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Industriell processtyrning – Fältbuss – Del 3-14: Definition av tjänster i datalänksskiktet – Delar i fältbuss, Typ 14

*Industrial communication networks –
Fieldbus specifications –
Part 3-14: Data-link layer service definition –
Type 14 elements*

Som svensk standard gäller europastandarden EN 61158-3-14:2012. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61158-3-14:2012.

Nationellt förord

Europastandarden EN 61158-3-14:2012

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 61158-3-14, Second edition, 2010 - Industrial communication networks - Fieldbus specifications - Part 3-14: Data-link layer service definition - Type 14 elements**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 61158-3-14, utgåva 1, 2008, gäller ej fr o m 2015-03-28.

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English version

**Industrial communication networks -
Fieldbus specifications -
Part 3-14: Data-link layer service definition -
Type 14 elements
(IEC 61158-3-14:2010)**

Réseaux de communication industriels -
Spécifications des bus de terrain -
Partie 3-14: Définition des services de
couche liaison de données -
Éléments de type 14
(CEI 61158-3-14:2010)

Industrielle Kommunikationsnetze -
Feldbusse -
Teil 3-14: Dienstfestlegungen des Data
Link Layer (Sicherungsschicht) -
Typ 14-Elemente
(IEC 61158-3-14:2010)

This European Standard was approved by CENELEC on 2012-03-28. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, 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, Turkey and the United Kingdom.

CENELEC

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

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Foreword

The text of document 65C/604/FDIS, future edition 2 of IEC 61158-3-14, 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 61158-3-14:2012.

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 61158-3-14:2008.

EN 61158-3-14:2012 includes the following significant technical changes with respect to EN 61158-3-14:2008:

- provide stability date for the publication;
- update the edition of IEC 61588;
- update the Normative references and Bibliography;
- update the value of Protocol type in 5.3.2;
- correct the edit error;
- specification changes for CPF3;
- update of the requirements for all conformance classes;
- update of the requirements for all conformance services.

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.

Endorsement notice

The text of the International Standard IEC 61158-3-14:2010 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/TR 61158-1	NOTE Harmonized as CLC/TR 61158-1.
IEC 61158-4-14	NOTE Harmonized as EN 61158-4-14.
IEC 61158-5-14	NOTE Harmonized as EN 61158-5-14.
IEC 61158-6-14	NOTE Harmonized as EN 61158-6-14.

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 61588	2009	Precision clock synchronization protocol for networked measurement and control systems	-	-
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	-	-
IETF RFC 768	-	User Datagram Protocol	-	-
IETF RFC 791	-	Internet Protocol - DARPA Internet Program Protocol Specification	-	-
IETF RFC 793	-	Transmission Control Protocol - DARPA Internet Program Protocol Specification	-	-

CONTENTS

INTRODUCTION.....	5
1 Scope.....	6
1.1 Overview	6
1.2 Specifications	6
1.3 Conformance	6
2 Normative references	7
3 Terms, definitions, symbols, abbreviations and conventions	7
3.1 Reference model terms and definitions	7
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	15
4 DL service and concept	16
4.1 General	16
4.2 Services provided by the DLL	17
5 DL-management services	17
5.1 Overview	17
5.2 Non-periodic data annunciation	17
5.3 EndofNonPeriodicDataSendingAnnunciation service	19
5.4 DL-management for FRT applications.....	20
Bibliography.....	22
Figure 1 – Relationships of DLSAPs, DLSAP-addresses and group DL-addresses	11
Figure 2 – Communication model.....	16
Figure 3 – Sequence of non-periodic data annunciation service and end of non-periodic data annunciation service	18
Table 1 – Non-periodic data annunciation primitives and parameters	18
Table 2 – EndofNonPeriodicDataSending service primitives and parameters	19
Table 3 – DL-management service primitives and parameters.....	20

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.

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 3-14: Data-link layer service definition – Type 14 elements

1 Scope

1.1 Overview

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 14 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 14 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 14 data-link layer services defined in this standard.

2 Normative references

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61588:2009, *Precision clock synchronization protocol for networked measurement and control system*

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 – 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*

IETF RFC 768, *User Datagram Protocol*, available at <<http://www.ietf.org>>

IETF RFC 791, *Internet protocol*, available at <<http://www.ietf.org>>

IETF RFC 793, *Transmission Control Protocol*, available at <<http://www.ietf.org>>