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Industriell processtyrning – Fältbuss – Del 6-18: Specifikation av protokoll i applikationsskiktet – Delar i fältbuss, Typ 18

*Industrial communication networks –
Fieldbus specifications –
Part 6-18: Application layer protocol specification –
Type 18 elements*

Som svensk standard gäller europastandarden EN 61158-6-18:2008. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61158-6-18:2008.

Nationellt förord

Europastandarden EN 61158-6-18:2008

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 61158-6-18, First edition, 2007 - Industrial communication networks - Fieldbus specifications - Part 6-18: Application layer protocol specification - Type 18 elements**

utarbetad inom International Electrotechnical Commission, IEC.

Denna standard, och de andra delarna i serien SS-EN 61158-6, ersätter SS-EN 61158-6, utgåva 1, 2004.

Tidigare fastställd svensk standard SS-EN 61158-6, utgåva 1, 2004, gäller ej fr o m 2011-02-01.

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English version

**Industrial communication networks -
Fieldbus specifications -
Part 6-18: Application layer protocol specification -
Type 18 elements
(IEC 61158-6-18:2007)**

Réseaux de communication industriels -
Spécifications des bus de terrain -
Partie 6-18: Spécification des services
des couches d'application -
Éléments de type 18
(CEI 61158-6-18:2007)

Industrielle Kommunikationsnetze -
Feldbusse -
Teil 6-18: Protokollspezifikation
des Application Layer
(Anwendungsschicht) -
Typ 18-Elemente
(IEC 61158-6-18:2007)

This European Standard was approved by CENELEC on 2008-02-01. 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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 65C/476/FDIS, future edition 1 of IEC 61158-6-18, 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 was approved by CENELEC as EN 61158-6-18 on 2008-02-01.

This and the other parts of the EN 61158-6 series supersede EN 61158-6:2004.

With respect to EN 61158-6:2004 the following changes were made:

- deletion of Type 6 fieldbus for lack of market relevance;
- addition of new fieldbus types;
- partition into multiple parts numbered 6-2, 6-3, ...6.20.

The following dates were fixed:

- latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement (dop) 2008-11-01
- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2011-02-01

NOTE Use of some of the associated protocol types is restricted by their 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 particular data-link layer protocol type to be used with physical layer and application layer protocols in type combinations as specified explicitly in the EN 61784 series. Use of the various protocol types in other combinations may require permission from their respective intellectual-property-right holders.

IEC and CENELEC draw attention to the fact that it is claimed that compliance with this standard may involve the use of patents as follows, where the [xx] notation indicates the holder of the patent right:

Type 18:

3343036/Japan	[MEC]	"Network System for a Programmable Controller"
5896509/USA	[MEC]	"Network System for a Programmable Controller"
246906/Korea	[MEC]	"Network System for a Programmable Controller"
Pending/Germany	[MEC]	"Network System for a Programmable Controller"

IEC and CENELEC take no position concerning the evidence, validity and scope of these patent rights.

The holders of these patent rights have assured IEC that they are willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statement of the holders of these patent rights are registered with IEC. Information may be obtained from:

[MEC] Mitsubishi Electric Corporation
Corporate Licensing Division
7-3, Marunouchi 2-chome, Chiyoda-ku,
Tokyo 100-8310, Japan

Attention is drawn to the possibility that some of the elements of this standard may be the subject of patent rights other than those identified above. IEC and CENELEC shall not be held responsible for identifying any or all such patent rights.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61158-6-18:2007 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 standards indicated:

IEC 60559	NOTE Harmonized as HD 592 S1:1991 (not modified).
IEC 61158-3-18	NOTE Harmonized as EN 61158-3-18:2008 (not modified).
IEC 61158-4-18	NOTE Harmonized as EN 61158-4-18:2008 (not modified).
IEC 61784-2	NOTE Harmonized as EN 61784-2:2008 (not modified).
ISO/IEC 8877	NOTE Harmonized as EN 28877:1993 (not modified).
ISO 8601	NOTE Harmonized as EN 28601:1992 (not modified).

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61158-5-18	- ¹⁾	Industrial communication networks - Fieldbus specifications - Part 5-18: Application layer service definition - Type 18 elements	EN 61158-5-18	2008 ²⁾
ISO/IEC 7498-1	- ¹⁾	Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model	EN ISO/IEC 7498-1	1995 ²⁾
ISO/IEC 8822	- ¹⁾	Information technology - Open Systems Interconnection - Presentation service definition	-	-
ISO/IEC 8824-2	- ¹⁾	Information technology - Abstract Syntax Notation One (ASN.1): Information object specification	-	-
ISO/IEC 9545	- ¹⁾	Information technology - Open Systems Interconnection - Application Layer structure	-	-
ISO/IEC 10731	- ¹⁾	Information technology - Open Systems Interconnection - Basic reference model - Conventions for the definition of OSI services	-	-

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

CONTENTS

INTRODUCTION.....	7
1 Scope.....	8
1.1 General.....	8
1.2 Specifications.....	8
1.3 Conformance.....	8
2 Normative references	9
3 Terms and definitions	9
3.1 Terms and definitions from other ISO/IEC standards	9
3.2 Other terms and definitions	10
3.3 Abbreviations and symbols.....	19
3.4 Additional abbreviations and symbols for decentralized periphery	19
3.5 Conventions	21
4 Abstract syntax.....	21
4.1 M1 device manager PDU abstract syntax	21
4.2 M2 device manager PDU abstract syntax	21
4.3 S1 device manager PDU abstract syntax.....	22
4.4 S2 device manager PDU abstract syntax.....	22
4.5 M1 connection manager PDU abstract syntax.....	22
4.6 M2 connection manager PDU abstract syntax.....	23
4.7 S1 connection manager PDU abstract syntax	24
4.8 S2 connection manager PDU abstract syntax	24
4.9 M1 cyclic transmission PDU abstract syntax.....	24
4.10 M2 cyclic transmission PDU abstract syntax.....	25
4.11 S1 cyclic transmission PDU abstract syntax	25
4.12 S2 cyclic transmission PDU abstract syntax	26
5 Transfer syntax	26
5.1 M1 device manager PDU encoding.....	26
5.2 M2 device manager PDU encoding.....	28
5.3 S1 device manager PDU encoding	29
5.4 S2 device manager PDU encoding	30
5.5 M1 connection manager PDU encoding	31
5.6 M2 connection manager PDU encoding	35
5.7 S1 connection manager PDU encoding.....	35
5.8 S2 connection manager PDU encoding.....	36
5.9 M1 cyclic transmission PDU encoding	37
5.10 M2 cyclic transmission PDU encoding	38
5.11 S1 cyclic transmission PDU encoding.....	39
5.12 S2 cyclic transmission PDU encoding.....	41
5.13 Acyclic transmission PDU encoding.....	42
6 Structure of FAL protocol state machines	50
7 AP-context state machine.....	51
8 FAL service protocol machine (FSPM).....	51
8.1 Overview	51
8.2 FAL service primitives	51
9 AR protocol machine (ARPM)	52

9.1	Overview	52
9.2	M1 master ARPM	52
9.3	M2 master ARPM	57
9.4	Slave ARPM	60
10	DLL mapping protocol machine (DMPM)	63
10.1	Overview	63
10.2	Primitives received from the ARPM	63
10.3	Indications received from the DL	63
	Bibliography	64
	Figure 1 – Parameter block 1 command parameter field	44
	Figure 2 – Parameter block 2 command parameter field	45
	Figure 3 – Relationships among protocol machines and adjacent layers	50
	Figure 4 – ARPM M1 master AR state diagram	53
	Figure 5 – ARPM M2 master AR state diagram	57
	Figure 6 – ARPM slave AR state diagram	60
	Table 1 – M1 device manager attribute format	21
	Table 2 – M2 device manager attribute format	22
	Table 3 – S1 device manager attribute format	22
	Table 4 – S2 device manager attribute format	22
	Table 5 – M1 connection manager attribute format	23
	Table 6 – M2 connection manager attribute format	24
	Table 7 – S1 connection manager attribute format	24
	Table 8 – S2 connection manager attribute format	24
	Table 9 – M1 cyclic transmission attribute format	25
	Table 10 – M2 cyclic transmission attribute format	25
	Table 11 – S1 cyclic transmission attribute format	25
	Table 12 – S2 cyclic transmission attribute format	26
	Table 13 – M1 device manager attribute encoding	27
	Table 14 – M2 device manager attribute encoding	29
	Table 15 – S1 device manager attribute encoding	30
	Table 16 – S2 device manager attribute encoding	31
	Table 17 – M1 connection manager attribute encoding	32
	Table 18 – M2 connection manager attribute encoding	35
	Table 19 – S1 connection manager attribute encoding	36
	Table 20 – S2 connection manager attribute encoding	36
	Table 21 – M1 cyclic transmission attribute encoding	37
	Table 22 – M2 cyclic transmission attribute encoding	39
	Table 23 – S1 cyclic transmission attribute encoding	40
	Table 24 – S2 cyclic transmission attribute encoding	41
	Table 25 – Acyclic transmission – message data encoding	42
	Table 26 – Command header format	43
	Table 27 – Command codes	43

Table 28 – System information command parameter field	46
Table 29 – System information command parameter field	46
Table 30 – System information command parameter field	46
Table 31 – System information command parameter field	47
Table 32 – Line test command parameter field	47
Table 33 – Memory read command parameter field	48
Table 34 – Memory write command parameter field	49
Table 35 – FSPM events	52
Table 36 – M1 master state-event table 1 – events	55
Table 37 – M1 master state-event table 2 – receipt of FSPM service primitives	55
Table 38 – M1 master state-event table 3 – receipt of DMPM service primitives	57
Table 39 – M2 master state-event table 1 – events	58
Table 40 – M2 master state-event table 2 – receipt of FSPM service primitives	59
Table 41 – M2 master state-event table 3 – receipt of DMPM service primitives	59
Table 42 – S1 connect monitoring time	61
Table 43 – S2 connect monitoring time	61
Table 44 – Slave state-event table 1 – events	62
Table 45 – Slave state-event table 2 – receipt of FSPM service primitives	62
Table 46 – Slave state-event table 3 – receipt of DMPM service primitives	62
Table 47 – ARPM to DL mapping	63
Table 48 – DL to ARPM mapping	63

INTRODUCTION

This part of IEC 61158 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/TR 61158-1.

The application protocol provides the application service by making use of the services available from the data-link or other immediately lower layer. The primary aim of this standard is to provide a set of rules for communication expressed in terms of the procedures to be carried out by peer application entities (AEs) at the time of communication. These rules for communication are intended to provide a sound basis for development in order to serve a variety of purposes:

- as a guide for implementors and designers;
- for use in the testing and procurement of equipment;
- as part of an agreement for the admittance of systems into the open systems environment;
- as a refinement to the understanding of time-critical communications within OSI.

This standard is concerned, in particular, with the communication and interworking of sensors, effectors and other automation devices. By using this standard together with other standards positioned within the OSI or fieldbus reference models, otherwise incompatible systems may work together in any combination.

INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 6-18: Application layer protocol specification – Type 18 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 standard 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 18 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 standard specifies interactions between remote applications and defines the externally visible behavior provided by the Type 18 fieldbus application layer in terms of

- a) the formal abstract syntax defining the application layer protocol data units conveyed between communicating application entities;
- b) the transfer syntax defining encoding rules that are applied to the application layer protocol data units;
- c) the application context state machine defining the application service behavior visible between communicating application entities;
- d) the application relationship state machines defining the communication behavior visible between communicating application entities.

The purpose of this standard is to define the protocol provided to

- 1) define the wire-representation of the service primitives defined in IEC 61158- 5-18, and
- 2) define the externally visible behavior associated with their transfer.

This standard specifies the protocol of the Type 18 fieldbus application layer, in conformance with the OSI Basic Reference Model (ISO/IEC 7498) and the OSI application layer structure (ISO/IEC 9545).

1.2 Specifications

The principal objective of this standard is to specify the syntax and behavior of the application layer protocol that conveys the application layer services defined in IEC 61158-5-18.

A secondary objective is to provide migration paths from previously-existing industrial communications protocols. It is this latter objective which gives rise to the diversity of protocols standardized in the IEC 61158-6 series.

1.3 Conformance

This standard does not specify individual implementations or products, nor do they constrain the implementations of application layer entities within industrial automation systems.

Conformance is achieved through implementation of this application layer protocol specification.

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 61158-5-18, *Industrial communication networks – Fieldbus specifications – Part 5-18: Application layer service definition – Type 18 elements*

ISO/IEC 10731, *Information technology – Open Systems Interconnection – Basic Reference Model – Conventions for the definition of OSI services*

ISO/IEC 7498-1, *Information technology – Open Systems Interconnection – Basic Reference Model – Part 1: The Basic Model*

ISO/IEC 8822, *Information technology – Open Systems Interconnection – Presentation service definition*

ISO/IEC 8824, *Information technology – Open Systems Interconnection – Specification of Abstract Syntax Notation One (ASN.1)*

ISO/IEC 9545, *Information technology – Open Systems Interconnection – Application Layer structure*

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