

# INTERNATIONAL STANDARD



**Industrial communication networks – Profiles –  
Part 5-6: Installation of fieldbuses – Installation profiles for CPF 6**

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IEC 61784-5-6:2010

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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

## INDUSTRIAL COMMUNICATION NETWORKS – PROFILES –

### Part 5-6: Installation of fieldbuses – Installation profiles for CPF 6

#### FOREWORD

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International Standard IEC 61784-5-6 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

This second edition cancels and replaces the first edition published in 2007. This edition constitutes a technical revision.

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

- a) alignment to IEC 61918:2010;
- b) addition of the M12-FO connector.

This standard is to be used in conjunction with IEC 61918:2010.

The text of this standard is based on the following documents:

FDIS	Report on voting
65C/602/FDIS	65C/616/RVD

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

This publication 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 publication 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 publication. At this date, the publication will be

- reconfirmed,
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- replaced by a revised edition, or
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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 61918:2010 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 standard, see IEC/TR 61158-1.

Each CP installation profile is specified in a separate annex of this standard. 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 standard are defined in Clause 5.

The provision of the installation profiles in one standard for each CPF (for example IEC 61784-5-6 for CPF 6), allows readers to work with standards of a convenient size.

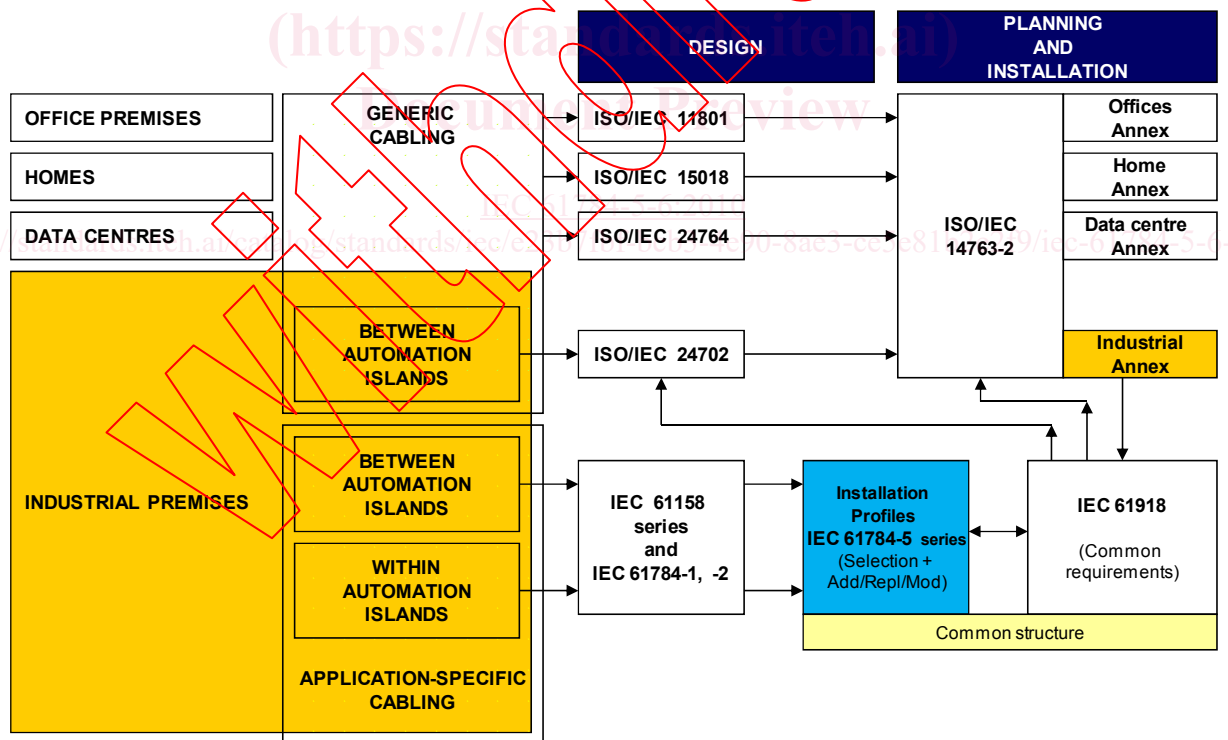


Figure 1 – Standards relationships



## INDUSTRIAL COMMUNICATION NETWORKS – PROFILES –

### Part 5-6: Installation of fieldbuses – Installation profiles for CPF 6

#### 1 Scope

This part of IEC 61784 specifies the installation profiles for CPF 6 (INTERBUS)<sup>1</sup>.

The installation profiles are specified in the annexes. These annexes are read in conjunction with IEC 61918:2010.

#### 2 Normative references

The following referenced documents are indispensable for the application 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 61918:2010, *Industrial communication networks – Installation of communication networks in industrial premises*

The normative references of IEC 61918:2010, Clause 2, apply. For profile specific normative references, see Clauses A.2 and B.2.

#### 3 Terms, definitions and abbreviated terms

For the purposes of this document, the terms, definitions and abbreviated terms of IEC 61918:2010, Clause 3, apply. For profile specific terms, definitions and abbreviated terms see Clauses A.3 and B.3.

#### 4 CPF 6: Overview of installation profiles

CPF 6 consists of seven communication profiles (see IEC 61784-1 for CP 6/1, CP 6/2, CP 6/3, see 61784-2 for CP 6/4, CP 6/5, CP 6/6, see 61784-3-6 for FSCP 6/7).

The CPF 6 Type 8 network (non Ethernet based) installation profile is specified in Annex A.

The CP 6/2 Ethernet specific installation profile file is specified in Annex B.

#### 5 Installation profile conventions

The numbering of the clauses and subclauses in the annexes of this standard corresponds to the numbering of IEC 61918 main clauses and subclauses.

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<sup>1</sup> INTERBUS is a trade name of INTERBUS Club, an independent organisation of users and vendors of INTERBUS products. This information is given for the convenience of users of this International Standard 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 INTERBUS. Use of the trade name INTERBUS requires permission of the trade name holder.

The annex clauses and subclauses of this standard 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 standard, 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 “Annex B.4.4” in IEC 61784-5-3 means that CP 3/2 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 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.

## 6 Conformance to installation profiles

Each installation profile within this standard includes part of IEC 61918:2010. It may also include defined additional specifications.

A statement of compliance to an installation profile of this standard shall be stated<sup>2</sup> as either

Compliance to IEC 61784-5-6:2010<sup>3</sup> for CP 6/m<name> or

Compliance to IEC 61784-5-6 (Ed.2.0) for CP 6/m <name>

where the name within the angle brackets < > is optional and the angle brackets are not to be included. The m within CP 6/m shall be replaced by the profile number 1 to 2.

NOTE The name may be the name of the profile, for example INTERBUS.

If the name is a trade name then the permission of the trade name holder shall be required.

<sup>2</sup> In accordance with ISO/IEC Directives

<sup>3</sup> The date should not be used when the edition number is used.

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)

### **CPF 6 Type 8 network specific installation profile**

#### **A.1 Installation profile scope**

*Addition:*

This standard specifies the installation profile for CPF 6 Type 8 networks and the related Communication Profiles:

- CP 6/1, CP 6/2, CP 6/3 - specified in IEC 61784-1;
- CP 6/4, CP 6/5, CP 6/6 - specified in IEC 61784-2;
- FSCP 6/7 - specified in IEC 61784-3-6.

#### **A.2 Normative references**

*Addition:*

IEC 60794-1-2:2003, *Optical fibre cables – Part 1-2: Generic specification - Basic optical cable test procedures*

IEC 61156-1:2007, *Multicore and symmetrical pair/quad cables for digital communications – Part 1: Generic specification*

IEC 61156-5 - Ed. 1.0, *Multicore and symmetrical pair/quad cables for digital communications – Part 5: Symmetrical pair/quad cables with transmission characteristics up to 600 MHz – Horizontal floor wiring – Sectional specification*

IEC 60189-1:2007, *Low-frequency cables and wires with PVC insulation and PVC sheath – Part 1: General test and measuring methods*

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

##### **A.3.1 Terms and definitions**

*Addition:*

###### **A.3.1.1 bus coupler**

a device that divides the Type 8 network into segments by opening the ring and integrating another ring at this point

###### **A.3.1.2 local bus**

a ring segment of a Type 8 network with alternate media specifications, which is coupled to a remote bus device via a bus coupler

###### **A.3.1.3 local bus device**

device that operates as a slave on a local bus

**A.3.1.4****master**

device that controls the data transfer on the Type 8 network and initiates the media access of the slaves by sending messages and that constitutes the interface to the control system

**A.3.1.5****remote bus**

a ring segment of a network

**A.3.1.6****remote bus**

device operating as a slave on a remote bus

**A.3.1.7****remote bus link**

connection of two remote bus devices

**A.3.1.8****ring segment**

one section of a Type 8 network

**A.3.1.9****slave**

a device that accesses the medium only after it has been initiated by the preceding slave or master

**A.3.2 Abbreviated terms***Addition:*

BC	Bus coupler
COM	Ground line
/DI	Incoming interface: send data line – Outgoing interface: receive data line –
DI	Incoming interface: send data line + Outgoing interface: receive data line +
/DO	Incoming interface: receive data line – Outgoing interface: send data line -
DO	Incoming interface: receive data line + Outgoing interface: send data line +
PELV	Protective Extra Low Voltage
SELV	Safety Extra Low Voltage

**A.3.3 Conventions for installation profiles**

Not applicable.

## **A.4 Installation planning**

### **A.4.1 Introduction**

#### **A.4.1.1 Objective**

#### **A.4.1.2 Cabling in industrial premises**

#### **A.4.1.3 The planning process**

#### **A.4.1.4 Specific requirements for CPs**

Not applicable.

#### **A.4.1.5 Specific requirements for generic cabling in accordance with ISO/IEC 24702**

Not applicable.

### **A.4.2 Planning requirements**

#### **A.4.2.1 Safety**

##### **A.4.2.1.1 General**

##### **A.4.2.1.2 Electric safety**

*Addition:*

Power distribution system shall comply with IEC 60364-1 312.2.1 TN-S systems, i.e. earthed by bonding of bodies with separated conductors for neutral (N) and protection earth (PE). Otherwise there are additional efforts necessary to avoid currents on the shield, i.e. an a.c. earthed system on one end in a network with balanced cables or a network built with FO-cables. For networks built with OF-cables the power distribution system should comply with IEC 60364-1 312.2.1 TN S systems.

PELV is the default version for the power supply with extra-low-voltage, but SELV may also be used. Temporary connected devices shall be powered by PELV or SELV.

##### **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**

#### **A.4.2.2 Security**

#### **A.4.2.3 Environmental considerations and EMC**

##### **A.4.2.3.1 Description methodology**

##### **A.4.2.3.2 Use of the described environment to produce a bill of material**

*Addition:*

To make fieldbus installation work easier for inexperienced planners, the user shall determine suitability of the components for the targeted environment through agreements with the component providers. The planner shall also observe the related technical data from the active devices. Depending on the expected environment he should define additional requirements.