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Industrial communication networks - Fieldbus specifications - Part 3-12: Data-link layer service definition - Type 12 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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NORME EUROPÉENNE
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EN 61158-3-12

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ICS 25.040.40; 35.100.20; 35.110

Supersedes EN 61158-3-12:2012

English Version

**Industrial communication networks - Fieldbus specifications -
Part 3-12: Data-link layer service definition - Type 12 elements
(IEC 61158-3-12:2014)**

Réseaux de communication industriels - Spécifications des
bus de terrain - Partie 3-12: Définition des services de la
couche liaison de données - Éléments de type 12
(CEI 61158-3-12:2014)

Industrielle Kommunikationsnetze - Feldbusse - Teil 3-12:
Dienstfestlegungen des Data Link Layer
(Sicherheitsschicht) - Typ 12-Elemente
(IEC 61158-3-12:2014)

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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 3 of IEC 61158-3-12, 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 61158-3-12:2014.

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- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-09-17

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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>
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 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 10731	-	Information technology - Open Systems Interconnection - Basic Reference Model - Conventions for the definition of OSI services	-	-
IEEE 802.1D	-	IEEE Standard for local and metropolitan area networks - Media Access Control (MAC) Bridges	-	-



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INTERNATIONAL STANDARD

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Edition 3.0 2014-08

INTERNATIONAL STANDARD

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**Industrial communication networks – Fieldbus specifications –
Part 3-12: Data-link layer service definition – Type 12 elements**

**Réseaux de communication industriels – Spécifications des bus de terrain –
Partie 3-12: Définition des services de la couche liaison de données – Éléments
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CONTENTS

FOREWORD	4
INTRODUCTION	6
1 Scope	7
1.1 General	7
1.2 Specifications	7
1.3 Conformance	7
2 Normative references	8
3 Terms, definitions, symbols, abbreviations and conventions	8
3.1 Reference model terms and definitions	8
3.2 Service convention terms and definitions	9
3.3 Data-link service terms and definitions	10
3.4 Symbols and abbreviations	13
3.5 Common conventions	14
4 Data-link layer services and concepts	15
4.1 Operating principle	15
4.2 Topology	16
4.3 Data-link layer overview	16
4.4 Error detection overview	17
4.5 Parameter and process data handling introduction	17
4.6 Node reference model	18
4.7 Operation overview	19
4.8 Addressing	20
4.9 Slave classification	22
4.10 Structure of the communication layer in the slave	23
5 Communication services	24
5.1 Overview	24
5.2 Read services	24
5.3 Write services	27
5.4 Combined read/write services	29
5.5 Network services	33
5.6 Mailbox	34
6 Local interactions	38
6.1 Read local	38
6.2 Write local	39
6.3 Event local	40

Figure 1 – Mapping of logical data in an Ethernet frame consisting of a single Type 12 DLPDU	17
Figure 2 – Type 12 data-link reference model	18
Figure 3 – Type 12 segments in open mode.....	19
Figure 4 – Type 12 segment in direct mode	19
Figure 5 – Addressing mode overview	20
Figure 6 – Fieldbus memory management unit overview	22
Figure 7 – Layering of communication.....	23
Figure 8 – Flow of Type 12 service primitives	24
Figure 9 – Successful mailbox write sequence	35
Figure 10 – Successful mailbox read sequence.....	35
Table 1 – Auto-increment physical read (APRD)	25
Table 2 – Configured-address physical read (FPRD).....	25
Table 3 – Broadcast read (BRD)	26
Table 4 – Logical read (LRD)	27
Table 5 – Auto-increment physical write (APWR)	27
Table 6 – Configured-address physical write (FPWR)	28
Table 7 – Broadcast write (BWR).....	28
Table 8 – Logical write (LWR).....	29
Table 9 – Auto-increment physical read/write (APRW)	30
Table 10 – Configured-address physical read/write (FPRW).....	30
Table 11 – Broadcast read/write (BRW)	31
Table 12 – Logical read/write (LRW)	31
Table 13 – Auto-increment physical read / multiple write (ARMW).....	32
Table 14 – Configured-address physical read / multiple write (FRMW).....	32
Table 15 – Provide network variable (PNV).....	33
Table 16 – Mailbox write	36
Table 17 – Mailbox read update	37
Table 18 – Mailbox read	38
Table 19 – Read local	39
Table 20 – Write local	39
Table 21 – Event local	40

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INDUSTRIAL COMMUNICATION NETWORKS –
FIELDBUS SPECIFICATIONS –****Part 3-12: Data-link layer service definition –
Type 12 elements**

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

International Standard IEC 61158-3-12 has been prepared by subcommittee 65C: Industrial networks of IEC technical committee 65: Industrial-process measurement, control and automation.

This third edition cancels and replaces the second edition published in 2010. This edition constitutes a technical revision. The main changes with respect to the previous edition are listed below:

- Editorial improvements for clarification.

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.

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

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- amended.

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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 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 3-12: Data-link layer service definition – Type 12 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 12 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;
- 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 12 fieldbus application layer at the boundary between the application and data-link layers of the fieldbus reference model;
- 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 does it 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 fulfils the Type 12 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.

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

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