

SLOVENSKI STANDARD SIST EN 62769-7:2015

01-november-2015

Naprave in združevanje v proizvodne sisteme - Vključitev procesne naprave (FDI) - 7. del: Komunikacijske naprave (IEC 62769-7:2015)

Devices and integration in enterprise systems; Field Device Integration - Part 7: Communication Devices (IEC 62769-7:2015)

Feldgeräteintegration (FDI) - Teil 7: Kommunikationsgeräte (IEC 62769-7:2015)

iTeh STANDARD PREVIEW

Intégration des appareils de terrain (FDI) a Partie 7: Appareils de communication FDI (IEC 62769-7:2015)

SIST EN 62769-7:2015

Ta slovenski standard je istoveten z: EN 62769-7:2015

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

SIST EN 62769-7:2015 en,fr,de

SIST EN 62769-7:2015

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 62769-7:2015

https://standards.iteh.ai/catalog/standards/sist/7337f7c0-7bfe-4eae-bdd1-27cac85edac4/sist-en-62769-7-2015

EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM EN 62769-7

June 2015

ICS 25.040.40; 35.100

English Version

Field Device Integration (FDI) - Part 7: FDI Communication Devices (IEC 62769-7:2015)

Intégration des appareils de terrain (FDI) - Partie 7: Appareils de communication FDI (IEC 62769-7:2015)

en SIA

Feldgeräteintegration (FDI) - Teil 7: Kommunikationsgeräte (IEC 62769-7:2015)

This European Standard was approved by CENELEC on 2015-06-16. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization Comité Européen de Normalisation Electrotechnique Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

EN 62769-7:2015

European foreword

The text of document 65E/350/CDV, future edition 1 of IEC 62769-7, prepared by SC 65E "Devices and integration in enterprise systems" of IEC/TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62769-7:2015.

The following dates are fixed:

standards conflicting with the document have to be withdrawn

•	latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2016-03-16
•	latest date by which the national	(dow)	2018-06-16

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62769-7:2015 was approved by CENELEC as a European Standard without any modification.

iTeh STANDARD PREVIEW (standards.iteh.ai)

<u>SIST EN 62769-7:2015</u> https://standards.iteh.ai/catalog/standards/sist/7337f7c0-7bfe-4eae-bdd1-27cac85edac4/sist-en-62769-7-2015

Annex ZA

(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	EN/HD	<u>Year</u>
IEC 61804-3	-	Function Blocks (FB) for process control Part 3: Electronic Device Description	EN 61804-3	-
		Language (EDDL)		
IEC 61804-4	-	Function blocks (FB) for process control	-	-
		Part 4: EDD interpretation		
IEC 62541-4	-	OPC Unified Architecture - Part 4: Services	EN 62541-4	-
IEC 62541-6	-	OPC unified architecture - Part 6:	EN 62541-6	-
IEC 62541-7	iT	Mappings OPC unified architecture - Part 7: Profiles	EN 62541-7	_
IEC 62541	series	OPC Unified Architecture	EN 62541	series
IEC 62541-100	-	OPC unified architecture - Part 100: Device	EN 62541-100	-
		Interface		
IEC 62769-1	-	Devices and integration in enterprise	-	-
	https://st	systems; Field Device Integration 7 Part 1.4	eae-bdd1-	
		Overviewac85edac4/sist-en-62769-7-2015		
IEC 62769-2	-	Devices and integration in enterprise	-	-
		systems; Field Device Integration - Part 2: FDI Client		
IEC 62769-3	_	Devices and integration in enterprise	_	_
120 027 03-3		systems; Field Device Integration - Part 3:		
		FDI Server		
IEC 62769-4	2015	Devices and integration in enterprise	-	-
		systems; Field Device Integration - Part 4:		
		FDI Packages		
IEC 62769-5	-	Devices and integration in enterprise	-	-
		systems; Field Device Integration - Part 5:		
		FDI Information Model		
IEC/TR 62541-1	-	OPC unified architecture - Part 1: Overview	CLC/TR 62541-1	-
		and concepts		

SIST EN 62769-7:2015

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 62769-7:2015

https://standards.iteh.ai/catalog/standards/sist/7337f7c0-7bfe-4eae-bdd1-27cac85edac4/sist-en-62769-7-2015



IEC 62769-7

Edition 1.0 2015-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE



Field Device Integration (EDI) AND ARD PREVIEW Part 7: FDI Communication Devices ards.iteh.ai)

Intégration des appareils de terrain (FDI) 5-7:2015

Partie 7: Appareils de communication FDI/sist/7337f7c0-7bfe-4eae-bdd1-27cac85edac4/sist-en-62769-7-2015

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

ICS 25.040.40; 35.100 ISBN 978-2-8322-2641-4

Warning! Make sure that you obtained this publication from an authorized distributor.

Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

CONTENTS

F	DREWO	RD	6
IN	TRODU	CTION	8
1	Scop	e	9
2	Norm	ative references	9
3	Term	s, definitions, abbreviated terms, acronyms and conventions	10
	3.1	Terms and definitions	10
	3.2	Abbreviated terms and acronyms	
	3.3	Conventions for graphical notation	
4	Gene	ral	11
5	FDI C	Communication Package	13
	5.1	General	13
	5.2	EDD	13
	5.2.1	General rules	13
	5.2.2	Device component	14
	5.2.3	CommunicationDevice component	15
	5.2.4	Communication service provider component	16
	5.2.5	Connection Point component	17
	5.2.6		
	5.2.7	Network componént and ards.iteh.ai) ValidateNetwork	18
	5.2.8		
	5.2.9	ValidateModules <u>SIST EN 62769-72015</u>	
	5.2.1	- Interpolation and South and Control of the Contro	
	5.2.1	-17	
6		munication relations	
7	FDI C	Communication Server definition	
	7.1	General	
	7.2	General characteristics	
	7.3	Information Model	
	7.3.1	General	
	7.3.2	CommunicationServerType	
	7.3.3	ServerCommunicationDeviceType	
	7.3.4	ServerCommunicationServiceType	
	7.4	OPC UA Server Profile for FDI Communication Server	
	7.5	Mapping the FDI Server IM to the FDI Communication Server IM	
	7.5.1 7.5.2	General Information Model differences	
	7.5.2	Installer	
	7.0 7.7	FDI Communication Package	
	7.7.1	General	
	7.7.2	EDD for Lightweight Communication Server	
	7.7.3	EDD for Multi-Channel Communication Server	
	7.7.4	Documentation	
	7.8	Handling and behavior	
	7.8.1	General	
	7.8.2	Deployment	

	7.8.3	Server configuration	41
	7.8.4	Start up	42
	7.8.5	Shutdown	42
	7.8.6	Watchdog	42
	7.8.7	Establish the OPC UA connection	42
	7.8.8	Instantiate the Communication Server	43
	7.8.9	Configure the communication hardware	43
	7.8.10	Configure the Network	43
	7.8.11	Parameterize	43
	7.8.12	Initialize	43
	7.8.13	Create the communication service object	43
	7.8.14	Communication relation	44
	7.8.15	Connect	44
	7.8.16	Disconnect	45
	7.8.17	Abort indication	
	7.8.18	Scan	45
	7.8.19	SetAddress	
8	FDI Com	ımunication Gateway definition	
		neral	
	8.2.1	ormation Model General Teh STANDARD PREVIEW	45
	8.2.2		
	8.2.3	CommunicationGatewayType CommunicationDeviceType GatewayCommunicationDeviceType	47
	8.2.4		
		GatewayCommunicationServiceType I CommunicationPackagealog/standards/sist/7337f7e0-7bfe-4eae-bdd1	54
	8.3.1	General27cac85edac4/sist-en-62769-7-2015	
	8.3.2	EDD	
		ndling and behavior	
	8.4.1	General	
	8.4.2	Deployment	
	8.4.3	Start up	
	8.4.4	Configure the communication hardware	
	8.4.5	Configure the Network	
	8.4.6	Parameterize	
	8.4.7	Communication relation	
	8.4.8	Connect	
	8.4.9	Disconnect	
	8.4.10	Abort indication	
	8.4.11	Scan	
	8.4.12	Communication Error Handling	
Δι		ormative) Layered protocols	
,		neral	
		nvention for protocol specific annex creation	
	A.2.1	Connection Point	
		I Communication Package definition	
	A.3.1	Connection Roint	
	A.3.2	Connection Point	
	A.3.3	Networkpresentation in the IM	
	A.4 KE	DIESENIAUON III INE NV	

_ 4 _	4 _	_	
-------	-----	---	--

Annex B (normative) Namespace and Mappings	62
Bibliography	63
Figure 4. EDI exphite sture diagram	0
Figure 1 – FDI architecture diagram	
Figure 2 – FDI communication infrastructure architecture	
Figure 3 – Communication relation	
Figure 4 – Communication relation state chart	
Figure 5 – FDI Communication Server AddressSpace	
Figure 6 – CommunicationServerType	
Figure 7 – ServerCommunicationDeviceType	
Figure 8 – ServerCommunicationServiceType	
Figure 9 – Information Model differences (example)	
Figure 10 – FDI Communication Server state machine	
Figure 11 – Communication relation state chart	
Figure 12 – Gateway information model	46
Figure 13 – CommunicationGatewayType	47
Figure 14 – GatewayCommunicationDeviceType	48
Figure 15 – GatewayCommunicationServiceType Figure 16 – Nested Communication Figure 16 – Nested Communication	51
	56
(standards.iteh.ai)	
Table 1 – ValidateNetwork Action arguments	20
Table 2 – ValidateModules Action arguments https://standards.iteh.arcatalog/standards/sist/7337f/c0-7bfe-4eae-bdd1-	20
Table 3 – CommunicationServerType definition on 62769-7-2015	25
Table 4 – MethodSet of CommunicationServerType	25
Table 5 – Reset Method arguments	26
Table 6 – Reset Method AddressSpace definition	26
Table 7 – Initialize Method arguments	27
Table 8 – Initialize Method AddressSpace definition	27
Table 9 – AddComponent Method arguments	28
Table 10 – AddComponent Method AddressSpace definition	28
Table 11 – RemoveComponent Method arguments	29
Table 12 – RemoveComponent Method AddressSpace definition	
Table 13 – ServerCommunicationDeviceType definition	
Table 14– MethodSet of ServerCommunicationDeviceType	
Table 15 – Scan Method arguments	
Table 16 – Scan Method AddressSpace definition	
Table 17 – ResetScan Method arguments	
Table 18 – ResetScan Method AddressSpace definition	
Table 19 – SetAddress Method arguments	
Table 20 – ServerCommunicationServiceType definition	
Table 21 – MethodSet of ServerCommunicationServiceType	
Table 22 – Connect Method arguments	
Table 23 – Disconnect Method arguments	
. as.a =	

Table 24 – Transfer Method arguments	36
Table 25 – GetPublishedData Method arguments	37
Table 26 – FDICommunicationServer_Facet definition	37
Table 27 – CommunicationGatewayType definition	47
Table 28 – GatewayCommunicationDeviceType definition	48
Table 29– MethodSet of GatewayCommunicationDeviceType	48
Table 30 – Scan Method arguments	49
Table 31 – Scan Method AddressSpace definition	49
Table 32 – ScanNext Method arguments	50
Table 33 – ScanNext Method AddressSpace definition	50
Table 34 – GatewayCommunicationServiceType definition	51
Table 35 – MethodSet of GatewayCommunicationServiceType	52
Table 36 – Connect Method arguments	53
Table 37 – Transfer Method arguments	54

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 62769-7:2015

https://standards.iteh.ai/catalog/standards/sist/7337f7c0-7bfe-4eae-bdd1-27cac85edac4/sist-en-62769-7-2015

- 6 **-**

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIELD DEVICE INTEGRATION (FDI) -

Part 7: FDI Communication Devices

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, EC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent-certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

International Standard IEC 62769-7 has been prepared by subcommittee 65E: Devices and integration in enterprise systems, of IEC technical committee 65: Industrial-process measurement, control and automation.

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

CDV	Report on voting
65E/350/CDV	65E/420/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 the ISO/IEC Directives, Part 2.

A list of all parts in the 62769 series, published under the general title *Field Device Integration* (*FDI*), can be found on the IEC website.

IEC 62769-7:2015 © IEC 2015

-7-

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

IMPORTANT – The 'colour 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.

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 62769-7:2015 https://standards.iteh.ai/catalog/standards/sist/7337f7c0-7bfe-4eae-bdd1-27cac85edac4/sist-en-62769-7-2015

IEC 62769-7:2015 © IEC 2015

INTRODUCTION

-8-

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of patents concerning

- a) Method for the Supplying and Installation of Device-Specific Functionalities, see Patent Family DE10357276;
- b) Method and device for accessing a functional module of automation system, see Patent Family EP2182418;
- c) Methods and apparatus to reduce memory requirements for process control system software applications, see Patent Family US2013232186;
- d) Extensible Device Object Model, see Patent Family US12/893,680.

IEC takes no position concerning the evidence, validity and scope of this patent right.

The holders of these patent rights have assured the IEC that he/she is willing to negotiate licences either free of charge or under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holder of this patent right is registered with IEC. Information may be obtained from:

a) ABB Research Ltd Claes Rytoft Affolterstrasse 4 Zurich, 8050

Switzerland

iTeh STANDARD PREVIEW

- b) Phoenix Contact GmbH & Coxindards.iteh.ai)
 Intellectual Property, Licenses & Standards
 Flachsmarktstrasse 8, 32825 Blomberg 62769-7:2015
 Germany
 https://standards.iteh.ai/catalog/standards/sist/7337f7c0-7bfe-4eae-bdd1-
- c) Fisher Controls International 11.Ce85edac4/sist-en-62769-7-2015
 John Dilger, Emerson Process Management LLLP
 301 S. 1st Avenue, Marshaltown, Iowa 50158
 USA
- d) Rockwell Automation Technologies, Inc.
 1 Allen-Bradley Drive
 Mayfield Heights, Ohio 44124
 USA

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights other than those identified above. IEC shall not be held responsible for identifying any or all such patent rights.

ISO (www.iso.org/patents) and IEC (http://patents.iec.ch) maintain on-line data bases of patents relevant to their standards. Users are encouraged to consult the data bases for the most up to date information concerning patents.

FIELD DEVICE INTEGRATION (FDI) -

Part 7: FDI Communication Devices

1 Scope

This part of IEC 62769 specifies the elements implementing communication capabilities called Communication Devices (IEC 62769-5).

The overall FDI architecture is illustrated in Figure 1. The architectural components that are within the scope of this document have been highlighted in this illustration. The document scope with respect to FDI Packages is limited to Communication Devices. The Communication Server shown in Figure 1 is an example of a specific Communication Device.

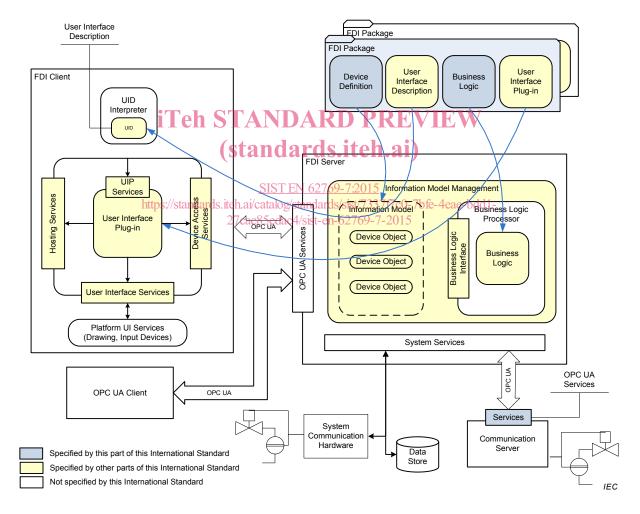


Figure 1 - FDI architecture diagram

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.