

# SLOVENSKI STANDARD

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**Industrijska komunikacijska omrežja - Specifikacije za procesna vodila - 4-21. del: Specifikacija protokola na ravni podatkovnih povezav - Elementi tipa 21 (IEC 61158-4-21:2019)**

Industrial communication networks - Fieldbus specifications - Part 4-21: Data-link layer protocol specification - Type 21 elements (IEC 61158-4-21:2019)

Industrielle Kommunikationsnetze - Feldbusse - Teil 4-21: Protokollspezifikation des Data Link Layer (Sicherheitsschicht) - Typ 21-Elemente (IEC 61158-4-21:2019)

Réseaux de communication industriels - Specifications des bus de terrain - Partie 4-21: Spécification du protocole de la couche de liaison de données - Eléments de Type 21 (IEC 61158-4-21:2019)

**Ta slovenski standard je istoveten z: EN IEC 61158-4-21:2019**

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35.100.20	Podatkovni povezovalni sloj	Data link layer
35.110	Omreževanje	Networking

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Réseaux de communication industriels - Spécifications des  
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Industrielle Kommunikationsnetze - Feldbusse - Teil 4-21:  
Protokollspezifikation des Data Link Layer  
(Sicherheitsschicht) - Typ 21-Elemente  
(IEC 61158-4-21:2019)

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**EN IEC 61158-4-21:2019 (E)****European foreword**

The text of document 65C/946/FDIS, future edition 2 of IEC 61158-4-21, 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 IEC 61158-4-21:2019.

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) 2020-02-15
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-05-15

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

IEC 61158-1:2019	NOTE Harmonized as EN IEC 61158-1:2019 (not modified)
IEC 61158-2:2014	NOTE Harmonized as EN 61158-2:2014 (not modified)
IEC 61158-5-21:2019	NOTE Harmonized as EN IEC 61158-5-21:2019 (not modified)
IEC 61784-2:2019	NOTE Harmonized as EN IEC 61784-2:2019 (not modified)
IEC 61918:2018	NOTE Harmonized as EN IEC 61918:2018 (not modified)

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where 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](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61158-3-21	2019	Industrial communication networks Fieldbus specifications - Part 3-21: Data- link layer service definition - Type 21 elements	-EN IEC 61158-3-21	2019
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	-	-
ISO/IEC/IEEE 8802-2017	-	Standard for Ethernet	-	-

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# INTERNATIONAL STANDARD

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**Industrial communication networks – Fieldbus specifications –  
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FIELDBUS SPECIFICATIONS –****Part 4-21: Data-link layer protocol specification –  
Type 21 elements**

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

International Standard IEC 61158-4-21 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 2010. This edition constitutes a technical revision.

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

- added Frame control Value, DLM function and DLL constants;
- changed NCM\_RETRY\_RNMS to NCM\_CHECK\_NET\_INTEGRITY\_REQ;
- updated DLM state table;
- miscellaneous editorial corrections.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
65C/946/FDIS	65C/955/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;
- withdrawn;
- replaced by a revised edition or
- amended.

A bilingual version of this publication may be issued at a later date.

## INTRODUCTION

This document 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.

The data-link protocol provides the data-link service by making use of the services available from the physical layer. The primary aim of this document is to provide a set of rules for communication expressed in terms of the procedures to be carried out by peer data-link entities (DLEs) 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:

- a) as a guide for implementors and designers;
- b) for use in the testing and procurement of equipment;
- c) as part of an agreement for the admittance of systems into the open systems environment;
- d) as a refinement to the understanding of time-critical communications within OSI.

This document is concerned, in particular, with the communication and interworking of sensors, effectors and other automation devices. By using this document 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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- |            |      |  |
|------------|------|--|
| KR 0789444 | [LS] | A communication packet processing apparatus and method for ring topology Ethernet network capable of preventing permanent packet looping |
| KR 0732510 | [LS] | Network system   |
| KR 0870670 | [LS] | Method for determining a Ring Manager Node   |

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