

© Copyright SEK Svensk Elstandard. Reproduction in any form without permission is prohibited.

Industriell processtyrning – Integration av fältenheter (FDI) – Del 103-1: Profiler – Profibus

*Field device integration (FDI) –
Part 103-1: Profiles –
PROFIBUS*

Som svensk standard gäller europastandarden EN IEC 62769-103-1:2020. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 62769-103-1:2020.

Nationellt förord

Europastandarden EN IEC 62769-103-1:2020

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 62769-103-1, Second edition, 2020 - Field device integration (FDI) - Part 103-1: Profiles - PROFIBUS**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 62769-103-1, utgåva 1, 2016, gäller ej fr o m 2023-06-02.

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a mätning, säkerhet och provning och för utförande, skötsel och dokumentation av elprodukter och elanläggningar.

Genom att utforma sådana standarder blir säkerhetsfordringar tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

Många standarder inom elområdet beskriver tekniska lösningar och metoder som åstadkommer den elsäkerhet som föreskrivs av svenska myndigheter och av EU.

SEK är Sveriges röst i standardiseringsarbetet inom elområdet

SEK Svensk Elstandard svarar för standardiseringen inom elområdet i Sverige och samordnar svensk medverkan i internationell och europeisk standardisering. SEK är en ideell organisation med frivilligt deltagande från svenska myndigheter, företag och organisationer som vill medverka till och påverka utformningen av tekniska regler inom elektrotekniken.

SEK samordnar svenska intressenters medverkan i SEKs tekniska kommittéer och stödjer svenska experters medverkan i internationella och europeiska projekt.

Stora delar av arbetet sker internationellt

Utformningen av standarder sker i allt väsentligt i internationellt och europeiskt samarbete. SEK är svensk nationalkommitté av International Electrotechnical Commission (IEC) och Comité Européen de Normalisation Electrotechnique (CENELEC).

Standardiseringsarbetet inom SEK är organiserat i referensgrupper bestående av ett antal tekniska kommittéer som speglar hur arbetet inom IEC och CENELEC är organiserat.

Arbetet i de tekniska kommittéerna är öppet för alla svenska organisationer, företag, institutioner, myndigheter och statliga verk. Den årliga avgiften för deltagandet och intäkter från försäljning finansierar SEKs standardiseringsverksamhet och medlemsavgift till IEC och CENELEC.

Var med och påverka!

Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

SEK Svensk Elstandard

Box 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

English Version

**Field device integration (FDI) - Part 103-1: Profiles - PROFIBUS
(IEC 62769-103-1:2020)**

Intégration des appareils de terrain (FDI) - Partie 103-1:
Profils - PROFIBUS
(IEC 62769-103-1:2020)

Feldgeräteintegration (FDI) Teil 103-1: Profile - PROFIBUS
(IEC 62769-103-1:2020)

This European Standard was approved by CENELEC on 2020-06-02. 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, 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

European foreword

The text of document 65E/622/CDV, future edition 2 of IEC 62769-103-1, 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 62769-103-1:2020.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2021-03-02
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-06-02

This document supersedes EN 62769-103-1:2015 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

The text of the International Standard IEC 62769-103-1:2020 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 61784-1 NOTE Harmonized as EN IEC 61784-1

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 62541-100	2015	OPC Unified Architecture - Part 100: Device Interface	EN 62541-100	2015
IEC 62769-2 ¹	-	Field Device Integration (FDI) - Part 2: FDI Client	-	-
IEC 62769-4 ²	-	Field Device Integration (FDI) - Part 4: FDI Packages	-	-
IEC 62769-5 ³	-	Field Device Integration (FDI) - Part 5: FDI Information Model	-	-
IEC 62769-7 ⁴	-	Field Device Integration (FDI) - Part 7: FDI Communication Devices	-	-
PI Order No. 2.122	2008	Specification for PROFIBUS - Device Description and Device Integration - Volume 1: GSD, V5.1, July 2008: GSD	-	-

¹ Under preparation. Stage at the time of publication: IEC/RFDIS 62769-2:2020.

² Under preparation. Stage at the time of publication: IEC/RFDIS 62769-4:2020.

³ Under preparation. Stage at the time of publication: IEC/RFDIS 62769-5:2020.

⁴ Under preparation. Stage at the time of publication: IEC/RFDIS 62769-7:2020.

CONTENTS

FOREWORD	4
1 Scope	6
2 Normative references	6
3 Terms, definitions, abbreviated terms and conventions	6
3.1 Terms and definitions	6
3.2 Abbreviated terms and acronyms	7
3.3 Conventions	7
3.3.1 EDDL syntax	7
3.3.2 XML syntax	7
3.3.3 Capitalizations	7
4 Profile for PROFIBUS	8
4.1 General	8
4.2 Catalog profile	8
4.2.1 Protocol support file	8
4.2.2 CommunicationProfile definition	8
4.2.3 Profile device	9
4.2.4 Protocol version information	9
4.3 Associating a Package with a device	10
4.3.1 Device type identification mapping	10
4.3.2 Device type revision mapping	11
4.4 Information Model mapping	12
4.4.1 ProtocolType definition	12
4.4.2 DeviceType mapping	13
4.4.3 FunctionalGroup identification definition	13
4.5 Topology elements	13
4.5.1 ConnectionPoint definition	13
4.5.2 Communication Device definition	15
4.5.3 Communication service provider definition	16
4.5.4 Network definition	17
4.6 Methods	17
4.6.1 Methods for FDI Communication Servers	17
4.6.2 Methods for Gateways	20
Annex A (normative) Topology Scan result schema	26
A.1 General	26
A.2 Network	26
A.3 ProfibusNetworkT	26
A.4 ProfibusConnectionPointT	26
A.5 ProfibusIdentificationT	27
A.6 ProfibusAddressT	28
Annex B (normative) Transfer service parameters	29
B.1 General	29
B.2 sendData	29
B.3 xsreceiveData	29
B.4 xsTransferSendDataT	29
B.5 TransferResultDataT	30
B.6 OperationT	30

Bibliography.....	31
Figure 1 – Version mapping problem.....	11
Table 1 – ProtocolSupportFile for FDI Device Packages	8
Table 2 – ProtocolSupportFile for FDI Communication Packages	8
Table 3 – PROFIBUS CommunicationProfile definition schema	9
Table 4 – Catalog values for profile devices.....	9
Table 5 – Version mapping examples.....	9
Table 6 – Device identification information mapping.....	11
Table 7 – Protocol type Profibus_DP	12
Table 8 – Protocol type Profibus_PA.....	12
Table 9 – DeviceType property mapping	13
Table 10 – PROFIBUS Device Types identification attributes	13
Table 11 – ConnectionPoint type for Profibus_DP.....	14
Table 12 – ConnectionPoint type for Profibus_PA.....	15
Table 13 – Method Connect arguments.....	18
Table 14 – Method Disconnect arguments	18
Table 15 – Method Transfer arguments.....	19
Table 16 – Method SetAddress arguments.....	20
Table 17 – Connect service arguments	21
Table 18 – Method Transfer arguments.....	22
Table 19 – Method SetAddress arguments.....	24
Table A.1 – Elements of ProfibusNetworkT	26
Table A.2 – Attributes of ProfibusConnectionPointT	27
Table A.3 – Elements of ProfibusConnectionPointT	27
Table A.4 – Attributes of ProfibusIdentificationT.....	28
Table B.1 – Attributes of TransferSendDataT	30
Table B.2 – Attributes of TransferResultDataT	30

INTERNATIONAL ELECTROTECHNICAL COMMISSION

FIELD DEVICE INTEGRATION (FDI) –**Part 103-1: Profiles – PROFIBUS****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 62769-103-1 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 for Package Developers to build EDDs targeted for today's EDD bases system under a single development tool.

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

CDV	Report on voting
65E/622/CDV	65E/685A/RVC 65E/685/RVC

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.

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.

FIELD DEVICE INTEGRATION (FDI) –

Part 103-1: Profiles – PROFIBUS

1 Scope

This part of IEC 62769 specifies an FDI profile of IEC 62769 for IEC 61784-1_CP 3/1 (PROFIBUS DP)¹ and IEC 61784-1_CP3/2 (PROFIBUS PA)¹.

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 62541-100:2015, *OPC Unified Architecture - Part 100: Device Interface*

IEC 62769-2², *Field Device Integration (FDI) - Part 2: FDI Client*

IEC 62769-4³, *Field Device Integration (FDI) – Part 4: FDI Packages*

IEC 62769-5⁴, *Field Device Integration (FDI) – Part 5: FDI Information Model*

IEC 62769-7⁵, *Field Device Integration (FDI) – Part 7: FDI Communication Devices*

PI Order No.: 2.122:2008, *Specification for PROFIBUS – Device Description and Device Integration – Volume 1: GSD, V5.1, July 2008: GSD*; available at <www.profibus.com> [viewed 2018-11-23]

¹ PROFIBUS is the trade name of the non-profit consortium PROFIBUS & PROFINET International. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the trademark holder or any of its products. Compliance does not require use of the trade name. Use of the trade name requires permission of the trade name holder.

² Under preparation. Stage at the time of publication: IEC/RFDIS 62769-2:2020.

³ Under preparation. Stage at the time of publication: IEC/RFDIS 62769-4:2020.

⁴ Under preparation. Stage at the time of publication: IEC/RFDIS 62769-5:2020.

⁵ Under preparation. Stage at the time of publication: IEC/RFDIS 62769-7:2020.