

STN	Priemyselné komunikačné siete. Špecifikácie prevádzkových zberníc. Časť 1: Prehľad a príručka k súborom noriem IEC 61158 a IEC 61784.	STN EN 61158-1 18 4020
------------	--	--

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

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 01/15

Obsahuje: EN 61158-1:2014, IEC 61158-1:2014

Oznámením tejto normy sa od 27.06.2017 ruší
TNI CLC/TR 61158-1 (18 4020) z marca 2011

119923

Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, odbor SÚTN, 2015
Podľa zákona č. 264/1999 Z. z. v znení neskorších predpisov sa môžu slovenské technické normy
rozmnžovať a rozširovať iba so súhlasom Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 61158-1

September 2014

ICS 25.040.40; 33.040; 35.100.05

Supersedes CLC/TR 61158-1:2010

English Version

Industrial communication networks - Fieldbus specifications -
Part 1: Overview and guidance for the IEC 61158 and IEC 61784
series
(IEC 61158-1:2014)

Réseaux de communication industriels - Spécifications des
bus de terrain - Partie 1: Présentation et lignes directrices
des séries CEI 61158 et CEI 61784
(CEI 61158-1:2014)

Industrielle Kommunikationsnetze - Feldbusse -
Teil 1: Überblick und Leitfaden zu den Normen der Reihe
IEC 61158 und IEC 61784
(IEC 61158-1:2014)

This European Standard was approved by CENELEC on 2014-06-27. 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

Foreword

The text of document 65C/757/FDIS, future edition 1 of IEC 61158-1, 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 61158-1:2014.

The following dates are fixed:

- latest date by which the document has to be (dop) 2015-03-27
implemented at national level by
publication of an identical national
standard or by endorsement
- latest date by which the national (dow) 2017-06-27
standards conflicting with the
document have to be withdrawn

This document supersedes CLC/TR 61158-1:2010.

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 61158-1:2014 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 60793-2-30:2012	NOTE	Harmonized as EN 60793-2-30:2013 (not modified).
IEC 60793-2-40:2009	NOTE	Harmonized as EN 60793-2-40:2011 (not modified).
IEC 61000-6-2	NOTE	Harmonized as EN 61000-6-2.
IEC 61131-2	NOTE	Harmonized as EN 61131-2.
IEC 61158 Series	NOTE	Harmonized as EN 61158 Series (not modified).
IEC 61158-2:2014	NOTE	Harmonized as EN 61158-2 ¹⁾ (not modified).
IEC 61158-3-1:2014	NOTE	Harmonized as EN 61158-3-1 ¹⁾ (not modified).
IEC 61158-3-2:2014	NOTE	Harmonized as EN 61158-3-2 ¹⁾ (not modified).
IEC 61158-3-3:2014	NOTE	Harmonized as EN 61158-3-3 ¹⁾ (not modified).
IEC 61158-3-4:2014	NOTE	Harmonized as EN 61158-3-4 ¹⁾ (not modified).
IEC 61158-3-7:2007	NOTE	Harmonized as EN 61158-3-7:2008 (not modified).
IEC 61158-3-8:2007	NOTE	Harmonized as EN 61158-3-8:2008 (not modified).
IEC 61158-3-11:2007	NOTE	Harmonized as EN 61158-3-11:2008 (not modified).
IEC 61158-3-12:2014	NOTE	Harmonized as EN 61158-3-12 ¹⁾ (not modified).
IEC 61158-3-13:2014	NOTE	Harmonized as EN 61158-3-13 ¹⁾ (not modified).
IEC 61158-3-14:2014	NOTE	Harmonized as EN 61158-3-14 ¹⁾ (not modified).
IEC 61158-3-16:2007	NOTE	Harmonized as EN 61158-3-16:2008 (not modified).

¹⁾ To be published.

IEC 61158-3-17:2007	NOTE	Harmonized as EN 61158-3-17:2008 (not modified).
IEC 61158-3-18:2007	NOTE	Harmonized as EN 61158-3-18:2008 (not modified).
IEC 61158-3-19:2014	NOTE	Harmonized as EN 61158-3-19 ¹⁾ (not modified).
IEC 61158-3-20:2014	NOTE	Harmonized as EN 61158-3-20 ¹⁾ (not modified).
IEC 61158-3-21:2010	NOTE	Harmonized as EN 61158-3-21:2012 (not modified).
IEC 61158-3-22:2014	NOTE	Harmonized as EN 61158-3-22 ¹⁾ (not modified).
IEC 61158-3-24:2014	NOTE	Harmonized as EN 61158-3-24 ¹⁾ (not modified).
IEC 61158-4-1:2014	NOTE	Harmonized as EN 61158-4-1 ¹⁾ (not modified).
IEC 61158-4-2:2014	NOTE	Harmonized as EN 61158-4-2 ¹⁾ (not modified).
IEC 61158-4-3:2014	NOTE	Harmonized as EN 61158-4-3 ¹⁾ (not modified).
IEC 61158-4-4:2014	NOTE	Harmonized as EN 61158-4-4 ¹⁾ (not modified).
IEC 61158-4-7:2007	NOTE	Harmonized as EN 61158-4-7:2008 (not modified).
IEC 61158-4-8:2007	NOTE	Harmonized as EN 61158-4-8:2008 (not modified).
IEC 61158-4-11:2014	NOTE	Harmonized as EN 61158-4-11 ¹⁾ (not modified).
IEC 61158-4-12:2014	NOTE	Harmonized as EN 61158-4-12 ¹⁾ (not modified).
IEC 61158-4-13:2014	NOTE	Harmonized as EN 61158-4-13 ¹⁾ (not modified).
IEC 61158-4-14:2014	NOTE	Harmonized as EN 61158-4-14 ¹⁾ (not modified).
IEC 61158-4-16:2007	NOTE	Harmonized as EN 61158-4-16:2008 (not modified).
IEC 61158-4-17:2007	NOTE	Harmonized as EN 61158-4-17:2008 (not modified).
IEC 61158-4-18:2010	NOTE	Harmonized as EN 61158-4-18:2012 (not modified).
IEC 61158-4-19:2014	NOTE	Harmonized as EN 61158-4-19 ¹⁾ (not modified).
IEC 61158-4-20:2014	NOTE	Harmonized as EN 61158-4-20 ¹⁾ (not modified).
IEC 61158-4-21:2010	NOTE	Harmonized as EN 61158-4-21:2012 (not modified).
IEC 61158-4-22:2014	NOTE	Harmonized as EN 61158-4-22 ¹⁾ (not modified).
IEC 61158-4-24:2014	NOTE	Harmonized as EN 61158-4-24 ¹⁾ (not modified).
IEC 61158-5-2:2014	NOTE	Harmonized as EN 61158-5-2 ¹⁾ (not modified).
IEC 61158-5-3:2014	NOTE	Harmonized as EN 61158-5-3 ¹⁾ (not modified).
IEC 61158-5-4:2014	NOTE	Harmonized as EN 61158-5-4 ¹⁾ (not modified).
IEC 61158-5-5:2014	NOTE	Harmonized as EN 61158-5-5 ¹⁾ (not modified).
IEC 61158-5-7:2007	NOTE	Harmonized as EN 61158-5-7:2008 (not modified).
IEC 61158-5-8:2007	NOTE	Harmonized as EN 61158-5-8:2008 (not modified).
IEC 61158-5-9:2014	NOTE	Harmonized as EN 61158-5-9 ¹⁾ (not modified).
IEC 61158-5-10:2014	NOTE	Harmonized as EN 61158-5-10 ¹⁾ (not modified).
IEC 61158-5-11:2007	NOTE	Harmonized as EN 61158-5-11:2008 (not modified).
IEC 61158-5-12:2014	NOTE	Harmonized as EN 61158-5-12 ¹⁾ (not modified).
IEC 61158-5-13:2014	NOTE	Harmonized as EN 61158-5-13 ¹⁾ (not modified).
IEC 61158-5-14:2014	NOTE	Harmonized as EN 61158-5-14 ¹⁾ (not modified).
IEC 61158-5-15:2010	NOTE	Harmonized as EN 61158-5-15:2012 (not modified).
IEC 61158-5-16:2007	NOTE	Harmonized as EN 61158-5-16:2008 (not modified).
IEC 61158-5-17:2007	NOTE	Harmonized as EN 61158-5-17:2008 (not modified).
IEC 61158-5-18:2010	NOTE	Harmonized as EN 61158-5-18:2012 (not modified).

¹⁾ To be published.

IEC 61158-5-19:2014	NOTE	Harmonized as EN 61158-5-19 ¹⁾ (not modified).
IEC 61158-5-20:2014	NOTE	Harmonized as EN 61158-5-20 ¹⁾ (not modified).
IEC 61158-5-21:2010	NOTE	Harmonized as EN 61158-5-21:2012 (not modified).
IEC 61158-5-22:2010	NOTE	Harmonized as EN 61158-5-22:2012 (not modified).
IEC 61158-5-23:2014	NOTE	Harmonized as EN 61158-5-23 ¹⁾ (not modified).
IEC 61158-5-24:2014	NOTE	Harmonized as EN 61158-5-24 ¹⁾ (not modified).
IEC 61158-6-2:2014	NOTE	Harmonized as EN 61158-6-2 ¹⁾ (not modified).
IEC 61158-6-3:2014	NOTE	Harmonized as EN 61158-6-3 ¹⁾ (not modified).
IEC 61158-6-4:2014	NOTE	Harmonized as EN 61158-6-4 ¹⁾ (not modified).
IEC 61158-6-5:2014	NOTE	Harmonized as EN 61158-6-5 ¹⁾ (not modified).
IEC 61158-6-7:2007	NOTE	Harmonized as EN 61158-6-7:2008 (not modified).
IEC 61158-6-8:2007	NOTE	Harmonized as EN 61158-6-8:2008 (not modified).
IEC 61158-6-9:2014	NOTE	Harmonized as EN 61158-6-9 ¹⁾ (not modified).
IEC 61158-6-10:2014	NOTE	Harmonized as EN 61158-6-10 ¹⁾ (not modified).
IEC 61158-6-11:2007	NOTE	Harmonized as EN 61158-6-11:2008 (not modified).
IEC 61158-6-12:2014	NOTE	Harmonized as EN 61158-6-12 ¹⁾ (not modified).
IEC 61158-6-13:2014	NOTE	Harmonized as EN 61158-6-13 ¹⁾ (not modified).
IEC 61158-6-14:2014	NOTE	Harmonized as EN 61158-6-14 ¹⁾ (not modified).
IEC 61158-6-15:2010	NOTE	Harmonized as EN 61158-6-15:2012 (not modified).
IEC 61158-6-16:2007	NOTE	Harmonized as EN 61158-6-16:2008 (not modified).
IEC 61158-6-17:2007	NOTE	Harmonized as EN 61158-6-17:2008 (not modified).
IEC 61158-6-18:2010	NOTE	Harmonized as EN 61158-6-18:2012 (not modified).
IEC 61158-6-19:2014	NOTE	Harmonized as EN 61158-6-19 ¹⁾ (not modified).
IEC 61158-6-20:2014	NOTE	Harmonized as EN 61158-6-20 ¹⁾ (not modified).
IEC 61158-6-21:2010	NOTE	Harmonized as EN 61158-6-21:2012 (not modified).
IEC 61158-6-22:2014	NOTE	Harmonized as EN 61158-6-22 ¹⁾ (not modified).
IEC 61158-6-23:2014	NOTE	Harmonized as EN 61158-6-23 ¹⁾ (not modified).
IEC 61158-6-24:2014	NOTE	Harmonized as EN 61158-6-24 ¹⁾ (not modified).
IEC 61326 Series	NOTE	Harmonized as EN 61326 Series (not modified).
IEC 61508 Series	NOTE	Harmonized as EN 61508 Series (not modified).
IEC 61784-1:2014	NOTE	Harmonized as EN 61784-1 ¹⁾ (not modified).
IEC 61784-2:2014	NOTE	Harmonized as EN 61784-2 ¹⁾ (not modified).
IEC 61784-3:2010	NOTE	Harmonized as EN 61784-3:2010 (not modified).
IEC 61784-3-1:2010	NOTE	Harmonized as EN 61784-3-1:2010 (not modified).
IEC 61784-3-2:2010	NOTE	Harmonized as EN 61784-3-2:2010 (not modified).
IEC 61784-3-3:2010	NOTE	Harmonized as EN 61784-3-3:2010 (not modified).
IEC 61784-3-6:2010	NOTE	Harmonized as EN 61784-3-6:2010 (not modified).
IEC 61784-3-8:2010	NOTE	Harmonized as EN 61784-3-8:2010 (not modified).
IEC 61784-3-12:2010	NOTE	Harmonized as EN 61784-3-12:2010 (not modified).
IEC 61784-3-13:2010	NOTE	Harmonized as EN 61784-3-13:2010 (not modified).
IEC 61784-3-14:2010	NOTE	Harmonized as EN 61784-3-14:2010 (not modified).

¹⁾ To be published.

IEC 61784-3-18:2011	NOTE	Harmonized as EN 61784-3-18:2011 (not modified).
IEC 61784-5-1:2013	NOTE	Harmonized as EN 61784-5-1:2013 (not modified).
IEC 61784-5-2:2013	NOTE	Harmonized as EN 61784-5-2:2013 (not modified).
IEC 61784-5-3:2013	NOTE	Harmonized as EN 61784-5-3:2013 (not modified).
IEC 61784-5-4:2010	NOTE	Harmonized as EN 61784-5-4:2012 (not modified).
IEC 61784-5-6:2013	NOTE	Harmonized as EN 61784-5-6:2013 (not modified).
IEC 61784-5-8:2013	NOTE	Harmonized as EN 61784-5-8:2013 (not modified).
IEC 61784-5-10:2010	NOTE	Harmonized as EN 61784-5-10:2012 (not modified).
IEC 61784-5-11:2013	NOTE	Harmonized as EN 61784-5-11:2013 (not modified).
IEC 61784-5-12:2010	NOTE	Harmonized as EN 61784-5-12:2012 (not modified).
IEC 61784-5-13:2013	NOTE	Harmonized as EN 61784-5-13:2013 (not modified).
IEC 61784-5-14:2013	NOTE	Harmonized as EN 61784-5-14:2013 (not modified).
IEC 61784-5-15:2010	NOTE	Harmonized as EN 61784-5-15:2012 (not modified).
IEC 61784-5-16:2013	NOTE	Harmonized as EN 61784-5-16:2013 (not modified).
IEC 61784-5-17:2013	NOTE	Harmonized as EN 61784-5-17:2013 (not modified).
IEC 61784-5-18:2013	NOTE	Harmonized as EN 61784-5-18:2013 (not modified).
IEC 61784-5-19:2013	NOTE	Harmonized as EN 61784-5-19:2013 (not modified).
IEC 61804 Series	NOTE	Harmonized as EN 61804 Series (not modified).
IEC 61918:2013	NOTE	Harmonized as EN 61918:2013 (modified).
IEC 62439 Series	NOTE	Harmonized as EN 62439 Series (not modified).
IEC 62453 Series	NOTE	Harmonized as EN 62453 Series (not modified).
IEC 62591	NOTE	Harmonized as EN 62591.
IEC 62657-2	NOTE	Harmonized as EN 62657-2 ²⁾ .
IEC 62734	NOTE	Harmonized as EN 62734 ²⁾ .
IEC/TR 62685:2010	NOTE	Harmonized as CLC/TR 62685:2011 (not modified).

²⁾ At draft stage.



IEC 61158-1

Edition 1.0 2014-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE



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

**Réseaux de communication industriels – Spécifications des bus de terrain –
Partie 1: Présentation et lignes directrices des séries CEI 61158 et CEI 61784**



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 Varembe
 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.



IEC 61158-1

Edition 1.0 2014-05

INTERNATIONAL STANDARD

NORME INTERNATIONALE



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

**Réseaux de communication industriels – Spécifications des bus de terrain –
Partie 1: Présentation et lignes directrices des séries CEI 61158 et CEI 61784**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX

XC

ICS 25.040.40; 33.040; 35.100.05

ISBN 978-2-8322-1630-9

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

FOREWORD.....	4
1 Scope.....	6
2 Normative references	6
3 Terms, definitions and abbreviated terms	6
3.1 Terms and definitions	6
3.2 Abbreviations	7
4 Guidelines for implementers and users	7
4.1 Background and purpose.....	7
4.2 Supported options	8
4.3 Benefits from using a common and formal style.....	8
5 Concept of the IEC 61158 series	9
6 Mapping onto the OSI Basic Reference Model.....	11
6.1 Overview.....	11
6.2 Physical layer service and protocol.....	11
6.3 Data-link layer service	12
6.4 Data-link layer protocol	13
6.5 Application layer service.....	13
6.6 Application layer protocol	14
7 Structure of IEC 61158 and IEC 61784 series.....	15
7.1 The IEC 61158 physical layer	15
7.2 The IEC 61158 data-link layer	15
7.3 The IEC 61158 application layer.....	16
7.4 IEC 61784-1 and IEC 61784-2 fieldbus profiles	16
7.5 IEC 61784-3 functional safety communication profiles	20
7.6 IEC 61784-5 installation profiles	22
7.7 Communication profiles for wireless communication networks	24
8 Brief summary of the characteristics of service and protocol for each fieldbus type	25
8.1 Summary of the physical layer service and protocol characteristics	25
8.2 Summary of data-link layer service characteristics	27
8.3 Summary of data-link layer protocol characteristics	29
8.4 Summary of application layer service characteristics	30
8.5 Summary of application layer protocol characteristics.....	32
9 Application layer service description concepts	34
9.1 Overview	34
9.2 Architectural relationships	34
9.3 Fieldbus application layer structure	36
9.4 Fieldbus application layer naming and addressing.....	48
9.5 Architecture summary.....	49
9.6 Notional FAL service procedures	50
9.7 Common FAL attributes	51
9.8 Common FAL service parameters.....	52
9.9 APDU size.....	53
10 Data type ASE.....	53
10.1 Overview	53
10.2 Formal definition of data type objects	55

11	Fieldbus system requirements	57
11.1	General	57
11.2	Industrial control network	57
11.3	Communication between industrial control networks and other networks	58
11.4	Quality of service features of an industrial control network	58
11.5	Special requirements for wireless networks	59
Annex A	(informative) Trade name declarations	60
Annex B	(informative) Media selection for fieldbus systems	62
B.1	General	62
B.2	Cabled media	62
B.3	Wireless media	62
B.4	Media needing special consideration	62
B.5	Performance characteristics of open and public networks	63
	Bibliography	64
Figure 1	– Example of a fieldbus system	9
Figure 2	– Concept of DL/AL to separate service and protocol parts	10
Figure 3	– Basic fieldbus reference model	11
Figure 4	– General model of physical layer	12
Figure 5	– Relationship of the Data-link layer to other fieldbus layers and to users of the fieldbus data-link service	13
Figure 6	– Relationship of the fieldbus Application layer to other fieldbus layers and to users of the fieldbus application service	14
Figure 7	– Structure of communication profile families	17
Figure 8	– Example of a CPF structure	18
Figure 9	– Document structure of IEC 61918 and the CPF specific part of IEC 61784-5	24
Figure 10	– Relationship to the OSI Basic Reference Model	35
Figure 11	– Architectural positioning of the fieldbus application layer	35
Figure 12	– Client/server interactions	38
Figure 13	– Pull model interactions	39
Figure 14	– Push model interactions	39
Figure 15	– APOs services conveyed by the FAL	41
Figure 16	– Application entity structure	43
Figure 17	– Example FAL ASEs	44
Figure 18	– FAL management of objects	45
Figure 19	– ASE service conveyance	46
Figure 20	– Defined and established AREPs	48
Figure 21	– FAL architectural components	50
Figure 22	– Data-type class hierarchy example	53
Table 1	– OSI and IEC 61158 layers	11
Table 2	– CPF, CP, and type relations	19
Table 3	– Types of timeliness defined for publisher/subscriber interactions	40
Table A.1	– Trade names of CPFs and CPs	60

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INDUSTRIAL COMMUNICATION NETWORKS –
FIELDBUS SPECIFICATIONS –****Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series****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 some of the associated protocol types is restricted by their 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 their respective intellectual property right holders.

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

International Standard IEC 61158-1 has been prepared by subcommittee 65C: Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation.

This first edition cancels and replaces the third edition of IEC/TR 61158-1 published in 2010. This edition constitutes a technical revision.

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

- updates of the references to and information about the IEC 61158 series, IEC 61784-1, IEC 61784-3, IEC 61784-5 series and IEC 61918 throughout the document;
- new Type 23 for profile family 8;
- new Type 24 and the related profile family CPF 19;
- new Subclause 7.7 Communication profiles for wireless communication networks;
- new Clause 11 Fieldbus system requirements;
- new Annex B Media selection for fieldbus systems.

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

FDIS	Report on voting
65C/757/FDIS	65C/767/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 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.

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.

INDUSTRIAL COMMUNICATION NETWORKS – FIELDBUS SPECIFICATIONS –

Part 1: Overview and guidance for the IEC 61158 and IEC 61784 series

1 Scope

This document specifies the generic concept of fieldbuses.

This document also presents an overview and guidance for the IEC 61158 series by:

- explaining the structure and content of the IEC 61158 series;
- relating the structure of the IEC 61158 series to the ISO/IEC 7498-1 OSI Basic Reference Model;
- showing the logical structure of the IEC 61784 series;
- showing how to use parts of the IEC 61158 series in combination with the IEC 61784 series;
- providing explanations of some aspects of the IEC 61158 series that are common to the type specific parts of the IEC 61158-5 including the application layer service description concepts and the generic fieldbus data types.

2 Normative references

None.

koniec náhľadu – text ďalej pokračuje v platenej verzii STN