SVENSK STANDARD

SS-EN IEC 61987-1, utg 2:2025

| Fastställd | Sida | Ansvarig kommitté |
|---|---|---|
| 2025-06-04 | 1 (62) | SEK TK 65 |



# Industriell processtyrning – Datastrukturer och dataelement i kataloger över processutrustning – Del 1: Generella strukturer för mätutrustning

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

Som svensk standard gäller europastandarden EN IEC 61987-1:2024. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 61987-1:2024.

**Nationellt förord**

Europastandarden EN IEC 61987-1:2024

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 61987-1, Second edition, 2024 - Industrial-process measurement and control - Data structures and elements in process equipment catalogues - Part 1: Generic structures for measuring equipment**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 61987-1, utg 1:2007 med eventuella tillägg, ändringar och rättelser gäller ej fr o m 2027-11-30.

ICS 25.040.40; 35.240.50

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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# 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)



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**



Ref. No. EN IEC 61987-1:2024 E

SEK Svensk Elstandard SS-EN IEC 61987-1, utg 2:2025

# 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 |

This document supersedes EN 61987-1:2007 and all of its amendments and corrigenda (if any).

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

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

## Endorsement notice

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.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| 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 |

| | | | | |
|---|---|---|---|---|
| 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 – Eléments et structures de données dans les catalogues d'équipements de processus – Partie 1: Structures génériques pour équipements de mesure

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

## Part 1: Generic structures for measuring equipment

## FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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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*