

# INTERNATIONAL STANDARD



Field device integration (FDI) –  
Part 7: **FDI** Communication devices

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## FIELD DEVICE INTEGRATION (FDI) –

Part 7: ~~FDI~~ Communication devices

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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.

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 of new protocols;
- c) generic protocol extension to allow adoption of other communication protocols;
- d) based on generic protocol extension: Modbus RTU.

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

FDIS	Report on voting
65E/764/FDIS	65E/774/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 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

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## INTRODUCTION

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- ~~a) Method for the Supplying and Installation of Device-Specific Functionalities, see Patent Family DE10357276;~~
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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
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# 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.

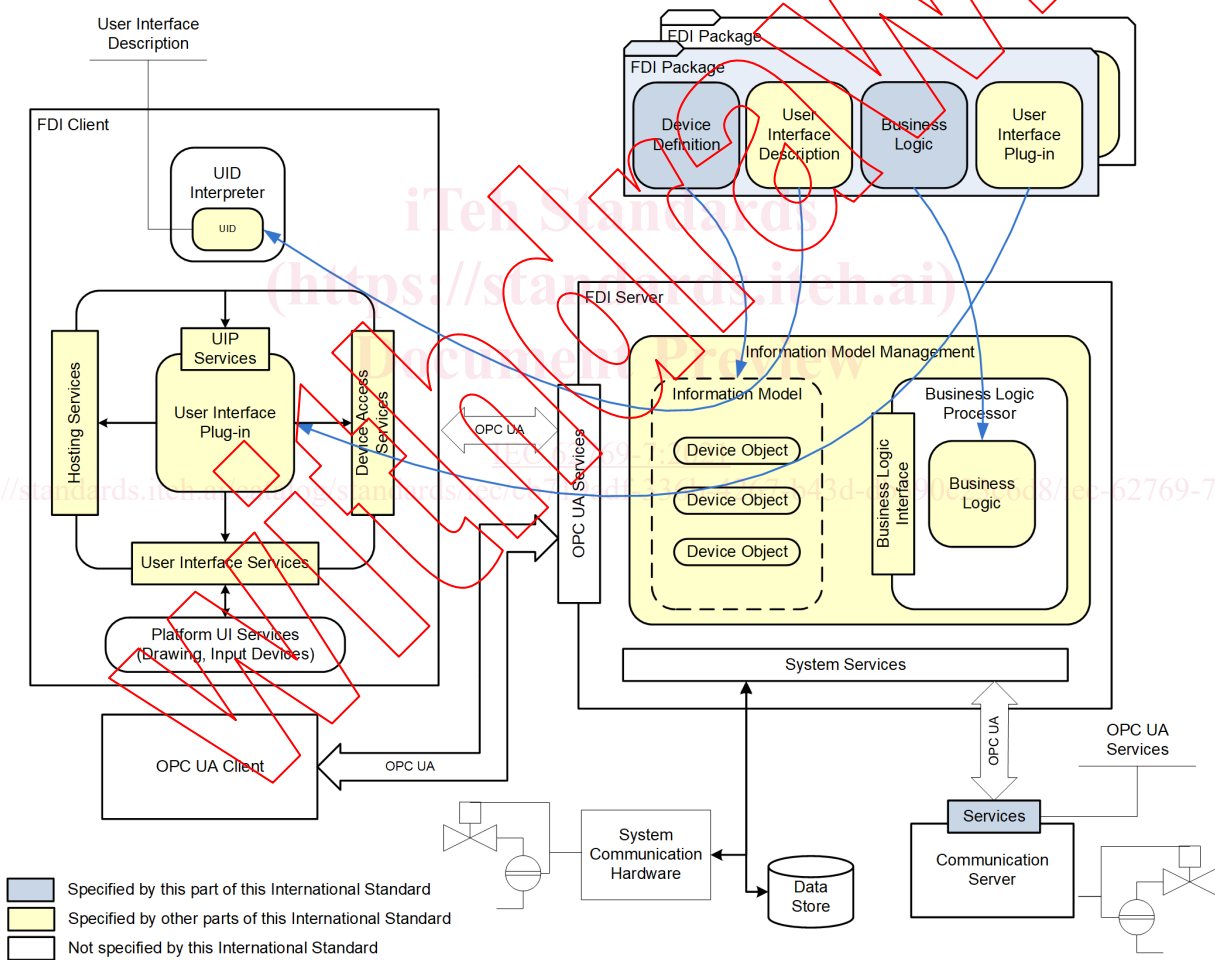


Figure 1 – FDI architecture diagram

## 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.

IEC 61804-3, *Function blocks (FB) for process control and Electronic Device Description Language (EDDL) – Part 3: EDDL syntax and semantics*

IEC 61804-4, *Function blocks (FB) for process control and Electronic Device Description Language (EDDL) – Part 4: EDD interpretation*

IEC 62541 (all parts), *OPC Unified Architecture*

~~IEC TR 62541-1, *OPC Unified Architecture – Part 1: Overview and Concepts*~~

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

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

~~IEC 62541-7, *OPC Unified Architecture – Part 7: Profiles*~~

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

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

~~NOTE IEC 62769-1 is technically identical to FDI-2021.~~

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

~~NOTE IEC 62769-2 is technically identical to FDI-2022.~~ <https://standards.iteh.ai/> <https://doi.org/10.31366/4267-b43d-db390c23c6d8/iec-62769-7-2021>

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

~~NOTE IEC 62769-3 is technically identical to FDI-2023.~~

IEC 62769-4:2015/2020, *Field Device Integration (FDI) – Part 4: FDI Packages*

~~NOTE IEC 62769-4 is technically identical to FDI-2024.~~

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

~~NOTE IEC 62769-5 is technically identical to FDI-2025.~~

## 3 Terms, definitions, abbreviated terms, **acronyms** 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 gateway

communication device that enables to bridge between different physical networks or different protocols

### 3.2 Abbreviated terms ~~and acronyms~~

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

HTTP	Hypertext Transfer Protocol
IP	Internet Protocol
PHY	Physical communication hardware
SNMP	Simple Network Management Protocol
TCP	Transmission Control Protocol
URI	Uniform Resource Identifier

### 3.3 Conventions ~~for graphical notation~~

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

This document uses the graphical notation defined in IEC 62769-5.

## 4 General

The abstract term "FDI Communication Device" represents an entity implementing communication functions over a network using a specific protocol. The group of FDI Communication Devices splits into two main groups.

- a) The FDI Communication Server is a dedicated OPC UA Server providing access to one or more field device networks. The FDI Communication Server is specified in Clause 7.
- b) The FDI Communication Gateway enables to bridge between different physical networks or different protocols. The bridging business logic is implemented in the ~~EED~~ EDD component that is provided with an FDI Communication Package. The FDI Communication Gateway is specified in Clause 8.

NOTE The main differences between a Gateway and a Communication Server are: in terms of FDI, the FDI Communication Server is a dedicated OPC UA Server providing access to one or more field device networks. A Gateway is a communication device that enables to bridge between different physical networks or different protocols. The logical representation of a Gateway device within the FDI Server hosted Information Model enables the FDI Server to process communication in heterogeneous network topologies.