IEC 61784-5-22

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

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Industrial networks – Profiles – Part 5-22: Installation of fieldbuses – Installation profiles for CPF 22

Réseaux industriels – Profils – Partie 5-22: Installation des bus de terrain – Profils d'installation pour CPF 22

IEC 61784-5-22:2024-03(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INDUSTRIAL NETWORKS – PROFILES –

Part 5-22: Installation of fieldbuses – Installation profiles for CPF 22

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IEC 61784-5-22 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.

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

Draft	Report on voting
65C/1279/FDIS	65C/1293/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- withdrawn, or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.

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INTRODUCTION

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

IEC 61918:2018 and 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 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 61784-5-22 for CPF 22) allows readers to work with documents of a convenient size.

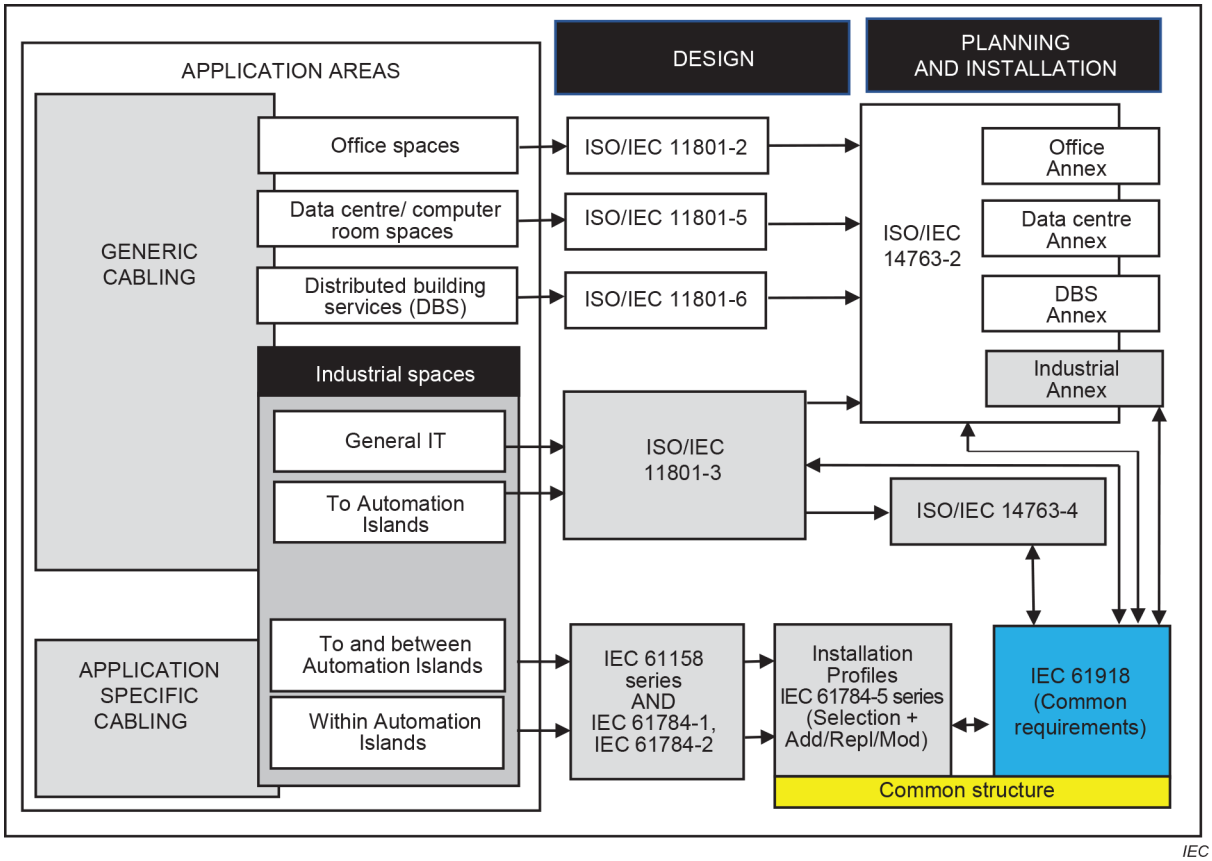

Figure 1 – Standards relationships

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INDUSTRIAL NETWORKS – PROFILES –

Part 5-22: Installation of fieldbuses – Installation profiles for CPF 22

1 Scope

This part of IEC 61784-5 specifies the installation profile for CPF 22 (AUTBUS™ [1]).

The installation profile is specified in Annex A. This annex is 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 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 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

4 CPF 22: Overview of installation profiles

CPF 22 consists of one communication profile as specified in IEC 61784-1:2023.

The installation requirements for CP 22/1 (AUTBUS™) are specified in Annex A.

---

[1] AUTBUS™ is the trade name of the Kyland Technology Co., Ltd. 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 Kyland Technology Co., Ltd.

[2] The normative references of IEC 61918:2018, Clause 2, IEC 61918:2018/AMD1:2022, Clause 2 and IEC 61918:2018/AMD2:2024, Clause 2, apply.

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5 Installation profile conventions

The numbering of the clauses and subclauses in Annex A 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 Annex A 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 61784-5-22 means that CP 22/1 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 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 with IEC 61784-5-22:2024 for CP 22/m <name> or

Compliance with IEC 61784-5-22 (Ed.1) for CP 22/m <name>.

[3] In accordance with ISO/IEC Directives.

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where the name within the angle brackets < > is optional and the angle brackets shall not be included. The m within CP 22/m shall be replaced by the profile number 1.

NOTE The name can be the name of the profile, for example AUTBUS.

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).

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Annex A
(normative)

CP 22/1 (AUTBUS™) specific installation profile

A.1 Installation profile scope

Addition:

This annex specifies the installation profile for Communication Profile CP 22/1 (AUTBUS™). The CP 22/1 is specified in IEC 61784-1-22.

A.2 Normative references

Addition:

IEC 61784-1-22, *Industrial networks – Profiles – Part 1-22: Fieldbus profiles – Communication Profile Family 22*

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

Subclause 4.1.2 has addition:

Generic cabling in accordance with ISO/IEC 11801-3 is not suitable for the cabling of CP 22/1 networks.

A.4.2 Planning requirements

A.4.2.1 Safety

Subclause 4.2.1.3 has addition:

Each and every device on CP 22/1 network should provide manufacturer's declaration stating compliance with CP 22/1 specification.

Subclause 4.2.1.5 is 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

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A.4.3 Network capabilities

A.4.3.1 Network topology

Subclause 4.3.1.2 has addition:

Bus or ring topology apply to CP 22/1 fieldbus network.

Subclause 4.3.1.5 is not applicable.

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

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

Characteristic	CP 22/1
Basic transmission technology	Type 28
Length / transmission speed	**Segment length** m
30,208 Mbit/s – 103,936 Mbit/s	500
Maximum capacity	**Max. No.**
Devices/segment	254
Devices/network	254

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

Addition:

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

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Table A.2 – Basic network characteristics for un-balanced cabling not based on Ethernet

Characteristic	CP 22/1
Basic transmission technology	Type 28
Length / transmission speed	**Segment length** m
30,208 Mbit/s – 103,936 Mbit/s	500
Maximum capacity	**Max. No.**
Devices/segment	254
Devices/network	254

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

Addition:

Generic cabling in accordance with ISO/IEC 11801-3 is not suitable for the cabling of CP 22/1 networks.

A.4.4.1.2 Copper cables

A.4.4.1.2.1 Balanced cables for Ethernet-based CPs

Not applicable.

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

Addition:

Unshielded twisted cables shall not be used with CP 22/1 networks.

Replacement:

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

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