



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 62769-151-1:2022**  
**01-maj-2022**

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**Integracija procesne naprave (FDI) - 151-1. del: Profili - OPC UA**

Field device integration (FDI) - Part 151-1: Profiles - OPC UA

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PREVIEW**

Ta slovenski standard je istoveten z: **prEN IEC 62769-151-1:2022**  
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**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 62769-151-1:2022**      **en,fr,de**

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# 65E/853/CDV

## COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER:

**IEC 62769-151-1 ED1**

DATE OF CIRCULATION:

**2022-03-04**

CLOSING DATE FOR VOTING:

**2022-05-27**

SUPERSEDES DOCUMENTS:

**65E/793/NP, 65E/838A/RVN**

IEC SC 65E : DEVICES AND INTEGRATION IN ENTERPRISE SYSTEMS	
SECRETARIAT: United States of America	SECRETARY: Mr Donald (Bob) Lattimer
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TITLE:

**Field device integration (FDI) - Part 150-1: Profiles - OPC UA**

PROPOSED STABILITY DATE: 2025

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## FIELD DEVICE INTEGRATION (FDI) –

## Part 151-1: Profiles – OPC UA

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IEC 62769-151-1 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation. It is an International Standard.

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

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

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

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

89 This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance  
90 with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at  
91 [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in  
92 greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

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

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- 97 • withdrawn,
- 98 • replaced by a revised edition, or
- 99 • amended.

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# FIELD DEVICE INTEGRATION (FDI) –

## Part 151-1: Profiles – OPC UA

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### 107 **1 Scope**

108 This document defines the protocol-specific definitions (PSDs) as defined in IEC 62769-7 (annex on  
109 generic protocol extensions) for the OPC UA protocol.

### 110 **2 Normative References**

111 The following documents, in whole or in part, are normatively referenced in this document and are  
112 indispensable for its application. For dated references, only the edition cited applies. For undated  
113 references, the latest edition of the referenced document (including any amendments) applies.

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

116 IEC 62541-4:2020, *OPC Unified Architecture – Part 4: Services*

117 IEC 62541-6:2020, *OPC Unified Architecture – Part 6: Mappings*

118 IEC 62541-12:2020, *OPC Unified Architecture – Part 12: Discovery and Global Services*

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

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

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

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

123 IEC 62769-100:2021, *Field Device Integration (FDI) – Part 100: Profiles – Generic Protocols*

124 Status Codes, <http://www.opcfoundation.org/UA/schemas/1.04/StatusCode.csv>

### 125 **3 Terms, definitions, abbreviated terms and Acronyms**

#### 126 **3.1 Terms and definitions**

127 For the purposes of this document, the terms and definitions are given in IEC 61784-1, IEC 61804 (all  
128 parts), IEC 62541-100, IEC 62769-4, IEC 62541-4, IEC 62769-5, and IEC 62769-7 apply.

#### 129 **3.2 Abbreviations**

130 For the purposes of this specification, the following abbreviations apply.

131 EDD Electronic Device Description

132 EDDL Electronic Device Description Language (see IEC 61804 (all parts))

133 FDI Field Device Integration



134	FCG	FieldComm Group
135	XML	Extensible markup language (see REC-xml-20081126)
136	OPC UA	Open Platform Communications Unified Architecture
137	GDS	Global Discovery Server
138	LDS	Local Discovery Server
139	LDS-ME	Local Discovery Server – Multicast Extensions

140

## 141 4 Conventions

### 142 4.1 EDDL syntax

143 This part of IEC 62769 specifies content for the EDD component that is part of FDI Communication  
 144 Packages. The specification content using EDDL syntax uses the font `Courier New`. The EDDL syntax  
 145 is used for method signature, variable, data structure and component declarations.

### 146 4.2 Capitalizations

147 The IEC 62769 series use capitalized terms to emphasize that these terms have a FDI specific meaning.

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

- 149 • FDI Client, or
- 150 • FDI Server.

151 Some of these terms are compound terms such as:

- 152 • Communication Servers, or
- 153 • Profile Package.

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

- 156 • ProtocolSupportFile or
- 157 • ProtocolType.

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

- 160 • DEVICE\_REV or
- 161 • DEVICE\_MODEL

## 162 5 PSDs for OPC UA

### 163 5.1 General

164 The next sections define the protocol-specific definitions for OPC UA to be used to develop the  
 165 communication server which defines header syntax, Topology Scan result mapping, error coding mapping  
 166 etc.

167 **5.2 Header**

168 The HEADER string is composed of Service Code, NodeId, NodePath, AttributeId, and IndexRange.

169 **Syntax:-** "SERVICE\_CODE=\<code>" NODEID=\<NodeID>" NODEPATH=\<NodePath>"  
170 ATTRIBUTE=\<AttributeId>" INDEXRANGE=\<IndexRange>"<sup>1</sup>171 **5.2.1 Service Code –**

172 Table 1 defines the supported services.

173 **Table 1 - Service Codes**

Service Code	Description
Read	Service is to perform to read the parameter value from the OPC UA device.
Write	Service is to perform to write the parameter value to the OPC UA device.
MethodCall	Service is to perform the simple Method execution supports in OPC UA device that can be invoked. A simple method is a method that doesn't have any input or output parameters. [Ex:- LoadDefaultConfiguration()]

174

175 **5.2.2 NodeId**176 NodeId is the String representation of the target NodeId for the service. If NODEPATH is specified, the  
177 NodeId of the starting node of the NodePath is specified. If NODEPATH is not specified or null, the NodeId  
178 of the target node is specified.179 **Syntax:-** ns=<Name Space Index>;<NodeId Type>=<Id>  
180 *NameSpace Index* : Name Space Index number. For zero, ns=0 is not required.

181

182 *NodeId Type* :

183 i UInteger

184 s String

185 g GUID

186 b ByteString

187

188 *Id* : Identifier

189 Examples:

190 ns=2;s=Temperature

191 i=2045

192 ns=1;g=09087e75-8e5e-499b-954f-f2a9603db28a

193 ns=1;b=M/RbKBsRVkePCePcx24oRA=='

194 **5.2.3 NodePath**

195 Nodepath is the relative path of the node starting from the specified NodeId

---

<sup>1</sup> NOTE that \ is used as escape character allowing " in the HEADER string.

196 The text format for the NodePath is as defined in IEC 62541-4:2020, Annex A.2]

197  
198

#### Examples:

Browse Path	Description
"/2:Block&.Output"	Follows any forward hierarchical <i>Reference</i> with target <i>BrowseName</i> = "2:Block.Output".
"/3:Truck.0:NodeVersion"	Follows any forward hierarchical <i>Reference</i> with target <i>BrowseName</i> = "3:Truck" and from there a forward <i>Aggregates Reference</i> to a target with <i>BrowseName</i> "0:NodeVersion".
"<1:ConnectedTo>1:Boiler/1:HeatSensor"	Follows any forward <i>Reference</i> with a <i>BrowseName</i> = '1:ConnectedTo' and finds targets with <i>BrowseName</i> = '1:Boiler'. From there follows any hierarchical <i>Reference</i> and find targets with <i>BrowseName</i> = '1:HeatSensor'.
"<1:ConnectedTo>1:Boiler/"	Follows any forward <i>Reference</i> with a <i>BrowseName</i> = '1:ConnectedTo' and finds targets with <i>BrowseName</i> = '1:Boiler'. From there it finds all targets of hierarchical <i>References</i> .
"<0:HasChild>2:Wheel"	Follows any forward <i>Reference</i> with a <i>BrowseName</i> = 'HasChild' and qualified with the default OPC UA namespace. Then find targets with <i>BrowseName</i> = 'Wheel' qualified with namespace index '2'.
"<!HasChild>Truck"	Follows any inverse <i>Reference</i> with a <i>BrowseName</i> = 'HasChild'. Then find targets with <i>BrowseName</i> = 'Truck'. In both cases, the namespace component of the <i>BrowseName</i> is assumed to be 0.
"<0:HasChild>"	Finds all targets of forward <i>References</i> with a <i>BrowseName</i> = 'HasChild' and qualified with the default OPC UA namespace.

199

#### 200 5.2.4 AttributeId

201 AttributeId is the Id of the attribute as defined in IEC 62541-6:2020, Annex A.1] If ATTRIBUTE is not  
202 specified, AttributeId(Value) 13 is assumed.

#### 203 5.2.5 IndexRange

204 IndexRange is the NumericRange as defined in IEC 62541-4:2020, Clause 7.22. This parameter is used  
205 to identify a single element of an array, or a single range of indexes for arrays. If ATTRIBUTE is an array,  
206 and INDEXRANGE is specified, the specific element of the array is addressed. If ATTRIBUTE is an array  
207 and INDEXRANGE is not specified, all the element of the array are addressed.

208 Table 2 specifies the common OPC UA SERVICE\_CODE values, the usage of the attributes, and the used  
209 EDD COMMAND OPERATION.