

This is a preview - click here to buy the full publication



IEC 61784-5-20

Edition 1.0 2018-08

INTERNATIONAL STANDARD



**Industrial communication networks – Profiles –
Part 5-20: Installation of fieldbuses – Installation profiles for CPF 20**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 25.040.40; 35.100.40

ISBN 978-2-8322-6011-1

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

CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms, definitions, symbols and abbreviations.....	7
4 CPF 20: Overview of installation profiles	7
5 Installation profile conventions	8
6 Conformance to installation profiles.....	8
Annex A (normative) CP 20/1 (ADS-net/ μ SNETWORK-1000) specific installation profile	10
A.1 Installation profile scope	10
A.2 Normative references.....	10
A.3 Installation profile terms, definitions, and abbreviated terms	10
A.3.1 Terms and definitions	10
A.3.2 Abbreviated terms	10
A.3.3 Conventions for installation profiles	10
A.4 Installation planning.....	11
A.4.1 General	11
A.4.2 Planning requirements.....	11
A.4.3 Network capabilities	11
A.4.4 Selection and use of cabling components	13
A.4.5 Cabling planning documentation.....	20
A.4.6 Verification of cabling planning specification	20
A.5 Installation implementation	20
A.5.1 General requirements	20
A.5.2 Cable installation.....	20
A.5.3 Connector installation.....	22
A.5.4 Terminator installation	22
A.5.5 Device installation	22
A.5.6 Coding and labelling	22
A.5.7 Earthing and bonding of equipment and devices and shield cabling.....	23
A.5.8 As-implemented cabling documentation.....	23
A.6 Installation verification and installation acceptance test	23
A.6.1 General	23
A.6.2 Installation verification.....	23
A.6.3 Installation acceptance test	25
A.7 Installation administration	25
A.8 Installation maintenance and installation troubleshooting.....	25
Annex B (normative) CP 20/2 (ADS-net/NX) specific installation profile	26
B.1 Installation profile scope	26
B.2 Normative references.....	26
B.3 Installation profile terms, definitions, and abbreviated terms	26
B.3.1 Terms and definitions	26
B.3.2 Abbreviated terms	26
B.3.3 Conventions for installation profiles	26
B.4 Installation planning.....	27

B.4.1	General	27
B.4.2	Planning requirements	27
B.4.3	Network capabilities	27
B.4.4	Selection and use of cabling components	29
B.4.5	Cabling planning documentation	36
B.4.6	Verification of cabling planning specification	36
B.5	Installation implementation	36
B.5.1	General requirements	36
B.5.2	Cable installation	36
B.5.3	Connector installation	38
B.5.4	Terminator installation	38
B.5.5	Device installation	38
B.5.6	Coding and labelling	38
B.5.7	Earthing and bonding of equipment and devices and shield cabling	39
B.5.8	As-implemented cabling documentation	39
B.6	Installation verification and installation acceptance test	39
B.6.1	General	39
B.6.2	Installation verification	39
B.6.3	Installation acceptance test	41
B.7	Installation administration	41
B.8	Installation maintenance and installation troubleshooting	41
	Bibliography	42
	Figure 1 – Standards relationships	6
	Table A.1 – Network characteristics for balanced cabling based on Ethernet	12
	Table A.2 – Network characteristics for optical fibre cabling	13
	Table A.3 – Information relevant to copper cable: fixed cables	14
	Table A.4 – Information relevant to copper cable: cords	14
	Table A.5 – Information relevant to optical fibre cables	15
	Table A.6 – Connectors for balanced cabling CPs based on Ethernet	15
	Table A.7 – Optical fibre connecting hardware	16
	Table A.8 – Relationship between FOC and fibre types (CP 20/1)	16
	Table A.9 – Parameters for balanced cables	20
	Table A.10 – Parameters for silica optical fibre cables	21
	Table B.1 – Network characteristics for balanced cabling based on Ethernet	28
	Table B.2 – Network characteristics for optical fibre cabling	29
	Table B.3 – Information relevant to copper cable: fixed cables	30
	Table B.4 – Information relevant to copper cable: cords	30
	Table B.5 – Information relevant to optical fibre cables	31
	Table B.6 – Connectors for balanced cabling CPs based on Ethernet	31
	Table B.7 – Optical fibre connecting hardware	32
	Table B.8 – Relationship between FOC and fibre types (CP 20/2)	32
	Table B.9 – Parameters for balanced cables	36
	Table B.10 – Parameters for silica optical fibre cables	37

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INDUSTRIAL COMMUNICATION NETWORKS –
PROFILES –**

**Part 5-20: Installation of fieldbuses –
Installation profiles for CPF 20**

FOREWORD

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

International Standard IEC 61784-5-20 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

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

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

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

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

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

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

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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

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

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

INTRODUCTION

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

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

For general background on fieldbuses, their profiles, and relationship between the installation profiles specified in this 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 for the benefit of the persons representing the roles in the fieldbus installation process as defined in IEC 61918 (planner, installer, verification personnel, validation personnel, maintenance personnel, administration personnel). By reading the installation profile in conjunction with IEC 61918, these persons immediately know which requirements are common for the installation of all CPs and which are modified or replaced. The conventions used to draft this document are defined in Clause 5. The provision of the installation profiles in one standard for each CPF (for example IEC 61784-5-20 for CPF 20) allows readers to work with standards of a convenient size.

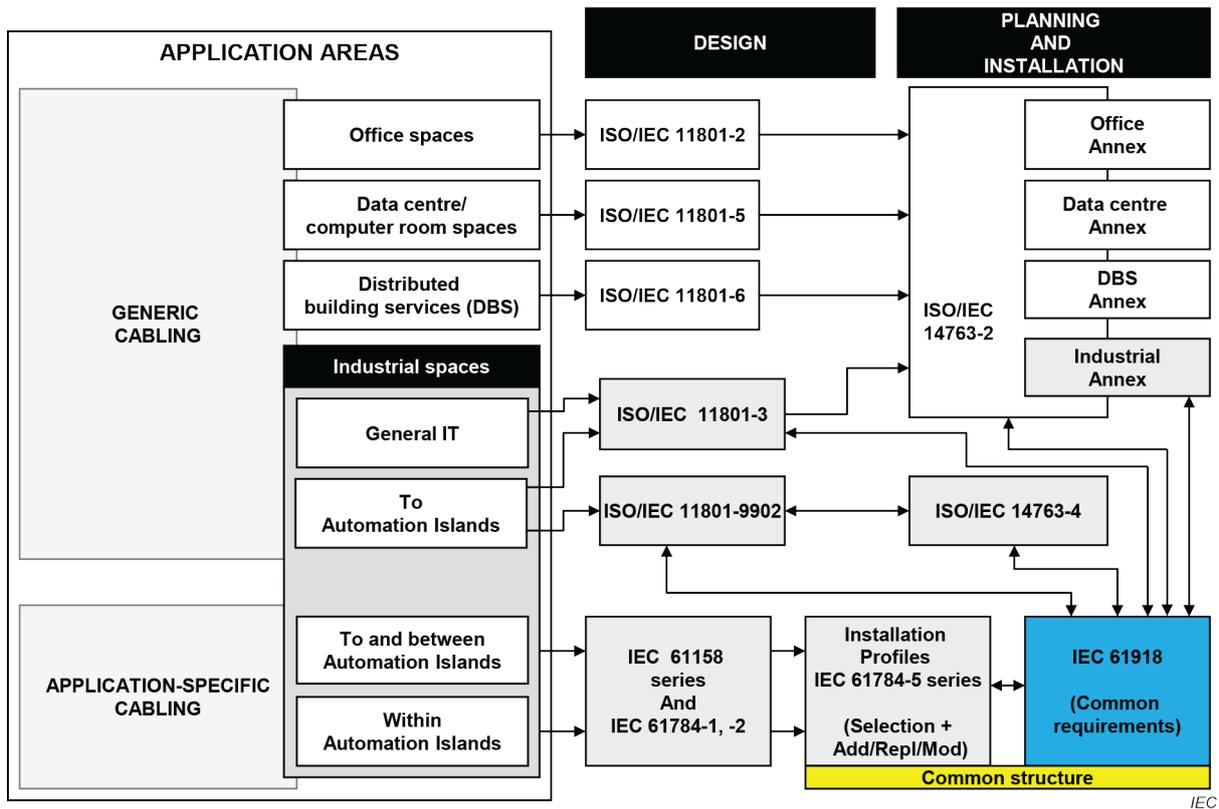


Figure 1 – Standards relationships

INDUSTRIAL COMMUNICATION NETWORKS – PROFILES –

Part 5-20: Installation of fieldbuses – Installation profiles for CPF 20

1 Scope

This part of IEC 61784 specifies the installation profiles for CPF 20 (ADS-net¹).

The installation profiles are specified in the annexes. These annexes are read in conjunction with IEC 61918:2018.

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, *Industrial communication networks – Installation of communication networks in industrial premises*

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

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

¹ ADS-net, ADS-net/μΣNETWORK-1000 and ADS-net/NX are used to describe this document.