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**Feldgeräteintegration (FDI) –
Teil 100: Profile –
Allgemeine Protokolle
(IEC 62769-100:2020);
Englische Fassung EN IEC 62769-100:2020**

Field device integration (FDI) –
Part 100: Profiles –
Generic protocols
(IEC 62769-100:2020);
English version EN IEC 62769-100:2020

Intégration des appareils de terrain (FDI) –
Partie 100: Profils –
Protocoles génériques
(IEC 62769-100:2020);
Version anglaise EN IEC 62769-100:2020

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Anwendungsbeginn

Anwendungsbeginn für die von CENELEC am 2020-10-29 angenommene Europäische Norm als DIN-Norm ist 2021-08-01.

Nationales Vorwort

Vorausgegangener Norm-Entwurf: E DIN EN 62769-100:2018-10.

Für dieses Dokument ist das nationale Arbeitsgremium K 956 „Industrielle Kommunikation“ der DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik in DIN und VDE (www.dke.de) zuständig.

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Da sich die Benutzer der vorliegenden Norm der englischen Sprache als Fachsprache bedienen, wird die Englische Fassung der EN IEC 62769-100 veröffentlicht. Zu deren Abschnitt 1, der den Anwendungsbereich festlegt und Abschnitt 3 (außer Unterabschnitt 3.2), der die Begriffe und Abkürzungen festlegt, wurde eine Übersetzung angefertigt und als informativer Nationaler Anhang NA der vorliegenden Norm hinzugefügt. Für die meisten der verwendeten Begriffe existieren keine gebräuchlichen deutschen Benennungen, da sich die deutschen Anwender in der Regel ebenfalls der englischen Benennungen bedienen. Diese Norm steht nicht in unmittelbarem Zusammenhang mit Rechtsvorschriften und ist nicht als Sicherheitsnorm anzusehen.

Nationaler Anhang NA (informativ)

Auszugsweise Übersetzung

Reihenfolge und Inhalt der folgenden Abschnitte sind identisch mit denen in den jeweiligen Abschnitten der Englischen Fassung.

1 Anwendungsbereich

Dieser Teil der IEC 62769 definiert ein FDI Profil der IEC 62769 für generische Protokolle. Das bedeutet, dass alle Schnittstellen definiert sind und ein Host Unterstützung für weitere Protokolle hinzufügen kann, ohne seine Implementierung zu ändern. Dennoch gibt es einige protokollspezifische Definitionen (PSD), die bei Verwendung dieses Profils pro Protokoll angegeben werden müssen. Anhang C legt fest, welche PSDs pro Protokoll definiert werden müssen, damit FDI Device Packages, FDI Kommunikation Packages für Gateways und FDI Kommunikationsserver, FDI Kommunikationsserver, Gateways und Geräte, die ein solches Protokoll unterstützen, in einem Host zusammenarbeiten können, der dieses spezielle Protokoll nicht kennt.

ANMERKUNG Ein Host, der keinen FDI Kommunikationsserver, sondern einen Proprietären Mechanismus für die Kommunikation verwendet, definiert seine eigenen Mittel zum Umgang mit diesem Profil, um mehrere Protokolle zu unterstützen, ohne seine Implementierung zu ändern. Dies ist spezifisch für die Proprietäre Art und Weise, wie der Kommunikationstreiber an den Host gebunden ist.

3 Begriffe, Abkürzungen und Vereinbarungen

Für die Anwendung dieses Dokuments gelten die Begriffe nach IEC 61804 (alle Teile), IEC 62541-100, IEC 62769-2, IEC 62769-4, IEC 62769-5 und IEC 62769-7.

ISO und IEC stellen terminologische Datenbanken für die Verwendung in der Normung unter den folgenden Adressen bereit:

- IEC Electropedia: verfügbar unter <http://www.electropedia.org/>
- ISO Online Browsing Platform: verfügbar unter <http://www.iso.org/obp>

3.1 Abkürzungen

EDD Electronic device description

EDDL Electronic Device Description Language (siehe IEC 61804)

FDITM Field Device Integration^{TM 1}

FCG FieldComm Group

XML Extensible Markup Language (siehe FCG TS62769-100, Edition 1.1, Field Device Integration Part 100: Profiles – Generic Protocols, verfügbar unter <https://fieldcommgroup.org>)

¹ Field Device Integration (FDI) ist das Handelsname eines von der FieldComm Group gelieferten Produkts. Diese Information dient der Bequemlichkeit der Benutzer dieses Dokuments und stellt keine Billigung des genannten Produkts durch IEC dar. Gleichwertige Produkte können verwendet werden, wenn sie nachweislich zu den gleichen Ergebnissen führen.

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English Version

**Field device integration (FDI) - Part 100: Profiles - Generic
protocols
(IEC 62769-100:2020)**

Intégration des appareils de terrain (FDI) - Partie 100:
Profils - Protocoles génériques
(IEC 62769-100:2020)

Feldgeräteintegration (FDI) - Teil 100: Profile - Allgemeine
Protokolle
(IEC 62769-100:2020)

This European Standard was approved by CENELEC on 2020-10-29. 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.

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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

European foreword

The text of document 65E/739/FDIS, future edition 1 of IEC 62769-100, 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 62769-100:2020.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by (dop) 2021-07-29
publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2023-10-29
document have to be withdrawn

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

The text of the International Standard IEC 62769-100:2020 was approved by CENELEC as a European Standard without any modification.

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.

<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 61804-3	–	Devices and integration in enterprise systems – Function blocks (FB) for process control and electronic device description language (EDDL) – Part 3: EDDL syntax and semantics	EN IEC 61804-3	–
IEC 62541-100	2015	OPC Unified Architecture – Part 100: Device Interface	EN 62541-100	2015
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: FDI Communication Devices	–	–

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FIELD DEVICE INTEGRATION (FDI) –

Part 100: Profiles – Generic protocols

1 Scope

This part of IEC 62769 specifies an FDI profile of IEC 62769 for generic protocols. That means that all interfaces are defined, and a host can add support for more protocols without changing its implementation. Nevertheless, there are some protocol-specific definitions (PSD) that need to be specified per protocol using this profile. Annex C specifies what PSDs need to be defined per protocol so that FDI Device Packages, FDI Communication Packages for Gateways and FDI Communication Servers, FDI Communication Servers, Gateways and Devices supporting such a protocol can work together in a host not aware about this specific protocol.

NOTE A host not using an FDI Communication Server but a proprietary mechanism for communication defines its own means to deal with this profile to support several protocols without changing its implementation. This is specific to the proprietary way how the communication driver is bound to the host.

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

IEC 62541-100:2015, *OPC Unified Architecture – Part 100: OPC UA for Devices*

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: FDI Communication Devices*

3 Terms, definitions, abbreviated terms and conventions

For the purposes of this document, the terms and definitions given in IEC 61804 series, IEC 62541-100, IEC 62769-2, IEC 62769-4, IEC 62769-5 and IEC 62769-7 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 Abbreviated terms

EDD	electronic device description
EDDL	Electronic Device Description Language (see IEC 61804)
FDI™	Field Device Integration™ ¹
FCG	FieldComm Group
XML	Extensible Markup Language (see FCG TS62769-100, Edition 1.1, Field Device Integration Part 100: Profiles – Generic Protocols, available at https://fieldcommgroup.org)

3.2 Conventions

3.2.1 EDDL syntax

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

3.2.2 XML syntax

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

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

3.2.3 Capitalizations

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

Some of these terms use an initialism as a prefix, for example:

- FDI Client, or
- FDI Server.

Some of these terms are compound terms, such as:

- Communication Servers, or
- Profile Package.

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

- ProtocolSupportFile or
- ProtocolType.

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

- DEVICE_REV or
- DEVICE_MODEL

¹ Field Device Integration (FDI) is the trademark of a product supplied by FieldComm Group. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.

4 Profile for Generic Protocols

4.1 General

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

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

4.2 Catalog profile

4.2.1 Protocol support file

4.2.1.1 FDI Device Package

Protocol-specific attachments are mentioned in the Package Catalog as defined in IEC 62769-5. As this document defines a profile generically suitable for many protocols, it does not define requirements for any protocol-specific attachments. However, it does also not prevent the usage of protocol-specific attachments. The PSDs (see Annex C) define the requirements on the need of ProtocolSupportFiles for a specific protocol. However, the configuration of a device using an FDI Device Package shall not require the usage of a protocol-specific attachment. Table 1 specifies the parameters of the ProtocolSupportFile in the FDI Device Package in case one or many are provided.

Table 1 – ProtocolSupportFile for FDI Device Packages

Parameter	Description
Content Type	text/plain
Root Namespace	empty
Source Relationship	http://fdi-cooperation.com/2010/relationship/attachment-protocol
Filename	Not defined

4.2.1.2 FDI Communication Packages

The same rules as for FDI Device Packages apply.

4.2.2 CommunicationProfile definition

IEC 62769-4 defines a CommunicationProfileT string for the Catalog XML schema. The string is protocol-specific and defined as ProfileIdentifier in the PSD (see Annex C).

4.2.3 Profile device

A Profile Package shall provide the catalog values for profile devices, enabling the FDI Server to leverage a generic device description, if a specific one is not available. The definitions in Table 2 focus on catalog content that is vendor-independent.

Table 2 – Catalog values for profile devices

Element	Attribute	Content
PackageType	—	Profile
Manufacturer	—	Empty
DeviceModel	—	<p>The format of the DeviceModel is protocol specific and details on the format are defined in the PSD (see Annex C).</p> <p>In order to assign a scan result with a profile package the ProfileId of the scan result shall be mapped to the DeviceModel of the profile package.</p>

4.2.4 Protocol version information

IEC 62769-4 defines an element type named InterfaceT for the Catalog XML schema. The element type InterfaceT contains an element named Version, which is supposed to provide version information about the applied communication protocol profile. The value shall follow the IEC 62769-4 defined version information schema defined in the element type VersionT. The PSDs (see Annex C) define the mapping of versions of a specific protocol to this field.

4.3 Associating a Package with a device

4.3.1 Device type identification mapping

The purpose of device-type identification mapping is to enable FDI host systems to compare the scan result against the topology representation in the Information Model. FDI host systems shall also be enabled to determine the FDI Device Package that fits for a device entry contained in the scan result. This will enable the user of an FDI host system to synchronize the Information Model with the actual installation.

The Communication Server implemented scan service (defined in 4.6.1.7) provides the scan result through an XML document (the schema is defined in Clause A.5).

The Gateway implemented scan service (defined in 4.6.2.7) provides the scan result by means of the Information Model that contains data structures created from EDD content as specified in 4.6.2.7.

For both ways of presenting the scan result, it is common that scan results contain device type identification and device instance identification.

FDI host systems comparing the actual network topology configuration against the topology representation in the Information Model shall be enabled to handle the following situations:

- The physical Device instance identified at a specific device address is not logically present in the Information Model (as Instance): enable the FDI Host system to find the appropriate FDI Device Package according to the device catalog information.
- The physical Device instance identified by the device address is logically present in the Information Model (as Instance): enable the FDI Host system to compare device type information presented in scan result (see the identification in Clause A.5) and the device type specific information of the Instance present in the Information Model.

The FDI Device Package contains device type identification information that can be compared to the scan results based on the Catalog Schema in IEC 62769-4 defining the XML (simple) element types “DeviceModel” and “Manufacturer”. Both types are used in the (complex) element types “Protocol” and “RegDeviceType”.

As a result of the FDI Package deployment, the FDI Package information is then present in the Information Model as the specified FunctionalGroup Identification containing SerialNumber and Tag (see 4.4.3).

The mapping between different device identification data sources is described in Table 3. Since scan results provided by the Communication Server or Gateway can convey data that is produced by the device