

This is a preview of "BS EN 61158-5-4:2014". Click [here](#) to purchase the full version from the ANSI store.

**BS EN 61158-5-4:2014**



**BSI Standards Publication**

# **Industrial communication networks — Fieldbus specifications**

Part 5-4: Application layer service definition — Type 4 elements

**bsi.**

...making excellence a habit.™

This is a preview of "BS EN 61158-5-4:2014". [Click here to purchase the full version from the ANSI store.](#)

This British Standard is the UK implementation of EN 61158-5-4:2014. It is identical to IEC 61158-5-4:2014. It supersedes BS EN 61158-5-4:2008 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee AMT/7, Industrial communications: process measurement and control, including fieldbus.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2014.  
Published by BSI Standards Limited 2014

ISBN 978 0 580 79454 4  
ICS 25.040.40; 35.100.70; 35.110

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 October 2014.

#### **Amendments/corrigenda issued since publication**

<b>Date</b>	<b>Text affected</b>
-------------	----------------------

---

This is a preview of "BS EN 61158-5-4:2014". [Click here to purchase the full version from the ANSI store.](#)

## EUROPÄISCHE NORM

October 2014

ICS 25.040.40; 35.100.70; 35.110

Supersedes EN 61158-5-4:2008

English Version

Industrial communication networks - Fieldbus specifications -  
Part 5-4: Application layer service definition - Type 4 elements  
(IEC 61158-5-4:2014)

Réseaux de communication industriels - Spécifications des  
bus de terrain - Partie 5-4: Définition des services de la  
couche application - Eléments de type 4  
(CEI 61158-5-4:2014)

Industrielle Kommunikationsnetze - Feldbusse -  
Teil 5-4: Dienstfestlegungen des Application Layer  
(Anwendungsschicht) - Typ 4-Elemente  
(IEC 61158-5-4:2014)

This European Standard was approved by CENELEC on 2014-09-22. 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

This is a preview of "BS EN 61158-5-4:2014". [Click here to purchase the full version from the ANSI store.](#)

The text of document 65C/763/FDIS, future edition 2 of IEC 61158-5-4, prepared by SC 65C "Industrial networks" of IEC/TC 65 "Industrial-process measurement, control and automation" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61158-5-4:2014.

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) 2015-06-22
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2017-09-22

This document supersedes EN 61158-5-4:2008.

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

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 61158-5-4:2014 was approved by CENELEC as a European Standard without any modification.

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

IEC 61158-1:2014	NOTE	Harmonized as EN 61158-1:2014 (not modified).
IEC 61784-1:2014	NOTE	Harmonized as EN 61784-1:2014 (not modified).
IEC 61784-2:2014	NOTE	Harmonized as EN 61784-2 <sup>1)</sup> (not modified).

---

<sup>1)</sup> To be published.

This is a preview of "BS EN 61158-5-4:2014". Click here to purchase the full version from the ANSI store.

(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](http://www.cenelec.eu)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61158-3-4	2014	Industrial communication networks - Fieldbus specifications - Part 3-4: Data-link layer service definition - Type 4 elements	EN 61158-3-4 <sup>2)</sup>	-
IEC 61158-4-4	2014	Industrial communication networks - Fieldbus specifications - Part 4-4: Data-link layer protocol specification - Type 4 elements	EN 61158-4-4 <sup>2)</sup>	-
IEC 61158-6-4	2014	Industrial communication networks - Fieldbus specifications - Part 6-4: Application layer protocol specification - Type 4 elements	EN 61158-6-4 <sup>2)</sup>	-
IEC 61158-6	Series	Industrial communication networks - Fieldbus specifications - Part 6: Application layer protocol specification	EN 61158-6	Series
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 8822	-	Information technology - Open Systems Interconnection - Presentation service definition	-	-
ISO/IEC 8824-1	-	Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation	-	-
ISO/IEC 9545	-	Information technology - Open Systems Interconnection - Application layer structure	-	-

<sup>2)</sup> To be published.

This is a preview of "BS EN 61158-5-4:2014". [Click here to purchase the full version from the ANSI store.](#)

ISO/IEC 10731	-	Information technology - Open Systems Interconnection - Basic Reference Model - Conventions for the definition of OSI services	-	-
ISO/IEC/IEEE 60559	-	Information technology - Microprocessor Systems - Floating-Point arithmetic	-	-

This is a preview of "BS EN 61158-5-4:2014". [Click here to purchase the full version from the ANSI store.](#)

## CONTENTS

INTRODUCTION.....	6
1 Scope.....	7
1.1 General.....	7
1.2 Specifications.....	8
1.3 Conformance.....	8
2 Normative references.....	8
3 Terms and definitions.....	9
3.1 ISO/IEC 7498-1 terms.....	9
3.2 ISO/IEC 8822 terms.....	9
3.3 ISO/IEC 9545 terms.....	9
3.4 ISO/IEC 8824-1 terms.....	10
3.5 Fieldbus data-link layer terms.....	10
3.6 Fieldbus application layer specific definitions.....	10
3.7 Abbreviations and symbols.....	16
3.8 Conventions.....	17
4 Concepts.....	20
4.1 Overview.....	20
4.2 Architectural relationships.....	21
4.3 Fieldbus Application Layer structure.....	23
4.4 Fieldbus Application Layer naming and addressing.....	35
4.5 Architecture summary.....	35
4.6 FAL service procedures.....	36
4.7 Common FAL attributes.....	37
4.8 Common FAL service parameters.....	37
4.9 APDU size.....	38
5 Type 4 communication model specification.....	38
5.1 Concepts.....	38
5.2 Variable ASE.....	45
5.3 Application relationship ASE.....	64
Bibliography.....	71
Figure 1 – Relationship to the OSI basic reference model.....	21
Figure 2 – Architectural positioning of the fieldbus Application Layer.....	22
Figure 3 – Client/server interactions.....	24
Figure 4 – Pull model interactions.....	25
Figure 5 – Push model interactions.....	26
Figure 6 – APOs services conveyed by the FAL.....	27
Figure 7 – Application entity structure.....	29
Figure 8 – Example FAL ASEs.....	30
Figure 9 – FAL management of objects.....	31
Figure 10 – ASE service conveyance.....	32
Figure 11 – Defined and established AREPs.....	34
Figure 12 – FAL architectural components.....	36