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Industrial-process measurement and control - Data structures and elements in process equipment catalogues - Part 1: Generic structures for measuring equipment

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 01/25

Obsahuje: EN IEC 61987-1:2024, IEC 61987-1:2024

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NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

**Industrial-process measurement and control - Data structures
and elements in process equipment catalogues - Part 1: Generic
structures for measuring equipment
(IEC 61987-1:2024)**

Mesure et commande dans les processus industriels -
Eléments et structures de données dans les catalogues
d'équipements de processus - Partie 1: Structures
génériques pour équipements de mesure
(IEC 61987-1:2024)

Industrielle Leittechnik - Datenstrukturen und -elemente in
Katalogen der Prozessleittechnik - Teil 1: Generische
Strukturen für Messeinrichtungen
(IEC 61987-1:2024)

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Europäisches Komitee für Elektrotechnische Normung

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EN IEC 61987-1:2024 (E)**European foreword**

The text of document 65E/1113/FDIS, future edition 2 of IEC 61987-1, prepared by SC 65E "Devices and integration in enterprise systems" of IEC/TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61987-1:2024.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2025-11-30
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2027-11-30

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The text of the International Standard IEC 61987-1:2024 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 60068 (series) NOTE Approved as EN 60068 (series)

IEC 60873-1:2003 NOTE Approved as EN 60873-1:2004 (not modified)

IEC 61082-1:2014 NOTE Approved as EN 61082-1:2015 (not modified)

IEC 61508 (series) NOTE Approved as EN 61508 (series)

IEC 61987-10:2009 NOTE Approved as EN 61987-10:2009 (not modified)

IEC 62828 (series) NOTE Approved as EN IEC 62828 (series)

IEC 82045-1:2001 NOTE Approved as EN 82045-1:2001 (not modified)

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
-	-		+ corrigendum May 1993	
+ A1	1999		+ A1	2000
+ A2	2013		+ A2	2013
IEC 60654-1	1993	Industrial-process measurement and control equipment - Operating conditions - Part 1: Climatic conditions	EN 60654-1	1993
IEC 60721-3	series	Classification of environmental conditions - Classification of groups of environmental parameters and their severities	EN IEC 60721-3	series
IEC 60751	2022	Industrial platinum resistance thermometers and platinum temperature sensors	EN IEC 60751	2022
IEC/TR 61000-1-1	2023	Electromagnetic compatibility (EMC) - Part - 1: General - Section 1: Application and interpretation of fundamental definitions and terms		-
IEC 61069	series	Industrial-process measurement, control and automation - Evaluation of system properties for the purpose of system assessment	EN 61069	series
IEC 61298	series	Process measurement and control devices - General methods and procedures for evaluating performance	EN 61298	series
IEC 61326	series	Electrical equipment for measurement, control and laboratory use - EMC requirements	EN IEC 61326	series

EN IEC 61987-1:2024 (E)

IEC 61987-11	-	Industrial-process measurement and control - Data structures and elements in process equipment catalogues - Part 11: List of properties (LOPs) of measuring equipment for electronic data exchange - Generic structures	EN 61987-11	-
ISO 3511-1	1977	Process measurement control functions and instrumentation; Symbolic representation - Part 1: Basic requirements	-	-



IEC 61987-1

Edition 2.0 2024-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Industrial- process measurement and control – Data structures and elements in process equipment catalogues –
Part 1: Generic structures for measuring equipment**

**Mesure et commande dans les processus industriels – Éléments et structures de données dans les catalogues d'équipements de processus –
Partie 1: Structures génériques pour équipements de mesure**





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CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	9
2 Normative references	9
3 Terms and definitions	10
4 Metadocuments	18
4.1 General.....	18
4.2 Metadocument clauses and features	20
4.2.1 General	20
4.2.2 Composite measuring equipment.....	21
4.2.3 Measuring equipment with a digital communication interface	22
4.3 Nomenclature	22
5 Metadocument for process measuring equipment	22
5.1 Identification	22
5.1.1 General	22
5.1.2 Document identification	22
5.1.3 Date of issue	22
5.1.4 Product type	22
5.1.5 Product name	22
5.1.6 Version	22
5.1.7 Manufacturer	23
5.2 Application.....	23
5.3 Function and system design.....	23
5.3.1 General	23
5.3.2 Measuring principle	23
5.3.3 Equipment architecture	23
5.3.4 Communication and data processing	23
5.3.5 Dependability.....	23
5.4 Input	24
5.4.1 General	24
5.4.2 Measured variable	24
5.4.3 Measuring range.....	24
5.5 Output.....	24
5.5.1 General	24
5.5.2 Output signal	24
5.5.3 Signal on alarm	25
5.5.4 Load	25
5.6 Digital Communication	25
5.6.1 General	25
5.6.2 Communication protocol	25
5.6.3 Communication variable	25
5.6.4 Physical layer	25
5.7 Performance characteristics.....	26
5.7.1 General	26
5.7.2 Accuracy	26
5.7.3 Measured error	26

5.7.4	Hysteresis	26
5.7.5	Non-repeatability	26
5.7.6	Start-up drift	26
5.7.7	Long-term drift	26
5.7.8	Influence of ambient temperature	26
5.7.9	Influence of medium temperature	27
5.7.10	Settling time	27
5.8	Operating conditions	27
5.8.1	General	27
5.8.2	Installation	27
5.8.3	Environment	28
5.8.4	Process	29
5.9	Mechanical and electrical construction	29
5.9.1	General	29
5.9.2	Design	29
5.9.3	Dimensions	30
5.9.4	Weight	30
5.9.5	Material	30
5.9.6	Electrical connection	30
5.9.7	Degree of protection	30
5.9.8	Type of protection	30
5.9.9	Process connection	30
5.10	Operability	30
5.11	Power supply	31
5.12	Certificates and approvals	31
5.13	Ordering information	31
5.14	Documentation	31
Annex A (normative) Classification of features as a function of measuring equipment		32
Annex B (informative) Classification of features as a function of measurement principle		35
B.1	Additional features proposed for flow measurement principles	35
B.1.1	Overview	35
B.1.2	Output	38
B.1.3	Performance characteristics	38
B.1.4	Installation	39
B.1.5	Process	39
B.1.6	Mechanical construction – Field coil isolation class	40
B.2	Additional features proposed for level measurement principles	40
B.2.1	Overview	40
B.2.2	Input	43
B.2.3	Output – Signal resolution	43
B.2.4	Performance characteristics – Influence of medium pressure	43
B.2.5	Installation – Emitting angle	43
B.2.6	Process	43
B.3	Additional features proposed for pressure measurement principles	44
B.3.1	Overview	44
B.3.2	Function and system design – Measurement type	47
B.3.3	Input	47
B.3.4	Output	48

B.3.5	Performance characteristics	49
B.3.6	Operating conditions/process.....	49
B.3.7	Mechanical and electrical construction.....	50
B.4	Additional features proposed for temperature measurement principles	50
B.4.1	Overview	50
B.4.2	Input.....	53
B.4.3	Output – Linearization	53
B.4.4	Performance characteristics	54
B.5	Additional features proposed for density measurement principles	54
B.5.1	Overview	54
B.5.2	Performance characteristics – Influence of medium pressure.....	57
B.5.3	Installation conditions – Cable length.....	57
B.5.4	Process conditions	57
Bibliography.....		58
Figure 1 – Classification scheme for process measuring equipment (letter codes <i>D</i> , <i>F</i> , <i>L</i> etc. identifying the measuring equipment function taken from ISO 3511-1).....		20
Table A.1 – Classification and documentation structure of measuring equipment		32
Table B.1 – Classification and documentation structure of flow measuring equipment.....		35
Table B.2 – Classification and documentation structure of level measuring equipment.....		40
Table B.3 – Classification and documentation structure of pressure measuring equipment.....		44
Table B.4 – Classification and documentation structure of temperature measuring equipment.....		51
Table B.5 – Classification and documentation structure of density measuring equipment.....		54

INTERNATIONAL ELECTROTECHNICAL COMMISSION

INDUSTRIAL-PROCESS MEASUREMENT AND CONTROL – DATA STRUCTURES AND ELEMENTS IN PROCESS EQUIPMENT CATALOGUES –

Part 1: Generic structures for measuring equipment

FOREWORD

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IEC 61987-1 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement and control. It is an International Standard.

This second edition cancels and replaces the first edition published in 2006. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Addition of a subclause “Digital communication” in Clause 5, in order to allow a more comprehensive description of the properties of such an interface;
- b) Alignment of clause headings, as described in the introduction, to correspond with those of the IEC CDD.

The text of this International Standard is based on the following documents:

Draft	Report on voting
65E/1113/FDIS	65E/1136/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts in the IEC 61987 series, published under the general title *Industrial-process measurement and control – Data structures and elements in process equipment catalogues*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

In recent years, industry has become alert to the fact that a great deal of time and effort is wasted in the transposition of measuring equipment data from one form to another. The technical data of an instrument, for example, may exist at the manufacturer's facility as two separate data sets for paper and electronic presentation: the end-user requires much the same data for works standards, engineering data bases or commercial data bases. In most cases, however, the data cannot be automatically re-used because each application has its own particular data storage format.

A second problem that belies the re-use of technical data is the content of the product descriptions themselves. There is little agreement between manufacturers on what information a technical data sheet should contain, how it should be arranged, or how the results, for example of particular performance tests, should be presented. When transferring this information into a data base, an end-user will always find gaps and proprietary interpretations that make the task more difficult.

This part of IEC 61987 aims to solve these problems by defining a generic structure and its content for industrial process measuring and control equipment. It builds upon the assumption that, for a given class of measuring equipment, for example, pressure measuring equipment, temperature measuring equipment or electromagnetic flow-measuring equipment, a set of non-proprietary structures and product features can be specified. The resulting documents can not only be exchanged electronically, but they can also be presented to humans in an easily understandable form.

This part of IEC 61987 is applicable to electronic catalogues of process measuring equipment. The structure also contains a great many product features that are common to measuring equipment with binary output. Similarly, Annex B has been prepared with a view to future standardisation.

This part of IEC 61987 is not intended as a replacement for existing standards, but rather as a guiding document for all future standards which are concerned with the specifications of process measuring equipment. Every revision of an existing standard should take into account the structures and product features defined in Clause 5 or work towards a harmonisation.

Annex A contains a tabular overview of the classification and catalogue structure of process measuring equipment. Annex B contains tables with a further sub-classification for specific measured variables.

Wherever possible, existing terms from international standards have been used to name the product features within the structures. In accordance with ISO 10241, Clause 3 contains a list of terms, definitions and sources.

Documents created according to the standard are structured. A possible means of exchanging structured information free of layout information is given by SGML (Standard Generalised Mark-Up Language, ISO 8879) or XML (Extensible Mark-Up Language), which is derived from it.

This part of IEC 61987 could also provide the basis for arranging of properties (data element types) that conform to IEC 61360 or ISO 13584. This would require that the features, which in this part of IEC 61987 can be textual units, graphical and tabular representations etc., be broken down into properties (data element types) conformant to the said standards. For example, a range would be expressed as a lower range-limit (LRL) and upper range-limit (URL) with unit of measure; dimensions (L x B x H) as three separate elements, length, breadth and height with unit of measure; or a derating curve as an appropriate series of data element pairs.

This part of IEC 61987 conforms to ISO 15926-1 and -2 with respect to the data model and associated reference data library (ISO 15926-4), for example, as used for the limited classification structure. At the same time, it is also aligned to STEP: Standard for the Exchange of Product Model Data. The data model and definitions of ISO 10303-221 use the ISO 15926-4 TS Reference Data Library as "library". The current standard can reproduce the data fields as per this ISO 10303-221, including, for example, product structure data, dimensional data, electrical connection data and product properties such as measuring range or power supply.

Since the publication of Edition 1 (2006) of this document a great deal of work has been done on the development of the IEC Common Data Dictionary for equipment for industrial-process automation. This, published as further parts of IEC 61987, covers not only measuring instruments with a variety of inputs and outputs, but also final control elements, infrastructure devices and in future process analysers.

For this reason, the title has been adjusted and the scope has been revised to reflect the current content of the whole IEC 61987 standard series.

During the development of the IEC CCD a number of questions arose regarding the structure proposed in this document, in particular the assignment of any digital communication interface to the output. Although this is not strictly incorrect, it was thought that the properties of such an interface could be better described separately. For this reason, a clause "Digital communication" has been added to this Edition 2. In addition, the clause "Mechanical construction" has been renamed "Mechanical and electrical construction" to reflect its true content.

"Ordering information" is not found as a separate block in the IEC CDD, as it is assumed that the properties there describe the type and particular instance of an already purchased device. For an ordering process using IEC CDD properties, the necessary information is retrieved from the "Identification" which also includes the ordering information.

"Certificates and approvals" can be found both in the device list of properties (0112/2///61987#ABC156) and as a device aspect within the "device documents supplied" (0112/2///61987#ABH517). This is also the location of the information contained in "Documentation".

In preparing the current edition of this document all terms and definitions have been checked and where necessary the references updated. Since the publication of Edition 1 in 2006 a number of standards have been withdrawn. Where no suitable alternative source has been found, a note to this effect has been added, but the original term and definition have been left unchanged.

INDUSTRIAL-PROCESS MEASUREMENT AND CONTROL – DATA STRUCTURES AND ELEMENTS IN PROCESS EQUIPMENT CATALOGUES –

Part 1: Generic structures for measuring equipment

1 Scope

This part of IEC 61987 defines a generic structure in which product features of industrial process measurement devices shall be arranged, in order to facilitate the understanding of product descriptions when they are transferred from one party to another. It applies to the production of catalogues supplied by the manufacturer of such devices and helps the user to formulate their requirements.

This document will also serve as a reference document for all future standards which are concerned with process measuring equipment.

In addition, this document also provides a basic structure for the production of further standards listing the properties of process control equipment, for example, for actuators and infrastructure devices.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 60529:1989/AMD1:1999

IEC 60529:1989/AMD2:2013

IEC 60654-1:1993, *Industrial-process measurement and control equipment – Operating conditions – Part 1: Climatic conditions*

IEC 60721-3 (all parts), *Classification of environmental conditions – Classification of groups of environmental parameters and their severities*

IEC 60751:2022, *Industrial platinum resistance thermometers and platinum temperature sensors*

IEC TR 61000-1-1:2023, *Electromagnetic compatibility (EMC) – Part 1: General – Section 1: Application and interpretation of fundamental definitions and terms*

IEC 61069 (all parts), *Industrial-process measurement, control and automation – Evaluation of system properties for the purpose of system assessment*

IEC 61298 (all parts), *Process measurement and control devices – General methods and procedures for evaluating performance*

IEC 61326 (all parts), *Electrical equipment for measurement, control and laboratory use – EMC requirements*

IEC 61987-11, *Industrial-process measurement and control – Data structures and elements in process equipment catalogues – List of properties (LOPs) of measuring equipment for electronic data exchange – Generic structures*

ISO 3511-1:1977, *Process measurement control functions and instrumentation – Symbolic representation – Part 1: Basic requirements*

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