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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 21099.3-2024

Replacing GB/T 21099.3-2018

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

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Foreword

This document was drafted in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents".

This document is Part 3 of GB/T (Z) 21099. GB/T (Z) 21099 has published the following parts.

- Function blocks for process control Part 1: General aspects of the system;
- Function Block (FB) and Electronic Device Description Language (EDDL) for equipment and integrated process control in enterprise systems Part 2: FB concept specification;
- Function Block (FB) and Electronic Device Description Language (EDDL) for equipment and integrated process control in enterprise systems Part 3: EDDL syntax and semantics;
- Function Block (FB) and Electronic Device Description Language (EDDL) for equipment and integrated process control in enterprise systems Part 4: EDD interoperability;
- Function Block (FB) and Electronic Device Description Language (EDDL) for equipment and integrated process control in enterprise systems Part 5: EDDL built-in library;
- Function Block (FB) and Electronic Device Description Language (EDDL) for process control Part 6: Meeting the needs of field device engineering tools for integrating fieldbus devices.

This document replaces GB/T 21099.3-2018 "Function blocks (FB) for process control Part 3: Electronic device description language (EDDL)", compared with GB/T 21099.3-2018, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- Changed the content of "Lexical Structure Conventions" (see 6.3, Chapter 5 of the 2018 edition);
- Changed the content of "Electronic Device Description Language" (see Chapter 7, Chapter 7 of the 2018 edition);
- Added EDD identification information (see Chapter 8);
- Added data modeling (see Chapter 9);
- Added communication (see Chapter 10);
- Added user interface (see Chapter 11);
- Added METHOD (see Chapter 12);
- Added equipment modeling (see Chapter 13);
- Added common properties (see Chapter 14);
- Added redefinition (see Chapter 15);
- Added references (see Chapter 16);
- Added strings (see Chapter 17);
- Added conditional expressions (see Chapter 18);
- Added expressions (see Chapter 19);

---Added text dictionary (see Chapter 20);

---Change Appendix B "EDDL built-in library" to "Data types" (see Appendix B, Appendix B of the 2018 edition);

--- Deleted Appendix D (see Appendix D of the 2018 edition).

This document is equivalent to IEC 61804-3:2020 "Function blocks (FBs) and electronic devices for equipment and integrated process control in enterprise systems" Device Description Language (EDDL) Part 3: EDDL syntax and semantics.

Introduction

EDDL fills the gap between the conceptual function block specification and product implementation of GB/T 21099.2. It allows manufacturers to Devices of different technologies and platforms use the same description method.

GB/T (Z) 21099 consists of the following 6 parts.

--- Part 1: General introduction to system aspects. The purpose is to provide suppliers with general guidelines and specifications to ensure that users can select compatible equipment.

compatibility, interoperability, and interchangeability.

--- Part 2: FB concept specification. The purpose is to define multiple types of function blocks, including. device models of device components; measurement, Conceptual specification of FB implementation and processing, including general rules for essential features of supporting controls to avoid hindering innovation details, and specialization details in different industrial fields; Electronic Device Description (EDD) technology, using engineering life cycle tools to Integrate real product details.

--- Part 3: EDDL syntax and semantics. The purpose is to specify the Electronic Device Description Language (EDDL) technology, which allows the use of industrial the integration of actual product details is accomplished through tools in the process life cycle.

--- Part 4: EDD interoperability. The purpose is to ensure that field device developers use the EDDL structure consistently. It supplements EDDL specification to promote interoperability and improve portability between EDDL applications.

--- Part 5: EDDL built-in library. The purpose is to define the EDDL built-in library and provide configuration files for various fieldbuses.

--- Part 6: Meeting the needs of field device engineering tools for integrated fieldbus devices. The purpose is to provide equipment and system manufacturers with it provides guidance for manufacturers to use EDDL technology to meet user needs, and also provides guidance for system integrators and instrument maintenance personnel.

Provides guidance to help end users integrate systems and incorporate device management into their workflow using EDDL technology.

EDDL can also be used to describe product attributes in other areas such as industrial automation. Industrial automation can include general digital and analog Devices such as analog input/output modules, motion controllers, human-machine interfaces, sensors, closed-loop controllers, encoders, hydraulic valves and programmable controllers.

The relationship between GB/T 21099.3 and other standards and products is shown in Figure 1.

Figure 1 Relationship between GB/T 21099.3 and other standards and products

Equipment and integration in enterprise systems Function blocks (FB) and electronic devices for process control Description Language (EDDL) Part 3: EDDL syntax and semantics

1 Scope

This document describes the Electronic Device Description Language (EDDL) technology that allows tools in the engineering life cycle to be used to complete the Integration of actual product details.

This document specifies EDDL as a general language for describing the properties of automation system components. EDDL can describe the following.

- Equipment parameters and their dependencies.
- Device capabilities, such as simulation mode, calibration.
- Graphical representations, such as menus.
- Interaction with control devices.
- Graphical representation.
- Enhance user interface;
- Drawing system.
- Persistent data storage.

EDDL is used to create electronic device descriptions (EDDs), such as specific devices, generic profiles, or libraries. EDDs are generated using appropriate tools.

It generates interpreted code to support parameter processing, operation and monitoring of automation system components such as remote I/O, controllers, sensors and programmable controllers.

This document specifies the semantic and lexical structure in a grammar-independent