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Industrielle Kommunikationsnetze - Feldbusse - Teil 6-22: Protokollspezifikation des Application Layer (Anwendungsschicht) - Typ 22-Elemente (IEC 61158-6-22:2010)

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35.110	Omreževanje	Networking

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Foreword

The text of document 65C/607/FDIS, future edition 1 of IEC 61158-6-22, 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 61158-6-22:2012.

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
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IEC/TR 61158-1:2010 NOTE Harmonized as CLC/TR 61158-1:2010 (not modified).

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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.

Publication	Year	Title	EN/HD	Year
IEC 60559	-	Binary floating-point arithmetic for microprocessor systems	HD 592 S1	-
IEC 61158-3-22	2010	Industrial communication networks - Fieldbus specifications - Part 3-22: Data-link layer service definition - Type 22 elements	EN 61158-3-22	2012
IEC 61158-4-22	2010	Industrial communication networks - Fieldbus specifications - Part 4-22: Data-link layer protocol specification - Type 22 elements	EN 61158-4-22	2012
IEC 61158-5-22	2010	Industrial communication networks - Fieldbus specifications - Part 5-22: Application layer service definition - Type 22 elements	EN 61158-5-22	2012
ISO/IEC 7498-1	-	Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model	-	-
ISO/IEC 8802-3	-	Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications	-	-
ISO/IEC 8822	-	Information technology - Open Systems Interconnection - Presentation service definition	-	-
ISO/IEC 8824-1	-	Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation	-	-
ISO/IEC 9545	-	Information technology - Open Systems Interconnection - Application Layer structure	-	-
ISO/IEC 10731	-	Information technology - Open Systems Interconnection - Basic reference model - Conventions for the definition of OSI services	-	-

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CONTENTS

FOREWORD 6
INTRODUCTION 8
1 Scope 9
1.1 General 9
1.2 Specifications 10
1.3 Conformance 10
2 Normative references 10
3 Terms, definitions, abbreviations, symbols and conventions 11
3.1 Terms and definitions from other ISO/IEC standards 11
3.2 Fieldbus application-layer specific definitions 11
3.3 Abbreviations and symbols 15
3.4 Conventions 17
4 Application layer protocol specification 18
4.1 Operating principle 18
4.2 Device reference models 19
4.3 Application layer structure 21
5 FAL syntax description 21
5.1 Introduction and coding principles 21
5.2 Data type encoding 21
5.3 CeS encoding 25
5.4 ISO/IEC 8802-3 DLPDU communication inside Type 22 RTFL 72
5.5 Management encoding 72
6 FAL protocol state machines 73
6.1 Overview 73
6.2 Fieldbus service protocol machine (FSPM) 74
6.3 Application relationship protocol machine (ARPM) 74
6.4 DLL mapping protocol machine 74
7 AP-context state machine 75
8 FAL service protocol machine (FSPM) 75
9 Application layer state machine (ALSM) 75
9.1 Description 75
9.2 States 77
9.3 Primitive definitions 78
9.4 State table 79
9.5 AL-service forwarding depending on AL-state 79
10 DLL mapping protocol machine (DMPM) 80
10.1 Overview 80
10.2 Primitives exchanged between ALSM and DMPM 80
10.3 Primitives exchanged between DLL and DMPM 84
10.4 ALSM to DLL mapping 86
Bibliography 88

Figure 1 – RTFL device reference model 20
Figure 2 – RTFN device reference model 21
Figure 3 – Encoding of TimeOfDay value 22

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SIST EN 61158-6-22:2012
https://standards.iteh.ai/catalog/standards/sist/618f4549-5048-475a-8931-3c1b6d029b9/sist-en-61158-6-22-2012

SIST EN 61158-6-22:2012

Figure 4 – Encoding of TimeDifference value 23
Figure 5 – Object dictionary addressing schema 26
Figure 6 – Relationships among protocol machines and adjacent layers 73
Figure 7 – ALSM protocol machine 74
Figure 8 – ALSM diagram 76

Table 1 – PDU element definition 18
Table 2 – Object definition 18
Table 3 – Transfer syntax for bit sequences 22
Table 4 – Transfer syntax for Integer data type 24
Table 5 – Transfer syntax for Unsigned data type 24
Table 6 – Object dictionary structure 25
Table 7 – Object dictionary object type definitions 26
Table 8 – Basic data type definitions 27
Table 9 – Complex data type definition 28
Table 10 – Communication section 29
Table 11 – Device type 31
Table 12 – Error register encoding 31
Table 13 – Error register 31
Table 14 – Object definition template 32
Table 15 – Encoding of event log entries 32
Table 16 – Event log 33
Table 17 – Manufacturer device name 33
Table 18 – Manufacturer HW version 34
Table 19 – Manufacturer SW version 34
Table 20 – CL configuration 34
Table 21 – Time sync IRQ configuration encoding 36
Table 22 – Time sync IRQ configuration 36
Table 23 – Time sync IRQ state 37
Table 24 – Store parameters read information 38
Table 25 – Store parameters 38
Table 26 – Restore parameters read information 39
Table 27 – Restore default parameters 39
Table 28 – Diagnostic information 41
Table 29 – Diagnostic threshold 44
Table 30 – IP address EMCY 45
Table 31 – Inhibit time EMCY 46
Table 32 – Encoding of consumer heartbeat entries 46
Table 33 – Consumer heartbeat list 47
Table 34 – Producer heartbeat parameter 47
Table 35 – Identity object 49
Table 36 – SDO protocol timeout 51
Table 37 – Enable client SDO parameter 51

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(standards.iteh.ai)
SIST EN 61158-6-22:2012
https://standards.iteh.ai/catalog/standards/sist/618f4549-5048-475a-8931-3c1bf6d029b9/sist-en-61158-6-22-2012

SIST EN 61158-6-22:2012

Table 38 – Enable EMCY 52
Table 39 – PDO timeout tolerance 52
Table 40 – Store EDS 52
Table 41 – Storage format 53
Table 42 – OS command 53
Table 43 – OS command mode 54
Table 44 – OS debugger interface 55
Table 45 – OS prompt 56
Table 46 – Module list 57
Table 47 – Emergency subscriber encoding 57
Table 48 – Emergency subscriber 57
Table 49 – Client SDO parameter encoding 58
Table 50 – Client SDO parameter 58
Table 51 – Receive PDO communication parameter 59
Table 52 – Transmit PDO communication parameter 61
Table 53 – Mapping format 63
Table 54 – Receive PDO mapping parameter 63
Table 55 – Transmit PDO mapping parameter 64
Table 56 – Initiate SDO expedited download request 65
Table 57 – Initiate SDO expedited download response 65
Table 58 – Initiate SDO normal download request 65
Table 59 – Initiate SDO normal download response 66
Table 60 – SDO download request 66
Table 61 – SDO download response 66
Table 62 – Initiate SDO expedited upload request 67
Table 63 – Initiate SDO expedited upload response 67
Table 64 – Initiate SDO normal upload response 67
Table 65 – SDO upload request 68
Table 66 – SDO upload response 68
Table 67 – SDO abort request 68
Table 68 – SDO abort codes 68
Table 69 – Process data write request via MSC 69
Table 70 – Process data write request via CDC 70
Table 71 – Emergency request 70
Table 72 – Emergency error codes 70
Table 73 – Heartbeat request via MSC 71
Table 74 – Heartbeat request via CDC 71
Table 75 – Send frame request 72
Table 76 – Application layer management request 72
Table 77 – State transitions and management services 76
Table 78 – Primitives issued by ALSM to DLL 78
Table 79 – Primitives issued by DLL to ALSM 78
Table 80 – Primitives issued by FSPM to ALSM 78

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SIST EN 61158-6-22:2012
https://standards.iteh.ai/catalog/standards/sist/618f4549-5048-475a-8931-5e4bbd029b9/sist-en-61158-6-22-2012

SIST EN 61158-6-22:2012

Table 81 – Primitives issued by ALSM to FSPM 78
Table 82 – ALSM state table 79
Table 83 – Application layer states and communication services 80
Table 84 – Primitives issued by ALSM to DMPM 80
Table 85 – Primitives issued by DMPM to ALSM 82
Table 86 – Primitives issued by DMPM to DLL 84
Table 87 – Primitives issued by DLL to DMPM 85
Table 88 – ALSM to DLL mapping 86

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(standards.iteh.ai)
SIST EN 61158-6-22:2012
https://standards.iteh.ai/catalog/standards/sist/618f4549-5048-475a-8931-3c1bf6d029b9/sist-en-61158-6-22-2012

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Part 6-22: Application layer protocol specification – Type 22 elements

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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 of their respective intellectual-property-right holders.

International Standard IEC 61158-6-22 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

This standard cancels and replaces IEC/PAS 61158-6-22 published in 2009. This first edition constitutes a technical revision.

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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 International 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,
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- 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 6-22: Application layer protocol specification – Type 22 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 22 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.

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This standard defines in an abstract way the externally visible behavior provided by the different Types of the fieldbus Application Layer in terms of:

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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.

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

a) define the wire-representation of the service primitives defined in IEC 61158-5-22:2010; and

b) define the externally visible behavior associated with their transfer.

This standard specifies the protocol of the IEC fieldbus Application Layer, in conformance with the OSI Basic Reference Model (ISO/IEC 7498) 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 request and responses 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 behavioral aspects of the