



# SLOVENSKI STANDARD SIST EN IEC 61784-5-6:2019

01-april-2019

Nadomešča:  
SIST EN 61784-5-6:2014

---

## Industrijska komunikacijska omrežja - Profili - 5-6. del: Inštalacija procesnih vodil - Inštalacijski profili za CPF 6 (IEC 61784-5-6:2018)

Industrial communication networks - Profiles - Part 5-6: Installation of fieldbuses - Installation profiles for CPF 6 (IEC 61784-5-6:2018)

Industrielle Kommunikationsnetze - Profile - Teil 5-6: Feldbusinstallation - Installationsprofile für die Kommunikationsprofilfamilie 6 (IEC 61784-5-6:2018)

Réseaux de communication industriels - Profils - Partie 5-6: Installation des bus de terrain - Profils d'installation pour CPF 6 (IEC 61784-5-6:2018)

Ta slovenski standard je istoveten z: EN IEC 61784-5-6:2018

### ICS:

25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
35.100.40	Transportni sloj	Transport layer

SIST EN IEC 61784-5-6:2019 en,fr,de

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN IEC 61784-5-6:2019](https://standards.iteh.ai/catalog/standards/sist/83e13786-0539-4af1-9244-4e57eedc44f/sist-en-iec-61784-5-6-2019)

<https://standards.iteh.ai/catalog/standards/sist/83e13786-0539-4af1-9244-4e57eedc44f/sist-en-iec-61784-5-6-2019>

EUROPEAN STANDARD

**EN IEC 61784-5-6**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2018

ICS 35.100.40; 25.040.40

Supersedes EN 61784-5-6:2013

English Version

**Industrial communication networks - Profiles - Part 5-6:  
Installation of fieldbuses - Installation profiles for CPF 6  
(IEC 61784-5-6:2018)**

Réseaux de communication industriels - Profils - Partie 5-6:  
Installation des bus de terrain - Profils d'installation pour  
CPF 6  
(IEC 61784-5-6:2018)

Industrielle Kommunikationsnetze - Profile - Teil 5-6:  
Feldbusinstallation - Installationsprofile für die  
Kommunikationsprofilfamilie 6  
(IEC 61784-5-6:2018)

This European Standard was approved by CENELEC on 2018-10-04. 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.

[SIST EN IEC 61784-5-6:2019](#)

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

**EN IEC 61784-5-6:2018 (E)****European foreword**

The text of document 65C/924/FDIS, future edition 4 of IEC 61784-5-6, 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 61784-5-6:2018.

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) 2019-07-04
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2021-10-04

This document supersedes EN 61784-5-6:2013.

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.

## **iTeh STANDARD PREVIEW** **(standards.iteh.ai)**

### **Endorsement notice**

[SIST EN IEC 61784-5-6:2019](https://standards.iteh.ai/catalog/standards/sist/83e13786-0539-4af1-9244-4e57eedc44f/sist-en-iec-61784-5-6-2019)

[https://standards.iteh.ai/catalog/standards/sist/83e13786-0539-4af1-9244-](https://standards.iteh.ai/catalog/standards/sist/83e13786-0539-4af1-9244-4e57eedc44f/sist-en-iec-61784-5-6-2019)

[4e57eedc44f/sist-en-iec-61784-5-6-2019](https://standards.iteh.ai/catalog/standards/sist/83e13786-0539-4af1-9244-4e57eedc44f/sist-en-iec-61784-5-6-2019)

The text of the International Standard IEC 61784-5-6:2018 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](http://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

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

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

[SIST EN IEC 61784-5-6:2019  
https://standards.iteh.ai/catalog/standards/sist/83e13786-0539-4af1-9244-4e57eedc44f/sist-en-iec-61784-5-6-2019](https://standards.iteh.ai/catalog/standards/sist/83e13786-0539-4af1-9244-4e57eedc44f/sist-en-iec-61784-5-6-2019)

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN IEC 61784-5-6:2019](https://standards.iteh.ai/catalog/standards/sist/83e13786-0539-4af1-9244-4e57eedc44f/sist-en-iec-61784-5-6-2019)

<https://standards.iteh.ai/catalog/standards/sist/83e13786-0539-4af1-9244-4e57eedc44f/sist-en-iec-61784-5-6-2019>



IEC 61784-5-6

Edition 4.0 2018-08

# INTERNATIONAL STANDARD



---

**Industrial communication networks – Profiles –  
Part 5-6: Installation of fieldbuses – Installation profiles for CPF 6**

*STANDARD PREVIEW*  
*(standards.iteh.ai)*

SIST EN IEC 61784-5-6:2019  
<https://standards.iteh.ai/catalog/standards/sist/83e13786-0539-4af1-9244-4e57eedc44f/sist-en-iec-61784-5-6-2019>

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

---

ICS 25.040.40; 35.100.40

ISBN 978-2-8322-5940-5

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

## CONTENTS

FOREWORD.....	7
INTRODUCTION.....	9
1 Scope.....	10
2 Normative references .....	10
3 Terms, definitions and abbreviated terms .....	10
4 CPF 6: Overview of installation profiles .....	10
5 Installation profile conventions .....	11
6 Conformance to installation profiles.....	11
Annex A (normative) CPF 6 Type 8 network specific installation profile.....	13
A.1 Installation profile scope.....	13
A.2 Normative references .....	13
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 .....	15
A.4 Installation planning .....	15
A.4.1 General.....	15
A.4.1.1 Objective.....	15
A.4.1.2 Cabling in industrial premises.....	15
A.4.1.3 The planning process .....	15
A.4.1.4 Specific requirements for CPs IEC 61784-5-6:2019.....	15
A.4.1.5 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3 IEC 61784-5-6:2019.....	15
A.4.2 Planning requirements .....	15
A.4.2.1 Safety.....	15
A.4.2.2 Security .....	16
A.4.2.3 Environmental considerations and EMC.....	16
A.4.2.4 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3 .....	16
A.4.3 Network capabilities.....	16
A.4.3.1 Network topology.....	16
A.4.3.2 Network characteristics.....	18
A.4.4 Selection and use of cabling components .....	21
A.4.4.1 Cable selection.....	21
A.4.4.2 Connecting hardware selection.....	24
A.4.4.3 Connections within a channel/permanent link .....	26
A.4.4.4 Terminators .....	27
A.4.4.5 Device location and connection .....	27
A.4.4.6 Coding and labelling .....	27
A.4.4.7 Earthing and bonding of equipment and devices and shielded cabling .....	28
A.4.4.8 Storage and transportation of cables .....	29
A.4.4.9 Routing of cables.....	29
A.4.4.10 Separation of circuit.....	29
A.4.4.11 Mechanical protection of cabling components .....	29
A.4.4.12 Installation in special areas .....	29
A.4.5 Cabling planning documentation .....	29



A.4.5.1	Common description .....	29
A.4.5.2	Cabling planning documentation for CPs .....	29
A.4.5.3	Network certification documentation .....	29
A.4.5.4	Cabling planning documentation for generic cabling in accordance with ISO/IEC 11801-3 .....	29
A.4.6	Verification of cabling planning specification .....	29
A.5	Installation implementation .....	29
A.5.1	General requirements .....	29
A.5.1.1	Common description .....	29
A.5.1.2	Installation of CPs .....	29
A.5.1.3	Installation of generic cabling in industrial premises .....	29
A.5.2	Cable installation .....	29
A.5.2.1	General requirements for all cabling types .....	29
A.5.2.2	Installation and routing .....	31
A.5.2.3	Specific requirements for CPs .....	31
A.5.2.4	Specific requirements for wireless installation .....	31
A.5.2.5	Specific requirements for generic cabling in accordance with ISO/IEC 11801-3 .....	31
A.5.3	Connector installation .....	32
A.5.3.1	Common description .....	32
A.5.3.2	Shielded connectors .....	32
A.5.3.3	Unshielded connectors .....	32
A.5.3.4	Specific requirements for CPs .....	32
A.5.3.5	Specific requirements for wireless installation .....	33
A.5.3.6	Specific requirements for generic cabling in accordance with ISO/IEC 11801-3 .....	33
A.5.4	Terminator installation .....	33
A.5.5	Device installation .....	33
A.5.6	Coding and labelling .....	33
A.5.7	Earthing and bonding of equipment and devices and shield cabling .....	33
A.5.8	As-implemented cabling documentation .....	34
A.6	Installation verification and installation acceptance test .....	34
A.6.1	General .....	34
A.6.2	Installation verification .....	34
A.6.2.1	General .....	34
A.6.2.2	Verification according to cabling planning documentation .....	34
A.6.2.3	Verification of earthing and bonding .....	34
A.6.2.4	Verification of shield earthing .....	34
A.6.2.5	Verification of cabling system .....	34
A.6.2.6	Cable selection verification .....	34
A.6.2.7	Connector verification .....	34
A.6.2.8	Connection verification .....	34
A.6.2.9	Terminator verification .....	34
A.6.2.10	Coding and labelling verification .....	34
A.6.2.11	Verification report .....	35
A.6.3	Installation acceptance test .....	35
A.6.3.1	General .....	35
A.6.3.2	Acceptance test of Ethernet based cabling .....	35
A.6.3.3	Acceptance test of non-Ethernet-based cabling .....	35

A.6.3.4	Specific requirements for wireless installation.....	35
A.6.3.5	Acceptance test report.....	35
A.7	Installation administration.....	35
A.8	Installation maintenance and installation troubleshooting.....	35
Annex B (normative)	CPF 6 Ethernet network specific installation profile .....	37
B.1	Installation profile scope.....	37
B.2	Normative references .....	37
B.3	Installation profile terms, definitions, and abbreviated terms.....	38
B.3.1	Terms and definitions.....	38
B.3.2	Abbreviated terms.....	38
B.3.3	Conventions for installation profiles .....	38
B.4	Installation planning .....	38
B.4.1	General.....	38
B.4.1.1	Objective .....	38
B.4.1.2	Cabling in industrial premises.....	38
B.4.1.3	The planning process .....	38
B.4.1.4	Specific requirements for CPs .....	38
B.4.1.5	Specific requirements for generic cabling in accordance with ISO/IEC 11801-3 .....	38
B.4.2	Planning requirements.....	38
B.4.2.1	Safety.....	38
B.4.2.2	Security.....	39
B.4.2.3	Environmental considerations and EMC.....	39
B.4.2.4	Specific requirements for generic cabling in accordance with ISO/IEC 11801-3 .....	39
B.4.3	Network capabilities.....	39
B.4.3.1	Network topology.....	39
B.4.3.2	Network characteristics.....	40
B.4.4	Selection and use of cabling components .....	42
B.4.4.1	Cable selection.....	42
B.4.4.2	Connecting hardware selection.....	44
B.4.4.3	Connections within a channel/permanent link .....	47
B.4.4.4	Terminators .....	47
B.4.4.5	Device location and connection .....	48
B.4.4.6	Coding and labelling .....	48
B.4.4.7	Earthing and bonding of equipment and devices and shielded cabling .....	48
B.4.4.8	Storage and transportation of cables .....	48
B.4.4.9	Routing of cables.....	48
B.4.4.10	Separation of circuit.....	48
B.4.4.11	Mechanical protection of cabling components .....	48
B.4.4.12	Installation in special areas .....	48
B.4.5	Cabling planning documentation .....	48
B.4.6	Verification of cabling planning specification.....	48
B.5	Installation implementation .....	48
B.5.1	General requirements .....	48
B.5.2	Cable installation .....	48
B.5.2.1	General requirements for all cabling types.....	48
B.5.2.2	Installation and routing .....	49

B.5.2.3	Specific requirements for CPs .....	49
B.5.2.4	Specific requirements for wireless installation.....	50
B.5.2.5	Specific requirements for generic cabling in accordance with ISO/IEC 11801-3 .....	50
B.5.3	Connector installation .....	50
B.5.3.1	Common description .....	50
B.5.3.2	Shielded connectors .....	50
B.5.3.3	Unshielded connectors .....	50
B.5.3.4	Specific requirements for CPs .....	50
B.5.3.5	Specific requirements for wireless installation.....	50
B.5.3.6	Specific requirements for generic cabling in accordance with ISO/IEC 11801-3 .....	50
B.5.4	Terminator installation .....	50
B.5.5	Device installation.....	50
B.5.6	Coding and labelling .....	50
B.5.7	Earthing and bonding of equipment and devices and shield cabling .....	50
B.5.8	As-implemented cabling documentation .....	51
B.6	Installation verification and installation acceptance test.....	51
B.6.1	General.....	51
B.6.2	Installation verification .....	51
B.6.3	Installation acceptance test.....	51
B.7	Installation administration.....	51
B.8	Installation maintenance and installation troubleshooting.....	51
Bibliography.....		52
Figure 1 – Standards relationships.....		9
Figure A.1 – Type 8 network structure example .....		17
Figure A.2 – Example of a Type 8 network configuration.....		18
Figure A.3 – Sub-D connector pin assignment .....		32
Figure A.4 – M23 circular connector pin assignment .....		32
Figure A.5 – M12 circular connector pin assignment .....		33
Figure A.6 – Terminal connector at the device .....		33
Figure B.1 – Terminal connector at the device .....		50
Table A.1 – Basic network characteristics for balanced cabling not based on Ethernet .....		19
Table A.2 – Network characteristics for optical fibre cabling.....		20
Table A.3 – Information relevant to balanced cable: fixed cables .....		21
Table A.4 – Information relevant to balanced cable: cords .....		22
Table A.5 – Remote bus fibre optic cable length .....		24
Table A.6 – Connectors for copper cabling CPs not based on Ethernet.....		25
Table A.7 – Optical fibre connecting hardware .....		25
Table A.8 – Relationship between FOC and fibre types (Type 8 networks).....		26
Table A.9 – Colour code for balanced cables used by Type 8 networks .....		27
Table A.10 – Parameters for balanced cables .....		30
Table A.11 – Parameters for silica optical fibre cables .....		30
Table A.12 – Parameters for POF optical fibre cables .....		30

Table A.13 – Parameters for hard clad silica optical fibre cables.....	31
Table A.14 – Pin assignment of the terminal connector.....	33
Table B.1 – Network characteristics for balanced cabling based on Ethernet .....	40
Table B.2 – Network characteristics for optical fibre cabling.....	41
Table B.3 – Information relevant to copper cable: fixed cables.....	42
Table B.4 – Information relevant to copper cable: cords.....	43
Table B.5 – Information relevant to optical fibre cables .....	44
Table B.6 – Connectors for balanced cabling CPs based on Ethernet .....	45
Table B.7 – Connectors for copper cabling CPs not based on Ethernet.....	45
Table B.8 – Optical fibre connecting hardware .....	46
Table B.9 – Relationship between FOC and fibre types (CP 6/2 Ethernet network) .....	46
Table B.10 – Parameters for balanced cables .....	48
Table B.11 – Parameters for silica optical fibre cables .....	49
Table B.12 – Parameters for POF optical fibre cables .....	49
Table B.13 – Parameters for hard clad silica optical fibre cables.....	49

## **iTeh STANDARD PREVIEW** **(standards.iteh.ai)**

[SIST EN IEC 61784-5-6:2019](https://standards.iteh.ai/catalog/standards/sist/83e13786-0539-4af1-9244-4e57eedc44f/sist-en-iec-61784-5-6-2019)

<https://standards.iteh.ai/catalog/standards/sist/83e13786-0539-4af1-9244-4e57eedc44f/sist-en-iec-61784-5-6-2019>

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INDUSTRIAL COMMUNICATION NETWORKS –  
PROFILES –****Part 5-6: Installation of fieldbuses –  
Installation profiles for CPF 6**

## 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 61784-5-6 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

This fourth edition cancels and replaces the third edition published in 2013. This edition constitutes a technical revision.

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

- a) alignment with IEC 61918:2018;
- b) addition of new connectors.

This document is to be used in conjunction with IEC 61918:2018.

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

FDIS	Report on voting
65C/924/FDIS	65C/925/RVD

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

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

A list of all parts of the IEC 61784-5 series, published 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 document 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 document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)

SIST EN IEC 61784-5-6:2019

**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 61918:2018 provides the common requirements for the installation of communication networks in industrial control systems. This installation profile document 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 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 document 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 document are defined in Clause 5.

The provision of the installation profiles in one document for each CPF (for example IEC 61784-5-6 for CPF 6), allows readers to work with documents of a convenient size.

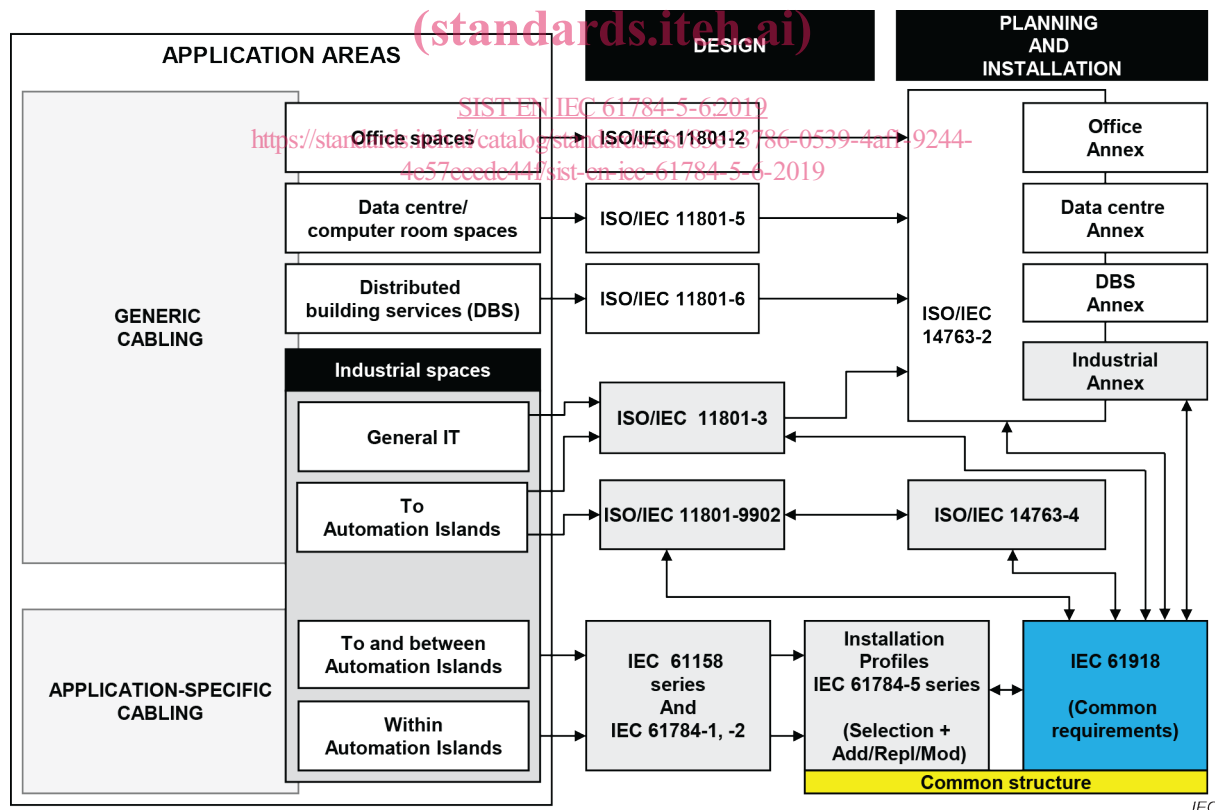


Figure 1 – Standards relationships