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Function Blocks (FB) for process control and Electronic Device Description Language (EDDL) – Part 3: EDDL syntax and semantics

Blocs Fonctionnels (FB) pour les procédés industriels et le Langage de Description Electronique de Produit (EDDL) – Partie 3: Sémantique et syntaxe EDDL

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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 third edition cancels and replaces the second edition published in 2010. This edition constitutes a technical revision.

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

- Builtins and their profiles removed and relocated into IEC 61804-5.
- The following extensions are integrated in the EDDL specification to meet FDI requirements:
  - New contructs BLOB, PLUGIN.
  - Component construct for communication server requirements (additional attributes).

- Extension of the class attribute.
- New attributes PRIVATE, VISIBILITY, WRITE_MODE

x The following changes will be integrated in the EDDL based on EDDL harmonization:

- Removed some unused features.
- Harmonized some profile features.

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

FDIS	Report on voting
65E/451/FDIS	65E/462/RVD

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 Function blocks (FB) for process control and Electronic Device Description Language (EDDL), can be found on the IEC website.

Future standards in this series will carry the new general title as cited above. Titles of existing standards in this series will be updated at the time of the next edition.

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

x reconfirmed,

x withdrawn,

x replaced by a revised edition, or

x 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 "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

This part of IEC 61804 has integrated some parts of IEC TS 61804-1:2003, which was withdrawn in January 2013.

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.

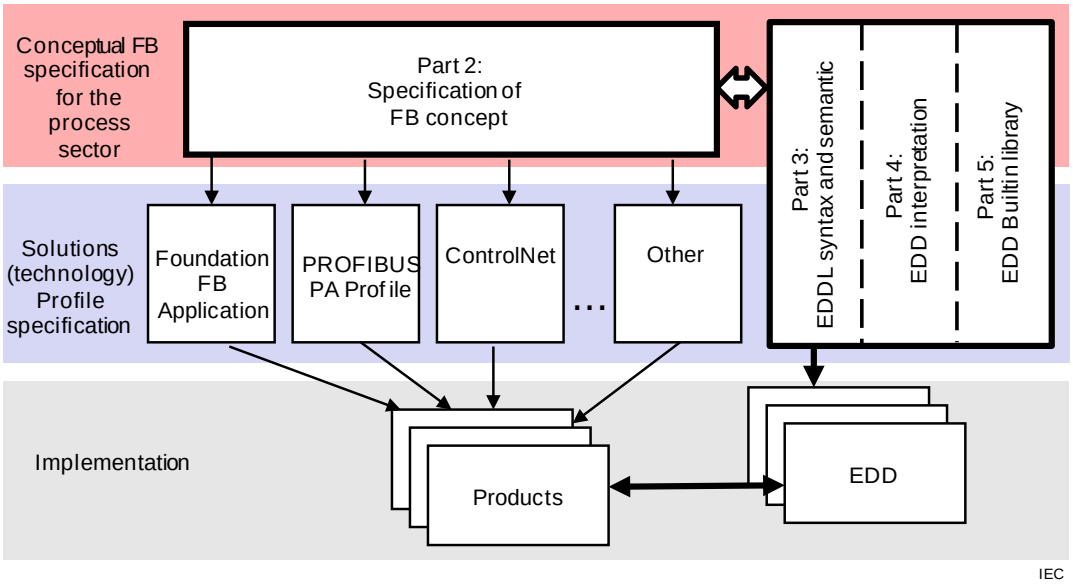

Figure 1 – Position of IEC 61804 in relation to other standards and products

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 part of IEC 61804 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 example 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 standard.

This part of IEC 61804 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.

2 Normative references

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.

IEC 60050 (all parts), International Electrotechnical Vocabulary (available at http://www.electropedia.org)

IEC 61804-2:–[1], Function blocks (FB) for process control and Electronic Device Description Language (EDDL) – Part 2: Specification of FB concept and Electronic Device Description Language (EDDL)

[1] To be published.

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 2375, Information technology – Procedure for registration of escape sequences and coded character sets

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, Information technology – Programming languages C

ISO/IEC 10646-1, Information technology – Universal Multiple-Octet Coded Character Set (UCS) – Part 1: Architecture and Basic Multilingual Plane

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

IEEE 754, IEEE Standard for Floating-Point Arithmetic

RFC 3629, UTF-8, User Datagram Protocol, available at http://www.ietf.org/rfc/rfc0768.txt

W3C Cascading Style Sheets Level 2 Specification http://www.w3.org/TR/CSS2

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