

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



IEC 61784-5-21

Edition 1.0 2018-08

INTERNATIONAL STANDARD



**Industrial communication networks – Profiles –
Part 5-21: Installation of fieldbuses – Installation profiles for CPF 21**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 25.040.40; 35.100.40

ISBN 978-2-8322-6012-8

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 and abbreviated terms	7
4 CPF 21: Overview of installation profiles	7
5 Installation profile conventions	8
6 Conformance to installation profiles.....	8
Annex A (normative) CP 21/1 (FL-net) 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.4 Installation planning.....	10
A.4.1 General	10
A.4.2 Planning requirements.....	10
A.4.3 Network capabilities.....	11
A.4.4 Selection and use of cabling components	14
A.4.5 Cabling planning documentation	18
A.4.6 Verification of cabling planning specification.....	18
A.5 Installation implementation	18
A.5.1 General requirements	18
A.5.2 Cable installation	18
A.5.3 Connector installation.....	19
A.5.4 Terminator installation	19
A.5.5 Device installation	19
A.5.6 Coding and labelling	19
A.5.7 Earthing and bonding of equipment and devices and shield cabling.....	19
A.5.8 As-implemented cabling documentation.....	19
A.6 Installation verification and installation acceptance test	19
A.6.1 General	19
A.6.2 Installation verification.....	19
A.6.3 Installation acceptance test	20
A.7 Installation administration	20
A.8 Installation maintenance and installation troubleshooting.....	20
Bibliography.....	21
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	16
Table A.7 – Optical fibre connecting hardware	16

Table A.8 – Relationship between FOC and fibre types (CP 21/1).....	16
Table A.9 – Parameters for balanced cables	18
Table A.10 – Parameters for silica optical fibre cables	18

INTERNATIONAL ELECTROTECHNICAL COMMISSION

INDUSTRIAL COMMUNICATION NETWORKS – PROFILES –

Part 5-21: Installation of fieldbuses – Installation profiles for CPF 21

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 61784-5-21 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

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

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

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

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

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

A list of all parts of IEC 61784-5 series, under the general title *Industrial communications 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 document provides the installation profiles of the communication profiles (CP) of a specific communication profile family (CPF) by stating which requirements of IEC 61918 fully apply and, where necessary, by supplementing, modifying, or replacing the other requirements (see Figure 1).

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

Each CP installation profile is specified in a separate annex of this document. Each annex is structured exactly as the reference 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 document for each CPF (for example IEC 61784-5-21 for CPF 21), allows readers to work with documents of a convenient size.

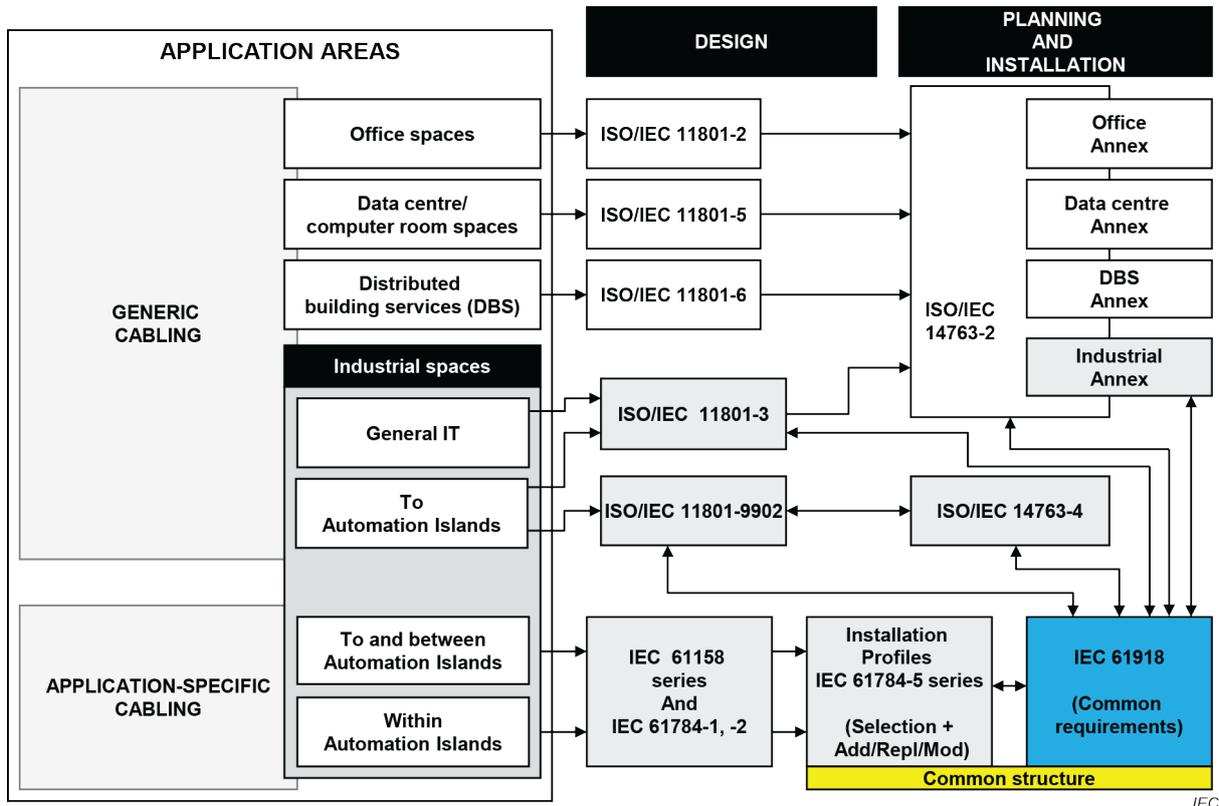


Figure 1 – Standards relationships

INDUSTRIAL COMMUNICATION NETWORKS – PROFILES –

Part 5-21: Installation of fieldbuses – Installation profiles for CPF 21

1 Scope

This part of IEC 61784 specifies the installation profile for CPF 21 (FL-net¹).

The installation profile is specified in Annex A. The annex is 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 Clause A.2.

¹ FL-net is the trade name of JEMA/FL-net: The Japan Electrical Manufacturers' Association / the Factory Automation Link network. 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 does not require use of the trade name. Use of the trade name requires permission of the trade name holder.