



# SLOVENSKI STANDARD SIST EN IEC 62769-3:2021

01-julij-2021

Nadomešča:  
SIST EN 62769-3:2015

---

## Integracija procesne naprave (FDI) - 3. del: Strežnik FDI (IEC 62769-3:2021)

Field Device Integration (FDI) - Part 3: FDI Server (IEC 62769-3:2021)

Feldgeräteintegration (FDI) - Teil 3: FDI-Server (IEC 62769-3:2021)

Intégration des appareils de terrain (FDI) - Partie 3: Serveur FDI (IEC 62769-3:2021)

**STANDARD PREVIEW**  
**(standards.iteh.ai)**

Ta slovenski standard je istoveten z: **EN IEC 62769-3:2021**

<https://standards.iteh.ai/catalog/standards/sist/77118ef1-9a0b-4c76-a9e3-bada64961027/sist-en-iec-62769-3-2021>

---

### 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 IEC 62769-3:2021**

**en,fr,de**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN IEC 62769-3:2021](#)

<https://standards.iteh.ai/catalog/standards/sist/77118ef1-9a0b-4c76-a9e3-badab4961027/sist-en-iec-62769-3-2021>

EUROPEAN STANDARD

EN IEC 62769-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2021

ICS 25.040.40; 35.100.05

Supersedes EN 62769-3:2015 and all of its amendments  
and corrigenda (if any)

English Version

**Field Device Integration (FDI) - Part 3: Server  
(IEC 62769-3:2021)**Intégration des appareils de terrain (FDI) - Partie 3: Serveur  
(IEC 62769-3:2021)Feldgeräteintegration (FDI) - Teil 3: FDI-Server  
(IEC 62769-3:2021)

This European Standard was approved by CENELEC on 2021-03-12. 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.

(standards.iteh.ai)

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, 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: Rue de la Science 23, B-1040 Brussels

**EN IEC 62769-3:2021 (E)****European foreword**

The text of document 65E/760/FDIS, future edition 2 of IEC 62769-3, 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 IEC 62769-3:2021.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2021-12-12 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2024-03-12 document have to be withdrawn

This document supersedes EN 62769-3:2015 and all of its amendments and corrigenda (if any).

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

**Endorsement notice****iTeh STANDARD PREVIEW**

The text of the International Standard IEC 62769-3:2021 was approved by CENELEC as a European Standard without any modification. (standards.iteh.ai)

[SIST EN IEC 62769-3:2021](https://standards.iteh.ai/catalog/standards/sist/77118ef1-9a0b-4c76-a9e3-badab4961027/sist-en-iec-62769-3-2021)

<https://standards.iteh.ai/catalog/standards/sist/77118ef1-9a0b-4c76-a9e3-badab4961027/sist-en-iec-62769-3-2021>

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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

NOTE 1 Where 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](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61804	series	Function blocks (FB) for process control and electronic device description language (EDDL)	EN IEC 61804	series
IEC 61804-4	2020	Devices and integration in enterprise systems - Function blocks (FB) for process control and electronic device description language (EDDL) - Part 4: EDD interpretation	EN IEC 61804-4	2020
IEC 62541-4	-	OPC Unified Architecture - Part 4: Services	EN IEC 62541-4	-
IEC 62541-7	-	OPC unified architecture - Part 7: Profiles	EN IEC 62541-7	-
IEC 62769-1	-	Field Device Integration (FDI) - Part 1: Overview	EN 62769-1	-
IEC 62769-2	-	Field Device Integration (FDI) - Part 2: FDI Client	EN 62769-2	-
IEC 62769-4	-	Field Device Integration (FDI) - Part 4: FDI Packages	EN 62769-4	-
IEC 62769-5	-	Field Device Integration (FDI) - Part 5: Information Model	EN 62769-5	-
IEC 62769-7	-	Field Device Integration (FDI) - Part 7: Communication Devices	EN 62769-7	-

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN IEC 62769-3:2021](#)

<https://standards.iteh.ai/catalog/standards/sist/77118ef1-9a0b-4c76-a9e3-badab4961027/sist-en-iec-62769-3-2021>



IEC 62769-3

Edition 2.0 2021-02

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Field device integration (FDI) –**  
**Part 3: Server**

**Intégration des appareils de terrain (FDI) –**  
**Partie 3: Serveur**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

ICS 25.040.40; 35.100.05

ISBN 978-2-8322-9310-2

**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

FOREWORD .....	5
INTRODUCTION .....	7
1 Scope .....	8
2 Normative references .....	8
3 Terms, definitions, abbreviated terms and conventions .....	9
3.1 Terms and definitions .....	9
3.2 Abbreviated terms .....	9
3.3 Conventions .....	9
4 Overview .....	9
5 Information Model .....	10
5.1 General .....	10
5.2 Online/Offline .....	11
5.2.1 Overview .....	11
5.2.2 Transfer to device .....	11
5.2.3 Transfer from device .....	11
5.3 Access privileges .....	12
5.4 Private Parameters .....	12
5.5 Locking .....	12
5.6 EditContext .....	13
5.6.1 Concept and usage model .....	13
5.6.2 Services .....	14
5.6.3 Nodes .....	15
5.6.4 Reading .....	15
5.6.5 Writing .....	15
5.6.6 Writing dominant and dependent Variables .....	15
5.6.7 Actions (EDD METHODS) .....	17
5.6.8 UIDs .....	18
5.6.9 Synchronization .....	18
5.7 Reading .....	18
5.7.1 General .....	18
5.7.2 Reading offline variables .....	19
5.7.3 Reading online variables .....	19
5.8 Writing .....	20
5.8.1 General .....	20
5.8.2 Write offline variables .....	21
5.8.3 Writing online variables .....	22
5.8.4 Writing to an EditContext .....	24
5.9 Subscription .....	25
5.9.1 General .....	25
5.9.2 Subscription of offline variables .....	25
5.9.3 Subscription of online variables .....	26
5.10 Device topology .....	28
5.10.1 General .....	28
5.10.2 Connection Points .....	28
5.10.3 Topology management .....	29
5.10.4 Topology scanning .....	32



5.10.5	Use of SCAN function .....	33
5.10.6	Validation of defined topology .....	34
5.11	User Interface Elements .....	34
5.11.1	User Interface Descriptions .....	34
5.11.2	User Interface Plug-ins .....	35
5.12	Actions .....	35
5.12.1	FDI Server – FDI Client interaction .....	35
5.12.2	Action state machine .....	38
5.12.3	Actions Proxies .....	40
5.12.4	Actions, EDD Actions and Actions Proxies .....	40
6	OPC UA services .....	42
6.1	OPC UA profiles .....	42
6.2	Service error information .....	42
6.2.1	Overview .....	42
6.2.2	OPC UA services and their response .....	42
6.2.3	Mappings of EDDL response codes to OPC UA service response .....	42
6.3	Parameter value update during write service request .....	43
6.4	Localization .....	44
6.5	Audit events .....	44
7	Communication .....	44
7.1	Notation .....	44
7.2	General .....	44
7.2.1	Concepts .....	44
7.2.2	Terms .....	47
7.3	Communication Service processing .....	48
7.3.1	Communication Service invocation .....	48
7.3.2	Analyze communication path .....	48
7.3.3	Manage communication relations .....	49
7.3.4	Communication service request mapping .....	49
7.3.5	Communication service request propagation .....	50
7.3.6	Communication error handling .....	51
7.4	FDI Communication Server specific handling .....	51
7.4.1	Discovery .....	51
7.4.2	Information Model synchronization .....	52
8	Parallel Execution within the FDI Server .....	52
8.1	Motivation .....	52
8.2	Internal structure of the EDD interpreter .....	52
8.3	Rules for running an EDD entity .....	53
Annex A (informative)	FDI Server functional structure .....	54
A.1	FDI functional elements .....	54
A.2	FDI Server extension .....	55
Annex B (informative)	Access privileges and user roles .....	57
B.1	User roles and usage case .....	57
B.2	Private data usage .....	58
Annex C (informative)	Parallel execution within the FDI Server – Examples .....	59
C.1	Simple example for a synchronous execution .....	59
C.2	Example for a concurrent execution .....	59
C.3	Deadlock detection in concurrent execution .....	61

Figure 1 – FDI architecture diagram .....	8
Figure 2 – Locking services .....	13
Figure 3 – EditContext models .....	14
Figure 4 – Online EditContext state diagram for dominant and dependent Variables .....	16
Figure 5 – Offline EditContext state diagram for dominant and dependent Variables .....	17
Figure 6 – EditContext for EDD Methods .....	17
Figure 7 – Offline variable read .....	19
Figure 8 – Online variable read .....	20
Figure 9 – Offline variable write immediate .....	21
Figure 10 – Online variable write immediate .....	23
Figure 11 – Write with EditContext .....	24
Figure 12 – Offline variable subscription .....	26
Figure 13 – Online variable subscription .....	27
Figure 14 – Topology with Network objects (non-normative) .....	28
Figure 15 – Add Device to topology .....	30
Figure 16 – Remove device from topology .....	31
Figure 17 – Scan topology .....	32
Figure 18 – Action execution .....	37
Figure 19 – Action state machine .....	38
Figure 20 – System communication integration example .....	45
Figure 21 – FDI Communication Server integration example .....	46
Figure 22 – Gateway integration example .....	47
Figure 23 – Message propagation example scenario .....	50
Figure A.1 – Functional components of an FDI Server .....	54
Figure A.2 – FDI Server extensions .....	56
Figure B.1 – User roles and access privileges .....	57
Figure C.1 – Synchronous execution of two triggers .....	59
Figure C.2 – Concurrent execution of two triggers (step 1) .....	59
Figure C.3 – Concurrent execution of two triggers (step 2) .....	60
Figure C.4 – Concurrent execution of two triggers (step 3) .....	60
Figure C.5 – Concurrent execution of two triggers (step 4) .....	61
Figure C.6 – Concurrent execution of two triggers .....	61
Table 1 – Action states .....	38
Table 2 – Action state transitions .....	39
Table 3 – EDD Action types and the EDD constructs that use them .....	41
Table 4 – OPC UA severity bits and EDDL response codes TYPE .....	43

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## FIELD DEVICE INTEGRATION (FDI) –

## Part 3: Server

## 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, IEC 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.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 62769-3 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) modification of the edit context concept to harmonize the IEC 61804 and the IEC 62769 series.

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

FDIS	Report on voting
65E/760/FDIS	65E/770/RVD

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

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

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

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

## iTeh STANDARD PREVIEW

(standards.iteh.ai)

**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.** <https://standards.iteh.ai/catalog/standards/sist/77118ef1-9a0b-4c76-a9e3-badab4961027/sist-en-iec-62769-3-2021>

## INTRODUCTION

The IEC 62769 series has the general title *Field Device Integration (FDI)* and the following parts:

- Part 1: Overview
- Part 2: FDI Client
- Part 3: FDI Server
- Part 4: FDI Packages
- Part 5: FDI Information Model
- Part 6: FDI Technology Mapping
- Part 7: FDI Communication Devices
- Part 100: Profiles – Generic Protocol Extensions
- Part 101-1: Profiles – Foundation Fieldbus H1
- Part 101-2: Profiles – Foundation Fieldbus HSE
- Part 103-1: Profiles – PROFIBUS
- Part 103-4: Profiles – PROFINET
- Part 109-1: Profiles – HART and WirelessHART
- Part 115-2: Profiles – Protocol-specific Definitions for Modbus RTU
- Part 150-1: Profiles – ISA 100.11a

**ITeH STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN IEC 62769-3:2021](https://standards.iteh.ai/catalog/standards/sist/77118ef1-9a0b-4c76-a9e3-badab4961027/sist-en-iec-62769-3-2021)

<https://standards.iteh.ai/catalog/standards/sist/77118ef1-9a0b-4c76-a9e3-badab4961027/sist-en-iec-62769-3-2021>

# FIELD DEVICE INTEGRATION (FDI) –

## Part 3: Server

### 1 Scope

This part of IEC 62769 specifies the FDI Server. 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 figure.

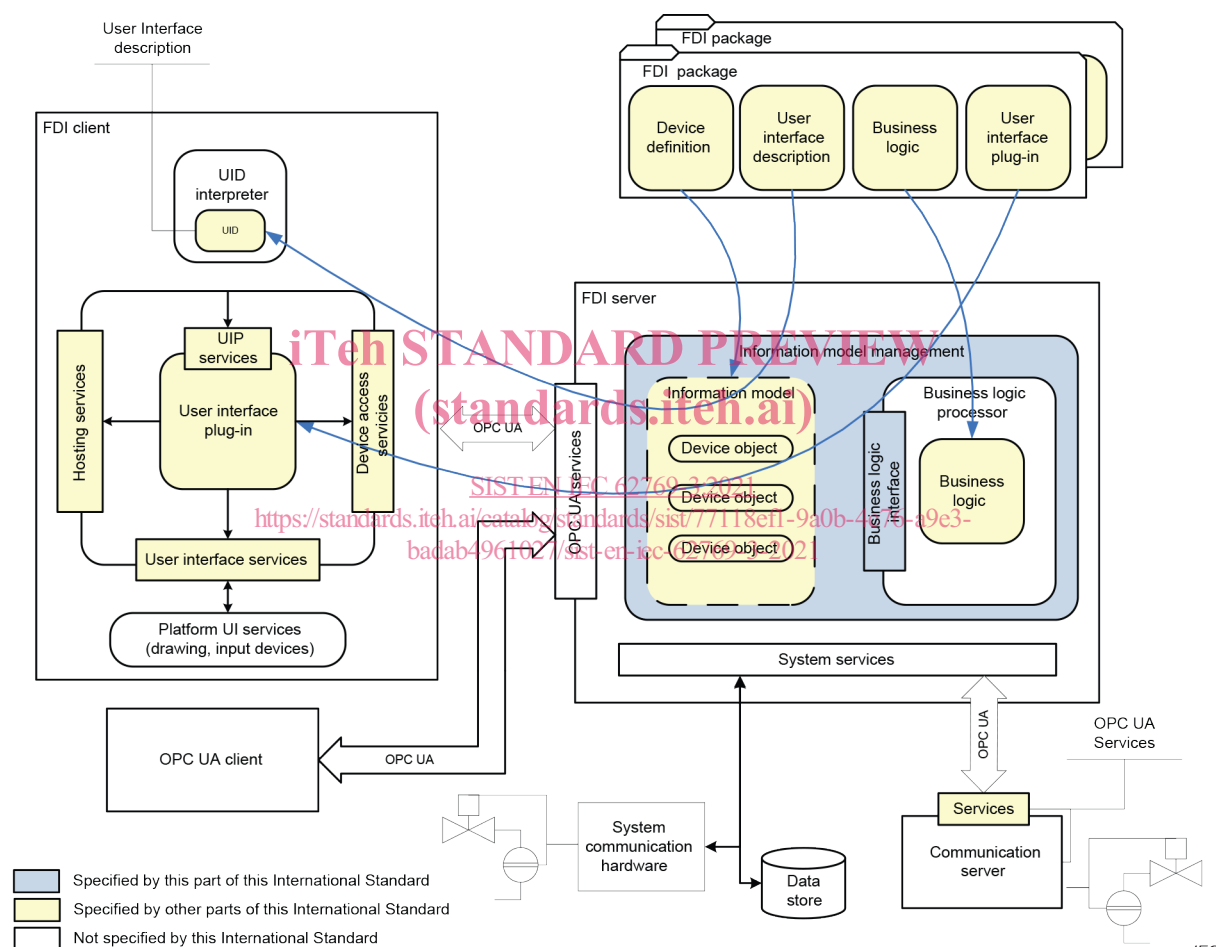


Figure 1 – FDI architecture diagram

### 2 Normative references

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

IEC 61804 (all parts), *Function blocks (FB) for process control and electronic device description language (EDDL)*

IEC 61804-4:2020, *Function blocks (FB) for process control and electronic device description language (EDDL) – Part 4: EDD interpretation*

IEC 62541-4, *OPC unified architecture – Part 4: Services*

IEC 62541-7, *OPC unified architecture – Part 7: Profiles*

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

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

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

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

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

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

#### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62769-1 as well as the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

##### 3.1.1

#### **Actions Proxy**

internal FDI Server entity that encapsulates all the EDD Methods specified in an EDD Action definition

#### 3.2 Abbreviated terms

For the purposes of this document, the abbreviated terms given in IEC 62769-1 apply.

#### 3.3 Conventions

For the purposes of this document, the conventions given in IEC 62769-1 apply.

### 4 Overview

The structure for an FDI Server is shown in Figure 1.

FDI Servers that support connectivity with third-party FDI Clients shall support OPC UA. A vendor can provide both an FDI Server and one or more FDI Clients. In this case, the FDI Clients can communicate with the FDI Server through proprietary protocols.

An FDI Server communicates with devices via Native Communication (see 7.2.1) and/or Communication Devices (see IEC 62769-7).