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Industrial communication networks - Fieldbus specifications - Part 3-3: Data-link layer service definition - Type 3 elements

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 03/15

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English Version

**Industrial communication networks - Fieldbus specifications -
Part 3-3: Data-link layer service definition - Type 3 elements
(IEC 61158-3-3:2014)**

Réseaux de communication industriels - Spécifications des
bus de terrain - Partie 3-3: Définition des services de la
couche liaison de données - Éléments de type 3
(CEI 61158-3-3:2014)

Industrielle Kommunikationsnetze - Feldbusse - Teil 3-3:
Dienstfestlegungen des Data Link Layer
(Sicherheitsschicht) - Typ 3-Elemente
(IEC 61158-3-3:2014)

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Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

The text of document 65C/759/FDIS, future edition 2 of IEC 61158-3-3, 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 61158-3-3:2014.

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) 2015-06-17
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-09-17

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61158-2	NOTE	Harmonized as EN 61158-2.
IEC 61158-4-3	NOTE	Harmonized as EN 61158-4-3.
IEC 61158-5-3	NOTE	Harmonized as EN 61158-5-3.
IEC 61158-6-3	NOTE	Harmonized as EN 61158-6-3.

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 1 When 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.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61158-1	-	Industrial communication networks - Fieldbus specifications - Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series	EN 61158-1	-
ISO/IEC 7498-1	-	Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model	-	-
ISO/IEC 7498-3	-	Information technology - Open Systems Interconnection - Basic Reference Model: Naming and addressing	-	-
ISO/IEC 10731	-	Information technology - Open Systems Interconnection - Basic Reference Model - Conventions for the definition of OSI services	-	-



INTERNATIONAL STANDARD

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**Réseaux de communication industriels – Spécifications des bus de terrain –
Partie 3-3: Définition des services de la couche liaison de données – Éléments
de type 3**





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INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Industrial communication networks – Fieldbus specifications –
Part 3-3: Data-link layer service definition – Type 3 elements**

**Réseaux de communication industriels – Spécifications des bus de terrain –
Partie 3-3: Définition des services de la couche liaison de données – Éléments
de type 3**

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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.....	9
3.1 Reference model terms and definitions.....	9
3.2 Service convention terms and definitions.....	11
3.3 Common data-link service terms and definitions.....	12
3.4 Additional Type 3 data-link specific definitions.....	13
3.5 Common symbols and abbreviations.....	15
3.6 Additional Type 3 symbols and abbreviations.....	16
3.7 Common conventions.....	18
3.8 Additional Type 3 conventions.....	19
4 Connectionless-mode data-link service.....	20
4.1 General.....	20
4.2 Model of the connectionless-mode data-link service.....	20
4.3 Sequence of primitives.....	22
4.4 Detailed description of DL services.....	25
5 DL-management Service.....	44
5.1 General.....	44
5.2 Facilities of the DLMS.....	44
5.3 Services of the DL-management.....	45
5.4 Overview of interactions.....	46
5.5 Detailed specification of services and interactions.....	48
Bibliography.....	68
Figure 1 – Relationships of DLSAPs, DLSAP-addresses and group DL-addresses.....	12
Figure 2 – SDA service.....	23
Figure 3 – SDN service.....	23
Figure 4 – SRD service.....	23
Figure 5 – MSRD service.....	24
Figure 6 – CS service.....	24
Figure 7 – Reset, Set value, Get value, Ident (local), DLSAP status, DLSAP activate, DLSAP activate responder, DLSAP activate subscriber and DLSAP deactivate services.....	47
Figure 8 – Event service.....	47
Figure 9 – Ident (remote) service.....	48
Table 1 – Summary of DL services and primitives.....	22
Table 2 – SDA data ack primitives and parameters.....	26
Table 3 – Values of DL_status for the SDA data ack service.....	28
Table 4 – SDN data primitives and parameters.....	29

Table 5 – Values of DL_status for the SDN data service	31
Table 6 – SRD data reply primitives and parameters	32
Table 7 – Values of Update_status for the SRD data reply service	33
Table 8 – Additional values of DL_status for the SRD data reply service.....	34
Table 9 – SRD reply-update primitives and parameters.....	34
Table 10 – Values of DL_status for the SRD reply-update service.....	36
Table 11 – MSRD MCT data reply primitives and parameters.....	37
Table 12 – MSRD DXM data reply primitive and parameters	39
Table 13 – CS time event primitives and parameters	41
Table 14 – Values of DL_status for the CS time event service	42
Table 15 – CS clock value primitives and parameters	42
Table 16 – Values of CS_status for the CS clock value service	44
Table 17 – Values of DL_status for the CS clock value service	44
Table 18 – Summary of DL-management services and primitives	47
Table 19 – Reset primitives and parameters	48
Table 20 – Values of DLM_status for the reset service.....	48
Table 21 – Set value primitives and parameters	49
Table 22 – Mandatory DLE-variables	50
Table 23 – Optional DLE-variables.....	50
Table 24 – Permissible values of mandatory DLE-variables	51
Table 25 – Permissible values of optional DLE-variables	51
Table 26 – Meaning of the values for the parameter isochronous_mode	52
Table 27 – Default reaction times and operating parameters for a master station for asynchronous transmission.....	52
Table 28 – Default reaction times and operating parameters for a slave station with asynchronous transmission.....	52
Table 29 – Default reaction times and operating parameters for master stations for coupling of synchronous and asynchronous transmission segments.....	53
Table 30 – Default reaction times and operating parameter for slave stations for coupling of synchronous and asynchronous transmission segments.....	53
Table 31 – Values of DLM_status for the set value service	53
Table 32 – Get value primitives and parameters	54
Table 33 – Additional mandatory DLE-variables in master stations	54
Table 34 – Permissible values of the additional DLE-variables in master stations	55
Table 35 – Values of DLM_status for the get value service	55
Table 36 – Event primitive and parameters	55
Table 37 – Mandatory DLL events and fault types	56
Table 38 – Permissible values of TSH.....	56
Table 39 – Ident primitives and parameters	57
Table 40 – Ident_list for the ident service.....	57
Table 41 – Values of DLM_status for the ident service (local)	58
Table 42 – Values of DLM_status for the ident service (remote).....	58
Table 43 – DLSAP status primitives and parameters.....	58
Table 44 – Values of DLM_status for the DLSAP status service	59

Table 45 – DLSAP activate primitives and parameters	60
Table 46 – DLSAP activate service_list.....	60
Table 47 – DLSAP activate DLSDU_length_list (SDA, SDN, SRD, MSRD and CS).....	61
Table 48 – DLSDU lengths of SDA and SDN as used in the DLSAP activate service.....	62
Table 49 – DLSDU lengths of SRD and MSRD as used in the (master station) DLSAP activate service.....	62
Table 50 – DLSDU lengths of CS as used in the DLSAP activate service	62
Table 51 – Values of DLM_status for the DLSAP activate service	62
Table 52 – DLSAP activate responder primitives and parameters	63
Table 53 – DLSDU_length_list for the DLSAP activate responder service	63
Table 54 – DLSDU length of SRD and MSRD as used in the DLSAP activate responder service.....	64
Table 55 – Values of DLM_status for the DLSAP activate responder service	65
Table 56 – DLSAP activate subscriber primitives and parameters	65
Table 57 – DLSDU_length_list for the DLSAP activate subscriber service.....	66
Table 58 – DLSDU lengths of MSRD as used in the DLSAP activate subscriber service (master and slave stations).....	66
Table 59 – Values of DLM_status for the DLSAP activate subscriber service	66
Table 60 – DLSAP deactivate primitives and parameters	67
Table 61 – Values of DLM_status for the DLSAP deactivate service	67

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INDUSTRIAL COMMUNICATION NETWORKS –
FIELDBUS SPECIFICATIONS –****Part 3-3: Data-link layer service definition –
Type 3 elements**

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

International Standard IEC 61158-3-3 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:

- Two notes in definitions modified.

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

FDIS	Report on voting
65C/759/FDIS	65C/769/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.

The list of all the parts of the IEC 61158 series, 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.

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 61158-1.

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 data-link layer service defined in this standard is a conceptual architectural service, independent of administrative and implementation divisions.

INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 3-3: Data-link layer service definition – Type 3 elements

1 Scope

1.1 General

This part of IEC 61158 provides common elements for basic time-critical messaging communications between devices in an automation environment. 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 service provided by the Type 3 fieldbus data-link layer in terms of

- a) the primitive actions and events of the service;
- b) the parameters associated with each primitive action and event, and the form which they take; and
- c) the interrelationship between these actions and events, and their valid sequences.

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

- the Type 3 fieldbus application layer at the boundary between the application and data-link layers of the fieldbus reference model, and
- systems management at the boundary between the data-link layer and systems management of the fieldbus reference model.

1.2 Specifications

The principal objective of this standard is to specify the characteristics of conceptual data-link layer services suitable for time-critical communications, and thus supplement the OSI Basic Reference Model in guiding the development of data-link protocols for time-critical communications. A secondary objective is to provide migration paths from previously existing industrial communications protocols.

This specification may be used as the basis for formal DL-Programming-Interfaces. Nevertheless, it is not a formal programming interface, and any such interface will need to address implementation issues not covered by this specification, including

- a) the sizes and octet ordering of various multi-octet service parameters, and
- b) the correlation of paired request and confirm, or indication and response, primitives.

1.3 Conformance

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

There is no conformance of equipment to this data-link layer service definition standard. Instead, conformance is achieved through implementation of the corresponding data-link protocol that fulfills the Type 1 data-link layer services defined in this standard.

2 Normative references

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 All parts of the IEC 61158 series, as well as IEC 61784-1 and IEC 61784-2 are maintained simultaneously. Cross-references to these documents within the text therefore refer to the editions as dated in this list of normative references.

IEC 61158-1, *Industrial communication networks – Fieldbus specifications – Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series*

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

ISO/IEC 7498-3, *Information technology – Open Systems Interconnection – Basic Reference Model: Naming and addressing*

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