TECHNICAL SPECIFICATION

ISO/TS 15926-4

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AMENDMENT 1
2010-12-15

Industrial automation systems and integration — Integration of life-cycle data for process plants including oil and gas production facilities —

Part 4: Initial reference data

AMENDMENT 1

Systèmes d'automatisation industrielle et intégration — Intégration de données de cycle de vie pour les industries de «process», y compris les usines de production de pétrole et de gaz

Partie 4: Données de référence initiales

AMENDEMENT 1

Reference number
ISO/TS 15926-4:2007/Amd.1:2010(E)

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

— an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;

— an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

Amendment 1 to ISO/TS 15926-4:2007 was prepared by Technical Committee ISO/TC 184, *Automation systems and integration*, Subcommittee SC 4, *Industrial data*.

ISO 15926 is organized as a series of parts, each published separately. The structure of ISO 15926 is described in ISO 15926-1.

Each part of ISO 15926 is a member of the following series: data model, reference data, implementation methods, conformance testing methodology and framework, characterization methods, abstract test suites.

This part is a member of the reference data series.

A complete list of parts of ISO 15926 is available from the Internet:

<http://www.tc184-sc4.org/titles/OIL_GAS_Titles.htm>

Amendment 1 to ISO/TS 15926-4:2007 has the following purposes:

— to add the set of reference data items for rotating equipment;

— to add a numeric identifier for each reference data item;

— to add URIs for each reference data item;

— to add synonyms for reference data items;

— to correct errors in the spreadsheet for units of measure;

— to add a copyright statement for the sets of data items.

Industrial automation systems and integration — Integration of life-cycle data for process plants including oil and gas production facilities —

Part 4:
Initial reference data

AMENDMENT 1

Page v, Foreword

Update the information on the list of parts of ISO 15926. Replace the eighth, ninth and tenth paragraphs with the following:

> ISO 15926 is organized as a series of parts, each published separately. The structure of ISO 15926 is described in ISO 15926-1.
>
> Each part of ISO 15926 is a member of the following series: data model, reference data, implementation methods, conformance testing methodology and framework, characterization methods, abstract test suites.
>
> This part is a member of the reference data series.
>
> A complete list of parts of ISO 15926 is available from the Internet:
>
> <http://www.tc184-sc4.org/titles/OIL_GAS_Titles.htm>

Page vi, Introduction

Add the rotating equipment set, which was omitted from the sets of reference data items. Add the following notes immediately after the second paragraph:

> NOTE 1 ICAAMC (International Compressed Air and Allied Machinery Committee) is the source for some reference data items.
>
> NOTE 2 IEV (International Electrotechnical Vocabulary) is the source for some reference data items.

Update the information on the structure of ISO 15926. Replace the third paragraph with the following:

> The structure of ISO 15926 is as follows:
>
> — ISO 15926-1 provides an overview of ISO 15926;
>
> — ISO 15926-2 contains a generic, conceptual data model that supports representation of all life-cycle aspects of a process plant;
>
> — ISO/TS 15926-3 contains a reference data library for geometry and topology;

— ISO/TS 15926-4 contains a reference data library for physical objects, activities, properties and other reference data necessary to record information about a process plant;

— ISO/TS 15926-6[1)] specifies the information that is recorded for reference data items of ISO/TS 15926-4;

— ISO/TS 15926-7[2)] specifies implementation methods for the integration of distributed systems;

— ISO/TS 15926-8[2)] specifies an OWL implementation for ISO 15926;

— ISO/TS 15926-9[3)] specifies facades for ISO 15926;

— ISO/TS 15926-10[3)] specifies abstract test methods for ISO 15926.

Page 2, Clause 2 Normative references

Update the information on the normative references. Replace the first referenced document with the following:

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

Page 4, 3.4 Abbreviated terms

Add URIs for each reference data item. Add the rotating equipment set, which was omitted from the sets of reference data items. Add the following abbreviations:

URI Uniform Resource Identifier

ICAAMC International Compressed Air and Allied Machinery Committee

IEV International Electrotechnical Vocabulary

Page 5, 4.1 Sets of reference data items

Add the rotating equipment set, which was omitted from the sets of reference data items. Add the following row to Table 1:

rotating equipment	rotating equipment, including pumps, compressors, expanders and mixers

Page 5, 4.2 Representation of the reference data

Add a copyright statement for the sets of data items. Add the following copyright statement:

The following copyright statement applies to each set of reference data items, and is included within the representation of each set of data items.

1) Planned.

2) To be published.

3) Under preparation.

Page 6, 4.3 The URLs for the sets of reference data items

Add the rotating equipment set, which was omitted from the sets of reference data items. Add the following row to Table 2:

rotating equipment	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/rotating_equipment.xls

Add the file with URI http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/rotating_equipment.xls to the set of electronic inserts that is part of this part of ISO/TS 15926.

Add a numeric identifier for each reference data item. Add URIs for each reference data item. Change the references to files in Table 2 to amended files which contain URIs and numeric identifiers, so that the amended Table 2 is as follows:

Table 2 — URLs of the sets of reference data items

name of set	URL of set
activity	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/activity.xls
basics	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/basics.xls
class of class	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/class_of_class.xls
connection material	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/connection_material.xls
electrical	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/electrical.xls
encoded information	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/encoded_information.xls

control function	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/control_function.xls
heat transfer	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/heat_transfer.xls
information	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/information.xls
instrumentation	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/instrumentation.xls
ISO 15926-2 superclasses	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/iso15926-2_superclasses.xls
piping	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/piping.xls
property	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/property.xls
protection	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/protection.xls
rotating equipment	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/rotating_equipment.xls
solid handling	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/solid_handling.xls
static equipment	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/static_equipment.xls
transport	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/transport.xls
uom	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/uom.xls
valve	http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/valve.xls

Page 6, 4.4 Numeric identifiers for reference data items

Add a numeric identifier for each reference data item. Add the following new clause:

Each reference data item within this part of ISO 15926 has a numeric identifier. The numeric identifier is an integer greater than or equal to 1.

NOTE Each reference data item is assigned an HTTP URI with a fragment identifier generated from the numeric identifier, as described in Clause 4.5.

Page 6, 4.5 URIs for reference data items

Add URIs for each reference data item. Add the following new clause:

Each reference data item within this part of ISO 15926 has three URIs.

The URIs are included in the Excel spreadsheets specified by Clause 4.3.

NOTE 1 Different user communities prefer different types of URI, so different alternatives are provided.

The three URIs are as follows:

a) an HTTP URI which contains a fragment identifier which consists principally of a number;

b) a URN;

c) an HTTP URI which does not include a fragment identifier and which contains a final component consisting of text derived from the unique name.

EXAMPLE The three URIs assigned to the heat transfer class “heat exchanger” are:

a) http://standards.tc184-sc4.org/iso/15926/tech/reference-data#RDL3789

b) urn:iso:std:iso:15926:tech:reference-data:heat_exchanger

c) http://standards.tc184-sc4.org/iso/15926/tech/reference-data/heat_exchanger

Each URI of type (1) has:

— the primary resource:

http://standards.tc184-sc4.org/iso/15926/tech/reference-data

— a fragment ID that consists of:

“RDL” followed by the numeric identifier of the reference data item as decimal.

NOTE 2 The HTTP URIs assigned to reference data items by this part of ISO 15926 are not dereferenceable.

NOTE 3 The URIs assigned to reference data items by this part of ISO 15926 specify neither the part nor the edition of the standard. This is because a URI assigned to a reference data item does not change with edition.

The URI of type (2) can be a URN of any form.

NOTE 4 This part of ISO 15926 can use a URN assigned by another standard.

The URI of type (3) can be an HTTP URI of any form.

NOTE 5 This part of ISO 15926 can use an HTTP URI assigned by another standard.

Page 7, Annex A

Update the Information Object registration for the amended document. Replace the object identifier by:

{iso standard 15926 part(4) version (2)}

Page 8, Annex B

Update the URN for the amended document. Replace the document URN by:

urn:iso:std:iso:ts:15926:-4:ed-1:v1-amd1

Add the rotating equipment set, which was omitted from the sets of reference data items. Add the following row to Table B.1:

rotating equipment	urn:iso:std:iso:ts:15926:-4:ed-1:v1-amd1:tech:reference-data:rotating_equipment

Add a numeric identifier for each reference data item. Add URIs for each reference data item. Change the URNs assigned to sets of reference data items in Table B.1 to indicate the amended sets, so that the amended Table B.1 is as follows:

Table B.1 — URNs of the sets of reference data items

name of set	URN of set
activity	urn:iso:std:iso:ts:15926:-4:ed-1: v1-amd1:tech:reference-data:activity
basics	urn:iso:std:iso:ts:15926:-4:ed-1:v1-amd1:tech:reference-data:basics
class of class	urn:iso:std:iso:ts:15926:-4:ed-1: v1-amd1:tech:reference-data:class_of_class
connection material	urn:iso:std:iso:ts:15926:-4:ed-1:v1-amd1:tech:reference-data:connection_material
electrical	urn:iso:std:iso:ts:15926:-4:ed-1:v1-amd1:tech:reference-data:electrical
encoded information	urn:iso:std:iso:ts:15926:-4:ed-1:v1-amd1:tech:reference-data:encoded_information
control function	urn:iso:std:iso:ts:15926:-4:ed-1:v1-amd1:tech:reference-data:control_function
heat transfer	urn:iso:std:iso:ts:15926:-4:ed-1: v1-amd1:tech:reference-data:heat_transfer
information	urn:iso:std:iso:ts:15926:-4:ed-1: v1-amd1:tech:reference-data:information
instrumentation	urn:iso:std:iso:ts:15926:-4:ed-1:v1-amd1:tech:reference-data:instrumentation
ISO 15926-2 superclasses	urn:iso:std:iso:ts:15926:-4:ed-1:v1-amd1:tech:reference-data:15926-2_superclasses
piping	urn:iso:std:iso:ts:15926:-4:ed-1: v1-amd1:tech:reference-data:piping
property	urn:iso:std:iso:ts:15926:-4:ed-1: v1-amd1:tech:reference-data:property
protection	urn:iso:std:iso:ts:15926:-4:ed-1: v1-amd1:tech:reference-data:protection
rotating equipment	urn:iso:std:iso:ts:15926:-4:ed-1:v1-amd1:tech:reference-data:rotating_equipment
solid handling	urn:iso:std:iso:ts:15926:-4:ed-1:v1-amd1:tech:reference-data:solid_handling
static equipment	urn:iso:std:iso:ts:15926:-4:ed-1:v1-amd1:tech:reference-data:static_equipment
transport	urn:iso:std:iso:ts:15926:-4:ed-1: v1-amd1:tech:reference-data:transport
uom	urn:iso:std:iso:ts:15926:-4:ed-1: v1-amd1:tech:reference-data:uom
valve	urn:iso:std:iso:ts:15926:-4:ed-1: v1-amd1:tech:reference-data:valve

Add a numeric identifier for each reference data item. Add URIs for each reference data item. Add a note after Table B.1, as follows:

NOTE A URN in Table B.1 identifies a set of reference data items, and not a particular file of information about a set of reference data items. Hence a URN in Table B.1 does not change as a result of a new edition of this part of ISO 15926 or as a result of an amendment, unless one or more items are added to, or removed from a set.

Pages 9 and 10, Annex C

Add URIs for each reference data item. Add the following rows to Table C.1:

1	URI 1	A URI of the reference data item	text
2	URI 2	A URI of the reference data item	text
3	URI 3	A URI of the reference data item	text

Add a numeric identifier for each reference data item. Add the following row to Table C.1:

4	unique number	The unique number of the reference data item	#

Add synonyms for reference data items. Add the following rows to Table C.1:

6	synonym 1	A synonym for the unique name of the reference data item	text
7	synonym 2	A synonym for the unique name of the reference data item	text

Increment the column numbers specified in the original rows of Tables C.1 and C.2, so that the amended tables are as follows:

Table C.1 — The columns of a spreadsheet representation of an RDL

column number	column name	information contained	format
1	URI 1	A URI of the reference data item.	text
2	URI 2	A URI of the reference data item.	text
3	URI 3	A URI of the reference data item.	text
4	unique number	The unique number of the reference data item.	#
5	unique name	The unique name of the reference data item.	ID
6	synonym 1	A synonym for the unique name of the reference data item.	ID
7	synonym 2	A synonym for the unique name of the reference data item.	ID
8	text definition	The text definition for the reference data item.	text
9	source	The source of the text definition for the reference data item.	text
10	notes	Notes and other informative text about the reference data item.	text
11	superclass 1	The designation of a class that is a superclass.	ID
12	superclass 2	The designation of a class that is a superclass.	ID
13	superclass 3	The designation of a class that is a superclass.	ID
14	ISO 15926-2 entity	The name of the ISO 15926-2 entity that has the reference data item as a member.	ID
15	classification 1	The designation of a class that has the reference data item as a member.	ID

16	classification 2	The designation of a class that has the reference data item as a member.	ID
17	classification 3	The designation of a class that has the reference data item as a member.	ID

Table C.2 — Additional columns for a spreadsheet representation of units of measure

column number	column name	information contained	format
18	symbol	The symbol used to represent a unit of measure. EXAMPLE 1 The unit of measure 'metre per second' has the symbol m s^{-1}.	ID
19	operator	The operator which defined a unit of measure by an expression. The allowed values are 'multiply', 'divide', 'factor', and 'exponentiate'. EXAMPLE 2 The unit of measure 'metre per second' is defined by the 'divide' operator with operands metre and second.	keyword
20	first operand	The designation of the first unit of measure in a 'multiply', 'divide', 'factor' or 'exponentiate' operation.	ID
21	second operand	The designation of the second unit of measure in a 'multiply' or 'divide' operation.	ID
22	factor/prefix	The real number which is used to derive one unit of measure from another in a 'factor' operation. Either a number or an ISO prefix, such as 'milli' or 'kilo' can be specified. EXAMPLE 3 The unit of measure 'kilometre' is defined by the 'factor' operator with first operand 'metre' and the factor/prefix 'kilo'. EXAMPLE 4 The unit of measure 'inch' is defined by the 'factor' operator with first operand 'metre' and the factor/prefix 0,0254.	# or keyword
23	exponent	The integer number which is used to derive one unit of measure from another in an 'exponentiate' operation. EXAMPLE 5 The unit of measure 'square inch' is defined by the 'exponentiate' operator with first operand 'inch' and the exponent 2.	#

Page 18, Bibliography

Update the information on the bibliographical references. Replace the first six referenced documents with the following:

[1] ISO/IEC 11179-6, *Information technology — Metadata registries (MDR) — Part 6: Registration*

[2] ISO/TS 15926-3, *Industrial automation systems and integration — Integration of life-cycle data for process plants including oil and gas production facilities — Part 3: Reference data for geometry and topology*

[3] ISO/TS 15926-7[4)], *Industrial automation systems and integration — Integration of life-cycle data for process plants including oil and gas production facilities — Part 7: Implementation methods for the integration of distributed systems — Template methodology*

[4] ISO 704, *Terminology work — Principles and methods*

4) To be published.

[5] ISO/IEC 8859-1, *Information technology — 8-bit single-byte coded graphic character sets — Part 1: Latin alphabet No. 1*

[6] ISO 10241-1, *Terminological entries in standards — Part 1: General requirements and examples of presentation*

Electronic inserts

Add a numeric identifier for each reference data item. Add URIs for each reference data item. Add synonyms for reference data items. Add the rotating equipment set, which was omitted from the sets of reference data items.

rotating equipment

(http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/rotating_equipment.xls):

All reference data items within the electronic insert have been added.

activity

(http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/activity.xls):

The following reference data item has been renamed:

— opening has become opening-activity.

basics

(http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/basics.xls):

The following reference data items have been added:

— diaphragm;

— groove;

— inlet port;

— opening;

— outlet port.

connection material

(http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/connection_material.xls):

The following reference data item has been added:

— lock nut assembly.

The definition of the following reference data item has been modified, and a note added:

— castle nut.

electrical

(http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/electrical.xls):

The following reference data items have been added:

— cage rotor;

— thyristor variable speed drive converter.

A new synonym and superclass has been added for the following reference data item:

— stud terminal.

A new synonym has been added for the following reference data item:

— magnetic core.

At numerous places within the spreadsheet, synonyms that were previously in the notes column have been transferred to the new synonym columns.

instrumentation

(http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/instrumentation.xls):

The following reference data items have been added:

— speed controller;

— anti-surge controller;

— electronic speed governor;

— hydraulic speed governor;

— isochronous speed governor;

— monitor;

— mechanical speed governor;

— speed changer;

— acceleration based vibration channel;

— axial displacement channel;

— temperature channel;

— velocity based vibration channel;

— monitor channel.

The following reference data item has been transferred to basics:

— diaphragm.

New synonyms have been added for:

— relayed speed governor;

— antisurge controller.

The note has been corrected for:

— orifice handle.

At numerous places within the spreadsheet, source information that was previously in the notes column has been transferred to the source column.

piping

(http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/piping.xls):

The following reference data item has been transferred to basics:

— groove.

uom

(http://standards.tc184-sc4.org/iso/ts/15926/-4/ed-1/v1-amd1/tech/reference-data/uom.xls):

The use of “square” and “squared”, and of “cubic” and “cubed” has been made consistent.

— Identifiers have been changed to use the forms “xxxx squared” and “xxxx cubed” consistently.

— Previously the alternative forms “square xxxx” and “cubic xxxx” were also used in some places. The alternative forms have been added as synonyms.

The use of “force” and “mass” after “pound” to distinguish between “pound force” and “pound mass” has been made consistent.

— Previously the qualifier “force” was omitted in some places.

The unit “Gray” was previously misspelt “Grey” in some places;

The use of the identifier “micrometre” has been made consistent.

— Previously the identifier “micron” was used in some places. The term “micron” has been added as a synonym.

The use of the prefixes “hundred” and “thousand” in Imperial units has been made consistent.

— Previously the prefixes “100” and “1000” were used in some places.

The following duplicates have been removed:

— “reciprocal Henry” was also present as “inverse Henry”;

— “US survey mile” was also present as “mile-US survey”;

— “centimetre cubed” was also present as “cubic centimetre”;

— “pound mass per foot” was also present as “pounds per foot”;

— “pound mass per foot cubed” was also present as “pound mass per cubic foot”;

— “Gray” was also present as “Grey”;

— “metre cubed per day” was also present as “cubic metre per day”;

— “British thermal unit per second per foot cubed degree Fahrenheit” was also present as “British thermal unit per second per cubic foot degree Fahrenheit”;

— “micrometre squared” was also present as “micron squared”.

ICS 25.040.40; 75.020

Price based on 12 pages