

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

Industriell processtyrning – Profiler – Del 5-6: Installation av fältbussar – Installationsprofiler för CPF 6

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

Som svensk standard gäller europastandarden EN 61784-5-6:2008. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61784-5-6:2008.

Nationellt förord

Europastandarden EN 61784-5-6:2008

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 61784-5-6, First edition, 2007 - Industrial communication networks - Profiles - Part 5-6: Installation of fieldbuses - Installation profiles for CPF 6**

utarbetad inom International Electrotechnical Commission, IEC.

Standarden ska användas tillsammans med SS-EN 61918, utgåva 1, 2009.

Standarder underlättar utvecklingen och höjer elsäkerheten

Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven 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 1284
164 29 Kista
Tel 08-444 14 00
www.elstandard.se

English version

**Industrial communication networks -
Profiles -
Part 5-6: Installation of fieldbuses -
Installation profiles for CPF 6
(IEC 61784-5-6:2007)**

Réseaux de communication industriels -
Profils -
Partie 5-6: Installation des bus de terrain -
Profils d'installation pour CPF 6
(CEI 61784-5-6:2007)

Industrielle Kommunikationsnetze -
Profile -
Teil 5-6: Felddbusinstallation -
Installationsprofile
für die Kommunikationsprofilfamilie 6
(IEC 61784-5-6:2007)

This European Standard was approved by CENELEC on 2008-05-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 65C/471/FDIS, future edition 1 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 was approved by CENELEC as EN 61784-5-6 on 2008-05-01.

This standard is to be used in conjunction with EN 61918:2008.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2009-02-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2011-05-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61784-5-6:2007 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 61158 NOTE Harmonized in EN 61158 series (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60794-1-2	2003	Optical fibre cables - Part 1-2: Generic specification - Basic optical cable test procedures	EN 60794-1-2	2003
IEC 61076-3-106	2006	Connectors for electronic equipment - Product requirements - Part 3-106: Rectangular connectors - Detail specification for protective housings for use with 8-way shielded and unshielded connectors for industrial environments incorporating the IEC 60603-7 series interface	EN 61076-3-106	2006
IEC 61156-1	2002	Multicore and symmetrical pair/quad cables - for digital communications - Part 1: Generic specification		-
IEC 61156-5	2002	Multicore and symmetrical pair/quad cables - for digital communications - Part 5: Symmetrical pair/quad cables with transmission characteristics up to 600 MHz - Horizontal floor wiring - Sectional specification		-
IEC 61918 (mod)	2007	Industrial communication networks - Installation of communication networks in industrial premises	EN 61918	2008

CONTENTS

INTRODUCTION.....	7
1 Scope.....	8
2 Normative references.....	8
3 Terms, definitions and abbreviated terms.....	8
4 CPF 6: Overview of installation profiles.....	8
5 Installation profile conventions.....	8
6 Conformance to installation profiles.....	10
Annex A (Normative) CPF 6 Type 8 network specific installation profile.....	11
A.1 Installation profile scope.....	11
A.2 Normative references.....	11
A.3 Installation profile terms, definitions, and abbreviated terms.....	11
A.3.1 Terms and definitions.....	11
A.3.2 Abbreviated terms.....	12
A.3.3 Conventions for installation profiles.....	12
A.4 Installation planning.....	13
A.4.1 Introduction.....	13
A.4.2 Planning requirements.....	13
A.4.3 Network capabilities.....	14
A.4.4 Selection and use of cabling components.....	19
A.4.5 Cabling planning documentation.....	26
A.4.6 Verification of cabling planning specification.....	26
A.5 Installation implementation.....	26
A.5.1 General requirements.....	26
A.5.2 Cable installation.....	26
A.5.3 Connector installation.....	28
A.5.4 Terminator installation.....	30
A.5.5 Device installation.....	30
A.5.6 Coding and labeling.....	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.....	31
A.6.1 Introduction.....	31
A.6.2 Installation verification.....	31
A.6.3 Installation acceptance test.....	32
A.7 Installation administration.....	32
A.8 Installation maintenance and installation Troubleshooting.....	33
Annex B (Normative) CP 6/2 Ethernet network specific installation profile.....	34
B.1 Installation profile scope.....	34
B.2 Normative references.....	34
B.3 Installation profile terms, definitions, and abbreviated terms.....	34
B.3.1 Terms and definitions.....	34
B.3.2 Abbreviated terms.....	34
B.3.3 Conventions for installation profiles.....	34
B.4 Installation planning.....	35
B.4.1 Introduction.....	35

B.4.2	Planning requirements	35
B.4.3	Network capabilities	36
B.4.4	Selection and use of cabling components	39
B.4.5	Cabling planning documentation	45
B.4.6	Verification of cabling planning specification	45
B.5	Installation implementation	45
B.5.1	General requirements	45
B.5.2	Cable installation	45
B.5.3	Connector installation	47
B.5.4	Terminator installation	48
B.5.5	Device installation	48
B.5.6	Coding and labeling	48
B.5.7	Earthing and bonding of equipment and devices and shield cabling	49
B.5.8	As-implemented cabling documentation	49
B.6	Installation verification and installation acceptance test	49
B.6.1	Introduction	49
B.6.2	Installation verification	49
B.6.3	Installation acceptance test	49
B.7	Installation administration	49
B.8	Installation maintenance and installation Troubleshooting	49
	Bibliography	50
Table A.1	– Basic network characteristics for balanced cabling not based on Ethernet	17
Table A.2	– Network characteristics for optical fibre cabling	18
Table A.3	– Information relevant to balanced cable: fixed cables	19
Table A.4	– Information relevant to balanced cable: cords	20
Table A.5	– Remote bus fibre optic cable length	22
Table A.6	– Connectors for balanced cabling CPs not based on Ethernet	23
Table A.7	– Optical fibre connecting hardware	23
Table A.8	– Colour code for balanced cables used by Type 8 networks	24
Table A.9	– Parameters for balanced cables	27
Table A.10	– Parameters for silica optical fibre cables	27
Table A.11	– Parameters for POF optical fibre cables	27
Table A.12	– Parameters for hard cladded silica optical fibre cables	28
Table A.13	– Pin assignment of the terminal connector	30
Table B.1	– Network characteristics for balanced cabling based on Ethernet	37
Table B.2	– Network characteristics for optical fibre cabling	38
Table B.3	– Information relevant to balanced cable: fixed cables	39
Table B.4	– Information relevant to balanced cable: cords	40
Table B.5	– Information relevant to optical fibre cables	41
Table B.6	– Connectors for balanced cabling CPs based on Ethernet	42
Table B.7	– Optical fibre connecting hardware	42
Table B.8	– Dimensions of the sealed SC-RJ free connector	43
Table B.9	– Dimensions of the sealed SC-RJ fixed adaptor	44
Table B.10	– Typical parameters for copper cables	46

Table B.11 – Typical parameters for Silica fibre cables	46
Table B.12 – POF fibre cables.....	46
Table B.13 – Hard cladded silica fibre cables	47
Table B.14 – Connector pin assignment	48
Figure 1 – Standards relationships	7
Figure A.1 – Type 8 network structure example	15
Figure A.2 – Example of a Type 8 network configuration.....	16
Figure A.3 – Sub-D connector pin assignments.....	29
Figure A.4 – M23 circular connector pin assignments	29
Figure A.5 – M12 circular connector pin assignments	30
Figure A.6 – Terminal connector at the device	30
Figure B.1 – Sealed SC-RJ free connector	43
Figure B.2 – Sealed SC-RJ fixed adaptor.....	44
Figure B.3 – Terminal connector at the device	48
Figure B.4 – Pin numbering.....	48

INTRODUCTION

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

IEC 61918:2007 (Ed. 1.0) 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/TR 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 (e.g. IEC 61784-5-6 for CPF 6), allows readers to work with standards of a convenient size.

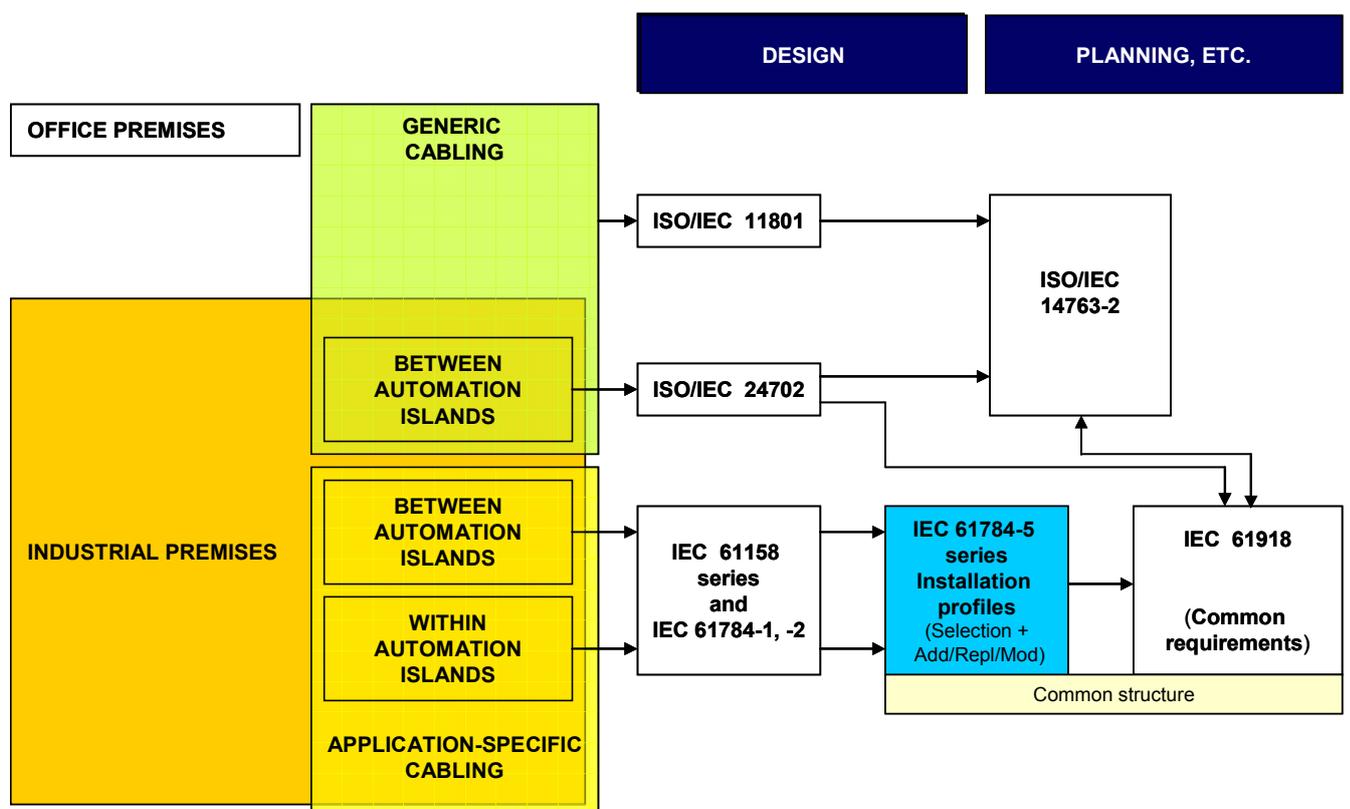


Figure 1 – Standards relationships

INDUSTRIAL COMMUNICATION NETWORKS – PROFILES

Part 5-6: Installation of fieldbuses – Installation profiles for CPF 6

1 Scope

This part of IEC 61784 specifies the installation profiles for the media specified in CPF 6 (INTERBUS)¹.

The installation profiles are specified in the annexes. These annexes are read in conjunction with IEC 61918:2007.

2 Normative references

The following referenced documents are indispensable for the application 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 61918:2007, *Industrial communication networks – Installation of communication networks in industrial premises*

The normative references of IEC 61918:2007, Clause 2, apply. For profile specific normative references see A.2, and B.2.

■ [Redacted]

[Redacted]

■ [Redacted]

[Redacted]

[Redacted]

[Redacted]

■ [Redacted]

[Redacted]

[Redacted]

¹ INTERBUS is a trade name of INTERBUS Club, an independent organisation of users and vendors of INTERBUS products. This information is given for the convenience of users of this International Standard 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 INTERBUS. Use of the trade name INTERBUS requires permission of the trade name holder.