IEC 61784-5-8

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

IEC 61784-5-8:2024-04 RLV(en)

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INDUSTRIAL ~~COMMUNICATION~~ NETWORKS – PROFILES –

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

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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

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- withdrawn, or
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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.

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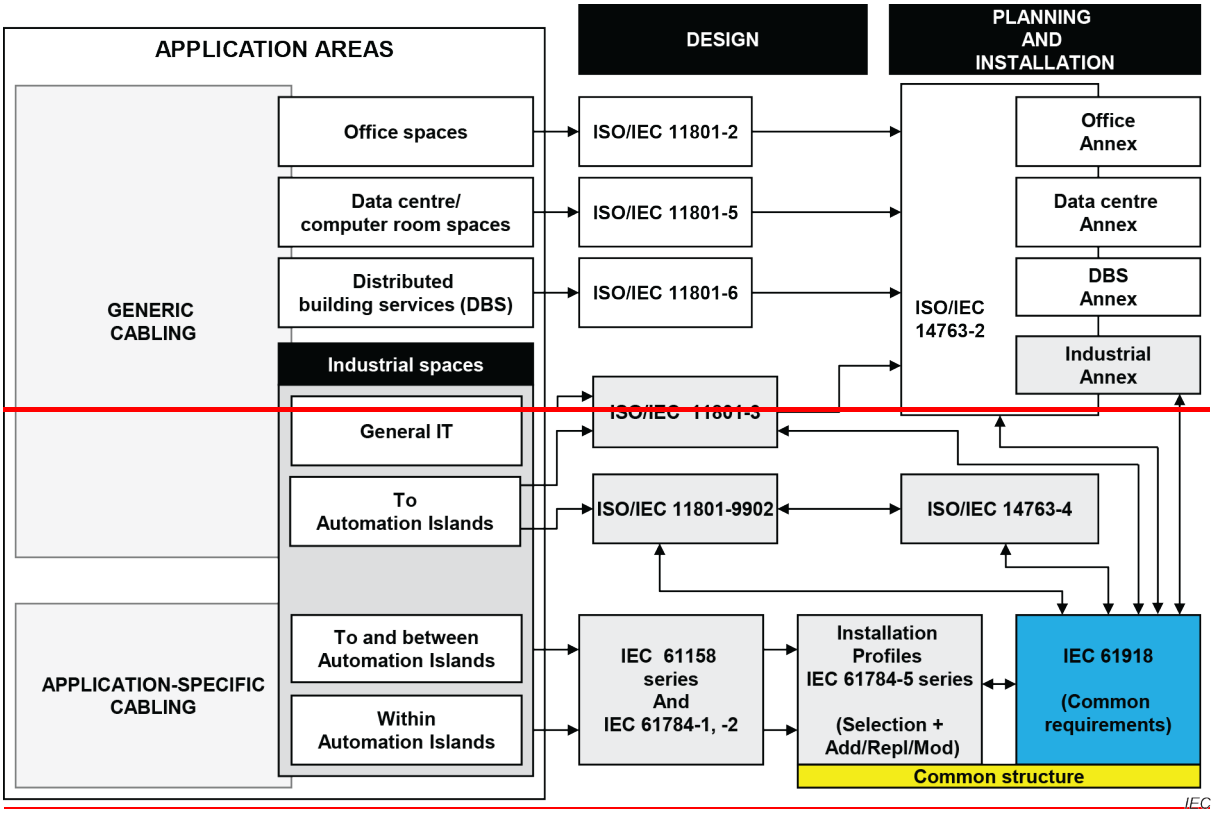

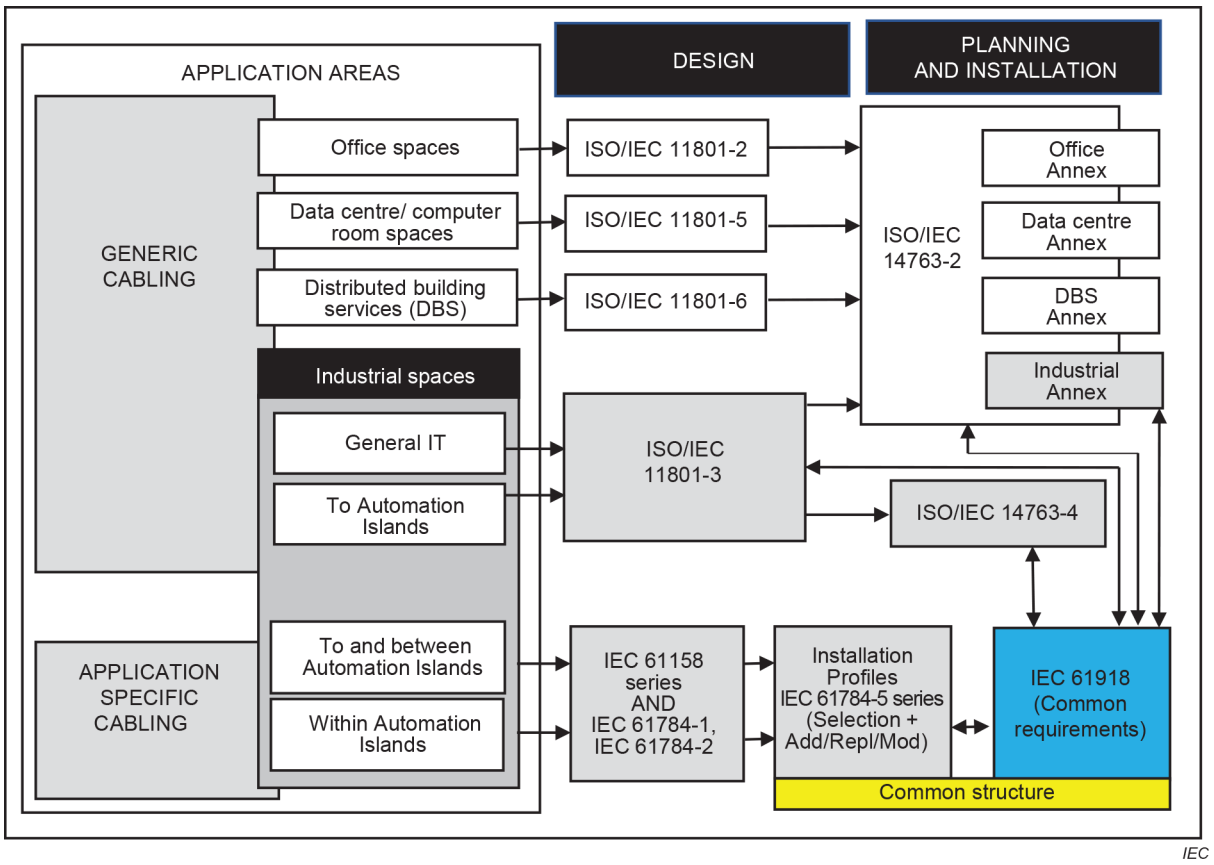

Figure 1 – Standards relationships

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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™[1]).

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 61918:2018[2], *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.2and D.2~~ and E.2 respectively.

3 Terms, definitions and abbreviated terms

For the purposes of this document, the terms, definitions and abbreviated terms given in IEC 61918:2018, Clause 3 and IEC 61918:2018/AMD1:2022, Clause 3 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

~~NOTE For profile specific normative references, see Clauses A.3, B.3, C.3 and D.3 respectively.~~

---

1 CC-Link™, CC-Link/LT™ and CC-Link IE™ 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.

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4 CPF 8: Overview of installation profiles

CPF 8 consists of ~~5~~ six communication profiles as specified in ~~IEC 61784-1:– and IEC 61784-2:–~~ IEC 61784-1-8 and IEC 61784-2-8.

The installation requirements for CP 8/1 (CC-Link™/V1) and CP 8/2 (CC-Link™/V2) are specified in Annex A.

The installation requirements for CP 8/3 (CC-Link/LT™) are specified in Annex B.

The installation requirements for CP 8/4 (CC-Link IE™ Controller Network) are specified in Annex C.

The installation requirements for CP 8/5 (CC-Link IE™ Field Network) are specified in Annex D.

The installation requirements for CP 8/6 (CC-Link IE™ TSN) are specified in Annex E.

5 Installation profile conventions

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

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

Where there is no corresponding subclause of IEC 61918 in the normative annexes in this document, the subclause of IEC 61918 applies without modification.

The annex heading letter represents the installation profile assigned in Clause 4. The annex heading number shall represent the corresponding numbering of IEC 61918.

EXAMPLE "Subclause B.4.4" in IEC 61784-5-8 means that CP 8/3 specifies 4.4 of IEC 61918:2018 and IEC 61918:2018/AMD1:2022.

All main clauses of IEC 61918 are cited and apply in full unless otherwise stated in each normative installation profile annex.

If all subclauses of a (sub)clause are omitted, then the corresponding IEC 61918 (sub)clause applies.

If in a (sub)clause it is written "Not applicable", then the corresponding IEC 61918 (sub)clause does not apply.

If in a (sub)clause it is written "*Addition:*", then the corresponding IEC 61918 (sub)clause applies with the additions written in the profile.

If in a (sub)clause it is written "*Replacement:*", then the text provided in the profile replaces the text of the corresponding IEC 61918 (sub)clause.

NOTE A replacement can also comprise additions.

If in a (sub)clause it is written "*Modification:*", then the corresponding IEC 61918 (sub)clause applies with the modifications written in the profile.

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If all (sub)clauses of a (sub)clause are omitted but in this (sub)clause it is written "*(Sub)clause x has addition:"* (or "*replacement*:") or "(Sub)clause x is not applicable.", then (sub)clause x becomes valid as declared and all the other corresponding IEC 61918 (sub)clauses apply.

6 Conformance to installation profiles

Each installation profile within this document includes parts of IEC 61918:2018 and IEC 61918:2018/AMD1:2022. It may also include defined additional specifications.

A statement of compliance with an installation profile of this document shall be stated[3] as either

Compliance ~~to~~ with IEC 61784-5-8:~~—~~[4]2024 for CP 8/m <CC-Link> or

Compliance ~~to~~ with IEC 61784-5-8 (Ed.~~2~~3.0) for CP 8/m <CC-Link>

where the name within the angle brackets < > is optional and the angle brackets ~~are~~ shall not ~~to~~ be included. The m within CP 8/m shall be replaced by the profile number 1 to ~~5~~ 6.

NOTE The name ~~may~~ can be the name of the profile, as: CC-Link/V1, CC-Link/V2, CC-Link/LT, CC-Link IE Controller Network, CC-Link IE Field Network, or CC-Link IE TSN.

If the name is a trade name then the permission of the trade name holder shall be required.

Product standards shall not include any conformity assessment aspects (including quality management provisions), neither normative nor informative, other than provisions for product testing (evaluation and examination).

~~3 In accordance with ISO/IEC Directives.~~

~~4 The date should not be used when the edition number is used.~~

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Annex A
(normative)

CP 8/1 and CP 8/2 (CC-Link™/V1 and CC-Link™/V2) specific installation profile

A.1 Installation profile scope

Addition:

This annex specifies the installation profile for Communication Profile CP 8/1 (CC-Link™/V1) and CP 8/2 (CC-Link™/V2). The CP 8/1 and CP 8/2 are specified in IEC 61784-1-8.

CP 8/1 and CP 8/2 networks implement a medium attachment unit compliant with ISO/IEC 8482 and is a derivative of ANSI TIA/EIA-485-A.

A.2 Normative references

Addition:

ISO/IEC 8482, *Information technology – Telecommunications and information exchange between systems – Twisted pair multipoint interconnections*

ANSI TIA/EIA-485-A, *Electrical Characteristics of Generators and Receivers for Use in Balanced Digital Multipoint Systems*

A.3 Installation profile terms, definitions, and abbreviated terms

A.3.1 Terms and definitions

A.3.2 Abbreviated terms

A.3.3 Conventions for installation profiles

Not applicable.

A.4 Installation planning

A.4.1 General

A.4.1.1 Objective

A.4.1.2 Cabling in industrial premises

Addition:

Generic cabling in accordance with ISO/IEC 11801-3 is not suitable for the cabling of CP 8/1 or CP 8/2 networks.

A.4.1.3 The planning process

A.4.1.4 Specific requirements for CPs

Not applicable.

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A.4.1.5 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.4.2 Planning requirements

A.4.2.1 Safety

A.4.2.1.1 General

A.4.2.1.2 Electrical safety

A.4.2.1.3 Functional safety

A.4.2.1.4 Intrinsic safety

Not applicable.

A.4.2.1.5 Safety of optical fibre communication systems

Not applicable.

A.4.2.2 Security

A.4.2.3 Environmental considerations and EMC

A.4.2.4 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.4.3 Network capabilities

A.4.3.1 Network topology

A.4.3.1.1 Common description

A.4.3.1.2 Basic physical topologies for passive networks

Modification:

CP 8/1 and CP 8/2 support bus and complex bus t-branch configurations (see A.4.3.1.5.2). A pure star is not recommended since there is no defined trunk line ends for terminator placement.

A.4.3.1.3 Basic physical topologies for active networks

Not applicable.

A.4.3.1.4 Combination of basic topologies

A.4.3.1.5 Specific requirements for CPs

Replacement:

A.4.3.1.5.1 Bus topology pass-through configuration

The bus topology pass-through configuration is implemented with a dedicated cable and pass-through type connectors, one for each device as shown in Figure A.1.

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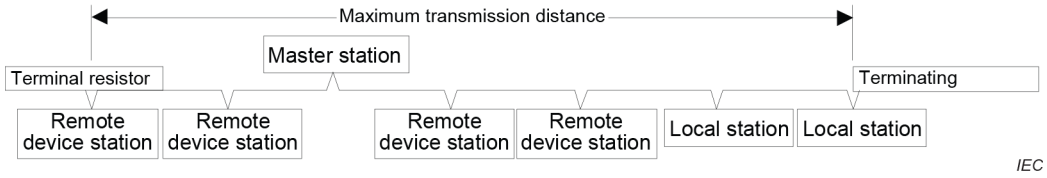


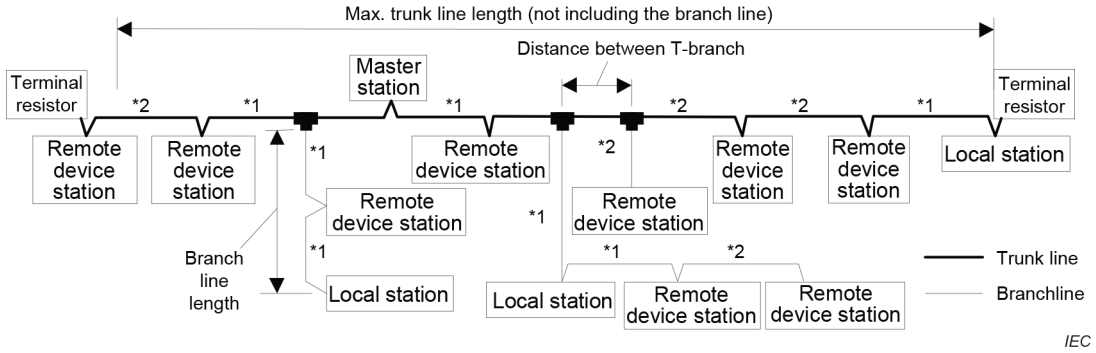
NOTE The minimum cable distance device-to-device is 20 cm.

Figure A.1 – Pass-through connector configuration

A.4.3.1.5.2 Bus t-branch topology

The bus t-branch topology is shown in Figure A.2. This is a modification of the bus topology in that branch lines, which differ from spurs, may be added to a trunk segment.

The cable types may be mixed in the network, but shall remain consistent for a given branch line or trunk segment.



NOTE 1 The minimum cable distance between the master or local station to another station depends on the network configuration.

NOTE 2 The minimum cable distance between remote stations is 30 cm.

Figure A.2 – Bus t-branch topology

A.4.3.1.6 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.4.3.2 Network characteristics

A.4.3.2.1 General

A.4.3.2.2 Network characteristics for balanced cabling not based on Ethernet

Replacement:

Table A.1 provides values for CP 8/1 and CP 8/2 for the bus topology based on the template given in IEC 61918:2018, Table 1.

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Table A.1 – Basic network characteristics for balanced cabling not based on Ethernet

Characteristic	CP 8/1, CP 8/2
Basic transmission technology	Type 18
Length / transmission speed	**Segment length** m
156 kbit/s	1 200
625 kbit/s	900
2,5 Mbit/s	400
5 Mbit/s	160
10 Mbit/s	100
Maximum capacity	**Max. no.**
Devices / segment	64
Devices / network	64

Addition:

Table A.2 provides values for CP 8/1 and CP 8/2 for the bus t-branch topology.

Table A.2 – Bus t-branch network characteristics

Characteristic	Transmission speed		Comment
Length / transmission speed	156 kbit/s	625 kbit/s	Higher speeds not supported
Maximum trunk segment length (m)	500	100	Does not include branch length
Maximum branch length (m)	8	8	
Maximum overall branch length (m)	200	50	Total all branches combined
Maximum capacity			
Maximum devices / branch segment	6	6	

A.4.3.2.3 Network characteristics for balanced cabling based on Ethernet

Not applicable.

A.4.3.2.4 Network characteristics for optical fibre cabling

Not applicable.

A.4.3.2.5 Specific network characteristics

A.4.3.2.6 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.4.4 Selection and use of cabling components

A.4.4.1 Cable selection

A.4.4.1.1 Common description

A.4.4.1.2 Copper cables

A.4.4.1.2.1 Balanced cables for Ethernet-based CPs

Not applicable.

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A.4.4.1.2.2 Copper cables for non-Ethernet-based CPs

Addition:

Unshielded cables shall not be used with CP 8/1 and CP 8/2 networks.

Replacement:

Table A.3 provides values based on the template given in IEC 61918:2018, Table 4.

Table A.3 – Information relevant to copper cable: fixed cables

Characteristic	CP 8/1, CP 8/2
Nominal impedance of cable (tolerance)	110 Ω (± 15 Ω) at 1 MHz 110 Ω (± 6 Ω) at 5 MHz
DCR of conductors	≤ 37,8 Ω/km
DCR of shield	–
Number of conductors	3
Shielding	with drain wire
Colour code for conductor	signal DA = BU (blue) signal DB = WH (white) signal DG = YE (yellow)
Jacket colour requirements	–
Jacket material	Application dependent
Resistance to harsh environment (e.g. UV, oil resist, LS0H)	Application dependent
Agency ratings	Application dependent
Conductor cross-sectional area	0,518 mm^2 (20 AWG)
Dielectric strength	≥ 500 V r.m.s.
Insulation resistance (after dielectric strength test)	≥ 10 000 MΩ · km
Mutual capacitance (at 1 kHz)	≤ 60 nF / km
Maximum attenuation for 100 m	≤ 1,6 dB at 1 MHz ≤ 3,5 dB at 5 MHz

A.4.4.1.3 Cables for wireless installation

A.4.4.1.4 Optical fibre cables

Not applicable.

A.4.4.1.5 Special purpose balanced and optical fibre cables

Not applicable.

A.4.4.1.6 Specific requirements for CPs

Addition:

The minimum wiring between three communicating devices is shown in Figure A.3.

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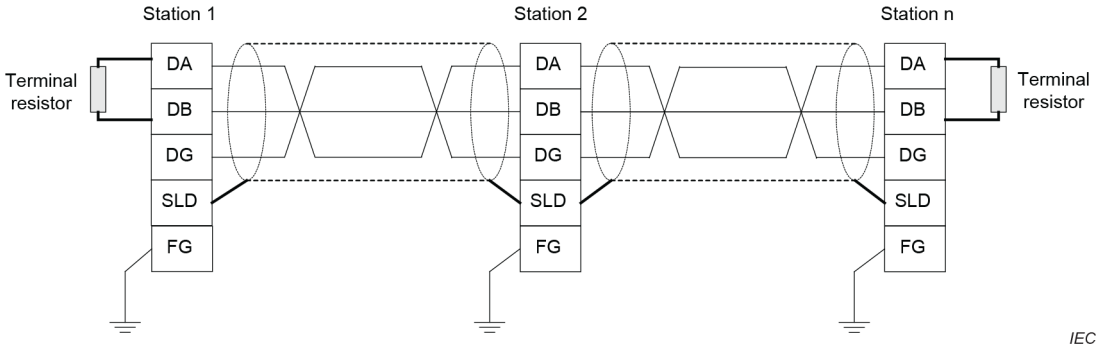

Figure A.3 – Wiring

A.4.4.1.7 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.4.4.2 Connecting hardware selection

A.4.4.2.1 Common description

A.4.4.2.2 Connecting hardware for balanced cabling CPs based on Ethernet

Not applicable.

A.4.4.2.3 Connecting hardware for copper cabling CPs not based on Ethernet

Modification:

There is no detailed physical connector specifications for CP 8/1 and CP 8/2 networks. The type of connector shall be a screw-compression type with each terminal able to accommodate two conductors of the type specified for the media cable. It is also required that sufficient terminals are provided for all five connection points, or alternatively, four connection points with a separate connection point provided for the FG circuit. See Figure A.3.

Replacement:

Table A.4 provides values based on the template given in IEC 61918:2018, Table 8.

Table A.4 – Connectors for copper cabling CPs not based on Ethernet

	IEC 60807-2 or IEC 60807-3	IEC 61076-2-101			IEC 61169-8	ANSI/(NFPA) T3.5.29 R1-2007		Others		
	Sub-D	M12-5 with A-coding	M12-5 with B-coding	M12-n with X-coding	Coaxial (BNC)	M 18	7/8-16 UN-2B THD	Open style	Terminal block	Others
CP 8/1	No	No	No	No	No	No	No	Yes	Yes	≥ 4 pins
CP 8/2	No	No	No	No	No	No	No	Yes	Yes	≥ 4 pins

A.4.4.2.4 Connecting hardware for wireless installation

A.4.4.2.5 Connecting hardware for optical fibre cabling

Not applicable.

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A.4.4.2.6 Specific requirements for CPs

Not applicable.

A.4.4.2.7 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.4.4.3 Connections within a channel/permanent link

A.4.4.3.1 Common description

A.4.4.3.2 Balanced cabling connections and splices for CPs based on Ethernet

Not applicable.

A.4.4.3.3 Copper cabling connections and splices for CPs not based on Ethernet

A.4.4.3.3.1 Common description

A.4.4.3.3.2 Connections minimum distance

A.4.4.3.3.3 Copper cabling splices

Not applicable.

A.4.4.3.3.4 Copper cabling bulkhead connections

Not applicable.

A.4.4.3.3.5 Copper cabling J-J couplers (J-J adaptors)

Not applicable.

A.4.4.3.4 Optical fibre cabling connections and splices for CPs based on Ethernet

Not applicable.

A.4.4.3.5 Optical fibre cabling connections and splices for CPs not based on Ethernet

Not applicable.

A.4.4.3.6 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.4.4.4 Terminators

A.4.4.4.1 Common description

A.4.4.4.2 Specific requirements for CPs

Addition:

The trunk line shall be terminated at each of its two ends with a 110 Ω ± 5 % resistor rated for at least 0,5 W.

A.4.4.4.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

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A.4.4.5 Device location and connection

A.4.4.5.1 Common description

A.4.4.5.2 Specific requirements for CPs

Not applicable.

A.4.4.5.3 Specific requirements for wireless installation

Not applicable.

A.4.4.5.4 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.4.4.6 Coding and labelling

A.4.4.6.1 Common description

A.4.4.6.2 Additional requirements for CPs

A.4.4.6.3 Specific requirements for CPs

Not applicable.

A.4.4.6.4 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.4.4.7 Earthing and bonding of equipment and devices and shielded cabling

A.4.4.7.1 Common description

A.4.4.7.2 Bonding and earthing of enclosures and pathways

A.4.4.7.3 Earthing methods

A.4.4.7.3.1 Equipotential

Not applicable.

A.4.4.7.3.2 Star

A.4.4.7.3.3 Earthing of equipment (devices)

Addition:

Parallel RC earthing circuit shall not be used for CP 8/1 or CP 8/2.

A.4.4.7.3.4 Copper bus bars

A.4.4.7.4 Shield earthing

A.4.4.7.4.1 Non-earthing or parallel RC

Not applicable.

A.4.4.7.4.2 Direct

A.4.4.7.4.3 Derivatives of direct and parallel RC

Not applicable.

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A.4.4.7.5 Specific requirements for CPs

Not applicable.

A.4.4.7.6 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.4.4.8 Storage and transportation of cables

A.4.4.8.1 Common description

A.4.4.8.2 Specific requirements for CPs

Not applicable.

A.4.4.8.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.4.4.9 Routing of cables

A.4.4.10 Separation of circuits

A.4.4.11 Mechanical protection of cabling components

A.4.4.11.1 Common description

A.4.4.11.2 Specific requirements for CPs

Not applicable.

A.4.4.11.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.4.4.12 Installation in special areas

A.4.5 Cabling planning documentation

A.4.6 Verification of cabling planning specification

A.5 Installation implementation

A.5.1 General requirements

A.5.1.1 Common description

A.5.1.2 Installation of CPs

Not applicable.

A.5.1.3 Installation of generic cabling in industrial premises

Not applicable.

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A.5.2 Cable installation

A.5.2.1 General requirements for all cabling types

A.5.2.1.1 Storage and installation

A.5.2.1.2 Protecting communication cables against potential mechanical damage

Replacement:

Table A.5 provides values based on the template given in IEC 61918:2018, Table 18.

Table A.5 – Parameters for balanced cables

Characteristic		Value
Mechanical force	Minimum bending radius, single bending (mm)	[a]
	Bending radius, multiple bending (mm)	[a]
	Pull forces (N)	[a]
	Permanent tensile forces (N)	[a]
	Maximum lateral forces (N/cm)	[a]
	Temperature range during installation (°C)	[a]
[a] Depending on cable type: see manufacturers data sheet		

A.5.2.1.3 Avoid forming loops

A.5.2.1.4 Torsion (twisting)

A.5.2.1.5 Tensile strength (on installed cables)

A.5.2.1.6 Bending radius

A.5.2.1.7 Pull force

A.5.2.1.8 Fitting strain relief

A.5.2.1.9 Installing cables in cabinet and enclosures

A.5.2.1.10 Installation on moving parts

A.5.2.1.11 Cable crush

A.5.2.1.12 Installation of continuous flexing cables

A.5.2.1.13 Additional instructions for the installation of optical fibre cables

Not applicable.

A.5.2.2 Installation and routing

A.5.2.3 Specific requirements for CPs

Not applicable.

A.5.2.4 Specific requirements for wireless installation

Not applicable.

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A.5.2.5 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.5.3 Connector installation

A.5.3.1 Common description

Replacement for paragraph 4:

When making cables or cord sets, the installer shall refer to Table A.6 for the appropriate connector wiring.

Addition:

Table A.6 – Cable conductor assignments

Signal	Conductor colour
DA	BU
DB	WH
DG	YE
SLD	Drain

A.5.3.2 Shielded connectors

Replacement for last paragraph:

Shielded connectors shall be installed in accordance with the manufacturer's recommended procedures.

A.5.3.3 Unshielded connectors

Not applicable.

A.5.3.4 Specific requirements for CPs

Not applicable.

A.5.3.5 Specific requirements for wireless installation

Not applicable.

A.5.3.6 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.5.4 Terminator installation

A.5.4.1 Common description

A.5.4.2 Specific requirements for CPs

Addition:

The trunk line shall be terminated at each of its two ends with a 110 Ω ± 5 % resistor rated for at least 0,5 W.

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A.5.5 Device installation

A.5.6 Coding and labelling

A.5.6.1 Common description

A.5.6.2 Specific requirements for CPs

Addition:

Devices shall display a manufacturers label that includes the text "V2" for CP 8/2 networks.

A.5.7 Earthing and bonding of equipment and devices and shield cabling

A.5.7.1 Common description

A.5.7.2 Bonding and earthing of enclosures and pathways

A.5.7.3 Earthing methods

A.5.7.3.1 Equipotential

Not applicable.

A.5.7.3.2 Star

A.5.7.3.3 Earthing of equipment (devices)

A.5.7.3.3.1 Non-earthing or parallel RC

Not applicable.

A.5.7.3.3.2 Direct

A.5.7.3.3.3 Installing copper bus bars

A.5.7.4 Shield earthing methods

A.5.7.4.1 General

A.5.7.4.2 Parallel RC

Not applicable.

A.5.7.4.3 Direct

A.5.7.4.4 Derivatives of direct and parallel RC

Not applicable.

A.5.7.5 Specific requirements for CPs

Not applicable.

A.5.7.6 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

A.5.8 As-implemented cabling documentation

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A.6 Installation verification and installation acceptance test

A.6.1 General

A.6.2 Installation verification

A.6.2.1 General

A.6.2.2 Verification according to cabling planning documentation

A.6.2.3 Verification of earthing and bonding

A.6.2.4 Verification of shield earthing

A.6.2.5 Verification of cabling system

A.6.2.6 Cable selection verification

A.6.2.6.1 Common description

A.6.2.6.2 Specific requirements for CPs

Not applicable.

A.6.2.6.3 Specific requirements for wireless installation

Not applicable.

A.6.2.7 Connector verification

A.6.2.8 Connection verification

A.6.2.8.1 Common description

A.6.2.8.2 Number of connections and connectors

A.6.2.8.3 Wire mapping

Replacement:

The verifier shall verify that the wire mapping is in accordance with the cabling planning documentation.

A.6.2.9 Terminator verification

A.6.2.9.1 Common description

A.6.2.9.2 Specific requirements for CPs

Addition:

It shall be verified, visually or by electrical measurement, that there are exactly two (2) terminators installed on the trunk line and that these are located, one each, at opposite ends of the trunk line.

A.6.2.10 Coding and labelling verification

Addition:

It shall be verified that devices display a manufacturer’s label that includes the text "V2" for CP 8/2 networks.

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A.6.2.11 Verification report

A.6.3 Installation acceptance test

A.6.3.1 General

A.6.3.2 Acceptance test of Ethernet-based cabling

Not applicable.

A.6.3.3 Acceptance test of non-Ethernet-based cabling

Not applicable.

A.6.3.4 Specific requirements for wireless installation

Not applicable.

A.6.3.5 Acceptance test report

A.7 Installation administration

Subclause 7.8 is not applicable.

A.8 Installation maintenance and installation troubleshooting

Subclause 8.4 is not applicable.

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Annex B
(normative)

CP 8/3 (CC-Link/LT™) specific installation profile

B.1 Installation profile scope

Addition:

This annex specifies the installation profile for Communication Profile CP 8/3 (CC-Link/LT™). The CP 8/3 is specified in IEC 61784-1-8.

CP 8/3 networks implement a medium attachment unit compliant with ISO/IEC 8482 twisted pair multipoint interconnections and is a derivative of ANSI TIA/EIA-485-A.

B.2 Normative references

Addition:

ISO/IEC 8482, *Information technology – Telecommunications and information exchange between systems – Twisted pair multipoint interconnections*

ANSI TIA/EIA-485-A, *Electrical Characteristics of Generators and Receivers for Use in Balanced Digital Multipoint Systems*

B.3 Installation profile terms, definitions, and abbreviated terms

B.3.1 Terms and definitions

B.3.2 Abbreviated terms

B.3.3 Conventions for installation profiles

Not applicable.

B.4 Installation planning

B.4.1 General

B.4.1.1 Objective

B.4.1.2 Cabling in industrial premises

Addition:

Generic cabling in accordance with ISO/IEC 11801-3 is not suitable for the cabling of CP 8/3 networks.

B.4.1.3 The planning process

B.4.1.4 Specific requirements for CPs

Not applicable.

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B.4.1.5 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

B.4.2 Planning requirements

B.4.2.1 Safety

B.4.2.1.1 General

B.4.2.1.2 Electrical safety

B.4.2.1.3 Functional safety

B.4.2.1.4 Intrinsic safety

Not applicable.

B.4.2.1.5 Safety of optical fibre communication systems

Not applicable.

B.4.2.2 Security

B.4.2.3 Environmental considerations and EMC

B.4.2.4 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

B.4.3 Network capabilities

B.4.3.1 Network topology

B.4.3.1.1 Common description

B.4.3.1.2 Basic physical topologies for passive networks

Modification:

The bus topology shall be used for CP 8/3 passive networks.

B.4.3.1.3 Basic physical topologies for active networks

Not applicable.

B.4.3.1.4 Combination of basic topologies

B.4.3.1.5 Specific requirements for CPs

Addition:

B.4.3.1.5.1 General

CP 8/3 employs a powered medium as shown in Figure B.1.

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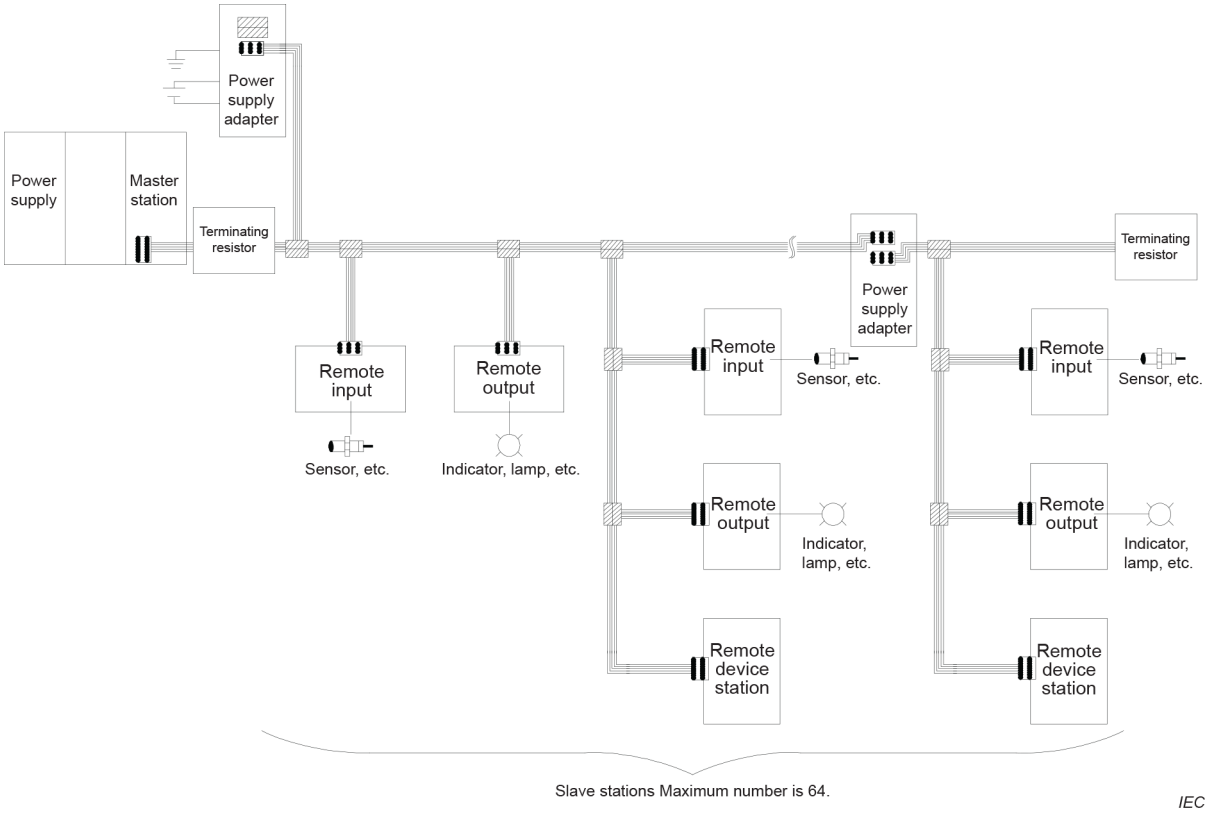

Figure B.1 – Powered network topology

B.4.3.1.5.2 Bus t-branch topology

A bus t-branch topology is shown in Figure B.2. This is a modification of the bus or linear topology in that branch lines, which differ from spurs, may be added to a trunk segment.

The cable types may be mixed in the network, but shall remain consistent for a given branch line or trunk segment.

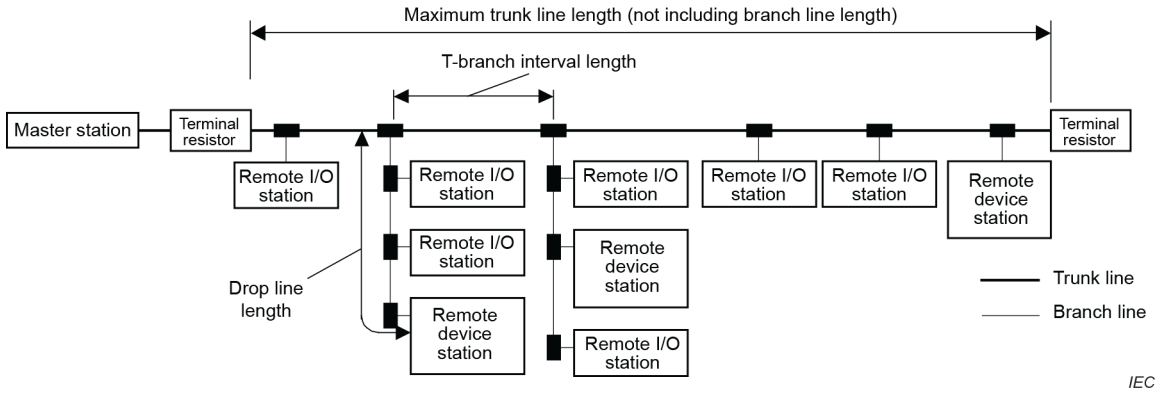

Figure B.2 – Bus t-branch topology

B.4.3.1.6 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

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B.4.3.2 Network characteristics

B.4.3.2.1 General

B.4.3.2.2 Network characteristics for balanced cabling not based on Ethernet

Replacement:

Table B.1 provides values based on the template given in IEC 61918:2018, Table 1.

Table B.1 – Basic network characteristics for balanced cabling not based on Ethernet

Characteristic	CP 8/3
Basic transmission technology	Type 18
Length / transmission speed	**Segment length** m
156 kbit/s	500
625 kbit/s	100
2,5 Mbit/s	35
Maximum capacity	**Max. no.**
Devices / segment	64
Devices / network	64

Addition:

CP 8/3 networks impose addition requirements on lengths of bus components as specified in Table B.2.

Table B.2 – CP 8/3 additional topology length limits

Parameter	Value			Comment
	156 kbit/s	**625** kbit/s	**2 500** kbit/s	
Max. trunk segment length	500 m	100 m	35 m	Not including branch line length
Max. branch length	60 m	16 m	4 m	Cable length per branch
Max. overall branch length	200 m	50 m	15 m	Total length of all branch lines combined
Max. spur length	60 m	16 m	4 m	Spurs must be included in the branch total length calculation
Max. cable length between connected devices	500 m	100 m	35 m	
Max. cable length between t-branches	no limit			
Max. number of devices connected per branch	8			

B.4.3.2.3 Network characteristics for balanced cabling based on Ethernet

Not applicable.

B.4.3.2.4 Network characteristics for optical fibre cabling

Not applicable.

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B.4.3.2.5 Specific network characteristics

B.4.3.2.6 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

B.4.4 Selection and use of cabling components

B.4.4.1 Cable selection

B.4.4.1.1 Common description

B.4.4.1.2 Copper cables

B.4.4.1.2.1 Balanced cables for Ethernet-based CPs

Not applicable.

B.4.4.1.2.2 Copper cables for non-Ethernet-based CPs

Addition:

A CP 8/3 network bus shall be implemented using a 4-core unshielded flat cable as shown in Figure B.3, Figure B.4 and Figure B.5 and specified in Table B.3.

The trunk segment shall be constructed using only one type of cable (flat, round/preferred, or round/alternate). Similarly, each branch shall be constructed of only one type of cable. However, branch cable types need not match the trunk cable type or that of other branches in the bus segment.

Dimensions in millimetres

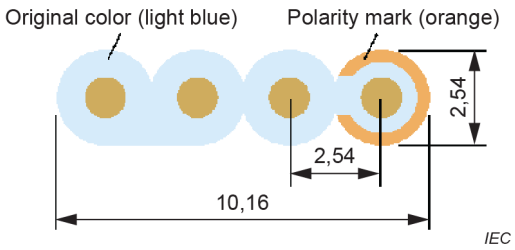

Figure B.3 – Flat cable cross section – with key

Dimensions in millimetres

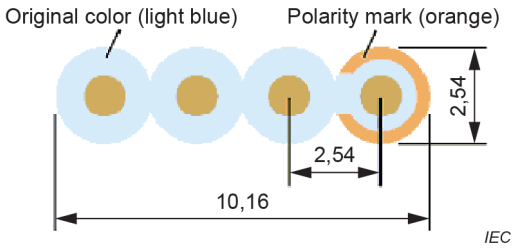

Figure B.4 – Flat cable cross section – without key

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Dimensions in metres

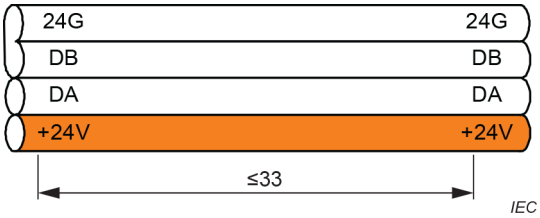

Figure B.5 – Flat cable polarity marking

Replacement:

Table B.3 provides values based on the template given in IEC 61918:2018, Table 5.

Table B.3 – Information relevant to copper cable: cords

Characteristic	CP 8/3 Flat
Nominal impedance of cable (tolerance)	130 Ω (± 25 Ω)
DCR of conductors	≤ 23,4 Ω / km
DCR of shield	–
Number of conductors	4
Shielding	–
Colour code for conductor	see Figure B.3, Figure B.4 and Figure B.5
Jacket colour requirements	seeFigure B.3, Figure B.4 and Figure B.5
Jacket material	Flexible resin
Resistance to harsh environment (e.g. UV, oil resist, LS0H)	–
Agency ratings	–
Conductor cross-sectional area	0,823 mm^2 (18 AWG)
Dielectric strength (conductor – conductor)	≥ 500 V r.m.s.
Dielectric strength (conductor – shield)	–
Insulation resistance (after dielectric strength test)	≥ 10 MΩ · km
Mutual capacitance (at 1 kHz)	≤ 55 nF / km
Maximum attenuation for 100 m	≤ 3,04 dB at 1 MHz ≤ 4,83 dB at 2 MHz

B.4.4.1.3 Cables for wireless installation

B.4.4.1.4 Optical fibre cables

Not applicable.

B.4.4.1.5 Special purpose balanced and optical fibre cables

Not applicable.

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B.4.4.1.6 Specific requirements for CPs

Addition:

The minimum wiring between three communicating devices is shown in Figure B.6.

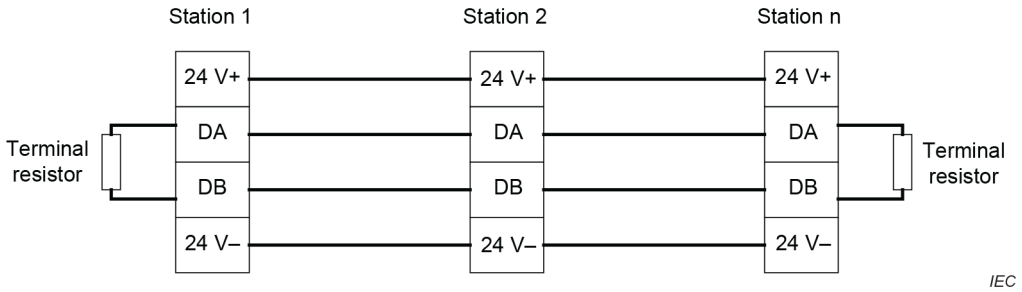

Figure B.6 – Wiring

B.4.4.1.7 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

B.4.4.2 Connecting hardware selection

B.4.4.2.1 Common description

B.4.4.2.2 Connecting hardware for balanced cabling CPs based on Ethernet

Not applicable.

B.4.4.2.3 Connecting hardware for copper cabling CPs not based on Ethernet

Modification:

The detailed physical connector specifications for CP 8/3 networks are shown in Figure B.7.

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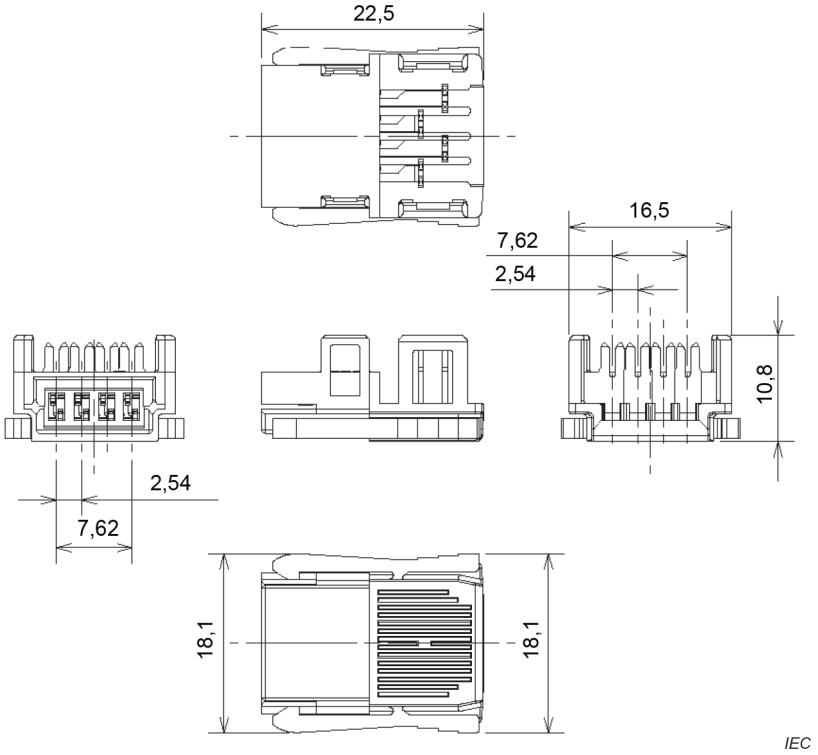
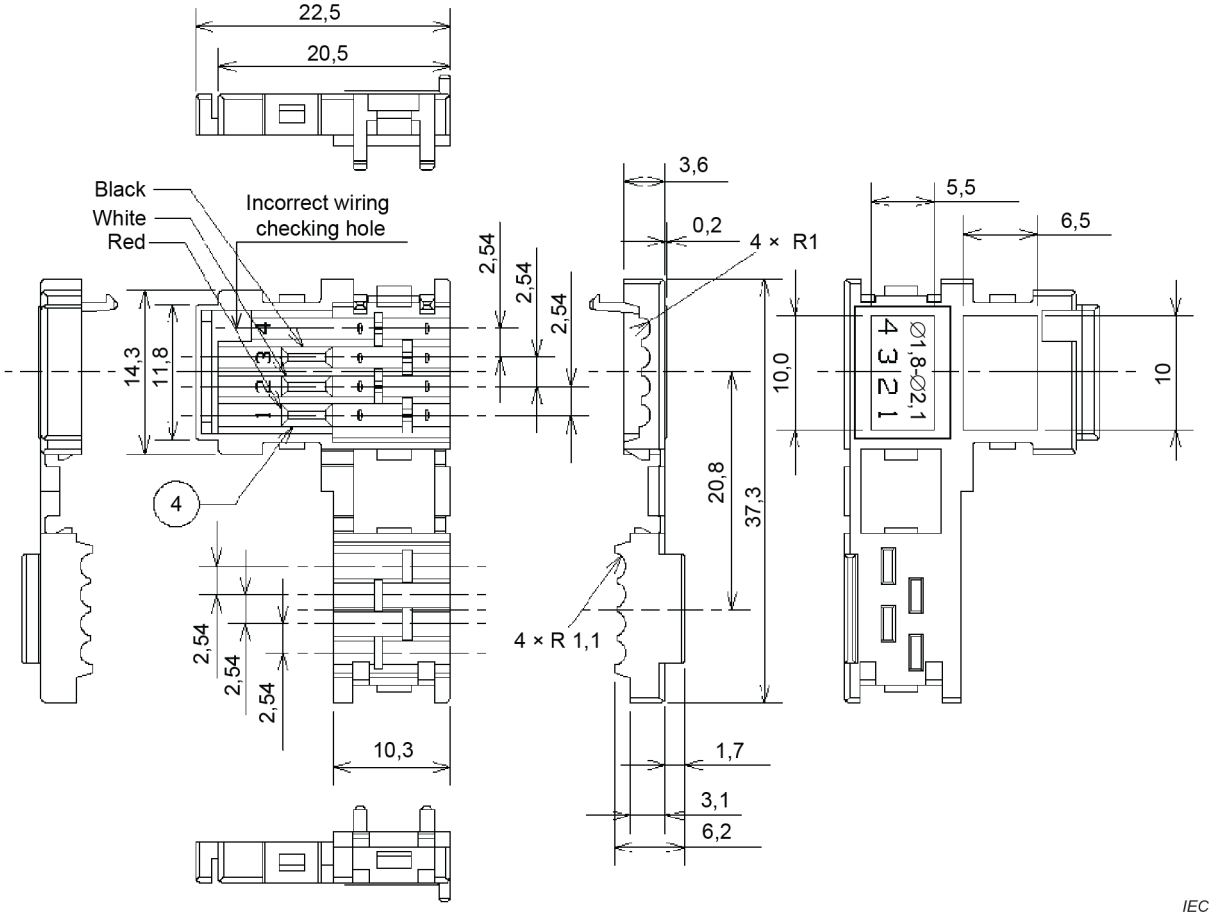


a) Body and connector



b) Terminal cover

Figure B.7 – Flat cable connector and terminal cover

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Replacement:

Table B.4 provides values based on the template given in IEC 61918:2018, Table 8.

Table B.4 – Connectors for copper cabling CPs not based on Ethernet

	IEC 608 07-2 or IEC 608 07-3	IEC 61076-2-101			IEC 61169 -8	ANSI/(NFPA) T3.5.29 R1-2007		Others		
	Sub-D	M12-5 with A-coding	M12-5 with B-coding	M12-n with X-coding	Coaxial (BNC)	M 18	7/8-16 UN-2B THD	Open style	Terminal block	Others
CP 8/3	No	No	No	No	No	No	No	No	No	see Figure B.7

B.4.4.2.4 Connecting hardware for wireless installation

B.4.4.2.5 Connecting hardware for optical fibre cabling

Not applicable.

B.4.4.2.6 Specific requirements for CPs

Not applicable.

B.4.4.2.7 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

B.4.4.3 Connections within a channel/permanent link

B.4.4.3.1 Common description

B.4.4.3.2 Balanced cabling connections and splices for CPs based on Ethernet

Not applicable.

B.4.4.3.3 Copper cabling connections and splices for CPs not based on Ethernet

B.4.4.3.3.1 Common description

B.4.4.3.3.2 Connections minimum distance

B.4.4.3.3.3 Copper cabling splices

Not applicable.

B.4.4.3.3.4 Copper cabling bulkhead connections

Not applicable.

B.4.4.3.3.5 Copper cabling J-J couplers (J-J adaptors)

Not applicable.

B.4.4.3.4 Optical fibre cabling connections and splices for CPs based on Ethernet

Not applicable.

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B.4.4.3.5 Optical fibre cabling connections and splices for CPs not based on Ethernet

Not applicable.

B.4.4.3.6 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

B.4.4.4 Terminators

B.4.4.4.1 Common description

B.4.4.4.2 Specific requirements for CPs

Addition:

The trunk line shall be terminated at each of its two ends with a 680 Ω ± 5 % resistor.

B.4.4.4.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

B.4.4.5 Device location and connection

B.4.4.5.1 Common description

B.4.4.5.2 Specific requirements for CPs

Not applicable.

B.4.4.5.3 Specific requirements for wireless installation

Not applicable.

B.4.4.5.4 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

B.4.4.6 Coding and labelling

B.4.4.6.1 Common description

B.4.4.6.2 Additional requirements for CPs

B.4.4.6.3 Specific requirements for CPs

Not applicable.

B.4.4.6.4 Specific requirements for generic cabling in accordance with ISO/IEC 11801-1

B.4.4.7 Earthing and bonding of equipment and devices and shielded cabling

B.4.4.7.1 Common description

B.4.4.7.1.1 Basic requirements

B.4.4.7.1.2 Planner tasks

B.4.4.7.1.3 Methods for controlling potential differences in the earth system

B.4.4.7.1.4 Selection of the earthing and bonding systems

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B.4.4.7.2 Bonding and earthing of enclosures and pathways

B.4.4.7.2.1 Equalisation and earthing conductor sizing and length

B.4.4.7.2.2 Bonding straps and sizing

B.4.4.7.2.3 Surface preparation and methods

B.4.4.7.2.4 Bonding and earthing

B.4.4.7.3 Earthing methods

B.4.4.7.3.1 Equipotential

Not applicable.

B.4.4.7.3.2 Star

B.4.4.7.3.3 Earthing of equipment (devices)

Addition:

A parallel RC earthing circuit shall not be used for CP 8/3.

B.4.4.7.3.4 Copper bus bars

B.4.4.7.4 Shield earthing

Not applicable.

B.4.4.7.5 Specific requirements for CPs

Not applicable.

B.4.4.7.6 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

B.4.4.8 Storage and transportation of cables

B.4.4.8.1 Common description

B.4.4.8.2 Specific requirements for CPs

Not applicable.

B.4.4.8.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

B.4.4.9 Routing of cables

B.4.4.10 Separation of circuits

B.4.4.11 Mechanical protection of cabling components

B.4.4.11.1 Common description

B.4.4.11.2 Specific requirements for CPs

Not applicable.

B.4.4.11.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

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B.4.4.12 Installation in special areas

B.4.5 Cabling planning documentation

B.4.6 Verification of cabling planning specification

B.5 Installation implementation

B.5.1 General requirements

B.5.1.1 Common description

B.5.1.2 Installation of CPs

B.5.1.3 Installation of generic cabling in industrial premises

Not applicable.

B.5.2 Cable installation

B.5.2.1 General requirements for all cabling types

B.5.2.1.1 Storage and installation

B.5.2.1.2 Protecting communication cables against potential mechanical damage

Replacement:

Table B.5 provides values based on the template given in IEC 61918:2018, Table 18.

Table B.5 – Parameters for balanced cables

Characteristic		Value
Mechanical force	Minimum bending radius, single bending (mm)	[a]
	Bending radius, multiple bending (mm)	[a]
	Pull forces (N)	[a]
	Permanent tensile forces (N)	[a]
	Maximum lateral forces (N/cm)	[a]
	Temperature range during installation (°C)	[a]
[a] Depending on cable type: see manufacturer's data sheet		

B.5.2.1.3 Avoid forming loops

B.5.2.1.4 Torsion (twisting)

B.5.2.1.5 Tensile strength (on installed cables)

B.5.2.1.6 Bending radius

B.5.2.1.7 Pull force

B.5.2.1.8 Fitting strain relief

B.5.2.1.9 Installing cables in cabinet and enclosures

B.5.2.1.10 Installation on moving parts

B.5.2.1.11 Cable crush

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B.5.2.1.12 Installation of continuous flexing cables

B.5.2.1.13 Additional instructions for the installation of optical fibre cables

Not applicable.

B.5.2.2 Installation and routing

B.5.2.3 Specific requirements for CPs

Not applicable.

B.5.2.4 Specific requirements for wireless installation

Not applicable.

B.5.2.5 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

B.5.3 Connector installation

B.5.3.1 Common description

Replacement for paragraph 4:

When making cables or cord sets, the installer shall refer to Table B.6 for the appropriate connector wiring.

Addition:

Table B.6 – Flat cable conductor assignments

Signal	Pin	Conductor colour
+24V	1	ORN
DA	2	BLU
DB	3	BLU
24G	4	BLU

B.5.3.2 Shielded connectors

Not applicable.

B.5.3.3 Unshielded connectors

Replacement for last paragraph:

Unshielded connectors shall be installed in accordance with the manufacturer's recommended procedures.

B.5.3.4 Specific requirements for CPs

Not applicable.

B.5.3.5 Specific requirements for wireless installation

Not applicable.

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B.5.3.6 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

B.5.4 Terminator installation

B.5.4.1 Common description

B.5.4.2 Specific requirements for CPs

Addition:

The trunk line shall be terminated at each of its two ends with a 680 Ω ± 5 %.

B.5.5 Device installation

B.5.6 Coding and labelling

B.5.7 Earthing and bonding of equipment and devices and shield cabling

B.5.7.1 Common description

B.5.7.2 Bonding and earthing of enclosures and pathways

B.5.7.2.1 Equalisation and earthing conductor sizing and length

B.5.7.2.2 Bonding straps and sizing

B.5.7.2.3 Surface preparation and methods

B.5.7.3 Earthing methods

B.5.7.3.1 Equipotential

Not applicable.

B.5.7.3.2 Star

B.5.7.3.3 Earthing of equipment (devices)

B.5.7.3.3.1 Non-earthing or parallel RC

Not applicable.

B.5.7.3.3.2 Direct

B.5.7.3.3.3 Installing copper bus bars

B.5.7.4 Shield earthing methods

Not applicable.

B.5.7.5 Specific requirements for CPs

Not applicable.

B.5.7.6 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

B.5.8 As-implemented cabling documentation

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B.6 Installation verification and installation acceptance test

B.6.1 General

B.6.2 Installation verification

B.6.2.1 General

B.6.2.2 Verification according to cabling planning documentation

B.6.2.3 Verification of earthing and bonding

B.6.2.3.1 General

B.6.2.3.2 Specific requirements for earthing and bonding

Not applicable.

B.6.2.4 Verification of shield earthing

B.6.2.5 Verification of cabling system

B.6.2.6 Cable selection verification

B.6.2.6.1 Common description

B.6.2.6.2 Specific requirements for CPs

Not applicable.

B.6.2.6.3 Specific requirements for wireless installation

Not applicable.

B.6.2.7 Connector verification

B.6.2.7.1 Common description

B.6.2.7.2 Specific requirements for CPs

Not applicable.

B.6.2.7.3 Specific requirements for wireless installation

Not applicable.

B.6.2.8 Connection verification

B.6.2.8.1 Common description

B.6.2.8.2 Number of connections and connectors

B.6.2.8.3 Wire mapping

Addition:

The verifier shall verify that the wire mapping is in accordance with the cabling planning documentation.

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B.6.2.9 Terminator verification

B.6.2.9.1 Common description

B.6.2.9.2 Specific requirements for CPs

Addition:

It shall be verified, visually or by electrical measurement, that there are exactly two (2) terminators installed on the trunk line and that these are located, one each, at opposite ends of the trunk line.

B.6.2.10 Coding and labelling verification

B.6.2.11 Verification report

B.6.3 Installation acceptance test

B.6.3.1 General

B.6.3.2 Acceptance test of Ethernet-based cabling

Not applicable.

B.6.3.3 Acceptance test of non-Ethernet-based cabling

B.6.3.4 Specific requirements for wireless installation

Not applicable.

B.6.3.5 Acceptance test report

B.7 Installation administration

Subclause 7.8 is not applicable.

B.8 Installation maintenance and installation troubleshooting

Subclause 8.4 is not applicable.

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Annex C
(normative)

CP 8/4 (CC-Link IE™ Controller Network) specific installation profile

C.1 Installation profile scope

Addition:

This annex specifies the installation profile for Communication Profile CP 8/4 (CC-Link IE™ Controller Network). The CP 8/4 is specified in IEC 61784-2-8.

C.2 Normative references

C.3 Installation profile terms, definitions, and abbreviated terms

C.3.1 Terms and definitions

C.3.2 Abbreviated terms

C.3.3 Conventions for installation profiles

Not applicable.

C.4 Installation planning

C.4.1 General

C.4.1.1 Objective

C.4.1.2 Cabling in industrial premises

C.4.1.3 The planning process

C.4.1.4 Specific requirements for CPs

Not applicable.

C.4.1.5 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

C.4.2 Planning requirements

C.4.2.1 Safety

C.4.2.1.1 General

C.4.2.1.2 Electrical safety

C.4.2.1.3 Functional safety

Not applicable.

C.4.2.1.4 Intrinsic safety

Not applicable.

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C.4.2.1.5 Safety of optical fibre communication systems

Not applicable.

C.4.2.2 Security

C.4.2.3 Environmental considerations and EMC

C.4.2.3.1 Description methodology

C.4.2.3.2 Use of the described environment to produce a bill of material

C.4.2.4 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

C.4.3 Network capabilities

C.4.3.1 Network topology

C.4.3.1.1 Common description

C.4.3.1.2 Basic physical topologies for passive networks

Not applicable.

C.4.3.1.3 Basic physical topologies for active networks

Addition:

The ring topology shall be used for CP 8/4 active networks.

C.4.3.1.4 Combination of basic topologies

C.4.3.1.5 Specific requirements for CPs

Not applicable.

C.4.3.1.6 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

C.4.3.2 Network characteristics

C.4.3.2.1 General

C.4.3.2.2 Network characteristics for balanced cabling not based on Ethernet

Not applicable.

C.4.3.2.3 Network characteristics for balanced cabling based on Ethernet

Replacement:

Table C.1 provides values based on the template given in IEC 61918:2018, Table 2.

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Table C.1 – Network characteristics for balanced cabling based on Ethernet

Characteristic	CP 8/4
Supported data rates (Mbit/s)	1 000
Supported channel length (m) [b]	23 900
Number of connections in the channel (max.) [a, b]	253
Patch cord length (m) [a]	100
Channel class per ISO/IEC 11801-3 (min.) [b]	D
Cable category per ISO/IEC 11801-3 (min.) [c]	5e
Connecting HW category per ISO/IEC 11801-3 (min.)	5e
Cable types	ANSI/TIA/EIA-568-B
[a] See C.4.4.3.2. [b] For the purposes of this table, the channel definitions of ISO/IEC 11801-3 are applicable. [c] For additional information, see the IEC 61156 series.	

C.4.3.2.4 Network characteristics for optical fibre cabling

Replacement:

Table C.2 provides values based on the template given in IEC 61918:2018, Table 3.

Table C.2 – Network characteristics for optical fibre cabling

CP 8/4		
Optical fibre type	**Description**	
Multimode silica	Modal bandwidth (MHz × km) at λ (nm)	500 at 850
	Minimum length (m)	–
	Typical maximum length[a] (m)	550
	Maximum channel Insertion loss/optical power budget (dB)	4,5
	Connecting hardware	See C.4.4.2.5
[a] This value is reduced by connections, splices and bends in accordance with Formula (1) in 4.4.3.4.1 of IEC 61918~~:2018~~—.		

C.4.3.2.5 Specific network characteristics

Not applicable.

C.4.3.2.6 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

C.4.4 Selection and use of cabling components

C.4.4.1 Cable selection

C.4.4.1.1 Common description

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C.4.4.1.2 Copper cables

C.4.4.1.2.1 Balanced cables for Ethernet-based CPs

Replacement

Table C.3 provides values based on the template given in IEC 61918:2018, Table 4.

Table C.3 – Information relevant to copper cable: fixed cables

Characteristic	CP 8/4
Nominal impedance of cable (Ω)	100
DCR of conductors (Ω/km)	< 115
DCR of shield (Ω/km)	–
Number of conductors	8
Shielding	Aluminium tape over annealed copper braided wire
Colour code for conductor	–
Jacket colour requirements	–
Jacket material	Application dependent
Resistance to harsh environment (e.g. UV, oil resist, LS0H)	Application dependent
Agency ratings	Application dependent
Standard	IEEE 802.3, 1000Base-T ANSI/TIA/EIA-568-B, Category 5e

C.4.4.1.3 Cables for wireless installation

C.4.4.1.4 Optical fibre cables

Replacement:

Table C.4 provides values based on the template given in IEC 61918:2018, Table 6.

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Table C.4 – Information relevant to optical fibre cables

Characteristic	9..10/125 µm single mode silica	50/125 µm multimode silica	62,5/125 µm multimode silica	980/1 000 µm step index POF	200/230 µm step index hard clad silica
Standard	–	IEC 60793-2-10	–	–	–
Attenuation per km (650 nm)	–	[a]	–	–	–
Attenuation per km (820 nm)	–	[a]	–	–	–
Attenuation per km (1 310 nm)	–	[a]	–	–	–
Number of optical fibres	–	single	–	–	–
Jacket colour requirements	–	none	–	–	–
Jacket material	–	[a]	–	–	–
Resistance to harsh environment (e.g. UV, oil resist, LS0H)	–	[a]	–	–	–
Breakout	–	No	–	–	–

[a] As specified in IEC 60793-2-10 for the subcategory ~~A1a.1~~ A1-OM2.

C.4.4.1.5 Special purpose balanced and optical fibre cables

C.4.4.1.6 Specific requirements for CPs

Not applicable.

C.4.4.1.7 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

C.4.4.2 Connecting hardware selection

C.4.4.2.1 Common description

C.4.4.2.2 Connecting hardware for balanced cabling CPs based on Ethernet

Replacement:

Table C.5 provides values based on the template given in IEC 61918:2018, Table 7.

Table C.5 – Connectors for balanced cabling CPs based on Ethernet

	IEC 60603-7 series [a]		IEC 61076-3-106 [b]		IEC 61076-3-117 [b]	IEC 61076-2-101	IEC 61076-2-109
	shielded	unshielded	Var. 1	Var. 6	Var. 14	M12-4 with D-coding	M12-8 with X-coding
CP 8/4	IEC 60603-7-3	No	No	No	No	No	Yes

[a] For the IEC 60603-7 series, the connector selection is based on the desired channel performance.

[b] Housings to protect connectors.

C.4.4.2.3 Connecting hardware for copper cabling CPs not based on Ethernet

Not applicable.

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