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Industrial-process measurement and control – Data structures and elements in process equipment catalogues –
Part 24-3: Lists of properties (LOPs) of flow modification accessories for electronic data exchange

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Mesure et commande dans les processus industriels – Structures de données et éléments dans les catalogues d'équipements de processus –
Partie 24-3: Listes de propriétés (LOP) des accessoires de modification de débit pour l'échange électronique de données

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

Part 24-3: Lists of properties (LOPs) of flow modification accessories for electronic data exchange

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

CDV	Report on voting
65B/1037/CDV	65B/1066/RVC

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.

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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 IEC 61987, 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.

IEC 61987 (all parts) propose 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 can be considered here to be either users or suppliers.

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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. IEC 61987 (all parts) covers both properties that can be used in an inquiry or a proposal and detailed properties required for integration of the equipment in computer systems for other tasks.

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Part 10 of IEC 61987 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. Part 10 also provides the data model for assembling the LOPs.

Part 11 of IEC 61987, 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 devices of other areas like the automated valves.

Part 21 of IEC 61987 specifies the generic structure for operating and device lists of properties (OLOPs and DLOPs) for automated valves. It lays down the framework for further parts of IEC 61987 in which complete LOPs for final control elements of different construction and functional principle will be specified. The generic structure can also serve as a basis for the specification of LOPs for other industrial-process control instrument types.

This part of IEC 61987 concerns flow modification accessories. It provides operating LOPs which can be used, for example, as a request for quotation for various purposes. The DLOPs for the accessories provided in this document can be used in very different ways in the computer systems of equipment manufacturers and suppliers, in CAE and similar systems of EPC contractors and other engineering companies and especially in the various plant maintenance systems of plant owners. The OLOP and the DLOPs provided correspond to the guidelines specified in IEC 61987-10, IEC 61987-11 and IEC 61987-21.

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

Part 24-3: Lists of properties (LOPs) of flow modification accessories for electronic data exchange

1 Scope

This part of IEC 61987 provides

- an operating list of properties (OLOP) for the description of the operating parameters and the collection of requirements for flow modification accessories for automated valves, listed in Annex A,
- device lists of properties (DLOPs) for flow modification accessories for automated valves, listed in Annex B.

The structures of the LOPs conform to the general structures defined in IEC 61987-11 and IEC 61987-21 as well as the fundamentals for the construction of LOPs defined in IEC 61987-10. The LOPs conform additionally with terms defined in IEC 60534-7.

Libraries of properties and of blocks used in the LOPs are listed in Annexes C and D respectively.

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2 Normative references

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IEC 61360 (all parts), *Standard data element types with associated classification scheme for electric components*

IEC 61360-4, *Standard data element types with associated classification scheme for electric components – Part 4: IEC reference collection of standard data element types and component classes* (available at: http://std.iec.ch/iec61360)

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 61987-11, *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*

IEC 61987-21:2015, *Industrial-process measurement and control – Data structures and elements in process equipment catalogues – Part 21: List of Properties (LOP) of automated valves for electronic data exchange – Generic structures*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61987-10, IEC 61987-11 and IEC 61987-21 apply

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

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

4 General

4.1 Overview

The LOPs provided by this document are intended for use in electronic data exchange processes performed between any two computer systems. The computer systems can belong to the same company or they can belong to different companies as described in Annex C of IEC 61987-10:2009.

4.2 Depiction of OLOP and DLOPs

The properties of the OLOP and DLOPs used in this part of IEC 61987 have been created in conformance with the requirements of the IEC 61360 (all parts). As such, the structural elements, properties and attributes to be found in the IEC Common Data Dictionary (CDD) (see IEC 61360-4) are normative.

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4.3 Example of DLOP block usage for a flow modification accessory (informative)

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A restriction orifice was designed to constrain a flow of nitrogen to 165 kg/h at 5 bar absolute inlet pressure, 1,13 bar absolute outlet pressure, and 25 °C gas temperature. It is common practice to repeat the design conditions of the OLOP also in the resulting DLOP, refer to Table 1 (unused properties and blocks are omitted).

Table 1 – Example for a restriction orifice

Name of LOP type, block or property[a]	Assigned value	Unit
Identification		
manufacturer	Name of company	
type of product	Restriction orifice	
code of product	0050/0040D6600	
serial number	2015-1771-00	
number of device tag plates	1	
Device tag plate_1		
style of tag plate mounting	Integrated into plate	
number of tag plate lines	1	
Text line tag plate_1		
line number of tag plate text	1	
content of text line	FZ 7893	

Name of LOP type, block or property[a]	Assigned value	Unit
Parameters of restriction orifice/diffuser		
tag name/PCE request	F 7893	
mass flow rate	165,0	kg/h
base density	5,65	kg/m^3
base dynamic viscosity	0,017 9	mPa·s
base specific heat ratio (Cp/Cv)	1,407	1
base absolute pressure	5,00	bar
base temperature	25	°C
phase of matter	Gaseous	
maximum permanent pressure loss	3,87	bar
Mechanical and electrical construction [restriction orifice/diffuser]		
Structural design [restriction orifice/diffuser]		
Structural design of a restriction orifice/diffuser		
type of restriction orifice/diffuser	plate	
number of end connections	1	
End connection_1		
style of sealing surface	B1	
design code	EN 1092-1	
nominal rating	PN 40	
nominal size	DN 50	
diameter of orifice plate bore	8,0	mm
reference pipe diameter	54,5	mm
diameter ratio (Beta d/D)	0,147	
thickness of orifice plate	5,0	mm
standard of design calculation	DFA	
Material of restriction orifice/diffuser		
designation of material	stainless steel	
material code	1.4571	
surface roughness of wetted parts	0,1	mm

[a] In the IEC CDD, block names start with a capital letter, property names with a lower case letter.

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Annex A
(normative)

Operating list of properties for flow modification accessories

This OLOP is assigned to the flow modification accessories in the classification scheme for final control elements (see Table A.1 in IEC 61987-21:2015).

– flow modification accessory node ID: IEC-ABD381

NOTE The OLOP is also found in the Properties Tree field and has the ID IEC-ABE656.

The OLOP is available with all blocks and properties in the IEC Common Data Dictionary (CDD) at the following address:

http://cdd.iec.ch/cdd/iec61987/iec61987.nsf/TreeFrameset?OpenFrameSet&ongletactif=1

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Annex B
(normative)

Device list of properties for flow modification accessories

B.1 DLOP for restriction orifice

The DLOPs of Annex B correspond to the classification scheme for final control elements placed in Annex A of IEC 61987-21:2015.

The DLOP for a restriction orifice/diffuser is assigned to the node of the classification:

– restriction orifice node ID: IEC- ABD382

NOTE The DLOP is also found in the Properties Tree field and has the ID IEC-ABE633.

The DLOP is available with all blocks and properties in the IEC Common Data Dictionary (CDD) at the following address:

http://cdd.iec.ch/cdd/iec61987/iec61987.nsf/TreeFrameset?OpenFrameSet&ongletactif=1

B.2 DLOP for diffuser

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The DLOPs of Annex B correspond to the classification scheme for final control elements placed in Annex A of IEC 61987-21:2015.

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The DLOP for a restriction orifice/diffuser is assigned to the node of the classification:

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– diffuser node ID: IEC- ABD383

NOTE The DLOP is also found in the Properties Tree field and has the ID IEC-ABE633.

The DLOP is available with all blocks and properties in the IEC Common Data Dictionary (CDD) at the following address:

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