

**SLOVENSKI STANDARD**  
**SIST EN IEC 61158-4-12:2019**  
**01-november-2019**

**Nadomešča:**  
**SIST EN 61158-4-12:2015**

---

**Industrijska komunikacijska omrežja - Specifikacije za procesna vodila - 4-12. del:  
Specifikacija protokola na ravni podatkovnih povezav - Elementi tipa 12 (IEC 61158  
-4-12:2019)**

Industrial communication networks - Fieldbus specifications - Part 4-12: Data-link layer protocol specification - Type 12 elements (IEC 61158-4-12:2019)

**iTeh STANDARD PREVIEW**

Industrielle Kommunikationsnetze - Feldbusse - Teil 4-12: Protokollspezifikation des Data Link Layer (Sicherungsschicht) - Typ 12-Elemente (IEC 61158-4-12:2019)

Réseaux de communication industriels - Spécifications des bus de terrain - Partie 4-12: Spécification du protocole de la couche liaison de données - Éléments de type 12 (IEC 61158-4-12:2019)

**Ta slovenski standard je istoveten z: EN IEC 61158-4-12:2019**

---

**ICS:**

25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
35.100.20	Podatkovni povezovalni sloj	Data link layer
35.110	Omreževanje	Networking

**SIST EN IEC 61158-4-12:2019**

**en,fr,de**

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN IEC 61158-4-12:2019](#)

<https://standards.iteh.ai/catalog/standards/sist/0cc1fdc8-f84b-47d9-b2f8-7ac08dca9975/sist-en-iec-61158-4-12-2019>

**EUROPEAN STANDARD**  
**NORME EUROPÉENNE**  
**EUROPÄISCHE NORM**

**EN IEC 61158-4-12**

June 2019

ICS 25.040.40; 35.100.20; 35.110

Supersedes EN 61158-4-12:2014

English Version

**Industrial communication networks - Fieldbus specifications -  
Part 4-12: Data-link layer protocol specification - Type 12  
elements  
(IEC 61158-4-12:2019)**

Réseaux de communication industriels - Spécifications des  
bus de terrain - Partie 4-12: Spécification du protocole de la  
couche liaison de données - Éléments de type 12  
(IEC 61158-4-12:2019)

Industrielle Kommunikationsnetze - Feldbusse - Teil 4-12:  
Protokollspezifikation des Data Link Layer  
(Sicherungsschicht) - Typ 12-Elemente  
(IEC 61158-4-12:2019)

This European Standard was approved by CENELEC on 2019-05-23. 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.

**iTeh STANDARD PREVIEW**  
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.  
[standards.iteh.ai](https://standards.iteh.ai/catalog/standards/sist/0cc1fdc8-f84b-47d9-b2f8-7ac08dca9975/sist-en-iec-61158-4-12-2019)

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, Republic of North Macedonia, Romania, Serbia, 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: Rue de la Science 23, B-1040 Brussels

**EN IEC 61158-4-12:2019 (E)****European foreword**

The text of document 65C/946/FDIS, future edition 4 of IEC 61158-4-12, 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 IEC 61158-4-12:2019.

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) 2020-02-23
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-05-23

This document supersedes EN 61158-4-12:2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

## iTeh STANDARD PREVIEW

**Endorsement notice**  
**(standards.iteh.ai)**

The text of the International Standard IEC 61158-4-12:2019 was approved by CENELEC as a European Standard without any modification.  
<https://standards.iteh.ai/catalog/standards/sist/0cc1fdc8-184b-47d9-b218-7ac08dca9975/sist-en-iec-61158-4-12-2019>

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

IEC 61131-2	NOTE Harmonized as EN 61131-2
IEC 61131-3	NOTE Harmonized as EN 61131-3
IEC 61158-1	NOTE Harmonized as EN 61158-1
IEC 61158-2:2014	NOTE Harmonized as EN 61158-2:2014 (not modified)
IEC 61158-5-12:2019	NOTE Harmonized as EN IEC 61158-5-12:2019 (not modified)
IEC 61158-6-12	NOTE Harmonized as EN 61158-6-12
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 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 61158-3-12	2019	Industrial communication networks - Fieldbus specifications - Part 3-12: Data-link layer service definition - Type 12 elements	-EN IEC 61158-3-12	2019
IEC 61588	-	Precision clock synchronization protocol for networked measurement and control systems	iTech STANDARD PREVIEW (standards.itech.ai)	-
ISO/IEC 7498-1	-	Information technology - Open Systems-Interconnection - Basic reference model: The basic model	SIST EN IEC 61158-4-12:2019	-
ISO/IEC 7498-3	-	Information technology - Open Systems-Interconnection - Basic reference model: Naming and addressing	<a href="https://standards.itech.ai/standards/sis/00-1fd8-841b-47d9-b2f8-7e0186a0175/sist-61158-4-12-2019">https://standards.itech.ai/standards/sis/00-1fd8-841b-47d9-b2f8-7e0186a0175/sist-61158-4-12-2019</a>	-
ISO/IEC 9899	-	Information technology - Programming-languages - C	-	-
ISO/IEC 10731	-	Information technology - Open Systems-Interconnection - Basic Reference Model - Conventions for the definition of OSI services	-	-
ISO/IEC/IEEE 8802--3	-	Standard for Ethernet	-	-
IEEE Std 802.1Q	-	IEEE Standard for Local and Metropolitan-Area Networks – Bridges and bridged networks	-	-
IETF RFC 768	-	User Datagram Protocol	-	-
IETF RFC 791	-	Internet protocol DARPA internet program-protocol specification	-	-

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN IEC 61158-4-12:2019](#)

<https://standards.iteh.ai/catalog/standards/sist/0cc1fdc8-f84b-47d9-b2f8-7ac08dca9975/sist-en-iec-61158-4-12-2019>



# INTERNATIONAL STANDARD



Industrial communication networks – Fieldbus specifications –  
Part 4-12: Data-link layer protocol specification – Type 12 elements  
(standards.iteh.ai)

SIST EN IEC 61158-4-12:2019  
<https://standards.iteh.ai/catalog/standards/sist/0cc1fdc8-f84b-47d9-b2f8-7ac08dca9975/sist-en-iec-61158-4-12-2019>

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

ICS 25.040.40; 35.100.20; 35.110

ISBN 978-2-8322-6775-2

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

## CONTENTS

FOREWORD .....	8
INTRODUCTION .....	10
1 Scope .....	11
1.1 General .....	11
1.2 Specifications .....	11
1.3 Procedures .....	11
1.4 Applicability .....	11
1.5 Conformance .....	11
2 Normative references .....	12
3 Terms, definitions, symbols, abbreviations and conventions .....	12
3.1 Reference model terms and definitions .....	12
3.2 Service convention terms and definitions .....	13
3.3 Common terms and definitions .....	14
3.4 Additional Type 12 definitions .....	14
3.5 Common symbols and abbreviations .....	17
3.6 Additional Type 12 symbols and abbreviations .....	18
3.7 Conventions .....	19
3.7.1 General concept .....	19
3.7.2 Abstract syntax conventions .....	19
3.7.3 Convention for the encoding of reserved bits and octets .....	21
3.7.4 Conventions for the common coding s of specific field octets .....	21
3.7.5 State machine conventions .....	22
4 Overview of the <a href="http://stds.itel.ai/catalog/standards/sist/0cc1fdc8-f84b-47d9-b2f8-7ac08dca9975/sist-en-iec-61158-4-12-2019">http://stds.itel.ai/catalog/standards/sist/0cc1fdc8-f84b-47d9-b2f8-7ac08dca9975/sist-en-iec-61158-4-12-2019</a> .....	24
4.1 Operating principle .....	24
4.2 Topology .....	24
4.3 Frame processing principles .....	24
4.4 Data-link layer overview .....	25
4.5 Error detection overview .....	26
4.6 Node reference model .....	26
4.6.1 Mapping onto OSI basic reference model .....	26
4.6.2 Data-link Layer features .....	27
4.7 Operation overview .....	27
4.7.1 Relation to ISO/IEC/IEEE 8802-3 .....	27
4.7.2 Frame structure .....	27
5 Frame structure .....	28
5.1 Frame coding principles .....	28
5.2 Data types and encoding rules .....	28
5.2.1 General description of data types and encoding rules .....	28
5.2.2 Transfer syntax for bit sequences .....	28
5.2.3 Unsigned Integer .....	29
5.2.4 Signed Integer .....	30
5.2.5 Octet String .....	30
5.2.6 Visible String .....	30
5.3 Ethernet DLPDU structure .....	31
5.3.1 Type 12 frame inside an Ethernet frame .....	31
5.3.2 Type 12 frame inside a UDP datagram .....	31

5.3.3	Type 12 frame structure.....	33
5.4	Type 12 DLPDU structure .....	33
5.4.1	Read .....	33
5.4.2	Write .....	38
5.4.3	Read write .....	43
5.4.4	Attributes access .....	50
5.5	Network variable structure .....	50
5.6	Type 12 mailbox structure.....	51
6	Attributes .....	52
6.1	Management.....	52
6.1.1	DL Information.....	52
6.1.2	Station address .....	56
6.1.3	DL control.....	57
6.1.4	DL status .....	59
6.1.5	DLS-user specific registers.....	62
6.1.6	Event parameter .....	63
6.2	Statistics .....	68
6.2.1	RX error counter.....	68
6.2.2	Lost link counter .....	69
6.2.3	Additional counter.....	70
6.3	Watchdogs <b>iTeh STANDARD PREVIEW</b> <b>(standards.iteh.ai)</b> .....	71
6.3.1	Watchdog divider.....	71
6.3.2	DLS-user watchdog .....	72
6.3.3	Sync manager watchdog.....	72
6.3.4	Sync manager watchdog status <small>SIST EN IEC 61158-4-12:2019 http://standards.iteh.ai/avcsang/standards/sist/0cc1fbc8-f346-47d9-b28</small> .....	73
6.3.5	Watchdog counter.....	74
6.4	Slave information interface .....	74
6.4.1	Slave information interface area .....	74
6.4.2	Slave information interface access .....	74
6.4.3	Slave information interface control/status .....	75
6.4.4	Slave information interface address .....	77
6.4.5	Slave information interface data .....	78
6.5	Media independent interface (MII).....	78
6.5.1	MII control/status .....	78
6.5.2	MII address .....	80
6.5.3	MII data .....	81
6.5.4	MII access .....	81
6.6	Fieldbus memory management unit (FMMU) .....	82
6.6.1	General .....	82
6.6.2	FMMU attributes .....	83
6.7	Sync manager.....	85
6.7.1	Sync manager overview.....	85
6.7.2	Sync Manager Attributes.....	88
6.8	Distributed clock .....	91
6.8.1	General .....	91
6.8.2	Delay measurement.....	91
6.8.3	Local time parameter .....	92
6.8.4	DL-user time parameter .....	92
6.8.5	DC attributes .....	93

7	DL-user memory .....	95
7.1	Overview .....	95
7.2	Mailbox access type .....	95
7.2.1	Mailbox transfer .....	95
7.2.2	Write access from master .....	95
7.2.3	Read access from master .....	97
7.3	Buffered access type .....	98
7.3.1	Write access from master .....	98
7.3.2	Read access from master .....	98
8	Type 12: FDL protocol state machines .....	99
8.1	Overview of slave DL state machines .....	99
8.2	State machine description .....	100
8.2.1	Port state machine (PSM) .....	100
8.2.2	PDU handler state machine (DHSM) .....	100
8.2.3	Sync manager state machine (SYSM) .....	101
8.2.4	Resilient mailbox state machine (RMSM) .....	101
8.2.5	SII state machine (SIISM) .....	101
8.2.6	MII state machine (MIISM) .....	105
8.2.7	DC state machine (DCSM) .....	105
	Annex A (informative), Type 12: Additional specifications on DL-Protocol state machines .....	108
A.1	DHSM .....	108
A.1.1	Primitive definitions .....	108
A.1.2	State machine description .....	109
A.1.3	DHSM table .....	110
A.1.4	Functions .....	125
A.2	SYSM .....	126
A.2.1	Primitive definition .....	126
A.2.2	State machine description .....	127
A.2.3	Local variables .....	128
A.2.4	State table nomenclature .....	128
A.2.5	SYSM table .....	128
A.2.6	Functions .....	138
A.3	RMSM .....	138
A.3.1	Primitive definitions .....	138
A.3.2	State machine description .....	139
A.3.3	Local variables .....	139
A.3.4	RMSM table .....	139
A.3.5	Functions .....	141
	Bibliography .....	142
	Figure 1 – Type description example .....	20
	Figure 2 – Common structure of specific fields .....	21
	Figure 3 – Frame structure .....	25
	Figure 4 – Mapping of data in a frame .....	26
	Figure 5 – Slave node reference model .....	27
	Figure 6 – Type 12 PDUs embedded in Ethernet frame .....	28
	Figure 7 – Type 12 PDUs embedded in UDP/IP .....	28

Figure 8 – DL information type description .....	54
Figure 9 – Address type description .....	56
Figure 10 – DL control type description .....	58
Figure 11 – DL status type description .....	61
Figure 12 – Successful write sequence to DL-user control register .....	62
Figure 13 – Successful read sequence to the DL-user status register .....	63
Figure 14 – RX error counter type description .....	69
Figure 15 – Lost link counter type description .....	70
Figure 16 – Additional counter type description .....	71
Figure 17 – Watchdog divider type description .....	72
Figure 18 – DLS-user Watchdog divider type description .....	72
Figure 19 – Sync manager watchdog type description .....	73
Figure 20 – Sync manager watchdog status type description .....	73
Figure 21 – Watchdog counter type description .....	74
Figure 22 – Slave information interface access type description .....	74
Figure 23 – Slave information interface control/status type description .....	76
Figure 24 – Slave information interface address type description .....	78
Figure 25 – Slave information interface data type description .....	78
Figure 26 – MII control/status type description .....	79
Figure 27 – MII address type description .....	81
Figure 28 – MII data type description .....	81
Figure 29 – MII access type description .....	82
Figure 30 – FMMU mapping example .....	83
Figure 31 – FMMU entity type description .....	84
Figure 32 – SyncM mailbox interaction .....	86
Figure 33 – SyncM buffer allocation .....	86
Figure 34 – SyncM buffer interaction .....	87
Figure 35 – Handling of write/read toggle with read mailbox .....	87
Figure 36 – Sync manager channel type description .....	89
Figure 37 – Distributed clock local time parameter type description .....	93
Figure 38 – Successful write sequence to mailbox .....	96
Figure 39 – Bad write sequence to mailbox .....	96
Figure 40 – Successful read sequence to mailbox .....	97
Figure 41 – Bad read sequence to mailbox .....	97
Figure 42 – Successful write sequence to buffer .....	98
Figure 43 – Successful read sequence to buffer .....	99
Figure 44 – Structuring of the protocol machines of an slave .....	100
Figure 45 – Slave information interface read operation .....	102
Figure 46 – Slave information interface write operation .....	103
Figure 47 – Slave information interface reload operation .....	104
Figure 48 – Distributed clock .....	106
Figure 49 – Delay measurement sequence .....	107

Table 1 – PDU element description example .....	20
Table 2 – Example attribute description .....	21
Table 3 – State machine description elements .....	23
Table 4 – Description of state machine elements .....	23
Table 5 – Conventions used in state machines .....	23
Table 6 – Transfer Syntax for bit sequences .....	29
Table 7 – Transfer syntax for data type Unsignedn .....	29
Table 8 – Transfer syntax for data type Integern .....	30
Table 9 – Type 12 frame inside an Ethernet frame .....	31
Table 10 – Type 12 frame inside an UDP PDU .....	32
Table 11 – Type 12 frame structure containing Type 12 PDUs .....	33
Table 12 – Type 12 frame structure containing network variables .....	33
Table 13 – Type 12 frame structure containing mailbox .....	33
Table 14 – Auto increment physical read (APRD) .....	34
Table 15 – Configured address physical read (FPRD) .....	35
Table 16 – Broadcast read (BRD) .....	36
Table 17 – Logical read (LRD) .....	37
Table 18 – Auto Increment physical write (APWR) .....	38
Table 19 – Configured address physical write (FPWR) .....	39
Table 20 – Broadcast write (BWR) .....	41
Table 21 – Logical write (LWR) .....	42
Table 22 – Auto increment physical read write (APRW) .....	43
Table 23 – Configured address physical read write (FPRW) .....	44
Table 24 – Broadcast read write (BRW) .....	45
Table 25 – Logical read write (LRW) .....	47
Table 26 – Auto increment physical read multiple write (ARMW) .....	48
Table 27 – Configured address physical read multiple write (FRMW) .....	49
Table 28 – Network variable .....	50
Table 29 – Mailbox .....	51
Table 30 – Error Reply Service Data .....	52
Table 31 – DL information .....	54
Table 32 – Configured station address .....	57
Table 33 – DL control .....	58
Table 34 – DL status .....	61
Table 35 – DLS-user specific registers .....	63
Table 36 – DLS-user event .....	65
Table 37 – DLS-user event mask .....	66
Table 38 – External event .....	67
Table 39 – External event mask .....	68
Table 40 – RX error counter .....	69
Table 41 – Lost link counter .....	70
Table 42 – Additional counter .....	71
Table 43 – Watchdog divider .....	72

Table 44 – DLS-user watchdog .....	72
Table 45 – Sync manager channel watchdog .....	73
Table 46 – Sync manager watchdog Status .....	73
Table 47 – Watchdog counter .....	74
Table 48 – Slave information interface access .....	75
Table 49 – Slave information interface control/status .....	76
Table 50 – Slave information interface address .....	78
Table 51 – Slave information interface data .....	78
Table 52 – MII control/status.....	80
Table 53 – MII address .....	81
Table 54 – MII data.....	81
Table 55 – MII access.....	82
Table 56 – Fieldbus memory management unit (FMMU) entity .....	84
Table 57 – Fieldbus memory management unit (FMMU).....	85
Table 58 – Sync manager channel .....	90
Table 59 – Sync manager Structure .....	91
Table 60 – Distributed clock local time parameter .....	93
Table 61 – Distributed clock DLS-user parameter.....	94
Table A.1 – Primitives issued by DHSM to PSM .....	108
Table A.2 – Primitives issued by PSM to DHSM.....	108
Table A.3 – Parameters used with primitives exchanged between DHSM and PSM .....	108
Table A.4 – Identifier for the octets of a Ethernet frame.....	109
Table A.5 – DHSM state table.....	111
Table A.6 – DHSM function table .....	126
Table A.7 – Primitives issued by SYSM to DHSM.....	126
Table A.8 – Primitives issued by DHSM to SYSM.....	127
Table A.9 – Primitives issued by DL-User to SYSM.....	127
Table A.10 – Primitives issued by SYSM to DL-User.....	127
Table A.11 – Parameters used with primitives exchanged between SYSM and DHSM .....	127
Table A.12 – SYSM state table .....	129
Table A.13 – SYSM function table.....	138
Table A.14 – Primitives issued by RMSM to SYSM .....	138
Table A.15 – Primitives issued by SYSM to RMSM .....	139
Table A.16 – Parameters used with primitives exchanged between RMSM and SYSM .....	139
Table A.17 – RMSM state table.....	140
Table A.18 – RMSM function table .....	141

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INDUSTRIAL COMMUNICATION NETWORKS –  
FIELDBUS SPECIFICATIONS –****Part 4-12: Data-link layer protocol specification –  
Type 12 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.
- 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 61158-4-12 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

This fourth edition cancels and replaces the third edition published in 2014. This edition constitutes a technical revision.

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

- technical corrections and editorial improvements for clarification.

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 the ISO/IEC Directives, Part 2.

A list of all the 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.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

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

<https://standards.iteh.ai/catalog/standards/sist/0cc1fdc8-f84b-47d9-b2f8-7ac08dca9975/sist-en-iec-61158-4-12-2019>

**IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.**