SLOVENSKI STANDARD
oSIST prEN IEC 61987-31:2021

01-december-2021

Seznam lastnosti (LOP) infrastrukturnih naprav za elektronsko izmenjavo podatkov - Generična struktura

List of Properties (LOP) of infrastructure devices for electronic data exchange - Generic structure

Liste des propriétés (LOP) d'appareils d'infrastructure pour l'échange électronique de données - Structures génériques

Ta slovenski standard je istoveten z: **prEN IEC 61987-31:2021**

ICS:

01.110	Tehnična dokumentacija za izdelke	Technical product documentation
25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
35.240.50	Uporabniške rešitve IT v industriji	IT applications in industry

oSIST prEN IEC 61987-31:2021 **en,fr,de**

65E/802/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 61987-31 ED1**	
DATE OF CIRCULATION: **2021-10-15**	CLOSING DATE FOR VOTING: **2022-01-07**
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IEC SC 65E : DEVICES AND INTEGRATION IN ENTERPRISE SYSTEMS	
SECRETARIAT: United States of America	SECRETARY: Mr Donald (Bob) Lattimer
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 65,SC 65A,SC 65B,SC 65C	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

IEC 61987, Part 31: List of Properties (LOP) of infrastructure devices for electronic data exchange – Generic structures

PROPOSED STABILITY DATE: 2024

NOTE FROM TC/SC OFFICERS:

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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 31: Lists of Properties (LOPs) of infrastructure devices for electronic data exchange – Generic structures

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This XXX edition cancels and replaces the XXX edition published in [publication_date], Amendment 1:[publication_date] and Amendment 2:[publication_date]. This edition constitutes a technical revision.

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

a) …;

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

FDIS	Report on voting
XX/XX/FDIS	XX/XX/RVD

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

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

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

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

The National Committees are requested to note that for this document the stability date is 2024.

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

INTRODUCTION

General

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 have been clearly defined.

Prior to this standard, 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.

The IEC 61987 series proposes a method for standardization which will help both suppliers and users of process control 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 process control 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. The IEC 61987 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 while specifying a generic structure for measuring equipment provides several important detail descriptions, such as the handling of composite devices, that are also required for LOPs describing automated industrial valves.

This part of IEC 61987 specifies the generic structure for operating and device lists of properties (OLOPs and DLOPs) for infrastructure devices. Infrastructure devices are devices installed in switch and control rooms. It lays down the framework for further parts of IEC 61987 in which complete LOPs for infrastructure devices of different construction and functional principle will be specified. The generic structure may also serve as a basis for the specification of LOPs for other industrial-process control device types.

Device type dictionary

Annex A contains a characterisation of infrastructure devices. This is a tree of relationships between different device types. Starting at the root “equipment for industrial-process automation”, it introduces the infrastructure devices. This characterisation is used in the Process Automation Domain of the IEC Common Data Dictionary (CDD).

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

Part 31: Lists of Properties (LOPs) of infrastructure devices for electronic data exchange – Generic structures

1 Scope

This part of IEC 61987 provides

- a characterization for the integration of infrastructure devices in the Common Data Dictionary (CDD);
- generic structures in conformance with IEC 61987-10 for Operating Lists of Properties (OLOPs) and Device Lists of Properties (DLOPs) of infrastructure devices.

The generic structures for the OLOP and DLOP contain the most important blocks for infrastructure devices. 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 this part of IEC 61987. For instance, the OLOP and DLOP for I/O-modules are to be found in IEC 61987-32.

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 61069-5, *Industrial-process measurement and control – 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, *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, *Industrial-process measurement and control – Data structures and elements in process equipment catalogues – Part 10: List of Properties (LOPs) for Industrial-Process Measurement and Control for Electronic Data Exchange – Fundamentals*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions in IEC 61987-10, IEC 61987-11 and IEC 60534-1 apply

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp/ui

4 General

4.1 Characterization scheme

IEC 61987-1 describes a general classification scheme for industrial process measuring equipment based on measured variables. The introduction of the LOPs of any area of technology into the IEC Common Data Dictionary (CDD) requires the creation of a characterization scheme for the device types of this technology area.

The area of technology considered in this standard concerns infrastructure devices. The characterisation of the area for the CDD is provided in Table A.1.

The enhanced characterization scheme is used for the IEC Component Data Dictionary (CDD). The area of infrastructure devices belongs to the domain of “Process automation” in the CDD.

The area of infrastructure devices is divided into a range of sub-areas. The names of the sub-areas are shown in Figure 1.

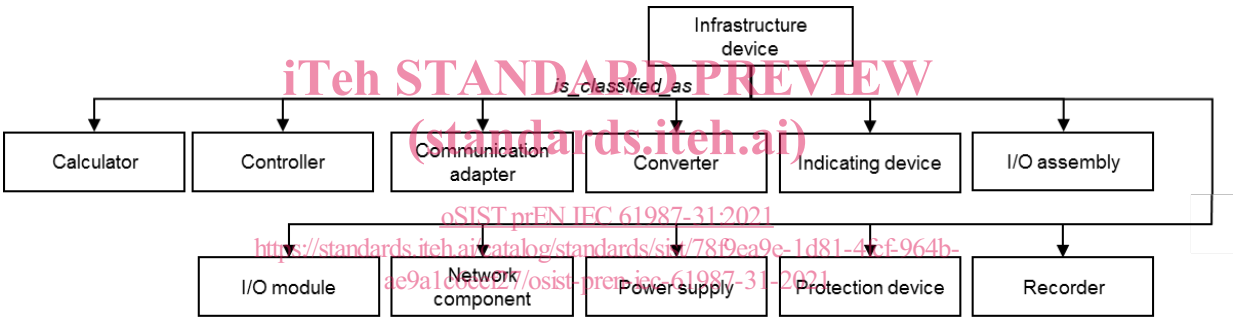

Figure 1 – Characterization of infrastructure devices

4.2 OLOP and DLOP

An Operating List of Properties (OLOP) describes an aspect relating to a device type, for example, the operational environment of the device, the device design requirements as well as all the boundary conditions applicable to the point of operation. The structure element “aspect” is described in IEC 61987-11. Among a range of possible aspects, the operating aspect represented by the OLOP is the most important.

The Device List of Properties (DLOP) is used to describe a given device type, for example an I/O-module, a calculator or a controller. The DLOP describes, for example, the mechanical construction and the electrical construction of a device. Each DLOP describes a particular device type.

Figure 2 shows the relationship between the OLOP and DLOPs for infrastructure devices. The OLOP is valid for the generic DLOP as well as for the DLOPs for the various device types, for example I/O-module, controller etc.

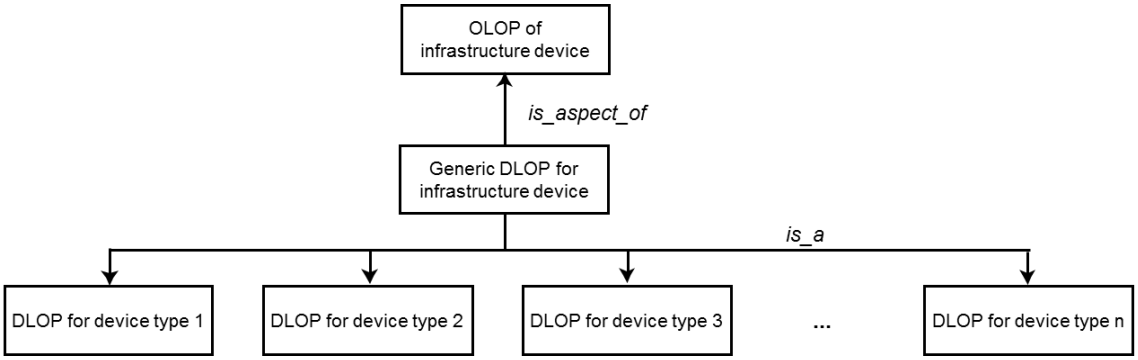

Figure 2 – Assignment of OLOP and DLOPs for infrastructure devices

At higher levels of their construction, OLOPs and DLOPs contain blocks of properties that are common to all process variables or device types respectively. This part of IEC 61987 specifies these generic block structures.

Further parts of this standard series specify the block structures and properties of OLOPs and DLOPs for particular infrastructure device types.

4.3 Cardinality and polymorphism

The principles and the description of the cardinality and polymorphic areas applied in this standard are described in IEC 61987-10 and IEC 61987-11. These structural elements introduce a high degree of flexibility in the description of a device and its surroundings, provided the block structure in the LOP is used. They can be briefly described as follows:

- Cardinality allows an LOP element, for example a property block describing a particular feature of a device, to be repeated as many times as necessary.
- Polymorphism allows the introduction of a complete property block from a selection of property blocks at a particular structure level of an LOP.

In the case of infrastructure devices, the cardinality can be used for replication of the “Input” block. For example, an input-module can have two or more different types of input signals.

5 Operating List of Properties (OLOP)

5.1 Generic block structure

An operating list of properties is a list of properties describing the aspect concerning the operational conditions of the device and additional information regarding the design conditions under which it will be applied. An OLOP contains no information about the device itself: this is to be found in the DLOP.

The role of an OLOP is similar to that of an engineering datasheet, in which data describing the installation environment where the device is to operate are collected. This includes information on the ambient conditions, the design safety conditions, etc. All of these data are described with an OLOP.

Due to the nature of infrastructure devices, a single OLOP can be used for more than one infrastructure device families. The generic block structure of this OLOP shall correspond to that shown in Table 1. It corresponds to the generic block structure of an OLOP for measuring equipment (see IEC 61987-11). Details of the individual blocks are to be found in 5.2 to 5.3.