

SLOVENSKI STANDARD SIST EN 61158-3-4:2015

01-april-2015

Nadomešča:

SIST EN 61158-3-4:2008

Industrijska komunikacijska omrežja - Specifikacije za procesna vodila - 3-4. del: Definicija opravil na ravni podatkovnih povezav - Elementi tipa 4 (IEC 61158-3-4:2014)

Industrial communication networks - Fieldbus specifications - Part 3-4: Data-link layer service definition - Type 4 elements (IEC 61158-3-4:2014)

iTeh STANDARD PREVIEW

Industrielle Kommunikationsnetze - Feldbusse - Teil 3-4: Dienstfestlegungen des Data Link Layer (Sicherungsschicht) Typ 4-Elemente (IEC 61158-3-4:2014)

SIST EN 61158-3-4:2015

Réseaux de communication industriels Spécifications des bus de terrain - Partie 3-4: Définition des services de la couche liaison de données Eléments de type 4 (CEI 61158 -3-4:2014)

Ta slovenski standard je istoveten z: EN 61158-3-4:2014

ICS:

25.040.40 Merjenje in krmiljenje Industrial process

industrijskih postopkov measurement and control

35.100.20 Podatkovni povezovalni sloj Data link layer 35.110 Omreževanje Networking

SIST EN 61158-3-4:2015 en,fr,de

SIST EN 61158-3-4:2015

iTeh STANDARD PREVIEW (standards.iteh.ai)

EUROPEAN STANDARD

EN 61158-3-4

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2014

ICS 25.040.40; 35.100.20; 35.110

Supersedes EN 61158-3-4:2008

English Version

Industrial communication networks - Fieldbus specifications - Part 3-4: Data-link layer service definition - Type 4 elements (IEC 61158-3-4:2014)

Réseaux de communication industriels - Spécifications des bus de terrain - Partie 3-4: Définition des services de la couche liaison de données - Eléments de type 4 (CEI 61158-3-4:2014) Industrielle Kommunikationsnetze - Feldbusse - Teil 3-4: Dienstfestlegungen des Data Link Layer (Sicherungsschicht) - Typ 4-Elemente (IEC 61158-3-4:2014)

This European Standard was approved by CENELEC on 2014-09-17. 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. N D A R D P R F V F V

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.

SIST EN 61158-3-4:2015

CENELEC members are the national electrotechnical committees of Austria; Belgium, Bulgaria; Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav, Republic of Macedonia, 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.



European Committee for Electrotechnical Standardization Comité Européen de Normalisation Electrotechnique 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 61158-3-4, 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 61158-3-4:2014.

The following dates are fixed:

- latest date by which the document has to be implemented at (dop) 2015-06-17 national level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with (dow) 2017-09-17 the document have to be withdrawn

This document supersedes EN 61158-3-4:2008.

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.

iTeh STANDARD PREVIEW

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

SIST EN 61158-3-4:2015

https://standards.iteh.ai/catalog/standards/sist/f81cc7ad-3fbe-46b3-a2e7-

da3 Endorsement notice 015

The text of the International Standard IEC 61158-3-4:2014 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 61158-1	NOTE	Harmonized as EN 61158-1.
IEC 61158-2	NOTE	Harmonized as EN 61158-2.
IEC 61158-4-4	NOTE	Harmonized as EN 61158-4-4.
IEC 61158-5-4	NOTE	Harmonized as EN 61158-5-4.
IEC 61158-6-4	NOTE	Harmonized as EN 61158-6-4.
IEC 61784-1	NOTE	Harmonized as EN 61784-1.
IEC 61784-2	NOTE	Harmonized as EN 61784-2.

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>	EN/HD	<u>Year</u>
ISO/IEC 7498-1	- iT	Information technology - Open Systems Interconnection - Basic Reference Model: The Basic Model	- : W	-
ISO/IEC 7498-3	. **	Information technology - Open Systems Interconnection - Basic Reference Model: Naming and addressing	<u> </u>	-
ISO/IEC 10731	1994 https://st	Information technology S Open Systems Interconnection Basic Reference Model -161 Conventions for the definition of OSI 15 services	- 53-a2e7-	-

SIST EN 61158-3-4:2015

iTeh STANDARD PREVIEW (standards.iteh.ai)



IEC 61158-3-4

Edition 2.0 2014-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Industrial communication networks — Fieldbus specifications — Part 3-4: Data-link layer service definition — Type 4 elements

Réseaux de communication industriels 58-Spécifications des bus de terrain – Partie 3-4: Définition des services de la couche liaison de données – Eléments de type 4 da371933abf6/sist-en-61158-3-4-2015

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION ELECTROTECHNIQUE INTERNATIONALE

PRICE CODE
CODE PRIX



ICS 25.040.40; 35.100.20; 35.110

ISBN 978-2-8322-1712-2

Warning! Make sure that you obtained this publication from an authorized distributor.

Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.

CONTENTS

Normative references
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 12 3.5 Conventions 12 3.5 Conventions 13 4 Data-link service and concepts 14 4.1 Overview 14 4.2 Types and classes of data-link service 15 4.3 Functional classes 1A DAR PREVIEW 4.4 Facilities of the connectionless-mode data-link service 15 4.5 Model of the connectionless-mode data-link service 15 4.6 Sequence of primitives 16 4.7 Connectionless-mode data transfer functions 18
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 .12 3.5 Conventions .13 4 Data-link service and concepts .14 4.1 Overview .14 4.2 Types and classes of data-link service .15 4.3 Functional classes .15 4.4 Facilities of the connectionless-mode data-link service .15 4.5 Model of the connectionless-mode data-link service .15 4.6 Sequence of primitives .16 4.7 Connectionless-mode data transfer functions (cc7ad-3 fbc-46b3-a2c7) .18
1.3 Conformance 7 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 12 3.5 Conventions 13 4 Data-link service and concepts 14 4.1 Overview 14 4.2 Types and classes of data-link service 15 4.3 Functional classes STANDARD PREVIEW 15 4.4 Facilities of the connectionless-mode data-link service 15 4.5 Model of the connectionless-mode data-link service 15 4.6 Sequence of primitives 16 4.7 Connectionless-mode data transfer functions to create the service 18
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 12 3.5 Conventions 13 4 Data-link service and concepts 14 4.1 Overview 14 4.2 Types and classes of data-link service 15 4.3 Functional classes 15 4.4 Facilities of the connectionless-mode data-link service 15 4.5 Model of the connectionless-mode data-link service 15 4.6 Sequence of primitives 15 4.7 Connectionless-mode data transfer functions 100 for the connection 1
Terms, definitions, symbols, abbreviations and conventions
3.1 Reference model terms and definitions
3.2 Service convention terms and definitions
3.3 Data-link service terms and definitions
3.4 Symbols and abbreviations
3.5 Conventions
Data-link service and concepts
4.1 Overview
4.2Types and classes of data-link service154.3Functional classes154.4Facilities of the connectionless-mode data-link service154.5Model of the connectionless-mode data-link service154.6Sequence of primitives164.7Connectionless-mode data transfer functions accorded to the connection less-mode data transfer functions
4.3 Functional classes S.T.A.N.D.A.R.D. P.R.E.V.E.W. 15 4.4 Facilities of the connectionless-mode data-link service 15 4.5 Model of the connectionless-mode data-link service 15 4.6 Sequence of primitives 16 4.7 Connectionless-mode data transfer functions 1 cc7ad-3 fbc-46b3-a2c7- 18
4.4 Facilities of the connectionless-mode data-link service
4.5 Model of the connectionless-mode data-link service
4.6 Sequence of primitives
5 DL-management serviceda37.1933abb/sist-cp-61.158-3-4-2015
5.1 Scope and inheritance
5.2 Facilities of the DL-management service
5.3 Model of the DL-management service21
5.4 Constraints on sequence of primitives
5.5 Set
5.6 Get
5.7 Action
5.8 Event
Bibliography25
Figure 1 – Relationship of PhE, DLE and DLS-users14
Figure 2 – Confirmed and unconfirmed UNITDATA request time-sequence diagram17
Figure 3 – Repeated confirmed request time-sequence diagram
Figure 4 – State transition diagram for sequences of primitives at one DLSAP18
Figure 5 – Sequence of primitives for the DLM action service
Table 1 – Summary of DL-connectionless-mode primitives and parameters17
Table 2 – Unitdata transfer primitives and parameters18
Table 3 – Control-status error codes
Table 4 – Summary of DL-management primitives and parameters21
Table 5 – DLM-Set primitive and parameters22

SIST EN 61158-3-4:2015

IEC 61158-3-4:2014 © IEC 2014	- 3 -	
Table 6 – DLM-Get primitive and parameter	rs	22
Table 7 – DLM-Action primitive and parame	eters	23
Table 8 – DLM-Event primitive and parame	ters	24

iTeh STANDARD PREVIEW (standards.iteh.ai)

INTERNATIONAL ELECTROTECHNICAL COMMISSION

INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 3-4: Data-link layer service definition – Type 4 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.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.

 da371933abf6/sist-en-61158-3-4-2015
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

Attention is drawn to the fact that the use of the associated protocol type is restricted by its 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 layer protocol type to be used with other layer protocols of the same type, or in other type combinations explicitly authorized by its intellectual-property-right holders.

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

International Standard IEC 61158-3-4 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 an editorial revision with only minor editorial changes.

IEC 61158-3-4:2014 © IEC 2014

- 5 -

This edition includes the following significant changes with respect to the previous edition:

- a) editorial improvements;
- b) editorial corrections.

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 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 ANDARD PREVIEW
- amended.

(standards.iteh.ai)

IEC 61158-3-4:2014 © IEC 2014

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.

iTeh STANDARD PREVIEW (standards.iteh.ai)

<u>SIST EN 61158-3-4:2015</u> https://standards.iteh.ai/catalog/standards/sist/f81cc7ad-3fbe-46b3-a2e7-da371933abf6/sist-en-61158-3-4-2015

-6-