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Industrial-process measurement and control - Data structures and elements in -process equipment catalogues - Part 11: Lists of properties (LOPs) of measuring equipment for electronic data exchange - Generic structures

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

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EUROPEAN STANDARD

**EN 61987-11**

NORME EUROPÉENNE

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Supersedes EN 61987-11:2012

English Version

**Industrial-process measurement and control - Data structures  
and elements in -process equipment catalogues - Part 11: Lists  
of properties (LOPs) of measuring equipment for electronic data  
exchange - Generic structures  
(IEC 61987-11:2016)**

Mesure et commande des processus industriels -  
Structures de données et éléments dans les catalogues  
d'équipement de processus - Partie 11: Listes des  
propriétés (LOP) d'équipements de mesure pour l'échange  
électronique de données - Structures génériques  
(IEC 61987-11:2016)

Industrielle Leittechnik - Datenstrukturen und -elemente in  
Katalogen der Prozessleittechnik - Teil 11: Merkmalleisten  
(ML) für Messgeräte für den elektronischen  
Datenaustausch - Allgemeine Strukturen  
(IEC 61987-11:2016)

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Europäisches Komitee für Elektrotechnische Normung

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**European foreword**

The text of document 65E/467/CDV, future edition 2 of IEC 61987-11, 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 61987-11:2017.

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) 2017-10-21
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-04-21

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

IEC 60770-1:2010	NOTE	Harmonized as EN 60770-1:2011
IEC 61360-1:2009	NOTE	Harmonized as EN 61360-1:2010
IEC 61360-2	NOTE	Harmonized as EN 61360-2
IEC 61987-12	NOTE	Harmonized as EN 61987-12
IEC 81346-1:2009	NOTE	Harmonized as EN 81346-1:2009
ISO 10303 (Series)	NOTE	Harmonized as ENV 10303 (Series)

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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

NOTE 1 When 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.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60947-5-6	-	Low-voltage switchgear and controlgear -- Part 5-6: Control circuit devices and switching elements - DC interface for proximity sensors and switching amplifiers (NAMUR)	EN 60947-5-6	-
IEC 61069-5	-	Industrial-process measurement, control and automation - Evaluation of system properties for the purpose of system assessment - Part 5: Assessment of system dependability	EN 61069-5	-
IEC 61508-6	-	Functional safety of electrical/electronic/programmable electronic safety-related systems -- Part 6: Guidelines on the application of IEC 61508-2 and IEC 61508-3	EN 61508-6	-
IEC 61987-1	2006	Industrial-process measurement and control - Data structures and elements in process equipment catalogues -- Part 1: Measuring equipment with analogue and digital output	EN 61987-1	2007
IEC 61987-10	2009	Industrial-process measurement and control - Data structures and elements in process equipment catalogues - Part 10: Lists of Properties (LOPs) for Industrial-Process Measurement and Control for Electronic Data Exchange - Fundamentals	EN 61987-10	2009
-	-		+ AC	2011
IEC 61987-92	-		-	-
IEC 62424	-	Representation of process control engineering - Requests in P&I diagrams and data exchange between P&ID tools and PCE-CAE tools	EN 62424	-



# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Industrial-process measurement and control – Data structures and elements in process equipment catalogues –  
Part 11: Lists of properties (LOPs) of measuring equipment for electronic data exchange – Generic structures**

**Mesure et commande des processus industriels – Structures de données et éléments dans les catalogues d'équipement de processus –  
Partie 11: Listes des propriétés (LOP) d'équipements de mesure pour l'échange électronique de données – Structures génériques**



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# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



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**Industrial-process measurement and control – Data structures and elements in process equipment catalogues –  
Part 11: Lists of properties (LOPs) of measuring equipment for electronic data exchange – Generic structures**

**Mesure et commande des processus industriels – Structures de données et éléments dans les catalogues d'équipement de processus –  
Partie 11: Listes des propriétés (LOP) d'équipements de mesure pour l'échange électronique de données – Structures génériques**

INTERNATIONAL  
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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INDUSTRIAL-PROCESS MEASUREMENT AND CONTROL –  
DATA STRUCTURES AND ELEMENTS IN PROCESS  
EQUIPMENT CATALOGUES –****Part 11: Lists of properties (LOPs) of measuring equipment  
for electronic data exchange – Generic structures**

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International Standard IEC 61987-11 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation.

This second edition cancels and replaces the first edition published in 2012. This edition constitutes a technical revision.

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

- a) The classification in Table A.1 has been amended to reflect the changes in the classification scheme of process measuring equipment in the CDD due to the development of IEC 61987-14, IEC 61987-15 and IEC 61987-16.
- b) Annex A has become “informative”.

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

CDV	Report on voting
65E/467/CDV	65E/509/RVC

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

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

A list of all parts 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 publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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## INTRODUCTION

The exchange of product data between companies, business systems, engineering tools, data systems within companies and, in the future, control systems (electrical, measuring and control technology) can run smoothly only when both the information to be exchanged and the use of this information has been clearly defined.

Prior to this document, requirements on process control devices and systems were specified by customers in various ways when suppliers or manufacturers were asked to quote for suitable equipment. The suppliers in their turn described the devices according to their own documentation schemes, often using different terms, structures and media (paper, databases, CDs, e-catalogues, etc.). The situation was similar in the planning and development process, with device information frequently being duplicated in a number of different information technology (IT) systems.

Any method that is capable of recording all existing information only once during the planning and ordering process and making it available for further processing, gives all parties involved an opportunity to concentrate on the essentials. A precondition for this is the standardization of both the descriptions of the objects and the exchange of information.

This standard series proposes a method for standardization which will help both suppliers and users of measuring equipment to optimize workflows both within their own companies and in their exchanges with other companies. Depending on their role in the process, engineering firms may be considered here to be either users or suppliers.

The method specifies measuring equipment by means of blocks of properties. These blocks are compiled into lists of properties (LOPs), each of which describes a specific equipment (device) type. This standard series covers both properties that may be used in an inquiry or a proposal and detailed properties required for integration of the equipment in computer systems for other tasks.

IEC 61987-10 defines structure elements for constructing lists of properties for electrical and process control equipment in order to facilitate automatic data exchange between any two computer systems in any possible workflow, for example engineering, maintenance or purchasing workflow and to allow both the customers and the suppliers of the equipment to optimize their processes and workflows. IEC 61987-10 also provides the data model for assembling the LOPs.

IEC 61987-11 specifies the generic structure for operating and device lists of properties (OLOPs and DLOPs). It lays down the framework for further parts of IEC 61987 in which complete LOPs for device types measuring a given physical variable and using a particular measuring principle will be specified. The generic structure may also serve as a basis for the specification of LOPs for other industrial-process control instrument types such as control valves and signal processing equipment.

### **Content of the lists of properties (LOPs)**

The LOPs specified in this document describe at generic level:

- the operating conditions of the measuring equipment;
- the ambient conditions at the measuring point;
- the performance of the measuring equipment;
- the metrological, mechanical and electrical features of the measuring equipment;
- the compliance of the measuring instrument to specific industrial requirements.

The LOPs mirror constructive reality but do not represent an instrument model.

## Measuring equipment configuration

The generic LOPs have been so constructed that they take account of integral equipment and separately mounted equipment.

## Device type dictionary

Annex A describes a characterisation of measuring equipment based on the STEP library, ISO 10303. This is a tree of relationships between different device types. Starting at the root “equipment for industrial-process automation”, it first characterizes measuring equipment according to type, then according to process variable measured and finally according to the measuring method employed. This structure will be used in the IEC Common Data Dictionary (CDD) “Process automation (IEC 61987 series)” domain.

For the purpose of this document, the following types of measuring equipment have been identified, see Clause 3 for definitions:

- sight indicator (with direct indicating qualitative output),
- gauge (with quantitative output only in the form of a direct indicating display),
- transmitter (with quantitative analogue output or corresponding digital output signal),
- switch (with discrete output or corresponding digital output signal),
- measuring assembly (as a grouping of instrument components, which together form a gauge, transmitter or switch).

It should be noted that in the real world, there is not such a clear demarcation between types of measuring equipment. In commercial literature, indicators are often called gauges, although the products offer no quantitative measurement. Similarly, direct indicating displays are often equipped with electrical trip switches which allow a gauge to act as a switch. Finally “transmitter” is by no means a universal term and in particular for flow measurement many manufacturers call this kind of equipment “meter”.

## Composite devices

A structural scheme is given, defining how to build up LOPs for devices consisting of several components or assembled from different parts, that is, composite devices and measuring assemblies.

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

## Part 11: Lists of properties (LOPs) of measuring equipment for electronic data exchange – Generic structures

### 1 Scope

This part of IEC 61987 provides:

- a characterisation of industrial process measuring equipment (device type dictionary) for integration in the Common Data Dictionary (CDD), and
- generic structures for operating lists of properties (OLOP) and device lists of properties (DLOP) of measuring equipment in conformance with IEC 61987-10.

The generic structures for the OLOP and DLOP contain the most important blocks for process measuring equipment. Blocks pertaining to a specific equipment type will be described in the corresponding part of the IEC 61987 standard series. Similarly, equipment properties are not part of IEC 61987-11. For instance, the OLOP and DLOP for flow transmitters with blocks and properties are to be found in IEC 61987-12.

### 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 60947-5-6, *Low-voltage switchgear and controlgear – Part 5-6: Control circuit devices and switching elements – DC interface for proximity sensors and switching amplifiers (NAMUR)*

IEC 61069-5, *Industrial-process measurement, control and automation – Evaluation of system properties for the purpose of system assessment – Part 5: Assessment of system dependability*

IEC 61508-6, *Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 6: Guidelines on the application of IEC 61508-2 and IEC 61508-3*

IEC 61987-1:2006, *Industrial-process measurement and control – Data structures and elements in process equipment catalogues – Part 1: Measuring equipment with analogue and digital output*

IEC 61987-10:2009, *Industrial-process measurement and control – Data structures and elements in process equipment catalogues – Part 10: Lists of Properties (LOPs) for Industrial-Process Measurement and Control for Electronic Data Exchange – Fundamentals*

IEC 61987-92, *Industrial-process measurement and control – Data structures and elements in process equipment catalogues – Part 92: Lists of properties (LOPs) of measuring equipment for electronic data exchange – aspect LOPs<sup>1</sup>*

IEC 62424, *Representation of process control engineering – Requests in P&I diagrams and data exchange between P&ID tools and PCE-CAE tools*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**