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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN IEC 61158-1:2023 sisaldab Euroopa standardi EN IEC 61158-1:2023 ingliskeelset teksti.	This Estonian standard EVS-EN IEC 61158-1:2023 consists of the English text of the European standard EN IEC 61158-1:2023.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 21.04.2023.	Date of Availability of the European standard is 21.04.2023.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

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ICS 25.040.40, 33.040.40, 35.100.05

EUROPEAN STANDARD

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EUROPÄISCHE NORM

EN IEC 61158-1

April 2023

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Supersedes EN IEC 61158-1:2019

English Version

Industrial communication networks - Fieldbus specifications - Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series (IEC 61158-1:2023)

Réseaux de communication industriels - Spécifications des bus de terrain - Partie 1 : Vue d'ensemble et recommandations pour les séries IEC 61158 et IEC 61784 (IEC 61158-1:2023)

Industrielle Kommunikationsnetze - Feldbusse - Teil 1: Überblick und Leitfaden zu den Normen der Reihen IEC 61158 und IEC 61784 (IEC 61158-1:2023)

This European Standard was approved by CENELEC on 2023-04-20. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Ref. No. EN IEC 61158-1:2023 E

European foreword

The text of document 65C/1199/FDIS, future edition 3 of IEC 61158-1, prepared by SC 65C "Industrial networks" of IEC/TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61158-1:2023.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2024-01-20
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2026-04-20

This document supersedes EN IEC 61158-1:2019 and all of its amendments and corrigenda (if any).

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Endorsement notice

The text of the International Standard IEC 61158-1:2023 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standard indicated:

IEC 60793-2-30:2015	NOTE Approved as EN 60793-2-30:2015 (not modified)
IEC 60793-2-40:2021	NOTE Approved as EN IEC 60793-2-40:2021 (not modified)
IEC 61000-6-2	NOTE Approved as EN IEC 61000-6-2
IEC 61131-2	NOTE Approved as EN 61131-2
IEC 61158 (series)	NOTE Approved as EN 61158 (series)
IEC 61158-2:2023	NOTE Approved as EN IEC 61158-2:2023 (not modified)
IEC 61158-3 (series)	NOTE Approved as EN 61158-3 (series)
IEC 61158-4 (series)	NOTE Approved as EN 61158-4 (series)
IEC 61158-5 (series)	NOTE Approved as EN 61158-5 (series)
IEC 61158-6 (series)	NOTE Approved as EN 61158-6 (series)
IEC 61326 (series)	NOTE Approved as EN IEC 61326 (series)

IEC 61508 (series)	NOTE Approved as EN 61508 (series)
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IEC 61784-1-0:2023	NOTE Approved as EN IEC 61784-1-0 (not modified)[2]
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IEC 61784-2-0	NOTE Approved as EN IEC 61784-2-0[4]
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IEC 61784-3-1	NOTE Approved as EN 61784-3-1
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IEC 61784-3-3	NOTE Approved as EN IEC 61784-3-3
IEC 61784-3-6	NOTE Approved as EN 61784-3-6
IEC 61784-3-8	NOTE Approved as EN IEC 61784-3-8
IEC 61784-3-12	NOTE Approved as EN 61784-3-12
IEC 61784-3-13	NOTE Approved as EN IEC 61784-3-13
IEC 61784-3-14	NOTE Approved as EN 61784-3-14
IEC 61784-3-17	NOTE Approved as EN 61784-3-17
IEC 61784-3-18	NOTE Approved as EN 61784-3-18
IEC 61784-5-1	NOTE Approved as EN 61784-5-1
IEC 61784-5-2	NOTE Approved as EN IEC 61784-5-2
IEC 61784-5-3	NOTE Approved as EN IEC 61784-5-3
IEC 61784-5-4	NOTE Approved as EN 61784-5-4
IEC 61784-5-6	NOTE Approved as EN IEC 61784-5-6
IEC 61784-5-8	NOTE Approved as EN IEC 61784-5-8
IEC 61784-5-10	NOTE Approved as EN 61784-5-10
IEC 61784-5-11	NOTE Approved as EN 61784-5-11
IEC 61784-5-12	NOTE Approved as EN IEC 61784-5-12
IEC 61784-5-13	NOTE Approved as EN 61784-5-13
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IEC 61784-5-15	NOTE Approved as EN 61784-5-15
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IEC 61784-5-19	NOTE Approved as EN 61784-5-19
IEC 61784-5-20	NOTE Approved as EN IEC 61784-5-20
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IEC 61918:2018	NOTE Approved as EN IEC 61918:2018 (not modified)
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IEC 62443 (series)	NOTE Approved as EN IEC 62443 (series)
IEC 62453 (series)	NOTE Approved as EN 62453 (series)
IEC 62591	NOTE Approved as EN 62591
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IEC 61158-1

Edition 3.0 2023-03

INTERNATIONAL STANDARD

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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: Vue d'ensemble et recommandations pour les séries IEC 61158 et IEC 61784

IEC 61158-1:2023-03(en-fr)

IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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IEC 61158-1

Edition 3.0 2023-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

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: Vue d'ensemble et recommandations pour les séries IEC 61158 et IEC 61784

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

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

FOREWORD

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

IEC 61158-1 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 third edition cancels and replaces the second edition published in 2019. This edition constitutes a technical revision.

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

a) added the new technology AUTBUS specified in Type 28;
b) additional profile within IEC 61784-2-8 referring to Type 23 (CP 8/6, CC-Link IE TSN);
c) additional profile referring to Type 24 (CP 19/3, Σ-LINKII);
d) additional profile within IEC 61784-2-19 referring to a new Type 27 (CP 19/4, MECHATROLINK-4).

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

Draft	Report on voting
65C/1199/FDIS	65C/1240/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 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.

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

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INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

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

1 Scope

This part of IEC 61158 specifies the generic concept of fieldbuses.

This document also presents an overview and guidance for the IEC 61158[1] 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[2] 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 series including the application layer service description concepts and the generic fieldbus data types.

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

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

ISO and IEC maintain terminological 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

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

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1 In the following pages of this document, “IEC 61158” will be used as a qualifier for “IEC 61158 (all parts)”.

2 In the following pages of this document, “IEC 61784” will be used as a qualifier for “IEC 61784 (all parts)”.