



BSI Standards Publication

Industrial communication networks — Fieldbus specifications

Part 5-26: Application layer service definition — Type 26 elements

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National foreword

This British Standard is the UK implementation of EN IEC 61158-5-26:2023. It is identical to IEC 61158-5-26:2023. It supersedes BS EN IEC 61158-5-26:2019, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/65, Measurement and control.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Amendments/corrigenda issued since publication

Date	Text affected
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EUROPÄISCHE NORM

April 2023

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Supersedes EN IEC 61158-5-26:2019

English Version

Industrial communication networks - Fieldbus specifications -
Part 5-26: Application layer service definition - Type 26 elements
(IEC 61158-5-26:2023)

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bus de terrain - Partie 5-26: Définition des services de la
couche application - Eléments de type 26
(IEC 61158-5-26:2023)

Industrielle Kommunikationsnetze - Feldbusse - Teil 5-26:
Application layer service definition (Anwendungsschicht) -
Type 26-Elemente
(IEC 61158-5-26:2023)

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European foreword

The text of document 65C/1203/FDIS, future edition 2 of IEC 61158-5-26, 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 61158-5-26:2023.

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- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2026-04-20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 61158-5-26:2019 and all of its amendments and corrigenda (if any).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 61158-5-26:2023 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 61784-1 (series) NOTE Approved as EN IEC 61784-1 (series)¹

IEC 61784-2 (series) NOTE Approved as EN IEC 61784-2 (series)²

¹ To be published. Stage at time of publication : FprEN 61784-1-X:2023.

² To be published. Stage at time of publication : FprEN 61784-2-X:2023.

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(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61131-3	-	Programmable controllers - Part 3: Programming languages	EN 61131-3	-
IEC 61158-1	2023	Industrial communication networks - Fieldbus specifications - Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series	EN 61158-1	2023
IEC 61158-6-26	2023	Industrial communication networks - Fieldbus specifications - Part 6-26: Application layer protocol specification - Type 26 elements	EN IEC 61158-6-26	— ³
IEC 61784-2-21	2023	Industrial networks - Profiles - Part 2-21: Additional real-time fieldbus profiles based on ISO/IEC/IEEE 8802-3 - CPF 21	-	-
ISO/IEC 646	-	Information technology; ISO 7-bit coded character set for information interchange	-	-
ISO/IEC 7498-1	-	Information technology - Open Systems Interconnection - Basic reference model: The basic model	-	-
ISO/IEC/IEEE 8802-3	-	Standard for Ethernet	-	-
ISO/IEC 8822	-	Information technology - Open Systems Interconnection - Presentation service definition	-	-
ISO/IEC 8824-1	-	Information technology - Abstract Syntax Notation One (ASN.1) - Part 1: Specification of basic notation	-	-
ISO/IEC 9545	-	Information technology - Open Systems Interconnection - Application layer structure	-	-

³ To be published. Stage at time of publication: FprEN IEC 61158-6-26:2023.

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		Interconnection - Basic Reference Model - Conventions for the definition of OSI services		
IEC 60559	-	Floating-Point arithmetic	HD 592 S1	-
IETF RFC 768	1980	User Datagram Protocol	-	-
IETF RFC 791	1981	Internet Protocol	-	-
IETF RFC 792	1981	Internet Control Message Protocol	-	-
IETF RFC 793	1981	Transmission Control Protocol	-	-
IETF RFC 796	2081	Address mappings	-	-
IETF RFC 826	1982	An Ethernet Address Resolution Protocol: Or Converting Network Protocol Addresses to 48.bit Ethernet Address for Transmission on Ethernet Hardware	-	-
IETF RFC 894	1984	Standard for the Transmission of IP Datagrams over Ethernet	-	-
IETF RFC 919	1984	Broadcasting Internet Datagrams	-	-
IETF RFC 922	1984	Broadcasting Internet datagrams in the presence of subnets	-	-
IETF RFC 950	1985	Internet Standard Subnetting Procedure	-	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 5-26: Application layer service definition – Type 26 elements

FOREWORD

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Attention is drawn to the fact that the use of the associated protocol type is restricted by its intellectual-property-right holders. In all cases, the commitment to limited release of intellectual-property-rights made by the holders of those rights permits a layer protocol type to be used with other layer protocols of the same type, or in other type combinations explicitly authorized by its intellectual-property-right holders.

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

IEC 61158-5-26 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 second edition cancels and replaces the first edition published in 2019. This edition constitutes a technical revision.

This is a preview of "BS EN IEC 61158-5-26...". Click here to purchase the full version from the ANSI store.

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

- a) expand Common-memory-area as a new Common-memory-area-3 (CM3);
- b) add new services with expansion of Common-memory-area:
 - Extended-cyclic-data transfer service;
 - Extended-participation-request service;
 - Extended-network-parameter-read service;
 - Extended-network-parameter-write service.

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

Draft	Report on voting
65C/1203/FDIS	65C/1244/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.

A list of all 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 document will remain unchanged until the stability date indicated on the IEC web site 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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INTRODUCTION

This document is one of a series produced to facilitate the interconnection of automation system components. It is related to other standards in the set as defined by the "three-layer" fieldbus reference model described in IEC 61158-1.

The application service is provided by the application protocol making use of the services available from the data-link or other immediately lower layer. This document defines the application service characteristics that fieldbus applications and/or system management can exploit.

Throughout the set of fieldbus standards, the term "service" refers to the abstract capability provided by one layer of the OSI Basic Reference Model to the layer immediately above. Thus, the application layer service defined in this document is a conceptual architectural service, independent of administrative and implementation divisions.

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INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 5-26: Application layer service definition – Type 26 elements

1 Scope

1.1 General

The fieldbus application layer (FAL) provides user programs with a means to access the Fieldbus communication environment. In this respect, the FAL can be viewed as a "window between corresponding application programs."

This part of IEC 61158 provides common elements for basic time-critical and non-time-critical messaging communications between application programs in an automation environment and material specific to Type 26 fieldbus. The term "time-critical" is used to represent the presence of a time-window, within which one or more specified actions are required to be completed with some defined level of certainty. Failure to complete specified actions within the time window risks failure of the applications requesting the actions, with attendant risk to equipment, plant and possibly human life.

This document defines in an abstract way the externally visible service provided by the Type26 fieldbus application layer in terms of:

- an abstract model for defining application resources (objects) capable of being manipulated by users via the use of the FAL service;
- the primitive actions and events of the service;
- the parameters associated with each primitive action and event, and the form which they take; and
- the interrelationship between these actions and events, and their valid sequences.

The purpose of this document is to define the services provided to:

- the FAL user at the boundary between the user and the Application Layer of the Fieldbus Reference Model, and
- Systems Management at the boundary between the Application Layer and Systems Management of the Fieldbus Reference Model.

This document specifies the structure and services of the Type 26 fieldbus application layer, in conformance with the OSI Basic Reference Model (see ISO/IEC 7498-1) and the OSI Application Layer Structure (see ISO/IEC 9545).

FAL services and protocols are provided by FAL application-entities (AE) contained within the application processes. The FAL AE is composed of a set of object-oriented Application Service Elements (ASEs) and a Layer Management Entity (LME) that manages the AE. The ASEs provide communication services that operate on a set of related application process object (APO) classes. One of the FAL ASEs is a management ASE that provides a common set of services for the management of the instances of FAL classes.