IEC 61784-5-21

Edition 1.0 2018-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

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

Réseaux de communication industriels – Profils – Partie 5-21: Installation de bus de terrain – Profils d'installation pour CPF 21

IEC 61784-5-21:2018-08(en-fr)

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INDUSTRIAL COMMUNICATION NETWORKS – PROFILES –

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

FOREWORD

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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- withdrawn,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.

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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.

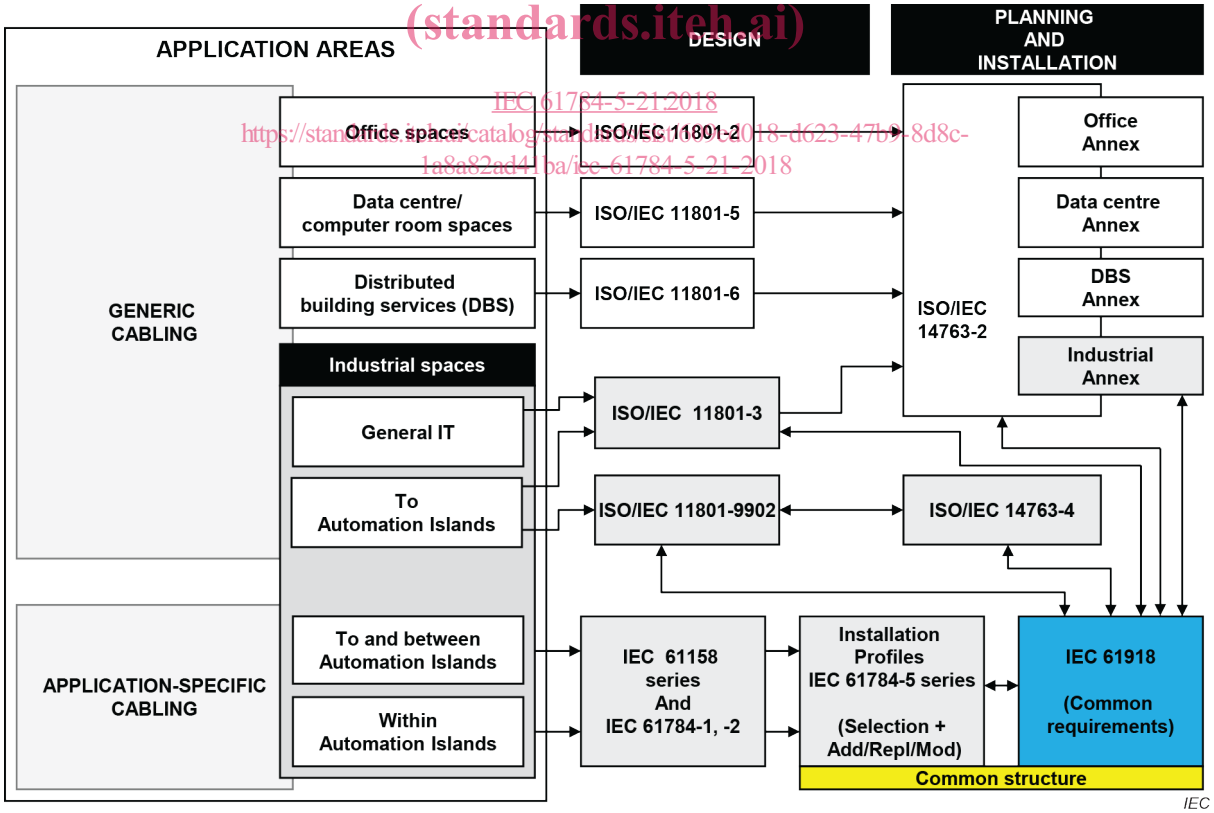

Figure 1 – Standards relationships

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-net[1]).

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.

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, apply.

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

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

4 CPF 21: Overview of installation profiles

CPF 21 consists of one communication profile as specified in IEC 61784-2.

The installation requirements for CP 21/1 (FL-net) are specified in Annex A.

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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.

5 Installation profile conventions

The numbering of the clauses and subclauses in the annex 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 annex 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 (sub)clause numbering following the annex letter shall represent the corresponding (sub)clause numbering of IEC 61918.

EXAMPLE Subclause A.4.4 in IEC 61784-5-21 means that CP 21/1 specifies the Subclause 4.4 of IEC 61918.

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 apply.

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.

6 Conformance to installation profiles

Each installation profile within this document includes part of the IEC 61918:2018. It may also include defined additional specifications.

A statement of compliance to an installation profile of this document shall be stated[2] as either

Compliance to IEC 61784-5-21:—[3] for CP 21/m <name> or

Compliance to IEC 61784-5-21 (Ed.1.0) for CP 21/m <name>

2 In accordance with ISO/IEC Directives.

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

where the name within the angle brackets < > is optional and the angle brackets are not to be included. The m within CP 21/m shall be replaced by the profile number 1.

NOTE The name may be the name of the profile, for example FL-net.

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).

Annex A
(normative)

CP 21/1 (FL-net) specific installation profile

A.1 Installation profile scope

Addition:

This annex specifies the installation profile for Communication Profile CP 21/1 (FL-net). The CP 21/1 is specified in IEC 61784-2.

A.2 Normative references

Addition:

IEC 61754-18:2001, *Fibre optic connector interfaces – Part 18: Type MT-RJ connector family*

IEC 60793-2-50:2015, *Optical fibres – Part 2-50: Product specifications – Sectional specification for class B single-mode fibres*

IEC 60603-7-2:2010, *Connectors for electronic equipment – Part 7-2: Detail specification for 8-way, unshielded, free and fixed connectors, for data transmissions with frequencies up to 100 MHz*

IEC 60603-7-3:2010, *Connectors for electronic equipment – Part 7-3: Detail specification for 8-way, shielded, free and fixed connectors, for data transmission with frequencies up to 100 MHz*

IEC 60603-7-4:2010, *Connectors for electronic equipment – Part 7-4: Detail specification for 8-way, unshielded, free and fixed connectors, for data transmissions with frequencies up to 250 MHz*

IEC 60603-7-5:2010, *Connectors for electronic equipment – Part 7-5: Detail specification for 8-way, shielded, free and fixed connectors, for data transmissions with frequencies up to 250 MHz*

ANSI/TIA/EIA 568-B, *Commercial building telecommunications cabling standard*

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

Subclause 3.3 is not applicable.

A.4 Installation planning

A.4.1 General

Subclause 4.1.4 is not applicable.

A.4.2 Planning requirements

A.4.2.1 Safety

Subclause 4.2.1.3 is not applicable.

Subclause 4.2.1.4 is not applicable.

A.4.2.2 Security

Not applicable.

A.4.2.3 Environmental considerations and EMC

Subclause 4.2.3.2 has addition:

Only the products that are declared by the manufacturers as applicable to CP 21/1 fieldbus network shall be used and included in the bill of material.

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

Subclause 4.3.1.4 is not applicable.

Subclause 4.3.1.5 has addition:

Star topology applies to CP 21/1 fieldbus networks.

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

Not applicable.

A.4.3.2.3 Network characteristics for balanced cabling based on Ethernet

Replacement:

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