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Industriell processtyrning – Enheter och integration i företagssystem – Funktionsblock (FB) och EDDL – Del 3: Syntax och semantik för EDDL

*Devices and integration in enterprise systems –
Function blocks (FB) for process control and electronic device description language (EDDL) –
Part 3: EDDL syntax and semantics*

Som svensk standard gäller europastandarden EN IEC 61804-3:2020. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 61804-3:2020.

Nationellt förord

Europastandarden EN IEC 61804-3:2020

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 61804-3, Fourth edition, 2020 - Devices and integration in enterprise systems - Function blocks (FB) for process control and electronic device description language (EDDL) - Part 3: EDDL syntax and semantics**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 61804-3, utgåva 3, 2016, gäller ej fr o m 2023-07-29.

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SEK Svensk Elstandard

Box 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

English Version

**Devices and integration in enterprise systems - Function blocks
(FB) for process control and electronic device description
language (EDDL) - Part 3: EDDL syntax and semantics
(IEC 61804-3:2020)**

Les dispositifs et leur intégration dans les systèmes de
l'entreprise - Blocs fonctionnels (FB) pour les procédés
industriels et le langage de description électronique de
produit (EDDL) - Partie 3: Sémantique et syntaxe EDDL
(IEC 61804-3:2020)

Funktionsbausteine für die Prozessautomation und
elektronische Gerätebeschreibungssprache - Teil 3:
Elektronische Gerätebeschreibungssprache (EDDL)
(IEC 61804-3:2020)

This European Standard was approved by CENELEC on 2020-07-29. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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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

European foreword

The text of document 65E/631/CDV, future edition 4 of IEC 61804-3, 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 61804-3:2020.

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) 2021-04-29
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-07-29

This document supersedes EN 61804-3:2015 and all of its amendments and corrigenda (if any).

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Endorsement notice

The text of the International Standard IEC 61804-3:2020 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 standards indicated:

IEC 61131-3	NOTE	Harmonized as EN 61131-3
IEC 61360 (series)	NOTE	Harmonized as EN 61360 (series)
IEC 61499-1:2012	NOTE	Harmonized as EN 61499-1:2013 (not modified)
IEC 61784-1	NOTE	Harmonized as EN IEC 61784-1
IEC 61784-2	NOTE	Harmonized as EN IEC 61784-2
IEC 61987 (series)	NOTE	Harmonized as EN IEC 61987 (series)
ISO/IEC 2382 (series)	NOTE	Harmonized as EN 17054 (series)

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.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-351	-	International Electrotechnical Vocabulary - Part 351: Control technology	-	-
IEC 61804-2	-	Function blocks (FB) for process control and electronic device description language (EDDL) - Part 2: Specification of FB concept	EN IEC 61804-2	-
IEC 61804-4	-	Devices and integration in enterprise systems - Function blocks (FB) for process control and electronic device description language (EDDL) - Part 4: EDD interpretation	EN IEC 61804-4 ¹	-
IEC 61804-5	-	Devices and integration in enterprise systems - Function blocks (FB) for process control and electronic device description language (EDDL) - Part 5: EDDL Built-in library	EN IEC 61804-5 ²	-
IEC 62541-4	-	OPC Unified Architecture - Part 4: Services	-	-
ISO/IEC 7498-1	-	Information technology - Open Systems Interconnection - Basic reference model: The basic model	-	-
ISO/IEC 8859-1	-	Information technology - 8-bit single-byte coded graphic character sets - Part-1: Latin alphabet No. 1	-	-

¹ To be published. Stage at the time of publication: prEN IEC 61804-4:2018.

² To be published. Stage at the time of publication: prEN IEC 61804-5:2018.

EN IEC 61804-3:2020 (E)

ISO/IEC 9834-8	-	Information technology - Procedures for the operation of object identifier registration authorities - Part 8: Generation of universally unique identifiers (UUIDs) and their use in object identifiers	-	-
ISO/IEC 9899	1999	Programming languages - C	-	-
ISO/IEC 10646	-	Information technology - Universal Coded Character Set (UCS)	-	-
ISO/IEC 10918-1	-	Information technology; digital compression and coding of continuous-tone still images; requirements and guidelines	-	-
ISO/IEC 15948	-	Information technology - Computer graphics and image processing - Portable Network Graphics (PNG) - Functional specification	-	-
ISO 639	series	Code for the representation of names of languages	-	-
ISO 3166-1	-	Codes for the representation of names of countries and their subdivisions - Part 1: Country codes	EN ISO 3166-1	-
ISO/TS 29002-5	-	Industrial automation systems and integration - Exchange of characteristic data - Part 5: Identification scheme	-	-
IEEE 754	-	IEEE Standard for Floating-Point Arithmetic	-	-
RFC 3629	-	UTF-8, User Datagram Protocol	-	-
W3C Recommendation	-	Cascading Style Sheets Level 2 Specification	-	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**DEVICES AND INTEGRATION IN ENTERPRISE SYSTEMS –
FUNCTION BLOCKS (FB) FOR PROCESS CONTROL AND
ELECTRONIC DEVICE DESCRIPTION LANGUAGE (EDDL) –****Part 3: EDDL syntax and semantics****FOREWORD**

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International Standard IEC 61804-3 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation.

This fourth edition cancels and replaces the third edition published in 2015. This edition constitutes a technical revision.

This edition was developed by merging material from multiple variants of existing EDDL specifications including those from FieldComm Group (FOUNDATION™ Fieldbus¹, HART®²), PROFIBUS™³ Nutzerorganisation e.V. (PNO), and ISA100_Wireless™⁴ Compliance Institute (ISA100 WCI). Any places where there may be a profile deviation are now indicated in the context where the related deviation is found. As a result, the formatting and numbering of this edition may be different from any of the individual specifications from which this edition was derived.

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

- Communication profiles ISA100 and GPE were added.
- EDD Identification Information has a new LAYOUT_TYPE attribute.
- New construct SEMANTIC_MAP was added.
- CLASS attribute values LOCAL_A and LOCAL_B were added.
- Extended LIST functionality to support device managed lists.

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

CDV	Report on voting
65E/631/CDV	65E/689/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.

Headings ending with '(void)' are used to retain the numbering of previous editions.

A list of all parts in IEC 61804 series, published under the general title *Devices and integration in enterprise systems – Function blocks (FB) for process control and electronic device description language (EDDL)*, can be found on the IEC website.

Future parts of IEC 61804 will carry the new general title as cited above. Titles of existing parts will be updated at the time of the next edition.

¹ FOUNDATION™ Fieldbus is the trademark of FieldComm Group. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.

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The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

The EDDL fills the gap between the conceptual function block specification of IEC 61804-2 and a product implementation. It allows the manufacturers to use the same description method for devices based on different technologies and platforms. Figure 1 shows these aspects.

IEC 61804 has the general title "Devices and integration in enterprise systems – Function blocks (FB) for process control and electronic device description language (EDDL)" and consists of the following parts:

Part 2: Specification of FB concept

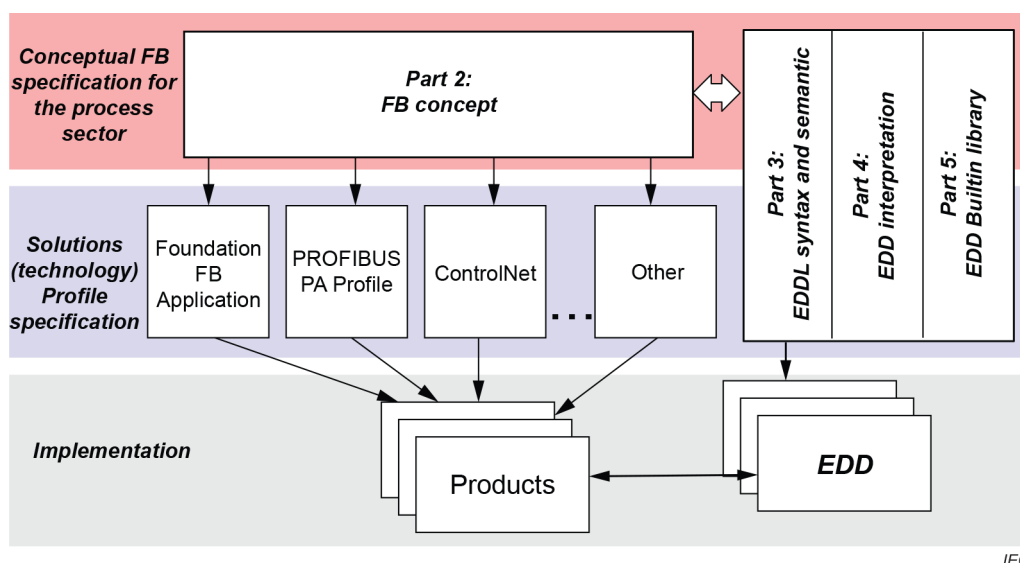
Part 3: EDDL syntax and semantics

Part 4: EDD interpretation

Part 5: EDDL builtin library

Part 6: Meeting the requirements for integrating fieldbus devices in engineering tools for field devices

The EDDL may also be used for the description of product properties in other domains such as industrial automation. Industrial automation may include devices such as generic digital and analog input/output modules, motion controllers, human-machine interfaces, sensors, closed-loop controllers, encoders, hydraulic valves, and programmable controllers.



IEC

Figure 1 – Position of IEC 61804 in relation to other standards and products

DEVICES AND INTEGRATION IN ENTERPRISE SYSTEMS – FUNCTION BLOCKS (FB) FOR PROCESS CONTROL AND ELECTRONIC DEVICE DESCRIPTION LANGUAGE (EDDL) –

Part 3: EDDL syntax and semantics

1 Scope

This part of IEC 61804 specifies the electronic device description language (EDDL) technology, which enables the integration of real product details using the tools of the engineering life cycle.

This document specifies EDDL as a generic language for describing the properties of automation system components. EDDL is capable of describing

- device parameters and their dependencies;
- device functions, for example, simulation mode, calibration;
- graphical representations, for example, menus;
- interactions with control devices;
- graphical representations:
 - enhanced user interface,
 - graphing system;
- persistent data store.

EDDL is used to create electronic device description (EDD) for e.g. concrete devices, common usable profiles or libraries. This EDD is used with appropriate tools to generate an interpretative code to support parameter handling, operation, and monitoring of automation system components such as remote I/Os, controllers, sensors, and programmable controllers. Tool implementation is outside the scope of this document.

This document specifies the semantic and lexical structure in a syntax-independent manner. A specific syntax is defined in Annex A, but it is possible to use the semantic model also with different syntaxes.

IEC 61804-4 specifies EDD interpretation for EDD applications and EDDs to support EDD interoperability.

IEC 61804-5 specifies the EDDL builtin library and provides the profiles of the various fieldbuses.

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 60050-351, *International Electrotechnical Vocabulary (IEV) – Part 351: Control technology*

IEC 61804-2, *Function blocks (FB) for process control – Part 2: Specification of FB concept*

IEC 61804-4, *Function blocks (FB) for process control and electronic device description language (EDDL) – Part 4: EDD interpretation*

IEC 61804-5, *Function blocks (FB) for process control and electronic device description language (EDDL) – Part 5: EDDL builtin library*

IEC 62541-4, *OPC Unified Architecture – Part 4: Services*

ISO/IEC 7498-1, *Information technology – Open Systems Interconnection – Basic Reference Model: The Basic Model*

ISO/IEC 8859-1, *Information technology – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1*

ISO/IEC 9834-8, *Information technology – Procedures for the operation of object identifier registration authorities – Part 8: Generation of universally unique identifiers (UUIDs) and their use in object identifiers*

ISO/IEC 9899:1999, *Programming languages – C*

ISO/IEC 10646, *Information technology – Universal Coded Character Set (UCS)*

ISO/IEC 10918-1, *Information technology – Digital compression and coding of continuous-tone still images: Requirements and guidelines*

ISO/IEC 15948, *Information technology – Computer graphics and image processing – Portable Network Graphics (PNG): Functional specification*

ISO 639 (all parts), *Codes for the representation of names of languages*

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions – Part 1: Country codes*

ISO/TS 29002-5, *Industrial automation systems and integration – Exchange of characteristic data – Part 5: Identification scheme*

IEEE 754, *IEEE Standard for Floating-Point Arithmetic*

RFC 3629, *User Datagram Protocol*, available at <http://www.ietf.org/rfc/rfc0768.txt> [viewed 2018-12-21]

W3C Recommendation, *Cascading Style Sheets Level 2 Specification*, available at <http://www.w3.org/TR/CSS2> [viewed 2018-12-21]