SLOVENSKI STANDARD
oSIST prEN IEC 62769-101-1:2022

01-maj-2022

Integracija procesne naprave (FDI) - 101-1. del: Profili - Osnovno procesno vodilo H1

Field device Integration (FDI) - Part 101-1: Profiles - Foundation Fieldbus H1

Feldgeräteintegration (FDI) - Teil 101-1: Profile - Foundation Fieldbus H1

Intégration des appareils de terrain (FDI) - Partie 101-1: Profils - Foundation Fieldbus H1

Ta slovenski standard je istoveten z: prEN IEC 62769-101-1:2022

ICS:

25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
35.240.50	Uporabniške rešitve IT v industriji	IT applications in industry

oSIST prEN IEC 62769-101-1:2022 en,fr,de

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65E/860/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:
IEC 62769-101-1 ED3

DATE OF CIRCULATION:	CLOSING DATE FOR VOTING:
2022-03-04	**2022-05-27**

SUPERSEDES DOCUMENTS:
65E/827/RR

IEC SC 65E : DEVICES AND INTEGRATION IN ENTERPRISE SYSTEMS	
SECRETARIAT: United States of America	SECRETARY: Mr Donald (Bob) Lattimer
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED:	
☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	
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TITLE:

Field device Integration (FDI) - Part 101-1: Profiles - Foundation Fieldbus H1

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

CONTENTS

82

83

84 INTERNATIONAL ELECTROTECHNICAL COMMISSION

85 _____

86
87 **FIELD DEVICE INTEGRATION (FDI) –**

88
89 **Part 101-1: Profiles – Foundation Fieldbus H1**

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91 FOREWORD

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122 62769-101-1 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of
123 IEC technical committee 65: Industrial-process measurement, control and automation. It is an International
124 Standard.

125 This third edition cancels and replaces the second edition published in 2021. This edition constitutes a
126 technical revision.

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

128 a) updated Transfer service;

129 b) added OPERATION "GETOD" and "GETDEVICETYPEINFO";

130 c) added DeviceTag and Block_Index to FoundationIdentificationT and Target;

131 d) removed arguments "BlockTag" and "ServiceId";

132 e) changed content type of CFF file to application/vnd.ff.cff.

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

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

134

135 Full information on the voting for its approval can be found in the report on voting indicated in the above
136 table.

137 The language used for the development of this International Standard is English.

138 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance
139 with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at
140 www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in
141 greater detail at www.iec.ch/standardsdev/publications.

142 The committee has decided that the contents of this document will remain unchanged until the stability
143 date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific
144 document. At this date, the document will be

145 • reconfirmed,

146 • withdrawn,

147 • replaced by a revised edition, or

148 • amended.

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FIELD DEVICE INTEGRATION (FDI) –

Part 101-1: Profiles – Foundation Fieldbus H1

1 Scope

This part of IEC 62769 specifies an FDI profile of IEC 62769 for IEC 61784-1_CP 1/1 (FOUNDATION™ Fieldbus H1)[1].

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 61158-5-9:2007, *Industrial communication networks - Fieldbus specifications – Part 5-9: Application layer service definition – Type 9 elements*

IEC 61784-1, *Industrial communication networks—Profiles—Part 1: Fieldbus Profiles*

IEC 61784-2, *Industrial communication networks – Profiles – Part 2: Additional fieldbus profiles for real-time networks based on ISO/IEC 8802-3*

IEC 61784-3:2010, *Industrial communication networks – Profiles – Part 3: Functional safety fieldbuses – General rules and profile definitions*

IEC 61804 (all parts), *Function blocks (FB) for process control and Electronic Device Description Language (EDDL)*

IEC 62769-100, *OPC Unified Architecture – Part 100: OPC UA for Devices*

IEC 62769-1, *Field Device Integration (FDI) – Part 1: Overview*

IEC 62769-2, *Field Device Integration (FDI) – Part 2: FDI Client*

IEC 62769-3, *Field Device Integration (FDI) – Part 3: FDI Server*

IEC 62769-4, *Field Device Integration (FDI) – Part 4: FDI Packages*

IEC 62769-5, *Field Device Integration (FDI) – Part 5: FDI Information Model*

IEC 62769-6, *Field Device Integration (FDI) – Part 6: FDI Technology Mapping*

IEC 62769-7, *Field Device Integration (FDI) – Part 7: FDI Communication Devices*

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[1] FOUNDATION™ Fieldbus is the trade name of the non-profit consortium Fieldbus Foundation. This information is given for the convenience of users of this standard and does not constitute an endorsement by IEC of the trademark holder or any of its products. Compliance does not require use of the trade name. Use of the trade name requires permission of the trade name holder.

3 Terms, definitions, abbreviated terms and acronyms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62769-100, IEC 62769-1, IEC 62769-2, IEC 62769-3, IEC 62769-4, IEC 62769-5, IEC 62769-6, IEC 62769-7 and the following apply.

3.2 Abbreviated terms and acronyms

For the purposes of this document, the following abbreviations apply:

CFF	common file format
CP	communication profile (see IEC 61784-1 or IEC 61784-2)
CPF	communication profile family (see IEC 61784-1 or IEC 61784-2)
EDD	Electronic Device Description (see IEC 61804)
EDDL	Electronic Device Description Language (see IEC 61804)
FB	function block
IM	Information Model
SMIB	system management information base
VFD	virtual field device

4 Conventions

4.1 EDDL syntax

This part of IEC 62769 specifies content for the EDD component that is part of an FDI Communication Package. EDDL syntax uses the font Courier New. EDDL syntax is used for method signature, variable, data structure and component declarations.

4.2 XML syntax

XML syntax examples use the font Courier New. The XML syntax is used to describe XML document schema.

Example: <xsd:simpleType name="Example">.

4.3 Capitalizations

The IEC 62769 series uses capitalized terms to emphasize that these terms have an FDI specific meaning.

Some of these terms use an acronym as a prefix for example

- FDI Client, or
- FDI Server.

Some of these terms are compound terms such as:

- Communication Servers, or
- Profile Package.

Parameter names or attributes are concatenated to a single term, where the original terms start in this term with a capital letter such as:

207 • ProtocolSupportFile, or

208 • ProtocolType.

209 Parameter names or attributes can also be constructed by using an underscore character to concatenate
210 two or more terms such as:

211 • PROFILE_ID, or

212 • Profibus_PA_Network.

213 5 Profile for CP 1/1 (FOUNDATION™ H1)

214 5.1 General

215 This profile specifies the protocol specifics needed for FDI Packages describing communication servers,
216 gateways and devices.

217 5.2 Catalog profile

218 5.2.1 Protocol support file

219 5.2.1.1 Capability file

220 Each CP 1/1 FDI Device Package shall contain a capability file. The capability file part is described in
221 Table 1.

222 **Table 1 – Capability File part**

Parameter	Description
Content Type:	application/vnd.ff.cff
Root Namespace:	Not applicable
Source Relationship:	http://fdi-cooperation.com/2010/relationships/attachment-protocol
Filename:	Use file extension .CFF

223 5.2.2 CommunicationProfile definition

224 IEC 62769-4 defines a CommunicationProfileT string type for the Catalog XML schema. Table 2 defines
225 the CP 1/1 specific values for this string.

226 **Table 2 – CommunicationProfile definition**

CommunicationProfile	Description
foundation_h1	CP 1/1 device type with a function block application

227

228 5.2.3 Profile device

229 Not supported in this standard.

230 5.2.4 Protocol version information

231 IEC 62769-4 defines an element type named InterfaceT for the Catalog XML Schema. Element type
232 InterfaceT contains an element named Version which is supposed to provide version information about
233 the applied communication protocol profile. The value follows the IEC 62769-4 defined version information
234 schema defined in element type VersionT.

235 The major version part of VersionT shall be set to the ITK_VER parameter. The minor and builds parts
236 shall be set to 0.

237　EXAMPLE　For ITK_VER 5, the value for InterfaceT is 5.0.0.

5.3　Associating a Package with a CP 1/1 device

1.1.1　Device type identification mapping

240　CP 1/1 device types are uniquely identified by the parameters MANUFAC_ID, DEVICE_TYPE and
241　DEV_REV found in the Resource Block. These parameters are used to associate a given device instance
242　to an FDI Device Package. These parameters are mapped to the FDI Device Package Catalog according
243　to Table 3.

Table 3 – Device type catalog mapping

Catalog Element	CP Mapping
Manufacturer element of InterfaceT (IEC 62769-4)	MANUFAC_ID String format "0xdddd" where dddd is the MANUFAC_ID number in hexadecimal format.
DeviceModel element of InterfaceT (IEC 62769-4)	DEVICE_TYPE String format "0xdddd" where dddd is the DEVICE_TYPE number in hexadecimal format.
DeviceRevision element ListOfSupportedDeviceRevisionsT (IEC 62769-4)	DEV_REV String format "x.0.0" where x is the DEV_REV in decimal format (no leading zeros).

5.3.1　Device type revision mapping

246　Each device type is identified according to 1.1.1. A device may also include a parameter
247　COMPATIBILITY_REV from the Resource Block. This parameter specifies the lowest device version
248　(DEV_REV) that a new device can replace while maintaining compatibility with a prior FDI Device Package.

5.4　Information Model mapping

1.1.1　ProtocolType definition

251　Table 4 defines the ProtocolType used to identify CP 1/1 network communications.

Table 4 – ProtocolType Foundation_H1 definition

Attribute	Value				
BrowseName	Foundation_H1				
IsAbstract	False				
References	NodeClass	BrowseName	DataType	TypeDefinition	ModellingRule
Inherits the properties of ProtocolType defined in IEC 62541-100.					

5.4.1　DeviceType mapping

255　Each device type inherits the properties of the DeviceType. The mapping of the inherited properties from
256　the DeviceType is defined in Table 5.

Table 5 – Inherited DeviceType Property mapping

Property	CP Mapping
SerialNumber	DEV_ID (System Management Information Base)
RevisionCounter	-1 (not defined)
Manufacturer	String obtained from FDI package catalog (ManufacturerName from PackageT)