



NSAI
Standards

Irish Standard
I.S. EN 61784-5-14:2013

Industrial communication networks - Profiles -- Part 5-14: Installation of fieldbuses - Installation profiles for CPF 14

I.S. EN 61784-5-14:2013

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 61784-5-14:2013

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 61784-5-14

December 2013

ICS 25.040.40; 35.100.40

Supersedes EN 61784-5-14:2012

English version

**Industrial communication networks -
Profiles -
Part 5-14: Installation of fieldbuses -
Installation profiles for CPF 14
(IEC 61784-5-14:2013)**

Réseaux de communication industriels -
Profils -
Partie 5-14: Installation des bus de terrain -
Profils d'installation pour CPF 14
(CEI 61784-5-14:2013)

Industrielle Kommunikationsnetze -
Profile -
Teil 5-14: Feldbusinstallation -
Installationsprofile für die
Kommunikationsprofilfamilie 14
(IEC 61784-5-14:2013)

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 2 of IEC 61784-5-14, 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 61784-5-14:2013.

The following dates are fixed:

- latest date by which the document has to be (dop) 2014-07-18
implemented at national level by
publication of an identical national
standard or by endorsement
- latest date by which the national (dow) 2016-10-18
standards conflicting with the
document have to be withdrawn

This document supersedes EN 61784-5-14:2012.

IEC 61784-5-14:2013 includes the following significant technical changes with respect to EN 61784-5-14:2012:

- requirements for CP 14/3 have been added;
- recommendations for the applications about the linear/ring topology networks have been added;
- Table A.2 and Table A.6 have been updated.

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 61784-5-14:2013 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 61784-5-14

Edition 2.0 2013-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Industrial communication networks – Profiles –
Part 5-14: Installation of fieldbuses – Installation profiles for CPF 14**

**Réseaux de communication industriels – Profils –
Partie 5-14: Installation des bus de terrain – Profils d'installation pour CPF 14**



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
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

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

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

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

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: 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

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

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

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

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.



IEC 61784-5-14

Edition 2.0 2013-09

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Industrial communication networks – Profiles –
Part 5-14: Installation of fieldbuses – Installation profiles for CPF 14**

**Réseaux de communication industriels – Profils –
Partie 5-14: Installation des bus de terrain – Profils d'installation pour CPF 14**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX



ICS 25.040.40; 35.100.40

ISBN 978-2-8322-1070-3

**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
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms, definitions and abbreviated terms	7
4 CPF 14: Overview of installation profiles	7
5 Installation profile conventions	7
6 Conformance to installation profiles.....	8
Annex A (Normative) CP 14/1, 14/2 and 14/3 (EPA) specific installation profile	9
A.1 Installation profile scope.....	9
A.2 Normative references	9
A.3 Installation profile terms, definitions, and abbreviated terms.....	9
A.3.1 Terms and definitions	9
A.3.2 Abbreviated terms	9
A.3.3 Conventions for installation profiles.....	9
A.4 Installation planning	9
A.4.1 General.....	9
A.4.2 Planning requirements.....	9
A.4.3 Network capabilities	12
A.4.4 Selection and use of cabling components.....	16
A.4.5 Cabling planning documentation.....	23
A.4.6 Verification of cabling planning specification	23
A.5 Installation implementation	23
A.5.1 General requirements.....	23
A.5.2 Cable installation.....	23
A.5.3 Connector installation.....	25
A.5.4 Terminator installation.....	30
A.5.5 Device installation	30
A.5.6 Coding and labelling.....	30
A.5.7 Earthing and bonding of equipment and devices and shield cabling.....	30
A.5.8 As-implemented cabling documentation.....	30
A.6 Installation verification and installation acceptance test.....	30
A.6.1 General.....	30
A.6.2 Installation verification.....	30
A.6.3 Installation acceptance test	31
A.7 Installation administration.....	32
A.8 Installation maintenance and installation troubleshooting	32
Figure 1 – Standards relationships.....	6
Figure A.1 – Example of EPA explosion-proof system.....	10
Figure A.2 – Earth of zener safety barrier	11
Figure A.3 – Earth of isolated safety barrier	11
Figure A.4 – Three stars coupled to a ring topology	12
Figure A.5 – Five daisy chain lines coupled to a ring topology	12

Figure A.6 – Five sub-rings coupled to a ring topology	13
Figure A.7 – Example of power with Ethernet.....	15
Figure A.8 – Example of power supply over 0,2 A	16
Figure A.9 – Example of power with Ethernet in linear/ring topology network	16
Figure A.10 – Examples of earthing method for the linear/ring topologies network	22
Figure A.11 – Pin assignment of sub-D connector	25
Figure A.12 – Example of a 4-pin open style connector	27
Figure A.13 – Example of a 6-pin open style connector	28
Figure A.14 – Example of an 8-pin open style connector	29
Table A.1 – Network characteristics for balanced cabling based on Ethernet	14
Table A.2 – Network characteristics for optical fibre cabling.....	14
Table A.3 – Information relevant to copper cable	16
Table A.4 – Information relevant to copper cable: fixed cables	17
Table A.5 – Information relevant to copper cable: cords.....	17
Table A.6 – Information relevant to optical fibre cables	18
Table A.7 – Connectors for balanced cabling CPs based on Ethernet	19
Table A.8 – Optical fibre connecting hardware	19
Table A.9 – Relationship between FOC and fibre type (CP 14/1, CP 14/2 and CP 14/3).....	20
Table A.10 – Specific connectors for balanced cabling based on Ethernet	20
Table A.11 – Requirements of sub-D and open style connector	21
Table A.12 – Parameters for balanced cables	23
Table A.13 – Parameters for silica optical fibre cables	24
Table A.14 – Parameters for POF optical fibre cables	24
Table A.15 – Parameters for hard cladded silica optical fibre cables	24
Table A.16 – Signal lines assignment of sub-D connector	26
Table A.17 – Signal lines assignment of sub-D connector for 1 000 Base Ethernet	26
Table A.18 – Signal lines assignment for a 4-pin open style connector	27
Table A.19 – Signal lines assignment for a 6-pin open style connector	28
Table A.20 – Signal lines assignment for an 8-pin open style connector(10/100 Mbps)	29
Table A.21 – Signal lines assignment for an 8-pin open style connector(1 000 Mbit/s)	30

INTERNATIONAL ELECTROTECHNICAL COMMISSION

INDUSTRIAL COMMUNICATION NETWORKS – PROFILES –

Part 5-14: Installation of fieldbuses – Installation profiles for CPF 14

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 61784-5-14 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

This second edition cancels and replaces the first edition issued in 2010. It constitutes a technical revision.

The main technical changes with regard to the previous edition are as follows:

- requirements for CP 14/3 have been added,
- recommendations for the applications about the linear/ring topology networks have been added,
- Table A.2 and Table A.6 have been updated.

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 61784-5-14 for CPF 14), allows readers to work with standards of a convenient size.

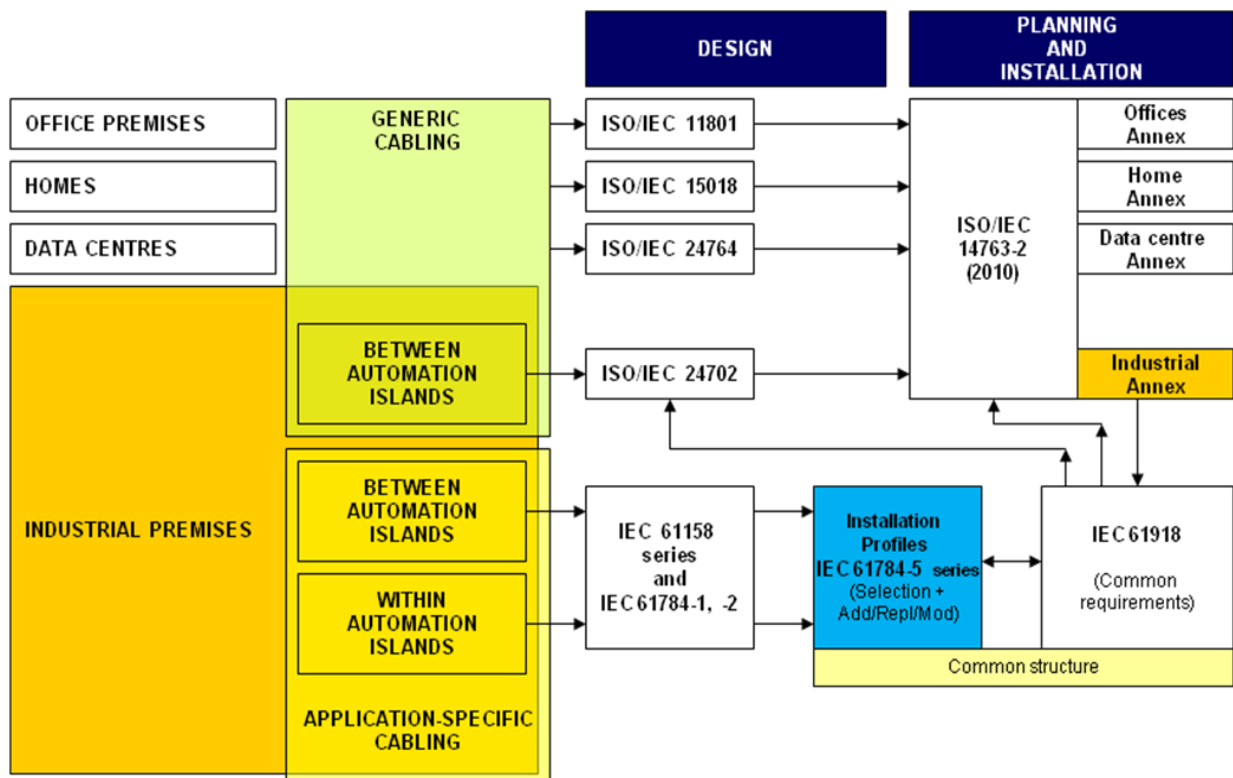


Figure 1 – Standards relationships

INDUSTRIAL COMMUNICATION NETWORKS – PROFILES –

Part 5-14: Installation of fieldbuses – Installation profiles for CPF 14

1 Scope

This part of IEC 61784-5 specifies the installation profiles for CPF 14 (EPA¹).

The installation profiles are specified in the annex. This annex is 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.

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.

4 CPF 14: Overview of installation profiles

CPF 14 consists of three communication profiles as specified in IEC 61784-2.

The installation requirements for CP 14/1, CP 14/2 and CP 14/3 (EPA) are specified in Annex A.

5 Installation profile conventions

The numbering of the clauses and subclauses in the annexes of this standard corresponds to the numbering of IEC 61918 main clauses and subclauses.

The annex clauses and subclauses of this standard supplement, modify, or replace the respective clauses and subclauses in IEC 61918.

1 EPA is the technology name of the CPF14. EPA is the trade name of Zhejiang SUPCON Technology Group Co. Ltd, China. 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 to this profile does not require use of the trade name. Use of the trade name 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
-