

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

REDLINE VERSION

Industriell processtyrning – Profiler – Del 5-8: Installation av fältbussar – Installationsprofiler för CPF 8 (Interbus™)

Industrial networks –

Profiles –

Part 5-8: Installation of fieldbuses –

Installation profiles for CPF 8

En så kallad ”Redline version” (RLV) innehåller både standarden som fastställts som SS och en ändringsmarkerad IEC-standard. Alla tillägg och borttagningar sedan den tidigare utgåvan av IEC-standardens är markerade med färg. Med en RLV sparar du mycket tid när du ska identifiera och bedöma aktuella ändringar i standarden. SEK Svensk Elstandard kan bara ge ut RLV i de fall den finns tillgänglig från IEC.



IEC 61784-5-8

Edition 3.0 2024-04
REDLINE VERSION

INTERNATIONAL STANDARD



Industrial **communication** networks – Profiles –
Part 5-8: Installation of fieldbuses – Installation profiles for CPF 8

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 25.040.40; 35.100.40

ISBN 978-2-8322-8695-1

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD.....	7
INTRODUCTION.....	2
1 Scope.....	11
2 Normative references	11
3 Terms, definitions and abbreviated terms	11
4 CPF 8: Overview of installation profiles	12
5 Installation profile conventions.....	12
6 Conformance to installation profiles.....	13
Annex A (normative) CP 8/1 and CP 8/2 (CC-Link™/V1 and CC-Link™/V2) specific installation profile	14
A.1 Installation profile scope	14
A.2 Normative references.....	14
A.3 Installation profile terms, definitions, and abbreviated terms	14
A.3.1 Terms and definitions	14
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.....	15
A.4.3 Network capabilities.....	15
A.4.4 Selection and use of cabling components	17
A.4.5 Cabling planning documentation	22
A.4.6 Verification of cabling planning specification.....	22
A.5 Installation implementation.....	22
A.5.1 General requirements	22
A.5.2 Cable installation	23
A.5.3 Connector installation	24
A.5.4 Terminator installation	24
A.5.5 Device installation	25
A.5.6 Coding and labelling	25
A.5.7 Earthing and bonding of equipment and devices and shield cabling	25
A.5.8 As-implemented cabling documentation	25
A.6 Installation verification and installation acceptance test	26
A.6.1 General	26
A.6.2 Installation verification	26
A.6.3 Installation acceptance test	27
A.7 Installation administration	27
A.8 Installation maintenance and installation troubleshooting	27
Annex B (normative) CP 8/3 (CC-Link/LT™) specific installation profile	28
B.1 Installation profile scope	28
B.2 Normative references.....	28
B.3 Installation profile terms, definitions, and abbreviated terms	28
B.3.1 Terms and definitions	28
B.3.2 Abbreviated terms	28
B.3.3 Conventions for installation profiles	28
B.4 Installation planning.....	28

B.4.1	General	28
B.4.2	Planning requirements	29
B.4.3	Network capabilities	29
B.4.4	Selection and use of cabling components	32
B.4.5	Cabling planning documentation	39
B.4.6	Verification of cabling planning specification	39
B.5	Installation implementation	39
B.5.1	General requirements	39
B.5.2	Cable installation	39
B.5.3	Connector installation	40
B.5.4	Terminator installation	41
B.5.5	Device installation	41
B.5.6	Coding and labelling	41
B.5.7	Earthing and bonding of equipment and devices and shield cabling	41
B.5.8	As-implemented cabling documentation	41
B.6	Installation verification and installation acceptance test	42
B.6.1	General	42
B.6.2	Installation verification	42
B.6.3	Installation acceptance test	43
B.7	Installation administration	43
B.8	Installation maintenance and installation troubleshooting	43
Annex C (normative)	CP 8/4 (CC-Link IE™ Controller Network) specific installation profile	44
C.1	Installation profile scope	44
C.2	Normative references	44
C.3	Installation profile terms, definitions, and abbreviated terms	44
C.3.1	Terms and definitions	44
C.3.2	Abbreviated terms	44
C.3.3	Conventions for installation profiles	44
C.4	Installation planning	44
C.4.1	General	44
C.4.2	Planning requirements	44
C.4.3	Network capabilities	45
C.4.4	Selection and use of cabling components	46
C.4.5	Cabling planning documentation	52
C.4.6	Verification of cabling planning specification	52
C.5	Installation implementation	52
C.5.1	General requirements	52
C.5.2	Cable installation	53
C.5.3	Connector installation	54
C.5.4	Terminator installation	54
C.5.5	Device installation	55
C.5.6	Coding and labelling	55
C.5.7	Earthing and bonding of equipment and devices and shield cabling	55
C.5.8	As-implemented cabling documentation	56
C.6	Installation verification and installation acceptance test	56
C.6.1	General	56
C.6.2	Installation verification	56
C.6.3	Installation acceptance test	57

C.7	Installation administration	57
C.8	Installation maintenance and installation troubleshooting	57
Annex D (normative)	CP 8/5 (CC-Link IE™ Field Network) specific installation profile	58
D.1	Installation profile scope	58
D.2	Normative references	58
D.3	Installation profile terms, definitions, and abbreviated terms	58
D.3.1	Terms and definitions	58
D.3.2	Abbreviated terms	58
D.3.3	Conventions for installation profiles	58
D.4	Installation planning	58
D.4.1	General	58
D.4.2	Planning requirements	58
D.4.3	Network capabilities	59
D.4.4	Selection and use of cabling components	60
D.4.5	Cabling planning documentation	65
D.4.6	Verification of cabling planning specification	65
D.5	Installation implementation	65
D.5.1	General requirements	65
D.5.2	Cable installation	65
D.5.3	Connector installation	67
D.5.4	Terminator installation	67
D.5.5	Device installation	67
D.5.6	Coding and labelling	67
D.5.7	Earthing and bonding of equipment and devices and shield cabling	67
D.5.8	As-implemented cabling documentation	68
D.6	Installation verification and installation acceptance test	68
D.6.1	General	68
D.6.2	Installation verification	68
D.6.3	Installation acceptance test	69
D.7	Installation administration	70
D.8	Installation maintenance and installation troubleshooting	70
Annex E (normative)	CP 8/6 (CC-Link IE™ TSN) specific installation profile	71
E.1	Installation profile scope	71
E.2	Normative references	71
E.3	Installation profile terms, definitions, and abbreviated terms	71
E.3.1	Terms and definitions	71
E.3.2	Abbreviated terms	71
E.3.3	Conventions for installation profiles	71
E.4	Installation planning	71
E.4.1	General	71
E.4.2	Planning requirements	72
E.4.3	Network capabilities	72
E.4.4	Selection and use of cabling components	74
E.4.5	Cabling planning documentation	80
E.4.6	Verification of cabling planning specification	80
E.5	Installation implementation	81
E.5.1	General requirements	81
E.5.2	Cable installation	81
E.5.3	Connector installation	82

E.5.4	Terminator installation	83
E.5.5	Device installation	83
E.5.6	Coding and labelling	83
E.5.7	Earthing and bonding of equipment and devices and shield cabling	83
E.5.8	As-implemented cabling documentation	84
E.6	Installation verification and installation acceptance test	84
E.6.1	General	84
E.6.2	Installation verification	84
E.6.3	Installation acceptance test	85
E.7	Installation administration	85
E.8	Installation maintenance and installation troubleshooting	85
	Bibliography	86
	Figure 1 – Standards relationships	10
	Figure A.1 – Pass-through connector configuration	16
	Figure A.2 – Bus t-branch topology	16
	Figure A.3 – Wiring	19
	Figure B.1 – Powered network topology	30
	Figure B.2 – Bus t-branch topology	30
	Figure B.3 – Flat cable cross section – with key	32
	Figure B.4 – Flat cable cross section – without key	32
	Figure B.5 – Flat cable polarity marking	33
	Figure B.6 – Wiring	34
	Figure B.7 – Flat cable connector and terminal cover	35
	Table A.1 – Basic network characteristics for balanced cabling not based on Ethernet	17
	Table A.2 – Bus t-branch network characteristics	17
	Table A.3 – Information relevant to copper cable: fixed cables	18
	Table A.4 – Connectors for copper cabling CPs not based on Ethernet	19
	Table A.5 – Parameters for balanced cables	23
	Table A.6 – Cable conductor assignments	24
	Table B.1 – Basic network characteristics for balanced cabling not based on Ethernet	31
	Table B.2 – CP 8/3 additional topology length limits	31
	Table B.3 – Information relevant to copper cable: cords	33
	Table B.4 – Connectors for copper cabling CPs not based on Ethernet	36
	Table B.5 – Parameters for balanced cables	39
	Table B.6 – Flat cable conductor assignments	40
	Table C.1 – Network characteristics for balanced cabling based on Ethernet	46
	Table C.2 – Network characteristics for optical fibre cabling	46
	Table C.3 – Information relevant to copper cable: fixed cables	47
	Table C.4 – Information relevant to optical fibre cables	48
	Table C.5 – Connectors for balanced cabling CPs based on Ethernet	48
	Table C.6 – Optical fibre connecting hardware	49
	Table C.7 – Relationship between FOC and fibre types (CP 8/4)	49

Table C.8 – Parameters for balanced cables.....	53
Table C.9 – Parameters for silica optical fibre cables.....	53
Table D.1 – Network characteristics for balanced cabling based on Ethernet	60
Table D.2 – Information relevant to copper cable: fixed cables.....	61
Table D.3 – Connectors for balanced cabling CPs based on Ethernet	62
Table D.4 – Parameters for balanced cables.....	66
Table E.1 – Network characteristics for balanced cabling based on Ethernet	73
Table E.2 – Network characteristics for optical fibre cabling.....	74
Table E.3 – Information relevant to copper cable: fixed cables.....	75
Table E.4 – Information relevant to optical fibre cables	76
Table E.5 – Connectors for balanced cabling CPs based on Ethernet	77
Table E.6 – Optical fibre connecting hardware	77
Table E.7 – Relationship between FOC and fibre types (CP 8/6).....	77
Table E.8 – Parameters for balanced cables	81
Table E.9 – Parameters for silica optical fibre cables	81

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INDUSTRIAL ~~COMMUNICATION~~ NETWORKS –
PROFILES –****Part 5-8: Installation of fieldbuses –
Installation profiles for CPF 8**

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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 61784-5-8:2018. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 61784-5-8 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation. It is an International Standard.

This document is to be used in conjunction with IEC 61918:2018, IEC 61918:2018/AMD1:2022 and IEC 61918:2018/AMD2:2024.

This third edition cancels and replaces the second edition published in 2018. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Annex E and related references have been added.

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

Draft	Report on voting
65C/1280/FDIS	65C/1295/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with the ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts of IEC 61784-5 series, published under the general title *Industrial networks – Profiles – Installation of fieldbuses*, 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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

IMPORTANT – The "colour inside" logo on the cover page of this document 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 document is one of a series produced to facilitate the use of communication networks in industrial control systems.

IEC 61918:2018, IEC 61918:2018/AMD1:2022 and IEC 61918:2018/AMD2:2024 provide 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 61918:2018 and IEC 61918:2018/AMD1:2022 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 document, see IEC 61158-1.

Each CP installation profile is specified in a separate annex of this document. Each annex is structured exactly as the reference standard IEC 61918:2018 for the benefit of the persons representing the roles in the fieldbus installation process as defined in IEC 61918:2018 (planner, installer, verification personnel, validation personnel, maintenance personnel, administration personnel). By reading the installation profile in conjunction with IEC 61918:2018, 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 document are defined in Clause 5.

The provision of the installation profiles in one standard for each CPF (for example IEC 61784-5-8 for CPF 8) allows readers to work with standards of a convenient size.

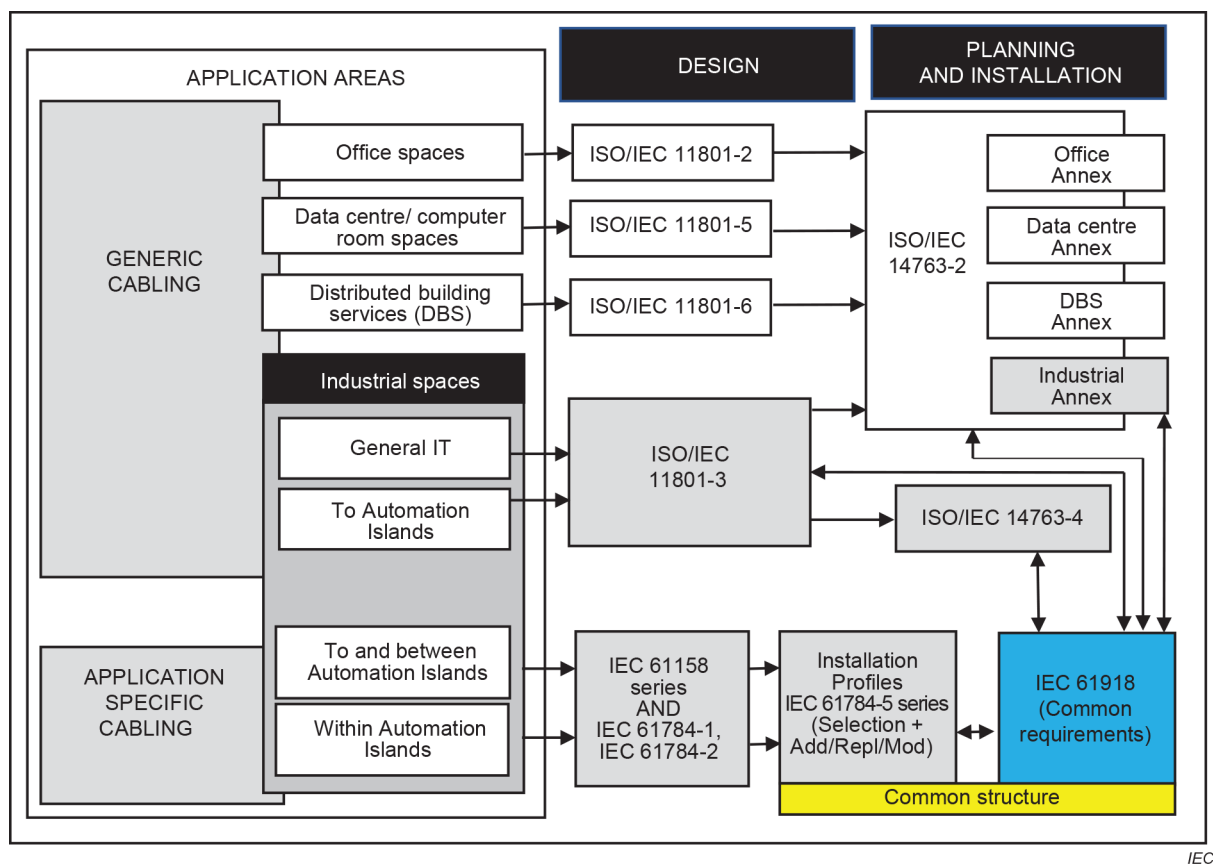
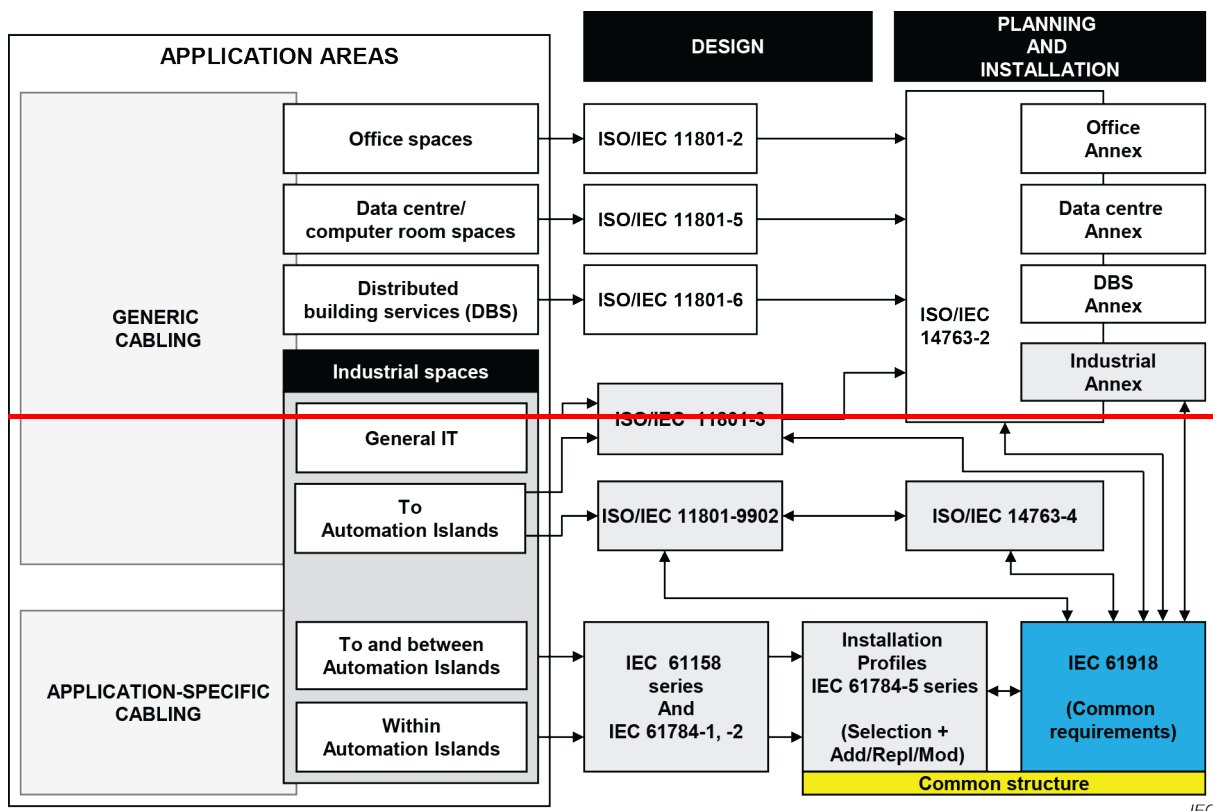


Figure 1 – Standards relationships

INDUSTRIAL ~~COMMUNICATION~~ NETWORKS – PROFILES –

Part 5-8: Installation of fieldbuses – Installation profiles for CPF 8

1 Scope

This part of IEC 61784-5 specifies the installation profiles for CPF 8 (CC-Link^{TM1}).

The installation profiles are specified in the annexes. These annexes are read in conjunction with IEC 61918:2018, IEC 61918:2018/AMD1:2022 and IEC 61918:2018/AMD2:2024.

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 61918:2018², *Industrial communication networks – Installation of communication networks in industrial premises*

IEC 61918:2018/AMD1:2022

IEC 61918:2018/AMD2:2024

~~The normative references of IEC 61918:2018, Clause 2, apply.~~

NOTE For profile specific normative references, see Clauses A.2, B.2, ~~C.2 and D.2~~ and E.2 respectively.

¹ CC-LinkTM, CC-Link/LTTM and CC-Link IETM are trade names of Mitsubishi Electric Co., control of trade name use is given to CCLink Partner Association. 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.

² The normative references of IEC 61918:2018, Clause 2, IEC 61918:2018/AMD1:2022, Clause 2 and IEC 61918:2018/AMD2:2024, Clause 2, apply.

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

Industriell processtyrning – Profiler – Del 5-8: Installation av fältbussar – Installationsprofiler för CPF 8 (Interbus)

Industrial networks –

Profiles –

Part 5-8: Installation of fieldbuses –

Installation profiles for CPF 8

Som svensk standard gäller europastandarden EN IEC 61784-5-8:2024. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 61784-5-8:2024.

Nationellt förord

Europastandarden EN IEC 61784-5-8:2024

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 61784-5-8, Third edition, 2024 - Industrial networks – Profiles – Part 5-8: Installation of fieldbuses – Installation profiles for CPF 8**

utarbetad inom International Electrotechnical Commission, IEC.

Standarden ska användas tillsammans med SS-EN IEC 61918, utg 3:2018 och dess separat utgivna tillägg, ändringar och rättelser.

Tidigare fastställd svensk standard SS-EN IEC 61784-5-8, utg 2:2019 med eventuella tillägg, ändringar och rättelser gäller ej fr o m 2027-07-05.

ICS 25.040.40; 35.100.40

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
Postadress: Box 1042, 172 21 Sundbyberg
Telefon: 08 - 444 14 00.
E-post: sek@elstandard.se. Internet: elstandard.se

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 1042
172 21 Sundbyberg
Tel 08-444 14 00
elstandard.se

English Version

Industrial networks - Profiles - Part 5-8: Installation of fieldbuses
- Installation profiles for CPF 8
(IEC 61784-5-8:2024)

Réseaux industriels - Profils - Partie 5-8: Installation des
bus de terrain - Profils d'installation pour la CPF 8
(IEC 61784-5-8:2024)

Industrielle Kommunikationsnetze - Profile - Teil 5-8:
Feldbusinstallation - Installationsprofile für die
Kommunikationsprofilfamilie 8
(IEC 61784-5-8:2024)

This European Standard was approved by CENELEC on 2024-05-08. 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, Türkiye 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 65C/1280/FDIS, future edition 3 of IEC 61784-5-8, 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 IEC 61784-5-8:2024.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2025-02-08 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2027-05-08 document have to be withdrawn

This document supersedes EN IEC 61784-5-8:2018 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.

This document is read in conjunction with EN IEC 61918:2018 and all of its amendments and corrigenda (if any).

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 61784-5-8:2024 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 61918	2018	Industrial communication networks - Installation of communication networks in industrial premises	EN IEC 61918	2018 ¹
-	-		+ A11	2019
-	-		+ A12	2023
-	-		+ AC	2019-03
+ AMD1	2022		+ A1	2022
+ AMD2	2024		+ A2	2024

¹ The normative references of EN IEC 61918:2018, EN IEC 61918:2018/A11:2019, EN IEC 61918:2018/A12:2023, EN IEC 61918:2018/AC:2019-03, EN IEC 61918:2018/A1:2022, and EN IEC 61918:2018/A2:2024 apply.

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Industrial networks – Profiles –
Part 5-8: Installation of fieldbuses – Installation profiles for CPF 8**

**Réseaux industriels – Profils –
Partie 5-8: Installation des bus de terrain – Profils d'installation pour la CPF 8**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 25.040.40, 35.100.40

ISBN 978-2-8322-8349-3

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.....	7
INTRODUCTION.....	9
1 Scope.....	10
2 Normative references	10
3 Terms, definitions and abbreviated terms	10
4 CPF 8: Overview of installation profiles	11
5 Installation profile conventions.....	11
6 Conformance to installation profiles.....	12
Annex A (normative) CP 8/1 and CP 8/2 (CC-Link™/V1 and CC-Link™/V2) 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	13
A.3.3 Conventions for installation profiles	13
A.4 Installation planning.....	13
A.4.1 General	13
A.4.2 Planning requirements.....	14
A.4.3 Network capabilities.....	14
A.4.4 Selection and use of cabling components	16
A.4.5 Cabling planning documentation	21
A.4.6 Verification of cabling planning specification.....	21
A.5 Installation implementation.....	21
A.5.1 General requirements	21
A.5.2 Cable installation	22
A.5.3 Connector installation	23
A.5.4 Terminator installation	23
A.5.5 Device installation	24
A.5.6 Coding and labelling	24
A.5.7 Earthing and bonding of equipment and devices and shield cabling	24
A.5.8 As-implemented cabling documentation	24
A.6 Installation verification and installation acceptance test	25
A.6.1 General	25
A.6.2 Installation verification	25
A.6.3 Installation acceptance test	26
A.7 Installation administration	26
A.8 Installation maintenance and installation troubleshooting	26
Annex B (normative) CP 8/3 (CC-Link/LT™) specific installation profile	27
B.1 Installation profile scope	27
B.2 Normative references.....	27
B.3 Installation profile terms, definitions, and abbreviated terms	27
B.3.1 Terms and definitions	27
B.3.2 Abbreviated terms	27
B.3.3 Conventions for installation profiles	27
B.4 Installation planning.....	27

B.4.1	General	27
B.4.2	Planning requirements	28
B.4.3	Network capabilities	28
B.4.4	Selection and use of cabling components	31
B.4.5	Cabling planning documentation	38
B.4.6	Verification of cabling planning specification	38
B.5	Installation implementation	38
B.5.1	General requirements	38
B.5.2	Cable installation	38
B.5.3	Connector installation	39
B.5.4	Terminator installation	40
B.5.5	Device installation	40
B.5.6	Coding and labelling	40
B.5.7	Earthing and bonding of equipment and devices and shield cabling	40
B.5.8	As-implemented cabling documentation	40
B.6	Installation verification and installation acceptance test	41
B.6.1	General	41
B.6.2	Installation verification	41
B.6.3	Installation acceptance test	42
B.7	Installation administration	42
B.8	Installation maintenance and installation troubleshooting	42
Annex C (normative)	CP 8/4 (CC-Link IE™ Controller Network) specific installation profile	43
C.1	Installation profile scope	43
C.2	Normative references	43
C.3	Installation profile terms, definitions, and abbreviated terms	43
C.3.1	Terms and definitions	43
C.3.2	Abbreviated terms	43
C.3.3	Conventions for installation profiles	43
C.4	Installation planning	43
C.4.1	General	43
C.4.2	Planning requirements	43
C.4.3	Network capabilities	44
C.4.4	Selection and use of cabling components	45
C.4.5	Cabling planning documentation	51
C.4.6	Verification of cabling planning specification	51
C.5	Installation implementation	51
C.5.1	General requirements	51
C.5.2	Cable installation	52
C.5.3	Connector installation	53
C.5.4	Terminator installation	53
C.5.5	Device installation	54
C.5.6	Coding and labelling	54
C.5.7	Earthing and bonding of equipment and devices and shield cabling	54
C.5.8	As-implemented cabling documentation	55
C.6	Installation verification and installation acceptance test	55
C.6.1	General	55
C.6.2	Installation verification	55
C.6.3	Installation acceptance test	56

C.7	Installation administration	56
C.8	Installation maintenance and installation troubleshooting	56
Annex D (normative)	CP 8/5 (CC-Link IE™ Field Network) specific installation profile	57
D.1	Installation profile scope	57
D.2	Normative references	57
D.3	Installation profile terms, definitions, and abbreviated terms	57
D.3.1	Terms and definitions	57
D.3.2	Abbreviated terms	57
D.3.3	Conventions for installation profiles	57
D.4	Installation planning	57
D.4.1	General	57
D.4.2	Planning requirements	57
D.4.3	Network capabilities	58
D.4.4	Selection and use of cabling components	59
D.4.5	Cabling planning documentation	64
D.4.6	Verification of cabling planning specification	64
D.5	Installation implementation	64
D.5.1	General requirements	64
D.5.2	Cable installation	64
D.5.3	Connector installation	66
D.5.4	Terminator installation	66
D.5.5	Device installation	66
D.5.6	Coding and labelling	66
D.5.7	Earthing and bonding of equipment and devices and shield cabling	66
D.5.8	As-implemented cabling documentation	67
D.6	Installation verification and installation acceptance test	67
D.6.1	General	67
D.6.2	Installation verification	67
D.6.3	Installation acceptance test	68
D.7	Installation administration	69
D.8	Installation maintenance and installation troubleshooting	69
Annex E (normative)	CP 8/6 (CC-Link IE™ TSN) specific installation profile	70
E.1	Installation profile scope	70
E.2	Normative references	70
E.3	Installation profile terms, definitions, and abbreviated terms	70
E.3.1	Terms and definitions	70
E.3.2	Abbreviated terms	70
E.3.3	Conventions for installation profiles	70
E.4	Installation planning	70
E.4.1	General	70
E.4.2	Planning requirements	71
E.4.3	Network capabilities	71
E.4.4	Selection and use of cabling components	73
E.4.5	Cabling planning documentation	79
E.4.6	Verification of cabling planning specification	79
E.5	Installation implementation	80
E.5.1	General requirements	80
E.5.2	Cable installation	80
E.5.3	Connector installation	81

E.5.4	Terminator installation	82
E.5.5	Device installation	82
E.5.6	Coding and labelling	82
E.5.7	Earthing and bonding of equipment and devices and shield cabling	82
E.5.8	As-implemented cabling documentation	83
E.6	Installation verification and installation acceptance test	83
E.6.1	General	83
E.6.2	Installation verification	83
E.6.3	Installation acceptance test	84
E.7	Installation administration	84
E.8	Installation maintenance and installation troubleshooting	84
	Bibliography	85
	Figure 1 – Standards relationships	9
	Figure A.1 – Pass-through connector configuration	15
	Figure A.2 – Bus t-branch topology	15
	Figure A.3 – Wiring	18
	Figure B.1 – Powered network topology	29
	Figure B.2 – Bus t-branch topology	29
	Figure B.3 – Flat cable cross section – with key	31
	Figure B.4 – Flat cable cross section – without key	31
	Figure B.5 – Flat cable polarity marking	32
	Figure B.6 – Wiring	33
	Figure B.7 – Flat cable connector and terminal cover	34
	Table A.1 – Basic network characteristics for balanced cabling not based on Ethernet	16
	Table A.2 – Bus t-branch network characteristics	16
	Table A.3 – Information relevant to copper cable: fixed cables	17
	Table A.4 – Connectors for copper cabling CPs not based on Ethernet	18
	Table A.5 – Parameters for balanced cables	22
	Table A.6 – Cable conductor assignments	23
	Table B.1 – Basic network characteristics for balanced cabling not based on Ethernet	30
	Table B.2 – CP 8/3 additional topology length limits	30
	Table B.3 – Information relevant to copper cable: cords	32
	Table B.4 – Connectors for copper cabling CPs not based on Ethernet	35
	Table B.5 – Parameters for balanced cables	38
	Table B.6 – Flat cable conductor assignments	39
	Table C.1 – Network characteristics for balanced cabling based on Ethernet	45
	Table C.2 – Network characteristics for optical fibre cabling	45
	Table C.3 – Information relevant to copper cable: fixed cables	46
	Table C.4 – Information relevant to optical fibre cables	47
	Table C.5 – Connectors for balanced cabling CPs based on Ethernet	47
	Table C.6 – Optical fibre connecting hardware	48
	Table C.7 – Relationship between FOC and fibre types (CP 8/4)	48

Table C.8 – Parameters for balanced cables.....	52
Table C.9 – Parameters for silica optical fibre cables.....	52
Table D.1 – Network characteristics for balanced cabling based on Ethernet	59
Table D.2 – Information relevant to copper cable: fixed cables.....	60
Table D.3 – Connectors for balanced cabling CPs based on Ethernet	61
Table D.4 – Parameters for balanced cables.....	65
Table E.1 – Network characteristics for balanced cabling based on Ethernet	72
Table E.2 – Network characteristics for optical fibre cabling.....	73
Table E.3 – Information relevant to copper cable: fixed cables.....	74
Table E.4 – Information relevant to optical fibre cables	75
Table E.5 – Connectors for balanced cabling CPs based on Ethernet	76
Table E.6 – Optical fibre connecting hardware	76
Table E.7 – Relationship between FOC and fibre types (CP 8/6).....	76
Table E.8 – Parameters for balanced cables	80
Table E.9 – Parameters for silica optical fibre cables	80

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INDUSTRIAL NETWORKS –
PROFILES –****Part 5-8: Installation of fieldbuses –
Installation profiles for CPF 8****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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 61784-5-8 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation. It is an International Standard.

This document is to be used in conjunction with IEC 61918:2018, IEC 61918:2018/AMD1:2022 and IEC 61918:2018/AMD2:2024.

This third edition cancels and replaces the second edition published in 2018. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) Annex E and related references have been added.

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

Draft	Report on voting
65C/1280/FDIS	65C/1295/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with the ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

A list of all parts of IEC 61784-5 series, published under the general title *Industrial networks – Profiles – Installation of fieldbuses*, 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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

IMPORTANT – The "colour inside" logo on the cover page of this document 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 document is one of a series produced to facilitate the use of communication networks in industrial control systems.

IEC 61918:2018, IEC 61918:2018/AMD1:2022 and IEC 61918:2018/AMD2:2024 provide 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 61918:2018 and IEC 61918:2018/AMD1:2022 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 document, see IEC 61158-1.

Each CP installation profile is specified in a separate annex of this document. Each annex is structured exactly as the reference standard IEC 61918:2018 for the benefit of the persons representing the roles in the fieldbus installation process as defined in IEC 61918:2018 (planner, installer, verification personnel, validation personnel, maintenance personnel, administration personnel). By reading the installation profile in conjunction with IEC 61918:2018, 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 document are defined in Clause 5.

The provision of the installation profiles in one standard for each CPF (for example IEC 61784-5-8 for CPF 8) allows readers to work with standards of a convenient size.

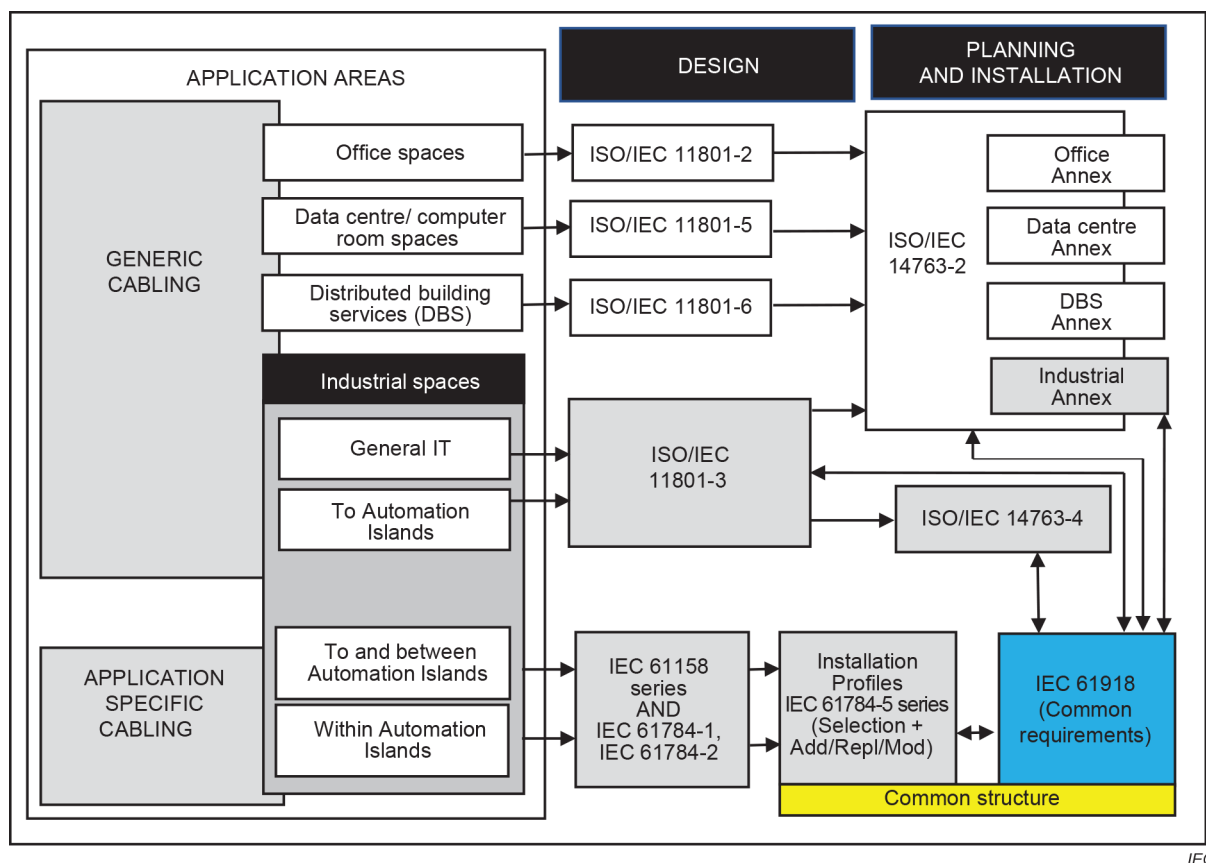


Figure 1 – Standards relationships

INDUSTRIAL NETWORKS – PROFILES –

Part 5-8: Installation of fieldbuses – Installation profiles for CPF 8

1 Scope

This part of IEC 61784-5 specifies the installation profiles for CPF 8 (CC-Link^{TM1}).

The installation profiles are specified in the annexes. These annexes are read in conjunction with IEC 61918:2018, IEC 61918:2018/AMD1:2022 and IEC 61918:2018/AMD2:2024.

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 61918:2018², *Industrial communication networks – Installation of communication networks in industrial premises*

IEC 61918:2018/AMD1:2022

IEC 61918:2018/AMD2:2024

NOTE For profile specific normative references, see Clauses A.2, B.2, and E.2 respectively.

¹ CC-LinkTM, CC-Link/LTTM and CC-Link IETM are trade names of Mitsubishi Electric Co., control of trade name use is given to CCLink Partner Association. 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.

² The normative references of IEC 61918:2018, Clause 2, IEC 61918:2018/AMD1:2022, Clause 2 and IEC 61918:2018/AMD2:2024, Clause 2, apply.