

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

---

**Field device integration (FDI) –  
Part 109-1: Profiles – HART® and WirelessHART®**

**Intégration des appareils de terrain (FDI) –  
Partie 109-1: Profils – HART® et WirelessHART®**





## THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2020 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

### About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

### About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

#### IEC publications search - [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

#### IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [sales@iec.ch](mailto:sales@iec.ch).

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

#### IEC Glossary - [std.iec.ch/glossary](http://std.iec.ch/glossary)

67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

---

### A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

### A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

#### Recherche de publications IEC -

[webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

#### Service Clients - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: [sales@iec.ch](mailto:sales@iec.ch).

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 000 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

#### Glossaire IEC - [std.iec.ch/glossary](http://std.iec.ch/glossary)

67 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.



IEC 62769-109-1

Edition 2.0 2020-04

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

---

**Field device integration (FDI) –  
Part 109-1: Profiles – HART® and WirelessHART®**

**Intégration des appareils de terrain (FDI) –  
Partie 109-1: Profils – HART® et WirelessHART®**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

---

ICS 25.040.40; 35.100.05

ISBN 978-2-8322-8140-6

**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 .....	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 .....	6
3.3 Conventions .....	7
3.3.1 EDDL syntax .....	7
3.3.2 XML syntax .....	7
3.3.3 Capitalizations .....	7
4 Profile for CP 9/1 (HART®) or CP 9/2 (WirelessHART®) .....	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 CP 9/1 device .....	9
4.3.1 Device type identification mapping .....	9
4.3.2 Device type revision mapping .....	10
4.4 Information Model mapping .....	10
4.4.1 ProtocolType definition .....	10
4.4.2 DeviceType mapping .....	10
4.4.3 FunctionalGroup Identification definition .....	11
4.5 Topology elements .....	11
4.5.1 ConnectionPoint definition .....	11
4.5.2 Communication Device definition .....	17
4.5.3 Communication service provider definition .....	18
4.5.4 Network definition .....	18
4.6 Methods .....	19
4.6.1 Methods for FDI Communication Servers .....	19
4.6.2 Methods for Gateways .....	23
Annex A (normative) Topology scan schema .....	31
A.1 General .....	31
A.2 IdentificationType .....	31
A.3 AddressTypeTP .....	33
A.4 AddressTypeIP .....	33
A.5 AddressTypeTDMA .....	34
A.6 AddressType .....	34
A.7 ConnectionPointType .....	35
A.8 NetworkType .....	36
A.9 Network .....	36
Annex B (normative) Transfer service parameters .....	37
B.1 General .....	37
B.2 receiveData .....	37
B.3 sendData .....	37

B.4	TransferResultDataT.....	37
B.5	TransferSendDataT.....	38
	Bibliography.....	39
Table 1	– Device Information Files.....	8
Table 2	– CommunicationProfile definition.....	8
Table 3	– Catalog values for profile devices.....	9
Table 4	– Protocol Version Information.....	9
Table 5	– Device type catalog mapping.....	9
Table 6	– ProtocolType HART definition.....	10
Table 7	– Inherited DeviceType Property mapping.....	10
Table 8	– Identification parameters.....	11
Table 9	– ConnectionPointType HART_TP definition.....	12
Table 10	– ConnectionPointType HART_IP Definition.....	14
Table 11	– ConnectionPointType HART_TDMA Definition.....	16
Table 12	– Method Connect arguments.....	20
Table 13	– Method Disconnect arguments.....	20
Table 14	– Method Transfer arguments.....	21
Table 15	– Method GetPublishedData arguments.....	22
Table 16	– Method SetAddress arguments.....	23
Table 17	– Method Connect arguments.....	24
Table 18	– Method Disconnect arguments.....	25
Table 19	– Method Transfer arguments.....	26
Table 20	– Method GetPublishedData arguments.....	27
Table 21	– Method SetAddress arguments.....	28
Table A.1	– Attributes of IdentificationT.....	32
Table A.2	– Elements of AddressTypeTP.....	33
Table A.3	– Elements of AddressTypeIP.....	34
Table A.4	– Elements of AddressTypeTDMA.....	34
Table A.5	– Elements of AddressT.....	35
Table A.6	– Elements of ConnectionPointT.....	35
Table A.7	– Elements of NetworkT.....	36
Table B.1	– Attributes of TransferResultDataT.....	37
Table B.2	– Attributes of TransferSendDataT.....	38

# INTERNATIONAL ELECTROTECHNICAL COMMISSION

## FIELD DEVICE INTEGRATION (FDI) –

### Part 109-1: Profiles – HART® and WirelessHART®

#### 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 62769-109-1 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/624/CDV	65E/687A/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.

## FIELD DEVICE INTEGRATION (FDI) –

### Part 109-1: Profiles – HART® and WirelessHART®

#### 1 Scope

This part of IEC 62769 specifies an FDI profile of IEC 62769 for IEC 61784-1\_CP 9/1 (HART®)<sup>1</sup> and IEC 61784-1\_CP 9/2 (WirelessHART®)<sup>1</sup>.

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

IEC 62769-4:–<sup>2</sup>, *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

##### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62541-100, 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>

##### 3.2 Abbreviated terms and acronyms

For the purposes of this document, the following abbreviations apply:

CP	Communication profile (see IEC 61784-1 or IEC 61784-2)
CPF	Communication profile family (see IEC 61784-1 or IEC 61784-2)
EDD	Electronic device description (see IEC 61804)
EDDL	Electronic device description language (see IEC 61804)

---

<sup>1</sup> HART® and wirelessHART® are the registered trademark of 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.

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