This is a free page sample. Access the full version online.

NSAI Standards

Irish Standard
I.S. EN 61158-6-20:2014

Industrial communication networks - Fieldbus specifications - Part 6-20: Application layer protocol specification - Type 20 elements

© CENELEC 2014 No copying without NSAI permission except as permitted by copyright law.

This is a free page sample. Access the full version online.

I.S. EN 61158-6-20:2014

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:	*Published:*
EN 61158-6-20:2014	2014-10-31

This document was published under the authority of the NSAI and comes into effect on:	ICS number:
2014-11-27	25.040.40 35.100.70 35.110
	NOTE: If blank see CEN/CENELEC cover page

NSAI	T +353 1 807 3800	Sales:
1 Swift Square,	F +353 1 807 3838	T +353 1 857 6730
Northwood, Santry	E standards@nsai.ie	F +353 1 857 6729
Dublin 9	W NSAI.ie	W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

This is a free page sample. Access the full version online.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61158-6-20

October 2014

ICS 25.040.40; 35.100.70; 35.110

Supersedes EN 61158-6-20:2012

English Version

Industrial communication networks - Fieldbus specifications - Part 6-20: Application layer protocol specification - Type 20 elements (IEC 61158-6-20:2014)

Réseaux de communication industriels - Spécifications des bus de terrain - Partie 6-20: Spécification du protocole de la couche application - Eléments de type 20 (CEI 61158-6-20:2014)

Industrielle Kommunikationsnetze - Feldbusse - Teil 6-20: Protokollspezifikation des Application Layer (Anwendungsschicht) - Typ 20-Elemente (IEC 61158-6-20:2014)

This European Standard was approved by CENELEC on 2014-09-23. 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.

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, 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

© 2014 CENELEC All rights of exploitation in any form and by any means reserved worldwide for CENELEC Members.

Ref. No. EN 61158-6-20:2014 E

This is a free page sample. Access the full version online.

Foreword

The text of document 65C/764/FDIS, future edition 3 of IEC 61158-6-20, 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 61158-6-20:2014.

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) 2015-06-23
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-09-23

This document supersedes EN 61158-6-20:2012.

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.

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

Endorsement notice

The text of the International Standard IEC 61158-6-20:2014 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 61784-1	NOTE	Harmonized as EN 61784-1.
IEC 61784-2	NOTE	Harmonized as EN 61784-2.

This is a free page sample. Access the full version online.

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.

Publication	Year	Title	EN/HD	Year
IEC 61158-1	2014	Industrial communication networks - Fieldbus specifications - Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series	EN 61158-1	2014
IEC 61158-5-20	2014	Industrial communication networks - Fieldbus specifications - Part 5-20: Application layer service definition - Type 20 elements	EN 61158-5-20	2014
IEC 62591	2010	Industrial communication networks - Wireless communication network and communication profiles - WirelessHART™	EN 62591	2010
ISO/IEC 7498-1	-	Information technology - Open Systems Interconnection - Basic reference model: The basic model	-	-
ISO/IEC 8824-1	-	Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation	-	-
ISO/IEC 8859-1	-	Information technology - 8-bit single-byte coded graphic character sets - Part-1: Latin alphabet No. 1	-	-
ISO/IEC 9545	-	Information technology - Open Systems Interconnection - Application layer structure	-	-
ISO/IEC/IEEE 60559	-	Information technology - Microprocessor Systems - Floating-Point arithmetic	-	-
IEEE 802.15.4	-	IEEE Standard for Local and metropolitan area networks - Part 15.4: Low-Rate Wireless Personal Area Networks (LR-WPANs)	-	-

This is a free page sample. Access the full version online.

This page is intentionally left blank

This is a free page sample. Access the full version online.

IEC 61158-6-20

Edition 3.0 2014-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Industrial communication networks – Fieldbus specifications – Part 6-20: Application layer protocol specification – Type 20 elements

Réseaux de communication industriels – Spécifications des bus de terrain – Partie 6-20: Spécification du protocole de la couche application – Eléments de type 20

IEC 61158-6-20:2014-08(en-fr)

This is a free page sample. Access the full version online.

THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2014 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue
The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

IEC publications search - www.iec.ch/searchpub
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,…). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and also once a month by email.

Electropedia - www.electropedia.org
The world's leading online dictionary of electronic and electrical terms containing more than 30 000 terms and definitions in English and French, with equivalent terms in 14 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary
More than 55 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: csc@iec.ch.

A propos de l'IEC
La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC
Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Catalogue IEC - webstore.iec.ch/catalogue
Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

Recherche de publications IEC - www.iec.ch/searchpub

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études,…). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et aussi une fois par mois par email.

Electropedia - www.electropedia.org

Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient plus de 30 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 14 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary
Plus de 55 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: csc@iec.ch.

This is a free page sample. Access the full version online.

IEC 61158-6-20

Edition 3.0 2014-08

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Industrial communication networks – Fieldbus specifications – Part 6-20: Application layer protocol specification – Type 20 elements

Réseaux de communication industriels – Spécifications des bus de terrain – Partie 6-20: Spécification du protocole de la couche application – Eléments de type 20

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX XC

ICS 25.040.40; 35.100.70; 35.110

ISBN 978-2-8322-1766-5

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.

® Registered trademark of the International Electrotechnical Commission
Marque déposée de la Commission Electrotechnique Internationale

This is a free page sample. Access the full version online.

CONTENTS

FOREWORD 7
INTRODUCTION 9
1 Scope 10
2 Normative references 10
3 Terms, definitions, symbols, abbreviations and conventions 11
3.1 Terms and definitions from other ISO/IEC standards 11
3.2 IEC 61158-1 terms 12
3.3 Type 20 fieldbus application-layer specific definitions 14
3.4 Abbreviations and symbols 17
3.5 Conventions 18
3.6 Conventions used in state machines 18
4 Abstract syntax 20
5 Transfer syntax 20
5.1 Common APDU fields 20
5.2 Common APDU structure 22
5.3 Device application service-specific APDU structures 24
5.4 Data coding rules 51
6 Common procedures 56
6.1 Delayed response 56
6.2 Publish mode procedure 56
7 FAL protocol state machines 56
7.1 General 56
7.2 AREP mapping to data link layer 57
7.3 Client ARPM 58
7.4 Server ARPM 60
7.5 Functions used by FAL state machines 61
Annex A (normative) Application process status 63
A.1 General 63
A.2 Device malfunction 63
A.3 Configuration changed 63
A.4 Cold start 64
A.5 More status available 64
A.6 Loop current fixed 64
A.7 Loop current saturated 64
A.8 Non-primary variable out of limits 65
A.9 Primary variable out of limits 65
Annex B (normative) Device and dynamic variable 66
B.1 Device variable 66
B.2 Dynamic variable 66
B.3 Primary variable 67
B.4 Device variable classification 68
B.5 Device families 68
B.6 Device variable status 68
Annex C (normative) Common tables 70
C.1 Overview 70

This is a free page sample. Access the full version online.

C.1.1 General 70
C.1.2 Enumeration 70
C.1.3 Bit Field 70
C.2 Table definitions 70
C.2.1 Publish mode control codes 70
C.2.2 Write device variable codes 70
C.2.3 Device variable family codes 70
C.2.4 Device variable classification codes 70
C.2.5 Analog channel saturated codes 70
C.2.6 Analog channel fixed codes 70
C.2.7 Standardized status 0 codes 71
C.2.8 Standardized status 1 codes 71
C.2.9 Standardized status 2 codes 71
C.2.10 Standardized status 3 codes 71
C.2.11 Publish trigger mode codes 71
C.2.12 Transfer function codes 71
C.2.13 Alarm Selection Codes 71
C.2.14 Write Protect Codes 72
C.2.15 Physical layer signalling codes 72
C.2.16 Flag Assignment codes 72
C.2.17 Loop current mode codes 73
C.2.18 Trim point codes 73
C.2.19 Analog channel flag codes 73
C.2.20 Device variable codes 73
C.2.21 Device profile codes 74
Annex D (normative) Command requirements 75
D.1 General 75
D.2 Stateless request and response 75
D.3 Read command 75
D.4 Write command 75
D.5 Action command 75
D.6 Indexed command 76
D.7 Multi-transaction command 76
Bibliography 77

Figure 1 – Request APDU 22
Figure 2 – Normal response APDU 22
Figure 3 – Command error response from slave to master 23
Figure 4 – Aggregated command APDU 24
Figure 5 – Coding without identification 51
Figure 6 – Coding of Integer type data 51
Figure 7 – Coding of Integer16 type data 52
Figure 8 – Coding of Unsigned type data 52
Figure 9 – Coding of Unsigned16 type data 52
Figure 10 – Coding of single precision Floating Point type data 52
Figure 11 – Coding of double precision Floating Point type data 53
Figure 12 – Coding of Date type data 53

This is a free page sample. Access the full version online.

Figure 13 – Client state machine 58
Figure 14 – Server state machine 60
Figure A.1 – Loop current saturation and alarm levels 65
Figure B.1 – Device and Dynamic variables 66
Figure B.2 – Primary variable domains 67
Figure B.3 – Device variable status 69

Table 1 – Conventions used for state machines 19
Table 2 – Response code values 20
Table 3 – Application process status values 21
Table 4 – Extended status values 21
Table 5 – Identify request APDU 24
Table 6 – Identify response value field 25
Table 7 – Identify command specific response codes 25
Table 8 – Read primary variable response value field 26
Table 9 – Read primary variable command specific response codes 26
Table 10 – Read loop current and percent of range value field 26
Table 11 – Read loop current and percent of range command specific response codes 27
Table 12 – Read dynamic variables and loop current value field 27
Table 13 – Read dynamic variables and loop current command specific response codes 27
Table 14 – Write loop configuration value field 28
Table 15 – Write loop configuration command specific response codes 28
Table 16 – Read loop configuration value field 29
Table 17 – Read loop configuration command specific response codes 29
Table 18 – Read dynamic variable families classifications value field 29
Table 19 – Read dynamic variable families classifications command specific response codes 29
Table 20 – Read device variables with status request value field 30
Table 21 – Read device variables with status value field 30
Table 22 – Read device variables with status command specific response codes 31
Table 23 – Read message response value field 32
Table 24 – Read message command specific response codes 32
Table 25 – Read tag, descriptor, date response value field 33
Table 26 – Read tag, descriptor, date command specific response codes 33
Table 27 – Read primary variable transducer information response value field 33
Table 28 – Read primary variable transducer information command specific response codes 34
Table 29 – Read device information response value field 34
Table 30 – Read device information command specific response codes 35
Table 31 – Read final assembly number response value field 35
Table 32 – Read final assembly number command specific response codes 35
Table 33 – Write message value field 35
Table 34 – Write message command specific response codes 36

This is a free page sample. Access the full version online.

Table 35 – Write tag, descriptor, date value field 36
Table 36 – Write tag, descriptor, date command specific response codes 36
Table 37 – Write final assembly number value field....37
Table 38 – Write final assembly number command specific response codes 37
Table 39 – Read long tag response value field....37
Table 40 – Read long tag command-specific response codes 37
Table 41 – Write long tag value field 38
Table 42 – Write long tag command specific Response codes 38
Table 43 – Write primary variable range value field....39
Table 44 – Write primary variable range command specific response codes 39
Table 45 – Enter-exit fixed current mode request value field 40
Table 46 – Enter-exit fixed current mode response value field....40
Table 47 – Enter-exit fixed current mode command specific response codes 40
Table 48 – Write primary variable unit value field....41
Table 49 – Write primary variable unit command specific response codes....41
Table 50 – Trim loop current zero request value field....41
Table 51 – Trim loop current zero command specific response codes 41
Table 52 – Trim loop current gain request value field 42
Table 53 – Trim loop current gain command specific response codes 42
Table 54 – Read dynamic variable assignment response value field 43
Table 55 – Read dynamic variable assignment command specific response codes 43
Table 56 – Write dynamic variable assignment value field....44
Table 57 – Write dynamic variable assignment command specific response codes 44
Table 58 – Write number of response preambles value field....45
Table 59 – Write number of response preambles command specific response codes 45
Table 60 – Read device variable trim points request value field 45
Table 61 – Read device variable trim points response value field....46
Table 62 – Read device variable trim points command specific response codes....46
Table 63 – Read device variable trim guidelines request value field....46
Table 64 – Read device variable trim guidelines response value field 46
Table 65 – Read device variable trim points command specific response codes....47
Table 66 – Write device variable trim point value field....47
Table 67 – Write device variable trim point command specific response codes 48
Table 68 – Reset device variable trim value field 48
Table 69 – Reset device variable trim command specific response codes 49
Table 70 – Aggregated command specific response codes 50
Table 71 – Coding for Date type 53
Table 72 – Coding for one octet Enumerated Type....54
Table 73 – One octet bit field 54
Table 74 – Packed ASCII character set....55
Table 75 – Acceptable subset of ISO Latin-1 characters 56
Table 76 – Client machine state transitions....59
Table 77 – Server machine state transitions....61

This is a free page sample. Access the full version online.

Table 78 – Function FormReqApdu 61
Table 79 – Function Command 61
Table 80 – Function CommErr 61
Table 81 – Function RespCode 62
Table 82 – Function Commcode 62
Table 83 – Function ApStatus 62
Table 84 – Function Value 62
Table A.1 – Commands that cause configuration change 63
Table C.1 – Transfer function codes 71
Table C.2 – Alarm Selection codes 72
Table C.3 – Write Protect codes 72
Table C.4 – Physical layer signalling codes 72
Table C.5 – Flag Assignment codes 73
Table C.6 – Loop current mode codes 73
Table C.7 – Trim point codes 73
Table C.8 – Analog channel flag codes 73
Table C.9 – Device variable codes 74

This is a free page sample. Access the full version online.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 6-20: Application layer protocol specification – Type 20 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 61158-6-20 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.

This is a free page sample. Access the full version online.

The main changes with respect to the previous edition are listed below:

a) added protocol for new services that are added to IEC 61158-5-20;
b) added normative annexes;
c) updated then references, terms, definitions, symbols, abbreviations;
d) corrected the editorial errors and the text.

The text of this standard is based on the following documents:

FDIS	Report on voting
65C/764/FDIS	65C/774/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:

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

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.

This is a free page sample. Access the full version online.

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.

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

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

This standard is concerned, in particular, with the communication and interworking of sensors, effectors and other automation devices. By using this standard together with other standards positioned within the OSI or fieldbus reference models, otherwise incompatible systems may work together in any combination.

This is a free page sample. Access the full version online.

INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 6-20: Application layer protocol specification – Type 20 elements

1 Scope

The Fieldbus Application Layer (FAL) provides user programs with a means to access the fieldbus communication environment. In this respect, the FAL can be viewed as a "window between corresponding application programs."

This standard provides common elements for basic time-critical and non-time-critical messaging communications between application programs in an automation environment and material specific to Type 20 fieldbus. 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 behavior provided by the Type 20 of the fieldbus Application Layer in terms of

a) the abstract syntax defining the application layer protocol data units conveyed between communicating application entities,
b) the transfer syntax defining the application layer protocol data units conveyed between communicating application entities,
c) the application context state machine defining the application service behavior visible between communicating application entities; and
d) the application relationship state machines defining the communication behavior visible between communicating application entities; and.

The purpose of this standard is to define the protocol provided to define

a) the wire-representation of the service primitives defined in IEC 61158-5-20, and
b) the externally visible behavior associated with their transfer.

This standard specifies the protocol of the Type 20 IEC fieldbus application layer, in conformance with the OSI Basic Reference Model (ISO/IEC 7498-1) and the OSI Application Layer Structure (ISO/IEC 9545).

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.

IEC 61158-1:2014, *Industrial communication networks – Fieldbus specifications – Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series*

SAI GLOBAL

This is a free preview. Purchase the entire publication at the link below:

Product Page

Looking for additional Standards? Visit Intertek Inform Infostore

Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation