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TECHNICAL REPORT

Function blocks (FB) for process control – Electronic device description language (EDDL) – Part 6: Meeting the requirements for integrating fieldbus devices in engineering tools for field devices

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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IEC 61804-6, which is a Technical Report, has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
65E/212A/DTR	65E/239/RVC

Full information on the voting for the approval of this technical report 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 61804 series, under the general title *Function blocks (FB) for process control – Electronic device description language (EDDL),* can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

The information contained in this part of IEC 61804 is provided for information only and is not part of the IEC 61804-3 requirements.

NOTE 1 ANSI/ISA-61804-3 (104.00.01):2007 is an equivalent to IEC 61804-3:2006.

The need for device integration has grown significantly in recent years. The combination of open systems, growth and mix of bus protocols, more intelligent devices and more sophisticated and complex devices has increased the requirements for integrating these devices in a single tool.

The purpose of this technical report is to investigate if the IEC 61804-3 technology meets the requirements of NAMUR NE 105. NAMUR is an international users association of automation technology in the process industries (www.namur.de). Recommendation NE 105 prepared by working group 2.6: Fieldbus, contains requirements for device integration technologies such as the electronic device description language (EDDL).

From experience, control system manufacturers and plant operations do not permit third-party software to be installed on DCS server, engineering station, or operator consoles – but rather only on separate application stations. One of the objectives of the EDDL standard is to reduce or minimize the need for third-party software to be installed. The question this technical report addresses is if EDDL can meet device integration requirement without the need for software drivers.

Most NAMUR NE 105 requirements are concerned with the long-term viability of the system and the ease of managing the system. A few requirements are concerned with consistency between different protocols, device types, and manufacturers.

EDDL meets all requirements of NAMUR NE 105. Most requirements are met by virtue of the fact that an EDD file is a compressed text, not a software.

Early EDDL, before enhancements were specified in IEC 61804-3:2006, met most but not all of the NAMUR NE 105 requirements.

NOTE 2 A system combining EDDL with other technologies that do not meet NAMUR NE 105, overall will not meet the requirements of NAMUR NE 105.

EDDL is a language to write the electronic device description (EDD) files. An EDD file describes how an engineering software can integrate a fieldbus device. EDD files provides information which command to send to a field device to read or to write information, how to decode the response, and how to display the information.

The main focus is on investment protection in the face of modern information technology because automation technology users cannot tolerate constant upgrades, updates, and releases – that is, long-term viability for systems and devices without undue maintenance effort. Other major points include ease of keeping systems up to date with new device types and versions, robustness, and uniform display of devices from different manufacturers, for a human interface that is intuitive and easy to learn.

The NE 105 recommendation provided important input for developing the enhancements made to EDDL.

FUNCTION BLOCKS (FB) FOR PROCESS CONTROL – ELECTRONIC DEVICE DESCRIPTION LANGUAGE (EDDL) –

Part 6: Meeting the requirements for integrating fieldbus devices in engineering tools for field devices

1 Scope

This Technical Report (TR) provides an evaluation and assessment of electronic device description language (EDDL) technology. It provides guidance to device and system manufacturers for how EDDL technology can help them meet user requirements. It provides guidance to system integrators, as well as instrumentation and maintenance practitioners at end-user companies, on how EDDL technology can help them integrate systems and incorporate device management in their work processes.

This TR gives examples of requirements from the NAMUR NE 105 recommendation. It is the intent of this TR to illustrate how EDDL technology and products based on EDDL technology meet these requirements.

This TR provides a current assessment of the capability of the EDDL technology and the features and capabilities it enables in devices and tools such as handheld field communicators, distributed control system (DCS) engineering software, DCS operator software, device management software as part of plant asset management solutions, as well as stand-alone software for use in laptop or tablet computers.

2 Terms, definitions, abbreviated terms and acronyms

2.1 Terms and definitions

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

2.1.1
EDD developer
individual or team that develops an EDD

2.1.2
audit trail
log of changes made to and events occurring to devices such as configuration change, calibration, and failures

2.1.3
backwards compatibility
capability of a new version of a product to interoperate with the same products as its earlier version

2.1.4
content and structure
information and how it is organized

Note 1 to entry: That is, what information is displayed and where, and what functions are provided. Note the distinction from look and feel.

2.1.5
distributed control system
process control system or basic process control system, responsible for control of the process and operator interface

2.1.6
development toolkit
set of software applications used by device developers to write, test, and tokenize EDD files for their devices

2.1.7
device management
setup (configuration and calibration) and diagnostics of field instruments

Note 1 to entry: Compare to plant asset management.

2.1.8
device management software
software used for device management

Note 1 to entry: Often an integral part of plant asset management solution.

2.1.9
forward compatibility
ability of an existing version of a product to interoperate with the same products as the next version

2.1.10
interoperability
ability of products to work together

2.1.11
interpreter
software engine that analyzes script statements in an EDDL method and carries them out without giving direct access to memory, database, underlying file system, and the like

Note 1 to entry: The interpreter is often referred to as "sandbox".

2.1.12
integrated host
integrated system of DCS and device management software where, for example, device diagnostics can be called up on operator display or device configuration on engineering display

2.1.13
look and feel
appearance of and interaction with controls such as buttons and parameters

Note 1 to entry: Look includes, for example, background and foreground color, size, shape, font, and icons and how these change depending on status. Feel includes single-click, double-click, selection, typing, expanding from a list, and the like. This is particularly pertinent for functions shared by all devices. Note the distinction from ‘content and structure’.

2.1.14
non-interfering
loading of EDD files on a system in such a way that they do not hamper or inhibit in any way the operation of the system

Note 1 to entry: That is, program files are not overwritten and operating system configuration is not changed.

2.1.15
off-the-shelf
commercially retailed software for business administration and home use as opposed to industrial automation use

2.1.16
plant asset management
system to achieve processing equipment optimization, machinery health monitoring, and device management

Note 1 to entry: Compare to device management.

2.1.17
standard dictionary
electronic dictionary of terms and phrases commonly displayed in interaction with the user where text exists in multiple languages and the selected language is displayed

EXAMPLE: Examples are parameter and menu labels, selection option text, help text, and dialog prompts.

2.1.18
synchronized
mechanism in place to ensure that when a parameter is changed, the change is automatically reflected in all other workstations in a multi-user environment to show the same information

2.1.19
tokenizer
software that, after verification, compresses and encrypts EDDL source text, preventing tampering

2.1.20
wizard
software-guided work process developed by a device manufacturer, in the form of a script interpreted by the software using the EDD file, to lead users step-by-step through complex tasks

Note 1 to entry: The wizard is officially known as an EDDL method.

2.2 Abbreviated terms and acronyms

DCS	Distributed control system
EDD	Electronic device description [according to IEC 61804-3]
EDDL	Electronic device description language [according to IEC 61804-3]
FB	Function block
LED	Light emitting diode
TR	Technical Report [according to ISO/IEC Directives, Part 2, 2011]

3 Requirement analysis

3.1 Conventions

This requirement analysis evaluates each clause in NAMUR NE 105 containing a requirement. The clause number in NAMUR NE 105 is indicated within parenthesis for each sub-clause of this Clause 3 and starts with a summary of the requirement in NAMUR NE 105.

NOTE The requirements and recommendations in NAMUR NE 105 expressed by the verbal forms "must" and "should" are cited in this document and do not establish requirement statements in this document.

This TR then proceeds to analyze how EDDL according to IEC 61804-3 meets this requirement.

The summary for each requirement does not take the place of the original NAMUR recommendation. This is an abridged version. In case of questions, users should follow the original NAMUR NE 105 text.

3.2 Investment safety (see 3.1 of NAMUR NE 105:2004)

3.2.1 NAMUR requirement summary

Plants and their automation systems remain operational for 15 years or more. Constant software upgrades would present an undue burden. Therefore, shared components or application programming interfaces between software programs not updated together as one shall be eliminated or minimized to avoid cascading upgrades. Investment shall be protected by stable interoperability. Operating system dependencies shall be minimized because:

- operating system version should not be made obsolete by EDD files for new device versions;
- EDD files should not be made obsolete by operating system patches, service packs, or upgrade;
- EDD files should not be made obsolete by new software versions.

It shall be possible to integrate all present and future devices in any tool.

3.2.2 How EDDL meets this requirement

An EDD file contains only text in a common format; it is a document, not software, and therefore is independent of the operating system. Thus, the files are intrinsically unaffected by changes in off-the-shelf IT products such as operating system and software during the operation of process plants, and therefore do not reduce the lifecycle of the system as a whole. This also makes long-term support easier for the DCS and device manufacturers. That is, EDD files are compatible with old and new versions of operating systems and old and new versions of the software using the EDD files.

From the description written in EDDL, some device manufacturers use the "tokenizer" utility to generate encrypted EDD files for the latest version and prior versions of the EDDL standard, enabling a new device to also be integrated to old software.

By loading the EDD files, it is possible to operate and parameterize field devices from a single tool instead of using device-specific solutions.

3.3 Version conflicts (see 3.2 of NAMUR NE 105:2004)

3.3.1 NAMUR requirement summary

Change of version of software components in modular systems such as operating systems or software programs is a source of substantial risk of interfering with DCS software as a whole.

If the software using the EDD files is integrated with the DCS, the EDD files shall not interfere with the DCS in any way.

Devices shall be supplied together with past and current version EDD files. It shall be possible to write a new version EDD file for an existing device in the future.

Software using the EDD files shall support past and current version EDD files.

3.3.2 How EDDL meets this requirement

An EDD file contains only text and is a document file. The EDDL file does not contain computer executable programs. No software is installed to support a new device type or version. Therefore, there are no software components to interfere with the DCS software. Each version of each device type from each manufacturer has a unique EDD file. Thus, existing EDD on the system are not removed or replaced when new devices types or versions are added.

Software using the EDD files includes interpreter services for both old and existing version EDD files.

New version EDD files can be written for old devices to enhance the user experience.

From the description of the device written in EDDL, some vendors use the "tokenizer" to generate encrypted EDD files for the latest version and prior versions of the EDDL standard, enabling a new device to also be integrated to old software.

3.4 Integration of devices (installation and removal) in configuration tools (see 4.1 of NAMUR NE 105:2004)

3.4.1 NAMUR requirement summary

EDD files for devices using HART, FOUNDATION Fieldbus, PROFIBUS DP, PROFIBUS PA and PROFINET should be loaded the same way regardless of manufacturer or device type.

NOTE The HART®[1] is a communication profile according to IEC 61784-1:2010, Communication Profile Family (CPF) 9. The FOUNDATION Fieldbus™[2] is a communication profile according to IEC 61784-1:2010, CPF 1. The PROFIBUS DP, PROFIBUS PA and PROFINET[3] are communication profiles according to IEC 61784-1:2010, CPF 3.

3.4.2 How EDDL meets this requirement

An EDD file contains only text, not software. Therefore, there are no software installation prompts or license agreements. An EDD file is copied and pasted onto the system like a document, the same way for all. The file is named according to device and file revision. The system folders are named according to manufacturer code and device type code. This allows the system to automatically match device to correct EDD file without configuration. Some software using the EDD files includes a common utility to automatically import any EDD file into its folder, the same way for all.

If needed, an unused EDD file can simply be deleted.

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1 HART is a registered trade name of the HART Communications Foundation. This information is given for the convenience of users of this part of IEC 61804 and does not constitute an endorsement by IEC of the trademark holder or any of its products. Compliance does not require use of the trade name. Use of the trade name requires permission of the trade name holder.

2 FOUNDATION fieldbus is a trade name of the Fieldbus Foundation. This information is given for the convenience of users of this part of IEC 61804 and does not constitute an endorsement by IEC of the trademark holder or any of its products. Compliance does not require use of the trade name. Use of the trade name requires permission of the trade name holder.

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3.5 User guidance (see 4.2 of NAMUR NE 105:2004)

3.5.1 NAMUR requirement summary

Access to common features shall be consistent for all devices regardless of manufacturer or type.

Configuration status shall be displayed.

It shall be possible to review an audit trail of configuration changes and tasks performed.

3.5.2 How EDDL meets this requirement

Because the individual EDD file does not define which button to click for acceptance of changes, printing, access to help, service notes, and manuals, these common functions buttons are defined in the software using the EDD files – and therefore look consistent, are placed consistently, and work consistently for all devices. The same consistency applies to buttons for zooming in and out as well as panning backwards and forwards in waveform graphs and trend charts for both setup and diagnostics for all devices.

Because the individual EDD file does not define which color or icon is used to indicate (a) if a parameter can be changed, (b) if a parameter has been changed but not sent to the device, (c) if there is a mismatch between device and database, or (d) if communication was lost, these common configuration status indications are defined in the software using the EDD files, and thus are consistent for all devices.

Subsequently, look and feel is the same as for the rest of the control system and plant asset management package.

NOTE Display content (which parameters are shown) is defined by the device manufacturer in the EDD file. It is not controlled by the software using the EDD files.

Because parameter changes and other functions are executed by the software using the EDD files and not the individual EDD file itself, the device manufacturer need not program audit trail functionality in the EDD file. Therefore, audit trail in the software using the EDD files supports all devices regardless of manufacturer or type.

3.6 Display of devices (see 4.3 of NAMUR NE 105:2004)

3.6.1 NAMUR requirement summary

Devices using HART, FOUNDATION Fieldbus, PROFIBUS DP, PROFIBUS PA and PROFINET communication shall be displayed consistently. Configuration and diagnostics shall be consistent.

Menu system and parameter labels shall be consistent.

Unique manufacturer-specific features can be on separate tabs or pop-up windows to prevent clutter of basic information with advanced information.

Manufacturer-specific device features shall be displayed consistently with standard features.

Parameter labels and menu system shall be consistent regardless of manufacturer.

3.6.2 How EDDL meets this requirement

EDDL is an integral part of HART, FOUNDATION Fieldbus, PROFIBUS and PROFINET protocols. Because the individual EDD file does not define which button to click for acceptance of changes, printing, access to help, service notes, and manuals, these common

functions buttons are defined in the software using the EDD files – and therefore look consistent, are placed consistently, and work consistently for all devices regardless of protocol. The same consistency applies to buttons for zooming in and out as well as panning backwards and forwards in waveform graphs and trend charts for both setup and diagnostics for all devices.

Similarly, since the individual EDD file does not define which color or icon is used to indicate if a parameter can be changed, if a parameter has been changed but not sent to the device, if there is a mismatch between device and database, or if communication was lost, these common configuration status indications are defined in the software using the EDD files and therefore consistent for all protocols.

IEC/TR 61804-4 defines a root menu used by the menu systems in all devices regardless of manufacturer, type, or protocol. This promotes consistency. The EDDL development toolkits also include a multilingual "standard dictionary" of parameter labels, phrases for user interaction prompts, and help text. These standard phrases are referenced by the device manufacturers, thus promoting consistency.

NOTE ANSI/ISA-TR61804-4 (104.00.02):2007 is an equivalent to IEC/TR 61804-4:2006.

Because the individual EDD file does not explicitly define if check box, drop-down list, status "LED" indication, or text box should be used to display the information, these common controls are defined in the software using the EDD files and therefore appear consistently, and work consistently, for all devices regardless of device manufacturer. All wizards and pop-up windows are activated with buttons.

Because the individual EDD file does not define which button to click for acceptance of changes or access to parameter help, these common functions are defined in the software using the EDD files, and therefore work consistently for all parameters – standard and manufacturer-specific. The same consistency applies to buttons for zooming in and out as well as panning backwards and forwards in waveform graphs and trend charts for both standard and manufacturer-specific functions.

Similarly, since the individual EDD file does not define which color or icon is used to indicate (a) if a parameter can be changed, (b) if a parameter has been changed but not sent to the device, (c) if there is a mismatch between device and database, or (d) if communication was lost, these common configuration status indications are defined in the software using the EDD files, and thus are consistent for all parameters – standard and manufacturer-specific.

3.7 **Standard profiles** (see 4.4 of NAMUR NE 105:2004)

3.7.1 NAMUR requirement summary

Consistency of loading EDD files, function access, display of data and configuration status is particularly important for devices of the same protocol device profile.

3.7.2 How EDDL meets this requirement

The EDDL development tools have EDD libraries that contain standard device descriptions for common device types (family, transducer block, or profiles) that device manufacturers import, ensuring consistency. A standard multilingual dictionary, including common parameter labels, wizard prompts, and help text, is also included.

3.8 **Device descriptions** (see 5.1 of NAMUR NE 105:2004)

3.8.1 NAMUR requirement summary

A single technology should work in DCS operator station, DCS engineering station, handheld field communicator, and device management software.

3.8.2 How EDDL meets this requirement

An EDD file contains only text, a document, not software. Therefore, the information about the device is not encapsulated, but externally accessible. The DCS engineering software extracts information about the device from the EDD file in order to automatically configure the database and to enable configuration of the function block diagram control strategy.

EDDL enables support for two menu systems: one menu when the device is displayed in a simple tool such as on a handheld field communicator with a small gray-scale display, and a second menu for when the device is displayed in a software program such as a device management software on a server, workstation, or laptop with a large, rich color screen.

3.9 Licensing of device descriptions (see 5.2 of NAMUR NE 105:2004)

3.9.1 NAMUR requirement summary

EDD files should not require license keys.

3.9.2 How EDDL meets this requirement

An EDD file contains only text; it is a document, not a software. An EDD file cannot be coded with a locking mechanism. If the content of an EDD file complies with IEC 61804-3 then the EDD file is freely available in principle.

3.10 Cross-platform compatibility (see 5.3 of NAMUR NE 105:2004)

3.10.1 NAMUR requirement summary

EDD files should not be made obsolete by operating system patches, service packs, or upgrades.

3.10.2 How EDDL meets this requirement

An EDD file contains only text, a document, not software, and therefore is independent of the operating system. Thus, the files are intrinsically unaffected by changes in the operating system.

3.11 Full support of device functionality (see 5.4 of NAMUR NE 105:2004)

3.11.1 NAMUR requirement summary

EDD files should give access to all device parameters and features. Graphics should be used when required.

3.11.2 How EDDL meets this requirement

EDDL enables both standard and manufacturer-specific parameters in a device to be described. Graphical elements such as images, waveform graphics, needle gauges, trend charts, and tables, are provided in EDDL.

3.12 Standardized data filing (see 5.5 of NAMUR NE 105:2004)

3.12.1 NAMUR requirement summary

Parameters displayed in multiple workstations shall be synchronized.

3.12.2 How EDDL meets this requirement

An EDD file contains only text, a document, not software. Because parameter changes and other functions are executed by the software using the EDD files and not the individual EDD file itself, the device manufacturer need not program data synchronization functionality in the

EDD file. Therefore, data synchronization functionality in the software using the EDD files supports all devices regardless of manufacturer or type.

3.13 Certification (see Clause 6 of NAMUR NE 105:2004)

3.13.1 NAMUR requirement summary

EDD files and software using the EDD files should be tested by an independent third-party to ensure interoperability.

3.13.2 How EDDL meets this requirement

An EDD file contains only text, a document, not software. Therefore, the information about the device is not encapsulated, but externally accessible. The interoperability test software extracts information about the device from the EDD file and communicates with the device to compare the description of the device in the file against the data in the actual device.

Each EDD file only supports a single version of a single device type. Therefore, each file need only be tested against a single version of a single device type.

Software using the EDD files is tested to verify it can render the different graphical elements, handle conditionals, interpret methods, and so forth.

Common and protocol specific test requirements are defined by the EDDL Cooperation Team and protocol organizations to ensure common behavior.

Bibliography

IEC 61784-1:2010, *Industrial communication networks – Profiles – Part 1: Fieldbus profiles*

IEC 61804-3:2006, *Function blocks (FB) for process control – Part 3: Electronic Device Description Language (EDDL)*

IEC 61804-3:2010, *Function blocks (FB) for process control – Part 3: Electronic Device Description Language (EDDL)*

IEC/TR 61804-4:2006, *Function blocks (FB) for process control – Part 4: EDD interoperability guideline*

ANSI/ISA-61804-3 (104.00.01):2007, *Function Blocks (FB) for Process Control – Part 3: Electronic Device Description Language (EDDL)*

ANSI/ISA-TR61804-4 (104.00.02):2007, *Function Blocks (FB) for Process Control – Part 4: EDD Interoperability Guideline*

NAMUR recommendation NE 105, Version: 24.08.2004, *Specifications for Integrating Fieldbus Devices in Engineering Tools for Field Devices*

InTech June 2008,*German lab tests benefits of EDDL for integrating field devices*, By Sven Seintsch, BIS Prozesstechnik GmbH

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