

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**Industrial communication networks – Profiles –  
Part 5-4: Installation of fieldbuses – Installation profiles for CPF 4**

**Réseaux de communication industriels – Profils –  
Partie 5-4: Installation de bus de terrain – Profils d'installation pour CPF 4**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**INDUSTRIAL COMMUNICATION NETWORKS –  
PROFILES –**

**Part 5-4: Installation of fieldbuses –  
Installation profiles for CPF 4**

FOREWORD

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**This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.**

**IEC 61784-5-4 edition 1.1 contains the first edition (2010-07) [documents 65C/602/FDIS and 65C/616/RVD] and its amendment 1 (2015-06) [documents 65C/768/CDV and 65C/800/RVC].**

**In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions and deletions are displayed in red, with deletions being struck through. A separate Final version with all changes accepted is available in this publication.**

International Standard IEC 61784-5-4 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:~~2010~~ 2013.

This bilingual version (2012-02) corresponds to the monolingual English version, published in 2010-07.

The French version of this standard has not been voted upon.

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 the base publication and its amendment 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

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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 2013 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 61784-5-4 for CPF 4), allows readers to work with standards of a convenient size.

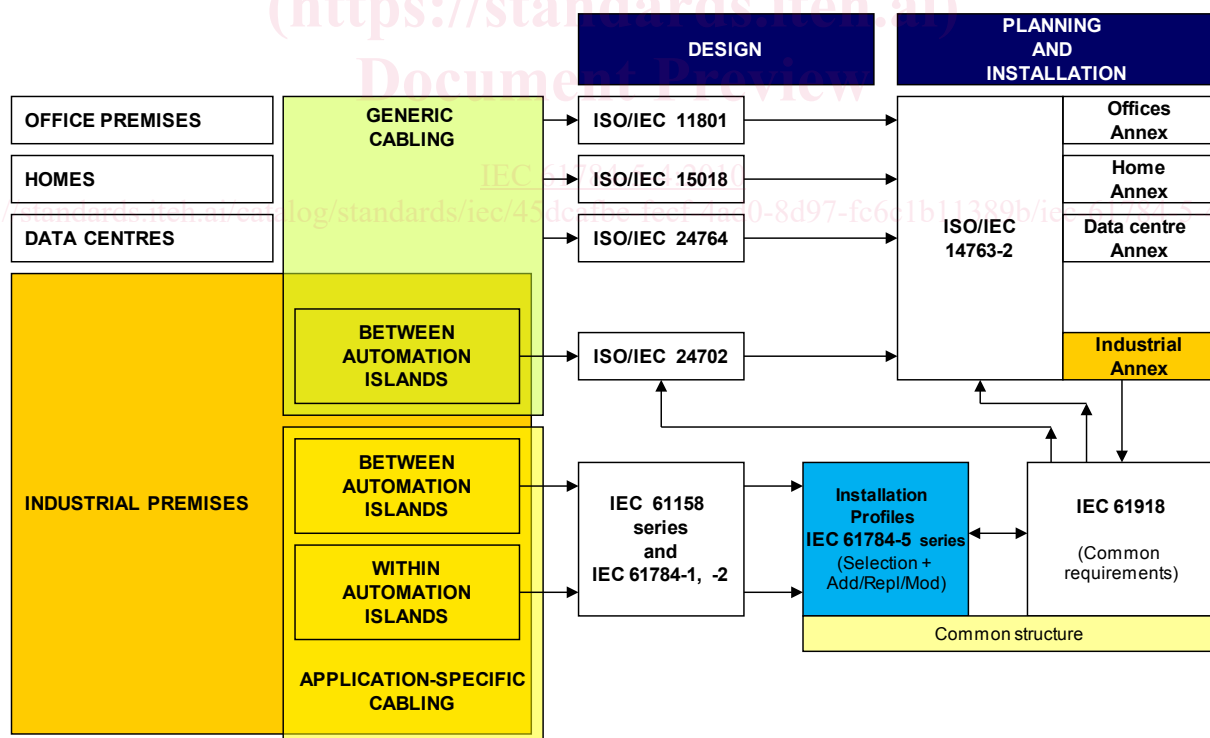


Figure 1 – Standards relationships

Attention is drawn to the fact that the document IEC 61918 specifies all the installation requirements that apply to large part of the industrial communication networks and that these requirements automatically apply to each single network with the exception of those requirements that in the relevant document of the IEC 61784-5 series are explicitly defined as modified or replaced.

All the additions to the latest edition of the IEC 61918 apply to the networks of CPF 4. Nevertheless, the fact that a few tables of IEC 61918 have been restructured to better define the technical content requires that the document IEC 61784-5-4 Ed.1 be amended to fully match the IEC 61918 revised structure.

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## INDUSTRIAL COMMUNICATION NETWORKS – PROFILES –

### Part 5-4: Installation of fieldbuses – Installation profiles for CPF 4

#### 1 Scope

This part of IEC 61784 specifies the installation profiles for CPF 4 (P-NET)<sup>1</sup>.

The installation profiles are specified in the annexes. These annexes are read in conjunction with IEC 61918:~~2010~~ 2013.

#### 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~~ 2013, *Industrial communication networks – Installation of communication networks in industrial premises*

The normative references of IEC 61918:~~2010~~ 2013, Clause 2, apply.

#### 3 Terms, definitions and abbreviated terms

For the purposes of this document, the terms, definitions and abbreviated terms of IEC 61918:~~2010~~ 2013, Clause 3, apply.

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

CPF 4 consists of three communication profiles as specified in IEC 61784-1 and IEC 61784-2.

The installation requirements for CP 4/1 (P-NET with physical layer according to RS 485) are specified in Annex A.

The installation requirements for CP 4/3 (P-NET on IP) are specified in Annex B.

NOTE There is no installation profile specified for CP 4/2 (P-NET with physical layer according to RS 232).

#### 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.

---

<sup>1</sup> P-NET is the trade name of International P-NET User Organisation ApS (IPUO). 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 P-NET. Use of the trade name P-NET 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 61784-5-4 means that CP 4/3 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 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~~ 2013. 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 61784-5-4:2010<sup>3</sup> and Am.1 for CP 4/m <name> or
- Compliance to IEC 61784-5-4 (Ed.1.0 and Am.1) for CP 4/m <name>

where the name within the angle brackets < > is optional and the angle brackets are not to be included. The m within CP 4/m shall be replaced by the profile number 1 or 3.

NOTE The name may be the name of the profile, for example ‘P-NET with physical layer according to RS 485’ or ‘P-NET on IP’.

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

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

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## **Annex A** (normative)

### **CP 4/1 (P-NET, RS 485) specific installation profile**

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

*Addition:*

This standard specifies the installation profile for Communication Profile CP 4/1 (P-NET with physical layer according to RS 485). The CP 4/1 is specified in IEC 61784-1.

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

#### **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 Introduction**

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

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

*Addition:*

Generic cabling in accordance with ISO/IEC 24702 is not suitable for the cabling of CP 4/1 networks.

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

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

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

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

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

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

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

##### **A.4.2.1.3 Functional safety**

Not applicable.