



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 62769-103-4:2018**  
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**Vključitev procesne naprave (FDI) - 103-4. del: Profili - PROFINET**

Field Device Integration (FDI) - Part 103-4: Profiles - PROFINET

Feldgeräteintegration (FDI) - Teil 103-4: Profile - PROFINET

Intégration des appareils de terrain (FDI) - Partie 103-4: Profils - PROFINET

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# 65E/623/CDV

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TITLE:

**Field Device Integration (FDI) - Part 103-4: Profiles - PROFINET**

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## FIELD DEVICE INTEGRATION (FDI) –

## Part 103-4: Profiles – PROFINET

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International Standard IEC 62769-103-4 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 2015. This edition constitutes a technical revision.

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

- a) support for generic protocol extension for faster adoption of other technologies;
- b) support for Package Developers to build EDDs targeted for today's EDD bases system under a single development tool;

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

FDIS	Report on voting
65E/XX/FDIS	65E/XX/RVD

51

52 Full information on the voting for the approval of this International Standard can be found in the  
53 report on voting indicated in the above table.

54 This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

- 58 • reconfirmed,
- 59 • withdrawn,
- 60 • replaced by a revised edition, or
- 61 • amended.

62

63 The National Committees are requested to note that for this document the stability date  
64 is 2023.

65 THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED  
66 AT THE PUBLICATION STAGE.

67

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## FIELD DEVICE INTEGRATION (FDI) –

### Part 103-1: Profiles – PROFINET

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72

#### 73 1 Scope

74 This part of IEC 62769 specifies an FDI profile of IEC 62769 for IEC 61784-2\_CP 3/4,  
75 IEC 61784-2\_CP3/5 and IEC 61784-2\_CP3/6 (PROFINET<sup>1</sup>).

#### 76 2 Normative references

77 The following documents are referred to in the text in such a way that some or all of their content  
78 constitutes requirements of this document. For dated references, only the edition cited applies.  
79 For undated references, the latest edition of the referenced document (including any  
80 amendments) applies.

81 IEC 61158-5-10, *Industrial communication networks – Fieldbus specifications – Part 5-10:*  
82 *Application layer service definition – Type 10 elements*

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

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

87 IEC 62541-100:–, *OPC Unified Architecture – Part 100: OPC UA for Devices*

88 IEC **Error! Unknown document property name.-2**, *Field Device Integration (FDI) – Part 2: FDI*  
89 *Client*

90 IEC **Error! Unknown document property name.-4**, *Field Device Integration (FDI) – Part 4: FDI*  
91 *Packages*

92 IEC **Error! Unknown document property name.-5**, *Field Device Integration (FDI) – Part 5: FDI*  
93 *Information Model*

94 IEC **Error! Unknown document property name.-6**, *Field Device Integration (FDI) – Part 6: FDI*  
95 *Technology Mapping*

96 IEC **Error! Unknown document property name.-7**, *Field Device Integration (FDI) – Part 7: FDI*  
97 *Communication Devices*

98 PI Order No.: 2.122:2008, *Specification for PROFIBUS – Device Description and Device*  
99 *Integration – Volume 1: GSD, V5.1, July 2008: GSD; available at <www.PROFIBUS.com>*

100 PI Order No.: 2.352:2014, *GSDML Specification for PROFINET IO; available at*  
101 *<www.PROFIBUS.com>*

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<sup>1</sup> PROFINET is the trade name of the non-profit consortium PROFIBUS & PROFINET International. This information is given for the convenience of users of this technical report 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.

### 102 3 Terms, definitions, abbreviated terms and conventions

#### 103 3.1 Terms and definitions

104 For the purposes of this document, the terms and definitions given in IEC 61158-5-10, IEC  
105 61784-2, IEC 61804 series, IEC 62541-100, IEC 62769-2, IEC 62769-4, IEC 62769-5,  
106 IEC 62769-6, IEC 62769-7 and PI Order No.: 2.352:2014 apply.

#### 107 3.2 Abbreviated terms

108 For the purposes of this document, the following abbreviated terms and acronyms apply:

DCP	Discovery and basic configuration protocol (according to IEC 61158-5-10)
DNS	Domain name system
EDD	Electronic Device Description
EDDL	Electronic Device Description Language (see IEC 61804)
GSD	General station description (see PI Order No.: 2.122:2008)
GSDML	GSD markup language (see PI Order No.: 2.352:2014)
IP	Internet protocol (RFC 791)
UIP	User Interface plug-in
UUID	Universal unique identifier (see ISO/IEC 11578)
XML	Extensible markup language (see REC-xml-20081126)

#### 109 3.3 Conventions

##### 110 3.3.1 EDDL syntax

111 This part of IEC 62769 specifies content for the EDD component that is part of FDI  
112 Communication Packages. The specification content using EDDL syntax uses the font *Courier*  
113 *New*. The EDDL syntax is used for method signature, variable, data structure and component  
114 declarations.

##### 115 3.3.2 XML syntax

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

118 Example: `<xs:simpleType name="ExampleType">`

##### 119 3.3.3 Capitalizations

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

122 Some of these terms using an acronym as a prefix for example

- 123 • FDI Client, or
- 124 • FDI Server.

125 Some of these terms are compound terms such as:

- 126 • Communication Servers, or

- 127 • Profile for Package.

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

- 130 • ProtocolSupportFile, or  
131 • ProtocolType.

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

- 134 • PROFILE\_ID, or  
135 • Profinet\_PA\_Network

## 136 4 Profile for PROFINET

### 137 4.1 General

138 This profile document to the FDI specification in IEC 62769 specifies the protocol specifics  
139 needed for FDI Packages describing Communication Servers, Gateways and Devices.

140 For Communication Servers this document defines also protocol specifics as these need to be  
141 considered in the Communication Servers hosted Information Model.

### 142 4.2 Catalog profile

#### 143 4.2.1 Protocol support file

##### 144 4.2.1.1 FDI Device Package

145 A GSD file is a mandatory Attachment for FDI Device Packages representing PROFINET IO  
146 devices.

147 Protocol specific attachments are mentioned in the Package Catalog as defined in  
148 IEC **Error! Unknown document property name.-5**. A communication feature list mark-up  
149 language (GSDML) file according to PI Order No.: 2.352:2014 is a mandatory attachment for FDI  
150 Device Packages representing PROFINET devices. Table 1 specifies the parameters of  
151 ProtocolSupportFile in the FDI Device Package.

152 **Table 1 – ProtocolSupportFile for FDI Device Packages**

Parameter	Description
Content Type	text/xml
Root Namespace	Empty
Source Relationship	http://fdi-cooperation.com/2010/relationship/attachment-protocol
Filename	According to PI Order No.: 2.352:2014.

153

##### 154 4.2.1.2 FDI Communication Package

155 A GSDML file as specified in ISO 15745 4:2003, Amd1, is an optional attachment for FDI  
156 Communication Packages representing PROFINET IO devices. Table 2 specifies the parameters  
157 of ProtocolSupportFile for FDI Communication Packages.

158

**Table 2 – ProtocolSupportFile for FDI Communication Packages**

Parameter	Description
Content Type	text/xml
Root Namespace	Empty
Source Relationship	http://fdi-cooperation.com/2010/relationship/attachment-protocol
Filename	According to PI Order No.: 2.352:2014

159

#### 160 4.2.2 CommunicationProfile definition

161 IEC **Error! Unknown document property name.-4** defines a CommunicationProfileT string for  
 162 the Catalog XML schema. The PROFINET specific value shall be "profinet\_io".

#### 163 4.2.3 Profile device

164 A Profile Package shall provide the catalog values for profile devices, enabling the FDI Server to  
 165 leverage a generic device description, if a specific one is not available. The definitions in Table 3  
 166 focus on catalog content that is vendor independent.

167

**Table 3 – Catalog values for profile devices**

Element	Attribute	Content
PackageType	—	Profile
Manufacturer	—	Empty
DeviceModel	—	<p>Allowed profile identifier values (PROFILE_ID) are provided by PROFIBUS &amp; PROFINET International (PI). PI provides and maintains a XML file (Profile_ID_Table) containing the assignment of PROFILE_ID to profiles.</p> <p>It is available at &lt;http://www.profibus.com/IM/Profile_ID_Table.xml&gt;</p> <p>The file can be downloaded by any engineering or service tool whenever it's connected to the Internet.</p> <p>NOTE More information is provided in PI Order No.: 3.502 (I&amp;M Profile) and related profile definitions referred therein.</p> <p>The string format shall be hexadecimal starting with 0x, e.g. '0x3D00'.</p>

168

#### 169 4.2.4 Protocol version information

170 IEC **Error! Unknown document property name.-4** defines an element type named InterfaceT  
 171 for the Catalog XML schema. The element type InterfaceT contains an element named Version  
 172 which is supposed to provide version information about the applied communication protocol  
 173 profile. The value has to follow the IEC **Error! Unknown document property name.-4** defined  
 174 version information schema defined in the element type VersionT. Table 4 describes how to apply  
 175 the currently known protocol versions defined by the non-profit consortium PROFIBUS & PROFINET  
 176 International. The general rule is to apply the value "0" for parts of the version information according to  
 177 IEC **Error! Unknown document property name.-4** that are not used in currently known protocol  
 178 versions.

179

**Table 4 – Version mapping examples**

Protocol / Version	InterfaceT Version value
PROFINET Version 2.3	2.3.0
NOTE 1 This Table is just an example since this document cannot foresee how future protocol versions will be defined.	