data_Transport-REQ-PDU
Cette fonction retourne TRUE si la L_sdu correspondante est une Data_Transport-REQ-PDU valide.

Abort-REQ-PDU
Cette fonction retourne TRUE si la L_sdu correspondante est une Abort-REQ-PDU valide.

Idle-REQ-PDU
Cette fonction retourne TRUE si la L_sdu correspondante est une Idle-REQ-PDU valide.

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STORE_ABORT_PARAMETER
(

Stored-Instance=Instance

Stored-Reason_Code=Reason_Code

)

<VALID-SERVICE>
<

Service_Header=0x5E: Read

Service_Header=0x5F: Write

Service_Header=0x51: Data_Transport

>

VALID-SERVICE-REQ-PDU
(

(Read-REQ-PDU || Write-REQ-PDU || OR Data_Transport-REQ-PDU)

&& L_sdu.len >= 4

&& (L_sdu[1] = 0x5e || (L_sdu.len >= Length+4

&& Max_DLSDU_length_ind_low-4 >= Length)

)

9.5.3 Table d'états de MSAC2S

Le Tableau 78 contient la description complète du diagramme d'états MSAC2S.

Tableau 78 – Table d'états de MSAC2S

#	État courant	Événement /Condition =>Action	État suivant
1	POWER-ON	=> Server_SAP:=Res_SAP	CLOSED
2	CLOSED	MSAC2S_Initiate.req(Res_SAP, Req_Add, Max_Len_Data_Unit, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => Service_Header:=0x57 F-Timer:=Send_Timeout U-Timer:=Send_Timeout I-Timer:=2*Send_Timeout Stored_Max_Len_Data_Unit:= Max(Max_Len_Data_Unit, INITIATE-REQ-PDU-LEN) clear Service_Buffer Go_Abort:=FALSE MSAC2_Initiate.ind(Req_Add, Res_SAP, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) DMPMS_RSAP_ACTIVATE.req(SSAP=Server_SAP, Access=Req_Add, L_sdu_length_list=(Stored_Max_Len_Data_Unit+4,0, Stored_Max_Len_Data_Unit+4,0) , Indication_Mode=Data)	SET-ACC-POS
3	CLOSED	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) => ignore	CLOSED

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#	État courant	Événement /Condition =>Action	État suivant
4	CLOSED	MSAC2S_RM2_Abort.req(Res_SAP, Req_Add, Subnet, Instance, Reason_Code, Send_Timeout) => F-Timer:=Send_Timeout STORE_ABORT_PARAMETER DMPMS_RSAP_ACTIVATE.req(SSAP=Server_SAP, Access=Req_add, L_sdu_length_list=(ABORT_PDU_LEN,0, ABORT_PDU_LEN,0) Indication_Mode=Data)	SET-ACC-FE
5	CLOSED	MSAC2S_XXX.rsp(+/-)(Res_SAP) => Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	CLOSED
6	CLOSED	MSAC2S_Initiate.rsp(+/-)(Res_SAP) => Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	CLOSED
7	CLOSED	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => ignore	CLOSED
8	SET-ACC-POS	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status = OK Start U-Timer	INITI-WRES
9	SET-ACC-POS	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status=NO/IV => MSAC2S_Fault.ind	POWER-ON
10	SET-ACC-FE	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status = OK => L_sdu:=Abort-REQ-PDU(with stored parameter) Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
11	SET-ACC-FE	DMPMS_RSAP_ACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status=NO/IV => MSAC2S_Fault.ind	POWER-ON
12	INITI-WRES	MSAC2S_Initiate.rsp(+)(Res_SAP) => L_sdu:=Initiate-RES-PDU(With Stored_MAx_Len_Data_Unit) Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	INITI-WUPD
13	INITI-WRES	MSAC2S_Initiate.rsp(-)(Res_SAP) => L_sdu:=Initiate-NRS-PDU Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
14	INITI-WRES	MSAC2S_XXX.rsp(+/-)(Res_SAP) => Reason_Code:=ABT_SE Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD

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#	État courant	Événement /Condition =>Action	État suivant
15	INITI-WRES	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => L_sdu:=Abort-REQ-PDU Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
16	INITI-WRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Abort-REQ-PDU => Stop U-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=FALSE, (Subnet, Instance, Reason_Code) from Abort-REQ-PDU)	WAIT-DEACT
17	INITI-WRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /NOT(Abort-REQ-PDU) => Reason_Code:=ABT_FE Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
18	INITI-WRES	U-Timer expired => L_sdu:=Idle-REQ-PDU Return-State:=INITIATE Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	IDLE-WUPD
19	INITI-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /L_status=OK => ignore	INITI-SRES
20	INITI-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /L_status= LS/IV/LR => Stop F-Timer Stop I-Timer MSAC2S_Fault.ind	POWER-ON
21	INITI-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len=0 && Go_Abort = FALSE => Stop F-Timer Start I-Timer	OPEN
22	INITI-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len=0 && Go_Abort = TRUE => L_sdu:=Abort-REQ-PDU(With Stored Parameter) Stop F-Timer Start I-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
23	INITI-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO/NO && L_sdu.len<>0 && Abort-REQ-PDU => Stop F-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=FALSE, (Subnet, Instance, Reason_Code) from Abort-REQ-PDU)	WAIT-DEACT

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#	État courant	Événement /Condition =>Action	État suivant
24	INITI-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len<>0 && NOT(Abort-REQ-PDU) => Reason_Code:=ABT_FE Stop F-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
25	INITI-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=NO && L_sdu.len<>0 && NOT(Abort-REQ-PDU) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_FE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	INITI-SRES
26	INITI-SRES	MSAC2S_XXX.rsp(+/-)(Res_SAP) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	INITI-SRES
27	INITI-SRES	MSAC2S_Initiate.rsp(+/-)(Res_SAP) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	INITI-SRES
28	INITI-SRES	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => Go_Abort:=TRUE STORE_ABORT_PARAMETER	INITI-SRES
29	INITI-SRES	F-Timer expired => Reason_Code:=ABT_TO Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
30	IDLE-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /Status=OK	IDLE-SREQ
31	IDLE-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /L_status= LS/IV/LR => Stop F-Timer Stop I-Timer MSAC2S_Fault.ind	POWER-ON
32	IDLE-SREQ	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len=0 && Go_Abort = FALSE => Stop F-Timer Start I-Timer	W-IDLE-CON

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#	État courant	Événement /Condition =>Action	État suivant
33	IDLE-SREQ	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len=0 && Go_Abort = TRUE => L_sdu:=Abort-REQ-PDU(With Stored Parameter) Stop F-Timer Start I-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
34	IDLE-SREQ	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO/NO && L_sdu.len<>0 && Abort-REQ-PDU DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2_Abort.ind(Res_SAP=Server_SAP, Locally-Generated=FALSE, (Subnet, Instance, Reason_Code) from Abort-REQ-PDU) Stop F-Timer	WAIT-DEACT
35	IDLE-SREQ	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len<>0 && NOT(Abort-REQ-PDU) => Reason_Code:=ABT_FE Stop F-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
36	IDLE-SREQ	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=NO && L_sdu.len<>0 && NOT(Abort-REQ-PDU) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_FE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	IDLE-SREQ
37	IDLE-SREQ	MSAC2S_XXX.rsp(+)(Res_SAP) /Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length && Service_Buffer empty => Service_Buffer:= <VALID-SERVICE>-RES-PDU(with Stored_Slot_Number,Stored_Index)	IDLE-SREQ
38	IDLE-SREQ	MSAC2S_XXX.rsp(-)(Res_SAP) /Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length && Service_Buffer empty => Service_Buffer:= <VALID-SERVICE>-NRS-PDU(with Stored_Slot_Number,Stored_Index)	IDLE-SREQ
39	IDLE-SREQ	MSAC2S_Initiate.rsp(+)(Res_SAP) /Service-Response fits stored Service_Header && Service_Buffer empty => Service_Buffer:= Initiate-RES-PDU	IDLE-SREQ
40	IDLE-SREQ	MSAC2S_Initiate.rsp(-)(Res_SAP) /Service-Response fits stored Service_Header && Service_Buffer empty => Service_Buffer:= Initiate-NRS-PDU	IDLE-SREQ
41	IDLE-SREQ	MSAC2S_XXX.rsp(+/-)(Res_SAP) /(NOT(Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length) || NOT(Service_Buffer empty)) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_RE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	IDLE-SREQ

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#	État courant	Événement /Condition =>Action	État suivant
42	IDLE-SREQ	MSAC2S_Initiate.rsp(+/-)(Res_SAP) /(NOT(Service-Response fits stored Service_Header) || NOT(Service_Buffer empty)) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_RE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	IDLE-SREQ
43	IDLE-SREQ	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => Go_Abort:=TRUE STORE_ABORT_PARAMETER	IDLE-SREQ
44	IDLE-SREQ	F-Timer expired => Reason_Code:=ABT_TO Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
45	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Idle-RES-PDU && Return-State=INITIATE && Go_Abort=FALSE && (Service_Buffer empty) => Stop I-Timer Start U-Timer	INITI-WRES
46	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Idle-RES-PDU && Return-State=INITIATE && Go_Abort=FALSE && NOT(Service_Buffer empty) && Service_Buffer=Initiate-NRS-PDU => L_sdu:=Stored L_sdu from Service_Buffer clear Service_Buffer Stop I-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
47	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Idle-RES-PDU && Return-State=INITIATE && Go_Abort=FALSE && NOT(Service_Buffer empty) && Service_Buffer=Initiate-RES-PDU => L_sdu:=Stored L_sdu from Service_Buffer clear Service_Buffer Stop I-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	INITI-WUPD
48	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Idle-RES-PDU && Return-State=VALID-SERVICE && Go_Abort=FALSE && (Service_Buffer empty) => Stop I-Timer Start U-Timer	VS-WRES

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#	État courant	Événement /Condition =>Action	État suivant
49	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Idle-RES-PDU && Return-State=VALID-SERVICE && Go_Abort=FALSE && NOT(Service_Buffer empty) => L_sdu:=Stored L_sdu from Service_Buffer clear Service_Buffer Stop I-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	VS-WUPD
50	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Idle-RES-PDU && Go_Abort=TRUE => L_sdu:=Abort-REQ-PDU(with stored Parameter) DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
51	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Abort-REQ-PDU => Stop I-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=FALSE, (Subnet, Instance, Reason_Code) from Abort-REQ-PDU)	WAIT-DEACT
52	W-IDLE-CON	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /NOT(Abort-REQ-PDU || Idle-RES-PDU) => Reason_Code:=ABT_FE Stop I-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
53	W-IDLE-CON	MSAC2S_XXX.rsp(+)(Res_SAP) /Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length && Service_Buffer empty => Service_Buffer:= <VALID-SERVICE>-RES-PDU(with Stored_Slot_Number,Stored_Index)	W-IDLE-CON
54	W-IDLE-CON	MSAC2S_XXX.rsp(-)(Res_SAP) /Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length && Service_Buffer empty => Service_Buffer:= <VALID-SERVICE>-NRS-PDU (with Stored_Slot_Number,Stored_Index)	W-IDLE-CON
55	W-IDLE-CON	MSAC2S_XXX.rsp(+/-)(Res_SAP) /(NOT(Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length) || NOT(Service_Buffer empty)) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_RE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	W-IDLE-CON
56	W-IDLE-CON	MSAC2S_Initiate.rsp(+/-)(Res_SAP) /(NOT(Service-Response fits stored Service_Header) || NOT(Service_Buffer empty)) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_RE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	W-IDLE-CON

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#	État courant	Événement /Condition =>Action	État suivant
57	W-IDLE-CON	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => Go_Abort:=TRUE STORE_ABORT_PARAMETER	W-IDLE-CON
58	W-IDLE-CON	I-Timer expired => Reason_Code:=ABT_TO Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
59	SABORT-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /Status=OK	SABORT-SRES
60	SABORT-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /L_status= LS/IV/LR => Stop F-Timer Stop I-Timer MSAC2S_Fault.ind	POWER-ON
61	SABORT-SRES	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => ignore	SABORT-SRES
62	SABORT-SRES	MSAC2S_XXX.rsp(+/-)(Res_SAP) => Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-SRES
63	SABORT-SRES	MSAC2S_Initiate.rsp(+/-)(Res_SAP) => Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-SRES
64	SABORT-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len=0 => Stop I-Timer Stop F-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP)	WAIT-DEACT
65	SABORT-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=NO && L_sdu.len<>0 => ignore	SABORT-SRES
66	SABORT-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len<>0 => ignore L_sdu Stop I-Timer Stop F-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP)	WAIT-DEACT
67	SABORT-SRES	I-Timer expired => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code=ABT_TO)	WAIT-DEACT
68	SABORT-SRES	F-Timer expired => DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code=ABT_TO)	WAIT-DEACT

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#	État courant	Événement /Condition =>Action	État suivant
69	WAIT-DEACT	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status = OK => MSAC2S_Closed.ind(Res_SAP)	CLOSED
70	WAIT-DEACT	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status=NO/IV => MSAC2S_Fault.ind	POWER-ON
71	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /VALID-SERVICE-REQ-PDU => Service_Header:=Function_Num Stored_Slot_Number:=Slot_Number Stored_Index:=Index Stop I-Timer Start U-Timer MSAC2S_<VALID-SERVICE>.ind(Res_SAP=Server_SAP)	VS-WRES
72	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Idle-REQ-PDU {IDLE-PDU} => L_sdu:=Idle-RES-PDU Stop I-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	VS-WUPD
73	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Abort-REQ-PDU => Stop I-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=FALSE, (Subnet, Instance, Reason_Code) from Abort-REQ-PDU)	WAIT-DEACT
74	OPEN	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /NOT(VALID-SERVICE-REQ-PDU || (Abort-REQ-PDU) || (Idle-REQ-PDU)) => Reason_Code:=ABT_FE Stop I-Timer Start I-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
75	OPEN	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => L_sdu:=Abort-REQ-PDU Stop I-Timer Start I-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
76	OPEN	MSAC2S_Initiate.rsp(+/-)(Res_SAP) => Reason_Code:=ABT_SE Stop I-Timer Start I-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD

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#	État courant	Événement /Condition =>Action	État suivant
77	OPEN	MSAC2S_XXX.rsp(+/-)(Res_SAP) => L_sdu:=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code=ABT_TO) Stop I-Timer Start I-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
78	OPEN	I-Timer expired => Reason_Code:=ABT_TO Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
79	VS-WRES	MSAC2S_XXX.rsp(+)(Res_SAP) /Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length => L_sdu:=<VALID-SERVICE>-RES-PDU(with Stored_Slot_Number,Stored_Index) Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	VS-WUPD
80	VS-WRES	MSAC2S_XXX.rsp(-)(Res_SAP) /Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length => L_sdu:=<VALID-SERVICE>-NRS-PDU Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	VS-WUPD
81	VS-WRES	MSAC2S_Initiate.rsp(+/-)(Res_SAP) => Reason_Code:=ABT_SE Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
82	VS-WRES	MSAC2S_XXX.rsp(+/-)(Res_SAP) /NOT(Service-Response fits stored Service_Header && Stored_Max_Len_Data_Unit >= Length) => Reason_Code:=ABT_RE Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
83	VS-WRES	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => L_sdu:=Abort-REQ-PDU Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD

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#	État courant	Événement /Condition =>Action	État suivant
84	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Abort-REQ-PDU => Stop U-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=FALSE, (Subnet, Instance, Reason_Code) from Abort-REQ-PDU)	WAIT-DEACT
85	VS-WRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /NOT(Abort-REQ-PDU) => Reason_Code:=ABT_FE Stop U-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
86	VS-WRES	U-Timer expired => L_sdu:=Idle-REQ-PDU Return-State:=VALID-SERVICE Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	IDLE-WUPD
87	VS-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /Status=OK	VS-SRES
88	VS-WUPD	DMPMS_REPLY_UPDATE.cnf(SSAP=Server_SAP, Serv_class=Low, L_status) /L_status= LS/IV/LR => Stop F-Timer Stop I-Timer MSAC2S_Fault.ind	POWER-ON
89	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len=0 && Go_Abort = FALSE Stop F-Timer Start I-Timer	OPEN
90	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len=0 && Go_Abort = TRUE => L_sdu:=Abort-REQ-PDU with stored Parameter Stop F-Timer Start I-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu, Serv_class=Low, Transmit=Single)	SABORT-WUPD
91	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO/NO && L_sdu.len<>0 && Abort-REQ-PDU => Stop F-Timer DMPMS_SAP_DEACTIVATE.req(SSAP=Server_SAP) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=FALSE, (Subnet, Instance, Reason_Code) from Abort-REQ-PDU)	WAIT-DEACT

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#	État courant	Événement /Condition =>Action	État suivant
92	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=LO && L_sdu.len<>0 && NOT (Abort-REQ-PDU) => Reason_Code:=ABT_FE Stop F-Timer Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
93	VS-SRES	DMPMS_DATA_REPLY.ind(SSAP, DSAP=Server_SAP, Loc_add, Rem_add,L_sdu, Serv_class=Low, Update_status) /Update_status=NO && L_sdu.len<>0 && NOT(Abort-REQ-PDU) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_FE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	VS-SRES
94	VS-SRES	MSAC2S_XXX.rsp(+/-)(Res_SAP) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	VS-SRES
95	VS-SRES	MSAC2S_Initiate.rsp(+/-)(Res_SAP) => Go_Abort:=TRUE STORE_ABORT_PARAMETER Reason_Code:=ABT_SE MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	VS-SRES
96	VS-SRES	MSAC2S_Abort.req(Res_SAP, Subnet, Instance, Reason_Code) => Go_Abort:=TRUE STORE_ABORT_PARAMETER	VS-SRES
97	VS-SRES	F-Timer expired => Reason_Code:=ABT_TO Start F-Timer DMPMS_REPLY_UPDATE.req(SSAP=Server_SAP, L_sdu=Abort-REQ-PDU(Subnet=NO, Instance=MSAC2, Reason_Code), Serv_class=Low, Transmit=Single) MSAC2S_Abort.ind(Res_SAP=Server_SAP, Locally_Generated=TRUE, Subnet=NO, Instance=MSAC2, Reason_Code)	SABORT-WUPD
98	ANY-STATE	unexpected DMPMS reaction => Stop U-Timer Stop F-Timer Stop I-Timer MSAC2S_Fault.ind	POWER-ON
99	DEACT-PON	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status = OK	POWER-ON
100	DEACT-PON	DMPMS_SAP_DEACTIVATE.cnf(SSAP=Server_SAP,M_status) /M_status=NO/IV => MSAC2S_Fault.ind	POWER-ON
101	tout état	MSAC2S_Reset.req(Res_SAP) => MSAC2S_Reset.cnf(Res_SAP)	POWER-ON

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9.6 MSCS1S

9.6.1 Définitions des primitives

9.6.1.1 Primitives échangées entre MSCS1S et FSPMS

Le Tableau 79 montre les primitives de service, y compris leurs paramètres associés, émises par le MSCS1S et reçues par la FSPMS.

Tableau 79 – Primitives émises par le MSCS1S vers la FSPMS

Nom de primitive	Source	Paramètres associés	Fonctions
Set Time.ind	MSCS1S	AREP, Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Sync Interval Violation.ind	MSCS1S	AREP	

9.6.1.2 Paramètre des primitives de MSCS1S

Les paramètres utilisés avec les primitives échangées entre la FSPMS et le MSCS1S sont décrits dans "Définition des services de la FAL" (voir la CEI 61158-5-3).

9.6.2 Description de diagramme d'états

Ce diagramme reste toujours à l'état IDLE. Il reçoit des indications Clock Value provenant du DMPMS. Une indication Set Time est émise à la détection de la fin d'une séquence Clock Synchronisation valide. Autrement, une indication Sync Interval Violation est émise.

Variables locales du MSCS1S

Time Last Rcvd
(Network Time)

Cette variable locale contient le Clock_Value_Time_Event de la dernière indication de Clock Value reçue valide.

Error
(Unsigned8)

Cette variable locale est un compteur pour les séquences de Clock Synchronisation non valides. Elle est réinitialisée à 0 lorsqu'une Sync Interval Violation est indiquée.

Macros du MSCS1S:
SET_TIME_ATTRIBUTES
(

Local Time Diff :=CS_list.Clock_value_status.C*(-1)^CS_list.Clock_value_status.CV

Summertime := CS_list.Clock_value_status.SWT

Accuracy := CS_list.Clock_value_status.CR

Synchronisation Active := CS_list.Clock_value_status.SYF

Announcement Hour :=CS_list.Clock_value_status.ANH

)

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9.6.3 Table d'états de MSCS1S

Le Tableau 80 contient la description complète du diagramme d'états MSCS1S.

Tableau 80 – Table d'états de MSCS1S

#	État courant	Événement /Condition =>Action	État suivant
1	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == SV && Error < 2 => Error := Error+1	Idle
2	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE != Time Last Rcvd && Error < 2 => Error := Error+1	Idle
3	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == SV && Error >= 2 => Error := 0 Sync Interval Violation.ind	Idle
4	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE != Time Last Rcvd && Error >= 2 => Error := 0 Sync Interval Violation.ind	Idle
5	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE == Time Last Rcvd => Error := 0 Time Last Rcvd:= CS_list.Clock_Value_Time_Event Time Value := Time Last Rcvd + Receive Delay Time SET_TIME_ATTRIBUTES Set_Time.ind(Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour)	Idle

9.7 MSCY1M

9.7.1 Définitions des primitives

9.7.1.1 Primitives échangées entre FSPMM1 et MSCY1M

Le Tableau 81 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMM1 et reçues par le MSCY1M.

Tableau 81 – Primitives émises par la FSPMM1 vers le MSCY1M

Nom de primitive	Source	Paramètres associés	Fonctions
MInit MS0.req	FSPMM1	Rem Add	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.req	FSPMM1	(aucun)	
Abort.req	FSPMM1	Rem Add, Subnet, Instance, Reason Code	

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Nom de primitive	Source	Paramètres associés	Fonctions
Start Slave Handler.req	FSPMM1	Rem Add	Lancer le premier cycle de MSCY1M
Stop Slave Handler.req	FSPMM1	Rem Add	Arrêter le traitement de MSCY1M
Cont Slave Handler.req	FSPMM1	Rem Add, Output Clear	Lancer un nouveau cycle de MSCY1M
Get Slave Diag.req	FSPMM1	Rem Add	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Set Output.req	FSPMM1	Rem Add, Slot_Number Output Data	
Get Input.req	FSPMM1	Rem Add, Slot Number	

Le Tableau 82 montre les primitives de service, y compris leurs paramètres associés, émises par le MSCY1M et reçues par la FSPMM1.

Tableau 82 – Primitives émises par le MSCY1M vers la FSPMM1

Nom de primitive	Source	Paramètres associés	Fonctions
MInit MS0.cnf	MSCY1M	Rem Add	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.cnf	MSCY1M	(aucun)	
Start Slave Handler.cnf	MSCY1M	Rem Add	Lancer le premier cycle de MSCY1M
Stop Slave Handler.cnf	MSCY1M	Rem Add	Arrêter le traitement de MSCY1M
Cont Slave Handler.cnf	MSCY1M	Rem Add, Diag, No AClr	Lancer un nouveau cycle de MSCY1M
Get Slave Diag.cnf(+)	MSCY1M	Rem Add, CREP, Diag Data	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Get Slave Diag.cnf(-)	MSCY1M	Rem Add	
Set Output.cnf(+)	MSCY1M	Rem Add, Slot Number	
Set Output.cnf(-)	MSCY1M	Rem Add, Slot Number	
Get Input.cnf(+)	MSCY1M	Rem Add, Slot_Number, Input Data	
Get Input.cnf(-)	MSCY1M	Rem Add	
New Slave Diag.ind	MSCY1M	Rem Add	
New Input.ind	MSCY1M	Rem Add	
Started.ind	MSCY1M	Rem Add, Alarm Limit	
Stopped.ind	MSCY1M	Rem Add	
Fault.ind	MSCY1M	Rem Add	

9.7.1.2 Paramètres des primitives de MSCY1M

Les paramètres utilisés avec les primitives échangées entre FSPMM1 et le MSCY1M sont décrits dans le Tableau 83.

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Tableau 83 – Paramètres utilisés avec les primitives échangées entre la FSPMM1 et le MSCY1M

Nom de paramètre	Description
Rem Add	Ce paramètre est utilisé pour identifier l'esclave DP qui est affecté à cette relation de communication.
Output Clear	Ce paramètre indique au diagramme d'états MSCY1M que les sorties doivent être effacées.
Diag	Ce paramètre indique au diagramme d'états FSPMM1 qu'aucun échange de données n'a été traité dans le cycle précédent ou l'esclave était désactivé.
No Aclr	Ce paramètre indique au diagramme d'états FSPMM1 que l'esclave DP correspondant est exploité dans le mode non Autoclear-Mode (cet esclave DP n'a pas d'influence sur l'état des Maîtres (OPERATE ou CLEAR)).

D'autres paramètres utilisés avec les primitives échangées entre la FSPMM1 et MSCY1M sont décrits dans "Définition des services de la FAL" (voir la CEI 61158-5-3).

9.7.2 Description de diagramme d'états

Pour chaque esclave DP possible, un diagramme d'états MSCY1M (Slave-Handler) est établi et démarré par un diagramme d'états supérieur, la FSPMM1. L'adresse distante de l'Esclave (Rem_Add) est utilisée comme référence locale pour le MSCY1M.

Le Slave-Handler gère les états individuels pour chaque esclave DP. Les principaux états suivants sont distingués:

– diagnostic,
– paramétrisation,
– configuration,
– échange de données.

Sl_Para_Exist
Accès: -r

Information locale indiquant si, oui ou non, un jeu de paramètres Slave du Rem_Add associé existe.

SPara
Accès:-r/-w

Toute information issue de l'ARL/CRL relative à cet esclave DP.

BOutput
Accès: -r

Stockage local de données de sortie pour l'esclave DP.

BInput
Accès: -w

Stockage local de données d'entrée pour l'esclave DP.

BDiag
Accès: -r/-w

Stockage local d'informations de diagnostic de l'esclave DP.

MSCY1M change les fanions suivants des informations de diagnostic:

Invalid_Slave_Response

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Station_Non_Existent

Deactivated

DTrans
Cette variable est mise en correspondance sur l'attribut Data Transfer List de la liste de CR.

Accès: –r/-w

Le mode d'échange de données utilisateur entre le maître DP (Classe 1) et ses esclaves DP assignés est surveillé sur le côté Maître. Cela signifie qu'il est vérifié si un transfert de données utilisateur vers les esclaves DP associés a été exécuté pendant le dernier cycle DP ou un cycle de diagnostic, après quoi l'état de l'esclave qui suit immédiatement est de nouveau l'état de transfert de données. Tout autre état suivant force l'effacement du bit associé à l'Esclave.

SDiag
Cette variable est mise en correspondance sur l'attribut System Diagnosis List de la liste de CR.

Accès: -r/-w

Elle est mise pendant que le diagramme d'états MSCY1M d'un Esclave activé ne peut pas établir la connexion vers l'Esclave sans erreurs. Par exemple, elle est mise si un Esclave ne répond pas, s'il répond par une confirmation DL négative ou s'il ne répond pas avec le nombre correct de données d'entrée au cours de l'échange de données. Le bit est réinitialisé après que la connexion a pu être établie sans la moindre erreur. Il est également réinitialisé si l'Esclave est désactivé par l'utilisateur ou si le diagramme d'états MSCY1M est arrêté.

Variables locales

Delay_Count
(Unsigned8)

La variable Delay_Count est utilisée pour compter le nombre de Slave_Diag.cnf dans l'état DIAG2 pendant que Diag_Data.Prm_Req est encore mis (Slow Slave). La variable Delay_Count est initialisée avec la valeur de SPara.Diag_Upd_Delay.

Plage: 0 à 15 (extensible jusqu'à 255)

MSAL1M_Started
(Boolean)

Cette variable est utilisée pour stocker de l'information indiquant si le diagramme d'états MSAL1M est démarré (True) ou non (False).

Wait_for_Start_con
(Boolean)

Cette variable est utilisée pour stocker de l'information indiquant si une Start.req n'a pas encore été confirmée par le diagramme d'états MSAL1M (True) ou non (False).

Go-Abort
(Boolean)

Cette variable est utilisée pour stocker de l'information indiquant qu'une erreur s'est produite forçant le diagramme d'états MSCY1M à abandonner la connexion.

Macros

CHANGE_DIAG_IND
(

MSCY1M_New Slave Diag.ind(Rem_Add)

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si (MSAL1M_Started = TRUE)

MSAL1M_Change Diag.req(Rem_Add)

)

GO_ABORT
(

DTrans = 0

Go_Abort = TRUE

BInp = Nil

)

START_MSAL1M
(

si ((SPara.DPV1_Supported= TRUE)

&& (Wait_for_Start_con = FALSE)

&& (MSAL1M_Started = FALSE))

MSAL1M_Start.req(Rem_Add),

MSAL1M_Started = TRUE,

MSAC1M_Start.req(Rem_Add)

)

9.7.3 Table d'états de MSCY1M

Le Tableau 84 contient la description complète du diagramme d'états MSCY1M.

Tableau 84 – Table d'états de MSCY1M

#	État courant	Événement /Condition =>Action	État suivant
1	POWER-ON	MSCY1M MInit MS0.req (Rem Add) => BDiag := NIL, SDiag := 0, DTrans := 0 Go_Abort := FALSE MSAL1M_Started := FALSE ExtPrmBsy:= FALSE MSCY1M MInit MS0.cnf(Rem Add)	STOP
2	STOP	MSCY1M Abort.req (Rem Add) => ignore	STOP
3	STOP	MSAL1 Abort.ind (Rem_Add) => ignore	STOP
4	STOP	MSCY1M Start Slave Handler.req (Rem Add) /Sl_Para_Exist = FALSE || SPara.Active = FALSE => MSCY1M Start Slave Handler.cnf(Rem Add)	DEACT

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#	État courant	Événement /Condition =>Action	État suivant
5	STOP	MSCY1M Start Slave Handler.req (Rem Add) /Sl_Para_Exist = TRUE && SPara.Active = TRUE => SDiag := 1, BInput := Nil, BOutput := Nil BDiag.Deactivated := FALSE BDiag.Station_Non_Existent := TRUE MSCY1M Start Slave Handler.cnf(Rem Add)	DIAG1
6	STOP	MSCY1M Get Slave Diag.req (Rem Add) => MSCY1M Get Slave Diag.cnf(-) (Rem Add)	STOP
7	STOP	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => MSCY1M Set Output.cnf(-) (Rem Add, Slot Number)	STOP
8	STOP	MSCY1M Get Input.req (Rem Add, Slot_Number) => MSCY1M Get Input.cnf(-) (Rem Add)	STOP
9	DEACT	MSCY1M Abort.req (Rem Add) => ignore	DEACT
10	DEACT	MSAL1 Abort.ind (Rem_Add) => ignore	DEACT
11	DEACT	MSCY1M Stop Slave Handler.req (Rem Add) => MSCY1M Stop Slave Handler.cnf(Rem Add)	STOP
12	DEACT	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Sl_Para_Exist = FALSE || SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DEACT
13	DEACT	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Sl_Para_Exist = TRUE && SPara.Active = TRUE => SDiag := 1, BInput := Nil, BOutput := Nil BDiag.Deactivated := FALSE BDiag.Station_Non_Existent := TRUE DMPMM1 Slave Diag.req (Rem Add)	WDIAG1
14	DEACT	MSCY1M Get Slave Diag.req (Rem Add) => MSCY1M Get Slave Diag.cnf(-) (Rem Add)	DEACT
15	DEACT	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => MSCY1M Set Output.cnf(-) (Rem Add, Slot Number)	DEACT
16	DEACT	MSCY1M Get Input.req (Rem Add, Slot_Number) => MSCY1M Get Input.cnf(-) (Rem Add)	DEACT
17	DIAG1	MSCY1M Abort.req (Rem Add) => ignore	DIAG1
18	DIAG1	MSAL1 Abort.ind (Rem_Add) => ignore	DIAG1
19	DIAG1	MSCY1M Stop Slave Handler.req (Rem Add) => BDiag.Deactivated := TRUE, SDiag := 0 MSCY1M Stop Slave Handler.cnf(Rem Add)	STOP
20	DIAG1	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) => ExtPrmBsy:=FALSE DMPMM1 Slave Diag.req (Rem Add)	WDIAG1

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#	État courant	Événement /Condition =>Action	État suivant
21	DIAG1	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	DIAG1
22	DIAG1	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	DIAG1
23	DIAG1	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	DIAG1
24	WDIAG1	MSCY1M Abort.req (Rem Add) => ignore	WDIAG1
25	WDIAG1	MSAL1 Abort.ind (Rem_Add) => ignore	WDIAG1
26	WDIAG1	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WDIAG1
27	WDIAG1	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WDIAG1
28	WDIAG1	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WDIAG1
29	WDIAG1	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE BDiag.Deactivated := TRUE, SDiag := 0 MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DEACT
30	WDIAG1	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE BDiag.Deactivated := TRUE, SDiag := 0 MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DEACT
31	WDIAG1	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status=NA => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
32	WDIAG1	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status=RE/RS/RR/UE/NR => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Invalid_Slave_Response := TRUE BDiag.Station_Non_Existent := FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
33	WDIAG1	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status=DS => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1

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#	État courant	Événement /Condition =>Action	État suivant
34	WDIAG1	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && Diag_Data.Master_Lock = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag := Diag_Data MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
35	WDIAG1	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && Diag_Data.Master_Lock = FALSE && Diag_Data.Master_Add <> invalid && SPara.Prm_Data.DPV1_Enable=TRUE && SPara.DPV1_Supported=TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag := Diag_Data MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	UNLCK
36	WDIAG1	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && Diag_Data.Master_Lock = FALSE && (Diag_Data.Master_Add = invalid || SPara.Prm_Data.DPV1_Enable=FALSE || SPara.DPV1_Supported=FALSE) => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr SPara.New_Prm := FALSE BDiag := Diag_Data, CHANGE_DIAG_IND MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	PRM
37	PRM	MSCY1M Abort.req (Rem Add) => ignore	PRM
38	PRM	MSAL1 Abort.ind (Rem_Add) => ignore	PRM
39	PRM	MSCY1M Stop Slave Handler.req (Rem Add) => BDiag.Deactivated := TRUE, SDiag := 0 MSCY1M Stop Slave Handler.cnf(Rem Add)	STOP
40	PRM	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) / ExtPrmBsy=FALSE => Prm_Data := SPara .Prm_Data Prm_Data.Lock_Req := TRUE Prm_Data.Unlock_Req := FALSE DMPMM1 Set Prm.req (Rem Add, Prm Data)	WPRM
41	PRM	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	PRM
42	PRM	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	PRM
43	PRM	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	PRM
44	WPRM	MSCY1M Abort.req (Rem Add) => ignore	WPRM
45	WPRM	MSAL1 Abort.ind (Rem_Add) => ignore	WPRM
46	WPRM	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WPRM

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#	État courant	Événement /Condition =>Action	État suivant
47	WPRM	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WPRM
48	WPRM	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WPRM
49	WPRM	DMPMM1 Set Prm.cnf(+) (Rem Add) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	UNLCK
50	WPRM	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	UNLCK
51	WPRM	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = DS => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	PRM
52	WPRM	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
53	WPRM	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = RE/RS/RR/UE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Invalid_Slave_Response := TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
54	WPRM	DMPMM1 Set Prm.cnf(+) (Rem Add) /SPara.Active = TRUE && ExtPrmFlag = FALSE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	CFG
55	CFG	MSCY1M Abort.req (Rem Add) => ignore	CFG
56	CFG	MSAL1 Abort.ind (Rem_Add) => ignore	CFG
57	CFG	MSCY1M Stop Slave Handler.req (Rem Add) => Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	SUNLCK
58	CFG	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) => Cfg_Data:=SPara .Cfg_Data DMPMM1 Chk Cfg.req (Rem Add, Cfg Data)	WCFG
59	CFG	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	CFG
60	CFG	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	CFG

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#	État courant	Événement /Condition =>Action	État suivant
61	CFG	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	CFG
62	WCFG	MSCY1M Abort.req (Rem Add) => ignore	WCFG
63	WCFG	MSAL1 Abort.ind (Rem_Add) => ignore	WCFG
64	WCFG	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WCFG
65	WCFG	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WCFG
66	WCFG	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WCFG
67	WCFG	DMPMM1 Chk Cfg.cnf(+) (Rem Add) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	UNLCK
68	WCFG	DMPMM1 Chk Cfg.cnf(-) (Rem Add, Status) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	UNLCK
69	WCFG	DMPMM1 Chk Cfg.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = DS => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	CFG
70	WCFG	DMPMM1 Chk Cfg.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
71	WCFG	DMPMM1 Chk Cfg.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = RE/RS/RR/UE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Invalid_Slave_Response := TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
72	WCFG	DMPMM1 Chk Cfg.cnf(+) (Rem Add) /SPara.Active = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSAL1M_Started := FALSE Delay_Count := SPara .Diag_Upd_Delay Wait_for_Start_con := FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
73	DIAG2	MSCY1M Abort.req (Rem Add) => GO_ABORT	DIAG2

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#	État courant	Événement /Condition =>Action	État suivant
74	DIAG2	MSAL1 Start.cnf (Rem Add) => Wait_for_Start_con:=FALSE MSCY1M_Started.ind(Rem_Add)	DIAG2
75	DIAG2	MSAL1 Abort.ind (Rem_Add) => GO_ABORT	DIAG2
76	DIAG2	MSCY1M Stop Slave Handler.req (Rem Add) /SPara.DPV1_Supported = FALSE => Go_Abort := FALSE, BInput := Nil DTrans := 0 Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	SUNLCK
77	DIAG2	MSCY1M Stop Slave Handler.req (Rem Add) /SPara.DPV1_Supported = TRUE => Go_Abort := FALSE, BInput := Nil DTrans := 0 MSAL1 Stop.req (Rem Add)	WSTPCS
78	DIAG2	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort = FALSE && Wait_for_Start_con = FALSE => DMPMM1 Slave Diag.req (Rem Add)	WDIAG2
79	DIAG2	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort = FALSE && Wait_for_Start_con = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
80	DIAG2	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort=TRUE && SPara.DPV1_Supported = FALSE => Go_Abort := FALSE No_AClr := SPara_.Ignore_AClr OR NOT SPara.Active Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	WUNLCK
81	DIAG2	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort=TRUE && SPara.DPV1_Supported = TRUE => Go_Abort := FALSE, Diag := TRUE No_AClr := SPara_.Ignore_AClr OR NOT SPara.Active MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr) MSAL1 Stop.req (Rem Add)	WSTPCC
82	DIAG2	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	DIAG2
83	DIAG2	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	DIAG2
84	DIAG2	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	DIAG2
85	WDIAG2	MSCY1M Abort.req (Rem Add) => GO_ABORT	WDIAG2
86	WDIAG2	MSAL1 Abort.ind (Rem_Add) => GO_ABORT	WDIAG2

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#	État courant	Événement /Condition =>Action	État suivant
87	WDIAG2	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WDIAG2
88	WDIAG2	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WDIAG2
89	WDIAG2	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WDIAG2
90	WDIAG2	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=FALSE BDiag := Diag_Data, GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
91	WDIAG2	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = FALSE => GO_ABORT, Diag:=FALSE, No_AClr:=FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
92	WDIAG2	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = DS => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
93	WDIAG2	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA && SPara_.NA_To_Abort = FALSE => Diag:=TRUE,No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE SDiag := 1, DTrans := 0 MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
94	WDIAG2	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA && SPara_.NA_To_Abort = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr, BDiag.Station_Non_Existent := TRUE, SDiag := 1, GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
95	WDIAG2	DMPMM1 Slave Diag.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = RE/RS/RR/UE/NR => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr, BDiag.Station_Non_Existent := TRUE, BDiag.Invalid_Slave_Response := TRUE, SDiag := 1, GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
96	WDIAG2	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && (Diag_Data.Prm_Req = TRUE || Diag_Data.Master_Lock = TRUE) && Delay_Count > 0 => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr Delay_Count := Delay_Count-1, BDiag := Diag_Data BInput := 0, SDiag := 1, DTrans := 0 MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
97	WDIAG2	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && (Diag_Data.Prm_Req = TRUE || Diag_Data.Master_Lock = TRUE) && Delay_Count = 0 => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag := Diag_Data, SDiag := 1, GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2

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#	État courant	Événement /Condition =>Action	État suivant
98	WDIAG2	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && Diag_Data.Prm_Req = FALSE && Diag_Data.Master_Lock = FALSE && Diag_Data.Station_Not_Ready = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr SDiag := 1, DTrans := 0, BInput := Nil BDiag := Diag_Data MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
99	WDIAG2	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && Diag_Data.Prm_Req = FALSE && Diag_Data.Master_Lock = FALSE && Diag_Data.Station_Not_Ready = FALSE && Diag_Data.Stat_Diag = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr START_MSAL1M, SDiag := 1, DTrans := 0 BInput := Nil, BDiag := Diag_Data MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
100	WDIAG2	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && Diag_Data.Prm_Req = FALSE && Diag_Data.Master_Lock = FALSE && Diag_Data.Station_Not_Ready = FALSE && Diag_Data.Stat_Diag=FALSE && DTrans = 0 => Diag:=TRUE, No_AClr:=TRUE SDiag := Diag_Data.Ext_Diag, Delay_Count := 0 BDiag := Diag_Data, START_MSAL1M, CHANGE_DIAG_IND MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
101	WDIAG2	DMPMM1 Slave Diag.cnf(+) (Rem Add, Diag Data) /SPara.Active = TRUE && Diag_Data.Prm_Req = FALSE && Diag_Data.Master_Lock = FALSE && Diag_Data.Station_Not_Ready = FALSE && Diag_Data.Stat_Diag = FALSE && DTrans = 1 => Diag:=TRUE, No_AClr:=TRUE SDIAG := Diag_Data.Ext_Diag, CHANGE_DIAG_IND BDiag := Diag_Data MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
102	DATA	MSCY1M Abort.req (Rem Add) => GO_ABORT	DATA
103	DATA	MSAL1 Start.cnf (Rem Add) => Wait_for_Start_con := FALSE, START_MSAL1M MSCY1M_Started.ind(Rem_Add)	DATA
104	DATA	MSAL1 Abort.ind (Rem_Add) => GO_ABORT	DATA
105	DATA	MSCY1M Stop Slave Handler.req (Rem Add) /SPara.DPV1_Supported = FALSE => Go_Abort := FALSE, BInput := Nil DTrans := 0 Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	SUNLCK
106	DATA	MSCY1M Stop Slave Handler.req (Rem Add) /SPara.DPV1_Supported = TRUE => Go_Abort := FALSE, BInput :=Nil, DTrans := 0 MSAL1 Stop.req (Rem Add)	WSTPCS
107	DATA	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort = FALSE && Wait_for_Start_con = FALSE && Output_Clear = TRUE && ((SPara.DPV1_Supported = FALSE && SPara.New_Prm = FALSE) || SPara.DPV1_Supported = TRUE) && SPara.Fail_Safe = FALSE => Outp_Data:=0 DMPMM1 Data Exchange.req (Rem Add, Outp Data)	WDATA

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#	État courant	Événement /Condition =>Action	État suivant
108	DATA	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort = FALSE && Wait_for_Start_con = FALSE && Output_Clear = TRUE && ((SPara.DPV1_Supported = FALSE && SPara.New_Prm = FALSE) || SPara.DPV1_Supported = TRUE) && SPara.Fail_Safe = TRUE => Outp_Data.len:=0 DMPMM1 Data Exchange.req (Rem Add, Outp Data)	WDATA
109	DATA	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort = FALSE && Wait_for_Start_con = FALSE && Output_Clear = FALSE && ((SPara.DPV1_Supported = FALSE && SPara.New_Prm = FALSE) || SPara.DPV1_Supported = TRUE) => Outp_Data:=BOutput DMPMM1 Data Exchange.req (Rem Add, Outp Data)	WDATA
110	DATA	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort = FALSE && SPara.DPV1_Supported = FALSE && SPara.New_Prm = TRUE => Prm_Data := SPara .Prm_Data Prm_Data.Lock_Req := TRUE Prm_Data.Unlock_Req := FALSE DMPMM1 Set Prm.req (Rem Add, Prm Data)	WDATA
111	DATA	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort = FALSE && Wait_for_Start_con = TRUE => Diag:=TRUE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
112	DATA	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort=TRUE && (SPara.DPV1_Supported = FALSE|| SPara_PrmCmd_Supported = TRUE) => Go_Abort := FALSE, Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	WUNLCK
113	DATA	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) /Go_Abort=TRUE && SPara.DPV1_Supported = TRUE && SPara_PrmCmd_Supported = FALSE => Go_Abort := FALSE, Diag := TRUE No_AClr := SPara_.Ignore_AClr OR NOT SPara.Active MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr) MSAL1 Stop.req (Rem Add)	WSTPCC
114	DATA	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	DATA
115	DATA	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	DATA
116	DATA	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	DATA
117	WDATA	MSCY1M Abort.req (Rem Add) => GO_ABORT	WDATA
118	WDATA	MSAL1 Abort.ind (Rem_Add) => GO_ABORT	WDATA
119	WDATA	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WDATA

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#	État courant	Événement /Condition =>Action	État suivant
120	WDATA	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WDATA
121	WDATA	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WDATA
122	WDATA	DMPMM1 Data Exchange.cnf(+) (Rem Add, Diag Flag, Inp Data) /SPara.Active = FALSE => GO_ABORT, Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
123	WDATA	DMPMM1 Data Exchange.cnf(-) (Rem Add, Status) /SPara.Active = FALSE => GO_ABORT, Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
124	WDATA	DMPMM1 Data Exchange.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = DS => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr DTrans := 0, BInput := Nil MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
125	WDATA	DMPMM1 Data Exchange.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA && SPara_.NA_To_Abort = FALSE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE, SDiag := 1 MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
126	WDATA	DMPMM1 Data Exchange.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status=NA && SPara_.NA_To_Abort = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE, SDiag := 1 GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
127	WDATA	DMPMM1 Data Exchange.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = RE/RS/RR/UE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Invalid_Slave_Response := TRUE BDiag.Station_Non_Existent := FALSE SDiag := 1, GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
128	WDATA	DMPMM1 Data Exchange.cnf(+) (Rem Add, Diag Flag, Inp Data) /SPara.Active = TRUE && Diag_Flag = FALSE && Inp_Data.len = Exp_Inp_Len => Diag:=FALSE, No_AClr:=TRUE BDiag.Station_Non_Existent := FALSE BInput := Inp_Data, DTrans := 1 SDiag := BDiag.Ext_Diag MSCY1M_New_Input.ind(Rem_Add) MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
129	WDATA	DMPMM1 Data Exchange.cnf(+) (Rem Add, Diag Flag, Inp Data) /SPara.Active = TRUE && Inp_Data.len <> Exp_Inp_Len && (Inp_Data.len <> 1 ‖ Exp_Inp_Len <> 0 ‖ Diag_Flag = FALSE) => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Invalid_Slave_Response := TRUE BDiag.Station_Non_Existent := FALSE SDiag := 1, GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA

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#	État courant	Événement /Condition =>Action	État suivant
130	WDATA	DMPMM1 Data Exchange.cnf(+) (Rem Add, Diag Flag, Inp Data) /SPara.Active = TRUE && Diag_Flag = TRUE && Inp_Data.len = Exp_Inp_Len => Diag:=FALSE, No_AClr:=TRUE BDiag.Station_Non_Existent := FALSE BInput := Inp_Data, DTrans := 1 SDiag := BDiag.Ext_Diag MSCY1M_New_Input.ind(Rem_Add) MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
131	WDATA	DMPMM1 Data Exchange.cnf(+) (Rem Add, Diag Flag, Inp Data) /SPara.Active = TRUE && Diag_Flag = TRUE && Inp_Data.len = 1 && Exp_Inp_Len = 0 => Diag:=FALSE, No_AClr:=TRUE BDiag.Station_Non_Existent := FALSE, DTrans := 1 SDiag := BDiag.Ext_Diag MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG2
132	WDATA	DMPMM1 Set Prm.cnf(+) (Rem Add) /SPara.Active = FALSE => GO_ABORT, Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
133	WDATA	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = FALSE => GO_ABORT, Diag:=FALSE, No_AClr:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
134	WDATA	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = DS => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
135	WDATA	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA && SPara_.NA_To_Abort = FALSE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE, SDiag := 1 MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
136	WDATA	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA && SPara_.NA_To_Abort = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE, SDiag := 1 GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
137	WDATA	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = RE/RS/RR/UE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Invalid_Slave_Response := TRUE BDiag.Station_Non_Existent := FALSE SDiag := 1, GO_ABORT MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
138	WDATA	DMPMM1 Set Prm.cnf(+) (Rem Add) /SPara.Active = TRUE => Diag:=TRUE, No_AClr:=TRUE SPara.New_Prm := FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DATA
139	UNLCK	MSCY1M Abort.req (Rem Add) => ignore	UNLCK
140	UNLCK	MSAL1 Abort.ind (Rem_Add) => ignore	UNLCK

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#	État courant	Événement /Condition =>Action	État suivant
141	UNLCK	MSCY1M Stop Slave Handler.req (Rem Add) => Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	SUNLCK
142	UNLCK	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) => Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	WUNLCK
143	UNLCK	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	UNLCK
144	UNLCK	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	UNLCK
145	UNLCK	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	UNLCK
146	WUNLCK	MSCY1M Abort.req (Rem Add) => ignore	WUNLCK
147	WUNLCK	MSAL1 Abort.ind (Rem_Add) => ignore	WUNLCK
148	WUNLCK	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WUNLCK
149	WUNLCK	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WUNLCK
150	WUNLCK	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WUNLCK
151	WUNLCK	DMPMM1 Set Prm.cnf(+) (Rem Add) /SPara.Active = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
152	WUNLCK	DMPMM1 Set Prm.cnf(+) (Rem Add) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE, SDiag := 0 BDiag.Deactivated := TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DEACT
153	WUNLCK	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
154	WUNLCK	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE, SDiag := 0 BDiag.Deactivated := TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DEACT

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#	État courant	Événement /Condition =>Action	État suivant
155	SUNLCK	MSCY1M Abort.req (Rem Add) => ignore	SUNLCK
156	SUNLCK	MSAL1 Abort.ind (Rem_Add) => ignore	SUNLCK
157	SUNLCK	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	SUNLCK
158	SUNLCK	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	SUNLCK
159	SUNLCK	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	SUNLCK
160	SUNLCK	DMPMM1 Set Prm.cnf(+) (Rem Add) => SDiag := 0, BDiag.Deactivated := TRUE MSCY1M Stop Slave Handler.cnf(Rem Add)	STOP
161	SUNLCK	DMPMM1 Set Prm.cnf(-) (Rem Add, Status) => SDiag := 0, BDiag.Deactivated := TRUE MSCY1M Stop Slave Handler.cnf(Rem Add)	STOP
162	WSTPCC	MSAL1 Start.cnf (Rem Add) => MSAL1M_Started := FALSE	WSTPCC
163	WSTPCC	MSAL1 Stop.cnf (Rem Add) /MSAL1M_Started = TRUE => MSCY1M Stopped.ind (Rem Add)	UNLCK
164	WSTPCC	MSAL1 Stop.cnf (Rem Add) /MSAL1M_Started = FALSE => ignore	UNLCK
165	WSTPCC	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr OR NOT SPara.Active MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	WSTPCC
166	WSTPCC	MSCY1M Abort.req (Rem Add) => ignore	WSTPCC
167	WSTPCC	MSAL1 Abort.ind (Rem_Add) => ignore	WSTPCC
168	WSTPCC	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WSTPCC
169	WSTPCC	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WSTPCC
170	WSTPCC	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WSTPCC

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#	État courant	Événement /Condition =>Action	État suivant
171	WSTPCS	MSAL1 Start.cnf (Rem Add) => MSAL1M_Started := FALSE	WSTPCS
172	WSTPCS	MSAL1 Stop.cnf (Rem Add) /MSAL1M_Started = TRUE => Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE MSCY1M Stopped.ind (Rem Add) DMPMM1 Set Prm.req (Rem Add, Prm Data)	SUNLCK
173	WSTPCS	MSAL1 Stop.cnf (Rem Add) /MSAL1M_Started = FALSE => Prm_Data := SPara .Prm_Data Prm_Data.Unlock_Req := TRUE DMPMM1 Set Prm.req (Rem Add, Prm Data)	SUNLCK
174	WSTPCS	MSCY1M Abort.req (Rem Add) => ignore	WSTPCS
175	WSTPCS	MSAL1 Abort.ind (Rem_Add) => ignore	WSTPCS
176	WSTPCS	MSCY1M Get Slave Diag.req (Rem Add) => Diag_Data := BDiag MSCY1M Get Slave Diag.cnf(+) (Rem Add, Diag Data)	WSTPCS
177	WSTPCS	MSCY1M Set Output.req (Rem Add, Slot Number, Output Data) => BOutput(Slot_Number) := Output_Data MSCY1M Set Output.cnf(+) (Rem Add, Slot Number)	WSTPCS
178	WSTPCS	MSCY1M Get Input.req (Rem Add, Slot_Number) => Input_Data := BInput(Slot_Number) MSCY1M Get Input.cnf(+) (Rem Add, Input Data)	WSTPCS
179	ANY-STATE	MSCY1M Reset.req (Rem Add) => MSCY1M Reset.cnf (Rem Add)	POWER-ON
180	WPRM	DMPMM1 Set Prm.cnf(+) (Rem Add) /SPara.Active = TRUE && ExtPrmFlag = TRUE => ExtPrmBsy:=TRUE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	PRM
181	PRM	MSCY1M Cont Slave Handler.req (Rem Add, Output Clear) / ExtPrmBsy=TRUE => Prm_Data := SPara .ExtPrm_Data DMPMM1 Set ExtPrm.req (Rem Add, Prm Data)	WPRM
182	WPRM	DMPMM1 Set ExtPrm.cnf(+) (Rem Add) /SPara.Active = TRUE => Diag:=TRUE, No_AClr:=SPara_.Ignore_Aclr, ExtPrmBsy:=FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	CFG
183	WPRM	DMPMM1 Set ExtPrm.cnf(+) (Rem Add) /SPara.Active = FALSE => Diag:=FALSE, No_AClr:=TRUE, ExtPrmBsy:=FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	UNLCK
184	WPRM	DMPMM1 Set ExtPrm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = DS => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	PRM

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#	État courant	Événement /Condition =>Action	État suivant
185	WPRM	DMPMM1 Set ExtPrm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = NA => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Station_Non_Existent := TRUE, ExtPrmBsy:=FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1
186	WPRM	DMPMM1 Set ExtPrm.cnf(-) (Rem Add, Status) /SPara.Active = TRUE && Status = RE/RS/RR/UE => Diag:=TRUE, No_AClr:=SPara_.Ignore_AClr BDiag.Invalid_Slave_Response := TRUE, ExtPrmBsy:=FALSE MSCY1M Cont Slave Handler.cnf(Rem Add, Diag, No AClr)	DIAG1

9.8 MSAL1M

9.8.1 Définitions des primitives

9.8.1.1 Primitives échangées entre FSPMM1 et MSAL1M

Le Tableau 85 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMM1 et reçues par le MSAL1M.

Tableau 85 – Primitives émises par la FSPMM1 vers le MSAL1M

Nom de primitive	Source	Paramètres associés	Fonctions
MInit.req	FSPMM1	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.req	FSPMM1	(aucun)	—
Abort.req	FSPMM1	(aucun)	—

Le Tableau 86 montre les primitives de service, y compris leurs paramètres associés, émises par le MSAL1M et reçues par la FSPMM1.

Tableau 86 – Primitives émises par le MSAL1M vers la FSPMM1

Nom de primitive	Source	Paramètres associés	Fonctions
MInit.cnf	MSAL1M	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.cnf	MSAL1M	(aucun)	—
Fault.ind	MSAL1M	(aucun)	—
Started.ind	MSAL1M	Limite d'alarme	—
Stopped.ind	MSAL1M	(aucun)	—
Alarm Notification.ind	MSAL1M	Slot Number, Alarm Type, Seq Nr, Add Ack, Alarm Specifier, Alarm Data	—

9.8.1.2 Primitives échangées entre MSCY1M et MSAL1M

Le Tableau 87 montre les primitives de service, y compris leurs paramètres associés, émises par le MSCY1M et reçues par le MSAL1M.

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Tableau 87 – Primitives émises par le MSCY1M vers le MSAL1M

Nom de primitive	Source	Paramètres associés	Fonctions
Start.req	MSCY1M	Rem Add	Démarrer le traitement MS1
Stop.req	MSCY1M	Rem Add	Arrêter le traitement MS1
Change Diag.req	MSCY1M	Rem Add, Diag Data	Indique le changement de diagnostic

Le Tableau 88 montre les primitives de service, y compris leurs paramètres associés, émises par le MSAL1M et reçues par le MSCY1M.

Tableau 88 – Primitives émises par le MSAL1M vers le MSCY1M

Nom de primitive	Source	Paramètres associés	Fonctions
Abort.ind	MSAL1M	Rem Add	MSAL1 a détecté une erreur.
Start.cnf	MSAL1M	Rem Add	Démarrage achevé.
Stop.cnf	MSAL1M	Rem Add	Arrêt achevé.

9.8.1.3 Paramètres des primitives de MSAL1M

Les paramètres utilisés avec les primitives échangées entre MSAL1M et le MSCY1M sont décrits dans le Tableau 89.

Tableau 89 – Paramètres utilisés avec les primitives échangées entre le MSAL1M et le MSCY1M

Nom de paramètre	Description
Rem Add	Ce paramètre achemine l'adresse DL de l'esclave DP assigné.
Diag Data	Ce paramètre achemine de nouvelles informations de diagnostic d'un esclave DP

9.8.2 Description de diagramme d'états

Le diagramme d'états Alarm d'un maître DP (Classe 1) gère des messages d'alarme, qui ont été indiqués par un esclave DP.

Lorsqu'il a démarré, le diagramme d'états attend d'être démarré par le MSCY1M. La Start.req suit, lorsque l'esclave DP assigné a atteint l'état DATA-EXCH. MSAL1M est arrêté par MSCY1M si l'esclave DP correspondant quitte l'état DATA-EXCH.

Le service Slave_Diag.cnf fournit de nouvelles Diag_Data au MSCY1M. MSCY1M copie les informations de diagnostic dans l'interface de données utilisateur. De plus, le MSCY1M transfère une "Alarm" dans Ext_Diag_Data au MSAL1M.

Les demandes d'alarmes sont indiquées à l'utilisateur. Il faut que l'utilisateur confirme les indications d'alarme par le service Alarm_Ack.

Le diagramme d'états MSAC1 indique la fin de la séquence d'alarme par la primitive de service Alarm_Ack.cnf.

Deux types de gestion d'alarmes sont fournis par un maître DP (Classe 1), à savoir le mode type et le mode séquence. Selon le mode choisi, le nombre d'alarmes en cours par esclave DP diffère. Dans le mode type, une seule alarme en cours par type et par esclave DP est autorisée. 6 types d'alarmes différents sont définis. Dans le mode séquence, le type d'alarme n'est pas pertinent. Seul le nombre d'alarmes traitées simultanément pour chaque esclave DP est limité à une valeur comprise entre 2 et 32.

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Variables locales

Alarm_Sequence
(Boolean)

Cette variable indique si:

une seule alarme d'un type d'alarme spécifique peut être active à la fois (mode type: Alarm_Sequence=False) ou

plusieurs alarmes (2 à 32) de n'importe quel type peuvent être actives à un instant donné (mode séquence: Alarm_Sequence=True).

Alarm_State_Table
(Unsigned8)

L'Alarm_State_Table est une matrice bidimensionnelle ayant 7 * 32 éléments. Chaque élément de la matrice stocke des informations relatives à l'état actuel de n'importe quelle alarme. La matrice est indexée avec la classe d'alarme calculée à partir de l'Alarm_Type et du Seq_Nr de l'alarme.

Plage
Le Tableau 90 montre les valeurs possibles pour les états réels des alarmes dans la Alarm_State_Table.

Tableau 90 – Valeurs possibles dans la Alarm_State_Table

Valeur	Signification
idle	Aucun service n'est en cours de traitement conformément à l'indice réel.
w_res	Attendre une MSAL1_Alarm.res conformément à l'indice réel.
w_req	Pour cet indice (Alarm_Type,Seq_Nr), un Alarm_Acknowledge est stocké dans l'Alarm_Ack_FIFO et MSAL1M attend une autre MSAC1M_Alarm_Ack.cnf.
w_con	Attendre une MSAC1M_Alarm_Ack.cnf conformément à l'indice réel.

Alarm_Limit
(Unsigned8)

Cette variable indique le nombre maximal d'alarmes parallèles de chaque Esclave.

Plage: 7..Bus_Para.Alarm_Max

Alarm_Decode
(Array 0 à 7 de Unsigned8)

Table pour décoder le nombre d'alarmes parallèles.

Plage:

Alarm_Decode[0]= 1
Alarm_Decode[1]= 2
Alarm_Decode[2]= 4
Alarm_Decode[3]= 8
Alarm_Decode[4]=12
Alarm_Decode[5]=16
Alarm_Decode[6]=24
Alarm_Decode[7]=32

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Actual_Max_Alarm_Len
(Unsigned8)

Actual_Max_Alarm_Len contient la longueur maximale réelle d'une alarme.

Plage: 4 à 64

Alarm_Count
(Unsigned8)

Ce compteur contient le nombre d'alarmes qui ont été réellement envoyées par l'Esclave. Le compteur est uniquement utilisé dans le mode de séquence.

Plage: 0 à 32

Waiting_For_Alarm_Ack
(Boolean)

Cette variable montre si le diagramme d'états Alarm attend réellement la confirmation de n'importe quel acquittement d'alarme (True) ou non (False).

Alarm_Ack_FIFO
L'Alarm_Ack_FIFO est utilisé pour stocker les Alarm_Ack qui sont encore à envoyer. Chaque élément de ce FIFO d'acquittements d'alarmes a 3 entrées Unsigned8: Alarm_Type, Slot_Number et Seq_Nr. Le FIFO doit pouvoir contenir jusqu'à 32 entrées Bus_Para.Alarm_Max.

Alarm_Ack_FIFO_Filled
(Boolean)

Cette variable indique si l'Alarm_Ack_FIFO contient au moins une entrée (True) ou elle est vide (False). La valeur de la variable est adaptée à chaque accès au FIFO.

Act_Alarm_PDU
(Octet-String)

La structure Act_Alarm_PDU est utilisée temporairement pour stocker une Alarme pendant qu'elle est évaluée.

Stored_Alarm_PDU
(Octet-String)

La structure Stored_Alarm_PDU est utilisée pour stocker exactement une Alarm-PDU. Au maximum une Alarm-PDU doit être sauvegardée localement pendant l'attente de la MSAC1M_Alarm_Ack.cnf du Seq_Nr correspondant, car il n'y a qu'une seule voie pour les acquittements d'alarmes.

Actual_Enabled_Alarms
(Bitarea[0..7])

Cette variable indique les types d'alarmes qui sont effectivement pris en charge par le Maître.

Bit 0 = réservé
Bit 1 = réservé
Bit 2 = Update_Alarm
Bit 3 = Status_Alarm
Bit 4 = Manufacturer_Specific_Alarm
Bit 5 = Diagnostic_Alarm
Bit 6 = Process_Alarm
Bit 7 = Pull_Plug_Alarm

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Fonctions

Fill_Alarm_State_Table(State)
Cette fonction met chaque entrée saisie de l'Alarm_State_Table bidimensionnelle à la valeur initiale donnée de "State". Les paramètres valides pour State sont idle, w_res, w_req et w_con. La fonction n'a pas de valeur de retour.

Reset_Alarm_Ack_FIFO()
Cette fonction réinitialise le FIFO pour les acquittements d'alarmes. Au cours de cette fonction, toutes les entrées sont effacées et, ainsi, la variable Alarm_Ack_FIFO_Filled est mise à False. La fonction n'a pas de valeur de retour.

Store_To_Alarm_Ack_FIFO(Alarm_Type, Slot_Number, Seq_Nr)
Au moyen de cette fonction, un jeu de 3 paramètres de reconnaissance d'alarmes, à savoir Alarm_Type, Slot_Number et Seq_Nr, est extrait des paramètres donnés et stocké dans l'Alarm_Ack_FIFO. La fonction n'a pas de valeur de retour.

Load_From_Alarm_Ack_FIFO(Alarm_Type, Slot_Number, Seq_Nr)
Au moyen de cette fonction, un jeu de 3 paramètres de reconnaissance d'alarmes, à savoir Alarm_Type, Slot_Number et Seq_Nr, est lu dans l'Alarm_Ack_FIFO et stocké dans les paramètres donnés. La fonction n'a pas de valeur de retour.

AcIs(Alarm_Type)
Cette fonction calcule l'indice relatif à l'Alarm_Type comme valeur de retour comme suit:

si (Alarm_Type = 1) retourner 0
si (Alarm_Type = 2) retourner 1
si (Alarm_Type = 3) retourner 2
si (Alarm_Type = 4) retourner 3
si (Alarm_Type = 5) retourner 4
si (Alarm_Type = 6) retourner 5
si (Alarm_Type >= 32) && (Alarm_Type <= 126) retourner 6

Macros
ALARM_ENABLED

```
(
((Alarm_Type=3 OR Alarm_Type=4)
&& Actual_Enabled_Alarms[7]=TRUE)
|| ((Alarm_Type=2) && Actual_Enabled_Alarms[6]=TRUE)
|| ((Alarm_Type=1) && Actual_Enabled_Alarms[5]=TRUE)
|| ((Alarm_Type>=32 && Alarm_Type<=126)
&& Actual_Enabled_Alarms[4]=TRUE)
|| ((Alarm_Type=5) && Actual_Enabled_Alarms[3]=TRUE)
|| ((Alarm_Type=6) && Actual_Enabled_Alarms[2]=TRUE)
)
```

9.8.3 Table d'états de MSAL1M

Le Tableau 91 contient la description complète du diagramme d'états MSAL1M.

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Tableau 91 – Table d'états de MSAL1M

#	État courant	Evénement /Condition =>Action	État suivant
1	POWER-ON	MSAL1M_Minit_MS1.req(Rem_Add) =>MSAL1M_Minit_MS1.cnf(Rem_Add)	WSTART
2	POWER-ON	MSAL1M_Abort.req(Rem_Add) =>ignore	POWER-ON
3	POWER-ON	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) =>MSAL1M_Alarm_Ack.cnf(-)(Rem_Add, Status:=Not_Initialized)	POWER-ON
4	WSTART	MSAL1M_Start.req(Rem_Add) /Alarm_Mode = 0 =>Alarm_Sequence := False Alarm_Limit := 7 Actual_Enabled_Alarms := Enabled_Alarms Actual_Max_Alarm_Len := Max_Alarm_Len Fill_Alarm_State_Table(idle) Reset_Alarm_Ack_FIFO() Alarm_Count := 0 Clear Stored_Alarm_PDU Waiting_For_Alarm_Ack := False MSAL1M_Started.ind(Rem_Add, Alarm_Limit) MSAL1M_Start.cnf(Rem_Add)	W-DIA-EVENT
5	WSTART	MSAL1M_Start.req(Rem_Add) /Alarm_Mode <> 0 =>Alarm_Sequence := True Alarm_Limit := min(Bus_Para.Alarm_Max, Alarm_Decode[Alarm_Mode]) Actual_Enabled_Alarms := Enabled_Alarms Actual_Max_Alarm_Len := Max_Alarm_Len Fill_Alarm_State_Table(idle) Reset_Alarm_Ack_FIFO() Alarm_Count := 0 Clear Stored_Alarm_PDU Waiting_For_Alarm_Ack := False MSAL1M_Started.ind(Rem_Add, Alarm_Limit) MSAL1M_Start.cnf(Rem_Add)	W-DIA-EVENT
6	WSTART	MSAL1M_Stop.req(Rem_Add) =>MSAL1M_Fault.ind	POWER-ON
7	WSTART	MSAL1M_Change_Diag.req(Rem_Add, Diag_Block) =>MSAL1M_Fault.ind	WSTART
8	WSTART	MSAL1M_Abort.req(Rem_Add) =>ignore	WSTART
9	WSTART	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) =>MSAL1M_Alarm_Ack.cnf(-)(Rem_Add, Status:=Not_Started)	WSTART
10	WSTART	MSAC1M_Alarm_Ack.cnf(+)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) =>MSAL1M_Fault.ind	POWER-ON
11	W-DIA-EVENT	MSAL1M_Minit_MS1.req(Rem_Add) =>MSAL1M_Fault.ind	POWER-ON
12	W-DIA-EVENT	MSAL1M_Abort.req(Rem_Add) =>MSAL1M_Abort.ind(Rem_Add)	WSTART
13	W-DIA-EVENT	MSAL1M_Start.req(Rem_Add) =>MSAL1M_Fault.ind	POWER-ON
14	W-DIA-EVENT	MSAL1M_Stop.req(Rem_Add) =>MSAL1M_Stopped.ind(Rem_Add) MSAL1M_Stop.cnf(Rem_Add)	WSTART
15	W-DIA-EVENT	MSAL1M_Change_Diag.req(Rem_Add, Diag_Block) =>Act_Alarm_PDU := Alarm-PDU	CHK-DIA-ALARM

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#	État courant	Evénement /Condition =>Action	État suivant
16	W-DIA-EVENT	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) /ALARM_ENABLED(Alarm_Type) = False =>MSAL1M_Alarm_Ack.cnf(-)(Rem_Add, Status:=Not_Enabled)	W-DIA-EVENT
17	W-DIA-EVENT	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) /ALARM_ENABLED(Alarm_Type) = True && Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] <> w_res =>MSAL1M_Alarm_Ack.cnf(-)(Rem_Add, Status:=Alarm_Not_Pending)	W-DIA-EVENT
18	W-DIA-EVENT	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) /ALARM_ENABLED(Alarm_Type) = True && Alarm_Sequence = False && Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] = w_res && Waiting_For_Alarm_Ack = False =>Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] := w_con Waiting_For_Alarm_Ack := True MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr)	W-DIA-EVENT
19	W-DIA-EVENT	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) /ALARM_ENABLED(Alarm-PDU.Alarm_Type) = True && Alarm_Sequence = False && Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] = w_res && Waiting_For_Alarm_Ack = True =>Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] := w_req Store_To_Alarm_Ack_FIFO(Alarm_Type, Slot_Number, Seq_Nr)	W-DIA-EVENT
20	W-DIA-EVENT	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) /ALARM_ENABLED(Alarm_Type) = True && Alarm_Sequence = True && Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] = w_res && Waiting_For_Alarm_Ack = False =>Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] := w_con Alarm_Count := Alarm_Count-1 Waiting_For_Alarm_Ack := True MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr)	W-DIA-EVENT
21	W-DIA-EVENT	MSAL1M_Alarm_Ack.req(Rem_Add, Alarm_Type, Slot_Number, Seq_Nr) /ALARM_ENABLED(Alarm_Type) = True && Alarm_Sequence = True && Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] = w_res && Waiting_For_Alarm_Ack = True =>Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] := w_req Store_To_Alarm_Ack_FIFO(Alarm_Type, Slot_Number, Seq_Nr)	W-DIA-EVENT
22	W-DIA-EVENT	MSAC1M_Alarm_Ack.cnf(+)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Waiting_For_Alarm_Ack = False =>MSAL1M_Fault.ind	POWER-ON
23	W-DIA-EVENT	MSAC1M_Alarm_Ack.cnf(+)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Waiting_For_Alarm_Ack = True && Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] <> w_con =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART
24	W-DIA-EVENT	MSAC1M_Alarm_Ack.cnf(+)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Waiting_For_Alarm_Ack = True && Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] = w_con =>Alarm_State_Table[Acls(Alarm_Type), Seq_Nr] := idle Waiting_For_Alarm_Ack := False MSAL1M_Alarm_Ack.cnf(+)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr)	SEND-NEXT-ALARM

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#	État courant	Evénement /Condition =>Action	État suivant
25	CHK-DIA-ALARM	/Act_Alarm_PDU not present =>ignore	W-DIA-EVENT
26	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = False =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART
27	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = False && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = w_res/w_req =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART
28	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = False && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = w_con && Stored_Alarm_PDU present =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART
29	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = False && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = idle =>Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] := w_res MSAL1M_Alarm_Notification.ind(Rem_Add, Alarm_Type:=Act_Alarm_PDU.Alarm_Type, Slot_Number:=Act_Alarm_PDU.Slot_Number, Seq_Nr:=Act_Alarm_PDU.Seq_Nr, Alarm_Specifier:=Act_Alarm_PDU.Alarm_Specifier, Add_Ack:=Act_Alarm_PDU.Add_Ack, Alarm_Data:=Act_Alarm_PDU.Diagnostic_User_Data)	W-DIA-EVENT
30	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = False && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = w_con && Stored_Alarm_PDU not present =>Stored_Alarm_PDU := Act_Alarm_PDU	W-DIA-EVENT
31	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = True && Alarm_Count >= Alarm_Limit =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART
32	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = True && Alarm_Count < Alarm_Limit && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = w_res/w_req =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART

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#	État courant	Evénement /Condition =>Action	État suivant
33	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = True && Alarm_Count < Alarm_Limit && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = idle =>Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] := w_res Alarm_Count := Alarm_Count+1 MSAL1M_Alarm_Ack.ind(Rem_Add, Alarm_Type:=Act_Alarm_PDU.Alarm_Type, Slot_Number:=Act_Alarm_PDU.Slot_Number, Seq_Nr:=Act_Alarm_PDU.Seq_Nr, Alarm_Specifier:=Act_Alarm_PDU.Alarm_Specifier, Add_Ack:=Act_Alarm_PDU.Add_Ack, Alarm_Data:=Act_Alarm_PDU.Diagnostic_User_Data)	W-DIA-EVENT
34	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = True && Alarm_Count < Alarm_Limit && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = w_con && Stored_Act_Alarm_PDU present =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART
35	CHK-DIA-ALARM	/Act_Alarm_PDU present && ALARM_ENABLED(Act_Alarm_PDU.Alarm_Type) = True && Alarm_Sequence = True && Alarm_Count < Alarm_Limit && Alarm_State_Table[Acls(Act_Alarm_PDU.Alarm_Type), Act_Alarm_PDU.Seq_Nr] = w_con && Stored_Alarm_PDU not present =>Stored_Alarm_PDU := Act_Alarm_PDU Alarm_Count := Alarm_Count+1	W-DIA-EVENT
36	SEND-NEXT-ALARM	/Stored_Alarm_PDU not present =>ignore	READ-NEXT-ACK
37	SEND-NEXT-ALARM	/Stored_Alarm_PDU present =>Alarm_State_Table[Acls(Stored_Alarm_PDU.Alarm_Type), Stored_Alarm_PDU.Seq_Nr] := w_res Clear Stored_Alarm_PDU MSAL1M_Alarm_Notification.ind(Rem_Add, Alarm_Type:=Stored_Alarm_PDU.Alarm_Type, Slot_Number:=Stored_Alarm_PDU.Slot_Number, Seq_Nr:=Stored_Alarm_PDU.Seq_Nr, Alarm_Specifier:=Stored_Alarm_PDU.Alarm_Specifier, Add_Ack:=Stored_Alarm_PDU.Add_Ack, Alarm_Data:=Stored_Alarm_PDU.Diagnostic_User_Data)	READ-NEXT-ACK
38	READ-NEXT-ACK	/Alarm_Ack_FIFO_Filled = False =>ignore	W-DIA-EVENT
39	READ-NEXT-ACK	/Alarm_Ack_FIFO_Filled = True =>Load_From_Alarm_Ack_FIFO(New_Alarm_Type, New_Slot_Number, New_Seq_Nr)	SEND-NEXT-ACK
40	SEND-NEXT-ACK	/Alarm_State_Table[Acls(New_Alarm_Type), New_Seq_Nr] <> w_req =>MSAL1M_Abort.ind(Rem_Add) MSAL1M_Stopped.ind(Rem_Add)	WSTART

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#	État courant	Evénement /Condition =>Action	État suivant
41	SEND-NEXT-ACK	/Alarm_State_Table[Acls(New_Alarm_Type), New_Seq_Nr] = w_req =>Alarm_State_Table[Acls(New_Alarm_Type), New_Seq_Nr] := w_con Alarm_Count := Alarm_Count-1 Waiting_For_Alarm_Ack := True MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number:=New_Slot_Number, Alarm_Type:=New_Alarm_Type, Seq_Nr:=New_Seq_Nr)	W-DIA-EVENT
42	ANY-STATE	MSAL1M_Reset.req(Rem_Add) =>MSAL1M_Reset.cnf(Rem_Add)	POWER-ON

9.9 MSAC1M

9.9.1 Définitions des primitives

9.9.1.1 Primitives échangées entre FSPMM1 et MSAC1M

Le Tableau 92 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMM1 et reçues par le MSAC1M.

Tableau 92 – Primitives émises par la FSPMM1 vers le MSAC1M

Nom de primitive	Source	Paramètres associés	Fonctions
Read.req	FSPMM1	Rem Add, Slot Number, Index, Length	
Write.req	FSPMM1	Rem Add, Slot Number, Index, Length, Data	
Alarm Ack.req	FSPMM1	Rem Add, Slot Number, Alarm Type, Seq Nr	

Le Tableau 93 montre les primitives de service, y compris leurs paramètres associés, émises par le MSAC1M et reçues par la FSPMM1.

Tableau 93 – Primitives émises par le MSAC1M vers la FSPMM1

Nom de primitive	Source	Paramètres associés	Fonctions
Reject.ind	MSAC1M	Rem Add, Status	
Read.cnf(+)	MSAC1M	Rem Add, Length, Data	
Read.cnf(-)	MSAC1M	Rem Add, Error Decode, Error Code 1 Error Code 2	
Write.cnf(+)	MSAC1M	Rem Add, Length	
Write.cnf(-)	MSAC1M	Rem Add, Error Decode, Error Code 1 Error Code 2	

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Nom de primitive	Source	Paramètres associés	Fonctions
Alarm Ack.cnf(+)	MSAC1M	Rem Add, Slot Number, Alarm Type, Seq Nr	
Alarm Ack.cnf(-)	MSAC1M	Rem_Add, Slot Number, Alarm Type, Seq Nr	

9.9.1.2 Primitives échangées entre MSAC1M et MSAL1M

Le Tableau 94 montre les primitives de service, y compris leurs paramètres associés, émises par le MSAL1M et reçues par le MSAC1M.

Tableau 94 – Primitives émises par le MSAL1M vers le MSAC1M

Nom de primitive	Source	Paramètres associés	Fonctions
SInit MSAC1.req	MSAL1M	Rem Add	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.req	MSAL1M	Rem Add	
Start.req	MSAL1M	Rem Add	Démarrer le traitement MS1
Stop.req	MSAL1M	Rem Add	Arrêter le traitement MS1

Le Tableau 95 montre les primitives de service, y compris leurs paramètres associés, émises par le MSAC1M et reçues par le MSAL1M.

Tableau 95 – Primitives émises par le MSAC1M vers le MSAL1M

Nom de primitive	Source	Paramètres associés	Fonctions
SInit MSAC1.cnf	MSAC1M	Rem Add	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.cnf	MSAC1M	Rem Add	
Start.cnf	MSAC1M	Rem Add	Démarrage achevé.
Stop.cnf	MSAC1M	Rem Add	Arrêt achevé.
Fault.ind	MSAC1M	(aucun)	
Abort.ind	MSAC1M	Rem Add	MSAC1 a détecté une erreur.

9.9.1.3 Paramètres des primitives de MSAL1M

Les paramètres utilisés avec les primitives échangées entre le MSAL1M et le MSCY1M sont décrits dans le Tableau 96.

Tableau 96 – Paramètres utilisés avec les primitives échangées entre le MSAL1M et le MSCY1M

Nom de paramètre	Description
Rem Add	Ce paramètre achemine l'adresse DL de l'esclave DP assigné.

9.9.2 Description de diagramme d'états

Le diagramme d'états MSAC1M a les trois états POWER-ON, CLOSED et OPEN. Avec l'Init.req provenant du FSPMM1, le diagramme d'états est initialisé et change pour passer à CLOSED. La transition d'état de CLOSED à OPEN est provoquée par la Start.req provenant du Slave-Handler (MSCY1M). Le Slave-Handler appelle ce service dès que l'esclave DP est

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entré dans l'état DATA-EXCH. Lorsque l'esclave DP quitte l'état DATA-EXCH, le service Stop.req est appelé et le diagramme d'états MSAC1M change de l'état OPEN à CLOSED. Une demande Read/_Write avec un paramètre interdit ou une demande de service parallèle pendant que la lecture/écriture est encore en cours de traitement est rejetée pour l'utilisateur en renvoyant un Reject.ind. Une Alarm_Ack.req contenant des paramètres de service interdits ou une Alarm_Ack.req parallèle pendant que la dernière Alarm_Ack.req est encore en cours de traitement provoque l'activation (POWER-ON) d'une transition d'état et le retour d'un Fault.ind dans la FSPMM1.

Le diagramme d'états MSAC1M prend en compte le fait que l'Alarm_Ack peut être géré soit sur le SAP 51 comme le service Read/Write, soit sur SAP 50.

Les réponses pour les services Read et Write sont surveillées au moyen du temporisateur C1.

Le MSAC1M_Alarm_Ack est géré sur le même SAP que le MSAC1M_Read/Write.

Si un MSAC1M_Alarm_Ack est demandé par le diagramme d'états MSAL1M ou un Read/_Write est demandé par l'utilisateur alors qu'aucun service n'est traité, la demande de service est transmise directement à la DL. Si une Alarm_Ack.req est demandée et un Read/Write est traité, l'Alarm_Ack.req est stockée et envoyée dès que la confirmation du Read/Write est reçue. Lorsqu'une Alarm_Ack.req est demandée et un Alarm_Ack est traité, le Read/Write est stocké et envoyé dès que la confirmation de l'Alarm_Ack est reçue.

Lorsqu'il reconnaît une erreur alors qu'une demande de service est en cours de traitement, le diagramme d'états MSAC1M

- abandonne la connexion MS0 en indiquant une Abort.ind au MSCY1S,
- supprime un service éventuellement stocké,
- informe l'utilisateur par une Reject.ind dans le cas d'un service Read/_Write en cours et
- passe de l'état OPEN à l'état CLOSE.
- Lorsqu'une Stop.req est demandée par le Slave-Handler, le MSAC1M attend d'abord une DATA-REPLY.cnf éventuellement en cours. Après quoi, la Stop.req est traitée. Une confirmation de Read/_Write est transmise à l'utilisateur et une Alarm_Ack.req éventuellement stockée est supprimée. Dans le cas d'une confirmation Alarm_Ack, cette confirmation est ignorée, un service Read/_Write éventuellement en cours est supprimé et l'utilisateur en est informé par une Reject.ind. Puis, la Stop.cnf est transmise au Slave-Handler et le diagramme d'états MSAC1M passe de l'état OPEN à l'état CLOSE.

MSAC1M_Alarm_Ack est géré sur SAP 50

Lorsqu'une Alarm_Ack est demandée par le diagramme d'états MSAL1M ou un service Read/_Write est demandé par l'utilisateur, la demande de service est transmise directement à la DL.

Lorsqu'il reconnaît une erreur alors qu'une demande de service est en cours de traitement sur l'autre SAP, le diagramme d'états MSAC1M

- attend la confirmation du service sur l'autre SAP,
- puis abandonne la connexion MSCY1M en indiquant une Abort.ind au Slave-Handler MSCY1S,
- informe l'utilisateur par une Reject.ind dans le cas d'un service _Read/_Write en cours et
- passe de l'état OPEN à l'état CLOSE.

Lorsqu'une Stop.req est demandée par le Slave-Handler, le MSAC1M attend d'abord une DL-DATA-REPLY.cnf éventuellement en cours. Après quoi, la Stop.req est traitée. Une confirmation de MSAC1M_Read/_Write en cours est transmise à l'utilisateur et une

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confirmation d'Alarm_Ack en cours est ignorée. Puis, la Stop.cnf est transmise au Slave-Handler et le diagramme d'états MSAC1M passe de l'état OPEN à l'état CLOSE.

Variables locales

Go_Abort
(Boolean)

Cette variable est mise à TRUE si la Stop.req est utilisée.

Internal_Abort
(Boolean)

Cette variable est mise à TRUE si une erreur se produit dans la réponse d'esclave.

Max_Data_Length
(Unsigned8)

Cette variable définit la taille maximale de la MS1-PDU pour tous les esclaves DP.

Alarm_DSAP
(Unsigned8)

Cette variable contient le DSAP auquel l'Alarm_Ack est envoyé.

Service_Header
(Unsigned8)

Cette variable contient le Function_Num du service MS1 réellement envoyé au DSAP 51.

Service_Buffer
(Octet-String)

Cette variable contient une PDU de demande de Read ou de Write si un Alarm_Ack est utilisé (DSAP 51).

Alarm_Buffer
(Octet-String)

Cette variable contient un Alarm_Ack si une PDU de demande de Read ou de Write est utilisée (DSAP 51).

Src
(Unsigned8)

Cette variable contient le nombre des services réels Read ou Write traités (seulement 0 ou 1 est possible).

Arc
(Unsigned8)

Cette variable contient le nombre des services Alarm_Ack réels (seulement 0 ou 1 est possible).

Stop_Pending
(Boolean)

Cette variable est mise à TRUE si une Stop.cnf est en cours.

Start_C1_Monitoring
(Boolean)

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Cette variable est mise à TRUE si l'utilisateur émet une primitive de service "request" Read ou Write. Elle est utilisée pour distinguer le premier sondage du plus tardif et pour lancer le temporisateur de C1 pour surveiller la réponse de l'utilisateur.

C1_Timer_Expired
(Boolean)

Cette variable est mise à TRUE si le temporisateur C1 expire. Avec la prochaine confirmation, elle est utilisée pour abandonner la connexion si aucune réponse n'est disponible. Elle est pertinente seulement si au moins un sondage pour la réponse a été émis.

C1_Timer
Temporisateur avec une base de 10 ms

Ce temporisateur est utilisé pour surveiller la réponse de l'esclave DP conformément aux valeurs spécifiées dans le GSD de l'esclave DP (stocké dans la CRL). La fonction Start C1 Timer démarre ou redémarre ce temporisateur avec la valeur C1_Response_Timeout prise dans l'entrée de CRL appropriée. La fonction Stop C1 Timer arrête le fonctionnement qu'il soit ou non en fonctionnement auparavant.

Macros et Remplacements

<REQPARAM>

<
XXX=Read : Slot_Number, Index, Length
XXX=Write : Slot_Number, Index, Length, Data
>

<VALID_SERVICE_FUNCTION_NUM>

<
XXX=Read : 0x5E
XXX=Write : 0x5F
>

<LOAD_SERVICE_BUFFER>

<
XXX=Read : Service_Buffer[1]=0x5E
Service_Buffer[2]=Slot_Number
Service_Buffer[3]=Index
Service_Buffer[4]=Length
XXX=Write : Service_Buffer[1]=0x5F
Service_Buffer[2]=Slot_Number
Service_Buffer[3]=Index
Service_Buffer[4]=Length
Service_Buffer[5..Length+4]=Data
>

<LOAD_ALARM_BUFFER>

<
Alarm_Buffer[1]=0x5C
Alarm_Buffer[2]=Slot_Number

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Alarm_Buffer[3]=Alarm_Type
Alarm_Buffer[4]=Seq_Nr*8
>

IS_VALID_SERVICE_REQ

(
Length ≤ Max_Data_Length
)

IS_VALID_SERVICE_RES_PDU

(
L_sdu[1] = Service_Buffer[1]
&& L_sdu.len ≥ 4
&& (L_sdu[1] <> 0x5E || L_sdu.len ≥ L_sdu[4]+4)
&& Max_Data_Length ≥ L_sdu[4]
)

IS_VALID_SERVICE_NRS_PDU

(
L_sdu[1] = (Service_Buffer[1]+0x80)
&& L_sdu.len = 4
)

IS_ALARM_ACK_PDU

(
L_sdu[2..4] = Alarm_Buffer[2..4]
&& (L_sdu[1] AND 0x7F = (Service_Buffer[1])
&& L_sdu.len = 4
)

<VALID_SERVICE>

<
Service_Header=0x5E : MSAC1M_Read
Service_Header=0x5F : MSAC1M_Write
>

<VALID_SERVICE_RES_PARAM>

<
Service_Header=0x5E : Length=L_sdu[4],
Data=L_sdu[5..Length+4]
Service_Header=0x5F : Length=L_sdu[4]
>

<VALID_SERVICE_NRS_PARAM>

<

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```
    Error_Decode=L_sdu[2],
    Error_Code_1=L_sdu[3],
    Error_Code_2=L_sdu[4],
    >
REJECT_VALID_SERVICE
    (
    if (Stop_Pending=True)
      MSAC1M_Reject.ind(Rem_Add, Status=REJ_SE)
    else
    if.(Go_Abort=True)
      MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT)
    else
    if (Src <> 0)
      MSAC1M_Reject.ind(Rem_Add, Status=REJ_PS)
    else
    if (Length<=Max_Data_Length)
      MSAC1M_Reject.ind(Rem_Add, Status=REJ_LE)
    else
      MSAC1M_Reject.ind(Rem_Add, Status=REJ_IV)
    )

CONTINUE_VALID_SERVICE
    (
    if (Src <> 0 && Alarm_Dsap=51)
      Service_Header = Service_Buffer[1]
      Start_C1_Monitoring = TRUE
      DMPMM1_DATA_REPLY.req(SSAP=51, DSAP=51,
       Rem_Add,L_sdu=Service_Buffer, Serv_class=Low)
    )

CONTINUE_ALARM_ACK
    (
    if (Arc <> 0 && Alarm_Dsap=51)
      Service_Header = Alarm_Buffer[1]
      DMPMM1_DATA_REPLY.req(SSAP=51, DSAP=51, Rem_Add,
       L_sdu=Alarm_Buffer, Serv_class=Low)
    )

IS_INVALID_SERVICE_RES
    (
     (L_status = DL &&
     (L_sdu[1]<> Service_Header || L_sdu.len<4) &&
     (L_sdu[1]<> (Service_Header+0x80) || L_sdu.len<> 4)
     ) ||
```

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L_status = DS/UE/RS/RDL/NA/RR/LR/DH/RDH
)

IS_INVALID_ALARM_ACK_RES

(
(L_status = DL &&
(L_sdu[1..4]<> Alarm_Buffer[1..4] || L_sdu.len<> 4)
) ||
L_status = DS/UE/RS/RDL/NA/RR/LR/DH/RDH
)

CHECK_STOP_PENDING

(
if (Stop_Pending = TRUE)
MSAC1M_Stop.cnf(Rem_Add)
else
MSAC1M_Abort.ind(Rem_Add)
)

9.9.3 Table d'états de MSAC1M

Le Tableau 97 contient la description complète du diagramme d'états MSAC1M.

Tableau 97 – Table d'états de MSAC1M

#	État courant	Événement /Condition =>Action	État suivant
1	POWER-ON	MSAC1M_MInit_MSAC1.req(Rem_Add) => MSAC1M_MInit_MSAC1.cnf(Rem_Add)	CLOSED
2	CLOSED	MSAC1M_Start.req(Rem_Add) => Alarm_Buffer := empty Service_Buffer := empty Stop_Pending := False Go_Abort := False Start_C1_Monitoring := FALSE C1_Timer_Expired := FALSE Src := 0 Arc := 0 Service_Header := 0 Max_Data_Length := Max_Channel_Data_Length if (Extra_Alarm_Sap=FALSE) (Alarm_Dsap:=51) ELSE (Alarm_Dsap:=50) MSAC1M_Start.cnf(Rem_Add)	OPEN
3	CLOSED	MSAC1M_Stop.req(Rem_Add) => MSAC1M_Stop.cnf(Rem_Add)	CLOSED
4	CLOSED	MSAC1M_XXX.req(Rem_Add, <REQPARAM>) => MSAC1M_Reject.ind(Rem_Add, Status:=REJ_SE)	CLOSED
5	CLOSED	MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) => ignore	CLOSED

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#	État courant	Événement /Condition =>Action	État suivant
6	CLOSED	DMPMM1_DATA_REPLY.cnf(SSAP, DSAP, Rem_Add, L_sdu, Serv_class, L_status) => MSAC1M_Fault.ind(Rem_Add)	POWER-ON
7	OPEN	MSAC1M_Start.req(Rem_Add) => MSAC1M_Fault.ind(Rem_Add)	POWER-ON
8	OPEN	MSAC1M_Stop.req(Rem_Add) /Arc = 0 && Src = 0 => MSAC1M_Stop.cnf(Rem_Add)	CLOSED
9	OPEN	MSAC1M_Stop.req(Rem_Add) /Arc <> 0 || Src <> 0 => Stop_Pending:=True	OPEN
10	OPEN	MSAC1M_XXX.req(Rem_Add, <REQPARAM>) /Src = 0 && Stop_Pending = False && Go_Abort = False && IS_VALID_SERVICE_REQ && (Arc = 0 || Alarm_Dsap <> 51) => Service_Header := <VALID_SERVICE_FUNCTION_NUM> Src := Src+1 Start_C1_Monitoring:=TRUE <LOAD_SERVICE_BUFFER> DMPMM1_DATA_REPLY.req(SSAP:=51, DSAP:=51, Rem_Add, L_sdu:=Service_Buffer, Serv_class:=Low)	OPEN
11	OPEN	MSAC1M_XXX.req(Rem_Add, <REQPARAM>) /Src = 0 && Stop_Pending = False && Go_Abort = False && IS_VALID_SERVICE_REQ && Arc <> 0 && Alarm_Dsap = 51 => Src := Src+1 <LOAD_SERVICE_BUFFER>	OPEN
12	OPEN	MSAC1M_XXX.req(Rem_Add, <REQPARAM>) /Src <> 0 || Stop_Pending = True || Go_Abort = True || NOT (IS_VALID_SERVICE_REQ) => REJECT_VALID_SERVICE	OPEN
13	OPEN	MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Arc = 0 && Stop_Pending = False && Go_Abort = False && Alarm_Dsap <> 51 => Arc := Arc+1 <LOAD_ALARM_BUFFER> DMPMM1_DATA_REPLY.req(SSAP:=51, DSAP:=Alarm_Dsap, Rem_Add, L_sdu:=Alarm_Buffer, Serv_class:=Low))	OPEN
14	OPEN	MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Arc = 0 && Stop_Pending = False && Go_Abort = False && Src = 0 && Alarm_Dsap = 51 => Arc := Arc+1 DMPMM1_DATA_REPLY.req(SSAP:=51, DSAP:=Alarm_Dsap, Rem_Add, L_sdu:=Alarm_Buffer, Serv_class:=Low))	OPEN
15	OPEN	MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Arc = 0 && Stop_Pending = False && Go_Abort = False && Src <> 0 && Alarm_Dsap = 51 => Arc := Arc+1 <LOAD_ALARM_BUFFER>	OPEN
16	OPEN	MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Arc=0 && (Stop_Pending = True || Go_Abort = True) => ignore	OPEN
17	OPEN	MSAC1M_Alarm_Ack.req(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr) /Arc <> 0 => DMPMM1_Fault.ind(Rem_Add, Status:=MSAC1_Fault)	POWER-ON

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#	État courant	Événement /Condition =>Action	État suivant
18	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_RES_PDU && Src <> 0 && L_sdu[1] = Service_Header && Stop_Pending = False && Go_Abort = False => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 CONTINUE_ALARM_ACK MSAC1_<VALID_SERVICE>.cnf(+)(Rem_Add, <VALID_SERVICE_RES_PARAM>)	OPEN
19	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_RES_PDU && Src <> 0 && L_sdu[1] = Service_Header && Stop_Pending = True && (Arc=0 || Alarm_Dsap=51) => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 Arc := 0 MSAC1_<VALID_SERVICE>.cnf(+)(Rem_Add, <VALID_SERVICE_RES_PARAM>) MSAC1M_Stop.cnf(Rem_Add)	CLOSED
20	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_RES_PDU && Src <> 0 && L_sdu[1] = Service_Header && Stop_Pending = True && Arc <> 0 && Alarm_Dsap <> 51 => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 MSAC1_<VALID_SERVICE>.cnf(+)(Rem_Add, <VALID_SERVICE_RES_PARAM>)	OPEN
21	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_RES_PDU && Src <> 0 && L_sdu[1] = Service_Header && Stop_Pending = False && Go_Abort = True => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 MSAC1_<VALID_SERVICE>.cnf(+)(Rem_Add, <VALID_SERVICE_RES_PARAM>) MSAC1M_Abort.ind(Rem_Add)	CLOSED
22	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_NRS_PDU && Src <> 0 && L_sdu[1] = (Service_Header+0x80) && Stop_Pending = False && Go_Abort = False => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 CONTINUE_ALARM_ACK MSAC1_<VALID_SERVICE>.cnf(-)(Rem_Add, <VALID_SERVICE_NRS_PARAM>)	OPEN
23	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_NRS_PDU && Src <> 0 && L_sdu[1] = (Service_Header+0x80) && Stop_Pending = True && (Arc=0 || Alarm_Dsap=51) => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 Arc := 0 MSAC1_<VALID_SERVICE>.cnf(-)(Rem_Add, <VALID_SERVICE_NRS_PARAM>) MSAC1M_Stop.cnf(Rem_Add)	CLOSED

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#	État courant	Événement /Condition =>Action	État suivant
24	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_NRS_PDU && Src <> 0 && L_sdu[1] = (Service_Header+0x80) && Stop_Pending = True && Arc <> 0 && Alarm_Dsap <> 51 => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 MSAC1_<VALID_SERVICE>.cnf(-)(Rem_Add, <VALID_SERVICE_NRS_PARAM>)	OPEN
25	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_SERVICE_NRS_PDU && Src <> 0 && L_sdu[1] = (Service_Header+0x80) && Stop_Pending = False && Go_Abort = True => Stop C1 Timer() C1_Timer_Expired := FALSE Src := 0 MSAC1_<VALID_SERVICE>.cnf(-)(Rem_Add, <VALID_SERVICE_NRS_PARAM>) MSAC1M_Abort.ind(Rem_Add)	CLOSED
26	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_ALARM_ACK_PDU && Arc <> 0 && L_sdu[1]=Service_Buffer[1] && (Alarm_Dsap<>51 || L_sdu[1]=Service_Header) && Stop_Pending = False && Go_Abort = False => Arc := 0 CONTINUE_VALID_SERVICE MSAC1S_Alarm_Ack.cnf(+)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr)	OPEN
27	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_ALARM_ACK_PDU && Arc <> 0 && L_sdu[1]=(Service_Buffer[1] OR 0x80) && (Alarm_Dsap<>51 || L_sdu[1]=Service_Header) && Stop_Pending = False && Go_Abort = False => Arc := 0 CONTINUE_VALID_SERVICE MSAC1S_Alarm_Ack.cnf(-)(Rem_Add, Slot_Number, Alarm_Type, Seq_Nr)	OPEN
28	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_ALARM_ACK_RES_PDU && Arc <> 0 && (Alarm_Dsap<>51 || L_sdu[1]=Service_Header) && Stop_Pending = True && Src = 0 => Arc := 0 MSAC1M_Stop.cnf(Rem_Add)	CLOSED
29	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_ALARM_ACK_PDU && Arc <> 0 && Alarm_Dsap = 51 && L_sdu[1] = Service_Header && Stop_Pending = True && Src <> 0 => Arc := 0 Src := 0 MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT) MSAC1M_Stop.cnf(Rem_Add)	CLOSED
30	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_ALARM_ACK_PDU && Arc <> 0 && Alarm_Dsap <> 51 && Stop_Pending = True && Src <> 0 => Arc := 0	OPEN

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#	État courant	Événement /Condition =>Action	État suivant
31	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = DL && IS_VALID_ALARM_ACK_PDU && Arc <> 0 && (Alarm_Dsap<>51 || L_sdu[1]=Service_Header) && Stop_Pending = False && Go_Abort = True => Arc := 0 MSAC1M_Abort.ind(Rem_Add)	CLOSED
32	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Src <> 0 && Service_Header <> Alarm_Ack && Stop_Pending = False && Go_Abort = False && Start_C1_Monitoring = TRUE => StartTimer C1() Start_C1_Monitoring = FALSE DMPMM1_DATA_REPLY.req(SSAP=51, DSAP, Rem_Add, L_sdu.len=0, Serv_class=Low)	OPEN
33	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Src <> 0 && Service_Header <> Alarm_Ack && Stop_Pending = False && Go_Abort = False && Start_C1_Monitoring = FALSE && C1_Timer_Expired = FALSE => DMPMM1_DATA_REPLY.req(SSAP=51, DSAP, Rem_Add, L_sdu.len=0, Serv_class=Low)	OPEN
34	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Src <> 0 && Service_Header <> Alarm_Ack && Stop_Pending = False && Go_Abort = False && Start_C1_Monitoring = FALSE && C1_Timer_Expired = TRUE => C1_Timer_Expired = FALSE Src:=0 MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT) MSAC1M_Abort.ind(Rem_Add)	CLOSED
35	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Src <> 0 && Service_Header <> Alarm_Ack && Stop_Pending = True && (Arc=0 || Alarm_Dsap=51) => Src := 0 Arc := 0 MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT) MSAC1M_Stop.cnf(Rem_Add)	CLOSED
36	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Src <> 0 && Service_Header <> Alarm_Ack && Stop_Pending = True && Arc <> 0 && Alarm_Dsap <> 51 => Src := 0 MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT)	OPEN
37	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Src <> 0 && Service_Header <> Alarm_Ack && Stop_Pending = False && Go_Abort = True => Src := 0 MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT) MSAC1M_Abort.ind(Rem_Add)	CLOSED
38	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Arc <> 0 && (Service_Header=Alarm_Ack || Alarm_Dsap<>51) && Stop_Pending = False && Go_Abort = False => DMPMM1_DATA_REPLY.req(SSAP=51, DSAP, Rem_Add, L_sdu.len=0, Serv_class=Low)	OPEN

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#	État courant	Événement /Condition =>Action	État suivant
39	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Arc <> 0 && (Service_Header=Alarm_Ack || Alarm_Dsap<>51) && Stop_Pending = True && Src = 0 => Arc := 0 MSAC1M_Stop.cnf(Rem_Add)	CLOSED
40	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Arc <> 0 && Service_Header = Alarm_Ack && Alarm_Dsap = 51 && Stop_Pending = True && Src <> 0 => Arc := 0 Src := 0 MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT) MSAC1M_Stop.cnf(Rem_Add)	CLOSED
41	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Arc <> 0 && Alarm_Dsap <> 51 && Stop_Pending = True && Src <> 0 => Arc := 0	OPEN
42	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=Alarm_Dsap, Rem_Add, L_sdu, Serv_class=LOW, L_status) /L_status = NR && Arc <> 0 && (Service_Header=Alarm_Ack || Alarm_Dsap<>51) && Stop_Pending = False && Go_Abort = True => Arc := 0 MSAC1M_Abort.ind(Rem_Add)	CLOSED
43	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /IS_INVALID_SERVICE_RES && Src <> 0 && Service_Header <> Alarm_Ack && (Arc=0 || Alarm_Dsap=51) => Src := 0 Arc := 0 CHECK_STOP_PENDING MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT)	CLOSED
44	OPEN	DMPMM1_DATA_REPLY.cnf(SSAP=51, DSAP=51, Rem_Add, L_sdu, Serv_class=LOW, L_status) /IS_INVALID_SERVICE_RES && Src <> 0 && Service_Header <> Alarm_Ack && Arc <> 0 && Alarm_Dsap <> 51 => Src := 0 if Stop_Pending := False Go_Abort := True MSAC1M_Reject.ind(Rem_Add, Status=REJ_ABORT)	OPEN
45	OPEN	C1 Timer expired => C1_Timer_Expired := TRUE	OPEN
46	CLOSED	C1 Timer expired => no action	CLOSED

9.10 MMAC1

9.10.1 Définitions des primitives

9.10.1.1 Primitives échangées entre FSPMM1 et MMAC1

Le Tableau 98 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMM1 et reçues par le MMAC1.

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Tableau 98 – Primitives émises par la FSPMM1 vers le MMAC1

Nom de primitive	Source	Paramètres associés	Fonctions
SInit MM.req	FSPMM1	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.req	FSPMM1	(aucun)	
Abort.req	FSPMM1	(aucun)	
Get Master Diag.rsp(+)	FSPMM1	Diagnosis Data	
Get Master Diag.rsp(-)	FSPMM1	Status	
Start Seq.rsp(+)	FSPMM1	Max Len Data Unit	
Start Seq.rsp(-)	FSPMM1	Status	
Download.rsp(+)	FSPMM1	(aucun)	
Download.rsp(-)	FSPMM1	Status	
Upload.rsp(+)	FSPMM1	Data	
Upload.rsp(-)	FSPMM1	Status	
End Seq.rsp(+)	FSPMM1	(aucun)	
End Seq.rsp(-)	FSPMM1	Status	
Act Param.rsp(+)	FSPMM1	(aucun)	
Act Param.rsp(-)	FSPMM1	Status	

Le Tableau 99 montre les primitives de service, y compris leurs paramètres associés, émises par le MMAC1 et reçues par la FSPMM1.

Tableau 99 – Primitives émises par le MMAC1 vers la FSPMM1

Nom de primitive	Source	Paramètres associés	Fonctions
SInit MM.cnf	MMAC1	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.cnf	MMAC1	(aucun)	
Abort.ind	MMAC1	(aucun)	
Fault.ind	MMAC1	(aucun)	
Get Master Diag.ind	MMAC1	MDiag Identifier	
Start Seq.ind	MMAC1	Area Code, Timeout	
Download.ind	MMAC1	Area Code, Add Offset, Data	
Upload.ind	MMAC1	Area Code, Add Offset, Data Len	
End Seq.ind	MMAC1	(aucun)	
Act Param.ind	MMAC1	Area Code, Activate	
Act Para Brct.ind	MMAC1	Area Code	

9.10.1.2 Paramètres des primitives de MMAC1

Les paramètres utilisés avec les primitives échangées entre la FSPMM1 et le MMAC1 sont décrits dans "Définition des services de la FAL" (voir la CEI 61158-5-3).

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9.10.2 Description de diagramme d'états

Le diagramme d'états MMAC1 suivant pour la communication Maître-Maître décrit le côté répondeur. Normalement, cela signifie une interface DP d'un appareil d'automatisation tel qu'un automate programmable.

Après réinitialisation, le MMAC1 passe à l'état "POWER-ON" et attend l'initialisation.

Le diagramme d'états reste à l'état "WAIT-REQ" tant qu'il reçoit une demande valide de la couche 2. Après avoir envoyé cette demande à l'utilisateur, le diagramme d'états reste à l'état "WAIT-RES" jusqu'à ce que l'utilisateur émette la réponse. Après stockage de la réponse, le groupe de données est surveillé. Si une séquence de service est exécutée, le MMAC1 attend la prochaine demande de service dans l'état "WAIT-SEQ-REQ".

À tout moment, au maximum une seule demande doit être en exécution.

Variables locales

T1
(Unsigned16)

Temps dans lequel un Maître (Classe 2) doit recevoir au moins une réponse provenant du Maître (Classe 1).

T2
(Unsigned16)

Temps qui peut s'écouler au cours de l'exécution d'une séquence de service entre la réponse et la demande suivante.

Client_Add
(Unsigned8)

Adresse du maître DP (Classe 2) avec lequel communiquer

Service-Header
(Octet-String de longueur 4)

Mémoire intermédiaire pour les quatre premiers octets de la dernière demande.

Sequence_Mode
(Boolean)

Indique qu'une séquence de service est juste en exécution. Au cours d'une séquence de service, le maître DP (Classe 1) est réservé pour le maître DP (Classe 2) respectif.

9.10.3 Table d'états de MMAC1

Le Tableau 100 contient la description complète du diagramme d'états MMAC1.

Tableau 100 – Table d'états de MMAC1

#	État courant	Événement /Condition =>Action	État suivant
1	POWER-ON	MMAC1_Minit_MM.req =>MMAC1_Minit_MM.cnf	WAIT-REQ
2	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 =>ignore	WAIT-REQ

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#	État courant	Événement /Condition =>Action	État suivant
3	WAIT-REQ	MMAC1_XXX.rsp =>MMAC1_Reject.ind(Reason:=REJ_PS)	WAIT-REQ
4	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=2 && L_sdu[1]=0x41 =>Service_Header:=L_sdu[1-2] Client_Add:=Loc_add MMAC1_Get_Master_Diag.ind(Identifier:=L_sdu[2]) DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=Loc_add, Indication_Mode:=Unchanged)	WAIT-PROT
5	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=4 && L_sdu[1]=0x42 =>Sequence_Mode:=True Service_Header:=L_sdu[1-4] T2:=L_sdu[3-4] Client_Add:=Loc_add MMAC1_Start_Seq.ind(Req_Add:=Loc_add, Area_Code:=L_sdu[2], Timeout:=L_sdu[3-4]) DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=Loc_add, Indication_Mode:=Unchanged)	WAIT-PROT
6	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len>=5 && L_sdu[1]=0x43 =>Service_Header:=L_sdu[1-4] Client_Add:=Loc_add MMAC1_Download.ind(Req_Add:=Loc_add, Area_Code:=L_sdu[2], Address_Offset:=L_sdu[3-4], Data:=L_sdu[5-L_sdu.len]) DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=Loc_add, Indication_Mode:=Unchanged)	WAIT-PROT
7	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=5 && L_sdu[1]=0x44 =>Service_Header:=L_sdu[1-4] Client_Add:=Loc_add MMAC1_Upload.ind(Req_Add:=Loc_add, Area_Code:=L_sdu[2], Address_Offset:=L_sdu[3-4], Data_Length:=L_sdu[5]) DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=Loc_add, Indication_Mode:=Unchanged)	WAIT-PROT
8	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=1 && L_sdu[1]=0x45 =>Client_Add:=Loc_add DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=Loc_add, Indication_Mode:=Unchanged)	END-SEQ-PROT
9	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=3 && L_sdu[1]=0x47 =>Service_Header:=L_sdu[1-3] Client_Add:=Loc_add MMAC1_Act_Param.ind(Area_Code:=L_sdu[2], Activate:=L_sdu[3]) DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=Loc_add, Indication_Mode:=Unchanged)	WAIT-PROT
10	WAIT-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /invalid MMAC-REQ-PDU =>Client_Add:=Loc_add DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=Loc_add, Indication_Mode:=Unchanged)	ERR-PROT
11	WAIT-REQ	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=2 && L_sdu[1]=0x46 =>MMAC1_Act_Para_Brct.ind(Area_Code:=L_sdu[2])	WAIT-REQ

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#	État courant	Événement /Condition =>Action	État suivant
12	WAIT-REQ	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len<>2 || L_sdu[1]<>0x46 =>ignore	WAIT-REQ
13	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=0 =>ignore	WAIT-REQ
14	WAIT-SEQ-REQ	MMAC1_xxx.rsp =>Sequence_Mode:=False Stop T2 DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=All, Indication_Mode:=Unchanged)	WAIT-UNPROT
15	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=2 && L_sdu[1]=0x41 =>Service_Header:=L_sdu[1-2] Stop T2 MMAC1_Get_Master_Diag.ind(Identifier:=L_sdu[2])	WAIT-RES
16	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=4 && L_sdu[1]=0x42 =>Sequence_Mode:=False Stop T2 DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu[1]:=0xC9, Serv_class:=Low, Transmit:=Single) {SE error code}	WAIT-UPD
17	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len>=5 && L_sdu[1]=0x43 =>Service_Header:=L_sdu[1-4] Stop T2 MMAC1_Download.ind(Req_Add:=Loc_add, Area_Code:=L_sdu[2], Address_Offset:=L_sdu[3-4], Data:=L_sdu[5-L_sdu.len])	WAIT-RES
18	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=5 && L_sdu[1]=0x44 =>Service_Header:=L_sdu[1-4] Stop T2 MMAC1_Upload.ind(Req_Add:=Loc_add, Area_Code:=L_sdu[2], Address_Offset:=L_sdu[3-4], Data_Length:=L_sdu[5])	WAIT-RES
19	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=1 && L_sdu[1]=0x45 =>Sequence_Mode:=False Service_Header:=L_sdu[1] Stop T2 MMAC1_End_Seq.ind(Req_Add:=Loc_add)	WAIT-RES
20	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /L_sdu.len=3 && L_sdu[1]=0x47 =>Service_Header:=L_sdu[1-3] Stop T2 MMAC1_Act_Param.ind(Area_Code:=L_sdu[2], Activate:=L_sdu[3])	WAIT-RES
21	WAIT-SEQ-REQ	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /invalid MMAC-REQ-PDU && Sequence_Mode=True =>Sequence_Mode:=False Stop T2 DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu[1]:=0xC1, Serv_class:=Low, Transmit:=Single) {FE error code}	WAIT-UPD

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#	État courant	Événement /Condition =>Action	État suivant
22	WAIT-SEQ-REQ	T2 expired =>Sequence_Mode:=False DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=All, Indication_Mode:=Unchanged)	WAIT-UNPROT
23	WAIT-SEQ-REQ	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class) /L_sdu.len=2 && Loc_add=Client_Add && L_sdu[1]=0x46 =>MMAC1_Act_Para_Brct.ind(Area_Code:=L_sdu[2])	WAIT-SEQ-REQ
24	WAIT-SEQ-REQ	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class) /L_sdu.len<>2 || Loc_add<>Client_Add || L_sdu[1]<>0x46 =>ignore	WAIT-SEQ-REQ
25	END-SEQ-PROT	DMPMM1_RSAP_ACTIVATE.cnf(SSAP=54, M_status) /M_status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu[1]:=0xC9, Serv_class:=Low, Transmit:=Single) {SE error code}	WAIT-UPD
26	ERR-PROT	DMPMM1_RSAP_ACTIVATE.cnf(SSAP=54, M_status) /M_status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu[1]:=0xC1, Serv_class:=Low, Transmit:=Single) {FE error code}	WAIT-UPD
27	WAIT-PROT	DMPMM1_RSAP_ACTIVATE.cnf(SSAP=54, M_status) /M_status=OK	WAIT-RES
28	WAIT-RES	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Sequence_Mode=False || Client_Add<>Loc_add || L_sdu.len=0 =>ignore	WAIT-RES
29	WAIT-RES	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Sequence_Mode=True && Client_Add=Loc_add && L_sdu.len>0 =>Sequence_Mode:=False ignore L_sdu	WAIT-RES
30	WAIT-RES	MMAC1_Get_Master_Diag.rsp(Status, Diagnostic_Data) /Service_Header[1]=0x41 && Status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu:=(Service_Header, Diagnostic_Data), Serv_class:=Low, Transmit:=Single)	WAIT-UPD
31	WAIT-RES	MMAC1_Start_Seq.rsp(Status, Max_Length_Data_Unit) /Service_Header[1]=0x42 && Status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu:=(Service_Header, Max_Length_Data_Unit), Serv_class:=Low,Transmit:=Single)	WAIT-UPD
32	WAIT-RES	MMAC1_Download.rsp(Status) /Service_Header[1]=0x43 && Status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu:=Service_Header, Serv_class:=Low,Transmit:=Single)	WAIT-UPD
33	WAIT-RES	MMAC1_Upload.rsp(Status, Data) /Service_Header[1]=0x44 && Status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu:=(Service_Header, Data), Serv_class:=Low,Transmit:=Single)	WAIT-UPD
34	WAIT-RES	MMAC1_End_Seq.rsp(Status) /Service_Header[1]=0x45 && Status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu:=Service_Header, Serv_class:=Low,Transmit:=Single)	WAIT-UPD
35	WAIT-RES	MMAC1_Act_Param.rsp(Status) /Service_Header[1]=0x47 && Status=OK =>DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu:=Service_Header, Serv_class:=Low,Transmit:=Single)	WAIT-UPD
36	WAIT-RES	MMAC1_xxx.rsp(Status) /Service_Header[1]=Service_Code && Status <> OK =>Start T1 DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu[1]:=Status, Serv_class:=Low, Transmit:=Single)	WAIT-UPD

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#	État courant	Événement /Condition =>Action	État suivant
37	WAIT-RES	MMAC1_XXX.rsp(Status) /Service_Header[1]<>Service_Code =>Sequence_Mode:=False DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu[1]:=0xC6, Serv_class:=Low, Transmit:=Single) {RE}	WAIT-UPD
38	WAIT-UPD	DMPMM1_REPLY_UPDATE.cnf(SSAP=54, Serv_class, L_status) /Status=OK =>Start T1	WAIT-IND
39	WAIT-UPD	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Loc_add<>Client_Add && Update_status=NO =>ignore	WAIT-UPD
40	WAIT-UPD	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Loc_add=Client_Add && L_sdu.len>0 && Update_status=NO =>Sequence_Mode := False ignore L_sdu	WAIT-UPD
41	WAIT-UPD	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO/HI =>MMAC1_Fault.ind	POWER-ON
42	WAIT-UPD	DMPMM1_REPLY_UPDATE.cnf(SSAP=54) /Status=NO/IV =>MMAC1_Fault.ind	POWER-ON
43	WAIT-UPD	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /(Update_status=LO/HI) || (Update_status=NO && L_sdu.len=0) =>MMAC1_Fault.ind	POWER-ON
44	WAIT-UPD	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class) /L_sdu.len=2 && L_sdu[1]=0x46 && (Sequence_Mode=False || Loc_add=Client_Add) =>MMAC1_Act_Para_Brct.ind(Area_Code:=L_sdu[2])	WAIT-UPD
45	WAIT-UPD	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class) /L_sdu.len<>2 || L_sdu[1]<>0x46 || Sequence_Mode=True || Loc_add<>Client_Add =>ignore	WAIT-UPD
46	WAIT-IND	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Loc_add<>Client_Add && Update_status=NO =>ignore	WAIT-IND
47	WAIT-IND	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO/HI && Loc_add<>Client_Add =>stop T1 MMAC1_Fault.ind	POWER-ON
48	WAIT-IND	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /(Update_status=LO && Loc_add<>Client_Add) ||(Update_status=NO && L_sdu.len=0) || (Update_status=HI) =>MMAC1_Fault.ind	POWER-ON
49	WAIT-IND	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Loc_add=Client_Add && L_sdu.len>0 && Update_status=NO =>Sequence_Mode = False ignore L_sdu	WAIT-IND

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#	État courant	Événement /Condition =>Action	État suivant
50	WAIT-IND	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && Sequence_Mode=False && Loc_add = Client_Add =>ignore L_sdu, if existent Stop T1 DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=All, Indication_Mode:=Unchanged)	WAIT-UNPROT
51	WAIT-IND	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && Sequence_Mode=True && L_sdu.len=0 && Loc_add = Client_Add =>Stop T1 Start T2	WAIT-SEQ-REQ
52	WAIT-IND	DMPMM1_DATA_REPLY.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class, Update_status) /Update_status=LO && Sequence_Mode=True && L_sdu.len>0 && Loc_add = Client_Add =>Sequence_Mode:=False ignore L_sdu, if existent STOP T1 DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=All, Indication_Mode:=Unchanged)	WAIT-UNPROT
53	WAIT-IND	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class) /L_sdu.len=2 && L_sdu[1]=0x46 && (Sequence_Mode=False || Loc_add=Client_Add) =>MMAC1_Act_Para_Brct.ind(Area_Code:=L_sdu[2])	WAIT-IND
54	WAIT-IND	DMPMM1_DATA.ind(SSAP,DSAP=54,Loc_add,Rem_add,L_sdu,Serv_class) /L_sdu.len<>2 || L_sdu[1]<>0x46 || (Sequence_Mode=True && Loc_add<>Client_Add) =>ignore	WAIT-IND
55	WAIT-IND	T1 expired =>Sequence_Mode:=False DMPMM1_REPLY_UPDATE.req(SSAP:=54, L_sdu.len:=0, Serv_class:=Low, Transmit:=Single)	WAIT-DEL
56	WAIT-DEL	DMPMM1_REPLY_UPDATE.cnf(SSAP=54) /L_status=OK =>DMPMM1_RSAP_ACTIVATE.req(SSAP:=54, Access:=All, Indication_Mode:=Unchanged)	WAIT-UNPROT
57	ANY-STATE	MMAC1_Reset.req =>Stop T1 MMAC1_Reset.cnf	POWER-ON

9.11 MSCS1M

9.11.1 Définitions des primitives

9.11.1.1 Primitives échangées entre MSCS1M et FSPMM1

Le Tableau 101 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMM1 et reçues par le MSC1SM.

Tableau 101 – Primitives émises par la FSPMM1 vers le MSCS1M

Nom de primitive	Source	Paramètres associés	Fonctions
Set Time.req	FSPMM1	AREP, Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.

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Le Tableau 102 montre les primitives de service, y compris leurs paramètres associés, émises par le MSCS1M et reçues par la FSPMM1.

Tableau 102 – Primitives émises par le MSCS1M vers la FSPMM1

Nom de primitive	Source	Paramètres associés	Fonctions
Set Time.ind	MSCS1M	AREP, Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Set Time.cnf	MSCS1M	AREP, Status	
Sync Interval Violation.ind	MSCS1M	AREP	

9.11.1.2 Paramètre des primitives de MSCS1M

Les paramètres utilisés avec les primitives échangées entre la FSPMM1 et le MSCS1M sont décrits dans "Définition des services de la FAL" (voir la CEI 61158-5-3).

9.11.2 Description de diagramme d'états

Dans l'état IDLE, ce diagramme attend soit une indication Clock Value provenant d'une Base de temps valide acheminée par la DMPMM1 pour entrer dans l'état StopTM et désactiver sa propre fonctionnalité de Base de temps, soit une demande Set Time provenant de l'utilisateur local acheminée par la FSPMM1 pour entrer dans l'état WTEc et devenir une Base de temps active.

Dans les états WTEc et WCVc, le diagramme émet une séquence de synchronisation d'horloges. À l'achèvement de cette séquence, une confirmation de Set Time est émise et le diagramme retourne à IDLE. En cas d'interruption de la séquence par une indication Clock Value valide, le diagramme passe à l'état StopTM et la fonctionnalité de Base de temps devient inactive.

L'état StopTM est laissé si aucune séquence de synchronisation d'horloges valide n'est détectée.

Variables locales du MSCS1M

Time Last Rcvd
(Network Time)

Cette variable locale contient le Clock_Value_Time_Event de la dernière indication de Clock Value reçue valide.

Error
(Unsigned8)

Cette variable locale est un compteur pour les séquences de Clock Synchronisation non valides. Elle est réinitialisée à 0 lorsqu'une Sync Interval Violation est indiquée.

Clock
(Network Time)

Cette variable est utilisée pour contenir la valeur de temps entre l'émission d'une demande de service Time Event et la réception de la confirmation de service Time Event correspondante.

T_State
(Compound)

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Cette variable locale est utilisée pour le stockage interne de paramètres de service pour la synchronisation d'horloges.

T_Last
(Network Time)

Cette variable locale est utilisée pour le stockage interne de la Time Value de la dernière séquence valide de synchronisation d'horloges. Elle est utilisée pour vérifier la validité des synchronisations ultérieures d'horloges.

Macros du MSCS1M:

SET_TIME_ATTRIBUTES

(
Local Time Diff :=CS_list.Clock_value_status.C * (-1)^CS_list.Clock_value_status.CV
Summertime := CS_list.Clock_value_status.SWT
Accuracy :=CS_list.Clock_value_status.CR
Synchronisation Active := CS_list.Clock_value_status.SYF
Announcement Hour :=CS_list.Clock_value_status.ANH
)

GET_TIME_ATTRIBUTES

(
CS_list.Clock_value_status.C * (-1)^CS_list.Clock_value_status.CV :=Local Time Diff
CS_list.Clock_value_status.SWT := Summertime
CS_list.Clock_value_status.CR := Accuracy
CS_list.Clock_value_status.SYF := Synchronisation Active
CS_list.Clock_value_status.ANH := Announcement Hour
)

9.11.3 Table d'états de MSCS1M

Le Tableau 103 contient la description complète du diagramme d'états MSCS1M.

Tableau 103 – Table d'états de MSCS1M

#	État courant	Événement /Condition =>Action	État suivant
1	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == SV && Error < 2 => Error := Error+1	Idle
2	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE != Time Last Rcvd && Error < 2 => Time Last Rcvd:= CS_list.Clock_Value_Time_Event Error := Error+1	Idle
3	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == SV && Error >= 2 => Error := 0 Sync Interval Violation.ind	Idle

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#	État courant	Événement /Condition =>Action	État suivant
4	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE != Time Last Rcvd && Error >= 2 => Time Last Rcvd:= CS_list.Clock_Value_Time_Event Error := 0 Sync Interval Violation.ind	Idle
5	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE == Time Last Rcvd && !(Time_Master_Addr < TS) => ignore	Idle
6	Idle	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE == Time Last Rcvd && Time_Master_Addr < TS => Error := 0 Time Last Rcvd:= CS_list.Clock_Value_Time_Event Time Value := Time Last Rcvd + Receive Delay Time Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour from CS-list.Clock_Value_Status Set_Time.ind(Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour)	StopTM
7	Idle	Set_Time.req(Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour) => T_State from Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour Clock:=Time Value CS-TIME_EVENT.req()	WTEc
8	WTEc	CS-TIME-EVENT.cnf (Send_Delay_Time, DL_status) /DL_status = OK => CS_list.Clock_Value_Previous_TE:= T_Last T_Last:= Clock + Send_Delay_Time CS_list.Clock_Value_Time_Event:= T_Last DL-CS-CLOCK-VALUE.req (CS_list)	WCVc
9	WTEc	CS-TIME-EVENT.cnf (Send_Delay_Time, DL_status) /DL_status != OK => Status:= DL_Status Set_Time.cnf(Status)	Idle
10	WTEc	Set_Time.req(Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour) => Status:= SV Set_Time.cnf(Status)	WTEc
11	WCVc	CS-CLOCK-VALUE.cnf (DL_status) => Status:= DL_Status Set_Time.cnf(Status)	Idle
12	WCVc	Set_Time.req(Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour) => Status:= SV Set_Time.cnf(Status)	WCVc

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#	État courant	Événement /Condition =>Action	État suivant
13	StopTM	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == SV && Error < 2 => Error := Error+1	StopTM
14	StopTM	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE != Time Last Rcvd && Error < 2 => Time Last Rcvd:= CS_list.Clock_Value_Time_Event Error := Error+1	StopTM
15	StopTM	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == SV && Error >= 2 => Error := 0 Sync Interval Violation.ind	Idle
16	StopTM	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE != Time Last Rcvd && Error >= 2 => Time Last Rcvd:= CS_list.Clock_Value_Time_Event Error := 0 Sync Interval Violation.ind	Idle
17	StopTM	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE == Time Last Rcvd && Time_Master_Addr < TS => Error := 0 Time Last Rcvd:= CS_list.Clock_Value_Time_Event Time Value := Time Last Rcvd + Receive Delay Time Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour from CS-list.Clock_Value_Status Set_Time.ind(Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour)	StopTM
18	StopTM	CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time) /CS_status == OK && CS_list.Clock_Value_previous_TE == Time Last Rcvd && !(Time_Master_Addr < TS) => ignore	StopTM
19	StopTM	Set_Time.req(Time Value, Local Time Diff, Summertime, Accuracy, Synchronisation Active, Announcement Hour) => Status:= SV Set_Time.cnf(Status)	StopTM

9.12 MSAC2M

9.12.1 Définitions des primitives

9.12.1.1 Primitives échangées entre FSPMM2 et MSAC2M

Le Tableau 104 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMM2 et reçues par le MSAC2M.

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Tableau 104 – Primitives émises par la FSPMM2 vers le MSAC2M

Nom de primitive	Source	Paramètres associés	Fonctions
MInit MS2.req	FSPMM2	C_Ref	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.req	FSPMM2	(aucun)	
Abort.req	FSPMM2	C_Ref	
Initiate.req	FSPMM2	C_Ref, Send Timeout, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	
Read.req	FSPMM2	C_Ref, Slot Number, Index, Length	
Write.req	FSPMM2	C_Ref, Slot Number, Index, Length, Data	
Data Transport.req	FSPMM2	C_Ref, Slot Number, Index, Length, Data	

Le Tableau 105 montre les primitives de service, y compris leurs paramètres associés, émises par le MSAC2M et reçues par la FSPMM2.

Tableau 105 – Primitives émises par le MSAC2M vers la FSPMM2

Nom de primitive	Source	Paramètres associés	Fonctions
MInit MS2.cnf	MSAC2M	C_Ref	
Reset.cnf	MSAC2M	(aucun)	
Initiate.cnf(+)	MSAC2M	C_Ref, Max Len Data Unit, Features Supported, Profile Features Supported, Profile Ident Number, Add Addr Param	
Initiate.cnf(-)	MSAC2M	C_Ref, Error Decode, Error Code 1 Error Code 2	
Read.cnf(+)	MSAC2M	C_Ref, Length, Data	
Read.cnf(-)	MSAC2M	C_Ref, Error Decode, Error Code 1 Error Code 2	
Write.cnf(+)	MSAC2M	C_Ref, Length	
Write.cnf(-)	MSAC2M	C_Ref, Error Decode, Error Code 1 Error Code 2	

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Nom de primitive	Source	Paramètres associés	Fonctions
Data Transport.cnf(+)	MSAC2M	C_Ref, Length, Data	
Data Transport.cnf(-)	MSAC2M	C_Ref, Error Decode, Error Code 1 Error Code 2	
Reject.ind	MSAC2M	C_Ref, Reason Code	
Abort.ind	MSAC2M	C_Ref, Locally_Generated, Subnet, Instance, Reason_Code, Abort_Detail	
Fault.ind	MSAC2M	C_Ref	

9.12.1.2 Paramètres des primitives de MSAC2M

Les paramètres utilisés avec les primitives échangées entre la FSPMM2 et le MSAC2M sont décrits dans "Définition des services de la FAL" (voir la CEI 61158-5-3). Des paramètres supplémentaires sont décrits dans le Tableau 106.

Tableau 106 – Paramètres utilisés avec des primitives échangées avec MSAC2M

Nom de paramètre	Description
C_Ref	Identificateur local d'un diagramme d'états MSAC2

9.12.2 Description de diagramme d'états

À la mise sous tension (POWER-ON), chaque diagramme d'états MSAC2M attend l'initialisation.

Dans l'état CLOSED, le service Initiate appelé depuis l'AP-Context est attendu et envoyé à l'esclave DP. Dans l'état START-POLL-RES, le Maître attend une Initiate.cnf positive et fait la transition vers l'état OPEN.

Dans l'état OPEN, les services Read, Write et Data_Transport sont autorisés. Le diagramme d'états contrôle qu'une seule demande provenant de l'utilisateur est traitée simultanément; autrement, la connexion est abandonnée.

La connexion peut être abandonnée par l'utilisateur du Maître ou par l'utilisateur de l'Esclave. Elle est abandonnée automatiquement si une erreur de protocole est détectée.

Variables locales

Client_SAP
(Unsigned8)

Le SAP utilisé pour la connexion.

Server_SAP
(Unsigned8)

Le SAP utilisé pour la connexion du côté serveur.

Server_Add
(Unsigned8)

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L'adresse DL (0 à 126) du serveur distant.

S-Timer
(Unsigned16)

Ce temporisateur surveille l'envoi de PDU de demande de services sur la connexion si aucun service n'est en cours. Le S-Timer expire si aucune PDU de demande de service n'a été envoyée pendant l'intervalle du S-Timer. Dans ce cas, une Idle-REQ-PDU est envoyée.

R-Timer
(Unsigned16)

Ce temporisateur surveille la vigueur de la connexion s'il y a une réponse de service en cours. Le R-Timer expire si aucune réponse de service ou une IDLE-PDU au cours de l'intervalle du R-Timer n'a été reçue. Dans ce cas, la connexion est abandonnée. L'intervalle du R-Timer est de 3 fois l'intervalle du S-Timer.

Service-Header
Tampon local pour le Function_Num de la dernière demande émise.

Go_Abort
(Boolean)

Fanion local qui indique une réaction d'abandon après avoir reçu la réponse distante.

Service_Buffer
(Octet-String[255])

Tampon local qui stocke un service complet pendant une Idle-RES-PDU en cours.

Macros
;XXX gère les services Data_Transport, Read et Write.

<REQPARAM>

<
XXX=Read : Slot_Number, Index, Length
XXX=Write :Slot_Number, Index, Length, Data
XXX=Data_Transport : Slot_Number, Index, Length, Data
>

<VALID_SERVICE_FUNCTION_NUM>

<
XXX=Read : 0x5E
XXX=Write : 0x5F
XXX=Data_Transport : 0x51
>

<LOAD_SERVICE_BUFFER>

<
XXX=Read : Service_Buffer[1]=0x5E
Service_Buffer[2]=Slot_Number
Service_Buffer[3]=Index
Service_Buffer[4]=Length
XXX=Write : Service_Buffer[1]=0x5F
Service_Buffer[2]=Slot_Number

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Service_Buffer[3]=Index
Service_Buffer[4]=Length
Service_Buffer[5..Length+4]=Data
XXX=Data_Transport : Service_Buffer[1]=0x51
Service_Buffer[2]=Slot_Number
Service_Buffer[3]=Index
Service_Buffer[4]=Length
Service_Buffer[5..Length+4]=Data
>

VALID_SERVICE

(
Length ≤ Max_Data_Length
)

VALID_SERVICE_RES_PDU

(
L_sdu[1] = Service_Buffer[1] &&
L_sdu.len ≥ 4 &&
(L_sdu[1] <> 0x5E || L_sdu.len ≥ L_sdu[4]+4) &&
Max_Data_Length ≥ L_sdu[4]
)

VALID_SERVICE_NRS_PDU

(
L_sdu[1] = (Service_Buffer[1]+0x80) &&
L_sdu.len = 4
)

<VALID_SERVICE>

<
Service_Header=0x5E : Read
Service_Header=0x5F : Write
Service_Header=0x51 : Data_Transport
>

<VALID_SERVICE_RES_PARAM>

<
Service_Header=0x5E : Length=L_sdu[4],
Data=L_sdu[5..Length+4]
Service_Header=0x5F : Length=L_sdu[4]
Service_Header=0x51 : Length=L_sdu[4],
Data=L_sdu[5..Length+4]
>

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<VALID_SERVICE_NRS_PARAM>

<

Error_Decode=L_sdu[2],

Error_Code_1=L_sdu[3],

Error_Code_2=L_sdu[4],

>

VALID_SERVICE_REQ_PDU

(

(Read-REQ-PDU) ||

(Write-REQ-PDU) ||

(Data_Transport-REQ-PDU)

)

VALID_SERVICE_RES_PDU

(

(Read-RES-PDU) ||

(Write-RES-PDU) ||

(Data_Transport-RES-PDU)

)

VALID_SERVICE_NRS_PDU

(

(Read-NRS-PDU) ||

(Write-NRS-PDU) ||

(Data_Transport-NRS-PDU)

)

STORE_ABORT_PARAMETER

(

Stored-Subnet=Subnet

Stored-Instance=Instance

Stored-Reason_Code=Reason_Code

)

9.12.3 Table d'états de MSAC2M

Le Tableau 107 contient la description complète du diagramme d'états MSAC2M.

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Tableau 107 – Table d'états de MSAC2M

#	État courant	Événement /Condition =>Action	État suivant
1	POWER-ON	MSAC2M_Minit_MS2.req(C_Ref) => Stored_RM_SAP := 49 Stored_C_Ref := C_Ref Stored_Max_Local_Data_Length := Max_Local_Data_Length Client_SAP := 50 MSAC2M_Minit_MS2.cnf(C_Ref)	CLOSED
2	CLOSED	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => Server_Add := Rem_Add S-Timer := Send_Timeout R-Timer := 3*Send_Timeout Go_Abort := FALSE Service_Buffer := empty store Initiate-REQ-PDU Start S-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=STORED_RM_SAP, Rem_Add:=Server_Add, L_sdu:=Initiate-REQ-PDU, Serv_class:=Low)	START-POLL-RMREQ
3	CLOSED	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
4	CLOSED	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
5	CLOSED	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = IV/LS => ignore	CLOSED
6	START-POLL-RMREQ	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = RM-REQ-PDU && S-Timer >= Send_Timeout && Go_Abort = FALSE => Stored_Server_SAP := Server_SAP Stop S-Timer Start R-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu.len:=0, Serv_class:=Low)	START-POLL-RES
7	START-POLL-RMREQ	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = RM-REQ-PDU && Go_Abort = TRUE => Stored_Server_SAP := Server_SAP Stop S-Timer Start R-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu.len:=0, Serv_class:=Low)	START-POLL-RES

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#	État courant	Événement /Condition =>Action	État suivant
8	START-POLL-RMREQ	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = RM-REQ-PDU && S-Timer < Send_Timeout => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_STO, Additional_Detail:=Send_Timeout, STORE_ABORT_PARAMETER Stored_Server_SAP := Server_SAP Go_Abort := TRUE Stop S-Timer Start R-Timer MSAC2M_Abort.ind (C_Ref, Locally_Generated, Subnet, Instance, Reason_Code, Additional_Detail) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu.len:=0, Serv_class:=Low)	START-POLL-RES
9	START-POLL-RMREQ	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu <> RM-REQ-PDU => Stop S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_FE) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
10	START-POLL-RMREQ	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = RR && Go_Abort = FALSE => DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=STORED_RM_SAP, Rem_Add:=Server_Add, L_sdu:=stored Initiate-REQ-PDU, Serv_class:=Low)	START-POLL-RMREQ
11	START-POLL-RMREQ	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu,Serv_class=Low, L_Status) /L_status = RR && Go_Abort = TRUE => Stop S-Timer MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
12	START-POLL-RMREQ	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_RM_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = RS/NR/RDL/RDH/LR/NA/DH/DS/UE => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=FALSE, Instance:=DLL, Reason_Code:=L_status ignore L_sdu if present Stop S-Timer MSAC2M_Abort.ind (C_Ref, Locally_Generated, Subnet, Instance, Reason_Code) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
13	START-POLL-RMREQ	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => Go_Abort := TRUE STORE_ABORT_PARAMETER	START-POLL-RMREQ
14	START-POLL-RMREQ	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE, Go_Abort := TRUE STORE_ABORT_PARAMETER MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	START-POLL-RMREQ

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#	État courant	Événement /Condition =>Action	État suivant
15	START-POLL-RMREQ	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE, Go_Abort := TRUE STORE_ABORT_PARAMETER MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	START-POLL-RMREQ
16	START-POLL-RMREQ	S-Timer expired => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_TO)	FINAL-WAIT-CON
17	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = RS/NR => DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu.len:=0, Serv_class:=Low)	START-POLL-RES
18	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Initiate-RES-PDU && Go_Abort = FALSE => Stored_Max_Data_Lenth := Max_Len_Data_Unit Stop R-Timer Start S-Timer MSAC2M_Initiate.cnf(+, C_Ref:=Stored_C_Ref, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param)	OPEN
19	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Initiate-RES-PDU && Go_Abort = TRUE => Stop R-Timer Start S-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU with stored Parameter, Serv_class:=Low)	END-POLL-RES
20	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DS/UE => Stop R-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:=L_status) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
21	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = RDL/NA/LR/DH/RDH/RR => ignore L_sdu if present Stop R-Timer Start S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:= L_status) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
22	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Abort-REQ-PDU => Stop R-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=FALSE, Subnet, Instance, Reason_Code) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED

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#	État courant	Événement /Condition =>Action	État suivant
23	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = (Initiate-NRS-PDU) && Go_Abort = FALSE => Stop R-Timer MSAC2M_Initiate.cnf(-,C_Ref:=Stored_C_Ref, Error_Decode,Error_Code_1,Error_Code_2) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
24	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = (Initiate-NRS-PDU) && Go_Abort = TRUE => Stop R-Timer MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
25	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && NOT (L_sdu = Initiate-RES-PDU || L_sdu = (Initiate-NRS-PDU) || L_sdu = Abort-REQ-PDU || L_sdu = Idle-REQ-PDU) => ignore L_sdu Stop R-Timer Start S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_RE) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
26	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Idle-REQ-PDU && Go_Abort = FALSE => Stop R-Timer Start R-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Idle-RES-PDU, Serv_class:=Low)	START-POLL-RES
27	START-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Idle-REQ-PDU && Go_Abort = TRUE => Stop R-Timer Start S-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU with stored Parameter, Serv_class:=Low)	END-POLL-RES
28	START-POLL-RES	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE, Go_Abort := TRUE STORE_ABORT_PARAMETER MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	START-POLL-RES
29	START-POLL-RES	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => Go_Abort := TRUE STORE_ABORT_PARAMETER	START-POLL-RES
30	START-POLL-RES	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE, Go_Abort := TRUE STORE_ABORT_PARAMETER MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	START-POLL-RES

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#	État courant	Événement /Condition =>Action	État suivant
31	START-POLL-RES	R-Timer expired => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_TO, STORE_ABORT_PARAMETER Start S-Timer MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	END-WAIT-CON
32	OPEN	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) /Length <= (Stored_Max_Data_Length) && Length <= (Stored_Max_Local_Data_Length) => Service_Header := Function_Num Stop S-Timer Start R-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=VALID_SERVICE_REQ_PDU, Serv_class:=Low)	VALID-SERVICE-POLL-RES
33	OPEN	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) /Length > (Stored_Max_Data_Length) || Length > (Stored_Max_Local_Data_Length) => MSAC2M_Reject.ind(C_Ref:=Stored_C_Ref, Reason_Code:=REJ_LE)	OPEN
34	OPEN	S-Timer expired => Start R-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L-sdu:=Idle-REQ-PDU, Serv_class:=Low)	IDLE-POLL-RES
35	OPEN	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => Stop S-Timer Start S-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
36	OPEN	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => Stop S-Timer Start S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
37	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = NR => DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu.len:=0, Serv_class:=Low)	VALID-SERVICE-POLL-RES
38	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Idle-REQ-PDU => Stop R-Timer Start R-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Idle-RES-PDU, Serv_class:=Low)	VALID-SERVICE-POLL-RES
39	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = VALID_SERVICE_RES_PDU && Function_Num = Service_Header && Go_Abort = FALSE => Stop R-Timer Start S-Timer MSAC2M_<VALID_SERVICE>.cnf(+, C_Ref:=Stored_C_Ref, <VALID_SERVICE_RES_PARAM>)	OPEN

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#	État courant	Événement /Condition =>Action	État suivant
40	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = VALID_SERVICE_NRS_PDU && Function_Num = (Service_Header+0x80) && Go_Abort = FALSE => Stop R-Timer Start S-Timer MSAC2M_<VALID_SERVICE>.cnf(-, C_Ref:=Stored_C_Ref, Rem_Add, <VALID_SERVICE_NRS_PARAM>)	OPEN
41	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && NOT(Abort-REQ-PDU) && Go_Abort = TRUE => ignore L_sdu Stop R-Timer Start S-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU with stored Parameter, Serv_class:=Low)	END-POLL-RES
42	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DS/UE/RS => Stop R-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:=L_status) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
43	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && Go_Abort = FALSE && NOT(L_sdu = VALID_SERVICE_RES_PDU && (Function_Num = Service_Header)) && NOT(L_sdu = VALID_SERVICE_NRS_PDU && (Function_Num = (Service_Header+0x80))) && NOT(L_sdu = Abort-REQ-PDU) && NOT(L_sdu = Idle-REQ-PDU) => Stop R-Timer Start S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_RE) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
44	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = RDL/NA/RR/LR/DH/RDH => ignore L_sdu if present Stop R-Timer Start S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:=L_status) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
45	VALID-SERVICE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Abort-REQ-PDU => Stop R-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=FALSE, Subnet, Instance, Reason_Code) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
46	VALID-SERVICE-POLL-RES	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) => MSAC2M_Reject.ind(C_Ref:=Stored_C_Ref, Reason_Code:=REJ_PS)	VALID-SERVICE-POLL-RES

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#	État courant	Événement /Condition =>Action	État suivant
47	VALID-SERVICE-POLL-RES	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE, Go_Abort := TRUE STORE_ABORT_PARAMETER MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	VALID-SERVICE-POLL-RES
48	VALID-SERVICE-POLL_RES	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => Go_Abort := TRUE STORE_ABORT_PARAMETER	VALID-SERVICE-POLL-RES
49	VALID-SERVICE-POLL-RES	R-Timer expired => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_TO, STORE_ABORT_PARAMETER Start S-Timer MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	END-WAIT-CON
50	END-WAIT-CON	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /(L_status = DL && L_sdu <> Abort-REQ-PDU) || (L_status = NR) => Stop S-Timer Start S-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU with stored Parameter, Serv_class:=Low)	END-POLL-RES
51	END-WAIT-CON	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DS/UE/RS/RDL/NA/RR/LR/RDH/DH => C_Ref:=Stored_C_Ref , Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:=L_status Stop S-Timer MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	CLOSED
52	END-WAIT-CON	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Abort-REQ-PDU => Stop S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=FALSE, Subnet, Instance, Reason_Code) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
53	END-WAIT-CON	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE)	END-WAIT-CON
54	END-WAIT-CON	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE)	END-WAIT-CON
55	END-WAIT-CON	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE)	END-WAIT-CON
56	END-WAIT-CON	S-Timer expired => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code := ABT_OC)	FINAL-WAIT-CON

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#	État courant	Événement /Condition =>Action	État suivant
57	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = NR => DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu.len:=0, Serv_class:=Low)	IDLE-POLL-RES
58	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Idle-RES-PDU && Service_Buffer = empty && Go_Abort = FALSE => Stop R-Timer Start S-Timer	OPEN
59	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Idle-RES-PDU && Service_Buffer <> empty && Go_Abort = FALSE => Service_Header:= Service_Buffer[1] Service_Buffer:=empty Stop R-Timer Start R-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Service_Buffer, Serv_class:=Low)	VALID-SERVICE-POLL-RES
60	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Idle-RES-PDU && Go_Abort = TRUE => Stop R-Timer Start S-Timer DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU with stored Parameter, Serv_class:=Low)	END-POLL-RES
61	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu = Abort-REQ-PDU => Stop R-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=FALSE, Subnet, Instance, Reason_Code) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
62	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL && L_sdu <> Idle-RES-PDU && L_sdu <> Abort-REQ-PDU => Stop R-Timer Start S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_RE) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
63	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DS/UE/RS => Stop R-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:=L_status) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED

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#	État courant	Événement /Condition =>Action	État suivant
64	IDLE-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = RDL/NA/RR/LR/DH/RDH => ignore L_sdu if present Stop R-Timer Start S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:=L_status) DMPMM2_DATA_REPLY.req(SSAP:=Client_SAP, DSAP:=Stored_Server_SAP, Rem_Add:=Server_Add, L_sdu:=Abort-REQ-PDU, Serv_class:=Low)	END-POLL-RES
65	IDLE-POLL-RES	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) /Length <= (Stored_Max_Data_Length) && Length <= (Stored_Max_Local_Data_Length) && Service_Buffer = empty => <LOAD_SERVICE_BUFFER>	IDLE-POLL-RES
66	IDLE-POLL-RES	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) /(Length > (Stored_Max_Data_Length) || Length > (Stored_Max_Local_Data_Length)) && Service_Buffer = empty => MSAC2M_Reject.ind(C_Ref:=Stored_C_Ref, Reason_Code:=REJ_LE)	IDLE-POLL-RES
67	IDLE-POLL-RES	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) //Service_Buffer <> empty => MSAC2M_Reject.ind(C_Ref:=Stored_C_Ref, Reason_Code:=REJ_PS)	IDLE-POLL-RES
68	IDLE-POLL-RES	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE, Go_Abort := TRUE STORE_ABORT_PARAMETER MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	IDLE-POLL-RES
69	IDLE-POLL_RES	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => Go_Abort:=TRUE STORE_ABORT_PARAMETER	IDLE-POLL-RES
70	IDLE-POLL-RES	R-Timer expired => C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_TO, STORE_ABORT_PARAMETER Start S-Timer MSAC2M_Abort.ind(C_Ref, Locally_Generated, Subnet, Instance, Reason_Code)	END-WAIT-CON
71	END-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = NR => Stop S-Timer MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
72	END-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DL => Stop S-Timer ignore L_sdu MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED

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#	État courant	Événement /Condition =>Action	État suivant
73	END-POLL-RES	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status = DS/UE/RS/RDL/NA/RR/LR/RDH/DH => ignore L_sdu if present Stop S-Timer MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=DLL, Reason_Code:=L_status) MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
74	END-POLL-RES	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE)	END-POLL-RES
75	END-POLL-RES	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_SE)	END-POLL-RES
76	END-POLL-RES	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => ignore	END-POLL-RES
77	END-POLL-RES	S-Timer expired => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code := ABT_OC)	FINAL-WAIT-CON
78	FINAL-WAIT-CON	DMPMM2_DATA_REPLY.cnf(SSAP=Client_SAP, DSAP=Stored_Server_SAP, Rem_add=Server_Add, L_sdu, Serv_class=Low, L_Status) /L_status <> IV/LS => ignore L_sdu if present MSAC2M_Closed.ind(C_Ref:=Stored_C_Ref)	CLOSED
79	FINAL-WAIT-CON	MSAC2M_XXX.req(C_Ref=Stored_C_Ref, <REQPARAM>) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_OC)	FINAL-WAIT-CON
80	FINAL-WAIT-CON	MSAC2M_Initiate.req(C_Ref, Send_Timeout, Features_Supported, Profile_Features_Supported, Profile_Ident_Number, Add_Addr_Param) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_OC)	FINAL-WAIT-CON
81	FINAL-WAIT-CON	MSAC2M_Abort.req(C_Ref=Stored_C_Ref, Subnet, Instance, Reason_Code) => MSAC2M_Abort.ind(C_Ref:=Stored_C_Ref, Locally_Generated:=TRUE, Subnet:=NO, Instance:=MSAC2M, Reason_Code:=ABT_OC)	FINAL-WAIT-CON
82	ANY-STATE	MSAC2M_Reset.req => Stop R-Timer Stop S-Timer MSAC2M_Reset.cnf	POWER-ON

9.13 MMAC2

9.13.1 Définitions des primitives

9.13.1.1 Primitives échangées entre MMAC2 et FSPMM2

Le Tableau 108 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMM2 et reçues par le MMAC2.

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Tableau 108 – Primitives émises par la FSPMM2 vers le MMAC2

Nom de primitive	Source	Paramètres associés	Fonctions
MInit MM.req	FSPMM2	Max Local Data Length	
Reset.req	FSPMM2	(aucun)	
Abort.req	FSPMM2	(aucun)	
Get Master Diag.req	FSPMM2	Rem Add, MDiag Identifier	
Start Seq.req	FSPMM2	Rem Add, Area Code, Timeout	
Download.req	FSPMM2	Rem Add, Area Code, Add Offset, Data	
Upload.req	FSPMM2	Rem Add, Area Code, Add Offset, Data Len	
End Seq.req	FSPMM2	Rem Add	
Act Param.req	FSPMM2	Rem Add, Area Code, Activate	
Act Para Brct.req	FSPMM2	Rem Add, Area Code	

Le Tableau 109 montre les primitives de service, y compris leurs paramètres associés, émises par le MMAC2 et reçues par la FSPMM2.

Tableau 109 – Primitives émises par le MMAC2 vers la FSPMM2

Nom de primitive	Source	Paramètres associés	Fonctions
MInit MM.cnf	MMAC2		
Reset.cnf	MMAC2	(aucun)	
Get Master Diag.cnf(+)	MMAC2	Rem Add, Diagnosis Data	
Get Master Diag.cnf(-)	MMAC2	Rem Add, Status	
Start Seq.cnf(+)	MMAC2	Rem Add, Max Len Data Unit	
Start Seq.cnf(-)	MMAC2	Rem Add, Status	
Download.cnf(+)	MMAC2	Rem Add	
Download.cnf(-)	MMAC2	Rem Add, Status	
Upload.cnf(+)	MMAC2	Rem Add, Data	
Upload.cnf(-)	MMAC2	Rem Add, Status	
End Seq.cnf(+)	MMAC2	Rem Add	
End Seq.cnf(-)	MMAC2	Rem Add, Status	
Act Param.cnf(+)	MMAC2	Rem Add	
Act Param.cnf(-)	MMAC2	Rem Add, Status	

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Nom de primitive	Source	Paramètres associés	Fonctions
Act Para Brct.cnf(+)	MMAC2	Rem Add	
Act Para Brct.cnf(-)	MMAC2	Rem Add, Status	
Abort.ind	MMAC2	Rem Add	
Fault.ind	MMAC2	(aucun)	

9.13.1.2 Paramètres des primitives de MMAC2

Les paramètres utilisés avec les primitives échangées entre le MMAC2 et la FSPMM2 sont décrits dans "Définition des services de la FAL" (voir la CEI 61158-5-3). Des paramètres supplémentaires sont décrits dans le Tableau 110.

Tableau 110 – Paramètres utilisés avec des primitives échangées avec MMAC2

Nom de paramètre	Description
Rem_Add	Adresse DL de la station distante

9.13.2 Description de diagramme d'états

Le diagramme d'états pour la communication Maître-Maître spécifie le côté demandeur. Typiquement, il s'agit d'appareils de programmation ou de diagnostic.

Après réinitialisation, le MMAC2 passe à l'état "POWER-ON" et attend l'initialisation par l'utilisateur.

Le diagramme d'états reprend dans l'état "WAIT-REQ" tant qu'il reçoit une demande valide provenant de l'utilisateur. Après que cette demande a été envoyée, le diagramme d'états reste dans l'état "WAIT-RES" jusqu'à ce qu'il soit mis fin au service avec succès ou de manière incorrecte.

À tout moment, au maximum une seule demande de service est en exécution.

Variables locales

T1
(Unsigned16)

Temps qui peut s'écouler au plus entre une demande et la réception de la réponse associée.

Server_Add
(Unsigned8)

Adresse du maître DP (Classe 1) avec lequel communiquer

Service-Header
(Octet-String of length 4)

Mémoire intermédiaire pour les quatre premiers octets de la dernière demande.

Srv_lst
Cette liste est utilisée pour contenir toutes les informations qui sont nécessaires pour le service SAP_ACTIVATE.

Upload_Data_Len
(Unsigned8)

Ce paramètre spécifie les longueurs des données demandées.

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9.13.3 Table d'états de MMAC2

Le Tableau 111 contient la description complète du diagramme d'états MMAC2.

Tableau 111 – Table d'états de MMAC2

#	État courant	Événement /Condition =>Action	État suivant
1	POWER-ON	MMAC2_Minit_MM.req =>MMAC2_Minit_MM.cnf	WAIT-REQ
2	WAIT-REQ	MMAC2_Get_Master_Diag.req(Rem_Add,Identifier) =>Service_Header[1]:=0x41 Service_Header[2]:=Identifier Server_Add:=Rem_Add Start T1 DMPMM2_DATA_REPLY.req(SSAP:=54, DSAP:=54, Rem_add:=Rem_Add, L_sdu:=Service_Header, Serv_class:=Low)	WAIT-RES
3	WAIT-REQ	MMAC2_Start_Seq.req(Rem_Add,Area_Code,Timeout) =>Service_Header[1]:=0x42 Service_Header[2]:=Area_Code Service_Header[3-4]:=Timeout Server_Add:=Rem_Add Start T1 DMPMM2_DATA_REPLY.req(SSAP:=54, DSAP:=54, Rem_add:=Rem_Add, L_sdu:=Service_Header, Serv_class:=Low)	WAIT-RES
4	WAIT-REQ	MMAC2_Download.req(Rem_Add,Area_Code,Add_Offset,Data) =>Service_Header[1]:=0x42 Service_Header[2]:=Area_Code Service_Header[3-4]:=Add_Offset Server_Add:=Rem_Add Start T1 DMPMM2_DATA_REPLY.req(SSAP:=54, DSAP:=54, Rem_add:=Rem_Add, L_sdu:=(Service_Header,Data), Serv_class:=Low)	WAIT-RES
5	WAIT-REQ	MMAC2_Upload.req(Rem_Add,Area_Code,Add_Offset, Data_Len) =>Service_Header[1]:=0x44 Service_Header[2]:=Area_Code Service_Header[3-4]:=Add_Offset Upload_Data_Len := Data_Len Server_Add:=Rem_Add Start T1 DMPMM2_DATA_REPLY.req(SSAP:=54, DSAP:=54, Rem_add:=Rem_Add, L_sdu:=(Service_Header,Data_Len), Serv_class:=Low)	WAIT-RES
6	WAIT-REQ	MMAC2_End_Seq.req(Rem_Add) =>Service_Header[1]:=0x45 Server_Add:=Rem_Add Start T1 DMPMM2_DATA_REPLY.req(SSAP:=54, DSAP:=54, Rem_add:=Rem_Add, L_sdu:=Service_Header[1], Serv_class:=Low)	WAIT-RES
7	WAIT-REQ	MMAC2_Act_Param.req(Rem_Add, Area_Code, Activate) =>Service_Header[1]:=0x47 Service_Header[2]:=Area_Code Service_Header[3]:=Activate Server_Add:=Rem_Add Start T1 DMPMM2_DATA_REPLY.req(SSAP:=54, DSAP:=54, Rem_add:=Rem_Add, L_sdu:=Service_Header[1-3], Serv_class:=Low)	WAIT-RES
8	WAIT-REQ	MMAC2_Act_Para_Brct.req(Rem_Add, Area_Code) =>DMPMM2_DATA.req(SSAP:=54, DSAP:=54, Rem_add:=Rem_Add, L_sdu:=(0x46,Area_Code), Serv_class:=Low)	WAIT-CON
9	WAIT-CON	MMAC2_XXX.req =>MMAC2_Reject.ind(Rem_Add,Reason_Code:=REJ_CO)	WAIT-CON
10	WAIT-CON	DMPMM2_DATA.cnf(SSAP=54, DSAP=54, Rem_Add, Serv_Class, L_status) /L_status=OK/DS =>MMAC2_Act_Para_Brct.cnf(Rem_Add,Status:=L_status)	WAIT-REQ
11	WAIT-RES	MMAC2_XXX.req =>MMAC2_Reject.ind(Rem_Add,Reason_Code:=REJ_PS)	WAIT-RES

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#	État courant	Événement /Condition =>Action	État suivant
12	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=NR =>DMPMM2_DATA_REPLY.req(SSAP:=54, DSAP:=54, Rem_add:=Server_Add, L_sdu.len:=0, Serv_class:=Low)	WAIT-RES
13	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=IV/LS =>MMAC2_Fault.ind	POWER-ON
14	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DS/NA/UE/RR/RS && Service_Header[1]=0x41 =>Stop T1 MMAC2_Get_Master_Diag.cnf(Rem_Add, Status:=L_status, Diagnostic_Data:=L_sdu)	WAIT-REQ
15	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DS/NA/UE/RR/RS && Service_Header[1]=0x42 =>Stop T1 MMAC2_Start_Seq.cnf(Rem_Add, Status:=L_status)	WAIT-REQ
16	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DS/NA/UE/RR/RS && Service_Header[1]=0x43 =>Stop T1 MMAC2_Download.cnf(Rem_Add, Status:=L_status)	WAIT-REQ
17	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DS/NA/UE/RR/RS && Service_Header[1]=0x44 =>Stop T1 MMAC2_Upload.cnf(Rem_Add, Status:=L_status)	WAIT-REQ
18	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DS/NA/UE/RR/RS && Service_Header[1]=0x45 =>Stop T1 MMAC2_End_Seq.cnf(Rem_Add, Status:=L_status)	WAIT-REQ
19	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DS/NA/UE/RR/RS && Service_Header[1]=0x47 =>Stop T1 MMAC2_Act_Param.cnf(Rem_Add, Status:=L_status)	WAIT-REQ
20	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=RDL/RDH && Service_Header[1]=0x41 =>Stop T1 MMAC2_Get_Master_Diag.cnf(Rem_Add, Status:=RR)	WAIT-REQ
21	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=RDL/RDH && Service_Header[1]=0x42 =>Stop T1 MMAC2_Start_Seq.cnf(Rem_Add, Status:=RR)	WAIT-REQ
22	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=RDL/RDH && Service_Header[1]=0x43 =>Stop T1 MMAC2_Download.cnf(Rem_Add, Status:=RR)	WAIT-REQ
23	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=RDL/RDH && Service_Header[1]=0x44 =>Stop T1 MMAC2_Upload.cnf(Rem_Add, Status:=RR)	WAIT-REQ

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#	État courant	Événement /Condition =>Action	État suivant
24	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=RDL/RDH && Service_Header[1]=0x45 =>Stop T1 MMAC2_End_Seq.cnf(Rem_Add, Status:=RR)	WAIT-REQ
25	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=RDL/RDH && Service_Header[1]=0x47 =>Stop T1 MMAC2_Act_Param.cnf(Rem_Add, Status:=RR)	WAIT-REQ
26	WAIT-RES	T1 expired /Service_Header[1]=0x41 =>MMAC2_Get_Master_Diag.cnf(Rem_Add, Status:=TO)	TIMO
27	WAIT-RES	T1 expired /Service_Header[1]=0x42 =>MMAC2_Start_Seq.cnf(Rem_Add, Status:=TO)	TIMO
28	WAIT-RES	T1 expired /Service_Header[1]=0x43 =>MMAC2_Download.cnf(Rem_Add, Status:=TO)	TIMO
29	WAIT-RES	T1 expired /Service_Header[1]=0x44 =>MMAC2_Upload.cnf(Rem_Add, Status:=TO)	TIMO
30	WAIT-RES	T1 expired /Service_Header[1]=0x45 =>MMAC2_End_Seq.cnf(Rem_Add, Status:=TO)	TIMO
31	WAIT-RES	T1 expired /Service_Header[1]=0x47 =>MMAC2_Act_Param.cnf(Rem_Add, Status:=TO)	TIMO
32	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]=FE/NE/AD/EA/LE/RE/IP && Service_Header[1]=0x41 =>Stop T1 MMAC2_Get_Master_Diag.cnf(Rem_Add, Status:=L_sdu[1])	WAIT-REQ
33	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]=FE/NE/AD/EA/LE/RE/IP/NI/SE/SC && Service_Header[1]=0x42 =>Stop T1 MMAC2_Start_Seq.cnf(Rem_Add, Status:=L_sdu[1])	WAIT-REQ
34	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]=FE/NE/AD/EA/LE/RE/NC/SC/NI && Service_Header[1]=0x43 =>Stop T1 MMAC2_Download.cnf(Rem_Add, Status:=L_sdu[1])	WAIT-REQ
35	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]=FE/NE/AD/EA/LE/RE/NI/SC && Service_Header[1]=0x44 =>Stop T1 MMAC2_Upload.cnf(Rem_Add, Status:=L_sdu[1])	WAIT-REQ
36	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]=FE/NE/AD/EA/LE/RE/NI/SE && Service_Header[1]=0x45 =>Stop T1 MMAC2_End_Seq.cnf(Rem_Add, Status:=L_sdu[1])	WAIT-REQ

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#	État courant	Événement /Condition =>Action	État suivant
37	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]=FE/NE/AD/EA/LE/RE/IP/SC/NI/DI && Service_Header[1]=0x47 =>Stop T1 MMAC2_Act_Param.cnf(Rem_Add, Status:=L_sdu[1])	WAIT-REQ
38	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DH/LR || L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/IP && Service_Header[1]=0x41 && (L_sdu.len<3 || L_sdu[1-2]<>Service_Header[1-2]) =>Stop T1 MMAC2_Get_Master_Diag.cnf(Rem_Add, Status:=RE)	WAIT-REQ
39	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DH/LR || L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/IP/NI/SE/SC && Service_Header[1]=0x42 && (L_sdu.len<>5 || L_sdu[1-4]<>Service_Header[1-4]) =>Stop T1 MMAC2_Start_Seq.cnf(Rem_Add, Status:=RE)	WAIT-REQ
40	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DH/LR || L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/NC/SC/NI && Service_Header[1]=0x43 && (L_sdu[1-4]<>Service_Header[1-4] || L_sdu.len<>4) =>Stop T1 MMAC2_Download.cnf(Rem_Add, Status:=RE)	WAIT-REQ
41	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DH/LR || L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/NI/SC && Service_Header[1]=0x44 && (L_sdu.len<5 || L_sdu[1-4]<>Service_Header[1-4] || L_sdu.len> Upload_Data_Len +4) =>Stop T1 MMAC2_Upload.cnf(Rem_Add, Status:=RE)	WAIT-REQ
42	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DH/LR || L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/NI/SE && Service_Header[1]=0x45 && (L_sdu[1]<>Service_Header[1] || L_sdu.len<>1) =>Stop T1 MMAC2_End_Seq.cnf(Rem_Add, Status:=RE)	WAIT-REQ
43	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DH/LR || L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/IP/SC/NI/DI && Service_Header[1]=0x47 && (L_sdu[1-3]<>Service_Header[1-3] || L_sdu.len<>3) =>Stop T1 MMAC2_Act_Param.cnf(Rem_Add, Status:=RE)	WAIT-REQ
44	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/IP && Service_Header[1]=0x41 && (L_sdu.len>=3 && L_sdu[1-2]=Service_Header[1-2]) =>Stop T1 MMAC2_Get_Master_Diag.cnf(Rem_Add, Status:=OK, Diagnostic_Data:=L_sdu[3-L_sdu.len])	WAIT-REQ

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#	État courant	Événement /Condition =>Action	État suivant
45	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/IP/NI/SE/SC && Service_Header[1]=0x42 && (L_sdu.len=5 && L_sdu[1-4]=Service_Header[1-4]) =>Stop T1 MMAC2_Start_Seq.cnf(Rem_Add, Status :=OK, Max_Length_Data_Unit:=L_sdu[5])	WAIT-REQ
46	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/NC/SC/NI && Service_Header[1]=0x43 && (L_sdu[1-4]=Service_Header[1-4] && L_sdu.len=4) =>Stop T1 MMAC2_Download.cnf(Rem_Add, Status:=OK)	WAIT-REQ
47	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/NI/SC && Service_Header[1]=0x44 && (L_sdu.len>=5 && L_sdu[1-4]=Service_Header[1-4] && L_sdu.len<= Upload_Data_Len +4) =>Stop T1 MMAC2_Upload.cnf(Rem_Add, Status:=OK,Data:=L_sdu[5-L_sdu.len])	WAIT-REQ
48	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/NI/SE && Service_Header[1]=0x45 && (L_sdu[1]=Service_Header[1] && L_sdu.len=1) =>Stop T1 MMAC2_End_Seq.cnf(Rem_Add, Status:=OK)	WAIT-REQ
49	WAIT-RES	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status) /L_status=DL && L_sdu[1]<>FE/NE/AD/EA/LE/RE/IP/SC/NI/DI && Service_Header[1]=0x47 && (L_sdu=Service_Header && L_sdu.len=3) =>Stop T1 MMAC2_Act_Param.cnf(Rem_Add, Status:=OK)	WAIT-REQ
50	TIMO	DMPMM2_DATA_REPLY.cnf(SSAP=54, DSAP=54, Rem_Add, L_sdu, Serv_Class, L_status)	WAIT-REQ
51	TIMO	MMAC2_XXX.req =>MMAC2_Reject.ind(Rem_Add,Reason_Code:=REJ_CO)	TIMO
52	any state	unexpected DL reaction =>Stop T1 MMAC22_Fault.ind	POWER-ON
53	any state	MMAC2_Reset.req =>Stop T1	WAIT-REQ

10 Machines protocolaires de mapping DLL (DMPM)

10.1 DMPMS

10.1.1 Définitions des primitives

10.1.1.1 Primitives échangées entre DMPMS et FSPMS

Le Tableau 112 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMS et reçues par la DMPMS.

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Tableau 112 – Primitives émises par la FSPMS vers la DMPMS

Nom de primitive	Source	Paramètres associés	Fonctions
SInit DLL.req	FSPMS	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.req	FSPMS	(aucun)	

Le Tableau 113 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMS et reçues par la FSPMS.

Tableau 113 – Primitives émises par la DMPMS vers la FSPMS

Nom de primitive	Source	Paramètres associés	Fonctions
SInit DL.cnf	DMPMS	Loc_Station_Address	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.cnf	DMPMS	(aucun)	
Fault.ind	DMPMS	(aucun)	

10.1.1.2 Primitives échangées entre DMPMS et MSCY1S

Le Tableau 114 montre les primitives de service, y compris leurs paramètres associés, émises par le MSCY1S et reçues par la DMPMS.

Tableau 114 – Primitives émises par le MSCY1S vers la DMPMS

Nom de primitive	Source	Paramètres associés	Fonctions
Slave Init req	MSCY1S	(aucun)	Initialisation des ressources utilisées par DP
Slave Deact.req	MSCY1S	(aucun)	Désactivation des LSAP pour MS0, MS1
Enter.req	MSCY1S	(aucun)	Préparation des ressources de DLL pour l'échange de données
Leave.req	MSCY1S	(aucun)	Libération des ressources de DLL pour l'échange de données
Set minTsdr.req	MSCY1S	MinTsdr	Changement du paramètre minTsdr dans la DLL
Slave Diag Upd.req	MSCY1S	Diag Data, Reference	Établissement du tampon de mises à jour de DL pour le diagnostic
Data Exchange Upd.req	MSCY1S	Diag Flag, Inp Data	Transfert du tampon de données d'entrée (Inp Data) au tampon de mises à jour de DL
RD Outp Upd.req	MSCY1S	Outp Data	Établir une copie du tampon de données de sortie (Outp Data)
RD Inp Upd.req	MSCY1S	Inp Data	Établir une copie du tampon de données d'entrée (Inp Data)
Get Cfg Upd.req	MSCY1S	Cfg Data	Réglage des données de configuration

Le Tableau 115 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMS et reçues par le MSCY1S.

Tableau 115 – Primitives émises par la DMPMS vers le MSCY1S

Nom de primitive	Source	Paramètres associés	Fonctions
Slave Init.cnf	DMPMS	(aucun)	Succès de l'initialisation
Reset.cnf	DMPMS	(aucun)	Fin du service de Reset

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Nom de primitive	Source	Paramètres associés	Fonctions
Slave Deact.cnf	DMPMS	(aucun)	Succès de la désactivation des LSAP pour MS0, MS1
Set Slave Add.ind	DMPMS	New Slave Add, Ident Number, No Add Chg, Rem Slave Data	Changement de l'adresse DL d'un esclave DP. Réglage des données Slave restantes
Slave Diag.ind	DMPMS	Req Add, Reference	Un maître DP recherche les informations de diagnostic.
Set Prm.ind	DMPMS	Req Add, Prm Data	Les données de paramètre sont délivrées à l'esclave DP. La paramétrisation est d'abord faite dans la phase démarrage et elle est également faite pendant que l'esclave DP est dans le mode "échange de données".
Chk Cfg.ind	DMPMS	Req Add, Cfg Data	Données de configuration reçues au niveau de l'esclave DP pour vérification. Elles contiennent le format des zones d'entrée et de sortie ainsi que les informations concernant la cohérence des données.
Data Exchange.ind	DMPMS	Outp Data	Émet des données de sortie vers l'esclave DP et demande des données d'entrée.
Global Control.ind	DMPMS	Control Command, Group Select	Commande de contrôle acceptée seulement en provenance du maître DP (Classe 1) auquel cet Esclave a été assigné. Le Maître communique son mode de fonctionnement avec cette commande.

10.1.1.3 Primitives échangées entre DMPMS et SSCY1S

Le Tableau 116 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMS et reçues par le SSCY1S.

Tableau 116 – Primitives émises par la DMPMS vers le SSCY1S

Nom de primitive	Source	Paramètres associés	Fonctions
DX_Entered.ind	DMPMS	Rem_add, Status	est entré dans le mode DATA-EXCH
DX_Broadcast.ind	DMPMS	Rem_add, Data	Diffusion reçue.

10.1.1.4 Primitives échangées entre DMPMS et MSAC1S, MSRM2S, MSAC2S

Le Tableau 117 montre les primitives de service, y compris leurs paramètres associés, émises par les MSAC1S, MSRM2S et MSAC2S et reçues par la DMPMS.

Tableau 117 – Primitives émises par le MSAC1S, le MSRM2S et le MSAC2S vers la DMPMS

Nom de primitive	Source	Paramètres associés	Fonctions
RSAP_ACTIVATE.req	MSAC1S, MSRM2S, MSAC2S	SSAP, Access, L_sdu_length_list, Indication_Mode	Active le SAP local.
SAP_DEACTIVATE.req	MSAC1S, MSRM2S, MSAC2S	SSAP	Désactive le SAP local.
REPLY_UPDATE.req	MSAC1S, MSRM2S, MSAC2S	SSAP, L_sdu, Serv_class, Transmit	Écrit des données dans le tampon des mises à jour pour émission.

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Le Tableau 118 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMS et reçues par le MSAC1S, MSRM2S et MSAC2S.

Tableau 118 – Primitives émises par la DMPMS vers le MSAC1S, le MSRM2S et le MSAC2S

Nom de primitive	Source	Paramètres associés	Fonctions
RSAP_ACTIVATE.cnf	DMPMS	SSAP, M_Status	Activation terminée.
SAP_DEACTIVATE.cnf	DMPMS	SSAP, M_Status	Désactivation terminée.
REPLY_UPDATE.cnf	DMPMS	SSAP, Serv_class, L_status	Mise à jour terminée.
DATA_REPLY.ind	DMPMS	SSAP, DSAP, Rem_Add, L_sdu, Serv_class, Loc_Add, Update_status	Données/Demande reçue

10.1.1.5 Primitives échangées entre DMPMS et MSCS1S

Le Tableau 119 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMS et reçues par le MSCS1S.

Tableau 119 – Primitives émises par la DMPMS vers le MSCS1S

Nom de primitive	Source	Paramètres associés	Fonctions
CS_CLOCK_VALUE.ind	DMPMS	Time_master_addr CS_list, CS_status, Receive_delay_time	Indique la réception d'un message d'horloges

10.1.1.6 Primitives échangées entre DMPMS et DL

Le Tableau 120 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMS et reçues par la DL.

Tableau 120 – Primitives émises par la DMPMS vers la DL

Nom de primitive	Source	Paramètres associés	Fonctions
DL-REPLY-UPDATE.req	DMPMS	Service_class, S_SAP_index, DLSDU, Transmit_strategy, Reference	
DLM-RESET.req	DMPMS	(aucun)	
DLM-SET-VALUE.req	DMPMS	Variable_name(1 to n), Desired_value (1 to n)	
DLM-DLSAP-ACTIVATE.req	DMPMS	S_SAP_index, Access, Service_list	
DLM-DLSAP-ACTIVATE-RESPONDER.req	DMPMS	S_SAP_index, Access, DLSDU_length_list, Indication_mode, Publisher_enabled	

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Nom de primitive	Source	Paramètres associés	Fonctions
DLM-DLSAP-ACTIVATE-SUBSCRIBER.req	DMPMS	S_SAP_index, DLSDU_length_list	
DLM-DLSAP-DEACTIVATE.req	DMPMS	S_SAP_index	

Le Tableau 121 montre les primitives de service, y compris leurs paramètres associés, émises par la DL et reçues par la DMPMS.

Tableau 121 – Primitives émises par la DL vers la DMPMS

Nom de primitive	Source	Paramètres associés	Fonctions
DL-DATA.ind	DL	Service_class, D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU	Se référer à la Définition des services de la DL dans la CEI 61158-3-3.
DL-DATA-REPLY.ind	DL	Service_class, D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU, Update_Status Reference	
DL-MCT-DATA-REPLY.ind	DL	Service_class, D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU, Update_Status Reference	
DL-REPLY-UPDATE.cnf	DL	Service_class, S_SAP_index, DL_status	
DL-DXM-REPLY.ind	DL	D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU	
DL-CS-CLOCK-VALUE.ind	DL	D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU, Receive_delay_time, CS_Status	
DLM-RESET.cnf	DL	DLM_Status	
DLM-SET-VALUE.cnf	DL	Current_value (1 to n), DLM_status	
DLM-DLSAP-ACTIVATE.cnf	DL	S_SAP_index, DLM_status	
DLM-DLSAP-ACTIVATE-RESPONDER.cnf	DL	S_SAP_index, DLM_status	
DLM-DLSAP-ACTIVATE-SUBSCRIBER.cnf	DL	S_SAP_index, DLM_status	
DLM-DLSAP-DEACTIVATE.cnf	DL	S_SAP_index, DLM_status	

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10.1.1.7 Paramètres des primitives de DMPMS

Les paramètres utilisés avec les primitives échangées entre DMPMS et d'autres diagrammes d'états de l'AL d'esclave sont décrits dans le Tableau 122.

Tableau 122 – Paramètres utilisés avec des primitives échangées avec la DMPMS

Nom de paramètre	Description
MasterAdd	Ce paramètre achemine l'adresse DL du maître DP assigné.
Input Data Len	Ce paramètre est utilisé pour établir la longueur des données d'entrée pour cet esclave.
Output Data Len	Ce paramètre est utilisé pour établir la longueur des données de sortie pour cet esclave.
Min Tsdr	Ce paramètre achemine la valeur de la variable minTsdr de DLL.
Diag Data	Ce paramètre achemine la Diagnosis-RES-PDU.
Diag Flag	Ce paramètre indique qu'un esclave DP a de nouvelles Diag Data.
Inp Data	Ce paramètre achemine la DataExchange-RES-PDU.
Outp Data	Ce paramètre achemine la DataExchange-REQ-PDU.
Cfg Data	Ce paramètre achemine la Chk_Cfg-REQ-PDU.
New Slave Add	Ce paramètre achemine la nouvelle adresse DL pour cet esclave DP.
Ident Number	Ce paramètre achemine l'identificateur de type d'appareil pour cet esclave DP.
No Add Chg	Ce paramètre indique qu'il n'y a pas d'autre changement d'adresse autorisé.
Rem Slave Data	Ce paramètre achemine le paramètre restant pour cet esclave DP.
Req Add	Ce paramètre achemine l'adresse DL de l'initiateur de ce service.
Prm Data	Ce paramètre achemine la Set_Prm-REQ-PDU.
Control Command	Ce paramètre achemine les actions sync et freeze ainsi que l'état du maître DP.
Group Select	Ce paramètre détermine quels groupes doivent être adressés par cette commande.
SSAP	Identificateur local pour le Point d'accès au service
Access	Définit l'utilisation d'un SAP pour une ou plusieurs adresses distantes (stations).
L_sdu_length_list	Définit la longueur maximale d'une L_sdu entrante ou sortante.
Indication_Mode	Définit le mode pour l'indication des séquences de sondage sans données utilisateur.
Serv_class	Indique la priorité du service.
M_status	Statut de l'exécution du service
L_status	Statut de l'exécution du service
Transmit	Définit le mode de fonctionnement du tampon de mises à jour (single = le tampon est émis une fois).
Rem_Add	Adresse DL de la station distante
Loc_Add	Adresse DL de cette station
Update_status	indique l'émission d'un tampon de mises à jour
Reference	Descripteur pour identifier les données de diagnostic
Data	Ce paramètre achemine les données
Time_master_addr	Adresse DL de la Base de temps active
CS_list	Liste de Time Value à l'émission de ce service (Clock_value_time_event), Time Value à la précédente émission (Clock_value_previous_TE) et informations de statut relatives à la valeur d'horloge (Clock_value_status)
CS_status	Indique le succès ou l'échec de la séquence de synchronisation d'horloge.
Receive_delay_time	Temps expiré entre la réception du Time_Event et l'invocation de cette primitive de service

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10.1.2 Description de diagramme d'états

La DMPMS (Machine protocolaire de mapping DL) établit la connexion entre les machines protocolaires liées à MS0, MS1, MS2 et la Couche 2. Tous les services sont mappés par la DMPMS vers la DL et ses services de gestion de la Couche 2. La DMPMS fournit les paramètres de Couche 2 nécessaires de l'appel de fonction (SSAP, DSAP, Serv_class, ...) de la Couche 2, reçoit les confirmations et les indications de la Couche 2 et les transmet aux machines protocolaires liées à MS0, MS1 et MS2.

Variables locales

Loc_Station_Address
(Unsigned8)

Variable locale pour le stockage intermédiaire de l'adresse de station propre qui a été délivrée avec la dernière Set_Value.

Prev_Diag_Flag
(Boolean)

Indique l'état du Diag_Flag à la dernière Data_Exchange_Update.req. Au moyen de ce fanion, il est détecté si une mise à jour à haute priorité est présente.

10.1.3 Table d'états de DMPMS

Le Tableau 123 contient la description complète du diagramme d'états DMPMS.

Tableau 123 – Table d'états de DMPMS

#	État courant	Événement /Condition =>Action	État suivant
1	PON	DMPMS_SInit_DLL.req(Bus Para) => Act_cnt := 0 DLM_SET_VALUE.req(Variable_name1:= “TS “, Variable_name2:= “Data_rate “, Variable_name3:= “TSL “, Variable_name4:= “min TSDR ", Desired_Value1:= Bus_Para.TS Desired_Value2:= Bus_Para.Data_rate, Desired_Value3:= Bus_Para.TSL, Desired_Value4:= 11)	DLM-SET-VALUE
2	DLM-SET-VALUE	DLM_SET_VALUE.cnf(DLM_status(1-5) /DLM_status(1-4)=OK => no action DMPMS_SInit_DLL.cnf	RUN
3	RUN	DMPMS_Enter.req => DMPMS_ActivateControl := DMPMS_Enter Status:=TRUE DMPMS_DX_Entered.ind (0..125, Status)	DLM-CHECK-RSAP-ACT
4	RUN	DMPMS_Slave_Init.req /ActivateRSAPFromCRList(DMPMS_ActivateControl)=TRUE => DMPMS_ActivateControl := DMPMS_Init DLSAP_ACTIVATE_RESPONDER.req(S_SAP_index:=CREP.DSAP, Access:=CREP.Rem Add, DLSDU_length_list:=BuildRSAPServiceListFromCR(), Indication_mode:=CREP.Indication Mode, Publisher_enabled:=FALSE)	DLM-ACT-RSAP

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#	État courant	Événement /Condition =>Action	État suivant
5	DLM-CHECK-RSAP-ACT	/ActivateRSAPFromCRList(DMPMS_ActivateControl)=TRUE => DLSAP_ACTIVATE_RESPONDER.req(S_SAP_index:=CREP.DSAP, Access:=CREP.Rem Add, DLSDU_length_list:=BuildRSAPServiceListFromCR(), Indication_mode:=CREP.Indication Mode, Publisher_enabled:= CREP.Publisher_enabled)	DLM-ACT-RSAP
6	DLM-CHECK-RSAP-ACT	/ActivateRSAPFromCRList(DMPMS_ActivateControl)=FALSE && DMPMS_ActivateControl=DMPMS_Init => DMPMS_Slave_Init.cnf	RUN
7	DLM-CHECK-RSAP-ACT	/ActivateRSAPFromCRList(DMPMS_ActivateControl)=FALSE && DMPMS_ActivateControl=DMPMS_Enter => DLSAP_ACTIVATE.req(S_SAP_index:=58, Access:=CREP.Rem_Add, (Service_activate:=SDN, Role_in_service:=Responder, DLSDU_length_list:=(0,2,0,0)))	DLM-ACT-SAP
8	DLM-ACT-RSAP	DLSAP_ACTIVATE_RESPONDER.cnf(SSAP, DLM_status) /DLM_status=OK	DLM-CHECK-RSAP-ACT
9	DLM-ACT-SAP	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=OK && EnableSubscriber() = FALSE => Prev_Diag_Flag := False	RUN
10	RUN	DMPMS_Leave.req => DMPMS_DeactControl:=DMPMS_Leave Status:=FALSE DMPMS_DX_Entered.ind (0..125, Status)	CHECK-SAP-DEACT
11	RUN	DMPMS_Slave_Deact.req => DMPMS_DeactControl:=DMPMS_Deact	CHECK-SAP-DEACT
12	CHECK-SAP-DEACT	/DeactivateSAPFromCRList(DMPMS_DeactControl)=TRUE => DLSAP_DEACTIVATE.req(S_SAP_index:=CREP.DSAP)	SAP-DEACT
13	CHECK-SAP-DEACT	/DeactivateSAPFromCRList(DMPMS_DeactControl)=FALSE => DMPMS_Slave_Deact.cnf	RUN
14	SAP-DEACT	DLSAP_DEACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=OK	CHECK-SAP-DEACT
15	RUN	DMPMS_Data_Exchange_Upd.req(Diag_Flag, Inp_Data) /Diag_Flag = False && Prev_Diag_Flag = False && Inp_Data.len > 0 => DL_REPLY_UPDATE.req(S:SAP_index:=NIL, DLSDU:=Inp_Data, Service_Class:=Low, Transmit_startegy:=Multiple, Reference:=Act_cnt)	RUN
16	RUN	DMPMS_Data_Exchange_Upd.req(Diag_Flag, Inp_Data) /Diag_Flag = False && Prev_Diag_Flag = False && Inp_Data.len = 0 => no action	RUN

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#	État courant	Événement /Condition =>Action	État suivant
17	RUN	DMPMS_Data_Exchange_Upd.req(Diag_Flag, Inp_Data) /Diag_Flag = False && Prev_Diag_Flag = True && Inp_Data.len > 0 => Prev_Diag_Flag := False DL_REPLY_UPDATE.req(S_SAP_index:=NIL, DLSDU:=Inp_Data, Service_Class:=Low, Transmit_strategy:=Multiple, Reference:=Act_cnt) DL_REPLY_UPDATE.req(S_SAP_index:=NIL, DLSDU:=NULL-PDU, Service_Class:=High, Transmit_strategy:=Single, Reference:=Act_cnt)	RUN
18	RUN	DMPMS_Data_Exchange_Upd.req(Diag_Flag, Inp_Data) /Diag_Flag = False && Prev_Diag_Flag = True && Inp_Data.len = 0 => Prev_Diag_Flag := False DL_REPLY_UPDATE.req(S_SAP_index:=NIL, DLSDU:=NULL-PDU, Service_Class:=High, Transmit_strategy:=Single, Reference:=Act_cnt)	RUN
19	RUN	DMPMS_Data_Exchange_Upd.req(Diag_Flag, Inp_Data) /Diag_Flag = True && Inp_Data.len > 0 => Prev_Diag_Flag := True DL_REPLY_UPDATE.req(S_SAP_index:=NIL, DLSDU:=Inp_Data, Service_Class:=High, Transmit_strategy:=Multiple, Reference:=Act_cnt)	RUN
20	RUN	DMPMS_Data_Exchange_Upd.req(Diag_Flag, Inp_Data) /Diag_Flag = True && Inp_Data.len = 0 => Prev_Diag_Flag := True DL_REPLY_UPDATE.req(S_SAP_index:=NIL, DLSDU:=ZERO-PDU, Service_Class:=High, Transmit_strategy:=Multiple, Reference:=Act_cnt)	RUN
21	RUN	DL_MCT_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Update_status, Reference) /D_SAP_index=NIL => DMPMS_Data_Exchange.ind(Outp_Data:=DLSDU)	RUN
22	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=NIL => DMPMS_Data_Exchange.ind(Outp_Data:=DLSDU)	RUN
23	RUN	DMPMS_Slave_Diag_Upd.req(Diag_Data, Reference) => Act_cnt := Reference DL_REPLY_UPDATE.req(S_SAP_index:=60, DLSDU:=Diag_Data, Service_Class:=Low, Transmit_strategy:=Multiple, Reference:=Act_cnt)	RUN
24	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=60 => Act_cnt := Reference DMPMS_Slave_Diag.ind(Req_Add:=S_addr, Reference := Act_cnt)	RUN
25	RUN	DMPMS_Get_Cfg_Upd.req(Cfg_Data) => DL_REPLY_UPDATE.req(S_SAP_index:=59, DLSDU:=Cfg_Data, Service_class:=Low, Transmit_strategy:=Multiple, Reference:=Act_cnt)	RUN
26	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=59 => no action	RUN

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#	État courant	Événement /Condition =>Action	État suivant
27	RUN	DL_DATA.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class) / D_SAP_index=58 && DLSDU = Global_Control-REQ-PDU => DMPMS_Global_Control.ind(Control_Command:=Global_Control-REQ-PDU.Control_Command, Group_Select:=Global_Control-REQ-PDU.Group_Select)	RUN
28	RUN	DL_DATA.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class) / D_SAP_index=58 && DLSDU <> Global_Control-REQ-PDU => no action	RUN
29	RUN	DMPMS_RD_Inp_Upd.req(Inp_Data) /Inp_Data.len > 0 => DL_REPLY_UPDATE.req(S_SAP_index:=56, DLSDU:=Inp_Data, Service_Class:=Low, Transmit_strategy:=Multiple, Reference:=Act_cnt)	RUN
30	RUN	DMPMS_RD_Inp_Upd.req(Inp_Data) /Inp_Data.len = 0 => no action	RUN
31	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=56 => no action	RUN
32	RUN	DMPMS_RD_Outp_Upd.req(Outp_Data) /Outp_Data.len > 0 => DL_REPLY_UPDATE.req(S_SAP_index:=57, DLSDU:=Outp_Data, Service_Class:=Low, Transmit_strategy:=Multiple, Reference:=Act_cnt)	RUN
33	RUN	DMPMS_RD_Outp_Upd.req(Outp_Data) /Outp_Data.len = 0 => no action	RUN
34	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=57 => no action	RUN
35	RUN	DMPMS_RSAP_ACTIVATE.req(SSAP, Access, L_sdu_length_list, Indication_Mode) => DLSAP_ACTIVATE_RESPONDER.req(S_SAP_index:=SSAP, Access:=Access, DLSDU_length_list:=L_sdu_length_list, Indication_mode:=Indication_Mode, Publisher_enabled:=FALSE)	DLM-PASS-ACT
36	DLM-PASS-ACT	DLSAP_ACTIVATE_RESPONDER.cnf(SSAP, DLM_status) => DMPMS_RSAP_ACTIVATE.cnf(SSAP:=S_SAP_index, M_Status:=DLM_status)	RUN
37	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index<52 => DMPMS_DATA_REPLY.ind(SSAP:=S_SAP_index, DSAP:=D_SAP_index, Rem_Add:=D_addr, L_sdu:=DLSDU, Serv_class:=Service_class, Loc_Add:=S_addr, Update_status:=Update_status)	RUN
38	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=55 && DLSDU=Set_Slave_Add-REQ-PDU => DMPMS_Set_Slave_Add.ind(New_Slave_Add:=Set_Slave_Add-REQ-PDU.New_Slave_Add, Ident_Number:=Set_Slave_Add-REQ-PDU.Ident_Number, No_Add_Chg:=Set_Slave_Add-REQ-PDU.No_Add_Chg, Rem_Slave_Data:=Set_Slave_Add-REQ-PDU.Rem_Slave_Data)	RUN

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#	État courant	Événement /Condition =>Action	État suivant
39	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=55 && DLSDU<>Set_Slave_Add-REQ-PDU => no action	RUN
40	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=62 => DMPMS_Chk_Cfg.ind(Req_Add:=S_addr, Cfg_Data:=DLSDU)	RUN
41	RUN	DMPMS_Set_minTsdr.req(minTsdr) /MinTsdr = 0 => no action	RUN
42	RUN	DMPMS_Set_minTsdr.req(minTsdr) /minTsdr > 0 => DLM_SET_VALUE.req(Variable_name1:=”minTSDR”, Desired_value1:=minTsdr)	SMINTSDR
43	SMINTSDR	DLM_SET_VALUE.cnf(DLM_status) /DLM_Status=OK => no action	RUN
44	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=61 => DMPMS_Set_Prm.ind(Req_Add:=S_add, Prm_Data:=DLSDU)	RUN
45	RUN	DMPMS_SAP_DEACTIVATE.req(SSAP) => DLSAP_DEACTIVATE.req(S_SAP_index:=SSAP)	DLM-PASS-DEACT
46	DLM-PASS-DEACT	DLSAP_DEACTIVATE.cnf(S_SAP_index, DLM_status) => DMPMS_SAP_DEACTIVATE.cnf(SSAP:=S_SAP_index, M_Status:=DLM_status)	RUN
47	RUN	DMPMS_REPLY_UPDATE.req(SSAP, L_sdu, Serv_class, Transmit) /SSAP<52 => DL_REPLY_UPDATE.req(S_SAP_index:=SSAP, DLSDU:=L_sdu, Service_class:=Serv_class, Transmit_strategy:=Transmit, Reference:=Act_cnt)	RUN
48	RUN	DL_REPLY_UPDATE.cnf(S_SAP_index, Service_class, DL_status) /S_SAP_index<52 => DMPMS_REPLY_UPDATE.cnf(SSAP:=S_SAP_index, Serv_class:=Service_class, L_status:=DL_status)	RUN
49	tout état	DMPMS_Reset.req => DLM_RESET.req	WAIT-RESET
50	WAIT-RESET	DLM_RESET.cnf(DLM_status) /DLM_status=OK => DMPMS_Reset.cnf	PON
51	RUN	DL_REPLY_UPDATE.cnf(S_SAP_index, Service_class, DL_status) /(S_SAP_index=NIL || S_SAP_index=62 || S_SAP_index=61 || S_SAP_index=60 || S_SAP_index=59 || S_SAP_index=57 || S_SAP_index=56) && DL_status=OK => no action	RUN
52	tout état	DL_CS_CLOCK_VALUE.ind (D_addr, D_SAP_index, S_addr, S_SAP_index, CS_list, CS_Status, Receive_delay_time) => CS_CLOCK_VALUE.ind (Time_master_addr := S_addr, CS_list, CS_Status, Receive Delay Time := Receive_delay_time)	SAME

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#	État courant	Événement /Condition =>Action	État suivant
53	tout état	DLM_SET_VALUE.cnf(DLM_status) /DLM_status=NO/IV => DMPMS_Fault.ind	PON
54	any state	DLSAP_ACTIVATE_RESPONDER.cnf(SSAP, DLM_status) /DLM_status=NO/IV => DMPMS_Fault.ind	PON
55	any state	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=NO/IV => DMPMS_Fault.ind	PON
56	tout état	DLSAP_DEACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=NO/IV => DMPMS_Fault.ind	PON
57	tout état	DL_REPLY_UPDATE.cnf(S_SAP_index, Service_class, DL_status) /DL_status=LS/LR/IV => DMPMS_Fault.ind	PON
58	tout état	unexpected DL-primitive /D_SAP_index>54 => DMPMS_Fault.ind	PON
59	tout état	unknown DL-primitive /D_SAP_index>54 => DMPMS_Fault.ind	PON
60	tout état	unexpected DLM-primitive => DMPMS_Fault.ind	PON
61	tout état	unknown DLM-primitive => DMPMS_Fault.ind	PON
62	RUN	DL_DXM_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU) /IsFilterEntryExistent(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class) =TRUE => Rem_Add:=Publisher Address Data:=DLSDU DMPMS_DX_Broadcast.ind (Rem_Add, Data)	RUN
63	RUN	DL_DXM_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU) /IsFilterEntryExistent(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class) =FALSE => no action	RUN
64	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status, Reference) /D_SAP_index=53 => DMPMS_Set_Ext_Prm.ind(Req_Add:=S_add, Prm_Data:=DLSDU)	RUN
65	DLM-ACT-SAP	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=OK && EnableSubscriber() = TRUE => DLSAP_ACTIVATE_SUBSCRIBER.req(S_SAP_index:=NIL, DLSDU_length_list:=(244,244))	DLM-ACT-SUB
66	DLM-ACT-SAP	DLSAP_ACTIVATE_SUBSCRIBER.cnf(S_SAP_index, DLM_status) /DLM_status=OK => Prev_Diag_Flag := False	RUN

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10.1.4 Fonctions

Le Tableau 124 contient les fonctions utilisées par la DMPMS, leurs arguments et leurs descriptions.

Tableau 124 – Fonctions utilisées par la DMPMS

Nom de fonction	Description
DeactivateSAPFromCRList (DMPMS_DeactControl)	Cette fonction vérifie l'esclave DP de la CRL s'il y a des entrées de CRL qui appartiennent à la MS0-AR et quel SSAP n'a pas encore été désactivé par la primitive de service DLM-SAP-DEACTIVATE.req. A) Si DMPMS_DeactControl=DMPMS_Deact et s'il existe une des entrées CRL suivantes qui n'a pas encore été désactivée: Entrées avec DSAP=NIL ou DSAP=58 ou DSAP=57 ou DSAP=56 ou DSAP=62 ou DSAP=61 ou DSAP=60 ou DSAP=59 ou DSAP=55 elle retourne TRUE et établit le contexte local en fonction du CREP courant. B) Si DMPMS_DeactControl=DMPMS_Leave et s'il existe une des entrées CRL suivantes qui n'a pas encore été désactivée: Entrées avec DSAP=NIL ou DSAP=58 ou DSAP=57 ou DSAP=56 elle retourne TRUE et établit le contexte local en fonction d'un CREP non activé. C) Autrement, elle retourne FALSE.
ActivateRSAPFromCRList (DMPMS_ActivateControl)	Cette fonction vérifie l'esclave DP de la CRL s'il y a des entrées de CRL qui appartiennent à la MS0-AR et quel SSAP n'a pas encore été activé par la primitive de service DLM-RSAP-ACTIVATE.req. A) Si DMPMS_ActivateControl=DMPMS_Init et s'il existe une des entrées CRL suivantes qui n'a pas encore été activée: Entrées avec DSAP=62 ou DSAP=61 ou DSAP=60 ou DSAP=59 ou DSAP=55 elle retourne TRUE et établit le contexte local en fonction du CREP courant. B) Si DMPMS_ActivateControl=DMPMS_Enter et s'il existe une des entrées CRL suivantes qui n'a pas été encore activée: Entrées avec DSAP=NIL ou DSAP=58 ou DSAP=57 ou DSAP=56 elle retourne TRUE et établit le contexte local en fonction d'un CREP courant non activé. C) Autrement, elle retourne FALSE.
BuildRSAPServiceListFrom CR()	Cette fonction crée le paramètre Service_list pour la primitive DL-RSAP-ACTIVATE.req à partir du contexte CRL courant. Elle renvoie DLSDU_length_list.Max_DLSDU_length_req_low = CREP.Max L_sdu Length Req Low DLSDU_length_list.Max_DLSDU_length_req_high = CREP.Max L_sdu Length Req High DLSDU_length_list.Max_DLSDU_length_ind/con_low =CREP.Max L_sdu Length Ind Low DLSDU_length_list.Max_DLSDU_length_ind/con_high = CREP.Max L_sdu Length Ind High
IsFilterEntryExistent(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class)	Cette fonction vérifie l'esclave DP de la CRL s'il y a des entrées de CRL qui appartiennent à la MS0-AR qui contiennent des entrées DXB-Link. A) Si (S_SAP_Index && D_SAP_Index)=NIL et (Service_class=R-Brct) et s'il existe une entrée avec (DLSDU = Input Data Length Publisher && S_addr =Publisher Address): elle retourne TRUE et établit le contexte local en fonction du CREP courant. B) Autrement, elle retourne FALSE.

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Nom de fonction	Description
BuildServiceListFromCR()	Cette fonction crée le paramètre Service_list pour la primitive DLSAP-ACTIVATE.req à partir du contexte CRL courant. A) Si Enable Publisher = TRUE && EnableSubscriber() =FALSE elle retourne Service_list.Service_activate[1] = SRD(R-Brct) Service_list.Role_in_Service[1] = Initiator Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=0 B) Si Enable Publisher = FALSE && EnableSubscriber() =TRUE elle retourne Service_list.Service_activate[1] = SRD(R-Brct) Service_list.Role_in_Service[1] = Responder Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=244 C)Si Enable Publisher = TRUE && EnableSubscriber() =TRUE elle retourne Service_list.Service_activate[1] = SRD(R-Brct) Service_list.Role_in_Service[1] = Both Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=244
EnableSubscriber()	Cette fonction vérifie l'esclave DP de la CRL s'il y a des entrées de CRL qui appartiennent à la MS0-AR qui contiennent des entrées DXB-Link. A) S'il existe au moins une entrée: elle retourne TRUE et établit le contexte local en fonction du CREP courant. B) Autrement, elle retourne FALSE.

10.2 DMPMM1

10.2.1 Définitions des primitives

10.2.1.1 Primitives échangées entre FSPMM1 et DMPMM1

Le Tableau 125 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMM1 et reçues par la DMPMM1.

Tableau 125 – Primitives émises par la FSPMM1 vers la DMPMM1

Nom de primitive	Source	Paramètres associés	Fonctions
MInit DLL.req	FSPMM1	Bus Para	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.req	FSPMM1	(aucun)	
Global Control.req	FSPMM1	Control Command, Group Select	
Set Bus Par.req	FSPMM1	Bus Para	
Delete SC.req	FSPMM1	Address	
Read Value.req	FSPMM1	Variable	

Le Tableau 126 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMM1 et reçues par la FSPMM1.

Tableau 126 – Primitives émises par la DMPMM1 vers la FSPMM1

Nom de primitive	Source	Paramètres associés	Fonctions
MInit DLL.cnf	DMPMM1	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.cnf	DMPMM1	(aucun)	
Global Control.cnf(+)	DMPMM1	(aucun)	

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Nom de primitive	Source	Paramètres associés	Fonctions
Global Control.cnf(-)	DMPMM1	Status	
Set Bus Par.cnf	DMPMM1	Status	
Delete SC.cnf	DMPMM1	Status	
Read Value.cnf	DMPMM1	Value, Status	
Fault.ind	DMPMM1	(aucun)	
Event.ind	DMPMM1	Event, Add Info	

10.2.1.2 Primitives échangées entre MSCY1M et DMPMM1

Le Tableau 127 montre les primitives de service, y compris leurs paramètres associés, émises par le MSCY1M et reçues par la DMPMM1.

Tableau 127 – Primitives émises par le MSCY1M vers la DMPMM1

Nom de primitive	Source	Paramètres associés	Fonctions
Slave Diag.req	MSCY1M	Rem Add	Récupérer le diagnostic d'un esclave DP
Set Prm.req	MSCY1M	Rem Add, Prm Data	Les données de paramètre sont délivrées à l'esclave DP. La paramétrisation est d'abord faite dans la phase démarrage et elle est également faite pendant que l'esclave DP est dans le mode "échange de données".
Set ExtPrm.req	MSCY1M	Rem Add, Prm Data	Les données de paramètre sont délivrées à l'esclave DP. La paramétrisation est d'abord faite dans la phase démarrage et elle est également faite pendant que l'esclave DP est dans le mode "échange de données".
Chk Cfg.req	MSCY1M	Rem Add, Cfg Data	Envoyer des données de configuration vers l'esclave DP pour vérification. Elles contiennent le format des zones d'entrée et de sortie ainsi que les informations concernant la cohérence des données.
Data Exchange.req	MSCY1M	Rem Add, Outp Data	Émet des données de sortie vers l'esclave DP et demande des données d'entrée.

Le Tableau 128 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMM1 et reçues par le MSCY1M.

Tableau 128 – Primitives émises par la DMPMM1 vers le MSCY1M

Nom de primitive	Source	Paramètres associés	Fonctions
Slave Diag.cnf(+)	DMPMS	Rem Add, Diag Data	Obtenir le diagnostic d'un esclave DP.
Slave Diag.cnf(-)	DMPMS	Rem Add, Status	Cette primitive est utilisée pour acheminer une confirmation négative Slave Diag au DMPMM.
Set Prm.cnf(+)	DMPMS	Rem Add	Paramétrisation émise avec succès, les paramètres ne sont pas vérifiés.
Set Prm.cnf(-)	DMPMS	Rem Add, Status	Cette primitive est utilisée pour acheminer une confirmation négative Set Prm (Parameter Setting) au DMPMM.
Set ExtPrm.cnf(+)	DMPMS	Rem Add	Paramétrisation émise avec succès, les paramètres ne sont pas vérifiés.

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Nom de primitive	Source	Paramètres associés	Fonctions
Set ExtPrm.cnf(-)	DMPMS	Rem Add, Status	Cette primitive est utilisée pour acheminer une confirmation négative Set ExtPrm (Parameter Setting) au DMPMM.
Chk Cfg.cnf(+)	DMPMS	Rem Add	Données de configuration émises avec succès, les paramètres ne sont pas vérifiés.
Chk Cfg.cnf(-)	DMPMS	Rem Add, Status	Cette primitive est utilisée pour acheminer une confirmation négative Chk Cfg (configuration Check) au DMPMM.
Data Exchange.cnf(+)	DMPMS	Rem Add, Diag Flag, Inp Data	Récupérer auprès de l'esclave DP les données d'entrée (Input Data) et le fanion de diagnostic (Diag flag).
Data Exchange.cnf(-)	DMPMS	Rem Add, Status	Cette primitive est utilisée pour acheminer une confirmation négative Data Exchange au DMPMS.

10.2.1.3 Primitives échangées entre DMPMM1 et MSAL1M, MSAC1M

Le Tableau 129 montre les primitives de service, y compris leurs paramètres associés, émises par le MSAL1M et le MSAC1M et reçues par la DMPMM1.

Tableau 129 – Primitives émises par le MSAL1M et le MSAC1M vers la DMPMM1

Nom de primitive	Source	Paramètres associés	Fonctions
DATA_REPLY.req	MSAL1M, MSAC1M	SSAP, DSAP, Rem_Add, L_sdu, Serv_class	Envoyer service.

Le Tableau 130 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMM1 et reçues par le MSAL1M et le MSAC1M.

Tableau 130 – Primitives émises par la DMPMM1 vers le MSAL1M et le MSAC1M

Nom de primitive	Source	Paramètres associés	Fonctions
DATA_REPLY.cnf	DMPMM1	SSAP, DSAP, Rem_Add, L_sdu, Serv_class, L_status	Envoyer service exécuté

10.2.1.4 Primitives échangées entre DMPMM1 et MMAC1

Le Tableau 131 montre les primitives de service, y compris leurs paramètres associés, émises par le MMAC1 et reçues par la DMPMM1.

Tableau 131 – Primitives émises par le MMAC1 vers la DMPMM1

Nom de primitive	Source	Paramètres associés	Fonctions
RSAP_ACTIVATE.req	MMAC1	SSAP, Access, L_sdu_length_list, Indication_Mode	Active le SAP local.
REPLY_UPDATE.req	MMAC1	SSAP, L_sdu, Serv_class, Transmit	Écrit des données dans le tampon des mises à jour pour émission.

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Le Tableau 132 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMM1 et reçues par le MMAC1.

Tableau 132 – Primitives émises par la DMPMM1 vers le MMAC1

Nom de primitive	Source	Paramètres associés	Fonctions
RSAP_ACTIVATE.cnf	DMPMM1	SSAP, M_Status	Activation terminée.
REPLY_UPDATE.cnf	DMPMM1	SSAP, Serv_class, L_status	Mise à jour terminée.
DATA.ind	DMPMM1	SSAP, DSAP, Rem_Add, L_sdu, Serv_class,	Données/Demande reçue
DATA_REPLY.ind	DMPMM1	SSAP, DSAP, Rem_Add, L_sdu, Serv_class, Update_status	Données/Demande reçue

10.2.1.5 Primitives échangées entre DMPMM1 et MSCS1M

Le Tableau 133 montre les primitives de service, y compris leurs paramètres associés, émises par le MSCS1M et reçues par la DMPMM1.

Tableau 133 – Primitives émises par le MSCS1M vers la DMPMM1

Nom de primitive	Source	Paramètres associés	Fonctions
CS_TIME_EVENT.req	FSPMM1	(aucun)	Se référer à la Définition des services de la DL dans la CEI 61158-3-3.
CS_CLOCK_VALUE.req	FSPMM1	CS_list	

Le Tableau 134 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMM1 et reçues par le MSCS1M.

Tableau 134 – Primitives émises par la DMPMM1 vers le MSCS1M

Nom de primitive	Source	Paramètres associés	Fonctions
CS_CLOCK_VALUE.ind	DMPMM1	Time_master_addr CS_list Receive Delay Time CS_status	Se référer à la Définition des services de la DL dans la CEI 61158-3-3.
CS_TIME_EVENT.cnf	DMPMM1	Send_delay_time, Status	
CS_CLOCK_VALUE.cnf	DMPMM1	Status	

10.2.1.6 Primitives échangées entre DMPMM1 et DL

Le Tableau 135 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMM1 et reçues par la DL.

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Tableau 135 – Primitives émises par la DMPMM1 vers la DL

Nom de primitive	Source	Paramètres associés	Fonctions
DL-DATA.req	DMPMM1	Service_class, D_addr, D_SAP_index, S_SAP_index, DLSDU	Se référer à la Définition des services de la DL dans la CEI 61158-3-3.
DL-DATA-REPLY.req	DMPMM1	Service_class, D_addr, D_SAP_index, S_SAP_index, DLSDU	
DL-REPLY-UPDATE.req	DMPMM1	Service_class, S_SAP_index, DLSDU, Transmit_strategy	
DLM-RESET.req	DMPMM1	(aucun)	
DLM-SET-VALUE.req	DMPMM1	Variable_name(1 to n), Desired_value (1 to n)	
DLM-GET-VALUE.req	DMPMM1	Variable_name(1 to n)	
DLSAP-ACTIVATE.req	DMPMM1	S_SAP_index, Access, Service_list	
DLSAP-ACTIVATE-RESPONDER.req	DMPMM1	S_SAP_index, Access, DLSDU_length_list, Indication_mode, Publisher_enabled	
DLSAP-DEACTIVATE.req	DMPMM1	S_SAP_index	
DL-CS_TIME_EVENT.req	DMPMM1	D_addr, D_SAP_index, S_SAP_index	
DL-CS_CLOCK_VALUE.req	DMPMM1	D_addr, D_SAP_index, S_SAP_index, DLSDU	

Le Tableau 136 montre les primitives de service, y compris leurs paramètres associés, émises par la DL et reçues par la DMPMM1.

Tableau 136 – Primitives émises par la DL vers la DMPMM1

Nom de primitive	Source	Paramètres associés	Fonctions
DL-DATA.cnf	DL	Service_class, D_addr, D_SAP_index, S_SAP_index, DL_status	Se référer à la Définition des services de la DL dans la CEI 61158-3-3.
DL-DATA-REPLY.cnf	DL	Service_class, D_addr, D_SAP_index, S_SAP_index, DLSDU, DL_status	
DL-DATA.ind	DL	Service_class, D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU	

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Nom de primitive	Source	Paramètres associés	Fonctions
DL-DATA-REPLY.ind	DL	Service_class, D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU, Update_Status	
DL-REPLY-UPDATE.cnf	DL	Service_class, S_SAP_index, DL_status	
DLM-RESET.cnf	DL	DLM_Status	
DLM-SET-VALUE.cnf	DL	Current_value (1 à n), DLM_status	
DLM-GET-VALUE.cnf	DL	Current_value (1 à n), DLM_status (1 à n)	
DLM-EVENT.ind	DL	Event/Fault	
DLSAP-ACTIVATE.cnf	DL	S_SAP_index, DLM_status	
DLSAP-ACTIVATE-RESPONDER.cnf	DL	S_SAP_index, DLM_status	
DLSAP-DEACTIVATE.cnf	DL	S_SAP_index, DLM_status	
DL-CS_CLOCK_VALUE.ind	DL	D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU, Receive_delay_time, CS_Status	
DL-CS_TIME_EVENT.cnf	DL	Send_delay_time, Status	
DL-CS_CLOCK_VALUE.cnf	DL	Status	

10.2.1.7 Paramètres des primitives de DMPMM1

Les paramètres utilisés avec les primitives échangées entre DMPMM1 et les autres diagrammes d'états d'AL de Maître (Classe 1) sont décrits dans le Tableau 137.

Tableau 137 – Paramètres utilisés avec des primitives échangées avec la DMPMM1

Nom de paramètre	Description
Input Data Len	Ce paramètre est utilisé pour établir la longueur des données d'entrée pour cet esclave.
Output Data Len	Ce paramètre est utilisé pour établir la longueur des données de sortie pour cet esclave.
Min Tsdr	Ce paramètre achemine la valeur de la variable minTsdr de DLL.
Rem Add	Ce paramètre achemine l'adresse DL du destinataire de ce service.
Diag Data	Ce paramètre achemine la Diagnosis-RES-PDU.
Diag Flag	Ce paramètre indique qu'un esclave DP a de nouvelles Diag Data.
Prm Data	Ce paramètre achemine la Set_Prm-REQ-PDU.
Cfg Data	Ce paramètre achemine la Chk_Cfg-REQ-PDU.
Inp Data	Ce paramètre achemine la DataExchange-RES-PDU.
Outp Data	Ce paramètre achemine la DataExchange-REQ-PDU.
Status	Ce paramètre contient la cause d'une confirmation négative-
SSAP	Identificateur local pour le Point d'accès au service
DSAP	Identificateur pour le Point d'accès au service distant

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Nom de paramètre	Description
Access	Définit l'utilisation d'un SAP pour une ou plusieurs adresses distantes (stations).
L_sdu_length_list	Définit la longueur maximale d'une L_sdu entrante ou sortante.
Indication_Mode	Définit le mode pour l'indication des séquences de sondage sans données utilisateur.
Serv_class	Indique la priorité du service.
M_status	Statut de l'exécution du service
L_status	Statut de l'exécution du service
L_sdu	Définit la DP PDU devant être émise.
Transmit	Définit le mode de fonctionnement du tampon de mises à jour (single = le tampon est émis une fois).
Rem_Add	Adresse DL de la station distante
Update_status	Indique l'émission d'un tampon de mises à jour
Time_master_addr	Adresse DL de la Base de temps active
CS_list	Liste de Time Value à l'émission de ce service (Clock_value_time_event), Time Value à la précédente émission (Clock_value_previous_TE) et informations de statut relatives à la valeur d'horloge (Clock_value_status)
CS_status	Indique le succès ou l'échec de la séquence de synchronisation d'horloge.
Receive_delay_time	Temps expiré entre la réception du Time_Event et l'invocation de cette primitive de service

Le Tableau 138 montre les valeurs possibles du paramètre Status et les entités sources correspondantes.

Tableau 138 – Valeurs possibles du statut

Valeur	Signification	Source
DS	Local-DLL/PHY L'entité n'est pas dans l'anneau à jeton ou déconnectée de la ligne.	DLL locale
NA	Ack négatif, aucune réaction de la station distante	DLL locale
NR	Aucune donnée de réponse	DLL distante
OK	Acquittement positif	DLL locale DLL distante
RE	Erreur de format dans la DLPDU de réponse	DMPM locale
RR	Ressources de l'entité de DLL distante insuffisantes ou non disponibles	DLL distante
RS	Service ou adresse distante au LSAP distant ou bien LSAP distant non activé; la station distante n'est pas une station DP; la station distante n'est pas encore prête pour ces fonctions; la station distante est associée à un autre demandeur; service facultatif non disponible	DLL distante
UE	Erreur d'interface MMAC distant/DLL	DLL distante

10.2.2 Description de diagramme d'états

La DMPMM1 établit la connexion entre des composants spécifiques de MS0, MS1, MM1, MM2 et la Couche 2. Les services sont mappés par la DMPMM1 vers la DL et ses services de gestion de la Couche 2. La DMPMM1 fournit les paramètres de Couche 2 nécessaires de l'appel de fonction (SSAP, DSAP, Serv_class, ...) de la Couche 2, reçoit les confirmations et les indications de la Couche 2 et les transmet aux gestionnaires (Handler) MS0, MS1 et MM1/2.

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Variables locales

Act_Max_Diag_Len
(Unsigned8)

Contient la longueur maximale des informations de diagnostic qui peuvent être stockées localement.

Plage: 6 .. 244

Loc_Station_Address
(Unsigned8)

Variable locale pour le stockage intermédiaire de l'adresse de station propre qui a été transférée avec la dernière Set_Bus_Par.

Plage: 0 .. 125

Srv_lst
Cette liste est utilisée pour stocker toutes les informations qui sont nécessaires pour le service SAP_ACTIVATE.

Act_msac1m_Max_L_sdu_len
(Unsigned8)

Cette variable est utilisée pour stocker localement la valeur effective du paramètre Max_L_sdu_len.

Plage: 0 .. 240

10.2.3 Table d'états de DMPMM1

Le Tableau 139 contient la description complète du diagramme d'états DMPMM1.

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Tableau 139 – Table d'états de DMPMM1

#	État courant	Événement /Condition =>Action	État suivant

1	PON	DMPMM1_Minit_DLL.req(Bus_Para)
		=>
		if (Isochronous Mode = Not Synchronized)
		IsoM On:=FALSE
		DLSDU:= NIL-SDU
		else
		IsoM On:=TRUE
		DL IsoM On:=FALSE
		DLSDU:=Global_Control-REQ-PDU(Control_Command:= 2, Group_Select:=Group_8)
		endif
		
		DLM_SET_VALUE.req(MSAP_0 ,
		Variable_name1:= "TS ",
		Variable_name2:= "Baud_rate ",
		Variable_name3:= "TSL ",
		Variable_name4:= "min TSDR ",
		Variable_name5:= "max TSDR ",
		Variable_name6:= "TQUI ",
		Variable_name7:= "TSET ",
		Variable_name8:= "TTR ",
		Variable_name9:= "G ",
		Variable_name10:= "HSA ",
		Variable_name11:= "max_retry_limit ",
		Variable_name12:= "in_ring_desired",
		Variable_name13:= "SYNCHT",
		Variable_name14:="maxTsh",
		Variable_name15:="Tct",
		Desired_Value1:= Bus_Para.TS,
		Desired_Value2:= Bus_Para.Baud_rate,
		Desired_Value3:= Bus_Para.TSL,
		Desired_Value4:= Bus_Para.min TSDR,
		Desired_Value5:= Bus_Para.max TSDR,
		Desired_Value6:= Bus_Para.TQUI,
		Desired_Value7:= Bus_Para.TSET,
		Desired_Value8:= Bus_Para.TTR,
		Desired_Value9:= Bus_Para.G,
		Desired_Value10:= Bus_Para.HSA,
		Desired_Value11:= Bus_Para.max_retry_limit,
		Desired_Value12:= TRUE,
		Desired_Value13:= DLSDU,
		Desired_Value14:= maxTsh,
		Desired_Value15:= Tct)
			SET-VALUE

2	PON	DLM_RESET.cnf(DLM_status) /DLM_status=OK => DMPMM1_Reset.cnf	PON
3	SET-VALUE	DLM_SET_VALUE.cnf(DLM_status(1-15)) /DLM_status(1-15)=OK => DLSAP_ACTIVATE.req(S_SAP_index:=SSAP, Access:=All, Service_list:=BuildServiceListFromCR())	SAP-ACT
4	SAP-ACT	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=OK && ActivateSAPFromCRList()=TRUE => DLSAP_ACTIVATE.req(S_SAP_index:=SSAP, Access:=All, Service_list:=BuildServiceListFromCR())	SAP-ACT
5	SAP-ACT	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=OK && ActivateSAPFromCRList()=FALSE => DLSAP_ACTIVATE_RESPONDER.req(S_SAP_index:=54, Access:=All, DLSDU_length_list:=BuildLengthListFromCR())	RSAP-ACT
6	RSAP-ACT	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=OK => DMPMM2_Minit_DLL.cnf	RUN

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#	État courant	Événement /Condition =>Action	État suivant

7	RUN	DMPMM1_Set_Bus_Par.req(Bus_Para)
		=>
		if (Isochron Mode = Not Synchronized)
		IsoM On:=FALSE
		DLSDU:= NIL-SDU
		else
		IsoM On:=TRUE
		DL IsoM On:=FALSE
		DLSDU:=Global_Control-REQ-PDU(Control_Command:= 2,
		Group_Select:=Group_8)
		endif
		
		DLM_SET_VALUE.req(MSAP_0 ,
		Variable_name1:= "TS ",
		Variable_name2:= "Baud_rate ",
		Variable_name3:= "TSL ",
		Variable_name4:= "min TSDR ",
		Variable_name5:= "max TSDR ",
		Variable_name6:= "TQUI ",
		Variable_name7:= "TSET ",
		Variable_name8:= "TTR ",
		Variable_name9:= "G ",
		Variable_name10:= "HSA ",
		Variable_name11:= "max_retry_limit ",
		Variable_name12:= "in_ring_desired",
		Variable_name13:= "SYNCHT",
		Variable_name14:="maxTsh",
		Variable_name15:="Tct",
		Desired_Value1:= Bus_Para.TS,
		Desired_Value2:= Bus_Para.Baud_rate,
		Desired_Value3:= Bus_Para.TSL,
		Desired_Value4:= Bus_Para.min TSDR,
		Desired_Value5:= Bus_Para.max TSDR,
		Desired_Value6:= Bus_Para.TQUI,
		Desired_Value7:= Bus_Para.TSET,
		Desired_Value8:= Bus_Para.TTR,
		Desired_Value9:= Bus_Para.G,
		Desired_Value10:= Bus_Para.HSA,
		Desired_Value11:= Bus_Para.max_retry_limit,
		Desired_Value12:= TRUE,
		Desired_Value13:= DLSDU,
		Desired_Value14:= maxTsh,
		Desired_Value15:= Tct)
			SV1

8	SV1	DLM_SET_VALUE.cnf(DLM_status(1-15)) /DLM_status(1-15)=OK => DMPMM1_Set_Bus_Par.cnf(+)	RUN
9	RUN	DMPMM1_Delete_SC.req(Address) => DLM_SET_VALUE.req(Variable_name1:="DLPDU_Sent_Count", Index1:=Address, Variable_name2:="Error_Count", Index2:=Address, Desired_Value1:=0, Desired_Value2:=0)	SV2
10	SV2	DLM_SET_VALUE.cnf(DLM_status(1-2)) /DLM_status(1-2)=OK => DMPMM1_Delete_SC.cnf(+)	RUN
11	RUN	DMPMM1_Read_Value.req(Variable) => DLM_GET_VALUE.req(Variable_name1:=Variable)	RUN
12	RUN	DLM_GET_VALUE.cnf(Current_Value(1), DLM_status(1)) /DLM_status(1)=OK/NO => DMPMM1_Read_Value.cnf(Status:=DLM_status(1),Value:=Current_Value(1))	RUN
13	RUN	DLM_EVENT.ind(Event/Fault, Tsh)/Event/Fault<>Synch_Delay &&Event/Fault<>Synch=>DMPMM1_Event.ind(Event:=Event/Fault)	RUN

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14	RUN	DLM_EVENT.ind(Event/Fault, Tsh) /Event/Fault=Synch_Delay => DMPMM1_SYNCH_Delayed.ind(TSH:=Tsh)	RUN
15	RUN	DLM_EVENT.ind(Event/Fault, Tsh) /Event/Fault=Synch => DMPMM1_SYNCH.ind	RUN
16	RUN	DMPMM1_RSAP_ACTIVATE.req(SSAP, Access, L_sdu_length_list, Indication_Mode) => DLSAP_ACTIVATE_RESPONDER.req(S_SAP_index:=SSAP, Access:=Access, DLSDU_length_list:= L_sdu_length_list, Indication_mode:= Indication_Mode)	RUN
17	RUN	DLSAP_ACTIVATE_RESPONDER.cnf(SSAP, DLM_status) /SSAP = 54 && DLM_status=OK => DMPMM1_RSAP_ACTIVATE.cnf(SSAP:=SSAP,DLM_status)	RUN
18	RUN	DMPMM1_REPLY_UPDATE.req(SSAP, L_sdu, Serv_class, Transmit) => DL_REPLY_UPDATE.req(S_SAP_index:=SSAP, DLSDU:=L_sdu, Service_class:=Serv_class, Transmit_strategy:=Transmit)	RUN
19	RUN	DL_REPLY_UPDATE.cnf(S_SAP_index, Service_class, DL_status) => DMPMM1_REPLY_UPDATE.cnf (SSAP:=S_SAP_index, Serv_class:=Service_class, L_status:=DL_status)	RUN
20	RUN	DMPMM1_DATA_REPLY.req (SSAP, DSAP, Rem_Add, L_sdu, Serv_class) => DL_DATA_REPLY.req (S_SAP_index:=SSAP, D_SAP_index:=DSAP, S_addr:=Rem_Add, DLSDU:=L_sdu, Service_class:=Serv_class)	RUN
21	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index<>62 && S_SAP_index<>NIL && DL_status<>LS/IV => DMPMM1_DATA_REPLY.cnf (SSAP:=S_SAP_index, DSAP:=D_SAP_index, Rem_Add:=S_addr, L_sdu:=DLSDU, Serv_class:=Service_class, L_status:=DL_status)	RUN
22	RUN	DL_DATA.ind(S_SAP_index, D_SAP_index, D_addr, S_Addr, DLSDU, Service_class) => DMPMM1_DATA.ind (SSAP:=S_SAP_index, DSAP:=D_SAP_index, Rem_Add:=S_addr, L_sdu:=DLSDU, Serv_class:=Service_class)	RUN
23	RUN	DL_DATA_REPLY.ind(S_SAP_index, D_SAP_index, S_addr, D_addr, DLSDU, Service_class, Update_status) => DMPMM1_DATA_REPLY.ind(SSAP:=S_SAP_index, DSAP:=D_SAP_index, Rem_Add:=S_addr, L_sdu:=DLSDU, Serv_class:=Service_class, Update_status:=Update_status)	RUN
24	RUN	DMPMM1_Data_Exchange.req(Rem_Add, Outp_Data) /GetCRAttribute(PublisherFlag) = TRUE => DL_MCT_DATA_REPLY.req(S_SAP_index:=NIL, D_SAP_index:=NIL, D_addr:=Rem_Add, DLSDU:=Outp_Data, Service_class:=High)	RUN
25	RUN	DMPMM1_Data_Exchange.req(Rem_Add, Outp_Data) /GetCRAttribute(PublisherFlag)=FALSE => DL_DATA_REPLY.req(S_SAP_index:=NIL, D_SAP_index:=NIL, D_addr:=Rem_Add,DLSDU:=Outp_Data, Service_class:=High)	RUN
26	RUN	DL_MCT_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=NR => DMPMM1_Data_Exchange.cnf(+)(Rem_Add:=S_addr, Diag_Flag:=False, Inp_Data.len:=0)	RUN

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27	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=NR => DMPMM1_Data_Exchange.cnf(+)(Rem_Add:=S_addr, Diag_Flag:=False, Inp_Data.len:=0)	RUN
28	RUN	DL_MCT_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=DL => DMPMM1_Data_Exchange.cnf(+)(Rem_Add:=S_addr, Diag_Flag:=False, Inp_Data:=DLSDU)	RUN
29	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=DL => DMPMM1_Data_Exchange.cnf(+)(Rem_Add:=S_addr, Diag_Flag:=False, Inp_Data:=DLSDU)	RUN
30	RUN	DL_MCT_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=DH => DMPMM1_Data_Exchange.cnf(+)(Rem_Add:=S_addr, Diag_Flag:=True, Inp_Data:=DLSDU)	RUN
31	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=DH => DMPMM1_Data_Exchange.cnf(+)(Rem_Add:=S_addr, Diag_Flag:=True, Inp_Data:=DLSDU)	RUN
32	RUN	DL_MCT_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=DS/UE/RS/NA => DMPMM1_Data_Exchange.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
33	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=DS/UE/RS/NA => DMPMM1_Data_Exchange.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
34	RUN	DL_MCT_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=RR/RDL/RDH => DMPMM1_Data_Exchange.cnf(-)(Rem_Add:=S_addr, Status:=RR)	RUN
35	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=NIL && D_SAP_index=NIL && DL_status=RR/RDL/RDH => DMPMM1_Data_Exchange.cnf(-)(Rem_Add:=S_addr, Status:=RR)	RUN
36	RUN	DMPMM1_Slave_Diag.req(Rem_Add) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=60, S_addr:=Rem_Add,DLSDU:=ZERO-PDU, Service_class:=High)	RUN
37	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DL && DLSDU.len >= 6 && DLSDU.len <= Act_Max_Diag_Len && (Diagnosis-RES-PDU.Diag_Master_Add=255 || Diagnosis-RES-PDU.Diag_Master_Add=Loc_Station_Address) => DMPMM1_Slave_Diag.cnf(+)(Rem_Add:=S_addr, Diag_Data:=DLSDU)	RUN

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38	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DL && DLSDU.len > Act_Max_Diag_Len && (Diagnosis-RES-PDU.Diag_Master_Add<>255 && Diagnosis-RES-PDU.Diag_Master_Add<>Loc_Station_Address) => cut Diagnosis-RES-PDU until Act_Max_Diag_Len Diagnosis-RES-PDU.Station_status_3.Ext_Diag_Overflow:=1 Diagnosis-RES-PDU.Station_status_1.Master_Lock := 1 DMPMM1_Slave_Diag.cnf(+)(Rem_Add:=S_addr, Diag_Data:=Diagnosis-RES-PDU)	RUN
39	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DL && DLSDU.len > Act_Max_Diag_Len && (Diagnosis-RES-PDU.Diag_Master_Add=255 || Diagnosis-RES-PDU.Diag_Master_Add=Loc_Station_Address) => cut Diagnosis-RES-PDU until Act_Max_Diag_Len Diagnosis-RES-PDU.Station_status_3.Ext_Diag_Overflow:=1 DMPMM1_Slave_Diag.cnf(+)(Rem_Add:=S_addr, Diag_Data:=Diagnosis-RES-PDU)	RUN
40	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=60 && L_status=DL && DLSDU.len >= 6 && DLSDU.len <= Act_Max_Diag_Len && (Diagnosis-RES-PDU.Diag_Master_Add<>255 && Diagnosis-RES-PDU.Diag_Master_Add<>Loc_Station_Address) => Diagnosis-RES-PDU.Station_status_1.Master_Lock := 1 DMPMM1_Slave_Diag.cnf(+)(Rem_Add:=S_addr, Diag_Data:=Diagnosis-RES-PDU)	RUN
41	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DL && DLSDU.len < 6 => DMPMM1_Slave_Diag.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
42	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DH/RDL/RDH => DMPMM1_Slave_Diag.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
43	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DS/UE/RS/NA/NR/RR => DMPMM1_Slave_Diag.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
44	RUN	DMPMM1_Global_Control.req(Rem_Add, Control_Command, Group_Select) /Isochron Mode Supp = FALSE || Isochron Mode = Not Synchronized || Group_Select <> 0 || Control_Command&2=2 && DL IsoM On=FALSE || Control_Command&2=0 && DL IsoM On=TRUE => DL_DATA.req(S_SAP_index:=62, D_SAP_index:=58, D_addr:=Rem_Add,DLSDU:=Global_Control-REQ-PDU,Service_class:=High)	RUN

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#	État courant	Événement /Condition =>Action	État suivant

45	RUN	DMPMM1_Global_Control.req(Rem_Add, Control_Command, Group_Select)
		/Isochron Mode Supp = TRUE && Isochron Mode <>Not Synchronized &&
		Group_Select=0 && Control_Command&2=0 && DL IsoM On=FALSE
		=>
		DL IsoM On:=TRUE
		Control_Command:=0
		if(IsoM Sync)
		Control_Command.Sync:=1
		endif
		if(IsoM Freeze)
		Control_command.Freeze:=1
		endif
		DLSDU:=Global_Control-REQ-PDU(Control_Command, Group_Select:=Group_8)
		DL_DATA.req(S_SAP_index:=62, D_SAP_index:=58, D_addr:=Rem_Add,
		DLSDU:=Global_Control-REQ-PDU,
		Service_class:=High)
		DLM_SET_VALUE.req(Variable_name1:="SYNCHT",
		Variable_name2:="maxTsh",
		Variable_name3:="Tct",
		Desired_Value1:=DLSDU,
		Desired_Value2:=maxTsh,
		Desired_Value3:=Tct)
			RUN

46	RUN	DMPMM1_Global_Control.req(Rem_Add, Control_Command, Group_Select) /Isochron Mode Supp = TRUE && Isochron Mode <>Not Synchronized && Group_Select=0 && Control_Command&2=2 && DL IsoM On=TRUE => DL IsoM On:=FALSE DLSDU:=Global_Control-REQ-PDU(Control_Command:= 2, Group_Select:=Group_8) DL_DATA.req(S_SAP_index:=62, D_SAP_index:=58, D_addr:=Rem_Add, DLSDU:=Global_Control-REQ-PDU, Service_class:=High) DLM_SET_VALUE.req(Variable_name1:="SYNCHT", Variable_name2:="maxTsh", Variable_name3:="Tct", Desired_Value1:=DLSDU, Desired_Value2:=maxTsh, Desired_Value3:=Tct)	RUN
47	RUN	DL_DATA.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=58 && DL_status=OK/DS => DMPMM1_Global_Control.cnf(Rem_Add:=S_addr, Status:=DL_status)	RUN
48	RUN	DMPMM1_Chk_Cfg.req(Rem_Add, Cfg_Data) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=62, S_addr:=Rem_Add, DLSDU:=Cfg_Data, Service_class:=High)	RUN
49	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=62 && DL_status=NR => DMPMM1_Chk_Cfg.cnf(+)(Rem_Add:=S_addr)	RUN
50	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=62 && DL_status=DS/NA/RS/RR/UE => DMPMM1_Chk_Cfg.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
51	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=62 && DL_status=RDL/RDH/DL/DH => DMPMM1_Chk_Cfg.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
52	RUN	DMPMM1_Set_Prm.req(Rem_Add, Prm_Data) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=61, S_addr:=Rem_Add, DLSDU:=Prm_Data, Service_class:=High)	RUN

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#	État courant	Événement /Condition =>Action	État suivant
53	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=61 && DL_status=NR => DMPMM1_Set_Prm.cnf(+)(Rem_Add:=S_addr)	RUN
54	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=61 && DL_status=DS/NA/RS/RR/UE => DMPMM1_Set_Prm.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
55	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=61 && DL_status=RDL/RDH/DL/DH => DMPMM1_Set_Prm.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
56	RUN	DMPMM1_CS_TIME_EVENT.req => D_addr=127, D_SAP_index=CS, S_SAP_index=CS DL_CS_TIME_EVENT.req(D_addr, D_SAP_index, S_SAP_index)	RUN
57	RUN	DL_CS_TIME_EVENT.cnf (D_addr, D_SAP_index, S_SAP_index, Send_delay_time, DL_status) => Send_Delay_Time=Send_delay_time, DL_Status=DL_status DMPMM1_CS_TIME_EVENT.cnf (Send_Delay_Time, DL_Status)	RUN
58	RUN	DMPMM1_CS_CLOCK_VALUE.req (Clock Value Time Event, Clock Value previous TE, Clock Value Status) => D_addr=127, D_SAP_index=CS, S_SAP_index=CS, DLSDU=Clock Value Time Event, Clock Value previous TE, Clock Value Status DL_CS_CLOCK_VALUE.req (D_addr, D_SAP_index, S_SAP_index, DLSDU)	RUN
59	RUN	DL_CS_CLOCK_VALUE.cnf (D_addr, D_SAP_index, S_SAP_index, DL_status) => DL_Status=DL_status DMPMM1_CS_CLOCK_VALUE.cnf (DL_Status)	RUN
60	RUN	DL_CS_CLOCK_VALUE.ind (D_addr, D_SAP_index, S_addr, S_SAP_index, DLSDU, Receive_delay_time, CS_Status) => Time_Master_Addr=S_addr, CS_list=DLSDU, CS_status=CS_Status, Receive_Delay_Time=Receive_delay_time) DMPMM1_CS_CLOCK_VALUE.ind (Time_Master_Addr, CS_list, CS_status, Receive_Delay_Time)	RUN
61	RUN	DMPMM1_Set_ExtPrm.req(Rem_Add, Prm_Data) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=53, S_addr:=Rem_Add,DLSDU:=Prm_Data, Service_class:=High)	RUN
62	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=53 && DL_status=NR => DMPMM1_Set_ExtPrm.cnf(+)(Rem_Add:=S_addr)	RUN
63	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=53 && DL_status=DS/NA/RS/RR/UE => DMPMM1_Set_ExtPrm.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
64	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_Status) /S_SAP_index=62 && D_SAP_index=53 && DL_status=RDL/RDH/DL/DH => DMPMM1_Set_ExtPrm.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
65	RUN	DLM_SET_VALUE.cnf(DLM_status(1-3)) /DLM_status(1-3)=OK => no action	RUN

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66	RUN	DLM_SET_VALUE.cnf(DLM_status(1)) /DLM_status(1)=OK => no action	RUN
67	any state	DMPMM1_Reset.req => DLM_RESET.req(DLMSAP_0)	PON
68	any state	DLM_RESET.cnf(DLM_status) /DLM_status=OK => DMPMM1_Reset.cnf	PON
69	any state	inadmissible or unknown DL primitive => DMPMM1_Fault.ind	PON

10.2.4 Fonctions

Le Tableau 140 contient les fonctions utilisées par la DMPMM1, leurs arguments et leurs descriptions.

Tableau 140 – Fonctions utilisées par la DMPMM1

Nom de fonction	Description
ActivateSAPFrom CRList()	Cette fonction vérifie dans le maître DP (Classe 1) de la CRL s'il y a des entrées de la CRL dont le SSAP n'a pas encore été activé avec la primitive de service DLAP-ACTIVATE.req. A) S'il existe une des entrées de CRL suivantes qui n'a pas encore été activée: Entrées avec SSAP=NIL ou SSAP=62 ou SSAP=51 ou SSAP=54 elle retourne TRUE et établit le contexte local en fonction du CREP courant. B) Autrement, elle retourne FALSE.

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Nom de fonction	Description
BuildServiceListFrom CR()	Cette fonction crée le paramètre Service_list pour la primitive DLSAP-ACTIVATE.req à partir du contexte CRL courant. A) Si SSAP = NIL(MS0) elle retourne Service_list.Service_activate[1] = SRD Service_list.Role_in_Service[1] = Initiator Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=244 B) Si SSAP = 62(MS0) elle retourne Service_list.Service_activate[1] = SRD Service_list.Role_in_Service[1] = Initiator Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=0 Service_list.Service_activate[2] = SDN Service_list.Role_in_Service[2] = Initiator Service_list.DLSDU_length_list[2].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[2].Max_DLSDU_length_req_high=2 Service_list.DLSDU_length_list[2].Max_DLSDU_length_ind/cnf_low=0 Service_list.DLSDU_length_list[2].Max_DLSDU_length_ind/cnf_high=0 C) Si SSAP = 51(MS1) elle retourne Service_list.Service_activate[1] = SRD Service_list.Role_in_Service[1] = Initiator Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=0 D) Si SSAP = 54(MM) elle retourne Service_list.Service_activate[1] = SDN Service_list.Role_in_Service[1] = Receiver Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=4 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=0
BuildLengthFromCR()	Cette fonction construit le paramètre Service_list pour la primitive DLSAP-ACTIVATE-RESPONDER.req à partir du contexte CRL courant. DLSDU_length_list.Max_DLSDU_length_req_low = 244 DLSDU_length_list.Max_DLSDU_length_req_high = 0 DLSDU_length_list.Max_DLSDU_length_ind_low =244 DLSDU_length_list.Max_DLSDU_length_ind_high = 0

10.3 DMPMM2

10.3.1 Définitions des primitives

10.3.1.1 Primitives échangées entre FSPMM2 et DMPMM2

Le Tableau 141 montre les primitives de service, y compris leurs paramètres associés, émises par la FSPMM2 et reçues par la DMPMM2.

Tableau 141 – Primitives émises par la FSPMM2 vers la DMPMM2

Nom de primitive	Source	Paramètres associés	Fonctions
MInit DLL.req	FSPMM2	Bus Para	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3 et dans la CEI 61158-3-3
Reset.req	FSPMM2	(aucun)	
Read Slave Diag.req	FSPMM2	Rem Add	
Read Output.req	FSPMM2	Rem Add	
Read Input.req	FSPMM2	Rem Add	
Get Cfg.req	FSPMM2	Rem Add	

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Nom de primitive	Source	Paramètres associés	Fonctions
Set Slave Add.req	FSPMM2	Rem Add, New Slave Add, Ident Number, No Add Chg, Rem Slave Data	

Le Tableau 142 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMM2 et reçues par la FSPMM2.

Tableau 142 – Primitives émises par la DMPMM2 vers la FSPMM2

Nom de primitive	Source	Paramètres associés	Fonctions
MInit DLL.cnf	DMPMM2	(aucun)	Se référer à la Définition des services de la FAL dans la CEI 61158-5-3.
Reset.cnf	DMPMM2	(aucun)	
Read Slave Diag.cnf(+)	DMPMM2	Rem Add, Diag Data	
Read Slave Diag.cnf(-)	DMPMM2	Rem Add, Status	
Get Cfg.cnf(+)	DMPMM2	Rem Add, Cfg Data	
Get Cfg.cnf(-)	DMPMM2	Rem Add Status	
Read Output.cnf(+)	DMPMM2	Rem Add, Output Data	
Read Output.cnf(-)	DMPMM2	Rem Add, Status	
Read Input.cnf(+)	DMPMM2	Rem Add, Input Data	
Read Input.cnf(-)	DMPMM2	Rem Add, Status	
Set Slave Add.cnf(+)	DMPMM2	Rem Add	
Set Slave Add.cnf(-)	DMPMM2	Rem Add, Status	
Event.ind	DMPMM2	Event, Add Info	
Fault.ind	DMPMM2	Rem Add	

10.3.1.2 Primitives échangées entre DMPMM2 et MSAC2M

Le Tableau 143 montre les primitives de service, y compris leurs paramètres associés, émises par le MSAC2M et reçues par la DMPMM2.

Tableau 143 – Primitives émises par le MSAC2M vers la DMPMM2

Nom de primitive	Source	Paramètres associés	Fonctions
DATA_REPLY.req	MSAC2M	SSAP, DSAP, Rem_Add, L_sdu, Serv_class	Envoyer service.

Le Tableau 144 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMM2 et reçues par le MSAC2M.

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Tableau 144 – Primitives émises par la DMPMM2 vers le MSAC2M

Nom de primitive	Source	Paramètres associés	Fonctions
DATA_REPLY.cnf	DMPMM2	SSAP, DSAP, Rem_Add, L_sdu, Serv_class, L_status	Envoyer service exécuté

10.3.1.3 Primitives échangées entre DMPMM2 et MMAC2

Le Tableau 145 montre les primitives de service, y compris leurs paramètres associés, émises par le MMAC2 et reçues par la DMPMM2.

Tableau 145 – Primitives émises par le MMAC2 vers la DMPMM2

Nom de primitive	Source	Paramètres associés	Fonctions
DATA_REPLY.req	MMAC2	SSAP, DSAP, Rem_Add, L_sdu, Serv_class	Envoyer service.
DATA.req	MMAC2	SSAP, DSAP, Rem_Add, L_sdu, Serv_class	Envoyer service.

Le Tableau 146 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMM2 et reçues par le MMAC2.

Tableau 146 – Primitives émises par la DMPMM2 vers le MMAC2

Nom de primitive	Source	Paramètres associés	Fonctions
DATA_REPLY.cnf	DMPMM2	SSAP, DSAP, Rem_Add, L_sdu, Serv_class, L_status	Envoyer service exécuté
DATA.cnf	DMPMM2	SSAP, DSAP, Rem_Add, Serv_class, L_status	Envoyer service exécuté

10.3.1.4 Primitives échangées entre DMPMM2 et DL

Le Tableau 147 montre les primitives de service, y compris leurs paramètres associés, émises par la DMPMM2 et reçues par la DL.

Tableau 147 – Primitives émises par la DMPMM2 vers la DL

Nom de primitive	Source	Paramètres associés	Fonctions
DL-DATA.req	DMPMM2	Service_class, D_addr, D_SAP_index, S_SAP_index, DLSDU	Se référer à la Définition des services de la DL dans la CEI 61158-3-3.

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Nom de primitive	Source	Paramètres associés	Fonctions
DL-DATA-REPLY.req	DMPMM2	Service_class, D_addr, D_SAP_index, S_SAP_index, DLSDU	
DLM-RESET.req	DMPMM2	(aucun)	
DLM-SET-VALUE.req	DMPMM2	Variable_name(1 to n), Desired_value (1 to n)	
DLSAP-ACTIVATE.req	DMPMM2	S_SAP_index, Access, Service_list	
DLSAP-DEACTIVATE.req	DMPMM2	S_SAP_index	

Le Tableau 148 montre les primitives de service, y compris leurs paramètres associés, émises par la DL et reçues par la DMPMM2.

Tableau 148 – Primitives émises par la DL vers la DMPMM2

Nom de primitive	Source	Paramètres associés	Fonctions
DL-DATA.cnf	DL	Service_class, D_addr, D_SAP_index, S_SAP_index, DL_status	Se référer à la Définition des services de la DL dans la CEI 61158-3-3.
DL-DATA-REPLY.cnf	DL	Service_class, D_addr, D_SAP_index, S_SAP_index, DLSDU, DL_status	
DLM-RESET.cnf	DL	DLM_Status	
DLM-SET-VALUE.cnf	DL	Current_value (1 to n), DLM_status	
DLM-EVENT.ind	DL	Event/Fault	
DLSAP-ACTIVATE.cnf	DL	S_SAP_index, DLM_status	
DLSAP-DEACTIVATE.cnf	DL	S_SAP_index, DLM_status	

10.3.1.5 Paramètres des primitives de FSPMM2

Les paramètres utilisés avec les primitives échangées entre la DMPMM2 et la FSPMM2 sont décrits dans "Définition des services de la FAL" (voir la CEI 61158-5-3). Des paramètres supplémentaires sont décrits dans le Tableau 149.

Tableau 149 – Paramètres utilisés avec des primitives échangées avec la DMPMM2

Nom de paramètre	Description
SSAP	Identificateur local pour le Point d'accès au service
DSAP	Identificateur pour le Point d'accès au service distant
Serv_class	Indique la priorité du service.
L_status	Statut de l'exécution du service
L_sdu	Définit la DP PDU devant être émise.
Rem_Add	Adresse DL de la station distante

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10.3.2 Description de diagramme d'états

La DMPMM2 établit la connexion entre les composants spécifiques de MS0, MS2, MM1/2 et la Couche 2. Les services sont mappés par la DMPMM2 vers la DL et ses services de gestion de la Couche 2. La DMPMM2 fournit les paramètres de Couche 2 nécessaires de l'appel de fonction (SSAP, DSAP, Serv_class, ...) de la Couche 2, reçoit les confirmations et les indications de la Couche 2 et les transmet aux gestionnaires (Handler) MS0, MS1 et MM1/2.

10.3.3 Table d'états de DMPMM2

Le Tableau 150 contient la description complète du diagramme d'états DMPMM2.

Tableau 150 – Table d'états de DMPMM2

#	État courant	Événement /Condition =>Action	État suivant
1	PON	DMPMM2_Minit_DLL.req(Bus_Para) => DLM_SET_VALUE.req(Variable_name1:= “TS “, Variable_name2:= “Data_rate “, Variable_name3:= “TSL “, Variable_name4:= “min TSDR “, Variable_name5:= “max TSDR “, Variable_name6:= “TQUI “, Variable_name7:= “TSET “, Variable_name8:= “TTR “, Variable_name9:= “G “, Variable_name10:= “HSA “, Variable_name11:= “max_retry_limit “, Variable_name12:= “in_ring_desired”, Desired_Value1:= Bus_Para.TS Desired_Value2:= Bus_Para.Data_rate, Desired_Value3:= Bus_Para.TSL, Desired_Value4:= Bus_Para.min TSDR, Desired_Value5:= Bus_Para.max TSDR, Desired_Value6:= Bus_Para.TQUI, Desired_Value7:= Bus_Para.TSET, Desired_Value8:= Bus_Para.TTR, Desired_Value9:= Bus_Para.G, Desired_Value10:= Bus_Para.HSA, Desired_Value11:= Bus_Para.max_retry_limit, Desired_Value12:= TRUE)	SET-VALUE
2	PON	DLM_RESET.cnf(DLM_status) /DLM_status=OK => DMPMM2_Reset.cnf	PON
3	SET-VALUE	DLM_SET_VALUE.cnf(DLM_status(1-11)) /DLM_status(1-11)=OK => no action	SAP-CHECK
4	SAP-CHECK	spontaneous /ActivateSAPFromCRList()=TRUE => DLSAP_ACTIVATE.req(S_SAP_index:=SSAP, Access:=All, Service_list:=BuildServiceListFromCR())	SAP-ACT
5	SAP-CHECK	spontaneous /ActivateSAPFromCRList()=FALSE => DMPMM2_Minit_DLL.cnf	RUN
6	SAP-ACT	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status=OK => no action	SAP-CHECK
7	RUN	DLM_EVENT.ind(Event/Fault, Add_info) => DMPMM2_Event.ind(Event:=Event/Fault, Add_Info:=Add_info)	RUN

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#	État courant	Événement /Condition =>Action	État suivant
8	RUN	DMPMM2_Read_Slave_Diag.req(Rem_Add) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=60, S_addr:=Rem_Add, DLSDU.len:=0, Service_class:=High)	RUN
9	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DL && DLSDU.len >= 6 => DMPMM2_Read_Slave_Diag.cnf(+)(Rem_Add:=S_addr, Diag_Data:=DLSDU)	RUN
10	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DL && DLSDU < 6 => DMPMM2_Read_Slave_Diag.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
11	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DH/RDL/RDH => DMPMM2_Read_Slave_Diag.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
12	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=60 && DL_status=DS/UE/RS/NA/NR/RR => DMPMM2_Read_Slave_Diag.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
13	RUN	DMPMM2_Get_Cfg.req(Rem_Add) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=59, S_addr:=Rem_Add, DLSDU.len:=0, Service_class:=High)	RUN
14	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=59 && DL_status=DL => DMPMM2_Get_Cfg.cnf(+)(Rem_Add:=S_addr, Cfg_Data:=DLSDU)	RUN
15	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=59 && DL_status=DS/UE/RS/NA/NR/RR => DMPMM2_Get_Cfg.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
16	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=59 && DL_status=DH/RDL/RDH => DMPMM2_Get_Cfg.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
17	RUN	DMPMM2_Read_Input.req(Rem_Add) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=56, S_addr:=Rem_Add, DLSDU.len:=0, Service_class:=High)	RUN
18	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=56 && DL_status=DL => DMPMM2_Read_Input.cnf(+)(Rem_Add:=S_addr, Inp_Data:=DLSDU)	RUN
19	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=56 && DL_status=DS/UE/RS/NA/NR/RR => DMPMM2_Read_Input.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
20	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=56 && DL_status=DH/RDL/RDH => DMPMM2_Read_Input.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN

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#	État courant	Événement /Condition =>Action	État suivant
21	RUN	DMPMM2_Read_Output.req(Rem_Add) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=57, S_addr:=Rem_Add, DLSDU.len:=0, Service_class:=High)	RUN
22	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=57 && DL_status=DL => DMPMM2_Read_Output.cnf(+)(Rem_Add:=S_addr, Outp_Data:=DLSDU)	RUN
23	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=57 && DL_status=DS/UE/RS/NA/NR/RR => DMPMM2_Read_Output.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
24	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=57 && DL_status=DH/RDL/RDH => DMPMM2_Read_Output.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
25	RUN	DMPMM2_Set_Slave_Add.req(Rem_Add, New_Slave_Add, Ident_Number, No_Add_Chg, Rem_Slave_Data) => DL_DATA_REPLY.req(S_SAP_index:=62, D_SAP_index:=55, S_addr:=Rem_Add, DLSDU:=Set_Slave_Add-REQ-PDU, Service_class:=High)	RUN
26	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=55 && DL_status=NR => DMPMM2_Set_Slave_Add.cnf(+)(Rem_Add:=S_addr)	RUN
27	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=55 && DL_status=DS/UE/RR/RS/NA => DMPMM2_Set_Slave_Add.cnf(-)(Rem_Add:=S_addr, Status:=DL_status)	RUN
28	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index=62 && D_SAP_index=55 && DL_status=RDL/RDH/DL/DH => DMPMM2_Set_Slave_Add.cnf(-)(Rem_Add:=S_addr, Status:=RE)	RUN
29	RUN	DMPMM2_DATA_REPLY.req (SSAP, DSAP, Rem_Add, L_sdu, Serv_class) => DL_DATA_REPLY.req (S_SAP_index:=SSAP, D_SAP_index:=DSAP, S_addr:=Rem_Add, DLSDU:=L_sdu, Service_class:=Serv_class)	RUN
30	RUN	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /S_SAP_index<>62 && DL_status<>LS/IV/LR => DMPMM2_DATA_REPLY.cnf (SSAP:=S_SAP_index, DSAP:=D_SAP_index, Rem_Add:=S_addr, L_sdu:=DLSDU, Serv_class:=Service_class, L_status:=DL_status)	RUN
31	RUN	DMPMM2_DATA.req (SSAP, DSAP, Rem_Add, L_sdu, Serv_class) => DL_DATA.req (S_SAP_index:=SSAP, D_SAP_index:=DSAP, S_addr:=Rem_Add, DLSDU:=L_sdu, Service_class:=Serv_class)	RUN
32	RUN	DL_DATA.cnf(S_SAP_index, D_SAP_index, S_addr, Service_class, DL_status) /DL_status<>LS/IV/LR => DMPMM2_DATA.cnf (SSAP:=S_SAP_index, DSAP:=D_SAP_index, Rem_Add:=S_addr, Serv_class:=Service_class, L_status:=DL_status)	RUN

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#	État courant	Événement /Condition =>Action	État suivant
33	any state	DLSAP_ACTIVATE.cnf(S_SAP_index, DLM_status) /DLM_status<>OK => DMPMM2_Fault.ind	PON
34	any state	DLM_SET_VALUE.cnf(DLM_status(1-11)) /NOT (DLM_status(1-11)=OK) => DMPMM2_Fault.ind	PON
35	any state	DL_DATA_REPLY.cnf(S_SAP_index, D_SAP_index, S_addr, DLSDU, Service_class, DL_status) /DL_status=LS/IV/LR => DMPMM2_Fault.ind	RUN
36	any state	inadmissible or unknown DL primitive => DMPMM2_Fault.ind	RUN
37	any state	DL_DATA.cnf(S_SAP_index, D_SAP_index, S_addr, Service_class, DL_status) /DL_status=LS/IV/LR => DMPMM2_Fault.ind	PON
38	any state	DMPMM2_Reset.req => DLM_RESET.req	PON

10.3.4 Fonctions

Le Tableau 151 contient les fonctions utilisées par la DMPMM2, leurs arguments et leurs descriptions.

Tableau 151 – Fonctions utilisées par la DMPMM2

Nom de fonction	Description
ActivateSAPFromCRList()	Cette fonction vérifie dans le maître DP (Classe 2) de la CRL s'il y a des entrées de la CRL dont le SSAP n'a pas encore été activé avec la primitive de service DLM-SAP-ACTIVATE.req. A) S'il existe une des entrées de CRL suivantes qui n'a pas encore été activée: Entrées avec SSAP=62 ou SSAP=50 ou SSAP=54 elle retourne TRUE et établit le contexte local en fonction du CREP courant. B) Autrement, elle retourne FALSE.

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Nom de fonction	Description
BuildServiceListFromCR()	Cette fonction crée le paramètre Service_list pour la primitive DLSAP-ACTIVATE.req à partir du contexte CRL courant. A) Si SSAP = 62(MS0) elle retourne Service_list.Service_activate[1] = SRD Service_list.Role_in_Service[1] = Initiator Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=0 B) Si SSAP = 50(MS2) elle retourne Service_list.Service_activate[1] = SRD Service_list.Role_in_Service[1] = Initiator Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=0 C) Si SSAP = 54(MM) elle retourne Service_list.Service_activate[1] = SRD Service_list.Role_in_Service[1] = Initiator Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_low=244 Service_list.DLSDU_length_list[1].Max_DLSDU_length_ind/cnf_high=0 Service_list.Service_activate[2] = SDN Service_list.Role_in_Service[2] = Initiator Service_list.DLSDU_length_list[2].Max_DLSDU_length_req_low=2 Service_list.DLSDU_length_list[2].Max_DLSDU_length_req_high=0 Service_list.DLSDU_length_list[2].Max_DLSDU_length_ind/cnf_low=0 Service_list.DLSDU_length_list[2].Max_DLSDU_length_ind/cnf_high=0

11 Paramètres pour un esclave DP

Le Tableau 152 contient des limitations pour les paramètres de synchronisation AL des esclaves qui dépendent du débit de données.

Tableau 152 – Temps de paramètre de bus/réaction pour un esclave DP

Débit de données (kbit/s)	≤ 187,5	500	1 500	3 000	6 000	12 000
Min_Slave_Interval (ms)	≤ 20	≤ 6	≤ 2	≤ 1,5	≤ 1	≤ 0,6
Send_Timeout (s) (1)	4	2	1	1	1	1
Send_Timeout (s) (2)	40	20	10	10	10	10

NOTE 1 Le paramètre Send_Timeout représente une caractéristique de performance d'une mise en œuvre d'esclave DP. Il faut que chaque mise en œuvre d'esclave DP assure que le paramètre Send_Timeout atteint la plus faible valeur possible.

NOTE 2 Le paramètre MS1_Timeout représente une caractéristique de performance d'un esclave DP. Il faut que chaque mise en œuvre d'esclave DP assure que le paramètre MS1_Timeout atteint la plus faible valeur possible.

Une autre caractéristique de performance pour une mise en œuvre d'esclave DP est le temps Min_Slave_Interval. Il faut que chaque mise en œuvre d'esclave DP assure que le Min_Slave_Interval atteint la plus faible valeur possible. Cela signifie que dans un système DP ayant plus de dix stations, le Min_Slave_Interval ne doit pas être le facteur dominant pour la durée de cycle.

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Bibliographie

CEI 61158-1:2014, *Réseaux de communication industriels – Spécifications des bus de terrain – Partie 1 : Présentation et lignes directrices des séries CEI 61158 et CEI 61784*

CEI 61784-1, *Réseaux de communication industriels – Profils – Partie 1: Profils de bus de terrain*

CEI 61784-2, *Réseaux de communication industriels – Profils – Partie 2: Profils de bus de terrain supplémentaires pour les réseaux en temps réel basés sur l'ISO/CEI 8802-3*

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