

# SLOVENSKI STANDARD

## SIST EN 61158-6-20:2012

01-september-2012

Nadomešča:

SIST EN 61158-6-20:2008

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**Industrijska komunikacijska omrežja - Specifikacije za procesno vodilo - 6-20. del: Specifikacija protokola na aplikacijskem nivoju - Elementi tipa 20 (IEC 61158-6-20:2010)**

Industrial communication networks - Fieldbus specifications - Part 6-20: Application layer protocol specification - Type 20 elements (IEC 61158-6-20:2010)

**iTeh STANDARD PREVIEW**

Industrielle Kommunikationsnetze - Feldbusse - Teil 6-20: Protokollspezifikation des Application Layer (Anwendungsschicht) - Typ 20-Elemente (IEC 61158-6-20:2010)

[SIST EN 61158-6-20:2012](#)

Réseaux de communication industriels - Spécifications des bus de terrain - Partie 6-20: Spécification des protocoles des couches d'application - Eléments de type 20 (CEI 61158-6-20:2010)

**Ta slovenski standard je istoveten z: EN 61158-6-20:2012**

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**ICS:**

25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
35.100.70	Uporabniški sloj	Application layer
35.110	Omreževanje	Networking

**SIST EN 61158-6-20:2012**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
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**EN 61158-6-20**

June 2012

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English version

**Industrial communication networks -  
Fieldbus specifications -  
Part 6-20: Application layer protocol specification -  
Type 20 elements  
(IEC 61158-6-20:2010)**

Réseaux de communication industriels -  
Spécifications des bus de terrain -  
Partie 6-20: Spécification des protocoles  
des couches d'application -  
Éléments de type 20  
(CEI 61158-6-20:2010)

Industrielle Kommunikationsnetze -  
Feldbusse -  
Teil 6-20: Protokollspezifikation des  
Application Layer (Anwendungsschicht) -  
Typ 20-Elemente  
(IEC 61158-6-20:2010)

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

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Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 65C/607/FDIS, future edition 2 of IEC 61158-6-20, 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 61158-6-20:2012.

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) 2012-12-28
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2015-03-28

This document supersedes EN 61158-6-20:2008.

EN 61158-6-20:2012 includes the following significant technical changes with respect to EN 61158-6-20:2008:

- revised Identify FAL PDU, see 5.3.2;
- revised Read device variables with status FAL PDU, see 5.3.9.

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

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## Endorsement notice

The text of the International Standard IEC 61158-6-20:2010 was approved by CENELEC as a European Standard without any modification.

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 60559	-	Binary floating-point arithmetic for microprocessor systems	HD 592 S1	-
IEC/TR 61158-1	2010	Industrial communication networks - Fieldbus specifications - Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series	CLC/TR 61158-1	2010
IEC 61158-5-20	-	Industrial communication networks - Fieldbus specifications - Part 5-20: Application layer service definition - Type 20 elements	EN 61158-5-20	-
ISO/IEC 7498-1	-	Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model	-	-
ISO/IEC 8824-1	-	Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation	-	-
ISO/IEC 8859-1	-	Information technology - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet No.1	-	-
ISO/IEC 9545	-	Information technology - Open Systems Interconnection - Application Layer structure	-	-

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# INTERNATIONAL STANDARD

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**Industrial communication networks – Fieldbus specifications –  
Part 6-20: Application layer protocol specification – Type 20 elements**

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## CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
1.1 General.....	8
1.2 Specifications.....	8
1.3 Conformance.....	9
2 Normative references.....	9
3 Terms, definitions, symbols, abbreviations and conventions.....	10
3.1 Terms and definitions from other ISO/IEC standards.....	10
3.2 IEC/TR 61158-1 terms.....	10
3.3 Type 20 fieldbus application-layer specific definitions.....	13
3.4 Abbreviations and symbols.....	15
3.5 Conventions.....	16
3.6 Conventions used in state machines.....	16
4 Abstract syntax.....	17
5 Transfer syntax.....	17
5.1 General.....	17
5.2 Common APDU structure.....	18
5.3 Service-specific APDU structures.....	20
5.4 Data coding rules.....	35
6 Structure of FAL protocol state machines.....	41
7 AP-context state machines.....	42
8 FAL service protocol machine (FSPM).....	42
8.1 General.....	42
8.2 FSPM state tables.....	43
8.3 Functions used by FSPM.....	48
8.4 Parameters of FSPM/ARPM primitives.....	48
9 Application relationship protocol machines (ARPMs).....	49
9.1 AREP mapping to data link layer.....	49
9.2 Application relationship protocol machines (ARPMs).....	50
9.3 AREP state machine primitive definitions.....	52
9.4 AREP state machine functions.....	52
10 DLL mapping protocol machine (DMPM).....	52
10.1 DMPM states.....	52
10.2 DMPM state machines.....	53
10.3 Primitives exchanged between data link layer and DMPM.....	53
10.4 Functions used by DMPM.....	54
Bibliography.....	55
Figure 1 – APDU format.....	18
Figure 2 – Normal response from slave to master.....	18
Figure 3 – Command error response from slave to master.....	19
Figure 4 – Communication error response from slave to master.....	20
Figure 5 – Coding without identification.....	36
Figure 6 – Coding of Integer type data.....	36



Figure 7 – Coding of Integer16 type data .....	36
Figure 8 – Coding of Unsigned type data .....	36
Figure 9 – Coding of Unsigned16 type data .....	36
Figure 10 – Coding of single precision Floating Point type data .....	37
Figure 11 – Coding of double precision Floating Point type data .....	38
Figure 12 – Coding of Date type data.....	38
Figure 13 – Relationships among protocol machines and adjacent layers .....	42
Figure 14 – State transition diagram of FSPM.....	43
Figure 15 – State transition diagram of the client ARPM .....	50
Figure 16 – State transition diagram of the server ARPM.....	51
Figure 17 – State transition diagram of DMPM.....	53
Table 1 – Conventions used for state machines .....	16
Table 2 – Response code values .....	19
Table 3 – Device status values .....	19
Table 4 – Response code values .....	20
Table 5 – Communication error codes.....	20
Table 6 – Identify request APDU.....	21
Table 7 – Identify response value field.....	22
Table 8 – Identify command specific response codes.....	22
Table 9 – Read primary variable response value field.....	23
Table 10 – Read primary variable command specific response codes.....	23
Table 11 – Read loop current and percent of range value field.....	23
Table 12 – Read loop current and percent of range command specific response codes .....	24
Table 13 – Read dynamic variables and loop current value field .....	24
Table 14 – Read dynamic variables and loop current command specific response codes.....	24
Table 15 – Write polling address value field.....	25
Table 16 – Loop current mode codes .....	25
Table 17 – Write polling address command specific response codes.....	25
Table 18 – Read loop configuration value field.....	26
Table 19 – Read loop configuration command specific response codes .....	26
Table 20 – Read dynamic variable families classifications value field.....	26
Table 21 – Read dynamic variable families classifications command specific response codes.....	27
Table 22 – Read device variables with status request value field .....	27
Table 23 – Read device variables with status value field.....	27
Table 24 – Variable status values .....	29
Table 25 – Read device variables with status command specific response codes .....	29
Table 26 – Read message response value field .....	30
Table 27 – Read message command specific response codes .....	30
Table 28 – Read tag, descriptor, date response value field .....	30
Table 29 – Read tag, descriptor, date command specific response codes .....	30
Table 30 – Read primary variable transducer information response value field.....	31

Table 31 – Read primary variable transducer information command specific response codes.....	31
Table 32 – Read device information response value field.....	32
Table 33 – Read device information command specific response codes.....	32
Table 34 – Read final assembly number response value field .....	32
Table 35 – Read final assembly number command specific response codes .....	33
Table 36 – Write message value field .....	33
Table 37 – Write message command specific response codes .....	33
Table 38 – Write tag, descriptor, date value field .....	33
Table 39 – Write tag, descriptor, date command specific response codes .....	34
Table 40 – Write final assembly number value field.....	34
Table 41 – Write final assembly number command specific response codes .....	34
Table 42 – Read long tag response value field.....	35
Table 43 – Read long tag command-specific response codes .....	35
Table 44 – Write long tag value field .....	35
Table 45 – Write long tag command specific Response codes .....	35
Table 46 – Coding for Date type .....	38
Table 47 – Coding for one octet Enumerated Type.....	39
Table 48 – One octet bit field.....	40
Table 49 – Packed ASCII character set.....	40
Table 50 – Acceptable subset of ISO Latin-1 characters .....	41
Table 51 – FSPM state Table – client transactions.....	43
Table 52 – FSPM state Table – server transactions.....	47
Table 53 – Function Command () .....	48
Table 54 – Function CommErr () .....	48
Table 55 – Function CommandErr () .....	48
Table 56 – Function Resp ().....	48
Table 57 – Function Device () .....	48
Table 58 – Parameters used with primitives exchanged between FSPM and ARPM .....	48
Table 59 – Client ARPM states .....	50
Table 60 – Client ARPM state table .....	51
Table 61 – Server ARPM states .....	51
Table 62 – Server ARPM state table .....	51
Table 63 – Primitives issued from ARPM to DMPM .....	52
Table 64 – Primitives issued by DMPM to ARPM .....	52
Table 65 – Parameters used with primitives exchanged between ARPM and DMPM .....	52
Table 66 – DMPM state descriptions.....	53
Table 67 – DMPM state Table – Client transactions .....	53
Table 68 – DMPM state Table – Server transactions.....	53
Table 69 – Primitives exchanged between data-link layer and DMPM .....	54

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**INDUSTRIAL COMMUNICATION NETWORKS –  
 FIELDBUS SPECIFICATIONS –**
**Part 6-20: Application layer protocol specification –  
 Type 20 elements**

## FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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NOTE 1 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 profile parts. Use of the various protocol types in other combinations may require permission from their respective intellectual-property-right holders.

International Standard IEC 61158-6-20 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

This second edition cancels and replaces the first edition published in 2007. This edition constitutes a technical revision.

The main changes with respect to the previous edition are listed below:

- a) revised Identify FAL PDU, see 5.3.2;

b) revised Read device variables with status FAL PDU, see 5.3.9;

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

FDIS	Report on voting
65C/607/FDIS	65C/621/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 ISO/IEC Directives, Part 2.

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 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.

NOTE 2 The revision of this standard will be synchronized with the other parts of the IEC 61158 series.

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## 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.

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## INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

### Part 6-20: Application layer protocol specification – Type 20 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 20 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 defines in an abstract way the externally visible behavior provided by the Type 20 of the fieldbus Application Layer in terms of

- a) the abstract syntax defining the application layer protocol data units conveyed between communicating application entities,
- b) the transfer syntax defining the application layer protocol data units conveyed between communicating application entities,
- c) the application context state machine defining the application service behavior visible between communicating application entities; and
- d) the application relationship state machines defining the communication behavior visible between communicating application entities; and.

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

- a) the wire-representation of the service primitives defined in IEC 61158-5-20, and
- b) the externally visible behavior associated with their transfer.

This standard specifies the protocol of the Type 20 IEC 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 61158-5-20.

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 IEC 61158-6.

### 1.3 Conformance

This standard does not specify individual implementations or products, nor does it 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 60559, *Binary floating-point arithmetic for microprocessor systems*

IEC/TR 61158-1:2010<sup>1</sup>, *Industrial communication networks – Fieldbus specifications – Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series*

IEC 61158-5-20, *Industrial communication networks – Fieldbus specifications – Part 5-20: Application layer service definition – Type 20 elements*

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

ISO/IEC 8824-1, *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation*

ISO/IEC 8859-1, *Information technology – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1*

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

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<sup>1</sup> To be published.