SLOVENSKI STANDARD
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Industrial communication networks - Fieldbus specifications - Part 5-28: Application layer service definition - Type 28 elements (IEC 61158-5-28:2023)

Industrielle Kommunikationsnetze - Feldbusse - Teil 5-28: Dienstfestlegungen des Application Layer (Anwendungsschicht) - Typ 28-Elemente (IEC 61158-5-28:2023)

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European foreword

The text of document 65C/1206/FDIS, future edition 1 of IEC 61158-5-28, 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 61158-5-28:2023.

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) 2024-01-14
•	latest date by which the national standards conflicting with the document have to be withdrawn	(dow) 2026-04-14

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Endorsement notice

The text of the International Standard IEC 61158-5-28:2023 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 61158-2	NOTE Approved as EN 61158-2
IEC 61158-3-28	NOTE Approved as EN IEC 61158-3-28
IEC 61158-6 (series)	NOTE Approved as EN 61158-6 (series)
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IEC 61784-2 (series)	NOTE Approved as EN IEC 61784-2 (series)[2]

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

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

Annex ZA
(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.

Publication	Year	Title	EN/HD	Year
IEC 61158-1	2023	Industrial communication networks - Fieldbus specifications - Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series	EN IEC 61158-1	2023
IEC 61158-4-28	2023	Industrial communication networks - Fieldbus specifications - Part 4-28: Data-link layer protocol specification - Type 28 elements	EN IEC 61158-4-28	2023
IEC 61158-6-28	2023	Industrial communication networks - Fieldbus specifications - Part 6-28: Application layer protocol specification - Type 28 elements	EN IEC 61158-6-28	2023
ISO/IEC 7498-1	1994	Information technology - Open Systems Interconnection - Basic reference model: The basic model	-	-
ISO/IEC 7498-3	1997	Information technology - Open Systems Interconnection - Basic reference model: Naming and addressing	-	-
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	-	-
ISO/IEC 10731	1994	Information technology - Open Systems Interconnection - Basic Reference Model - Conventions for the definition of OSI services	-	-
IETF RFC 2460	1998	Internet Protocol - Version 6 (IPv6) - Specification	-	-

IETF RFC 791	1981	Internet Protocol	-	-
ISO/IEC/IEEE 8802-3	2021	Telecommunications and exchange between information technology systems - Requirements for local and metropolitan area networks - Part 3: Standard for Ethernet	-	-

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Industrial communication networks –Fieldbus specifications – Part 5-28: Application layer service definition – Type 28 elements

Réseaux de communication industriels – Spécifications des bus de terrain – Partie 5-28: Définition des services de la couche application – Éléments de type 28

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CONTENTS

FOREWORD 5
INTRODUCTION 7
1 Scope 8
1.1 Overview 8
1.2 Specifications 9
1.3 Conformance 9
2 Normative references 9
3 Terms, definitions, symbols, abbreviated terms and conventions 10
3.1 Referenced terms and definitions 10
3.1.1 ISO/IEC 7498-1 terms 10
3.1.2 ISO/IEC 8822 terms 10
3.1.3 ISO/IEC 9545 terms 11
3.1.4 ISO/IEC 8824 terms 11
3.2 Additional terms and definitions for this IEC 61158-5-28 11
3.3 Abbreviations and symbols 12
3.4 Conventions 13
3.4.1 Overview 13
3.4.2 Conventions for class definitions 13
3.4.3 Conventions for service definitions 14
4 Concepts 15
5 Data type ASE 15
5.1 General 15
5.1.1 Overview 15
5.1.2 Overview of basic types 16
5.1.3 Overview of fixed-length types 16
5.1.4 Overview of constructed types 17
5.2 AL defined data types 17
5.2.1 Fixed length types 17
5.2.2 String type 19
5.2.3 Structure type 20
6 Type 28 communication model specification 25
6.1 General 25
6.2 Protocol stack for Type 28 fieldbus 26
6.3 Data mapping modelling 27
6.4 Overview of Type 28 communication model 29
6.4.1 General 29
6.4.2 P/S 29
6.4.3 C/S 30
6.5 AL related management information table 30
6.5.1 General 30
6.5.2 Time management information table 31
6.5.3 Network management information table 32
6.6 ASEs 33
6.6.1 Overview 33
6.6.2 RT data ASE 34
6.6.3 nRT data ASE 36

6.6.4 Time ASE 38
6.6.5 Resource ASE 41
6.6.6 Addressing ASE 43
6.6.7 Management ASE 48
6.6.8 Virtualization ASE 55
6.7 Application service 58
6.7.1 Overview 58
6.7.2 Read service 58
6.7.3 Write service 58
Annex A (informative) Example of service data mapping DTU message 60
Annex B (informative) Example of OPC UA data model and Type 28 data model mapping 61
Annex C (informative) Example of RTA service processing 62
Annex D (informative) Type 28 virtualization solution example 63
Bibliography 66

Figure 1 – Data type class hierarchy example 16
Figure 2 – BITMAP data type 20
Figure 3 – AL in fieldbus protocol stack architecture 26
Figure 4 – Type 28 AL protocol architecture 26
Figure 5 – Data mapping modelling object structure 27
Figure 6 – Diagram of mapping data buffers and service data variables 28
Figure 7 – Diagram of P/S model 29
Figure 8 – P/S model of PUSH mode 30
Figure 9 – P/S model of PULL mode 30
Figure 10 – Diagram of C/S communication model 30
Figure 11 – RT data transmission model 35
Figure 12 – Diagram of nRT data request response model 37
Figure 13 – Diagram of nRT data AP interaction based on C/S communication model 38
Figure 14 – Diagram of nRT data AP interaction based on P/S communication model 38
Figure 15 – Time synchronization application interaction process 40
Figure 16 – Time query process 41
Figure 17 – Resource AP interaction based on C/S communication model 43
Figure 18 – Resource ASE local service function diagram 43
Figure 19 – NETWORKID identification field structure 44
Figure 20 – NETWORKID interaction process diagram 46
Figure 21 – Diagram of MAC mapping table service function 46
Figure 22 – IP mapping table service function diagram 47
Figure 23 – Type 28 AL data message mapped to IP payload data payload 47
Figure 24 – Type 28 AL protocol header and IP protocol header mapping 48
Figure 25 – IP data message is mapped to valid data of Type 28 AL data message 48
Figure 26 – Static configuration initialization process 51
Figure 27 – Join the network interaction process 52
Figure 28 – Passively exit the network interaction process 53

Figure 29 – Actively exit network interaction process 54
Figure 30 – Diagram of diagnostic object mapping 54
Figure 31 – Diagram of the logging process 55
Figure 32 – A physical bus divided into two virtual bus domain diagrams 56
Figure 33 – Diagram of virtualized AP interaction based on C/S communication model 57
Figure 34 – Virtualization ASE local implementation diagram 58
Figure A.1 – Data transmission unit message content example 60
Figure B.1 – OPC UA data model and mapping of Type 28 data model 61
Figure C.1 – Example of RTA service processing 62
Figure D.1 – Diagram of Type 28 industrial bus service deployment 63
Figure D.2 – Diagram of networking topology based on the virtualized bus 63
Figure D.3 – Virtual network topology based on logical business function RT1 64

Table 1 – TIMEV type data coding 17
Table 2 – TIMEDATE type coding 18
Table 3 – TIMEOFDAY type coding 18
Table 4 – TIMEDIFFER type coding 19
Table 5 – VISIBLESTRING type data coding 19
Table 6 – Description of time information structure TIMEINFO_S 20
Table 7 – Description of clock option information structure CLOCK_OPTION_INFO_S 21
Table 8 – Description of network configuration parameter structure NETWORK_CFG_PARA_S 22
Table 9 – Description of MAC mapping table NETWORKID_MAC_MAP_TABLE_S 23
Table 10 – Description of IP mapping table structure IP_MAP_TABLE_S 24
Table 11 – Service data mapping table parameter list 29
Table 12 – Time management information table 31
Table 13 – Network management information table 32
Table 14 – Communication models supported by Type 28 AL ASEs 33
Table 15 – Application service interface return value list 33
Table 16 – RT data service interface parameters 34
Table 17 – nRT data service interface parameters 36
Table 18 – Timing service interface parameters 39
Table 19 – Resource service interface parameters 42
Table 20 – Addressing service interface parameters 45
Table 21 – Management service interface parameters 49
Table 22 – Virtual service interface parameters 56
Table 23 – Read service parameters 58
Table 24 – Write service parameters 59
Table 25 – Application service errcode 59
Table D.1 – Virtual bus environment node NETWORKID list 65

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INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 5-28: Application layer service definition – Type 28 elements

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 61158-5-28 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation. It is an International Standard.

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

Draft	Report on voting
65C/1206/FDIS	65C/1235/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 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.

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.

INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 5-28: Application layer service definition – Type 28 elements

1 Scope

1.1 Overview

The fieldbus Application Layer (FAL) provides user programs with a means to access the fieldbus communication environment. In this respect, the FAL can be considered 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 28 fieldbus. The term "time-critical" is used to represent the presence of a time-window, in which one or more specified actions are required to be completed with some defined level of certainty.

This document defines in an abstract way the externally visible service provided by the different Types of the 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 IEC fieldbus Application Layer, in conformance with the OSI Basic Reference Model (ISO/IEC 7498-1) and the OSI Application Layer Structure (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.

Although these services specify, from the perspective of applications, how to request and response are issued and delivered, they do not include a specification of what the requesting and responding applications are to do with them. That is, the behavioural aspects of the applications are not specified; only a definition of what requests and responses they can send/receive is specified. This permits greater flexibility to the FAL users in standardizing such