IEC 61784-5-8

Edition 3.0 2024-04
REDLINE VERSION

INTERNATIONAL STANDARD

colour inside

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2024 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, …). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IEC 61784-5-8

Edition 3.0 2024-04
REDLINE VERSION

INTERNATIONAL STANDARD

colour inside

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 25.040.40; 35.100.40

ISBN 978-2-8322-8695-1

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

® Registered trademark of the International Electrotechnical Commission

CONTENTS

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

INDUSTRIAL ~~COMMUNICATION~~ NETWORKS – PROFILES –

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

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

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

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

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

a) Annex E and related references have been added.

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

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

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

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

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

A list of all parts of IEC 61784-5 series, published under the general title *Industrial networks – Profiles – Installation of fieldbuses*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

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

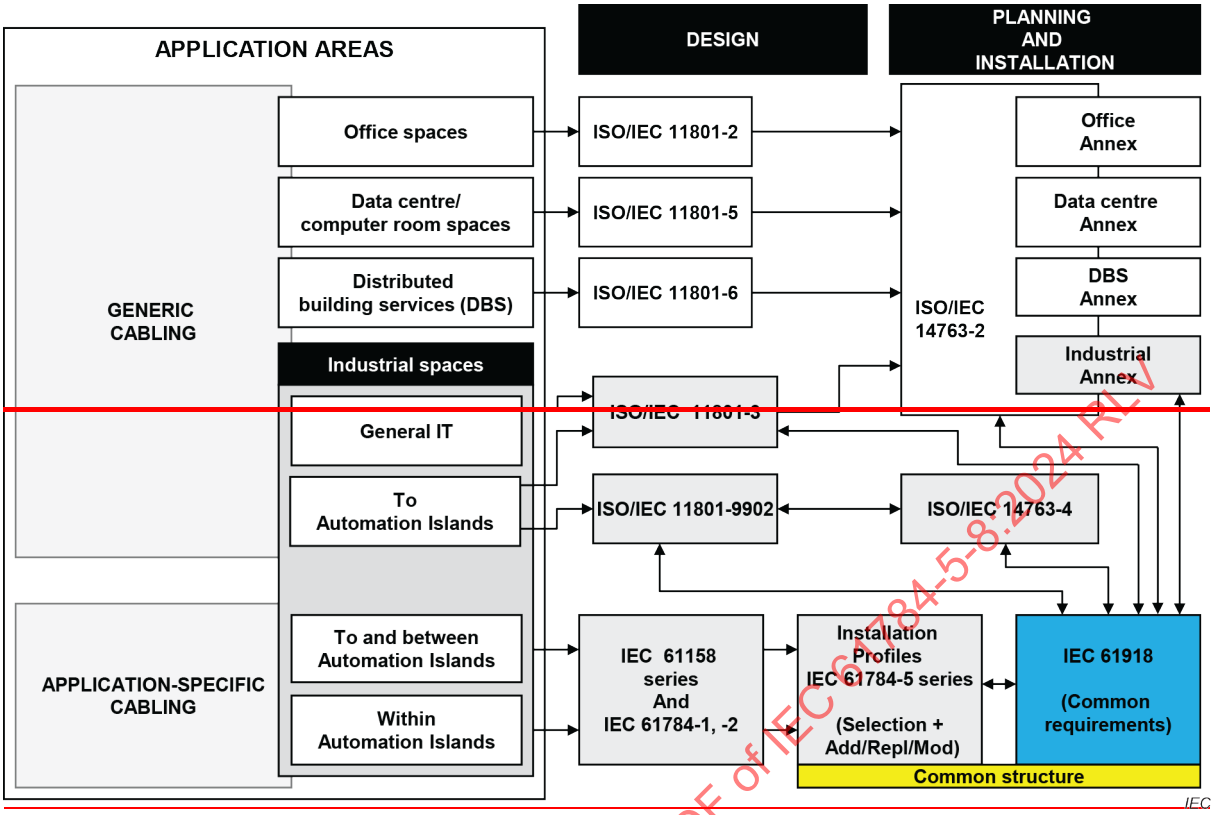
IEC 61918:2018, IEC 61918:2018/AMD1:2022 and IEC 61918:2018/AMD2:2024 provide the common requirements for the installation of communication networks in industrial control systems. This installation profile standard provides the installation profiles of the communication profiles (CP) of a specific communication profile family (CPF) by stating which requirements of IEC 61918:2018 and IEC 61918:2018/AMD1:2022 fully apply and, where necessary, by supplementing, modifying, or replacing the other requirements (see Figure 1).

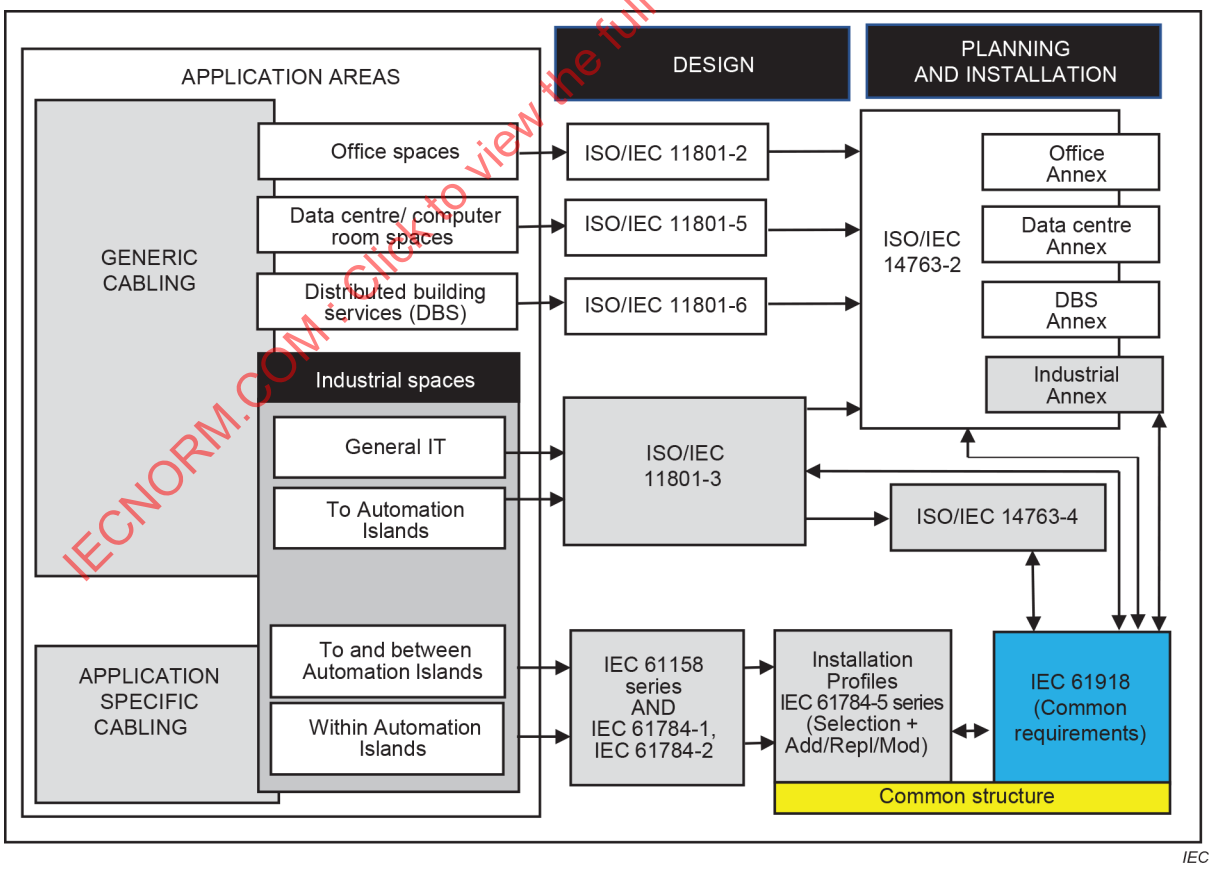
For general background on fieldbuses, their profiles, and relationship between the installation profiles specified in this document, see IEC 61158-1.

Each CP installation profile is specified in a separate annex of this document. Each annex is structured exactly as the reference standard IEC 61918:2018 for the benefit of the persons representing the roles in the fieldbus installation process as defined in IEC 61918:2018 (planner, installer, verification personnel, validation personnel, maintenance personnel, administration personnel). By reading the installation profile in conjunction with IEC 61918:2018, these persons immediately know which requirements are common for the installation of all CPs and which are modified or replaced. The conventions used to draft this document are defined in Clause 5.

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV





IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Figure 1 – Standards relationships

INDUSTRIAL ~~COMMUNICATION~~ NETWORKS – PROFILES –

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

1 Scope

This part of IEC 61784-5 specifies the installation profiles for CPF 8 (CC-Link™[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.~~

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

---

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.

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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).

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

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

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

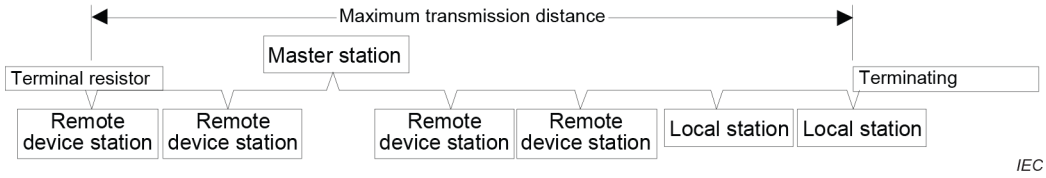
A.4.3.1.5 Specific requirements for CPs

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV



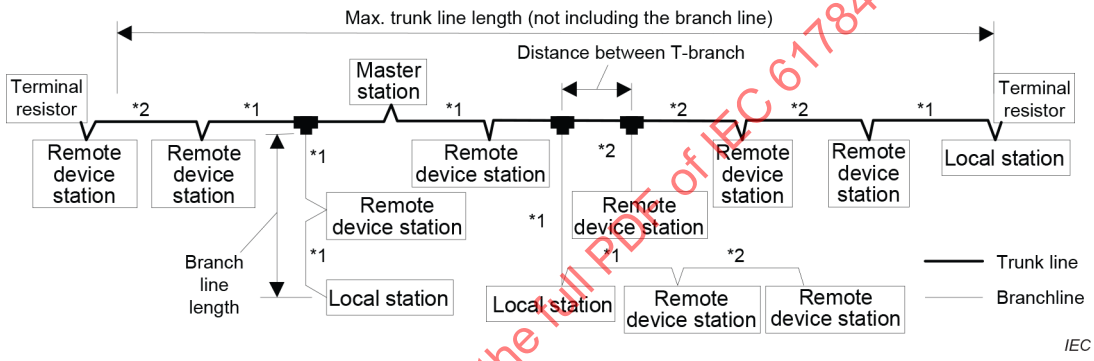
NOTE The minimum cable distance device-to-device is 20 cm.

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

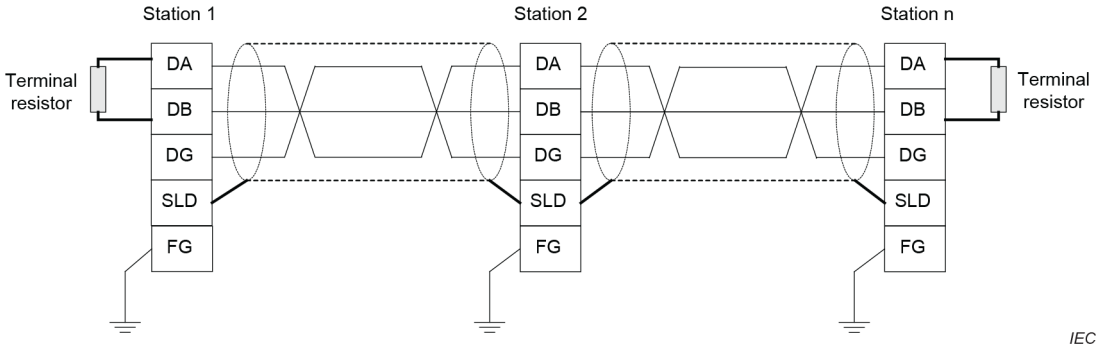


Figure A.3 – Wiring

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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		

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

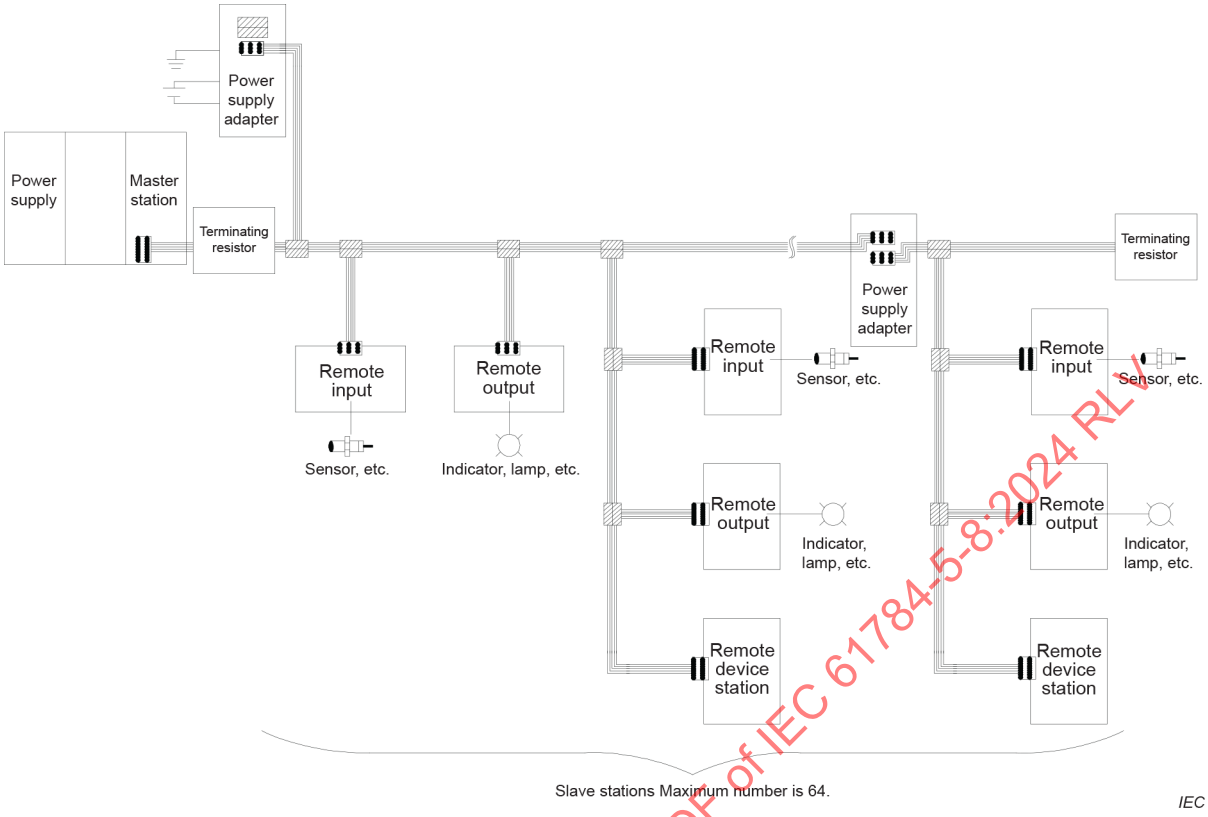


Figure B.1 – Powered network topology

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.

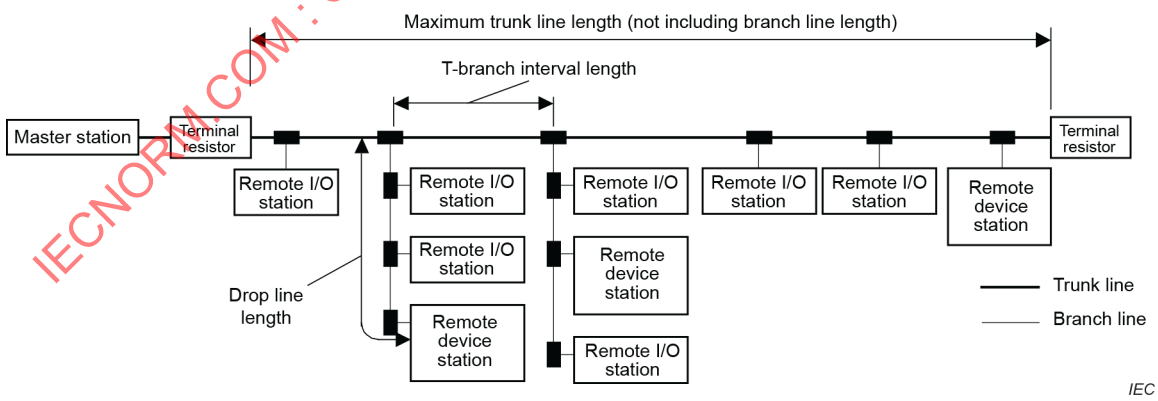


Figure B.2 – Bus t-branch topology

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

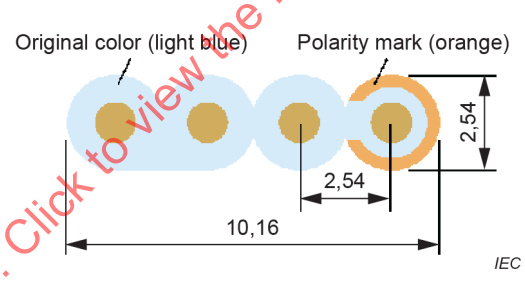


Figure B.3 – Flat cable cross section – with key

Dimensions in millimetres

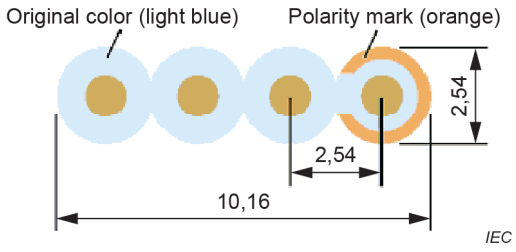


Figure B.4 – Flat cable cross section – without key

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Dimensions in metres

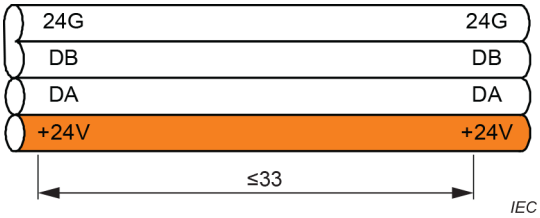


Figure B.5 – Flat cable polarity marking

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

B.4.4.1.6 Specific requirements for CPs

Addition:

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

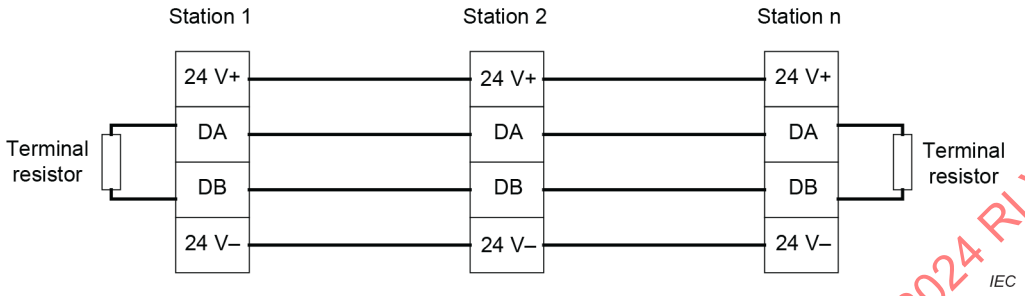


Figure B.6 – Wiring

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

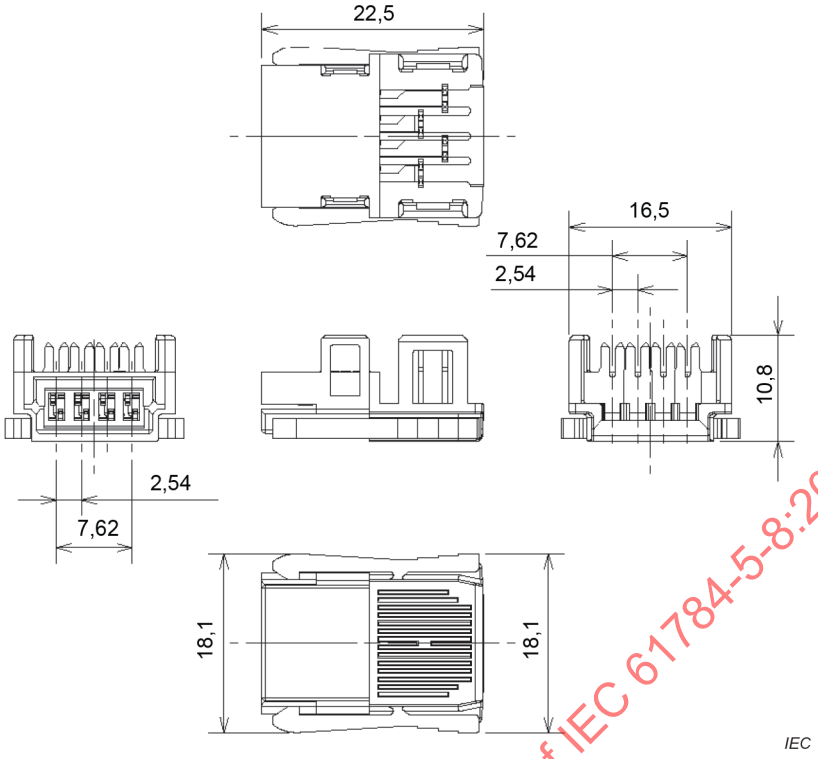
Not applicable.

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

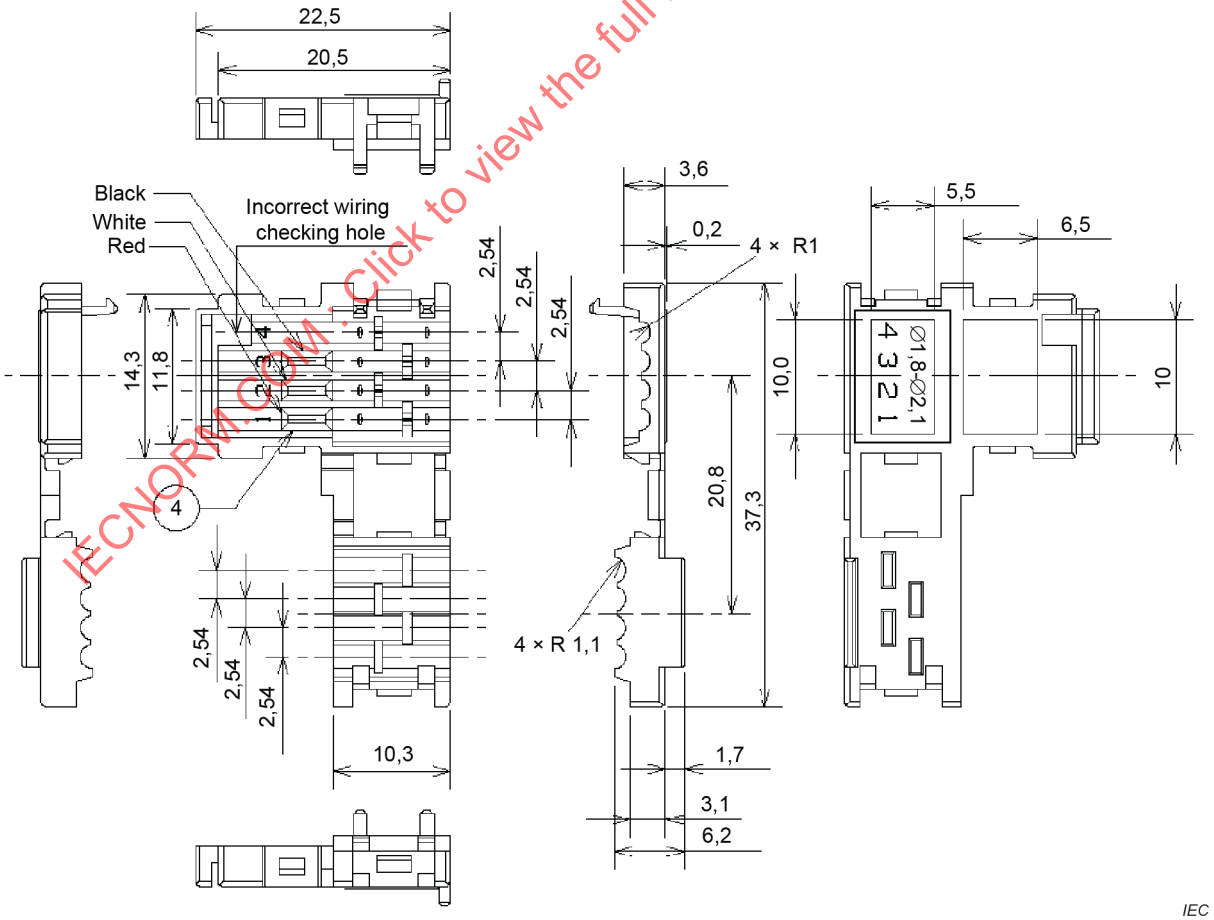
Modification:

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV



a) Body and connector



b) Terminal cover

Figure B.7 – Flat cable connector and terminal cover

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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 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 8/3	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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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		

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

C.4.4.2.4 Connecting hardware for wireless installation

C.4.4.2.5 Connecting hardware for optical fibre cabling

Replacement:

Table C.6 provides values based on the template given in IEC 61918:2018, Table 9.

Table C.6 – Optical fibre connecting hardware

	IEC 61754-2	IEC 61754-4	IEC 61754-24	IEC 61754-20	IEC 61754-22	Others
	BFOC/2,5	SC	SC-RJ	LC	F-SMA	
CP 8/4	No	Yes	No	Yes	No	No
NOTE The IEC 61754 series defines the optical fibre connector mechanical interfaces; performance specifications for optical fibre connectors terminated to specific fibre types are standardised in the IEC 61753 series.						

Replacement:

Table C.7 provides values based on the template given in IEC 61918:2018, Table 10.

Table C.7 – Relationship between FOC and fibre types (CP 8/4)

FOC	Fibre type					
	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	Others
BFOC/2,5	No	No	No	No	No	No
SC	No	Yes	No	No	No	No
SC-RJ	No	No	No	No	No	No
LC	No	Yes	No	No	No	No
F-SMA	No	No	No	No	No	No

C.4.4.2.6 Specific requirements for CPs

Not applicable.

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

C.4.4.3 Connections within a channel/permanent link

C.4.4.3.1 Common description

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

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

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

C.4.4.3.4.1 Common description

C.4.4.3.4.2 Optical fibre splices

C.4.4.3.4.3 Optical fibre bulkhead connections

C.4.4.3.4.4 Optical fibre J-J couplers (or adaptors)

Not applicable.

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

Not applicable

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

C.4.4.4 Terminators

Not applicable.

C.4.4.5 Device location and connection

C.4.4.5.1 Common description

C.4.4.5.2 Specific requirements for CPs

Not applicable.

C.4.4.5.3 Specific requirements for wireless installation

Not applicable.

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

C.4.4.6 Coding and labelling

C.4.4.6.1 Common description

C.4.4.6.2 Additional requirements for CPs

Not applicable.

C.4.4.6.3 Specific requirements for CPs

Not applicable.

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

C.4.4.7.1 Common description

C.4.4.7.1.1 Basic requirements

C.4.4.7.1.2 Planner tasks

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

C.4.4.7.1.4 Selection of the earthing and bonding systems

C.4.4.7.2 Bonding and earthing of enclosures and pathways

C.4.4.7.2.1 Equalisation and earthing conductor sizing and length

C.4.4.7.2.2 Bonding straps and sizing

C.4.4.7.2.3 Surface preparation and methods

C.4.4.7.2.4 Bonding and earthing

C.4.4.7.3 Earthing methods

C.4.4.7.3.1 Equipotential

Not applicable.

C.4.4.7.3.2 Star

C.4.4.7.3.3 Earthing of equipment (devices)

Addition:

A parallel RC earthing circuit shall not be used for CP 8/4 network.

C.4.4.7.3.4 Copper bus bars

C.4.4.7.4 Shield earthing

C.4.4.7.4.1 Non-earthing or parallel RC

Not applicable.

C.4.4.7.4.2 Direct

C.4.4.7.4.3 Derivatives of direct and parallel RC

Not applicable.

C.4.4.7.5 Specific requirements for CPs

Not applicable.

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

C.4.4.8 Storage and transportation of cables

C.4.4.8.1 Common description

C.4.4.8.2 Specific requirements for CPs

Not applicable.

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

C.4.4.9 Routing of cables

C.4.4.10 Separation of circuits

C.4.4.11 Mechanical protection of cabling components

C.4.4.11.1 Common description

C.4.4.11.2 Specific requirements for CPs

Not applicable.

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

C.4.4.12 Installation in special areas

C.4.4.12.1 Common description

C.4.4.12.2 Specific requirements for CPs

Not applicable.

C.4.4.12.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

C.4.5 Cabling planning documentation

C.4.5.1 Common description

C.4.5.2 Cabling planning documentation for CPs

Not applicable.

C.4.5.3 Network certification documentation

C.4.5.4 Cabling planning documentation for generic cabling in accordance with ISO/IEC 11801-3

C.4.6 Verification of cabling planning specification

C.5 Installation implementation

C.5.1 General requirements

C.5.1.1 Common description

C.5.1.2 Installation of CPs

C.5.1.3 Installation of generic cabling in industrial premises

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

C.5.2 Cable installation

C.5.2.1 General requirements for all cabling types

C.5.2.1.1 Storage and installation

C.5.2.1.2 Protecting communication cables against potential mechanical damage

Replacement:

Table C.8 provides values based on the template given in IEC 61918:2018, Table 18.

Table C.8 – 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)	−20 to +70
[a] Depending on cable type: see manufacturer's data sheet.		

Table C.9 provides values based on the template given in IEC 61918:2018, Table 19.

Table C.9 – Parameters for silica optical fibre cables

Characteristic		Value
Mechanical force	Minimum bending radius, single bending (mm)	30 (during installation) 15 (after installation)
	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)	−20 to +60
[a] As specified by IEC 60793-2-10, ~~A1a.1~~ A1-OM2 and the cable manufacturer.		

C.5.2.1.3 Avoid forming loops

C.5.2.1.4 Torsion (twisting)

C.5.2.1.5 Tensile strength (on installed cables)

C.5.2.1.6 Bending radius

C.5.2.1.7 Pull force

C.5.2.1.8 Fitting strain relief

C.5.2.1.9 Installing cables in cabinet and enclosures

C.5.2.1.10 Installation on moving parts

C.5.2.1.11 Cable crush

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

C.5.2.1.12 Installation of continuous flexing cables

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

C.5.2.1.13.1 Use cable pulling tools

C.5.2.1.13.2 Cautions for handling optical fibre cables

C.5.2.1.13.3 Keeping plugs clean

C.5.2.1.13.4 Attenuation change under load

C.5.2.1.13.5 Strain relief

C.5.2.1.13.6 EMC ruggedness

C.5.2.1.13.7 Crush resistance

C.5.2.2 Installation and routing

C.5.2.2.1 Common description

C.5.2.2.2 Separation of circuits

C.5.2.3 Specific requirements for CPs

Not applicable.

C.5.2.4 Specific requirements for wireless installation

Not applicable.

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

C.5.3 Connector installation

C.5.3.1 Common description

C.5.3.2 Shielded connectors

C.5.3.3 Unshielded connectors

Not applicable.

C.5.3.4 Specific requirements for CPs

Not applicable.

C.5.3.5 Specific requirements for wireless installation

Not applicable.

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

C.5.4 Terminator installation

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

C.5.5 Device installation

C.5.5.1 Common description

C.5.5.2 Specific requirements for CPs

Not applicable.

C.5.6 Coding and labelling

C.5.6.1 Common description

C.5.6.2 Specific requirements for CPs

Not applicable.

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

C.5.7.1 Common description

C.5.7.2 Bonding and earthing of enclosures and pathways

C.5.7.2.1 Equalisation and earthing conductor sizing and length

C.5.7.2.2 Bonding straps and sizing

C.5.7.2.3 Surface preparation and methods

C.5.7.3 Earthing methods

C.5.7.3.1 Equipotential

Not applicable.

C.5.7.3.2 Star

C.5.7.3.3 Earthing of equipment (devices)

C.5.7.3.3.1 Non-earthing or parallel RC

Not applicable.

C.5.7.3.3.2 Direct

C.5.7.3.3.3 Installing copper bus bars

C.5.7.4 Shield earthing methods

C.5.7.4.1 General

C.5.7.4.2 Parallel RC

Not applicable.

C.5.7.4.3 Direct

C.5.7.4.4 Derivatives of direct and parallel RC

Not applicable.

C.5.7.5 Specific requirements for CPs

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

C.5.8 As-implemented cabling documentation

C.6 Installation verification and installation acceptance test

C.6.1 General

C.6.2 Installation verification

C.6.2.1 General

C.6.2.2 Verification according to cabling planning documentation

C.6.2.3 Verification of earthing and bonding

C.6.2.3.1 General

C.6.2.3.2 Specific requirements for earthing and bonding

Not applicable.

C.6.2.4 Verification of shield earthing

C.6.2.5 Verification of cabling system

C.6.2.5.1 Verification of cable routing

C.6.2.5.2 Verification of cable protection and proper strain relief

C.6.2.6 Cable selection verification

C.6.2.6.1 Common description

C.6.2.6.2 Specific requirements for CPs

Not applicable.

C.6.2.6.3 Specific requirements for wireless installation

C.6.2.7 Connector verification

C.6.2.7.1 Common description

C.6.2.7.2 Specific requirements for CPs

Not applicable.

C.6.2.7.3 Specific requirements for wireless installation

Not applicable.

C.6.2.8 Connection verification

C.6.2.8.1 Common description

C.6.2.8.2 Number of connections and connectors

C.6.2.8.3 Wire mapping

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

C.6.2.9 Terminator verification

Not applicable.

C.6.2.10 Coding and labelling verification

C.6.2.10.1 Common description

C.6.2.10.2 Specific coding and labelling verification requirements

C.6.2.11 Verification report

C.6.3 Installation acceptance test

C.6.3.1 General

C.6.3.2 Acceptance test of Ethernet-based cabling

C.6.3.2.1 Validation of balanced cabling for CPs based on Ethernet

C.6.3.2.1.1 Common description

C.6.3.2.1.2 Transmission performance test parameters

C.6.3.2.1.3 Specific requirements for CPs based on Ethernet

Not applicable.

C.6.3.2.2 Validation of optical fibre cabling for CPs based on Ethernet

C.6.3.2.2.1 Common description

C.6.3.2.2.2 Specific requirements for optical fibre cabling CPs

Not applicable.

C.6.3.2.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

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

Not applicable.

C.6.3.4 Specific requirements for wireless installation

Not applicable.

C.6.3.5 Acceptance test report

C.7 Installation administration

Subclause 7.8 is not applicable.

C.8 Installation maintenance and installation troubleshooting

Subclause 8.4 is not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Annex D
(normative)

CP 8/5 (CC-Link IE™ Field Network) specific installation profile

D.1 Installation profile scope

Addition:

This annex specifies the installation profile for Communication Profile CP 8/5 (CC-Link IE™ Field Network). The CP 8/5 is specified in IEC 61784-2-8.

D.2 Normative references

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

D.3.1 Terms and definitions

D.3.2 Abbreviated terms

D.3.3 Conventions for installation profiles

Not applicable.

D.4 Installation planning

D.4.1 General

D.4.1.1 Objective

D.4.1.2 Cabling in industrial premises

D.4.1.3 The planning process

D.4.1.4 Specific requirements for CPs

Not applicable.

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

D.4.2 Planning requirements

D.4.2.1 Safety

D.4.2.1.1 General

D.4.2.1.2 Electrical safety

D.4.2.1.3 Functional safety

Not applicable.

D.4.2.1.4 Intrinsic safety

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

D.4.2.1.5 Safety of optical fibre communication systems

Not applicable.

D.4.2.2 Security

D.4.2.3 Environmental considerations and EMC

D.4.2.3.1 Description methodology

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

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

D.4.3 Network capabilities

D.4.3.1 Network topology

D.4.3.1.1 Common description

D.4.3.1.2 Basic physical topologies for passive networks

Not applicable.

D.4.3.1.3 Basic physical topologies for active networks

D.4.3.1.4 Combination of basic topologies

D.4.3.1.5 Specific requirements for CPs

Not applicable.

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

D.4.3.2 Network characteristics

D.4.3.2.1 General

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

Not applicable.

D.4.3.2.3 Network characteristics for balanced cabling based on Ethernet

Replacement:

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

Characteristic	CP 8/5
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 D.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.	

D.4.3.2.4 Network characteristics for optical fibre cabling

Not applicable.

D.4.3.2.5 Specific network characteristics

Not applicable.

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

D.4.4 Selection and use of cabling components

D.4.4.1 Cable selection

D.4.4.1.1 Common description

D.4.4.1.2 Copper cables

D.4.4.1.2.1 Balanced cables for Ethernet-based CPs

Replacement:

Table D.2 provides values based on the template given in IEC 61918:2018, Table 4.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Table D.2 – Information relevant to copper cable: fixed cables

Characteristic	CP 8/5
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

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

Not applicable.

D.4.4.1.3 Cables for wireless installation

Not applicable.

D.4.4.1.4 Optical fibre cables

Not applicable.

D.4.4.1.5 Special purpose balanced and optical fibre cables

Not applicable.

D.4.4.1.6 Specific requirements for CPs

Not applicable.

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

D.4.4.2 Connecting hardware selection

D.4.4.2.1 Common description

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

Replacement:

Table D.3 provides values based on the template given in IEC 61918:2018, Table 7.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Table D.3 – 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 8/5	IEC 60603-7-3	No	No	No	No	No	Yes
[a] For IEC 60603-7 series, the connector selection is based on the desired channel performance.							
[b] Housings to protect connectors.							

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

Not applicable.

D.4.4.2.4 Connecting hardware for wireless installation

Not applicable.

D.4.4.2.5 Connecting hardware for optical fibre cabling

Not applicable.

D.4.4.2.6 Specific requirements for CPs

Not applicable.

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

D.4.4.3 Connections within a channel/permanent link

D.4.4.3.1 Common description

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

D.4.4.3.2.1 Common description

D.4.4.3.2.2 Connections minimum distance

D.4.4.3.2.3 Balanced cabling splices

D.4.4.3.2.4 Balanced cabling bulkhead connections

D.4.4.3.2.5 Balanced cabling J-J coupler (J-J adaptor)

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

Not applicable.

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

Not applicable.

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

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

D.4.4.4 Terminators

Not applicable.

D.4.4.5 Device location and connection

D.4.4.5.1 Common description

D.4.4.5.2 Specific requirements for CPs

Not applicable.

D.4.4.5.3 Specific requirements for wireless installation

Not applicable.

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

D.4.4.6 Coding and labelling

D.4.4.6.1 Common description

D.4.4.6.2 Additional requirements for CPs

Not applicable.

D.4.4.6.3 Specific requirements for CPs

Not applicable.

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

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

D.4.4.7.1 Common description

D.4.4.7.1.1 Basic requirements

D.4.4.7.1.2 Planner tasks

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

D.4.4.7.1.4 Selection of the earthing and bonding systems

D.4.4.7.2 Bonding and earthing of enclosures and pathways

D.4.4.7.2.1 Equalisation and earthing conductor sizing and length

D.4.4.7.2.2 Bonding straps and sizing

D.4.4.7.2.3 Surface preparation and methods

D.4.4.7.2.4 Bonding and earthing

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

D.4.4.7.3 Earthing methods

D.4.4.7.3.1 Equipotential

Not applicable.

D.4.4.7.3.2 Star

D.4.4.7.3.3 Earthing of equipment (devices)

Addition:

A parallel RC earthing circuit shall not be used for CP 8/5 networks.

D.4.4.7.3.4 Copper bus bars

D.4.4.7.4 Shield earthing

D.4.4.7.4.1 Non-earthing or parallel RC

Not applicable.

D.4.4.7.4.2 Direct

D.4.4.7.4.3 Derivatives of direct and parallel RC

Not applicable.

D.4.4.7.5 Specific requirements for CPs

Not applicable.

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

D.4.4.8 Storage and transportation of cables

D.4.4.8.1 Common description

D.4.4.8.2 Specific requirements for CPs

Not applicable.

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

D.4.4.9 Routing of cables

D.4.4.9.1 Common description

D.4.4.9.2 Cable routing of assemblies

D.4.4.9.3 Requirements for cable routing inside enclosures

D.4.4.9.4 Cable routing inside buildings

D.4.4.9.5 Cable routing outside and between buildings

D.4.4.9.6 Installing redundant communication cables

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

D.4.4.10 Separation of circuits

D.4.4.11 Mechanical protection of cabling components

D.4.4.11.1 Common description

D.4.4.11.2 Specific requirements for CPs

Not applicable.

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

D.4.4.12 Installation in special areas

D.4.4.12.1 Common description

D.4.4.12.2 Specific requirements for CPs

Not applicable.

D.4.4.12.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

D.4.5 Cabling planning documentation

D.4.5.1 Common description

D.4.5.2 Cabling planning documentation for CPs

Not applicable.

D.4.5.3 Network certification documentation

D.4.5.4 Cabling planning documentation for generic cabling in accordance with ISO/IEC 11801-3

D.4.6 Verification of cabling planning specification

D.5 Installation implementation

D.5.1 General requirements

D.5.1.1 Common description

D.5.1.2 Installation of CPs

D.5.1.3 Installation of generic cabling in industrial premises

D.5.2 Cable installation

D.5.2.1 General requirements for all cabling types

D.5.2.1.1 Storage and installation

D.5.2.1.2 Protecting communication cables against potential mechanical damage

Replacement:

Table D.4 provides values based on the template given in IEC 61918:2018, Table 18.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Table D.4 – 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)	−20 to +70
[a] Depending on cable type: see manufacturer's data sheet.		

D.5.2.1.3 Avoid forming loops

D.5.2.1.4 Torsion (twisting)

D.5.2.1.5 Tensile strength (on installed cables)

D.5.2.1.6 Bending radius

D.5.2.1.7 Pull force

D.5.2.1.8 Fitting strain relief

D.5.2.1.9 Installing cables in cabinet and enclosures

D.5.2.1.10 Installation on moving parts

D.5.2.1.11 Cable crush

D.5.2.1.12 Installation of continuous flexing cables

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

Not applicable.

D.5.2.2 Installation and routing

D.5.2.2.1 Common description

D.5.2.2.2 Separation of circuits

D.5.2.3 Specific requirements for CPs

Not applicable.

D.5.2.4 Specific requirements for wireless installation

Not applicable.

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

D.5.3 Connector installation

D.5.3.1 Common description

D.5.3.2 Shielded connectors

D.5.3.3 Unshielded connectors

Not applicable.

D.5.3.4 Specific requirements for CPs

Not applicable.

D.5.3.5 Specific requirements for wireless installation

Not applicable.

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

D.5.4 Terminator installation

Not applicable.

D.5.5 Device installation

D.5.5.1 Common description

D.5.5.2 Specific requirements for CPs

Not applicable.

D.5.6 Coding and labelling

D.5.6.1 Common description

D.5.6.2 Specific requirements for CPs

Not applicable.

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

D.5.7.1 Common description

D.5.7.2 Bonding and earthing of enclosures and pathways

D.5.7.2.1 Equalisation and earthing conductor sizing and length

D.5.7.2.2 Bonding straps and sizing

D.5.7.2.3 Surface preparation and methods

D.5.7.3 Earthing methods

D.5.7.3.1 Equipotential

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

D.5.7.3.2 Star

D.5.7.3.3 Earthing of equipment (devices)

D.5.7.3.3.1 Non-earthing or parallel RC

Not applicable.

D.5.7.3.3.2 Direct

D.5.7.3.3.3 Installing copper bus bars

D.5.7.4 Shield earthing methods

D.5.7.4.1 General

D.5.7.4.2 Parallel RC

Not applicable.

D.5.7.4.3 Direct

D.5.7.4.4 Derivatives of direct and parallel RC

Not applicable.

D.5.7.5 Specific requirements for CPs

Not applicable.

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

D.5.8 As-implemented cabling documentation

D.6 Installation verification and installation acceptance test

D.6.1 General

D.6.2 Installation verification

D.6.2.1 General

D.6.2.2 Verification according to cabling planning documentation

D.6.2.3 Verification of earthing and bonding

D.6.2.3.1 General

D.6.2.3.2 Specific requirements for earthing and bonding

D.6.2.4 Verification of shield earthing

D.6.2.5 Verification of cabling system

D.6.2.5.1 Verification of cable routing

D.6.2.5.2 Verification of cable protection and proper strain relief

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

D.6.2.6 Cable selection verification

D.6.2.6.1 Common description

D.6.2.6.2 Specific requirements for CPs

Not applicable.

D.6.2.6.3 Specific requirements for wireless installation

D.6.2.7 Connector verification

D.6.2.7.1 Common description

D.6.2.7.2 Specific requirements for CPs

Not applicable.

D.6.2.7.3 Specific requirements for wireless installation

Not applicable.

D.6.2.8 Connection verification

D.6.2.8.1 Common description

D.6.2.8.2 Number of connections and connectors

D.6.2.8.3 Wire mapping

D.6.2.9 Terminator verification

Not applicable.

D.6.2.10 Coding and labelling verification

D.6.2.10.1 Common description

D.6.2.10.2 Specific coding and labelling verification requirements

Not applicable.

D.6.2.11 Verification report

D.6.3 Installation acceptance test

D.6.3.1 General

D.6.3.2 Acceptance test of Ethernet-based cabling

D.6.3.2.1 Validation of balanced cabling for CPs based on Ethernet

D.6.3.2.1.1 Common description

D.6.3.2.1.2 Transmission performance test parameters

D.6.3.2.1.3 Specific requirements for CPs based on Ethernet

Not applicable.

D.6.3.2.2 Validation of optical fibre cabling for CPs based on Ethernet

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

D.6.3.2.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

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

Not applicable.

D.6.3.4 Specific requirements for wireless installation

Not applicable.

D.6.3.5 Acceptance test report

D.7 Installation administration

Subclause 7.8 is not applicable.

D.8 Installation maintenance and installation troubleshooting

Subclause 8.4 is not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Annex E
(normative)

CP 8/6 (CC-Link IE™ TSN) specific installation profile

E.1 Installation profile scope

Addition:

This annex specifies the installation profile for Communication Profile CP 8/6 (CC-Link IE™ TSN). The CP 8/6 is specified in IEC 61784-2-8.

E.2 Normative references

Addition:

IEC 60793-2-40, *Optical fibres – Part 2-40: Product specifications – Sectional specification for category A4 multimode fibres*

CLPA BAP-C0401ENG-050, *CC-Link IE TSN Recommended Network Wiring Parts Test Specifications*

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

E.3.1 Terms and definitions

E.3.2 Abbreviated terms

E.3.3 Conventions for installation profiles

Not applicable.

E.4 Installation planning

E.4.1 General

E.4.1.1 Objective

E.4.1.2 Cabling in industrial premises

E.4.1.3 The planning process

E.4.1.4 Specific requirements for CPs

Not applicable.

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

E.4.2 Planning requirements

E.4.2.1 Safety

E.4.2.1.1 General

E.4.2.1.2 Electrical safety

E.4.2.1.3 Functional safety

Not applicable.

E.4.2.1.4 Intrinsic safety

Not applicable.

E.4.2.1.5 Safety of optical fibre communication systems

Not applicable.

E.4.2.2 Security

E.4.2.3 Environmental considerations and EMC

E.4.2.3.1 Description methodology

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

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

E.4.3 Network capabilities

E.4.3.1 Network topology

E.4.3.1.1 Common description

E.4.3.1.2 Basic physical topologies for passive networks

E.4.3.1.3 Basic physical topologies for active networks

E.4.3.1.4 Combination of basic topologies

E.4.3.1.5 Specific requirements for CPs

Not applicable.

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

E.4.3.2 Network characteristics

E.4.3.2.1 General

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

Not applicable.

E.4.3.2.3 Network characteristics for balanced cabling based on Ethernet

Replacement:

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

Characteristic	CP 8/6	
Supported data rates (Mbit/s)	1 000	100
Supported channel length (m) [b]	23 900	23 900
Number of connections in the channel (max.) [a, b]	64 770	64 770
Patch cord length (m) [a]	100	100
Channel class per ISO/IEC 11801-3 (min.) [b]	D	D
Cable category per ISO/IEC 11801-3 (min.) [c]	5e	5
Connecting HW category per ISO/IEC 11801-3 (min.)	5e	5
Cable types	ANSI/TIA/EIA-568-B	ANSI/TIA/EIA-568-B
[a] See E.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.		

E.4.3.2.4 Network characteristics for optical fibre cabling

Replacement:

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Table E.2 – Network characteristics for optical fibre cabling

CP 8/6		
1 Gbit/s		
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 E.4.4.2.5
Plastic (GI-POF)	Modal bandwidth (MHz × km) at λ (nm)	350 at 850
	Minimum length (m)	–
	Typical maximum length[a] (m)	50
	Maximum channel Insertion loss/optical power budget (dB)	15
	Connecting hardware	See E.4.4.2.5
100 Mbit/s		
Optical fibre type	**Description**	
Multimode plastic (SI-POF)	Modal bandwidth (MHz × km) at λ (nm)	10 at 650
	Minimum length (m)	–
	Typical maximum length[a] (m)	20
	Maximum channel Insertion loss/optical power budget (dB)	9,5
	Connecting hardware	See E.4.4.2.5
Plastic clad (SI-PCF)	Modal bandwidth (MHz × km) at λ (nm)	14 at 650
	Minimum length (m)	–
	Typical maximum length[a] (m)	100
	Maximum channel Insertion loss/optical power budget (dB)	3,3
	Connecting hardware	See E.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—.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

E.4.3.2.5 Specific network characteristics

Not applicable.

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

E.4.4 Selection and use of cabling components

E.4.4.1 Cable selection

E.4.4.1.1 Common description

E.4.4.1.2 Copper cables

E.4.4.1.2.1 Balanced cables for Ethernet-based CPs

Replacement

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

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

Characteristic	CP 8/6
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 IEEE 802.3, 100Base-TX ANSI/TIA/EIA-568-B, Category 5

E.4.4.1.3 Cables for wireless installation

E.4.4.1.4 Optical fibre cables

Replacement:

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Table E.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	55/490 µm GI-POF
Standard	–	IEC 60793-2-10	–	CLPA BAP-C0401ENG-050	CLPA BAP-C0401ENG-050	IEC 60793-2-40
Attenuation per km (650 nm)	–	a	–	b	c	d
Attenuation per km (820 nm)	–	a	–	b	c	d
Attenuation per km (1 310 nm)	–	a	–	b	c	d
Number of optical fibres	–	single	–	single	single	single
Jacket colour requirements	–	none	–	none	none	none
Jacket material	–	a	–	b	c	d
Resistance to harsh environment (e.g. UV, oil resist, LS0H)	–	a	–	b	c	d
Breakout	–	No	–	No	No	No

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

[b] As detailed in CC-Link IE TSN installation manual [43].

[c] As detailed in CC-Link IE TSN installation manual [43].

[d] As specified in IEC 60793-2-40.

E.4.4.1.5 Special purpose balanced and optical fibre cables

E.4.4.1.6 Specific requirements for CPs

Not applicable.

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

E.4.4.2 Connecting hardware selection

E.4.4.2.1 Common description

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

Replacement:

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Table E.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 8/6	IEC 60603-7-3	Yes	No	No	No	Yes	Yes

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

[b] Housings to protect connectors.

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

Not applicable.

E.4.4.2.4 Connecting hardware for wireless installation

E.4.4.2.5 Connecting hardware for optical fibre cabling

Replacement:

Table E.6 provides values based on the template given in IEC 61918:2018, Table 9.

Table E.6 – Optical fibre connecting hardware

	IEC 61754-2	IEC 61754-4	IEC 61754-24	IEC 61754-20	IEC 61754-22	IEC 61754-16
	BFOC/2,5	SC	SC-RJ	LC	F-SMA	F07
CP 8/6	No	Yes	Yes	Yes	No	Yes
NOTE The IEC 61754 series defines the optical fibre connector mechanical interfaces; performance specifications for optical fibre connectors terminated to specific fibre types are standardised in the IEC 61753 series.						

Replacement:

Table E.7 provides values based on the template given in IEC 61918:2018, Table 10.

Table E.7 – Relationship between FOC and fibre types (CP 8/6)

FOC	Fibre type					
	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	55/490 µm GI-POF
BFOC/2,5	No	No	No	No	No	No
SC	No	Yes	No	No	No	Yes
SC-RJ	No	No	No	No	No	No
LC	No	Yes	No	No	No	Yes
F-SMA	No	No	No	No	No	No
F07	No	No	No	Yes	Yes	No

E.4.4.2.6 Specific requirements for CPs

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

E.4.4.3 Connections within a channel/permanent link

E.4.4.3.1 Common description

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

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

Not applicable.

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

E.4.4.3.4.1 Common description

E.4.4.3.4.2 Optical fibre splices

E.4.4.3.4.3 Optical fibre bulkhead connections

E.4.4.3.4.4 Optical fibre J-J couplers (or adaptors)

Not applicable.

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

Not applicable

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

E.4.4.4 Terminators

Not applicable.

E.4.4.5 Device location and connection

E.4.4.5.1 Common description

E.4.4.5.2 Specific requirements for CPs

Not applicable.

E.4.4.5.3 Specific requirements for wireless installation

Not applicable.

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

E.4.4.6 Coding and labelling

E.4.4.6.1 Common description

E.4.4.6.2 Additional requirements for CPs

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

E.4.4.6.3 Specific requirements for CPs

Not applicable.

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

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

E.4.4.7.1 Common description

E.4.4.7.1.1 Basic requirements

E.4.4.7.1.2 Planner tasks

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

E.4.4.7.1.4 Selection of the earthing and bonding systems

E.4.4.7.2 Bonding and earthing of enclosures and pathways

E.4.4.7.2.1 Equalisation and earthing conductor sizing and length

E.4.4.7.2.2 Bonding straps and sizing

E.4.4.7.2.3 Surface preparation and methods

E.4.4.7.2.4 Bonding and earthing

E.4.4.7.3 Earthing methods

E.4.4.7.3.1 Equipotential

Not applicable.

E.4.4.7.3.2 Star

E.4.4.7.3.3 Earthing of equipment (devices)

Addition:

A parallel RC earthing circuit shall not be used for CP 8/6 network.

E.4.4.7.3.4 Copper bus bars

E.4.4.7.4 Shield earthing

E.4.4.7.4.1 Non-earthing or parallel RC

Not applicable.

E.4.4.7.4.2 Direct

E.4.4.7.4.3 Derivatives of direct and parallel RC

Not applicable.

E.4.4.7.5 Specific requirements for CPs

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

E.4.4.8 Storage and transportation of cables

E.4.4.8.1 Common description

E.4.4.8.2 Specific requirements for CPs

Not applicable.

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

E.4.4.9 Routing of cables

E.4.4.10 Separation of circuits

E.4.4.11 Mechanical protection of cabling components

E.4.4.11.1 Common description

E.4.4.11.2 Specific requirements for CPs

Not applicable.

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

E.4.4.12 Installation in special areas

E.4.4.12.1 Common description

E.4.4.12.2 Specific requirements for CPs

Not applicable.

E.4.4.12.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

E.4.5 Cabling planning documentation

E.4.5.1 Common description

E.4.5.2 Cabling planning documentation for CPs

Not applicable.

E.4.5.3 Network certification documentation

E.4.5.4 Cabling planning documentation for generic cabling in accordance with ISO/IEC 11801-3

E.4.6 Verification of cabling planning specification

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

E.5 Installation implementation

E.5.1 General requirements

E.5.1.1 Common description

E.5.1.2 Installation of CPs

E.5.1.3 Installation of generic cabling in industrial premises

E.5.2 Cable installation

E.5.2.1 General requirements for all cabling types

E.5.2.1.1 Storage and installation

E.5.2.1.2 Protecting communication cables against potential mechanical damage

Replacement:

Table E.8 provides values based on the template given in IEC 61918:2018, Table 18.

Table E.8 – 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)	−20 to +70
[a] Depending on cable type: see manufacturer's data sheet.		

Table E.9 provides values based on the template given in IEC 61918:2018, Table 19.

Table E.9 – Parameters for silica optical fibre cables

Characteristic		Value
Mechanical force	Minimum bending radius, single bending (mm)	30 (during installation) 15 (after installation)
	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)	−20 to +60
[a] As specified by IEC 60793-2-10, A1-OM2 and the cable manufacturer.		

E.5.2.1.3 Avoid forming loops

E.5.2.1.4 Torsion (twisting)

E.5.2.1.5 Tensile strength (on installed cables)

E.5.2.1.6 Bending radius

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

E.5.2.1.7 Pull force

E.5.2.1.8 Fitting strain relief

E.5.2.1.9 Installing cables in cabinet and enclosures

E.5.2.1.10 Installation on moving parts

E.5.2.1.11 Cable crush

E.5.2.1.12 Installation of continuous flexing cables

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

E.5.2.1.13.1 Use cable pulling tools

E.5.2.1.13.2 Cautions for handling optical fibre cables

E.5.2.1.13.3 Keeping plugs clean

E.5.2.1.13.4 Attenuation change under load

E.5.2.1.13.5 Strain relief

E.5.2.1.13.6 EMC ruggedness

E.5.2.1.13.7 Crush resistance

E.5.2.2 Installation and routing

E.5.2.2.1 Common description

E.5.2.2.2 Separation of circuits

E.5.2.3 Specific requirements for CPs

Not applicable.

E.5.2.4 Specific requirements for wireless installation

Not applicable.

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

E.5.3 Connector installation

E.5.3.1 Common description

E.5.3.2 Shielded connectors

E.5.3.3 Unshielded connectors

Not applicable.

E.5.3.4 Specific requirements for CPs

Not applicable.

E.5.3.5 Specific requirements for wireless installation

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

E.5.4 Terminator installation

Not applicable.

E.5.5 Device installation

E.5.5.1 Common description

E.5.5.2 Specific requirements for CPs

Not applicable.

E.5.6 Coding and labelling

E.5.6.1 Common description

E.5.6.2 Specific requirements for CPs

Not applicable.

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

E.5.7.1 Common description

E.5.7.2 Bonding and earthing of enclosures and pathways

E.5.7.2.1 Equalisation and earthing conductor sizing and length

E.5.7.2.2 Bonding straps and sizing

E.5.7.2.3 Surface preparation and methods

E.5.7.3 Earthing methods

E.5.7.3.1 Equipotential

Not applicable.

E.5.7.3.2 Star

E.5.7.3.3 Earthing of equipment (devices)

E.5.7.3.3.1 Non-earthing or parallel RC

Not applicable.

E.5.7.3.3.2 Direct

E.5.7.3.3.3 Installing copper bus bars

E.5.7.4 Shield earthing methods

E.5.7.4.1 General

E.5.7.4.2 Parallel RC

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

E.5.7.4.3 Direct

E.5.7.4.4 Derivatives of direct and parallel RC

Not applicable.

E.5.7.5 Specific requirements for CPs

Not applicable.

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

E.5.8 As-implemented cabling documentation

E.6 Installation verification and installation acceptance test

E.6.1 General

E.6.2 Installation verification

E.6.2.1 General

E.6.2.2 Verification according to cabling planning documentation

E.6.2.3 Verification of earthing and bonding

E.6.2.3.1 General

E.6.2.3.2 Specific requirements for earthing and bonding

Not applicable.

E.6.2.4 Verification of shield earthing

E.6.2.5 Verification of cabling system

E.6.2.5.1 Verification of cable routing

E.6.2.5.2 Verification of cable protection and proper strain relief

E.6.2.6 Cable selection verification

E.6.2.6.1 Common description

E.6.2.6.2 Specific requirements for CPs

Not applicable.

E.6.2.6.3 Specific requirements for wireless installation

E.6.2.7 Connector verification

E.6.2.7.1 Common description

E.6.2.7.2 Specific requirements for CPs

Not applicable.

E.6.2.7.3 Specific requirements for wireless installation

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

E.6.2.8 Connection verification

E.6.2.8.1 Common description

E.6.2.8.2 Number of connections and connectors

E.6.2.8.3 Wire mapping

E.6.2.9 Terminator verification

Not applicable.

E.6.2.10 Coding and labelling verification

E.6.2.10.1 Common description

E.6.2.10.2 Specific coding and labelling verification requirements

E.6.2.11 Verification report

E.6.3 Installation acceptance test

E.6.3.1 General

E.6.3.2 Acceptance test of Ethernet-based cabling

E.6.3.2.1 Validation of balanced cabling for CPs based on Ethernet

E.6.3.2.1.1 Common description

E.6.3.2.1.2 Transmission performance test parameters

E.6.3.2.1.3 Specific requirements for CPs based on Ethernet

Not applicable.

E.6.3.2.2 Validation of optical fibre cabling for CPs based on Ethernet

E.6.3.2.2.1 Common description

E.6.3.2.2.2 Specific requirements for optical fibre cabling CPs

Not applicable.

E.6.3.2.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

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

Not applicable.

E.6.3.4 Specific requirements for wireless installation

Not applicable.

E.6.3.5 Acceptance test report

E.7 Installation administration

Subclause 7.8 is not applicable.

E.8 Installation maintenance and installation troubleshooting

Subclause 8.4 is not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Bibliography

Addition:

[~~40~~41] CC-Link open field network cable wiring manual, November 2008, CC-Link Partner Association, available at <www.cc-link.org>

[~~41~~42] CC-Link IE Controller Network cable installation manual, September 2008, CC-Link Partner Association, available at <www.cc-link.org>

[~~42~~43] CC-Link IE Field Network cable installation manual, June 2010, CC-Link Partner Association, available at <www.cc-link.org>

[44] CC-Link IE TSN installation manual, April 2019, CC-Link Partner Association, available at <www.cc-link.org>

[45] CC-Link IE TSN recommended network wiring parts test specifications, April 2019, CC-Link Partner Association, available at www.cc-link.org

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IEC 61784-5-8

Edition 3.0 2024-04

INTERNATIONAL STANDARD

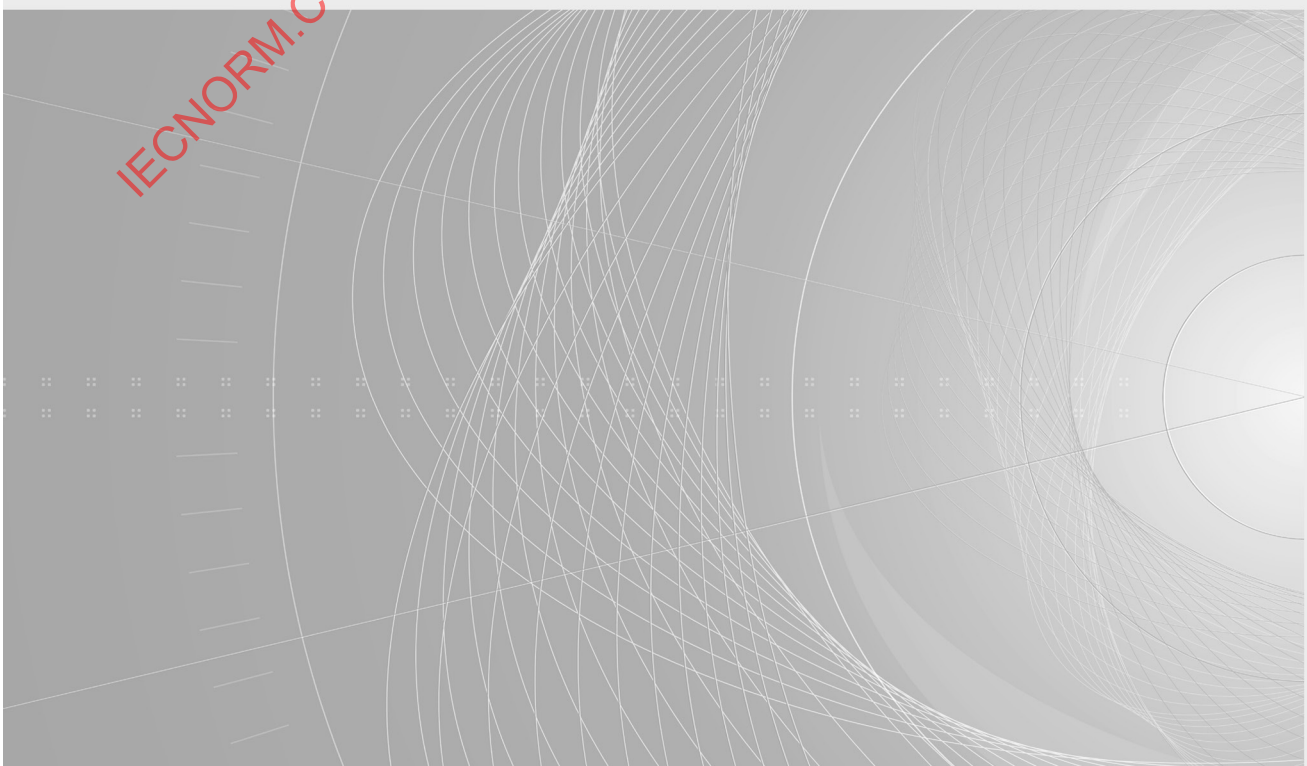
NORME INTERNATIONALE

colour inside

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

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



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

CONTENTS

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

INDUSTRIAL NETWORKS – PROFILES –

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

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

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

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

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

a) Annex E and related references have been added.

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

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

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

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

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

A list of all parts of IEC 61784-5 series, published under the general title *Industrial networks – Profiles – Installation of fieldbuses*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

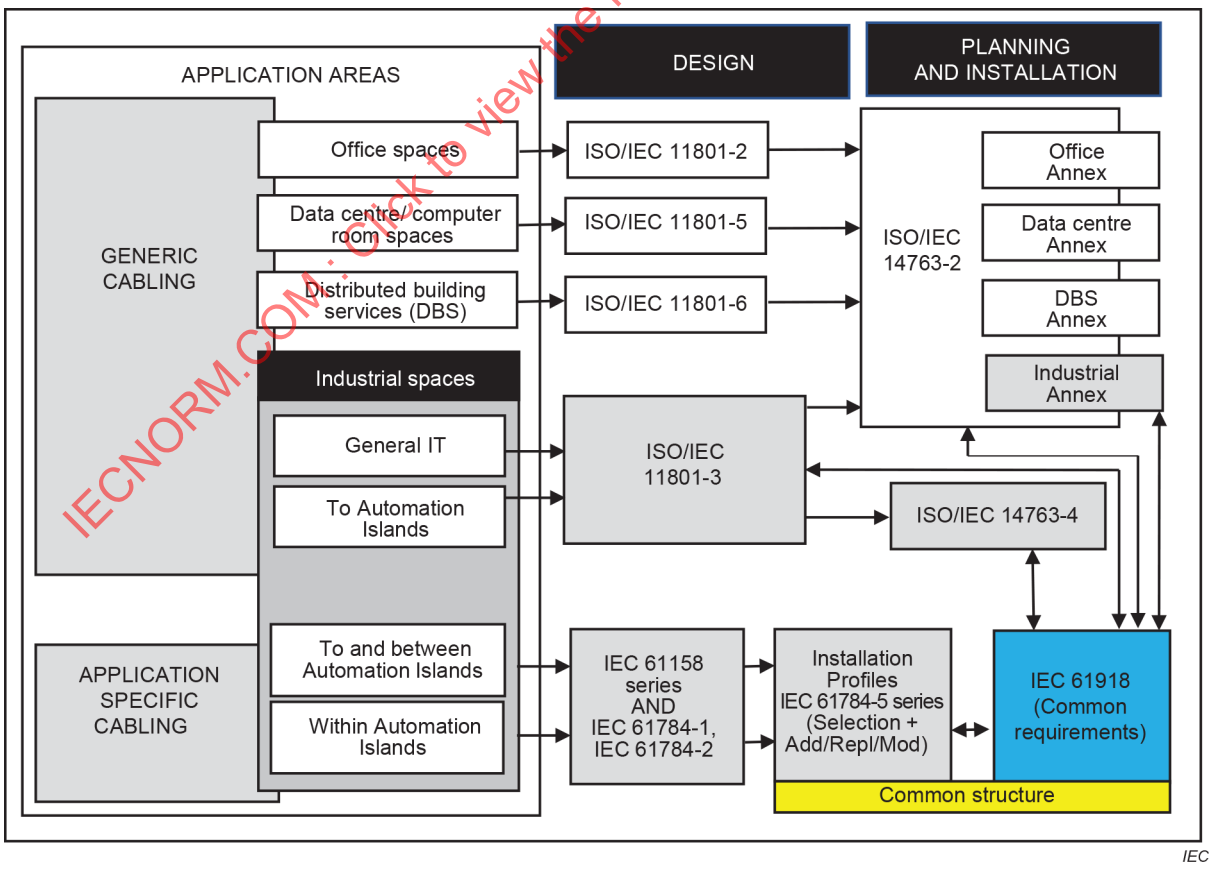


Figure 1 – Standards relationships

INDUSTRIAL NETWORKS – PROFILES –

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

1 Scope

This part of IEC 61784-5 specifies the installation profiles for CPF 8 (CC-Link™[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

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

[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.

4 CPF 8: Overview of installation profiles

CPF 8 consists of six communication profiles as specified in 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.

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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 as either

Compliance with IEC 61784-5-8:2024 for CP 8/m <CC-Link> or

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

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

NOTE The name 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).

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

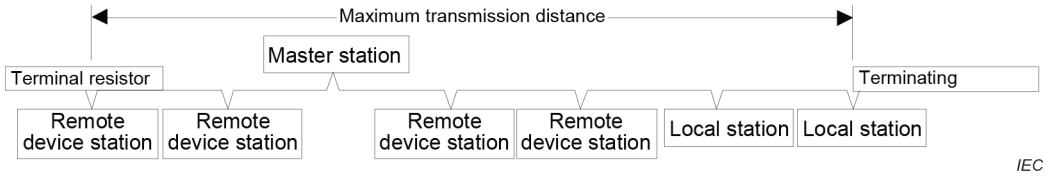
A.4.3.1.5 Specific requirements for CPs

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV



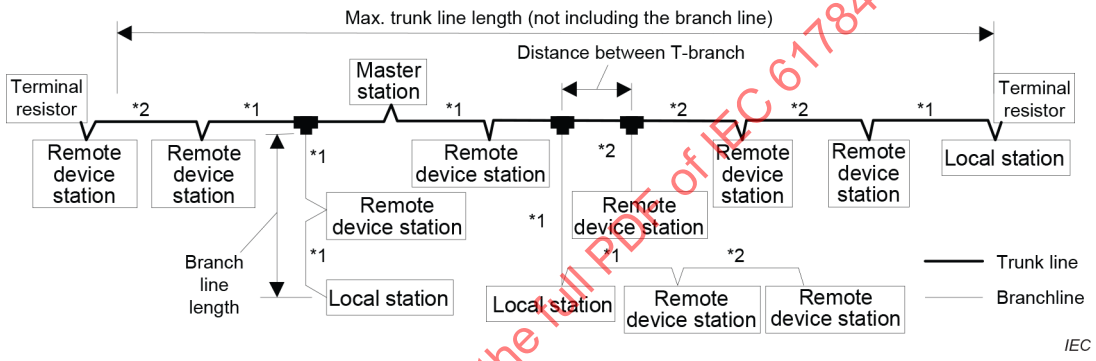
NOTE The minimum cable distance device-to-device is 20 cm.

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

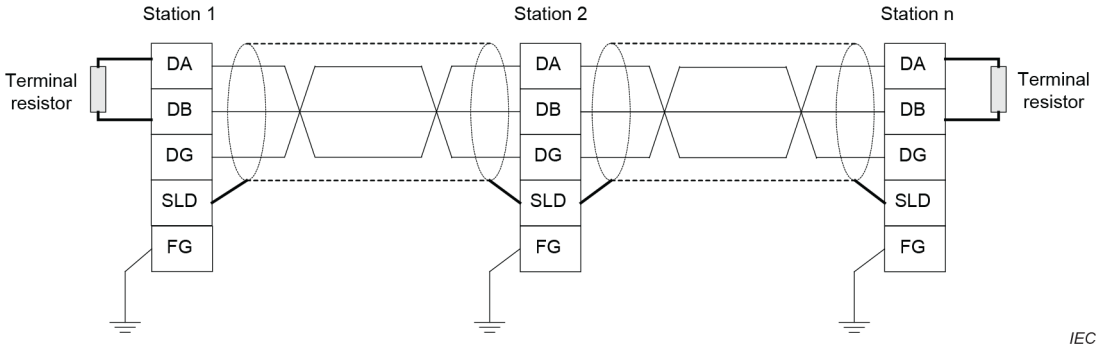


Figure A.3 – Wiring

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

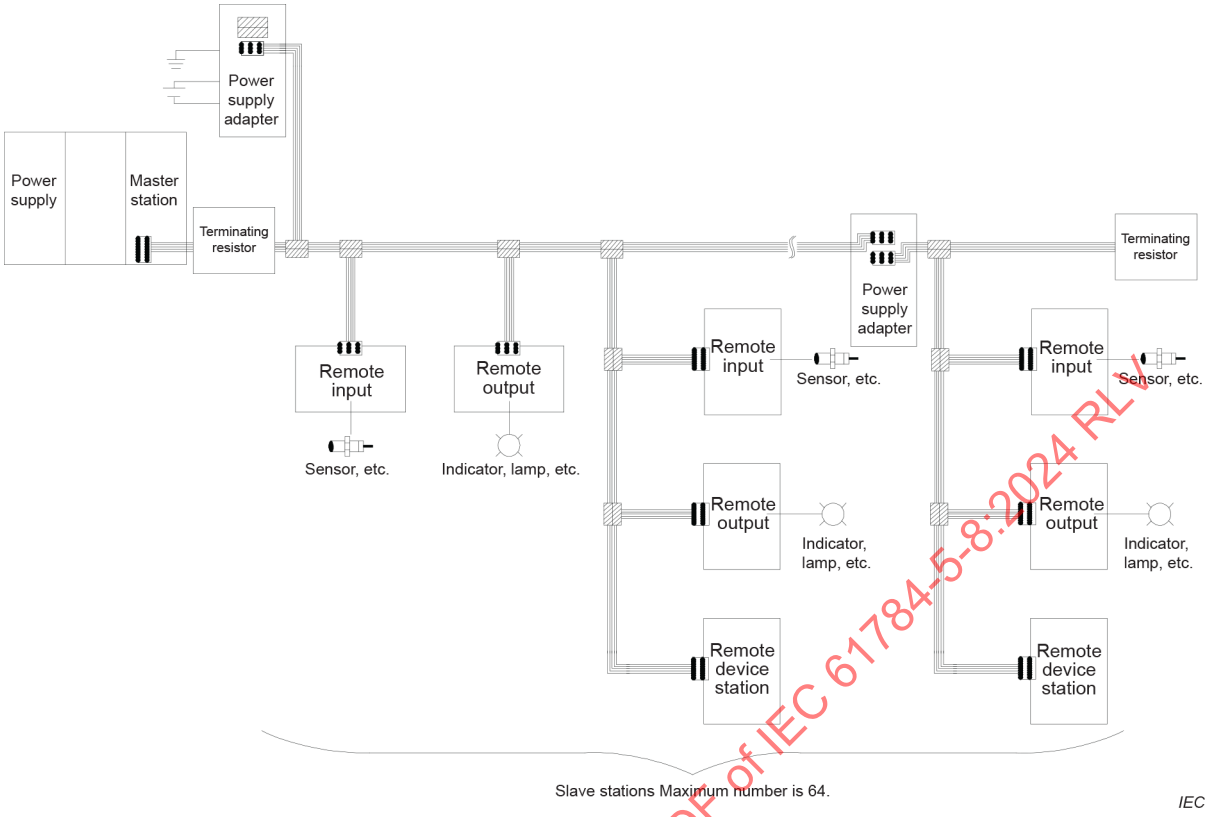


Figure B.1 – Powered network topology

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.

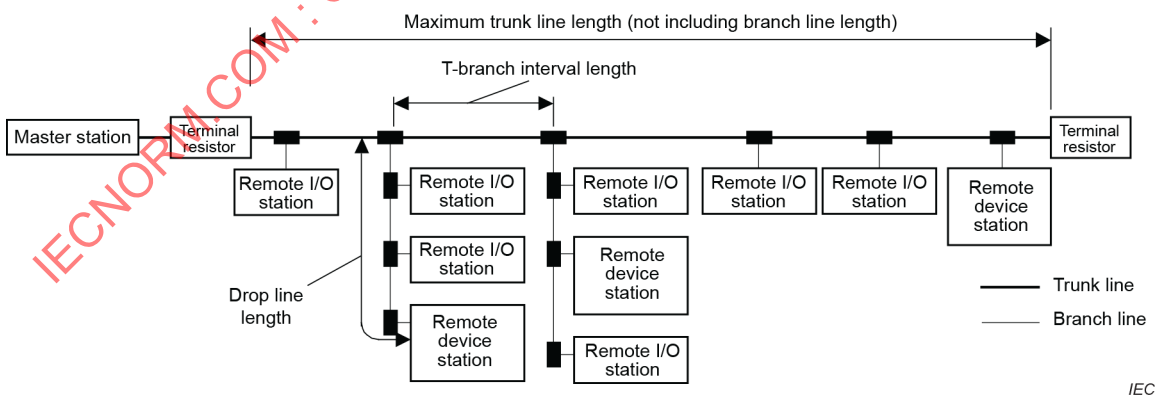


Figure B.2 – Bus t-branch topology

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

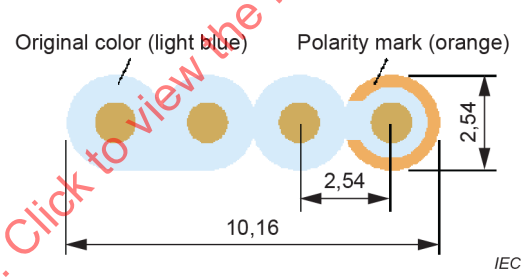


Figure B.3 – Flat cable cross section – with key

Dimensions in millimetres

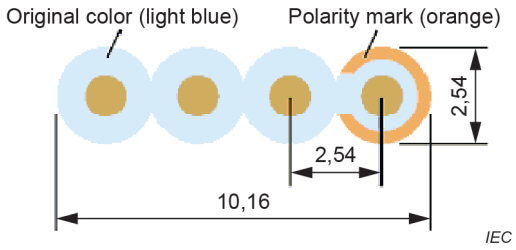


Figure B.4 – Flat cable cross section – without key

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Dimensions in metres

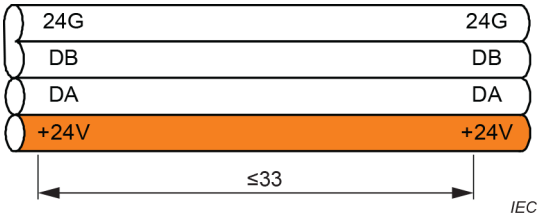


Figure B.5 – Flat cable polarity marking

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

B.4.4.1.6 Specific requirements for CPs

Addition:

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

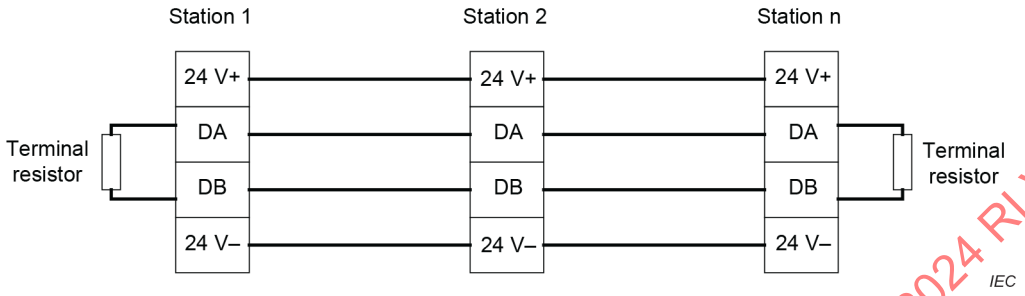


Figure B.6 – Wiring

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

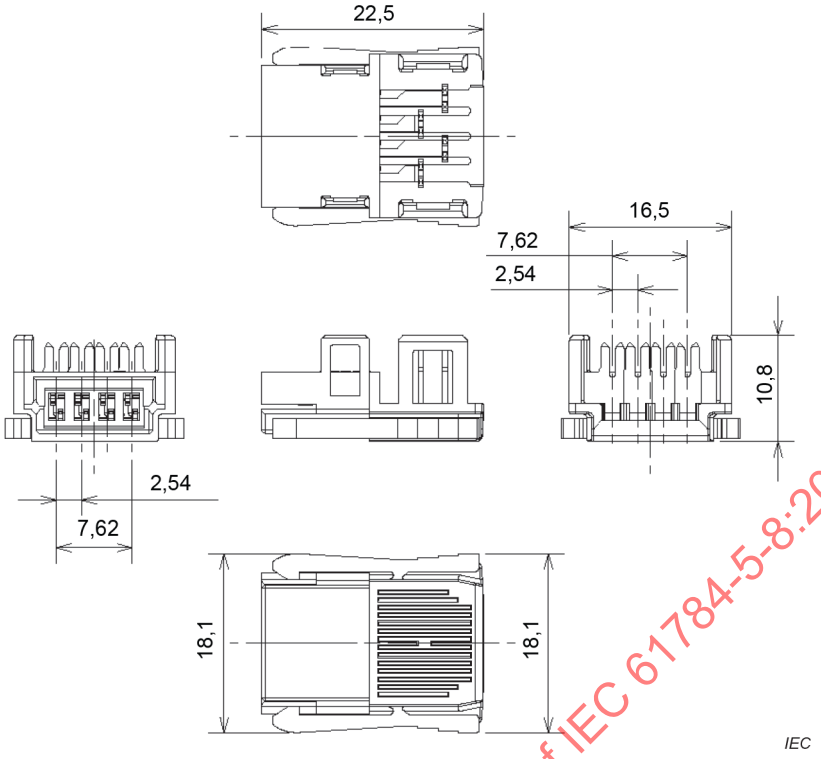
Not applicable.

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

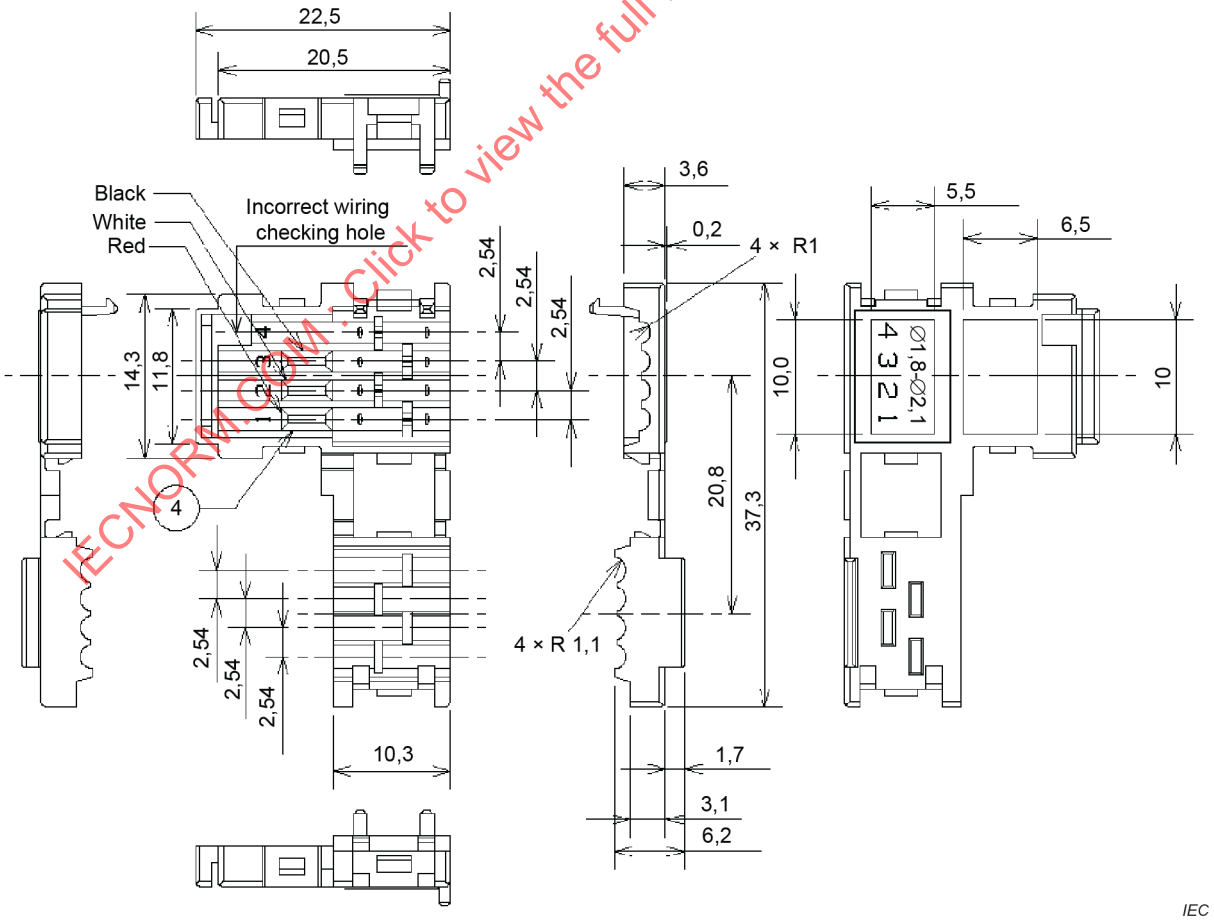
Modification:

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV



a) Body and connector



b) Terminal cover

Figure B.7 – Flat cable connector and terminal cover

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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 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 8/3	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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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		

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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—.		

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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 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.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

C.4.4.2.4 Connecting hardware for wireless installation

C.4.4.2.5 Connecting hardware for optical fibre cabling

Replacement:

Table C.6 provides values based on the template given in IEC 61918:2018, Table 9.

Table C.6 – Optical fibre connecting hardware

	IEC 61754-2	IEC 61754-4	IEC 61754-24	IEC 61754-20	IEC 61754-22	Others
	BFOC/2,5	SC	SC-RJ	LC	F-SMA	
CP 8/4	No	Yes	No	Yes	No	No
NOTE The IEC 61754 series defines the optical fibre connector mechanical interfaces; performance specifications for optical fibre connectors terminated to specific fibre types are standardised in the IEC 61753 series.						

Replacement:

Table C.7 provides values based on the template given in IEC 61918:2018, Table 10.

Table C.7 – Relationship between FOC and fibre types (CP 8/4)

FOC	Fibre type					
	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	Others
BFOC/2,5	No	No	No	No	No	No
SC	No	Yes	No	No	No	No
SC-RJ	No	No	No	No	No	No
LC	No	Yes	No	No	No	No
F-SMA	No	No	No	No	No	No

C.4.4.2.6 Specific requirements for CPs

Not applicable.

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

C.4.4.3 Connections within a channel/permanent link

C.4.4.3.1 Common description

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

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

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

C.4.4.3.4.1 Common description

C.4.4.3.4.2 Optical fibre splices

C.4.4.3.4.3 Optical fibre bulkhead connections

C.4.4.3.4.4 Optical fibre J-J couplers (or adaptors)

Not applicable.

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

Not applicable

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

C.4.4.4 Terminators

Not applicable.

C.4.4.5 Device location and connection

C.4.4.5.1 Common description

C.4.4.5.2 Specific requirements for CPs

Not applicable.

C.4.4.5.3 Specific requirements for wireless installation

Not applicable.

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

C.4.4.6 Coding and labelling

C.4.4.6.1 Common description

C.4.4.6.2 Additional requirements for CPs

Not applicable.

C.4.4.6.3 Specific requirements for CPs

Not applicable.

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

C.4.4.7.1 Common description

C.4.4.7.1.1 Basic requirements

C.4.4.7.1.2 Planner tasks

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

C.4.4.7.1.4 Selection of the earthing and bonding systems

C.4.4.7.2 Bonding and earthing of enclosures and pathways

C.4.4.7.2.1 Equalisation and earthing conductor sizing and length

C.4.4.7.2.2 Bonding straps and sizing

C.4.4.7.2.3 Surface preparation and methods

C.4.4.7.2.4 Bonding and earthing

C.4.4.7.3 Earthing methods

C.4.4.7.3.1 Equipotential

Not applicable.

C.4.4.7.3.2 Star

C.4.4.7.3.3 Earthing of equipment (devices)

Addition:

A parallel RC earthing circuit shall not be used for CP 8/4 network.

C.4.4.7.3.4 Copper bus bars

C.4.4.7.4 Shield earthing

C.4.4.7.4.1 Non-earthing or parallel RC

Not applicable.

C.4.4.7.4.2 Direct

C.4.4.7.4.3 Derivatives of direct and parallel RC

Not applicable.

C.4.4.7.5 Specific requirements for CPs

Not applicable.

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

C.4.4.8 Storage and transportation of cables

C.4.4.8.1 Common description

C.4.4.8.2 Specific requirements for CPs

Not applicable.

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

C.4.4.9 Routing of cables

C.4.4.10 Separation of circuits

C.4.4.11 Mechanical protection of cabling components

C.4.4.11.1 Common description

C.4.4.11.2 Specific requirements for CPs

Not applicable.

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

C.4.4.12 Installation in special areas

C.4.4.12.1 Common description

C.4.4.12.2 Specific requirements for CPs

Not applicable.

C.4.4.12.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

C.4.5 Cabling planning documentation

C.4.5.1 Common description

C.4.5.2 Cabling planning documentation for CPs

Not applicable.

C.4.5.3 Network certification documentation

C.4.5.4 Cabling planning documentation for generic cabling in accordance with ISO/IEC 11801-3

C.4.6 Verification of cabling planning specification

C.5 Installation implementation

C.5.1 General requirements

C.5.1.1 Common description

C.5.1.2 Installation of CPs

C.5.1.3 Installation of generic cabling in industrial premises

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

C.5.2 Cable installation

C.5.2.1 General requirements for all cabling types

C.5.2.1.1 Storage and installation

C.5.2.1.2 Protecting communication cables against potential mechanical damage

Replacement:

Table C.8 provides values based on the template given in IEC 61918:2018, Table 18.

Table C.8 – 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)	−20 to +70
[a] Depending on cable type: see manufacturer's data sheet.		

Table C.9 provides values based on the template given in IEC 61918:2018, Table 19.

Table C.9 – Parameters for silica optical fibre cables

Characteristic		Value
Mechanical force	Minimum bending radius, single bending (mm)	30 (during installation) 15 (after installation)
	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)	−20 to +60
[a] As specified by IEC 60793-2-10, A1-OM2 and the cable manufacturer.		

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

C.5.2.1.3 Avoid forming loops

C.5.2.1.4 Torsion (twisting)

C.5.2.1.5 Tensile strength (on installed cables)

C.5.2.1.6 Bending radius

C.5.2.1.7 Pull force

C.5.2.1.8 Fitting strain relief

C.5.2.1.9 Installing cables in cabinet and enclosures

C.5.2.1.10 Installation on moving parts

C.5.2.1.11 Cable crush

C.5.2.1.12 Installation of continuous flexing cables

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

C.5.2.1.13.1 Use cable pulling tools

C.5.2.1.13.2 Cautions for handling optical fibre cables

C.5.2.1.13.3 Keeping plugs clean

C.5.2.1.13.4 Attenuation change under load

C.5.2.1.13.5 Strain relief

C.5.2.1.13.6 EMC ruggedness

C.5.2.1.13.7 Crush resistance

C.5.2.2 Installation and routing

C.5.2.2.1 Common description

C.5.2.2.2 Separation of circuits

C.5.2.3 Specific requirements for CPs

Not applicable.

C.5.2.4 Specific requirements for wireless installation

Not applicable.

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

C.5.3 Connector installation

C.5.3.1 Common description

C.5.3.2 Shielded connectors

C.5.3.3 Unshielded connectors

Not applicable.

C.5.3.4 Specific requirements for CPs

Not applicable.

C.5.3.5 Specific requirements for wireless installation

Not applicable.

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

C.5.4 Terminator installation

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

C.5.5 Device installation

C.5.5.1 Common description

C.5.5.2 Specific requirements for CPs

Not applicable.

C.5.6 Coding and labelling

C.5.6.1 Common description

C.5.6.2 Specific requirements for CPs

Not applicable.

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

C.5.7.1 Common description

C.5.7.2 Bonding and earthing of enclosures and pathways

C.5.7.2.1 Equalisation and earthing conductor sizing and length

C.5.7.2.2 Bonding straps and sizing

C.5.7.2.3 Surface preparation and methods

C.5.7.3 Earthing methods

C.5.7.3.1 Equipotential

Not applicable.

C.5.7.3.2 Star

C.5.7.3.3 Earthing of equipment (devices)

C.5.7.3.3.1 Non-earthing or parallel RC

Not applicable.

C.5.7.3.3.2 Direct

C.5.7.3.3.3 Installing copper bus bars

C.5.7.4 Shield earthing methods

C.5.7.4.1 General

C.5.7.4.2 Parallel RC

Not applicable.

C.5.7.4.3 Direct

C.5.7.4.4 Derivatives of direct and parallel RC

Not applicable.

C.5.7.5 Specific requirements for CPs

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

C.5.8 As-implemented cabling documentation

C.6 Installation verification and installation acceptance test

C.6.1 General

C.6.2 Installation verification

C.6.2.1 General

C.6.2.2 Verification according to cabling planning documentation

C.6.2.3 Verification of earthing and bonding

C.6.2.3.1 General

C.6.2.3.2 Specific requirements for earthing and bonding

Not applicable.

C.6.2.4 Verification of shield earthing

C.6.2.5 Verification of cabling system

C.6.2.5.1 Verification of cable routing

C.6.2.5.2 Verification of cable protection and proper strain relief

C.6.2.6 Cable selection verification

C.6.2.6.1 Common description

C.6.2.6.2 Specific requirements for CPs

Not applicable.

C.6.2.6.3 Specific requirements for wireless installation

C.6.2.7 Connector verification

C.6.2.7.1 Common description

C.6.2.7.2 Specific requirements for CPs

Not applicable.

C.6.2.7.3 Specific requirements for wireless installation

Not applicable.

C.6.2.8 Connection verification

C.6.2.8.1 Common description

C.6.2.8.2 Number of connections and connectors

C.6.2.8.3 Wire mapping

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

C.6.2.9 Terminator verification

Not applicable.

C.6.2.10 Coding and labelling verification

C.6.2.10.1 Common description

C.6.2.10.2 Specific coding and labelling verification requirements

C.6.2.11 Verification report

C.6.3 Installation acceptance test

C.6.3.1 General

C.6.3.2 Acceptance test of Ethernet-based cabling

C.6.3.2.1 Validation of balanced cabling for CPs based on Ethernet

C.6.3.2.1.1 Common description

C.6.3.2.1.2 Transmission performance test parameters

C.6.3.2.1.3 Specific requirements for CPs based on Ethernet

Not applicable.

C.6.3.2.2 Validation of optical fibre cabling for CPs based on Ethernet

C.6.3.2.2.1 Common description

C.6.3.2.2.2 Specific requirements for optical fibre cabling CPs

Not applicable.

C.6.3.2.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

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

Not applicable.

C.6.3.4 Specific requirements for wireless installation

Not applicable.

C.6.3.5 Acceptance test report

C.7 Installation administration

Subclause 7.8 is not applicable.

C.8 Installation maintenance and installation troubleshooting

Subclause 8.4 is not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Annex D
(normative)

CP 8/5 (CC-Link IE™ Field Network) specific installation profile

D.1 Installation profile scope

Addition:

This annex specifies the installation profile for Communication Profile CP 8/5 (CC-Link IE™ Field Network). The CP 8/5 is specified in IEC 61784-2-8.

D.2 Normative references

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

D.3.1 Terms and definitions

D.3.2 Abbreviated terms

D.3.3 Conventions for installation profiles

Not applicable.

D.4 Installation planning

D.4.1 General

D.4.1.1 Objective

D.4.1.2 Cabling in industrial premises

D.4.1.3 The planning process

D.4.1.4 Specific requirements for CPs

Not applicable.

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

D.4.2 Planning requirements

D.4.2.1 Safety

D.4.2.1.1 General

D.4.2.1.2 Electrical safety

D.4.2.1.3 Functional safety

Not applicable.

D.4.2.1.4 Intrinsic safety

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

D.4.2.1.5 Safety of optical fibre communication systems

Not applicable.

D.4.2.2 Security

D.4.2.3 Environmental considerations and EMC

D.4.2.3.1 Description methodology

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

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

D.4.3 Network capabilities

D.4.3.1 Network topology

D.4.3.1.1 Common description

D.4.3.1.2 Basic physical topologies for passive networks

Not applicable.

D.4.3.1.3 Basic physical topologies for active networks

D.4.3.1.4 Combination of basic topologies

D.4.3.1.5 Specific requirements for CPs

Not applicable.

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

D.4.3.2 Network characteristics

D.4.3.2.1 General

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

Not applicable.

D.4.3.2.3 Network characteristics for balanced cabling based on Ethernet

Replacement:

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

Characteristic	CP 8/5
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 D.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.	

D.4.3.2.4 Network characteristics for optical fibre cabling

Not applicable.

D.4.3.2.5 Specific network characteristics

Not applicable.

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

D.4.4 Selection and use of cabling components

D.4.4.1 Cable selection

D.4.4.1.1 Common description

D.4.4.1.2 Copper cables

D.4.4.1.2.1 Balanced cables for Ethernet-based CPs

Replacement:

Table D.2 provides values based on the template given in IEC 61918:2018, Table 4.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Table D.2 – Information relevant to copper cable: fixed cables

Characteristic	CP 8/5
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

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

Not applicable.

D.4.4.1.3 Cables for wireless installation

Not applicable.

D.4.4.1.4 Optical fibre cables

Not applicable.

D.4.4.1.5 Special purpose balanced and optical fibre cables

Not applicable.

D.4.4.1.6 Specific requirements for CPs

Not applicable.

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

D.4.4.2 Connecting hardware selection

D.4.4.2.1 Common description

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

Replacement:

Table D.3 provides values based on the template given in IEC 61918:2018, Table 7.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Table D.3 – 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 8/5	IEC 60603-7-3	No	No	No	No	No	Yes
[a] For IEC 60603-7 series, the connector selection is based on the desired channel performance.							
[b] Housings to protect connectors.							

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

Not applicable.

D.4.4.2.4 Connecting hardware for wireless installation

Not applicable.

D.4.4.2.5 Connecting hardware for optical fibre cabling

Not applicable.

D.4.4.2.6 Specific requirements for CPs

Not applicable.

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

D.4.4.3 Connections within a channel/permanent link

D.4.4.3.1 Common description

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

D.4.4.3.2.1 Common description

D.4.4.3.2.2 Connections minimum distance

D.4.4.3.2.3 Balanced cabling splices

D.4.4.3.2.4 Balanced cabling bulkhead connections

D.4.4.3.2.5 Balanced cabling J-J coupler (J-J adaptor)

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

Not applicable.

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

Not applicable.

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

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

D.4.4.4 Terminators

Not applicable.

D.4.4.5 Device location and connection

D.4.4.5.1 Common description

D.4.4.5.2 Specific requirements for CPs

Not applicable.

D.4.4.5.3 Specific requirements for wireless installation

Not applicable.

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

D.4.4.6 Coding and labelling

D.4.4.6.1 Common description

D.4.4.6.2 Additional requirements for CPs

Not applicable.

D.4.4.6.3 Specific requirements for CPs

Not applicable.

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

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

D.4.4.7.1 Common description

D.4.4.7.1.1 Basic requirements

D.4.4.7.1.2 Planner tasks

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

D.4.4.7.1.4 Selection of the earthing and bonding systems

D.4.4.7.2 Bonding and earthing of enclosures and pathways

D.4.4.7.2.1 Equalisation and earthing conductor sizing and length

D.4.4.7.2.2 Bonding straps and sizing

D.4.4.7.2.3 Surface preparation and methods

D.4.4.7.2.4 Bonding and earthing

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

D.4.4.7.3 Earthing methods

D.4.4.7.3.1 Equipotential

Not applicable.

D.4.4.7.3.2 Star

D.4.4.7.3.3 Earthing of equipment (devices)

Addition:

A parallel RC earthing circuit shall not be used for CP 8/5 networks.

D.4.4.7.3.4 Copper bus bars

D.4.4.7.4 Shield earthing

D.4.4.7.4.1 Non-earthing or parallel RC

Not applicable.

D.4.4.7.4.2 Direct

D.4.4.7.4.3 Derivatives of direct and parallel RC

Not applicable.

D.4.4.7.5 Specific requirements for CPs

Not applicable.

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

D.4.4.8 Storage and transportation of cables

D.4.4.8.1 Common description

D.4.4.8.2 Specific requirements for CPs

Not applicable.

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

D.4.4.9 Routing of cables

D.4.4.9.1 Common description

D.4.4.9.2 Cable routing of assemblies

D.4.4.9.3 Requirements for cable routing inside enclosures

D.4.4.9.4 Cable routing inside buildings

D.4.4.9.5 Cable routing outside and between buildings

D.4.4.9.6 Installing redundant communication cables

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

D.4.4.10 Separation of circuits

D.4.4.11 Mechanical protection of cabling components

D.4.4.11.1 Common description

D.4.4.11.2 Specific requirements for CPs

Not applicable.

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

D.4.4.12 Installation in special areas

D.4.4.12.1 Common description

D.4.4.12.2 Specific requirements for CPs

Not applicable.

D.4.4.12.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

D.4.5 Cabling planning documentation

D.4.5.1 Common description

D.4.5.2 Cabling planning documentation for CPs

Not applicable.

D.4.5.3 Network certification documentation

D.4.5.4 Cabling planning documentation for generic cabling in accordance with ISO/IEC 11801-3

D.4.6 Verification of cabling planning specification

D.5 Installation implementation

D.5.1 General requirements

D.5.1.1 Common description

D.5.1.2 Installation of CPs

D.5.1.3 Installation of generic cabling in industrial premises

D.5.2 Cable installation

D.5.2.1 General requirements for all cabling types

D.5.2.1.1 Storage and installation

D.5.2.1.2 Protecting communication cables against potential mechanical damage

Replacement:

Table D.4 provides values based on the template given in IEC 61918:2018, Table 18.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Table D.4 – 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)	−20 to +70
[a] Depending on cable type: see manufacturer's data sheet.		

D.5.2.1.3 Avoid forming loops

D.5.2.1.4 Torsion (twisting)

D.5.2.1.5 Tensile strength (on installed cables)

D.5.2.1.6 Bending radius

D.5.2.1.7 Pull force

D.5.2.1.8 Fitting strain relief

D.5.2.1.9 Installing cables in cabinet and enclosures

D.5.2.1.10 Installation on moving parts

D.5.2.1.11 Cable crush

D.5.2.1.12 Installation of continuous flexing cables

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

Not applicable.

D.5.2.2 Installation and routing

D.5.2.2.1 Common description

D.5.2.2.2 Separation of circuits

D.5.2.3 Specific requirements for CPs

Not applicable.

D.5.2.4 Specific requirements for wireless installation

Not applicable.

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

D.5.3 Connector installation

D.5.3.1 Common description

D.5.3.2 Shielded connectors

D.5.3.3 Unshielded connectors

Not applicable.

D.5.3.4 Specific requirements for CPs

Not applicable.

D.5.3.5 Specific requirements for wireless installation

Not applicable.

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

D.5.4 Terminator installation

Not applicable.

D.5.5 Device installation

D.5.5.1 Common description

D.5.5.2 Specific requirements for CPs

Not applicable.

D.5.6 Coding and labelling

D.5.6.1 Common description

D.5.6.2 Specific requirements for CPs

Not applicable.

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

D.5.7.1 Common description

D.5.7.2 Bonding and earthing of enclosures and pathways

D.5.7.2.1 Equalisation and earthing conductor sizing and length

D.5.7.2.2 Bonding straps and sizing

D.5.7.2.3 Surface preparation and methods

D.5.7.3 Earthing methods

D.5.7.3.1 Equipotential

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

D.6.2.6 Cable selection verification

D.6.2.6.1 Common description

D.6.2.6.2 Specific requirements for CPs

Not applicable.

D.6.2.6.3 Specific requirements for wireless installation

D.6.2.7 Connector verification

D.6.2.7.1 Common description

D.6.2.7.2 Specific requirements for CPs

Not applicable.

D.6.2.7.3 Specific requirements for wireless installation

Not applicable.

D.6.2.8 Connection verification

D.6.2.8.1 Common description

D.6.2.8.2 Number of connections and connectors

D.6.2.8.3 Wire mapping

D.6.2.9 Terminator verification

Not applicable.

D.6.2.10 Coding and labelling verification

D.6.2.10.1 Common description

D.6.2.10.2 Specific coding and labelling verification requirements

Not applicable.

D.6.2.11 Verification report

D.6.3 Installation acceptance test

D.6.3.1 General

D.6.3.2 Acceptance test of Ethernet-based cabling

D.6.3.2.1 Validation of balanced cabling for CPs based on Ethernet

D.6.3.2.1.1 Common description

D.6.3.2.1.2 Transmission performance test parameters

D.6.3.2.1.3 Specific requirements for CPs based on Ethernet

Not applicable.

D.6.3.2.2 Validation of optical fibre cabling for CPs based on Ethernet

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

D.6.3.2.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

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

Not applicable.

D.6.3.4 Specific requirements for wireless installation

Not applicable.

D.6.3.5 Acceptance test report

D.7 Installation administration

Subclause 7.8 is not applicable.

D.8 Installation maintenance and installation troubleshooting

Subclause 8.4 is not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Annex E
(normative)

CP 8/6 (CC-Link IE™ TSN) specific installation profile

E.1 Installation profile scope

Addition:

This annex specifies the installation profile for Communication Profile CP 8/6 (CC-Link IE™ TSN). The CP 8/6 is specified in IEC 61784-2-8.

E.2 Normative references

Addition:

IEC 60793-2-40, *Optical fibres – Part 2-40: Product specifications – Sectional specification for category A4 multimode fibres*

CLPA BAP-C0401ENG-050, *CC-Link IE TSN Recommended Network Wiring Parts Test Specifications*

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

E.3.1 Terms and definitions

E.3.2 Abbreviated terms

E.3.3 Conventions for installation profiles

Not applicable.

E.4 Installation planning

E.4.1 General

E.4.1.1 Objective

E.4.1.2 Cabling in industrial premises

E.4.1.3 The planning process

E.4.1.4 Specific requirements for CPs

Not applicable.

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

E.4.2 Planning requirements

E.4.2.1 Safety

E.4.2.1.1 General

E.4.2.1.2 Electrical safety

E.4.2.1.3 Functional safety

Not applicable.

E.4.2.1.4 Intrinsic safety

Not applicable.

E.4.2.1.5 Safety of optical fibre communication systems

Not applicable.

E.4.2.2 Security

E.4.2.3 Environmental considerations and EMC

E.4.2.3.1 Description methodology

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

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

E.4.3 Network capabilities

E.4.3.1 Network topology

E.4.3.1.1 Common description

E.4.3.1.2 Basic physical topologies for passive networks

E.4.3.1.3 Basic physical topologies for active networks

E.4.3.1.4 Combination of basic topologies

E.4.3.1.5 Specific requirements for CPs

Not applicable.

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

E.4.3.2 Network characteristics

E.4.3.2.1 General

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

Not applicable.

E.4.3.2.3 Network characteristics for balanced cabling based on Ethernet

Replacement:

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

Characteristic	CP 8/6	
Supported data rates (Mbit/s)	1 000	100
Supported channel length (m) [b]	23 900	23 900
Number of connections in the channel (max.) [a, b]	64 770	64 770
Patch cord length (m) [a]	100	100
Channel class per ISO/IEC 11801-3 (min.) [b]	D	D
Cable category per ISO/IEC 11801-3 (min.) [c]	5e	5
Connecting HW category per ISO/IEC 11801-3 (min.)	5e	5
Cable types	ANSI/TIA/EIA-568-B	ANSI/TIA/EIA-568-B
[a] See E.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.		

E.4.3.2.4 Network characteristics for optical fibre cabling

Replacement:

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Table E.2 – Network characteristics for optical fibre cabling

CP 8/6		
1 Gbit/s		
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 E.4.4.2.5
Plastic (GI-POF)	Modal bandwidth (MHz × km) at λ (nm)	350 at 850
	Minimum length (m)	–
	Typical maximum length[a] (m)	50
	Maximum channel Insertion loss/optical power budget (dB)	15
	Connecting hardware	See E.4.4.2.5
100 Mbit/s		
Optical fibre type	**Description**	
Multimode plastic (SI-POF)	Modal bandwidth (MHz × km) at λ (nm)	10 at 650
	Minimum length (m)	–
	Typical maximum length[a] (m)	20
	Maximum channel Insertion loss/optical power budget (dB)	9,5
	Connecting hardware	See E.4.4.2.5
Plastic clad (SI-PCF)	Modal bandwidth (MHz × km) at λ (nm)	14 at 650
	Minimum length (m)	–
	Typical maximum length[a] (m)	100
	Maximum channel Insertion loss/optical power budget (dB)	3,3
	Connecting hardware	See E.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—.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

E.4.3.2.5 Specific network characteristics

Not applicable.

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

E.4.4 Selection and use of cabling components

E.4.4.1 Cable selection

E.4.4.1.1 Common description

E.4.4.1.2 Copper cables

E.4.4.1.2.1 Balanced cables for Ethernet-based CPs

Replacement

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

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

Characteristic	CP 8/6
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 IEEE 802.3, 100Base-TX ANSI/TIA/EIA-568-B, Category 5

E.4.4.1.3 Cables for wireless installation

E.4.4.1.4 Optical fibre cables

Replacement:

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Table E.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	55/490 µm GI-POF
Standard	–	IEC 60793-2-10	–	CLPA BAP-C0401ENG-050	CLPA BAP-C0401ENG-050	IEC 60793-2-40
Attenuation per km (650 nm)	–	a	–	b	c	d
Attenuation per km (820 nm)	–	a	–	b	c	d
Attenuation per km (1 310 nm)	–	a	–	b	c	d
Number of optical fibres	–	single	–	single	single	single
Jacket colour requirements	–	none	–	none	none	none
Jacket material	–	a	–	b	c	d
Resistance to harsh environment (e.g. UV, oil resist, LS0H)	–	a	–	b	c	d
Breakout	–	No	–	No	No	No

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

[b] As detailed in CC-Link IE TSN installation manual [43].

[c] As detailed in CC-Link IE TSN installation manual [43].

[d] As specified in IEC 60793-2-40.

E.4.4.1.5 Special purpose balanced and optical fibre cables

E.4.4.1.6 Specific requirements for CPs

Not applicable.

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

E.4.4.2 Connecting hardware selection

E.4.4.2.1 Common description

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

Replacement:

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

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Table E.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 8/6	IEC 60603-7-3	Yes	No	No	No	Yes	Yes

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

[b] Housings to protect connectors.

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

Not applicable.

E.4.4.2.4 Connecting hardware for wireless installation

E.4.4.2.5 Connecting hardware for optical fibre cabling

Replacement:

Table E.6 provides values based on the template given in IEC 61918:2018, Table 9.

Table E.6 – Optical fibre connecting hardware

	IEC 61754-2	IEC 61754-4	IEC 61754-24	IEC 61754-20	IEC 61754-22	IEC 61754-16
	BFOC/2,5	SC	SC-RJ	LC	F-SMA	F07
CP 8/6	No	Yes	Yes	Yes	No	Yes

NOTE The IEC 61754 series defines the optical fibre connector mechanical interfaces; performance specifications for optical fibre connectors terminated to specific fibre types are standardised in the IEC 61753 series.

Replacement:

Table E.7 provides values based on the template given in IEC 61918:2018, Table 10.

Table E.7 – Relationship between FOC and fibre types (CP 8/6)

FOC	Fibre type					
	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	55/490 µm GI-POF
BFOC/2,5	No	No	No	No	No	No
SC	No	Yes	No	No	No	Yes
SC-RJ	No	No	No	No	No	No
LC	No	Yes	No	No	No	Yes
F-SMA	No	No	No	No	No	No
F07	No	No	No	Yes	Yes	No

E.4.4.2.6 Specific requirements for CPs

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

E.4.4.3 Connections within a channel/permanent link

E.4.4.3.1 Common description

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

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

Not applicable.

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

E.4.4.3.4.1 Common description

E.4.4.3.4.2 Optical fibre splices

E.4.4.3.4.3 Optical fibre bulkhead connections

E.4.4.3.4.4 Optical fibre J-J couplers (or adaptors)

Not applicable.

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

Not applicable

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

E.4.4.4 Terminators

Not applicable.

E.4.4.5 Device location and connection

E.4.4.5.1 Common description

E.4.4.5.2 Specific requirements for CPs

Not applicable.

E.4.4.5.3 Specific requirements for wireless installation

Not applicable.

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

E.4.4.6 Coding and labelling

E.4.4.6.1 Common description

E.4.4.6.2 Additional requirements for CPs

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

E.4.4.6.3 Specific requirements for CPs

Not applicable.

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

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

E.4.4.7.1 Common description

E.4.4.7.1.1 Basic requirements

E.4.4.7.1.2 Planner tasks

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

E.4.4.7.1.4 Selection of the earthing and bonding systems

E.4.4.7.2 Bonding and earthing of enclosures and pathways

E.4.4.7.2.1 Equalisation and earthing conductor sizing and length

E.4.4.7.2.2 Bonding straps and sizing

E.4.4.7.2.3 Surface preparation and methods

E.4.4.7.2.4 Bonding and earthing

E.4.4.7.3 Earthing methods

E.4.4.7.3.1 Equipotential

Not applicable.

E.4.4.7.3.2 Star

E.4.4.7.3.3 Earthing of equipment (devices)

Addition:

A parallel RC earthing circuit shall not be used for CP 8/6 network.

E.4.4.7.3.4 Copper bus bars

E.4.4.7.4 Shield earthing

E.4.4.7.4.1 Non-earthing or parallel RC

Not applicable.

E.4.4.7.4.2 Direct

E.4.4.7.4.3 Derivatives of direct and parallel RC

Not applicable.

E.4.4.7.5 Specific requirements for CPs

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

E.4.4.8 Storage and transportation of cables

E.4.4.8.1 Common description

E.4.4.8.2 Specific requirements for CPs

Not applicable.

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

E.4.4.9 Routing of cables

E.4.4.10 Separation of circuits

E.4.4.11 Mechanical protection of cabling components

E.4.4.11.1 Common description

E.4.4.11.2 Specific requirements for CPs

Not applicable.

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

E.4.4.12 Installation in special areas

E.4.4.12.1 Common description

E.4.4.12.2 Specific requirements for CPs

Not applicable.

E.4.4.12.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

E.4.5 Cabling planning documentation

E.4.5.1 Common description

E.4.5.2 Cabling planning documentation for CPs

Not applicable.

E.4.5.3 Network certification documentation

E.4.5.4 Cabling planning documentation for generic cabling in accordance with ISO/IEC 11801-3

E.4.6 Verification of cabling planning specification

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

E.5 Installation implementation

E.5.1 General requirements

E.5.1.1 Common description

E.5.1.2 Installation of CPs

E.5.1.3 Installation of generic cabling in industrial premises

E.5.2 Cable installation

E.5.2.1 General requirements for all cabling types

E.5.2.1.1 Storage and installation

E.5.2.1.2 Protecting communication cables against potential mechanical damage

Replacement:

Table E.8 provides values based on the template given in IEC 61918:2018, Table 18.

Table E.8 – 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)	−20 to +70
[a] Depending on cable type: see manufacturer's data sheet.		

Table E.9 provides values based on the template given in IEC 61918:2018, Table 19.

Table E.9 – Parameters for silica optical fibre cables

Characteristic		Value
Mechanical force	Minimum bending radius, single bending (mm)	30 (during installation) 15 (after installation)
	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)	−20 to +60
[a] As specified by IEC 60793-2-10, A1-OM2 and the cable manufacturer.		

E.5.2.1.3 Avoid forming loops

E.5.2.1.4 Torsion (twisting)

E.5.2.1.5 Tensile strength (on installed cables)

E.5.2.1.6 Bending radius

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

E.5.2.1.7 Pull force

E.5.2.1.8 Fitting strain relief

E.5.2.1.9 Installing cables in cabinet and enclosures

E.5.2.1.10 Installation on moving parts

E.5.2.1.11 Cable crush

E.5.2.1.12 Installation of continuous flexing cables

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

E.5.2.1.13.1 Use cable pulling tools

E.5.2.1.13.2 Cautions for handling optical fibre cables

E.5.2.1.13.3 Keeping plugs clean

E.5.2.1.13.4 Attenuation change under load

E.5.2.1.13.5 Strain relief

E.5.2.1.13.6 EMC ruggedness

E.5.2.1.13.7 Crush resistance

E.5.2.2 Installation and routing

E.5.2.2.1 Common description

E.5.2.2.2 Separation of circuits

E.5.2.3 Specific requirements for CPs

Not applicable.

E.5.2.4 Specific requirements for wireless installation

Not applicable.

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

E.5.3 Connector installation

E.5.3.1 Common description

E.5.3.2 Shielded connectors

E.5.3.3 Unshielded connectors

Not applicable.

E.5.3.4 Specific requirements for CPs

Not applicable.

E.5.3.5 Specific requirements for wireless installation

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

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

E.5.4 Terminator installation

Not applicable.

E.5.5 Device installation

E.5.5.1 Common description

E.5.5.2 Specific requirements for CPs

Not applicable.

E.5.6 Coding and labelling

E.5.6.1 Common description

E.5.6.2 Specific requirements for CPs

Not applicable.

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

E.5.7.1 Common description

E.5.7.2 Bonding and earthing of enclosures and pathways

E.5.7.2.1 Equalisation and earthing conductor sizing and length

E.5.7.2.2 Bonding straps and sizing

E.5.7.2.3 Surface preparation and methods

E.5.7.3 Earthing methods

E.5.7.3.1 Equipotential

Not applicable.

E.5.7.3.2 Star

E.5.7.3.3 Earthing of equipment (devices)

E.5.7.3.3.1 Non-earthing or parallel RC

Not applicable.

E.5.7.3.3.2 Direct

E.5.7.3.3.3 Installing copper bus bars

E.5.7.4 Shield earthing methods

E.5.7.4.1 General

E.5.7.4.2 Parallel RC

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

E.5.7.4.3 Direct

E.5.7.4.4 Derivatives of direct and parallel RC

Not applicable.

E.5.7.5 Specific requirements for CPs

Not applicable.

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

E.5.8 As-implemented cabling documentation

E.6 Installation verification and installation acceptance test

E.6.1 General

E.6.2 Installation verification

E.6.2.1 General

E.6.2.2 Verification according to cabling planning documentation

E.6.2.3 Verification of earthing and bonding

E.6.2.3.1 General

E.6.2.3.2 Specific requirements for earthing and bonding

Not applicable.

E.6.2.4 Verification of shield earthing

E.6.2.5 Verification of cabling system

E.6.2.5.1 Verification of cable routing

E.6.2.5.2 Verification of cable protection and proper strain relief

E.6.2.6 Cable selection verification

E.6.2.6.1 Common description

E.6.2.6.2 Specific requirements for CPs

Not applicable.

E.6.2.6.3 Specific requirements for wireless installation

E.6.2.7 Connector verification

E.6.2.7.1 Common description

E.6.2.7.2 Specific requirements for CPs

Not applicable.

E.6.2.7.3 Specific requirements for wireless installation

Not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

E.6.2.8 Connection verification

E.6.2.8.1 Common description

E.6.2.8.2 Number of connections and connectors

E.6.2.8.3 Wire mapping

E.6.2.9 Terminator verification

Not applicable.

E.6.2.10 Coding and labelling verification

E.6.2.10.1 Common description

E.6.2.10.2 Specific coding and labelling verification requirements

E.6.2.11 Verification report

E.6.3 Installation acceptance test

E.6.3.1 General

E.6.3.2 Acceptance test of Ethernet-based cabling

E.6.3.2.1 Validation of balanced cabling for CPs based on Ethernet

E.6.3.2.1.1 Common description

E.6.3.2.1.2 Transmission performance test parameters

E.6.3.2.1.3 Specific requirements for CPs based on Ethernet

Not applicable.

E.6.3.2.2 Validation of optical fibre cabling for CPs based on Ethernet

E.6.3.2.2.1 Common description

E.6.3.2.2.2 Specific requirements for optical fibre cabling CPs

Not applicable.

E.6.3.2.3 Specific requirements for generic cabling in accordance with ISO/IEC 11801-3

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

Not applicable.

E.6.3.4 Specific requirements for wireless installation

Not applicable.

E.6.3.5 Acceptance test report

E.7 Installation administration

Subclause 7.8 is not applicable.

E.8 Installation maintenance and installation troubleshooting

Subclause 8.4 is not applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Bibliography

Addition:

[41] CC-Link open field network cable wiring manual, November 2008, CC-Link Partner Association, available at <www.cc-link.org>

[42] CC-Link IE Controller Network cable installation manual, September 2008, CC-Link Partner Association, available at <www.cc-link.org>

[43] CC-Link IE Field Network cable installation manual, June 2010, CC-Link Partner Association, available at <www.cc-link.org>

[44] CC-Link IE TSN installation manual, April 2019, CC-Link Partner Association, available at <www.cc-link.org>

[45] CC-Link IE TSN recommended network wiring parts test specifications, April 2019, CC-Link Partner Association, available at www.cc-link.org

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

SOMMAIRE

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

_____

RÉSEAUX INDUSTRIELS – PROFILS –

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

AVANT-PROPOS

1) La Commission Électrotechnique Internationale (IEC) est une organisation mondiale de normalisation composée de l'ensemble des comités électrotechniques nationaux (Comités nationaux de l'IEC). L'IEC a pour objet de favoriser la coopération internationale pour toutes les questions de normalisation dans les domaines de l'électricité et de l'électronique. À cet effet, l'IEC – entre autres activités – publie des Normes internationales, des Spécifications techniques, des Rapports techniques, des Spécifications accessibles au public (PAS) et des Guides (ci-après dénommés "Publication(s) de l'IEC"). Leur élaboration est confiée à des comités d'études, aux travaux desquels tout Comité national intéressé par le sujet traité peut participer. Les organisations internationales, gouvernementales et non gouvernementales, en liaison avec l'IEC, participent également aux travaux. L'IEC collabore étroitement avec l'Organisation Internationale de Normalisation (ISO), selon des conditions fixées par accord entre les deux organisations.
2) Les décisions ou accords officiels de l'IEC concernant les questions techniques représentent, dans la mesure du possible, un accord international sur les sujets étudiés, étant donné que les Comités nationaux de l'IEC intéressés sont représentés dans chaque comité d'études.
3) Les Publications de l'IEC se présentent sous la forme de recommandations internationales et sont agréées comme telles par les Comités nationaux de l'IEC. Tous les efforts raisonnables sont entrepris afin que l'IEC s'assure de l'exactitude du contenu technique de ses publications; l'IEC ne peut pas être tenue responsable de l'éventuelle mauvaise utilisation ou interprétation qui en est faite par un quelconque utilisateur final.
4) Dans le but d'encourager l'uniformité internationale, les Comités nationaux de l'IEC s'engagent, dans toute la mesure possible, à appliquer de façon transparente les Publications de l'IEC dans leurs publications nationales et régionales. Toutes divergences entre toutes Publications de l'IEC et toutes publications nationales ou régionales correspondantes doivent être indiquées en termes clairs dans ces dernières.
5) L'IEC elle-même ne fournit aucune attestation de conformité. Des organismes de certification indépendants fournissent des services d'évaluation de conformité et, dans certains secteurs, accèdent aux marques de conformité de l'IEC. L'IEC n'est responsable d'aucun des services effectués par les organismes de certification indépendants.
6) Tous les utilisateurs doivent s'assurer qu'ils sont en possession de la dernière édition de cette publication.
7) Aucune responsabilité ne doit être imputée à l'IEC, à ses administrateurs, employés, auxiliaires ou mandataires, y compris ses experts particuliers et les membres de ses comités d'études et des Comités nationaux de l'IEC, pour tout préjudice causé en cas de dommages corporels et matériels, ou de tout autre dommage de quelque nature que ce soit, directe ou indirecte, ou pour supporter les coûts (y compris les frais de justice) et les dépenses découlant de la publication ou de l'utilisation de cette Publication de l'IEC ou de toute autre Publication de l'IEC, ou au crédit qui lui est accordé.
8) L'attention est attirée sur les références normatives citées dans cette publication. L'utilisation de publications référencées est obligatoire pour une application correcte de la présente publication.
9) L'IEC attire l'attention sur le fait que la mise en application du présent document peut entraîner l'utilisation d'un ou de plusieurs brevets. L'IEC ne prend pas position quant à la preuve, à la validité et à l'applicabilité de tout droit de propriété revendiqué à cet égard. À la date de publication du présent document, l'IEC n'avait pas reçu notification qu'un ou plusieurs brevets pouvaient être nécessaires à sa mise en application. Toutefois, il y a lieu d'avertir les responsables de la mise en application du présent document que des informations plus récentes sont susceptibles de figurer dans la base de données de brevets, disponible à l'adresse https://patents.iec.ch. L'IEC ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de brevets. L'IEC ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de brevets.

L'IEC 61784-5-8 a été établie par le sous-comité 65C: Réseaux industriels, du comité d'études 65 de l'IEC: Mesure, commande et automation dans les processus industriels. Il s'agit d'une Norme internationale.

Le présent document est à utiliser conjointement avec l'IEC 61918:2018, l'IEC 61918:2018/AMD1:2022 et l'IEC 61918:2018/AMD2:2024.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Cette troisième édition annule et remplace la deuxième édition parue en 2018. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

a) ajout de l'Annexe E et des références connexes.

Le texte de cette Norme internationale est issu des documents suivants:

Projet	Rapport de vote
65C/1280/FDIS	65C/1295/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous www.iec.ch/members_experts/refdocs. Les principaux types de documents développés par l'IEC sont décrits plus en détail sous www.iec.ch/publications.

Une liste de toutes les parties de la série IEC 61784-5, publiées sous le titre général *Réseaux industriels – Profils – Installation des bus de terrain*, se trouve sur le site web de l'IEC.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site Web de l'IEC sous webstore.iec.ch dans les données relatives au document recherché. À cette date, le document sera:

- reconduit,
- supprimé, ou
- révisé.

IMPORTANT – Le logo "colour inside" qui se trouve sur la page de couverture de ce document indique qu'elle contient des couleurs qui sont considérées comme utiles à une bonne compréhension de son contenu. Les utilisateurs devraient, par conséquent, imprimer cette publication en utilisant une imprimante couleur.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

INTRODUCTION

Le présent document fait partie d'une série élaborée pour faciliter l'utilisation des réseaux de communication dans des systèmes de contrôle-commande industriels.

L'IEC 61918:2018, l'IEC 61918:2018/AMD1:2022 et l'IEC 61918:2018/AMD2:2024 spécifient les exigences communes relatives à l'installation de réseaux de communication dans des systèmes de contrôle-commande industriels. La présente norme décrit les profils d'installation des profils de communication (CP) d'une famille spécifique de profils de communication (CPF) en indiquant les exigences de l'IEC 61918:2018 et l'IEC 61918:2018/AMD1:2022 qui s'appliquent pleinement et, si nécessaire, en complétant, en modifiant ou en remplaçant les autres exigences (voir la Figure 1).

Se reporter à l'IEC 61158-1 pour un contexte général sur les bus de terrain, leurs profils et la relation entre les profils d'installation spécifiés dans le présent document.

Chaque profil d'installation de CP est spécifié dans une annexe séparée du présent document. Chaque annexe est structurée exactement de la même manière que la norme de référence IEC 61918:2018 compte tenu des rôles des différentes personnes impliquées dans le processus d'installation des bus de terrain, tels que définis dans l'IEC 61918:2018 (planificateur, installateur, vérificateur, valideur, personnel chargé de la maintenance, personnel chargé de l'administration). Si elles utilisent le profil d'installation conjointement avec l'IEC 61918:2018, ces personnes savent immédiatement quelles exigences sont communes à l'installation de tous les CP et lesquelles sont modifiées ou remplacées. Les conventions utilisées pour la rédaction du présent document sont définies à l'Article 5.

La définition d'une norme de profil d'installation pour chaque CPF (par exemple l'IEC 61784-5-8 pour la CPF 8) permet aux utilisateurs de travailler avec des documents de taille convenable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

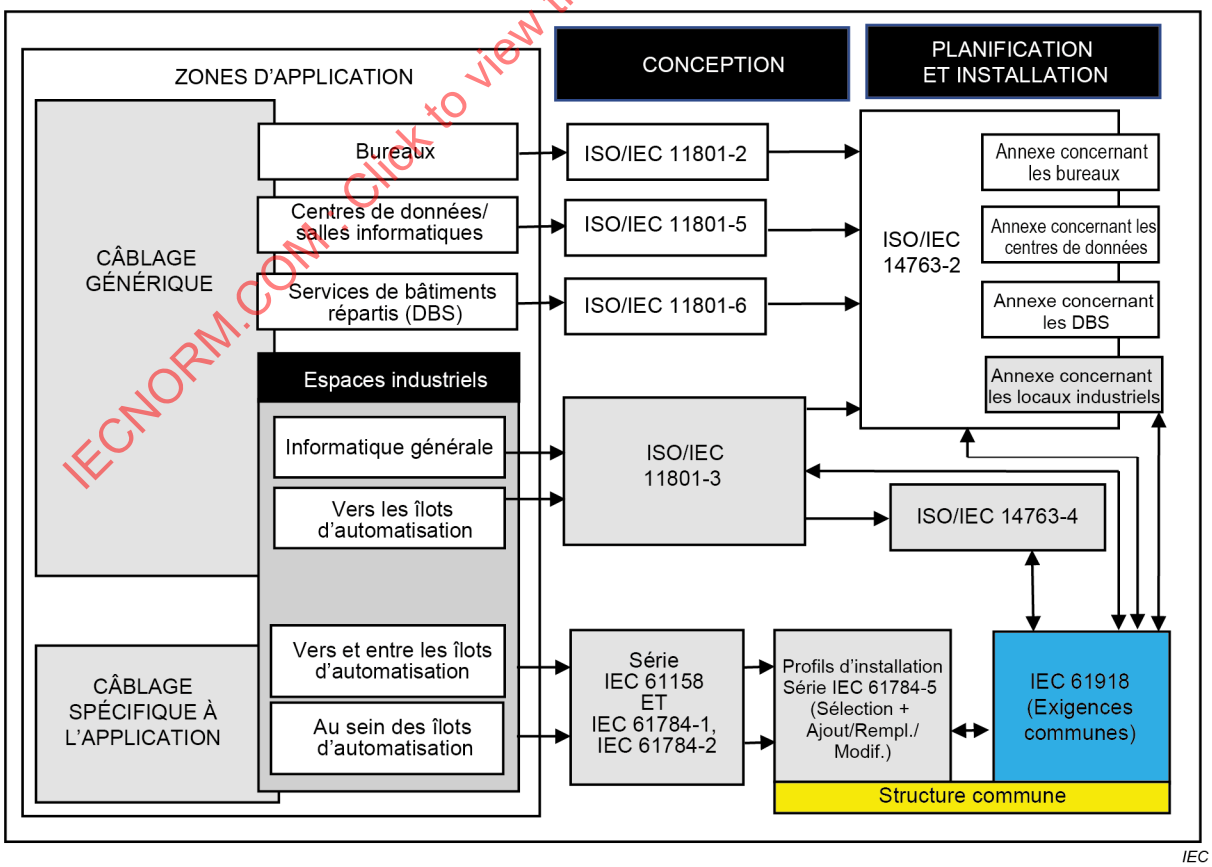


Figure 1 – Relations entre les normes

RÉSEAUX INDUSTRIELS – PROFILS –

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

1 Domaine d'application

La présente partie de l'IEC 61784-5 spécifie les profils d'installation pour la CPF 8 (CC-Link™[1]).

Les profils d'installation sont spécifiés dans les annexes. Ces annexes sont à lire conjointement avec l'IEC 61918:2018, l'IEC 61918:2018/AMD1:2022 et l'IEC 61918:2018/AMD2:2024.

2 Références normatives

Les documents suivants sont cités dans le texte de sorte qu'ils constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 61918:2018[2], *Réseaux de communication industriels – Installation de réseaux de communication dans des locaux industriels*
IEC 61918:2018/AMD1:2022
IEC 61918:2018/AMD2:2024

NOTE Pour les références normatives spécifiques aux profils, voir A.2, B.2 et E.2 respectivement.

3 Termes, définitions et abréviations

Pour les besoins du présent document, les termes, définitions et abréviations donnés dans l'IEC 61918:2018, Article 3 et l'IEC 61918:2018/AMD1:2022, Article 3 s'appliquent.

L'ISO et l'IEC tiennent à jour des bases de données terminologiques destinées à être utilisées en normalisation, consultables aux adresses suivantes:

- IEC Electropedia: disponible à l'adresse https://www.electropedia.org/
- ISO Online browsing platform: disponible à l'adresse https://www.iso.org/obp

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

---

1 CC-Link™, CC-Link/LT™ et CC-Link IE™ sont des appellations commerciales de Mitsubishi Electric Co., dont le contrôle d'utilisation est donné à CC-Link Partner Association. Cette information est donnée à l'intention des utilisateurs du présent document et ne signifie nullement que l'IEC approuve l'emploi du produit ainsi désigné. La conformité à ce profil n'exige pas l'utilisation de l'appellation commerciale. L'utilisation de l'appellation commerciale exige l'autorisation du détenteur de celle-ci.

2 Les références normatives de l'IEC 61918:2018, Article 2, IEC 61918:2018/AMD1:2022, Article 2 et de l'IEC 61918:2018/AMD2:2024, Article 2, s'appliquent.

4 CPF 8: vue d'ensemble des profils d'installation

La CPF 8 comprend 6 profils de communication spécifiés dans l'IEC 61784-1-8 et l'IEC 61784-2-8.

Les exigences d'installation pour le CP 8/1 (CC-Link™/V1) et le CP 8/2 (CC-Link™/V2) sont spécifiées à l'Annexe A.

Les exigences d'installation pour le CP 8/3 (CC-Link/LT™) sont spécifiées à l'Annexe B.

Les exigences d'installation pour le CP 8/4 (CC-Link IE™ Controller Network) sont spécifiées à l'Annexe C.

Les exigences d'installation pour le CP 8/5 (CC-Link IE™ Field Network) sont spécifiées à l'Annexe D.

Les exigences d'installation pour le CP 8/6 (CC-Link IE™ TSN) sont spécifiées à l'Annexe E.

5 Conventions relatives aux profils d'installation

La numérotation des articles et paragraphes des annexes du présent document correspond à celle des principaux articles et paragraphes de l'IEC 61918.

Les articles et paragraphes des annexes du présent document complètent, modifient ou remplacent les articles et paragraphes correspondants de l'IEC 61918.

En l'absence d'un paragraphe correspondant de l'IEC 61918 dans les annexes normatives du présent document, le paragraphe pertinent de l'IEC 61918 s'applique sans modification.

La lettre d'en-tête d'annexe représente le profil d'installation qui lui est attribué à l'Article 4. La numérotation des articles (ou paragraphes) après la lettre de chaque annexe doit correspondre à la numérotation de l'article (paragraphe) concerné de l'IEC 61918.

EXEMPLE "Le paragraphe B.4.4" dans l'IEC 61784-5-8 signifie que le CP 8/3 est défini dans le paragraphe 4.4 de l'IEC 61918:2018 et de l'IEC 61918:2018/AMD1:2022.

Tous les articles principaux de l'IEC 61918 sont cités et s'appliquent pleinement, sauf indication contraire dans chaque annexe normative de profil d'installation.

Si tous les paragraphes d'un article (paragraphe) sont omis, l'article (paragraphe) correspondant de l'IEC 61918 s'applique.

Si un article (paragraphe) indique "Non applicable", l'article (paragraphe) correspondant de l'IEC 61918 ne s'applique pas.

Si un article (ou paragraphe) indique "*Ajout:*", l'article (ou paragraphe) correspondant de l'IEC 61918 s'applique en incluant les ajouts indiqués pour le profil.

Si un article (paragraphe) indique "*Remplacement:*", le texte donné dans le profil remplace le texte de l'article (paragraphe) correspondant de l'IEC 61918.

NOTE Un remplacement peut également comprendre des ajouts.

Si un article (paragraphe) indique "*Modification:*", l'article (paragraphe) correspondant de l'IEC 61918 s'applique en incluant les modifications indiquées pour le profil.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Si tous les paragraphes d'un article (ou paragraphe) sont omis alors que, dans ledit article (ou paragraphe), il est indiqué "*l'article (ou paragraphe) x comporte un ajout:*" (ou un "*remplacement:*") ou "l'Article (paragraphe) x ne s'applique pas", l'Article (paragraphe) x est valide tel que spécifié et tous les autres articles (ou paragraphes) correspondants de l'IEC 61918 s'appliquent.

6 Conformité aux profils d'installation

Chaque profil d'installation dans le présent document inclut une partie de l'IEC 61918:2018 et de l'IEC 61918:2018/AMD1:2022. Il peut également comprendre la définition de spécifications supplémentaires.

Une déclaration de conformité à un profil d'installation du présent document doit être stipulée comme suit:

la conformité à l'IEC 61784-5-8:2024 pour CP 8/m <CC-Link>, ou

la conformité à l'IEC 61784-5-8 (Éd.3.0) pour CP 8/m <CC-Link>.

Le nom placé entre guillemets simples < > est facultatif, lesdits guillemets simples ne doivent pas être inclus. Le "m" dans CP 8/m doit être remplacé par le numéro de profil 1 à 6.

NOTE Le nom peut être celui du profil, comme: CC-Link/V1, CC-Link/V2, CC-Link/LT, CC-Link IE Controller Network, CC-Link IE Field Network ou CC-Link IE TSN.

Si le nom est une appellation commerciale, l'autorisation du détenteur de l'appellation commerciale doit être exigée.

Les normes de produits ne doivent pas intégrer d'éventuels aspects d'évaluation de la conformité (y compris les dispositions de management de la qualité), qu'ils soient normatifs ou informatifs, autres que les dispositions d'essai du produit (évaluation et examen).

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Annexe A
(normative)

Profils d'installation spécifiques aux CP 8/1 et CP 8/2 (CC-Link™/V1 et CC-Link™/V2)

A.1 Domaine d'application du profil d'installation

Ajout:

La présente annexe définit le profil d'installation du profil de communication CP 8/1 (CC-Link™/V1) et CP 8/2 (CC-Link™/V2). Le CP 8/1 et le CP 8/2 sont spécifiés dans l'IEC 61784-1-8.

Les réseaux CP 8/1 et CP 8/2 mettent en œuvre une unité de raccordement au support conformément à l'ISO/IEC 8482 et issue du document ANSI TIA/EIA-485-A.

A.2 Références normatives

Ajout:

ISO/IEC 8482, *Information technology – Telecommunications and information exchange between systems – Twisted pair multipoint interconnections* (disponible en anglais seulement)

ANSI TIA/EIA-485-A, *Electrical Characteristics of Generators and Receivers for Use in Balanced Digital Multipoint Systems* (disponible en anglais seulement)

A.3 Termes, définitions et abréviations utilisés pour le profil d'installation

A.3.1 Termes et définitions

A.3.2 Abréviations

A.3.3 Conventions relatives aux profils d'installation

Non applicable.

A.4 Planification de l'installation

A.4.1 Généralités

A.4.1.1 Objectif

A.4.1.2 Câblage dans les locaux industriels

Ajout:

Le câblage générique conformément à l'ISO/IEC 11801-3 ne convient pas pour le câblage des réseaux CP 8/1 ou CP 8/2.

A.4.1.3 Processus de planification

A.4.1.4 Exigences spécifiques pour les CP

Non applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

A.4.1.5 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.4.2 Exigences de planification

A.4.2.1 Sûreté

A.4.2.1.1 Généralités

A.4.2.1.2 Sécurité électrique

A.4.2.1.3 Sécurité fonctionnelle

A.4.2.1.4 Sécurité intrinsèque

Non applicable.

A.4.2.1.5 Sécurité des systèmes de communication par fibres optiques

Non applicable.

A.4.2.2 Sécurité

A.4.2.3 Considérations environnementales et compatibilité électromagnétique

A.4.2.4 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.4.3 Capacités du réseau

A.4.3.1 Topologie du réseau

A.4.3.1.1 Description commune

A.4.3.1.2 Topologies physiques de base des réseaux passifs

Modification:

Le CP 8/1 et le CP 8/2 prennent en charge les configurations de bus et à branche en T de bus complexe (voir A.4.3.1.5.2). Il n'est pas recommandé d'utiliser une topologie purement en étoile, car il n'y a pas d'extrémité de ligne principale définie pour la mise en place des terminaisons.

A.4.3.1.3 Topologies physiques de base des réseaux actifs

Non applicable.

A.4.3.1.4 Combinaison de topologies de base

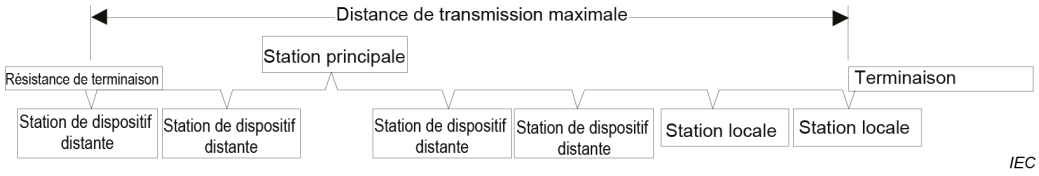
A.4.3.1.5 Exigences spécifiques pour les CP

Remplacement:

A.4.3.1.5.1 Configuration intermédiaire (de transfert direct – de jonction) de topologie en bus

La configuration intermédiaire de topologie en bus est mise en œuvre avec un câble spécifique et des connecteurs de type intermédiaire (de transfert direct – de jonction), un pour chaque dispositif, comme représenté à la Figure A.1.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV



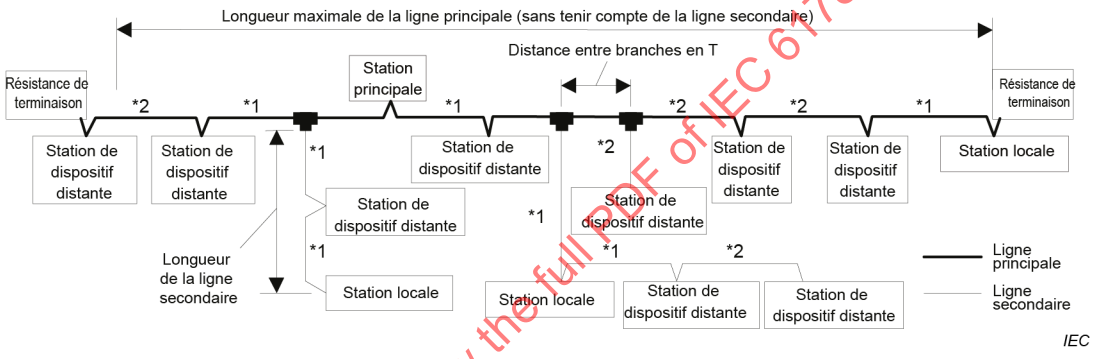
NOTE La distance de câble minimale entre dispositifs est de 20 cm.

Figure A.1 – Configuration de connecteur intermédiaire

A.4.3.1.5.2 Topologie en bus à branche en T

La topologie en bus à branche en T est représentée à la Figure A.2. Il s'agit d'une modification de la topologie en bus de ces lignes secondaires, différentes des lignes de dérivation, qu'il est possible d'ajouter à un segment de ligne principale.

Les types de câbles peuvent être combinés dans le réseau, mais ils doivent rester cohérents avec une ligne secondaire ou un segment de ligne principale donné.



NOTE 1 La distance de câble minimale entre la station principale ou locale et une autre station dépend de la configuration du réseau.

NOTE 2 La distance de câble minimale entre stations distantes est de 30 cm.

Figure A.2 – Topologie en bus à branche en T

A.4.3.1.6 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.4.3.2 Caractéristiques du réseau

A.4.3.2.1 Généralités

A.4.3.2.2 Caractéristiques du réseau pour un câblage symétrique ne reposant pas sur Ethernet

Remplacement:

Le Tableau A.1 fournit des valeurs applicables aux CP 8/1 et CP 8/2 pour la topologie en bus fondées sur le modèle de l'IEC 61918:2018, Tableau 1.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Tableau A.1 – Caractéristiques de base du réseau pour un câblage symétrique ne reposant pas sur Ethernet

Caractéristique	CP 8/1, CP 8/2
Technologie de transmission de base	Type 18
Longueur / vitesse de transmission	**Longueur de segment** m
156 kbit/s	1 200
625 kbit/s	900
2,5 Mbit/s	400
5 Mbit/s	160
10 Mbit/s	100
Capacité maximale	**Nbre max.**
Dispositifs / segment	64
Dispositifs / réseau	64

Ajout:

Le Tableau A.2 fournit des valeurs applicables aux CP 8/1 et CP 8/2 pour la topologie en bus à branche en T.

Tableau A.2 – Caractéristiques du réseau de bus à branche en T

Caractéristique	Vitesse de transmission		Commentaire
Longueur / vitesse de transmission	156 kbit/s	625 kbit/s	Vitesses supérieures non prises en charge
Longueur maximale de segment de la ligne principale (m)	500	100	Ne comprend pas la longueur de la ligne secondaire
Longueur maximale de la ligne secondaire (m)	8	8	
Longueur totale maximale de ligne secondaire (m)	200	50	Total de toutes les lignes secondaires combinées
Capacité maximale			
Dispositifs au maximum / segment de ligne secondaire	6	6	

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

A.4.3.2.3 Caractéristiques du réseau pour un câblage symétrique reposant sur Ethernet

Non applicable.

A.4.3.2.4 Caractéristiques du réseau pour un câblage à fibres optiques

Non applicable.

A.4.3.2.5 Caractéristiques spécifiques du réseau

A.4.3.2.6 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.4.4 Sélection et utilisation de composants de câblage

A.4.4.1 Sélection du câble

A.4.4.1.1 Description commune

A.4.4.1.2 Câbles en cuivre

A.4.4.1.2.1 Câbles symétriques pour les CP reposant sur Ethernet

Non applicable.

A.4.4.1.2.2 Câbles en cuivre pour les CP ne reposant pas sur Ethernet

Ajout:

Les câbles non blindés ne doivent pas être utilisés avec les réseaux CP 8/1 et CP 8/2.

Remplacement:

Le Tableau A.3 fournit des valeurs fondées sur le modèle donné dans l'IEC 61918:2018, Tableau 4.

Tableau A.3 – Informations applicables aux câbles en cuivre: câbles fixes

Caractéristique	CP 8/1, CP 8/2
Impédance nominale du câble et tolérance	(110 ± 15) Ω à 1 MHz (110 ± 6) Ω à 5 MHz
DCR des conducteurs	≤ 37,8 Ω/km
DCR du blindage	–
Nombre de conducteurs	3
Blindage	avec fil de décharge
Code de couleur du conducteur	signal DA = BU (bleu) signal DB = WH (blanc) signal DG = YE (jaune)
Exigences de couleur de gaine extérieure	–
Matériau de gaine extérieure	En fonction de l'application
Résistance aux environnements rigoureux (par exemple UV, résistance à l'huile, LS0H)	En fonction de l'application
Évaluation par les organismes de certification	En fonction de l'application
Section du conducteur	0,518 mm^2 (20 AWG)
Résistance diélectrique	≥ 500 V_{eff}
Résistance d'isolement (après l'essai de résistance diélectrique)	≥ 10 000 MΩ · km
Capacité mutuelle (à 1 kHz)	≤ 60 nF / km
Affaiblissement maximal pour 100 m	≤ 1,6 dB à 1 MHz ≤ 3,5 dB à 5 MHz

A.4.4.1.3 Câbles pour installation sans fil

A.4.4.1.4 Câbles à fibres optiques

Non applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

A.4.4.1.5 Câbles symétriques et à fibres optiques spéciaux

Non applicable.

A.4.4.1.6 Exigences spécifiques pour les CP

Ajout:

Le câblage minimal entre les trois dispositifs de communication est représenté à la Figure A.3.

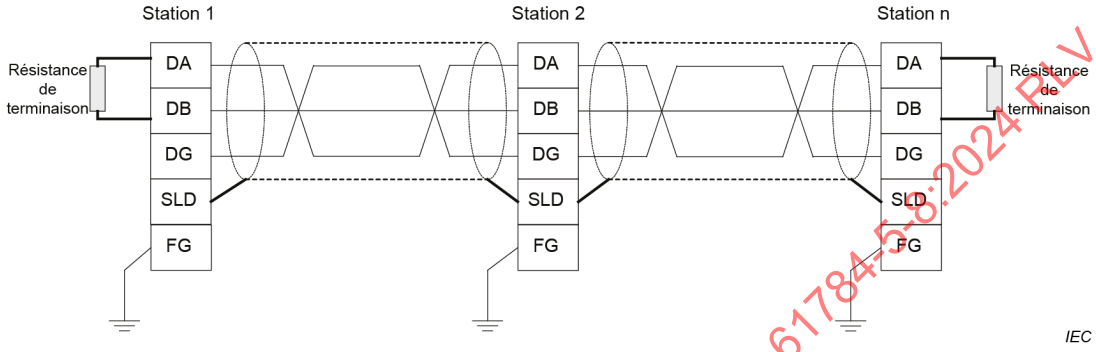


Figure A.3 – Câblage

A.4.4.1.7 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.4.4.2 Sélection du matériel de connexion

A.4.4.2.1 Description commune

A.4.4.2.2 Matériel de connexion pour les CP de câblage symétrique reposant sur Ethernet

Non applicable.

A.4.4.2.3 Matériel de connexion pour les CP de câblage en cuivre ne reposant pas sur Ethernet

Modification:

Il n'existe pas de spécification détaillée relative aux connecteurs physiques pour les réseaux CP 8/1 et CP 8/2. Le connecteur doit être de type à vis, chaque borne pouvant recevoir deux conducteurs du type spécifié pour le câble de support. Il est également exigé de prévoir suffisamment de bornes pour les cinq points de connexion, ou de prévoir quatre points de connexion avec un point de connexion séparé pour le circuit FG. Voir la Figure A.3.

Remplacement:

Le Tableau A.4 fournit des valeurs fondées sur le modèle donné dans l'IEC 61918:2018, Tableau 8.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Tableau A.4 – Connecteurs pour les CP de câblage en cuivre ne reposant pas sur Ethernet

	IEC 60807-2 ou IEC 60807-3	IEC 61076-2-101			IEC 61169-8	ANSI/(NFPA) T3.5.29 R1-2007		Autres		
	D-Sub	M12-5 avec codage A	M12-5 avec codage B	M12-n avec codage X	Coaxial (BNC)	M 18	7/8-16 UN-2B THD	Type ouvert	Bornier	Autres
CP 8/1	Non	Non	Non	Non	Non	Non	Non	Oui	Oui	≥ 4 broches
CP 8/2	Non	Non	Non	Non	Non	Non	Non	Oui	Oui	≥ 4 broches

A.4.4.2.4 Matériel de connexion des installations sans fil

A.4.4.2.5 Matériel de connexion pour câblage à fibres optiques

Non applicable.

A.4.4.2.6 Exigences spécifiques pour les CP

Non applicable.

A.4.4.2.7 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.4.4.3 Connexions dans un canal/une liaison permanente

A.4.4.3.1 Description commune

A.4.4.3.2 Connexions et épissures de câblage symétrique pour les CP reposant sur Ethernet

Non applicable.

A.4.4.3.3 Connexions et épissures de câblage en cuivre pour les CP ne reposant pas sur Ethernet

A.4.4.3.3.1 Description commune

A.4.4.3.3.2 Distance minimale entre les connexions

A.4.4.3.3.3 Épissures de câblage en cuivre

Non applicable.

A.4.4.3.3.4 Connexions de cloison de câblage en cuivre

Non applicable.

A.4.4.3.3.5 Coupleurs prise-prise de câblage en cuivre (adaptateurs prise-prise)

Non applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

A.4.4.3.4 Connexions et épissures de câblage à fibres optiques pour les CP reposant sur Ethernet

Non applicable.

A.4.4.3.5 Connexions et épissures de câblage à fibres optiques pour les CP ne reposant pas sur Ethernet

Non applicable.

A.4.4.3.6 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.4.4.4 Terminaisons

A.4.4.4.1 Description commune

A.4.4.4.2 Exigences spécifiques pour les CP

Ajout:

La ligne principale doit être terminée à chacune de ses deux extrémités par une résistance de 110 Ω ± 5 % d'une puissance assignée d'au moins 0,5 W.

A.4.4.4.3 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.4.4.5 Emplacement et connexion du dispositif

A.4.4.5.1 Description commune

A.4.4.5.2 Exigences spécifiques pour les CP

Non applicable.

A.4.4.5.3 Exigences particulières pour l'installation sans fil

Non applicable.

A.4.4.5.4 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.4.4.6 Codage et étiquetage

A.4.4.6.1 Description commune

A.4.4.6.2 Exigences supplémentaires pour les CP

A.4.4.6.3 Exigences spécifiques pour les CP

Non applicable.

A.4.4.6.4 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

A.4.4.7 Mise à la terre et équipotentialité du matériel et des dispositifs et câblage blindé

A.4.4.7.1 Description commune

A.4.4.7.2 Équipotentialité et mise à la terre des enveloppes et des chemins

A.4.4.7.3 Méthodes de mise à la terre

A.4.4.7.3.1 Équipotentielle

Non applicable.

A.4.4.7.3.2 En étoile

A.4.4.7.3.3 Mise à la terre du matériel (des dispositifs)

Ajout:

Un circuit de mise à la terre RC parallèle ne doit pas être utilisé pour le CP 8/1 ou le CP 8/2.

A.4.4.7.3.4 Barres de bus en cuivre

A.4.4.7.4 Mise à la terre du blindage

A.4.4.7.4.1 Absence de mise à la terre ou de circuit RC parallèle

Non applicable.

A.4.4.7.4.2 Direct

A.4.4.7.4.3 Dérivées de circuit RC direct et parallèle

Non applicable.

A.4.4.7.5 Exigences spécifiques pour les CP

Non applicable.

A.4.4.7.6 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.4.4.8 Stockage et transport des câbles

A.4.4.8.1 Description commune

A.4.4.8.2 Exigences spécifiques pour les CP

Non applicable.

A.4.4.8.3 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.4.4.9 Routage des câbles

A.4.4.10 Séparation des circuits

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

A.4.4.11 Protection mécanique des composants de câblage

A.4.4.11.1 Description commune

A.4.4.11.2 Exigences spécifiques pour les CP

Non applicable.

A.4.4.11.3 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.4.4.12 Installation dans des zones particulières

A.4.5 Documentation de planification du câblage

A.4.6 Vérification de la spécification de planification du câblage

A.5 Mise en œuvre de l'installation

A.5.1 Exigences générales

A.5.1.1 Description commune

A.5.1.2 Installation des CP

Non applicable.

A.5.1.3 Installation du câblage générique dans des locaux industriels

Non applicable.

A.5.2 Installation des câbles

A.5.2.1 Exigences générales relatives aux types de câblage

A.5.2.1.1 Stockage et installation

A.5.2.1.2 Protection des câbles de communication contre les éventuels dommages mécaniques

Remplacement:

Le Tableau A.5 fournit des valeurs fondées sur le modèle donné dans l'IEC 61918:2018, Tableau 18.

Tableau A.5 – Paramètres pour câbles symétriques

Caractéristique		Valeur
Effort mécanique	Rayon minimal de courbure, une seule courbure (mm)	[a]
	Rayon de courbure, plusieurs courbures (mm)	[a]
	Efforts de traction (N)	[a]
	Efforts de tension permanents (N)	[a]
	Forces latérales maximales (N/cm)	[a]
	Plage de températures pendant l'installation (°C)	[a]
[a] Selon le type de câble: voir la fiche technique du fabricant		

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

A.5.2.1.3 Prévention de formation de boucles

A.5.2.1.4 Torsion

A.5.2.1.5 Résistance à la traction (des câbles installés)

A.5.2.1.6 Rayon de courbure

A.5.2.1.7 Force de traction

A.5.2.1.8 Ajustement du serre-câble

A.5.2.1.9 Installation des câbles dans l'armoire et les enveloppes

A.5.2.1.10 Installation sur des parties mobiles

A.5.2.1.11 Écrasement du câble

A.5.2.1.12 Installation des câbles de flexion continue

A.5.2.1.13 Instructions supplémentaires pour l'installation des câbles à fibres optiques

Non applicable.

A.5.2.2 Pose et routage

A.5.2.3 Exigences spécifiques pour les CP

Non applicable.

A.5.2.4 Exigences particulières pour l'installation sans fil

Non applicable.

A.5.2.5 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.5.3 Installation de connecteur

A.5.3.1 Description commune

Remplacement de l'alinéa 4:

Lors de la réalisation des ensembles de câbles ou de cordons, l'installateur doit se conformer aux spécifications données dans le Tableau A.6 pour déterminer le câblage de connexion approprié.

Ajout:

Tableau A.6 – Affectations des conducteurs de câble

Signal	Couleur du conducteur
DA	BU
DB	WH
DG	YE
SLD	Décharge

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

A.5.3.2 Connecteurs blindés

Remplacement du dernier alinéa:

Les connecteurs blindés doivent être montés conformément aux procédures recommandées par le fabricant.

A.5.3.3 Connecteurs non blindés

Non applicable.

A.5.3.4 Exigences spécifiques pour les CP

Non applicable.

A.5.3.5 Exigences particulières pour l'installation sans fil

Non applicable.

A.5.3.6 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.5.4 Installation des terminaisons

A.5.4.1 Description commune

A.5.4.2 Exigences spécifiques pour les CP

Ajout:

La ligne principale doit être terminée à chacune de ses deux extrémités par une résistance de 110 Ω ± 5 % d'une puissance assignée d'au moins 0,5 W.

A.5.5 Installation du dispositif

A.5.6 Codage et étiquetage

A.5.6.1 Description commune

A.5.6.2 Exigences spécifiques pour les CP

Ajout:

Les dispositifs doivent porter une étiquette du fabricant comportant la mention "V2" pour les réseaux CP 8/2.

A.5.7 Mise à la terre et équipotentialité du matériel et des dispositifs et câblage blindé

A.5.7.1 Description commune

A.5.7.2 Équipotentialité et mise à la terre des enveloppes et des chemins

A.5.7.3 Méthodes de mise à la terre

A.5.7.3.1 Équipotentielle

Non applicable.

A.5.7.3.2 En étoile

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

A.5.7.3.3 Mise à la terre du matériel (des dispositifs)

A.5.7.3.3.1 Absence de mise à la terre ou de circuit RC parallèle

Non applicable.

A.5.7.3.3.2 Direct

A.5.7.3.3.3 Installation des barres de bus en cuivre

A.5.7.4 Méthodes de mise à la terre du blindage

A.5.7.4.1 Généralités

A.5.7.4.2 RC parallèle

Non applicable.

A.5.7.4.3 Direct

A.5.7.4.4 Dérivées de circuit RC direct et parallèle

Non applicable.

A.5.7.5 Exigences spécifiques pour les CP

Non applicable.

A.5.7.6 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

A.5.8 Documentation du câblage comme exécuté

A.6 Installation, vérification et essai de réception de l'installation

A.6.1 Généralités

A.6.2 Vérification de l'installation

A.6.2.1 Généralités

A.6.2.2 Vérification conformément à la documentation de planification du câblage

A.6.2.3 Vérification de la mise à la terre et de l'équipotentialité

A.6.2.4 Vérification de la mise à la terre du blindage

A.6.2.5 Vérification du système de câblage

A.6.2.6 Vérification de la sélection du câble

A.6.2.6.1 Description commune

A.6.2.6.2 Exigences spécifiques pour les CP

Non applicable.

A.6.2.6.3 Exigences particulières pour l'installation sans fil

Non applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

A.6.2.7 Vérification du connecteur

A.6.2.8 Vérification de la connexion

A.6.2.8.1 Description commune

A.6.2.8.2 Nombre de connexions et de connecteurs

A.6.2.8.3 Table de correspondance des fils

Remplacement:

Le vérificateur doit s'assurer que la mise en correspondance des fils est réalisée conformément à la documentation de planification du câblage.

A.6.2.9 Vérification des terminaisons

A.6.2.9.1 Description commune

A.6.2.9.2 Exigences spécifiques pour les CP

Ajout:

Il doit être vérifié, par examen visuel ou mesure électrique, qu'exactement deux (2) terminaisons sont installées sur la ligne principale et que chacune est située à chaque extrémité opposée de la ligne principale.

A.6.2.10 Vérification du codage et de l'étiquetage

Ajout:

Il doit être vérifié que les dispositifs portent une étiquette du fabricant comportant la mention "V2" pour les réseaux CP 8/2.

A.6.2.11 Rapport de vérification

A.6.3 Essai de réception de l'installation

A.6.3.1 Généralités

A.6.3.2 Essai de réception du câblage reposant sur Ethernet

Non applicable.

A.6.3.3 Essai de réception du câblage ne reposant pas sur Ethernet

Non applicable.

A.6.3.4 Exigences particulières pour l'installation sans fil

Non applicable.

A.6.3.5 Rapport d'essai de réception

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

A.7 Administration de l’installation

Le paragraphe 7.8 ne s’applique pas.

A.8 Maintenance et dépannage de l’installation

Le paragraphe 8.4 ne s’applique pas.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Annexe B
(normative)

Profil d'installation spécifique au CP 8/3 (CC-Link LT™)

B.1 Domaine d'application du profil d'installation

Ajout:

La présente annexe définit le profil d'installation du profil de communication CP 8/3 (CC-Link/LT™). Le CP 8/3 est spécifié dans l'IEC 61784-1-8.

Les réseaux CP 8/3 mettent en œuvre une unité de raccordement au support conformément à l'ISO/IEC 8482 (Interconnexions multipoints par paire torsadée) et issue du document ANSI TIA/EIA-485-A.

B.2 Références normatives

Ajout:

ISO/IEC 8482, *Information technology – Telecommunications and information exchange between systems – Twisted pair multipoint interconnections* (disponible en anglaise seulement)

ANSI TIA/EIA-485-A, *Electrical Characteristics of Generators and Receivers for Use in Balanced Digital Multipoint Systems* (disponible en anglais seulement)

B.3 Termes, définitions et abréviations utilisés pour le profil d'installation

B.3.1 Termes et définitions

B.3.2 Abréviations

B.3.3 Conventions relatives aux profils d'installation

Non applicable.

B.4 Planification de l'installation

B.4.1 Généralités

B.4.1.1 Objectif

B.4.1.2 Câblage dans les locaux industriels

Ajout:

Le câblage générique conformément à l'ISO/IEC 11801-3 ne convient pas pour le câblage des réseaux CP 8/3.

B.4.1.3 Processus de planification

B.4.1.4 Exigences spécifiques pour les CP

Non applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

B.4.1.5 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

B.4.2 Exigences de planification

B.4.2.1 Sûreté

B.4.2.1.1 Généralités

B.4.2.1.2 Sécurité électrique

B.4.2.1.3 Sécurité fonctionnelle

B.4.2.1.4 Sécurité intrinsèque

Non applicable.

B.4.2.1.5 Sécurité des systèmes de communication par fibres optiques

Non applicable.

B.4.2.2 Sécurité

B.4.2.3 Considérations environnementales et compatibilité électromagnétique

B.4.2.4 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

B.4.3 Capacités du réseau

B.4.3.1 Topologie du réseau

B.4.3.1.1 Description commune

B.4.3.1.2 Topologies physiques de base des réseaux passifs

Modification:

La topologie en bus doit être utilisée pour les réseaux passifs CP 8/3.

B.4.3.1.3 Topologies physiques de base des réseaux actifs

Non applicable.

B.4.3.1.4 Combinaison de topologies de base

B.4.3.1.5 Exigences spécifiques pour les CP

Ajout:

B.4.3.1.5.1 Généralités

Le CP 8/3 utilise un support à alimentation électrique tel que représenté à la Figure B.1.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

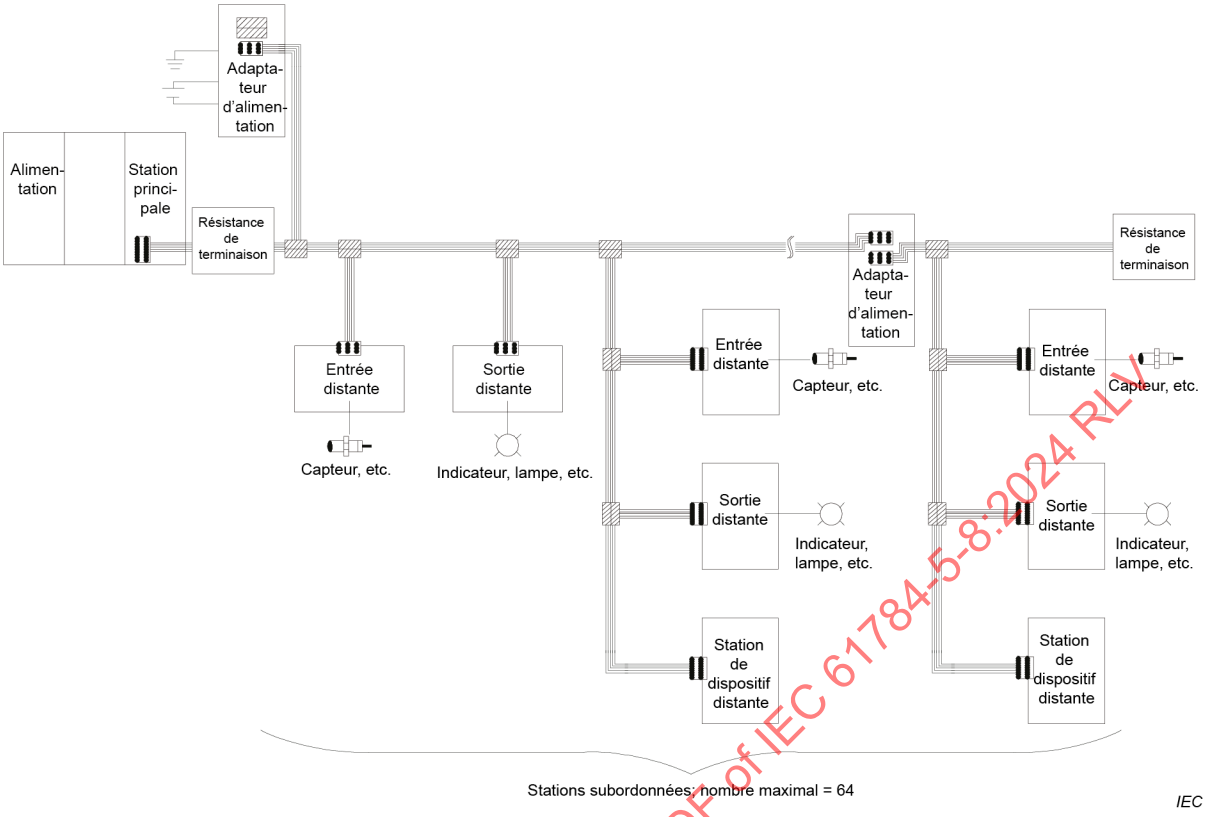


Figure B.1 – Topologie du réseau à alimentation électrique

B.4.3.1.5.2 Topologie en bus à branche en T

Une topologie en bus à branche en T est représentée à la Figure B.2. Il s'agit d'une modification de la topologie en bus ou linéaire de ces lignes secondaires, différentes des lignes de dérivation, qu'il est possible d'ajouter à un segment de ligne principale.

Les types de câbles peuvent être combinés dans le réseau, mais ils doivent rester cohérents avec une ligne secondaire ou un segment de ligne principale donné.

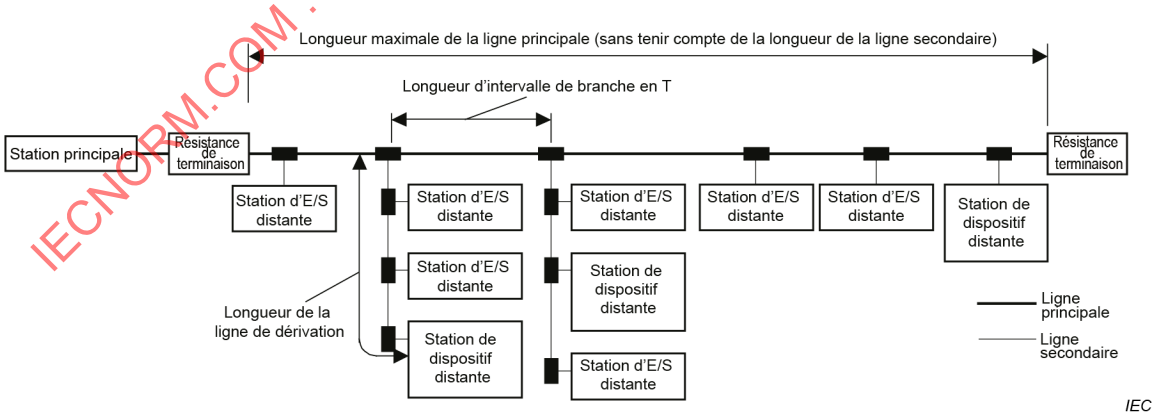


Figure B.2 – Topologie en bus à branche en T

B.4.3.1.6 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

B.4.3.2 Caractéristiques du réseau

B.4.3.2.1 Généralités

B.4.3.2.2 Caractéristiques du réseau pour un câblage symétrique ne reposant pas sur Ethernet

Remplacement:

Le Tableau B.1 fournit des valeurs fondées sur le modèle donné dans l'IEC 61918:2018, Tableau 1.

Tableau B.1 – Caractéristiques de base du réseau pour un câblage symétrique ne reposant pas sur Ethernet

Caractéristique	CP 8/3
Technologie de transmission de base	Type 18
Longueur / vitesse de transmission	**Longueur de segment** m
156 kbit/s	500
625 kbit/s	100
2,5 Mbit/s	35
Capacité maximale	**Nbre max.**
Dispositifs / segment	64
Dispositifs / réseau	64

Ajout:

Les réseaux CP 8/3 imposent des exigences supplémentaires sur les longueurs des composants de bus, tel que spécifié dans le Tableau B.2.

Tableau B.2 – Limites de longueur de topologie supplémentaires pour le CP 8/3

Paramètre	Valeur			Commentaire
	156 kbit/s	**625** kbit/s	**2 500** kbit/s	
Longueur maximale de segment de ligne principale	500 m	100 m	35 m	Non compris la longueur de la ligne secondaire
Longueur maximale de la ligne secondaire	60 m	16 m	4 m	Longueur du câble par ligne secondaire
Longueur totale maximale de ligne secondaire	200 m	50 m	15 m	Longueur totale de toutes les lignes secondaires combinées
Longueur maximale de la ligne de dérivation	60 m	16 m	4 m	Les lignes de dérivation doivent être comprises dans le calcul de la longueur totale de la ligne secondaire
Longueur maximale du câble entre les dispositifs connectés	500 m	100 m	35 m	
Longueur maximale du câble entre les branches (lignes secondaires) en T	Aucune limite			
Nombre maximal de dispositifs connectés par ligne secondaire	8			

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

B.4.3.2.3 Caractéristiques du réseau pour un câblage symétrique reposant sur Ethernet

Non applicable.

B.4.3.2.4 Caractéristiques du réseau pour un câblage à fibres optiques

Non applicable.

B.4.3.2.5 Caractéristiques spécifiques du réseau

B.4.3.2.6 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

B.4.4 Sélection et utilisation de composants de câblage

B.4.4.1 Sélection du câble

B.4.4.1.1 Description commune

B.4.4.1.2 Câbles en cuivre

B.4.4.1.2.1 Câbles symétriques pour les CP reposant sur Ethernet

Non applicable.

B.4.4.1.2.2 Câbles en cuivre pour les CP ne reposant pas sur Ethernet

Ajout:

Un bus de réseau CP 8/3 doit être mis en œuvre au moyen d'un câble plat non blindé à 4 conducteurs tel que représenté à la Figure B.3, la Figure B.4 et la Figure B.5, et spécifié dans le Tableau B.3.

Le segment de ligne principale doit être construit en utilisant uniquement un seul type de câble (plat, rond/préférentiel, ou rond/alterné). De même, chaque ligne secondaire doit être construite avec un seul type de câble. Cependant, il n'est pas nécessaire que les types de câbles de ligne secondaire correspondent au type de câble de ligne principale ou à celui d'autres lignes secondaires dans le segment de bus.

Dimensions exprimées en millimètres

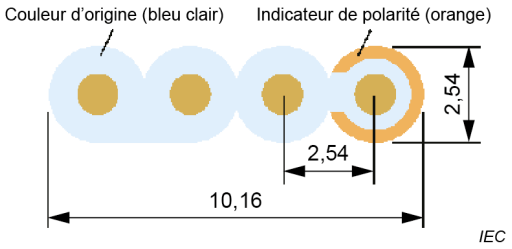


Figure B.3 – Section de câble plat – avec détrompeur

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Dimensions exprimées en millimètres

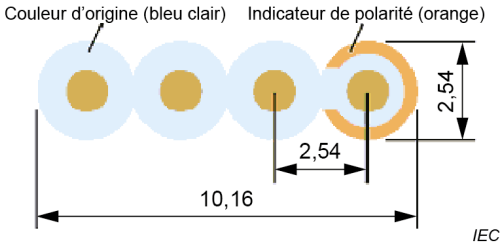


Figure B.4 – Section de câble plat – sans détrompeur

Dimensions en mètres

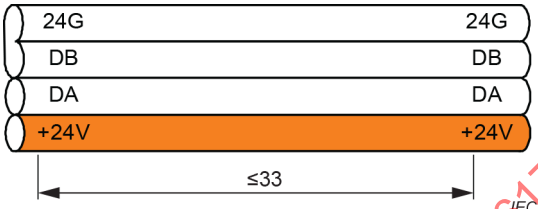


Figure B.5 – Indicateur de polarité de câble plat

Remplacement:

Le Tableau B.3 fournit des valeurs fondées sur le modèle donné dans l'IEC 61918:2018, Tableau 5.

Tableau B.3 – Informations applicables aux câbles en cuivre: cordons

Caractéristique	CP 8/3, plat
Impédance nominale du câble et tolérance	(130 ± 25) Ω
DCR des conducteurs	≤ 23,4 Ω / km
DCR du blindage	–
Nombre de conducteurs	4
Blindage	–
Code de couleur du conducteur	Voir la Figure B.3, la Figure B.4 et la Figure B.5
Exigences de couleur de gaine extérieure	Voir la Figure B.3, la Figure B.4 et la Figure B.5
Matériau de gaine extérieure	Résine souple
Résistance aux environnements rigoureux (par exemple UV, résistance à l'huile, LS0H)	–
Évaluation par les organismes de certification	–
Section du conducteur	0,823 mm^2 (18 AWG)
Résistance diélectrique (conducteur – conducteur)	≥ 500 V_{eff}
Résistance diélectrique (conducteur – blindage)	–
Résistance d'isolement (après l'essai de résistance diélectrique)	≥ 10 MΩ · km
Capacité mutuelle (à 1 kHz)	≤ 55 nF / km
Affaiblissement maximal pour 100 m	≤ 3,04 dB à 1 MHz ≤ 4,83 dB à 2 MHz

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

B.4.4.1.3 Câbles pour installation sans fil

B.4.4.1.4 Câbles à fibres optiques

Non applicable.

B.4.4.1.5 Câbles symétriques et à fibres optiques spéciaux

Non applicable.

B.4.4.1.6 Exigences spécifiques pour les CP

Ajout:

Le câblage minimal entre les trois dispositifs de communication est représenté à la Figure B.6.

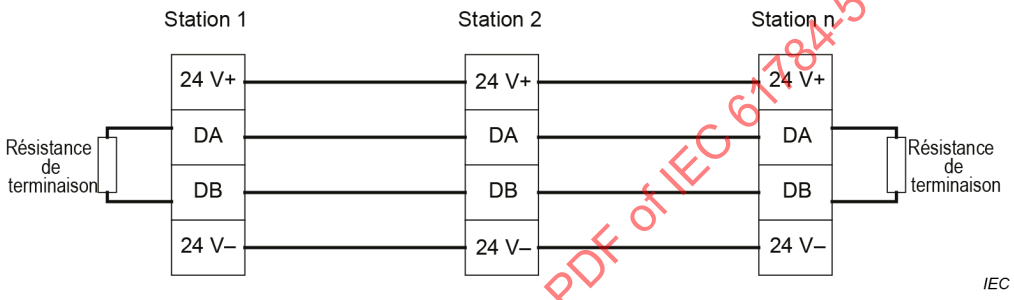


Figure B.6 – Câblage

B.4.4.1.7 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

B.4.4.2 Sélection du matériel de connexion

B.4.4.2.1 Description commune

B.4.4.2.2 Matériel de connexion pour les CP de câblage symétrique reposant sur Ethernet

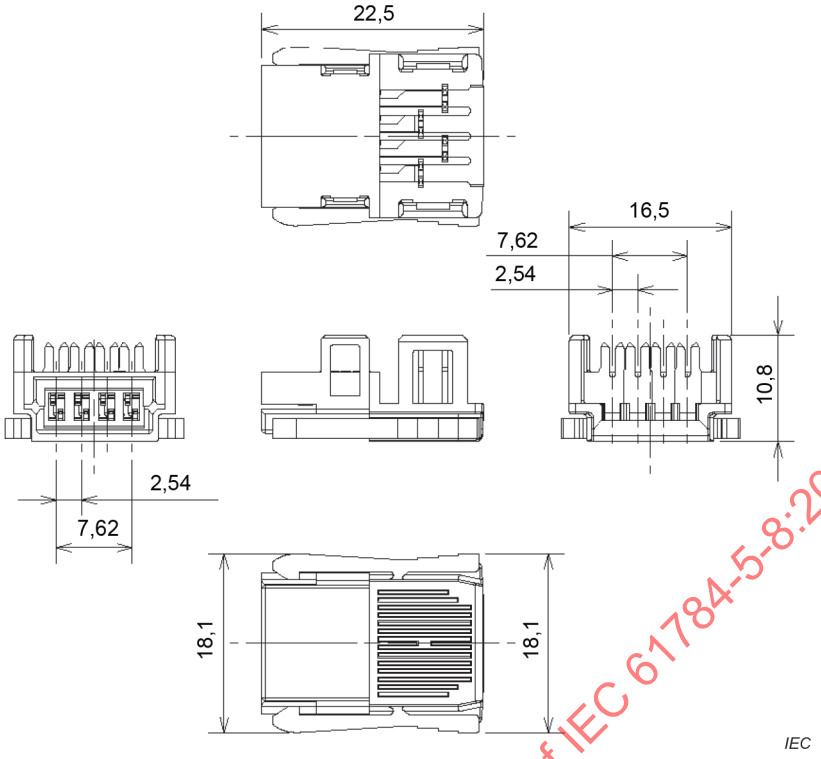
Non applicable.

B.4.4.2.3 Matériel de connexion pour les CP de câblage en cuivre ne reposant pas sur Ethernet

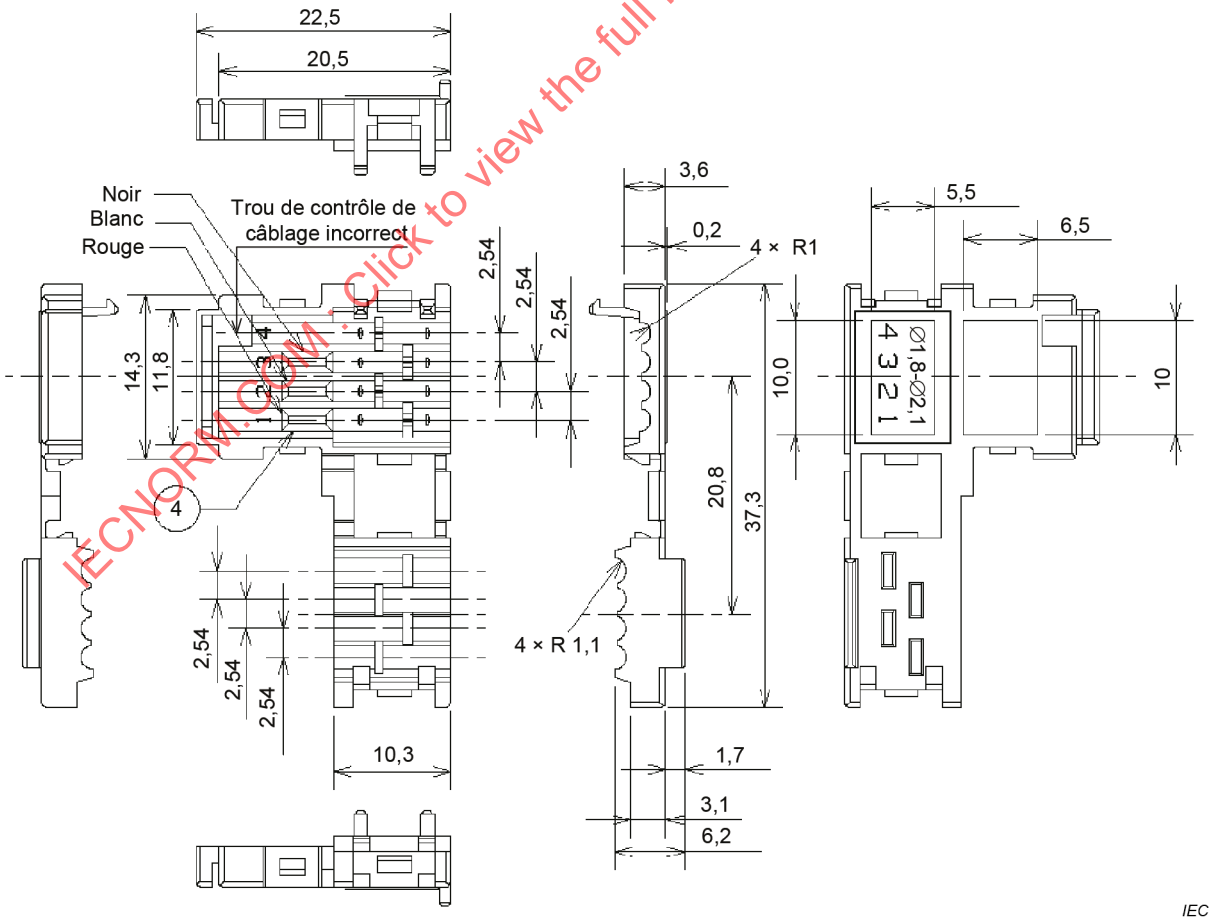
Modification:

Les spécifications détaillées relatives aux connecteurs physiques pour les réseaux CP 8/3 sont représentées à la Figure B.7.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV



a) Boîtier et connecteur



b) Couvercle de borne

Figure B.7 – Connecteur de câble plat et couvercle de borne

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

Remplacement:

Le Tableau B.4 fournit des valeurs fondées sur le modèle donné dans l'IEC 61918:2018, Tableau 8.

Tableau B.4 – Connecteurs pour les CP de câblage en cuivre ne reposant pas sur Ethernet

	IEC 60807-2 ou IEC 60807-3	IEC 61076-2-101			IEC 61169-8	ANSI/(NFPA) T3.5.29 R1-2007		Autres		
	D-Sub	M12-5 avec codage A	M12-5 avec codage B	M12-n avec codage X	Coaxial (BNC)	M 18	7/8-16 UN-2B THD	Type ouvert	Bornier	Autres
CP 8/3	Non	Non	Non	Non	Non	Non	Non	Non	Non	Voir la Figure B.7.

B.4.4.2.4 Matériel de connexion des installations sans fil

B.4.4.2.5 Matériel de connexion pour câblage à fibres optiques

Non applicable.

B.4.4.2.6 Exigences spécifiques pour les CP

Non applicable.

B.4.4.2.7 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

B.4.4.3 Connexions dans un canal/une liaison permanente

B.4.4.3.1 Description commune

B.4.4.3.2 Connexions et épissures de câblage symétrique pour les CP reposant sur Ethernet

Non applicable.

B.4.4.3.3 Connexions et épissures de câblage en cuivre pour les CP ne reposant pas sur Ethernet

B.4.4.3.3.1 Description commune

B.4.4.3.3.2 Distance minimale entre les connexions

B.4.4.3.3.3 Épissures de câblage en cuivre

Non applicable.

B.4.4.3.3.4 Connexions de cloison de câblage en cuivre

Non applicable.

B.4.4.3.3.5 Coupleurs prise-prise de câblage en cuivre (adaptateurs prise-prise)

Non applicable.

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

B.4.4.3.4 Connexions et épissures de câblage à fibres optiques pour les CP reposant sur Ethernet

Non applicable.

B.4.4.3.5 Connexions et épissures de câblage à fibres optiques pour les CP ne reposant pas sur Ethernet

Non applicable.

B.4.4.3.6 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

B.4.4.4 Terminaisons

B.4.4.4.1 Description commune

B.4.4.4.2 Exigences spécifiques pour les CP

Ajout:

La ligne principale doit être terminée à chacune de ses deux extrémités par une résistance de 680 Ω ± 5 %.

B.4.4.4.3 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

B.4.4.5 Emplacement et connexion du dispositif

B.4.4.5.1 Description commune

B.4.4.5.2 Exigences spécifiques pour les CP

Non applicable.

B.4.4.5.3 Exigences particulières pour l'installation sans fil

Non applicable.

B.4.4.5.4 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

B.4.4.6 Codage et étiquetage

B.4.4.6.1 Description commune

B.4.4.6.2 Exigences supplémentaires pour les CP

B.4.4.6.3 Exigences spécifiques pour les CP

Non applicable.

B.4.4.6.4 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-1

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

B.4.4.7 Mise à la terre et équipotentialité du matériel et des dispositifs et câblage blindé

B.4.4.7.1 Description commune

B.4.4.7.1.1 Exigences fondamentales

B.4.4.7.1.2 Tâches du planificateur

B.4.4.7.1.3 Méthodes de contrôle des différences de potentiel dans le système de mise à la terre

B.4.4.7.1.4 Sélection des systèmes de mise à la terre et d'équipotentialité

B.4.4.7.2 Équipotentialité et mise à la terre des enveloppes et des chemins

B.4.4.7.2.1 Dimension et longueur des conducteurs d'égalisation et de mise à la terre

B.4.4.7.2.2 Tresses d'équipotentialité et dimensions

B.4.4.7.2.3 Préparation de surface et méthodes

B.4.4.7.2.4 Équipotentialité et mise à la terre

B.4.4.7.3 Méthodes de mise à la terre

B.4.4.7.3.1 Équipotentielle

Non applicable.

B.4.4.7.3.2 En étoile

B.4.4.7.3.3 Mise à la terre du matériel (des dispositifs)

Ajout:

Un circuit de mise à la terre RC parallèle ne doit pas être utilisé pour le CP 8/3.

B.4.4.7.3.4 Barres de bus en cuivre

B.4.4.7.4 Mise à la terre du blindage

Non applicable.

B.4.4.7.5 Exigences spécifiques pour les CP

Non applicable.

B.4.4.7.6 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

B.4.4.8 Stockage et transport des câbles

B.4.4.8.1 Description commune

B.4.4.8.2 Exigences spécifiques pour les CP

Non applicable.

B.4.4.8.3 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV

B.4.4.9 Routage des câbles

B.4.4.10 Séparation des circuits

B.4.4.11 Protection mécanique des composants de câblage

B.4.4.11.1 Description commune

B.4.4.11.2 Exigences spécifiques pour les CP

Non applicable.

B.4.4.11.3 Exigences spécifiques pour le câblage générique conformément à l'ISO/IEC 11801-3

B.4.4.12 Installation dans des zones particulières

B.4.5 Documentation de planification du câblage

B.4.6 Vérification de la spécification de planification du câblage

B.5 Mise en œuvre de l'installation

B.5.1 Exigences générales

B.5.1.1 Description commune

B.5.1.2 Installation des CP

B.5.1.3 Installation du câblage générique dans des locaux industriels

Non applicable.

B.5.2 Installation des câbles

B.5.2.1 Exigences générales relatives aux types de câblage

B.5.2.1.1 Stockage et installation

B.5.2.1.2 Protection des câbles de communication contre les éventuels dommages mécaniques

Remplacement:

Le Tableau B.5 fournit des valeurs fondées sur le modèle donné dans l'IEC 61918:2018, Tableau 18.

Tableau B.5 – Paramètres pour câbles symétriques

Caractéristique		Valeur
Effort mécanique	Rayon minimal de courbure, une seule courbure (mm)	[a]
	Rayon de courbure, plusieurs courbures (mm)	[a]
	Efforts de traction (N)	[a]
	Efforts de tension permanents (N)	[a]
	Forces latérales maximales (N/cm)	[a]
	Plage de températures pendant l'installation (°C)	[a]
[a] Selon le type de câble: voir la fiche technique du fabricant		

IECNORM.COM : Click to view the full PDF of IEC 61784-5-8:2024 RLV