



**NSAI**  
Standards

Irish Standard  
I.S. EN 61784-5-3:2013

# Industrial communication networks - Profiles -- Part 5-3: Installation of fieldbuses - Installation profiles for CPF 3

**I.S. EN 61784-5-3:2013**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

*This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):*

*NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.*

*This document is based on:*

EN 61784-5-3:2013

*Published:*

2013-12-13

*This document was published under the authority of the NSAI and comes into effect on:*

2013-12-24

ICS number:

25.040.40

35.100.40

NOTE: If blank see CEN/CENELEC cover page

NSAI  
1 Swift Square,  
Northwood, Santry  
Dublin 9

T +353 1 807 3800  
F +353 1 807 3838  
E standards@nsai.ie  
W NSAI.ie

Sales:  
T +353 1 857 6730  
F +353 1 857 6729  
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 61784-5-3**

December 2013

ICS 25.040.40; 35.100.40

Supersedes EN 61784-5-3:2012

English version

**Industrial communication networks -  
Profiles -  
Part 5-3: Installation of fieldbuses -  
Installation profiles for CPF 3  
(IEC 61784-5-3:2013)**

Réseaux de communication industriels -  
Profils -  
Partie 5-3: Installation des bus de terrain -  
Profils d'installation pour CPF 3  
(CEI 61784-5-3:2013)

Industrielle Kommunikationsnetze -  
Profile -  
Teil 5-3: Feldbusinstallation -  
Installationsprofile für die  
Kommunikationsprofilfamilie 3  
(IEC 61784-5-3:2013)

This European Standard was approved by CENELEC on 2013-10-18. 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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

**CENELEC**

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 65C/738/FDIS, future edition 3 of IEC 61784-5-3, prepared by SC 65C "Industrial networks" of IEC/TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61784-5-3:2013.

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) 2014-07-18
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-10-18

This document supersedes EN 61784-5-3:2012.

EN 61784-5-3:2013 includes the following significant technical changes with respect to EN 61784-5-3:2012:

- an addition of 4-pair cabling (see C.4.4.1.2.1 and C.5.3.2);
- an addition of the connector M12 X-Coding (see C.4.4.2.2);
- an addition of the definition of end-to-end links (see C.4.4.3.1);
- a revision of Table C.17 (see C.5.2.1) and a formula for the NEXT limits of end-to-end links (see C.6.3.2.1.2).

This standard is to be used in conjunction with EN 61918:2013.

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

## Endorsement notice

The text of the International Standard IEC 61784-5-3:2013 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, 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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

#### ***Annex ZA of EN 61918:2013 applies, except as follows:***

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
--------------------	-------------	--------------	--------------	-------------

#### ***Addition to Annex ZA of EN 61918:2013:***

IEC 61918	2013	Industrial communication networks - Installation of communication networks in industrial premises	EN 61918	2013
-----------	------	---	----------	------

This page is intentionally left blank



**IEC 61784-5-3**

Edition 3.0 2013-09

# **INTERNATIONAL STANDARD**

# **NORME INTERNATIONALE**



---

**Industrial communication networks – Profiles –  
Part 5-3: Installation of fieldbuses – Installation profiles for CPF 3**

**Réseaux de communication industriels – Profils –  
Partie 5-3: Installation des bus de terrain – Profils d'installation pour CPF 3**





**THIS PUBLICATION IS COPYRIGHT PROTECTED**  
**Copyright © 2013 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 la CEI ou du Comité national de la CEI du pays du demandeur.

Si vous avez des questions sur le copyright de la CEI ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de la CEI de votre pays de résidence.

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

Tel.: +41 22 919 02 11  
Fax: +41 22 919 03 00  
[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 corrigenda or an amendment might have been published.

#### Useful links:

IEC publications search - [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

The advanced search enables you 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 on-line and also once a month by email.

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

The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in additional languages. Also known as the International Electrotechnical Vocabulary (IEV) on-line.

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: [csc@iec.ch](mailto:csc@iec.ch).

---

### A propos de la CEI

La Commission Electrotechnique Internationale (CEI) 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 CEI

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

#### Liens utiles:

Recherche de publications CEI - [www.iec.ch/searchpub](http://www.iec.ch/searchpub)

La recherche avancée vous permet de trouver des publications CEI 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.

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

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

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

Le premier dictionnaire en ligne au monde de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans les langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (VEI) en ligne.

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: [csc@iec.ch](mailto:csc@iec.ch).





**IEC 61784-5-3**

Edition 3.0 2013-09

# **INTERNATIONAL STANDARD**

# **NORME INTERNATIONALE**



---

**Industrial communication networks – Profiles –  
Part 5-3: Installation of fieldbuses – Installation profiles for CPF 3**

**Réseaux de communication industriels – Profils –  
Partie 5-3: Installation des bus de terrain – Profils d'installation pour CPF 3**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE **XE**  
CODE PRIX

---

ICS 25.040.40; 35.100.40

ISBN 978-2-8322-1074-1

**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.....	7
INTRODUCTION.....	9
1 Scope.....	10
2 Normative references .....	10
3 Terms, definitions and abbreviated terms .....	10
4 CPF 3: Overview of installation profiles .....	10
5 Installation profile conventions .....	11
6 Conformance to installation profiles.....	11
Annex A (normative) CP 3/1 (PROFIBUS) specific installation profile.....	13
A.1 Installation profile scope.....	13
A.2 Normative references .....	13
A.3 Installation profile terms, definitions, and abbreviated terms.....	13
A.3.1 Terms and definitions .....	13
A.3.2 Abbreviated terms .....	14
A.3.3 Conventions for installation profiles.....	14
A.4 Installation planning .....	14
A.4.1 General .....	14
A.4.2 Planning requirements.....	14
A.4.3 Network capabilities .....	16
A.4.4 Selection and use of cabling components.....	18
A.4.5 Cabling planning documentation.....	28
A.4.6 Verification of cabling planning specification .....	28
A.5 Installation implementation .....	28
A.5.1 General requirements.....	28
A.5.2 Cable installation.....	28
A.5.3 Connector installation.....	30
A.5.4 Terminator installation.....	33
A.5.5 Device installation .....	34
A.5.6 Coding and labeling.....	34
A.5.7 Earthing and bonding of equipment and device and shielded cabling.....	34
A.5.8 As-implemented cabling documentation.....	35
A.6 Installation verification and installation acceptance test.....	35
A.6.1 General .....	35
A.6.2 Installation verification.....	35
A.6.3 Installation acceptance test .....	37
A.7 Installation administration.....	43
A.8 Installation maintenance and installation troubleshooting .....	43
Annex B (normative) CP 3/2 (PROFIBUS) specific installation profile.....	44
B.1 Installation profile scope.....	44
B.2 Normative references .....	44
B.3 Installation profile terms, definitions, and abbreviated terms.....	44
B.3.1 Terms and definitions .....	44
B.3.2 Abbreviated terms .....	45
B.3.3 Conventions for installation profiles.....	45
B.4 Installation planning .....	46

B.4.1	General .....	46
B.4.2	Planning requirements.....	47
B.4.3	Network capabilities .....	54
B.4.4	Selection and use of cabling components.....	59
B.4.5	Cabling planning documentation.....	74
B.4.6	Verification of cabling planning specification .....	74
B.5	Installation implementation .....	75
B.5.1	General requirements.....	75
B.5.2	Cable installation.....	75
B.5.3	Connector installation.....	75
B.5.4	Terminator installation.....	77
B.5.5	Device installation .....	77
B.5.6	Coding and labelling.....	77
B.5.7	Earthing and bonding of equipment and device and shielded cabling.....	77
B.5.8	As-implemented cabling documentation.....	77
B.6	Installation verification and installation acceptance test.....	77
B.6.1	General .....	77
B.6.2	Installation verification.....	77
B.6.3	Installation acceptance test .....	78
B.7	Installation administration.....	78
B.8	Installation maintenance and installation troubleshooting .....	78
Annex C (normative)	CP 3/3, CP 3/4, CP 3/5, CP 3/6 (PROFINET) specific installation profile.....	79
C.1	Installation profile scope.....	79
C.2	Normative references .....	79
C.3	Installation profile terms, definitions, and abbreviated terms.....	79
C.3.1	Terms and definitions .....	79
C.3.2	Abbreviated terms .....	79
C.3.3	Conventions for installation profiles .....	80
C.4	Installation planning .....	80
C.4.1	General .....	80
C.4.2	Planing requirements .....	80
C.4.3	Network capabilities .....	80
C.4.4	Selection and use of cabling components.....	83
C.4.5	Cabling planning documentation.....	98
C.4.6	Verification of cabling planning specification .....	99
C.5	Installation implementation .....	99
C.5.1	General requirements.....	99
C.5.2	Cable installation.....	99
C.5.3	Connector installation.....	100
C.5.4	Terminator installation.....	102
C.5.5	Device installation .....	102
C.5.6	Coding and labeling.....	102
C.5.7	Earthing and bonding of equipment and device and shielded cabling.....	102
C.5.8	As-implemented cabling documentation.....	103
C.6	Installation verification and installation acceptance test.....	103
C.6.1	General .....	103
C.6.2	Installation verification.....	103
C.6.3	Installation acceptance test .....	105

C.7 Installation administration.....	106
C.8 Installation maintenance and installation troubleshooting .....	107
Bibliography.....	108
Figure 1 – Standards relationships.....	9
Figure A.1 – Recommended combination of shielding and earthing for CP 3/1 networks with RS 485-IS.....	26
Figure A.2 – Sub-D connector pin numberings (front view).....	31
Figure A.3 – 5-pin M12 female socket.....	32
Figure A.4 – 5-pin M12 male plug for CP 3/1.....	32
Figure A.5 – Test circuit A – Resistance measurement of data line B and shield.....	38
Figure A.6 – Test circuit B –Resistance measurement of data line A and shield .....	38
Figure A.7 – Test circuit C – Resistance measurement of data line A, data line B, and shield.....	39
Figure A.8 – Test circuit D – Resistance measurement between data line A and B.....	39
Figure A.9 – Resistance measurement without 9-pin Sub-D plug .....	39
Figure A.10 – Loop core resistance (cable type A).....	40
Figure A.11 – Action and resolution tree for measurement 1 (RS 485 and RS 485-IS) .....	41
Figure A.12 – Action and resolution tree for measurement 2 (RS 485 and RS 485-IS) .....	42
Figure A.13 – Action and resolution tree for measurement 3 (RS 485 and RS 485-IS) .....	42
Figure B.1 – Connection of CP 3/1 networks.....	47
Figure B.2 – Typical fieldbus architecture .....	49
Figure B.3 – Fieldbus with stations supplied by auxiliary power sources .....	50
Figure B.4 – Fieldbus model .....	52
Figure B.5 – Current modulation (Manchester II code) .....	53
Figure B.6 – Tree topology .....	54
Figure B.7 – Bus topology.....	55
Figure B.8 – Combination of the tree topology and the bus topology .....	55
Figure B.9 – Fieldbus extension.....	56
Figure B.10 – Recommended combination of shielding and earthing.....	69
Figure B.11 – Ideal combination of shielding and earthing .....	70
Figure B.12 – Capacitive earthing .....	71
Figure B.13 – Galvanic isolated field device.....	73
Figure B.14 – Pin assignment of the male and female connectors IEC 60947-5-2 (A-coding) .....	76
Figure C.1 – Definition of end-to-end-link.....	93
Figure C.2 – End-to-end link without interconnections.....	94
Figure C.3 – Assembled end-to-end link .....	94
Figure C.4 – Connectionless optical fibre link .....	95
Figure C.5 – Assembled optical fibre link .....	95
Figure C.6 – Shielded connectors for CP 3/3, CP 3/4, CP 3/5 and CP 3/6 fieldbus networks .....	101
Figure C.7 – Pin-assignment for a straight cable.....	101
Table A.1 – Excerpt of MICE definition.....	16

Table A.2 – Basic network characteristics for balanced cabling not based on Ethernet (ISO/IEC 8802-3) .....	17
Table A.3 – Network characteristics for optical fibre cabling .....	18
Table A.4 – Information relevant to copper cable: fixed cables .....	19
Table A.5 – Information relevant to optical fibre cables .....	20
Table A.6 – Connectors for copper cabling CPs not based on Ethernet .....	21
Table A.7 – Optical fibre connecting hardware .....	21
Table A.8 – Relationship between FOC and fibre types (CP 3/1) .....	21
Table A.9 – Parameters for balanced cables .....	28
Table A.10 – Parameters for silica optical fibre cables .....	29
Table A.11 – Parameters for POF optical fibre cables .....	29
Table A.12 – Parameters for hard clad silica optical fibre cables .....	29
Table A.13 – Use of 9 pin Sub-D connector pins (RS 485) .....	31
Table A.14 – Use of 9 pin Sub-D connector pins (RS 485-IS) .....	31
Table A.15 – Use of M12 connector pins (RS 485) .....	33
Table A.16 – Use of M12 connector pins (RS 485-IS) .....	33
Table A.17 – Maximum fibre channel attenuation for CP 3/1 (PROFIBUS) .....	43
Table B.1 – Valid parameter range of the FISCO model for use as EEx ib IIC / IIB .....	51
Table B.2 – Valid parameter range of the FISCO model for use as EEx ia IIC .....	51
Table B.3 – Power supply (operational values) .....	57
Table B.4 – Line lengths which can be achieved .....	57
Table B.5 – Limit values for distortion, reflection and signal delay .....	58
Table B.6 – Recommended maximum cable lengths including spurs .....	58
Table B.7 – Recommended length of the spurs .....	59
Table B.8 – Maximum length of the splices .....	59
Table B.9 – Information relevant to copper cable: fixed cables .....	60
Table B.10 – Safety limit values for the fieldbus cable .....	61
Table B.11 – Connectors for copper cabling CPs not based on Ethernet .....	62
Table B.12 – Mixing devices from different categories .....	64
Table B.13 – Electrical characteristics of fieldbus interfaces .....	65
Table B.14 – Recommended data sheet specifications for CP 3/2 devices .....	66
Table B.15 – Parameters for balanced cables .....	75
Table B.16 – Contact assignments for the external connector for harsh industrial environments .....	76
Table C.1 – General transmission media selection information .....	81
Table C.2 – Network characteristics for balanced cabling based on Ethernet (ISO/IEC 8802-3) .....	82
Table C.3 – Network characteristics for optical fibre cabling .....	82
Table C.4 – Information relevant to copper cable: CP 3/3, CP 3/4, CP 3/5 and CP 3/6 type A fixed cables .....	83
Table C.5 – Information relevant to copper cable: CP 3/3, CP 3/4, CP 3/5 and CP 3/6 type B flexible cables .....	84
Table C.6 – Information relevant to copper cable: CP 3/3, CP 3/4, CP 3/5 and CP 3/6 type C special cables .....	85
Table C.7 – Information relevant to copper cable: CP 3/3, CP 3/4, CP 3/5 and CP 3/6 of cabinet cord sets .....	85

Table C.8 – Information relevant to optical fibre cables .....	86
Table C.9 – Requirements for plastic and hard clad silica optical fibre cables .....	87
Table C.10 – Requirements for glass multimode optical fibre cables .....	88
Table C.11 – Requirements for glass singlemode optical fibre cables .....	89
Table C.12 – Information relevant to hybrid cables (application type B) .....	90
Table C.13 – Information relevant to hybrid cables (application type C) .....	91
Table C.14 – Connectors for balanced cabling CPs based on Ethernet .....	92
Table C.15 – Optical fibre connecting hardware .....	92
Table C.16 – Relationship between FOC and fibre types (CP 3/3, CP 3/4, CP 3/5, CP3/6) .....	93
Table C.17 – Typical fibre channels common for industrial applications. ....	96
Table C.18 – Parameters for balanced cables.....	99
Table C.19 – Parameters for silica optical fibre cables .....	99
Table C.20 – Parameters for POF optical fibre cables.....	100
Table C.21 – Parameters for hard clad silica optical fibre cables .....	100
Table C.22 – Colour coding of 2 pair cabling for CP 3/3, CP 3/4, CP 3/5 and CP 3/6 connectors.....	101
Table C.23 – Colour coding of 4 pair cabling for CP 3/3, CP 3/4, CP 3/5 and CP 3/6 connectors.....	102
Table C.24 – Formula for NEXT limits for an end-to-end link.....	106
Table C.25 – Maximum fibre channel attenuation for CP 3/3, CP 3/4, CP 3/5 and CP 3/6 (PROFINET)ET) .....	106

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

### **INDUSTRIAL COMMUNICATION NETWORKS – PROFILES –**

#### **Part 5-3: Installation of fieldbuses – Installation profiles for CPF 3**

### 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 61784-5-3 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

This third edition cancels and replaces the second edition published in 2010. This edition constitutes a technical revision.

This edition includes an addition of 4-pair cabling (see C.4.4.1.2.1 and C.5.3.2), an addition of the connector M12 X-Coding (see C.4.4.2.2), an addition of the definition of end-to-end links (see C.4.4.3.1), a revision of Table C.17 (see C.5.2.1) and a formula for the NEXT limits of end-to-end links (see C.6.3.2.1.2).

This standard is to be used in conjunction with IEC 61918:2013.

The text of this standard is based on the following documents:

FDIS	Report on voting
65C/738/FDIS	65C/743/RVD

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

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

A list of all parts of IEC 61784-5 series, under the general title *Industrial communication networks – Profiles – Installation of fieldbuses*, can be found on the IEC website.

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



## INTRODUCTION

This International Standard is one of a series produced to facilitate the use of communication networks in industrial control systems.

IEC 61918:2013 provides the common requirements for the installation of communication networks in industrial control systems. This installation profile standard provides the installation profiles of the communication profiles (CP) of a specific communication profile family (CPF) by stating which requirements of IEC 61918 fully apply and, where necessary, by supplementing, modifying, or replacing the other requirements (see Figure 1).

For general background on fieldbuses, their profiles, and relationship between the installation profiles specified in this standard, see IEC 61158-1.

Each CP installation profile is specified in a separate annex of this standard. Each annex is structured exactly as the reference standard IEC 61918 for the benefit of the persons representing the roles in the fieldbus installation process as defined in IEC 61918 (planner, installer, verification personnel, validation personnel, maintenance personnel, administration personnel). By reading the installation profile in conjunction with IEC 61918, these persons immediately know which requirements are common for the installation of all CPs and which are modified or replaced. The conventions used to draft this standard are defined in Clause 5.

The provision of the installation profiles in one standard for each CPF (for example IEC 61784-5-3 for CPF 3), allows readers to work with standards of a convenient size.

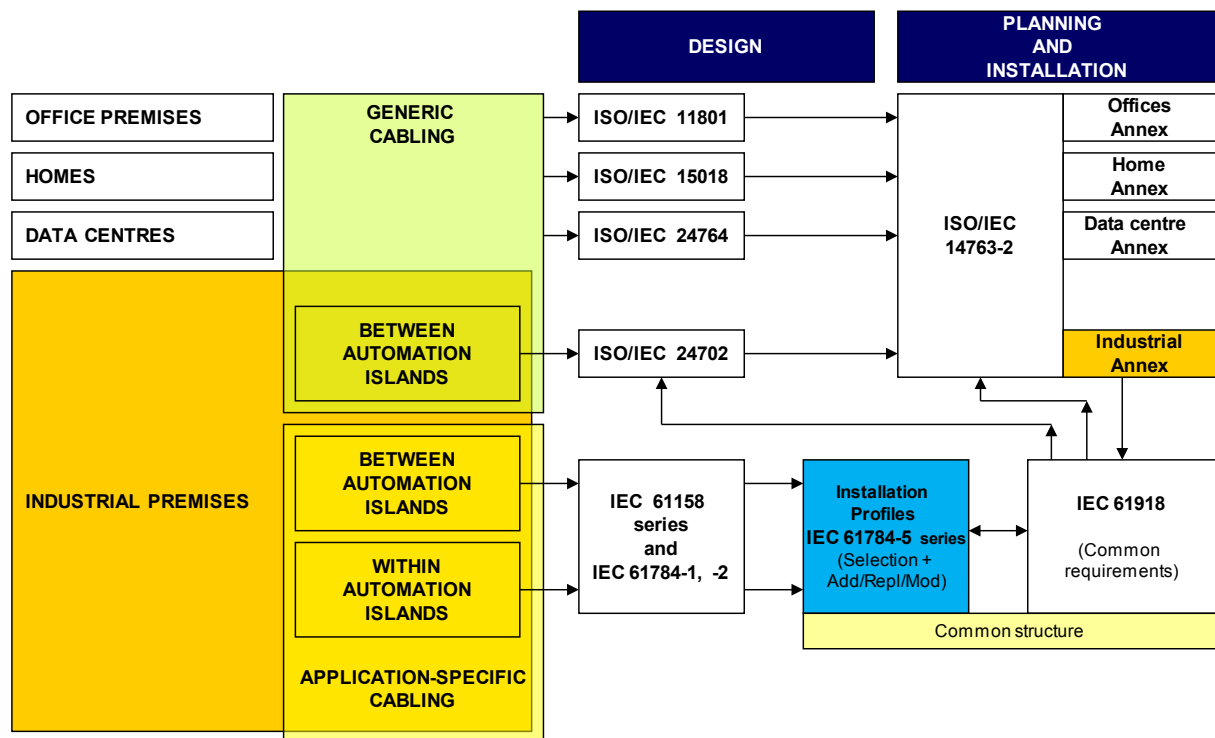


Figure 1 – Standards relationships

## INDUSTRIAL COMMUNICATION NETWORKS – PROFILES –

### Part 5-3: Installation of fieldbuses – Installation profiles for CPF 3

#### 1 Scope

This part of IEC 61784-5 specifies the installation profiles for CPF 3 (PROFIBUS/PROFINET)<sup>1</sup>.

The installation profiles are specified in the annexes. These annexes are read in conjunction with IEC 61918:2013.

#### 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 61918:2013, *Industrial communication networks – Installation of communication networks in industrial premises*

The normative references of IEC 61918:2013, Clause 2, apply. For profile specific normative references, see Clause(s) A.2, B.2 and C.2.

#### 3 Terms, definitions and abbreviated terms

For the purposes of this document, the terms, definitions and abbreviated terms of IEC 61918:2013, Clause 3, apply. For profile specific terms, definitions and abbreviated terms see Clause(s) A.3, B.3 and C.3.

#### 4 CPF 3: Overview of installation profiles

CPF 3 consists of six communication profiles as specified in IEC 61784-1 and IEC 61784-2.

The installation requirements for CP 3/1 (PROFIBUS with physical layer according to RS 485, RS 485-IS, and fibre) are specified in Annex A.

The installation requirements for CP 3/2 (PROFIBUS with physical layer according to MBP, MBP-IS, MBP-LP) are specified in Annex B.

The installation requirements for CP 3/3, CP 3/4, CP 3/5, and CP 3/6 (PROFINET) are specified in Annex C.

---

<sup>1</sup> PROFIBUS and PROFINET are trade names of the non-profit organization PROFIBUS Nutzerorganisation e.V. (PNO). This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the trade names holder or any of its products. Compliance to this profile does not require use of the trade names. Use of the trade names PROFIBUS and PROFINET requires permission of the trade name holder.

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
  - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-