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INTERNATIONAL STANDARD

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Withdrawn

Industrial communication networks – Fieldbus specifications –
Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series

Réseaux de communication industriels – Spécifications des bus de terrain –
Partie 1: Présentation et lignes directrices des séries CEI 61158 et CEI 61784

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INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series

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NOTE Combinations of protocol types are specified in IEC 61784-1 and IEC 61784-2.

International Standard IEC 61158-1 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

This first edition cancels and replaces the third edition of IEC/TR 61158-1 published in 2010. This edition constitutes a technical revision.

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This first edition includes the following significant changes with respect to the previous Technical Report:

- updates of the references to and information about the IEC 61158 series, IEC 61784-1, IEC 61784-3, IEC 61784-5 series and IEC 61918 throughout the document;
- new Type 23 for profile family 8;
- new Type 24 and the related profile family CPF 19;
- new Subclause 7.7 Communication profiles for wireless communication networks;
- new Clause 11 Fieldbus system requirements;
- new Annex B Media selection for fieldbus systems.

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

FDIS	Report on voting
65C/757/FDIS	65C/767/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 the parts of the IEC 61158 series, published under the general title *Industrial communication networks – Fieldbus specifications*, can be found on the IEC web site.

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,
- withdrawn,
- replaced by a revised edition, or
- amended.

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.

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1 Scope

This document specifies the generic concept of fieldbuses.

This document also presents an overview and guidance for the IEC 61158 series by:

- explaining the structure and content of the IEC 61158 series;
- relating the structure of the IEC 61158 series to the ISO/IEC 7498-1 OSI Basic Reference Model;
- showing the logical structure of the IEC 61784 series;
- showing how to use parts of the IEC 61158 series in combination with the IEC 61784 series;
- providing explanations of some aspects of the IEC 61158 series that are common to the type specific parts of the IEC 61158-5 including the application layer service description concepts and the generic fieldbus data types.

2 Normative references

None.

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1
communication system
arrangement of hardware, software and propagation media to allow the transfer of messages from one application to another

3.1.2
fieldbus
communication system based on serial data transfer as typically used in industrial automation and process control applications

3.1.3
fieldbus system
system using a fieldbus with connected devices

3.1.4
message
ordered series of octets intended to convey information

[SOURCE: ISO/IEC 2382-16:1996, 16.02.01, modified]

3.1.5
network
all of the media, connectors, repeaters, routers, gateways and associated node communication elements by which a given set of communicating devices are interconnected

3.2 Abbreviations

For the purposes of this document, the following abbreviations, based partially on the concepts developed in ISO/IEC 7498-1, apply:

AE	application entity
AL	application layer (N = 7)
APDU	application layer protocol data unit
APO	application process object
AR	application relationship
AREP	application relationship endpoint
ASE	application service element
CP	communication profile
CPF	communication profile family
DL-	data-link layer (as a prefix)
DLL	data-link layer (N = 2)
FAL	fieldbus application layer
FSCP	functional safety communication profile
IETF	Internet Engineering Task Force
IO	input output
IP	Internet protocol (see RFC 791)
kbit/s	thousand bit per second
Mbit/s	million bit per second
LME	layer management entity
(*n*)-layer	layer *n* of the OSI basic reference model
OSI	open systems interconnection
Ph-	physical layer (as a prefix)
PhL	physical layer (N = 1)
SIL	safety integrity level

4 Guidelines for implementers and users

4.1 Background and purpose

Communication in global markets requires a global understanding of a specification (standard or not). ISO/OSI related specifications provide a common basis for understanding and acceptance between international experts (manufacturers and end-users).

Examples are

- ISO/IEC 7498-1 for general layering and structuring;
- ISO/IEC 9545 for general application layer modeling;
- ISO/IEC 8886 for data-link layer modeling.

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