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Function blocks (FB) for process control – Part 3: Electronic Device Description Language (EDDL)

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Part 3: Electronic Device Description Language (EDDL)

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 second edition cancels and replaces the first edition published in 2006. This edition constitutes a technical revision.

The main changes with respect to the previous edition are listed below[1].

Additions

— Language elements to support modular devices, see , 7.9, 7.10, 7.36.1, 7.36.2, 7.36.3, 7.36.13, and 7.36.15;
— Language elements to support offline configuration, 7.31;
— Usage of UTF-8, see A.2.3.;

[1] The historical background to the EDDL specification is given in Annex E.

— Various BuiltIns;

— BLOCK_A referencing. Updates to support access to multiple blocks, see 7.4.1, 7.38.18 up to 7.38.26.;

— Add VALIDITY attribute to various lexical structures;

— Support of multi-language images, see 7.18.2.1.;

— In 7.23.1 deleted the restriction of the MENU item list;

— Syntactical limitation on conditionals in 7.23.2.1 to restrict the MENU layout;

— Add LIST and delete VARIABLE_LIST of the MENU items in 7.23.2.1;

— Additional return value data types for METHOD TYPE, see 7.24.2.3;

— Replace reference by a context specific specification in Table 170;

— Clearification on KEY_POINTS behaviour, see 7.35.2.4;

— Add TRANSPARENT to the lexical structure to make the list of attributes consistent, see 7.36.11;

— Clarification on file behaviour, see 7.36.10;

— Add in Table A.5 the new key-words;

— Add the formal EDDL syntax in A.6.

- Corrections

— Deleted in A.6 all non-needed constructs using the auxiliary ..._listR. These were created by a non-perfect syntax-checking tool.

— Deleted in A.6 all non-needed "stmt1:" and "stmt2:". These were created by a non-perfect syntax-checking tool.

— Made A.6 consistent about using a colon at the end of a term by amending colons in a consistent way.

— Deleted not used references.

— Deleted in several lexical structures the brackets and “<exp>”

— Deleted in lexical structures the “[… <expr>]” where the conditional expression was not possible.

— Exchanged the attribute WIDTH by HEIGHT in the subclause specifying HEIGHT.

— Spelling errors like GUAGE exchanged to GAUGE.

— Syntactical limitation on conditionals in ACTIONS (for example see 7.14.2.3 and 7.14.2.4) to support conditionals only in the METHODs.

— Clearification on file behavior in 7.15.

— Add GRID and IMAGES to the attribute list, see 7.19.

— Deleted a duplication of element list in 7.23.2.1.

— Defining and calling METHODs with parameter and return value, see 7.24.

— Restriction on METHOD CLASS, see 7.24.2.2.

— Clearification on SCALING_FACTOR behaviour, see Table 165.

— Deleted EDDL operators from EDDL keyword list, see Table A.5.

— Clarification on TIME_VALUE coding providing the absolute basis, see Table D.16 and Table D.17.

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

FDIS	Report on voting
65C/162/FDIS	65C/173/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 ISO/IEC Directives, Part 2.

A list of all parts of the IEC 61804 series, published under the general title *Function blocks (FB) for process control*, can be found on the IEC web site

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the 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.

A bilingual version of this publication may be issued at a later date.

IMPORTANT – The 'color 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

This part of the IEC 61804 series specifies the Electronic Device Description Language (EDDL) technology.

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.

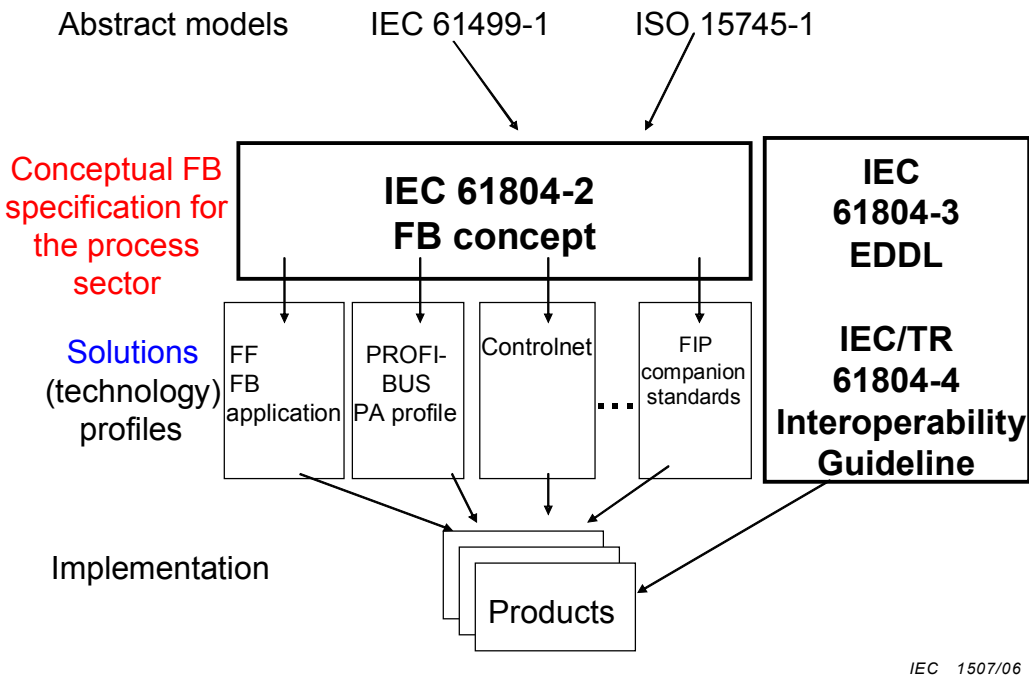

Figure 1 – Position of the IEC 61804 series related to other standards and products

FUNCTION BLOCKS (FB) FOR PROCESS CONTROL –

Part 3: Electronic Device Description Language (EDDL)

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 standard 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 to be used to create Electronic Device Description (EDD). This EDD is used with appropriate tools to generate 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 standard 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.

NOTE 1 The EDDL may also be used for the description of product properties in other domains.

The EDDL and the device-related EDD is applicable to industrial automation.

NOTE 2 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.

This International Standard satisfies the requirements of Clause 9 of IEC/TS 61804-1.

2 Normative references

The following referenced documents are indispensable for the application 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 61499-1:2005, *Function blocks – Part 1: Architecture*

IEC/TS 61804-1:2003, *Function blocks (FB) for process control – Part 1: Overview of system aspects*

ISO/IEC 2022, *Information technology – Character code structure and extension techniques*

ISO/IEC 2375:2003, *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 8859-1:1998, *Information technology – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1*

ISO/IEC 9899, *Programming languages – C*

ISO/IEC 10646-1:2000, *Information technology – Universal Multiple-Octet Coded Character Set (UCS) – Part 1: Architecture and Basic Multilingual Plane*

ISO 639*, Code for the representation of names of languages*

ISO 3166-1:2006*, Codes for the representation of names of countries and their subdivisions – Part 1: Country codes*

IEEE 754:1985 (R1990), *Binary Floating-Point Arithmetic*

RFC 3629:2003, *UTF-8, User Datagram Protocol*, available at
<http://www.ietf.org/rfc/rfc0768.txt >