SVENSK STANDARD SS-EN IEC 61784-3

Fastställd	Utgåva	Sida	Ansvarig kommitté
2021-04-21	4	1 (1+104)	SEK TK 65

Industriell processtyrning – Profiler – Del 3: Fältbussar i system av betydelse för säkerheten – Allmänna regler och profildefinitioner

Industrial communication networks – Profiles – Part 3: Functional safety fieldbuses – General rules and profile definitions

Som svensk standard gäller europastandarden EN IEC 61784-3:2021. Den svenska standarden innehåller den officiella engelska språkversionen av EN IEC 61784-3:2021.

Nationellt förord

Europastandarden EN IEC 61784-3:2021

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 61784-3, Fourth edition, 2021 - Industrial communication networks - Profiles - Part 3: Functional safety fieldbuses - General rules and profile definitions**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 61784-3, utgåva 3, 2016 och SS-EN 61784-3/A1, utgåva 1, 2018, gäller ej fr o m 2024-03-23.

ICS 25.040.40; 35.100.05

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN IEC 61784-3

March 2021

ICS 25.040.40; 35.100.05

Supersedes EN 61784-3:2016 and all of its amendments and corrigenda (if any)

English Version

Industrial communication networks - Profiles - Part 3: Functional safety fieldbuses - General rules and profile definitions (IEC 61784-3:2021)

Réseaux de communication industriels - Profils - Partie 3: Bus de terrain de sécurité fonctionnelle - Règles générales et définitions de profils (IEC 61784-3:2021)

Industrielle Kommunikationsnetze - Profile - Teil 3: Funktional sichere Übertragung bei Feldbussen - Allgemeine Regeln und Festlegungen für Profile (IEC 61784-3:2021)

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

Ref. No. EN IEC 61784-3:2021 E

SEK Svensk Elstandard SS-EN IEC 61784-3, utg 4:2021

European foreword

The text of document 65C/1067/FDIS, future edition 4 of IEC 61784-3, 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 61784-3:2021.

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) 2021-12-23
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024-03-23

This document supersedes EN 61784-3:2016 and all of its amendments and corrigenda (if any).

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.

Endorsement notice

The text of the International Standard IEC 61784-3:2021 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 61000-1-2	NOTE	Harmonized as EN 61000-1-2
IEC 61131-6	NOTE	Harmonized as EN 61131-6
IEC 61158-2:2014	NOTE	Harmonized as EN 61158-2:2014 (not modified)
IEC 61158-3-1	NOTE	Harmonized as EN 61158-3-1
IEC 61158-3-2	NOTE	Harmonized as EN 61158-3-2
IEC 61158-3-3	NOTE	Harmonized as EN 61158-3-3
IEC 61158-3-8	NOTE	Harmonized as EN 61158-3-8
IEC 61158-3-12	NOTE	Harmonized as EN IEC 61158-3-12
IEC 61158-3-13	NOTE	Harmonized as EN 61158-3-13
IEC 61158-3-14	NOTE	Harmonized as EN 61158-3-14
IEC 61158-3-18	NOTE	Harmonized as EN 61158-3-18
IEC 61158-3-19	NOTE	Harmonized as EN IEC 61158-3-19
IEC 61158-3-21	NOTE	Harmonized as EN IEC 61158-3-21
IEC 61158-3-22	NOTE	Harmonized as EN 61158-3-22
IEC 61158-4-1	NOTE	Harmonized as EN 61158-4-1
IEC 61158-4-2	NOTE	Harmonized as EN IEC 61158-4-2
IEC 61158-4-3	NOTE	Harmonized as EN IEC 61158-4-3
IEC 61158-4-8	NOTE	Harmonized as EN 61158-4-8
IEC 61158-4-12	NOTE	Harmonized as EN IEC 61158-4-12
IEC 61158-4-13	NOTE	Harmonized as EN 61158-4-13
IEC 61158-4-14	NOTE	Harmonized as EN 61158-4-14
IEC 61158-4-18	NOTE	Harmonized as EN 61158-4-18
IEC 61158-4-19	NOTE	Harmonized as EN IEC 61158-4-19

IEC 61158-4-21	NOTE	Harmonized as EN IEC 61158-4-21
IEC 61158-4-22	NOTE	Harmonized as EN 61158-4-22
IEC 61158-5-2	NOTE	Harmonized as EN IEC 61158-5-2
IEC 61158-5-3	NOTE	Harmonized as EN 61158-5-3
IEC 61158-5-5	NOTE	Harmonized as EN 61158-5-5
IEC 61158-5-8	NOTE	Harmonized as EN 61158-5-8
IEC 61158-5-9	NOTE	Harmonized as EN 61158-5-9
IEC 61158-5-10	NOTE	Harmonized as EN IEC 61158-5-10
IEC 61158-5-12	NOTE	Harmonized as EN IEC 61158-5-12
IEC 61158-5-13	NOTE	Harmonized as EN 61158-5-13
IEC 61158-5-14	NOTE	Harmonized as EN 61158-5-14
IEC 61158-5-18	NOTE	Harmonized as EN 61158-5-18
IEC 61158-5-19	NOTE	Harmonized as EN IEC 61158-5-19
IEC 61158-5-21	NOTE	Harmonized as EN IEC 61158-5-21
IEC 61158-5-22	NOTE	Harmonized as EN 61158-5-22
IEC 61158-5-23	NOTE	Harmonized as EN IEC 61158-5-23
IEC 61158-6-2	NOTE	Harmonized as EN IEC 61158-6-2
IEC 61158-6-3	NOTE	Harmonized as EN IEC 61158-6-3
IEC 61158-6-5	NOTE	Harmonized as EN 61158-6-5
IEC 61158-6-8	NOTE	Harmonized as EN 61158-6-8
IEC 61158-6-9	NOTE	Harmonized as EN 61158-6-9
IEC 61158-6-10	NOTE	Harmonized as EN IEC 61158-6-10
IEC 61158-6-12	NOTE	Harmonized as EN IEC 61158-6-12
IEC 61158-6-13	NOTE	Harmonized as EN 61158-6-13
IEC 61158-6-14	NOTE	Harmonized as EN 61158-6-14
IEC 61158-6-18	NOTE	Harmonized as EN 61158-6-18
IEC 61158-6-19	NOTE	Harmonized as EN IEC 61158-6-19
IEC 61158-6-21	NOTE	Harmonized as EN IEC 61158-6-21
IEC 61158-6-22	NOTE	Harmonized as EN 61158-6-22
IEC 61158-6-23	NOTE	Harmonized as EN IEC 61158-6-23
IEC 61496 (series)	NOTE	Harmonized as EN IEC 61496 (series)
IEC 61496-1	NOTE	Harmonized as EN IEC 61496-1
IEC 61508-4:2010	NOTE	Harmonized as EN 61508-4:2010 (not modified)
IEC 61508-5:2010	NOTE	Harmonized as EN 61508-5:2010 (not modified)
IEC 61511 (series)	NOTE	Harmonized as EN 61511 (series)
IEC 61800-5-2	NOTE	Harmonized as EN 61800-5-2
IEC 62061:2005	NOTE	Harmonized as EN 62061:2005 (not modified)
IEC 62061:2005/A1:2012	NOTE	Harmonized as EN 62061:2005/A1:2013 (not modified)
IEC 62061:2005/A2:2015	NOTE	Harmonized as EN 62061:2005/A2:2015 (not modified)
ISO 10218-1	NOTE	Harmonized as EN ISO 10218-1
ISO 13849 (series)	NOTE	Harmonized as EN ISO 13849 (series)
ISO 13849-1:2015	NOTE	Harmonized as EN ISO 13849-1:2015 (not modified)

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 61000-6-7	-	Electromagnetic compatibility (EMC) - Part 6-7: Generic standards - Immunity requirements for equipment intended to perform functions in a safety-related system (functional safety) in industrial locations	EN 61000-6-7	-
IEC 61010-2-201	-	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 2-201: Particular requirements for control equipment	EN IEC 61010-2-201	-
IEC 61158	series	Industrial communication networks - Fieldbus specifications	EN IEC 61158	series
IEC 61326-3-1	-	Electrical equipment for measurement, control and laboratory use - EMC requirements – Part 3-1: Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety) – General industrial applications	EN 61326-3-1	-
IEC 61326-3-2	-	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 3-2: Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety) - Industrial applications with specified electromagnetic environment	EN IEC 61326-3-2	-
IEC 61508	series	Functional safety of electrical /electronic/programmable electronic safety-related systems	EN 61508	series

Publication	Year	Title	EN/HD	Year
IEC 61508-1	2010	Functional safety of electrical /electronic/programmable electronic safety-related systems - Part 1: General requirements	EN 61508-1	2010
IEC 61508-2	-	Functional safety of electrical/ electronic/programmable electronic safety-related systems - Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems	EN 61508-2	-
IEC 61784-1	-	Industrial communication networks - Profiles Part 1: Fieldbus profiles	EN IEC 61784-1	-
IEC 61784-2	-	Industrial communication networks - Profiles - Part 2: Additional fieldbus profiles for real-time networks based on ISO/IEC/IEEE 8802-3	EN IEC 61784-2	-
IEC 61784-3	series	Industrial communication networks - Profiles - Part 3: Functional safety fieldbuses	-	-
IEC 61784-3-1	-	Industrial communication networks - Profiles - Part 3-1: Functional safety fieldbuses - Additional specifications for CPF 1	EN 61784-3-1	-
IEC 61784-3-2	-	Industrial communication networks - Profiles - Part 3-2: Functional safety fieldbuses - Additional specifications for CPF 2	EN 61784-3-2	-
IEC 61784-3-3	-	Industrial communication networks - Profiles - Part 3-3: Functional safety fieldbuses - Additional specifications for CPF 3	EN 61784-3-3	-
IEC 61784-3-6	-	Industrial communication networks - Profiles - Part 3-6: Functional safety fieldbuses - Additional specifications for CPF 6	EN 61784-3-6	-
IEC 61784-3-8	-	Industrial communication networks - Profiles - Part 3-8: Functional safety fieldbuses - Additional specifications for CPF 8	EN 61784-3-8	-
IEC 61784-3-12	-	Industrial communication networks - Profiles - Part 3-12: Functional safety fieldbuses - Additional specifications for CPF 12	EN 61784-3-12	-
IEC 61784-3-13	-	Industrial communication networks - Profiles - Part 3-13: Functional safety fieldbuses - Additional specifications for CPF 13	EN 61784-3-13	-
IEC 61784-3-14	-	Industrial communication networks - Profiles - Part 3-14: Functional safety fieldbuses - Additional specifications for CPF 14	EN 61784-3-14	-

Publication	Year	Title	EN/HD	Year
IEC 61784-3-17	-	Industrial communication networks - Profiles - Part 3-17: Functional safety fieldbuses - Additional specifications for CPF 17	EN 61784-3-17	-
IEC 61784-3-18	-	Industrial communication networks - Profiles - Part 3-18: Functional safety fieldbuses - Additional specifications for CPF 18	EN 61784-3-18	-
IEC 61784-5	series	Industrial communication networks - Profiles - Part 5: Installation of fieldbuses	EN 61784-5	series
IEC 61918	2018	Industrial communication networks - Installation of communication networks in industrial premises	EN IEC 61918	2018
-	-		EN IEC 61918:2018 /AC:2019-03	2019
IEC 62443	series	Security for industrial process measurement and control - Network and system security	-	-

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INDUSTRIAL COMMUNICATION NETWORKS – PROFILES –

Part 3: Functional safety fieldbuses – General rules and profile definitions

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.
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International Standard IEC 61784-3 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 2016 and its Amendment 1, published in 2017. This edition constitutes a technical revision.

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

- Contents of previous Annex F were corrected based on feedback from peer review and subsequent analysis (in particular deletion of RP_U for data integrity, reduction of the Equation for RR_A, and clarifications on the values of RP_I and R_T).
- Additional assumptions for residual error rate calculations, clarification of assumption a).

- After correction, contents of previous Annex F were exchanged with the contents of previous Subclause 5.8.
- Contents of Subclause 5.9 on security replaced by a simple reference to IEC 62443 in accordance with Guide 120.
- Changes in Annex B: Dependency of this Annex B with the BSC model has been highlighted. First two paragraphs and figure in Clause B.2 have been deleted because of little relevance. The approximation Equation (B.4) has been deleted due to obsolescence, based on the observations that the CRC shall be anyway explicitly calculated in order to prove properness, and that it may produce optimistic results. Guidance for calculation of R_{CRC} in B.4.2 has been reviewed.
- Changes in Annex D: Formula D.1 was changed from an approximation to a proper Equation, with some adjustments, and contents of D.4.3 were clarified (default safety action).
- New informative Annex H, providing additional guidance for the calculation of RCRC.

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

FDIS	Report on voting
65C/1067/FDIS	65C/1072/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 document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 61784-3 series, published under the general title *Industrial communication networks – Profiles – Functional safety fieldbuses*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific document. At this date, the document 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.

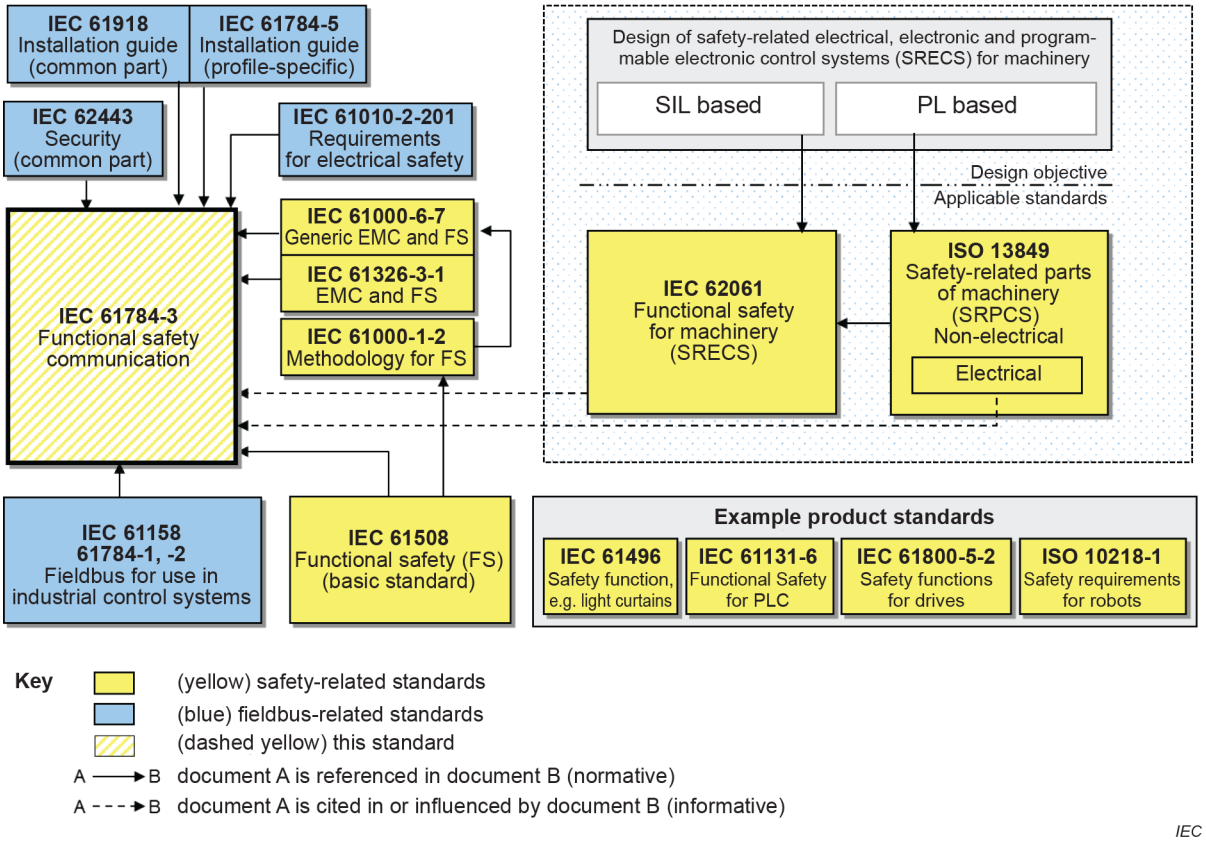
0 Introduction

0.1 General

The IEC 61158 (all parts) fieldbus standard together with its companion standards IEC 61784-1 and IEC 61784-2 defines a set of communication protocols that enable distributed control of automation applications. Fieldbus technology is now considered well accepted and well proven. Thus, fieldbus enhancements continue to emerge, addressing applications for areas such as real time and safety-related applications.

IEC 61784-3 (all parts) explains the relevant principles for functional safety communications with reference to IEC 61508 (all parts) and specifies several safety communication layers (profiles and corresponding protocols) based on the communication profiles and protocol layers of IEC 61784-1, IEC 61784-2 and IEC 61158 (all parts). It does not cover electrical safety and intrinsic safety aspects. It also does not cover security aspects, nor does it provide any requirements for security.

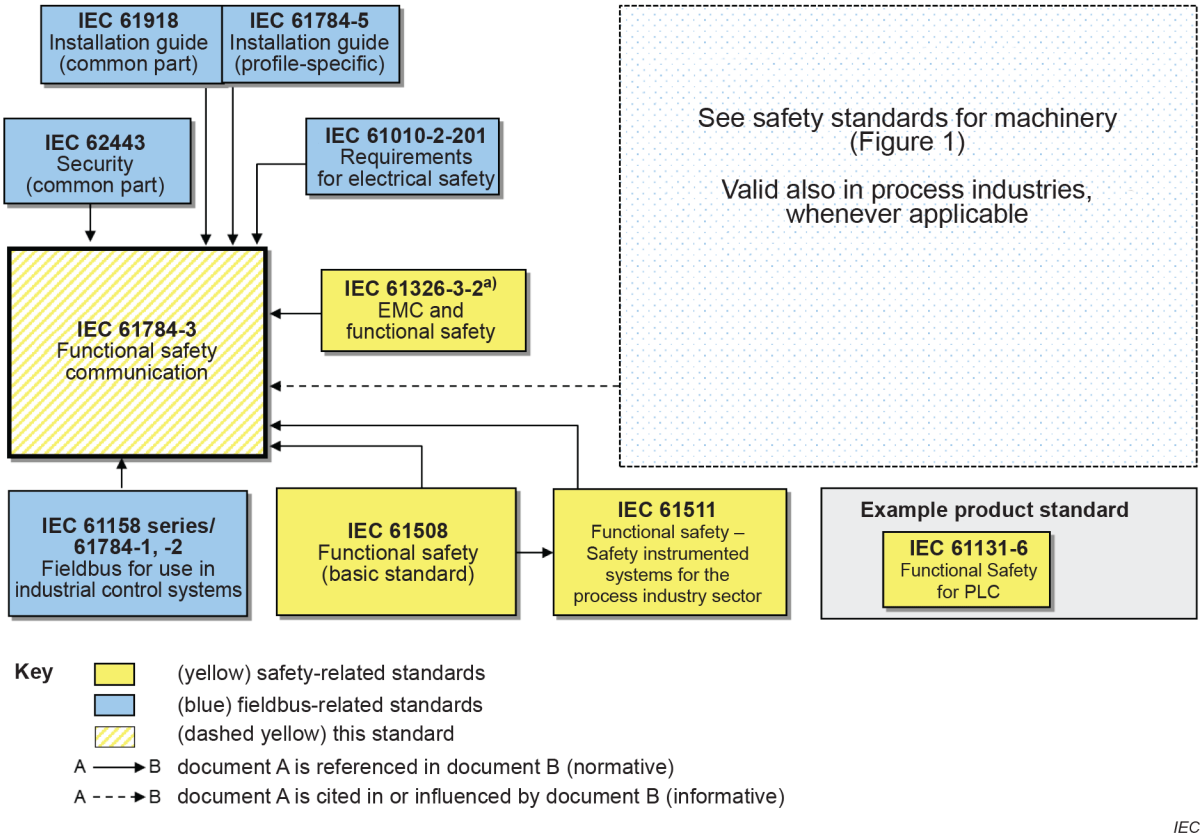
Figure 1 shows the relationships between IEC 61784-3 (all parts) and relevant safety and fieldbus standards in a machinery environment.



NOTE IEC 62061 specifies the relationship between PL (Category) and SIL.

Figure 1 – Relationships of IEC 61784-3 with other standards (machinery)

Figure 2 shows the relationships between IEC 61784-3 (all parts) and relevant safety and fieldbus standards in a process environment.



[a] For specified electromagnetic environments; otherwise IEC 61326-3-1 or IEC 61000-6-7.

Figure 2 – Relationships of IEC 61784-3 with other standards (process)

Safety communication layers which are implemented as parts of safety-related systems according to IEC 61508 (all parts) provide the necessary confidence in the transportation of messages (information) between two or more participants on a fieldbus in a safety-related system, or sufficient confidence of safe behaviour in the event of fieldbus errors or failures.

Safety communication layers specified in IEC 61784-3 (all parts) do this in such a way that a fieldbus can be used for applications requiring functional safety up to the Safety Integrity Level (SIL) specified by its corresponding functional safety communication profile.

The resulting SIL claim of a system depends on the implementation of the selected functional safety communication profile (FSCP) within this system – implementation of a functional safety communication profile in a standard device is not sufficient to qualify it as a safety device.

IEC 61784-3 (all parts) describes:

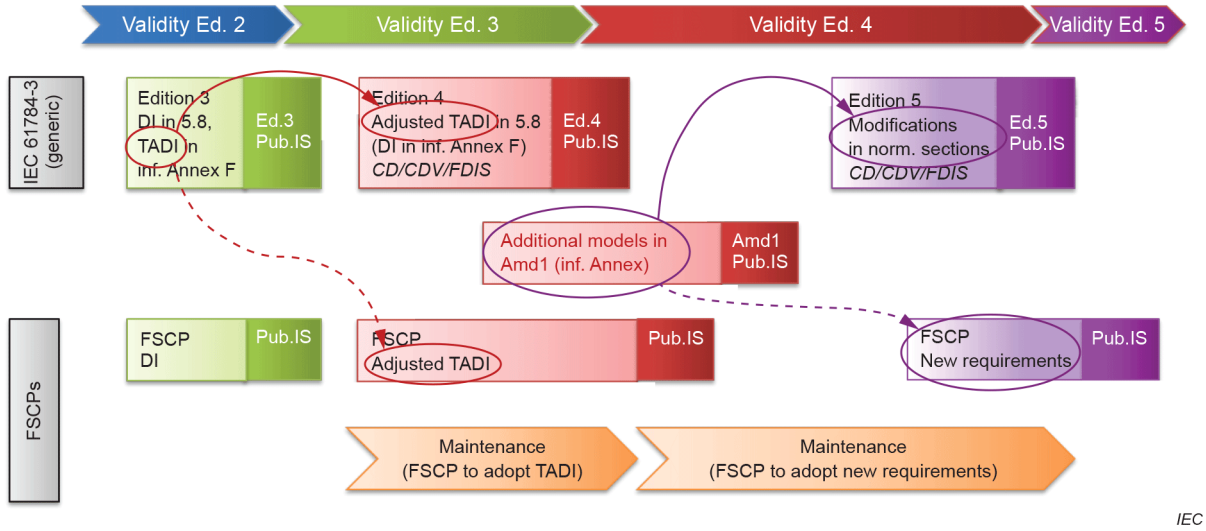
- basic principles for implementing the requirements of IEC 61508 (all parts) for safety-related data communications, including possible transmission faults, remedial measures and considerations affecting data integrity;
- functional safety communication profiles for several communication profile families in IEC 61784-1 and IEC 61784-2, including safety layer extensions to the communication service and protocols sections of IEC 61158 (all parts).

0.2 Use of extended assessment methods in Edition 4

This edition of the generic part of IEC 61784-3 (all parts) includes extended models for use when estimating the total residual error rate for an FSCP. This value can be used to determine if the FSCP meets the requirements of functional safety applications up to a given SIL. These extended models for qualitative and quantitative safety determination methods are detailed in Annex E and 5.8.

Upon publication of this new edition of the generic part, FSCPs shall be assessed using the methods from this Edition 4, based on the extended models specified in 5.8 (derived from a modified version of Annex F of Edition 3). The informative Annex F contains the legacy models for reference purpose only.

Figure 3 shows the transitions from original assessment methods of Edition 2 to extended assessment methods in this Edition 4 and the future Edition 5.



Key

DI Data Integrity

TADI Timeliness, Authenticity, Data Integrity

Figure 3 – Transitions from Ed. 2 to Ed. 4 and future Ed. 5 assessment methods

0.3 Patent declaration

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of patents concerning functional safety communication profiles for families 1, 2, 3, 6, 8, 12, 13, 14, 17 and 18 given in IEC 61784-3-1, IEC 61784-3-2, IEC 61784-3-3, IEC 61784-3-6, IEC 61784-3-8, IEC 61784-3-12, IEC 61784-3-13, IEC 61784-3-14, IEC 61784-3-17 and IEC 61784-3-18.

IEC takes no position concerning the evidence, validity and scope of these patent rights.

The holders of these patent rights have assured IEC that they are willing to negotiate licences under reasonable and non-discriminatory terms and conditions with applicants throughout the world. In this respect, the statements of the holders of these patent rights are registered with IEC. Information may be obtained from the patent database available at http://patents.iec.ch.

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

INDUSTRIAL COMMUNICATION NETWORKS – PROFILES –

Part 3: Functional safety fieldbuses – General rules and profile definitions

1 Scope

This part of the IEC 61784-3 series explains some common principles that can be used in the transmission of safety-relevant messages among participants within a distributed network which use fieldbus technology in accordance with the requirements of IEC 61508 (all parts)[1] for functional safety. These principles are based on the black channel approach. They can be used in various industrial applications such as process control, manufacturing automation and machinery.

This part and the IEC 61784-3-x parts specify several functional safety communication profiles based on the communication profiles and protocol layers of the fieldbus technologies in IEC 61784-1, IEC 61784-2 and IEC 61158 (all parts). These functional safety communication profiles use the black channel approach, as defined in IEC 61508. These functional safety communication profiles are intended for implementation in safety devices exclusively.

NOTE 1 Other safety-related communication systems meeting the requirements of IEC 61508 (all parts) can exist that are not included in IEC 61784-3 (all parts).

NOTE 2 It does not cover electrical safety and intrinsic safety aspects. Electrical safety relates to hazards such as electrical shock. Intrinsic safety relates to hazards associated with potentially explosive atmospheres.

All systems are exposed to unauthorized access at some point of their life cycle. Additional measures need to be considered in any safety-related application to protect fieldbus systems against unauthorized access. IEC 62443 (all parts) will address many of these issues; the relationship with IEC 62443 (all parts) is detailed in a dedicated subclause of this document.

NOTE 3 Implementation of a functional safety communication profile according to this document in a device is not sufficient to qualify it as a safety device, as defined in IEC 61508 (all parts).

NOTE 4 The resulting SIL claim of a system depends on the implementation of the selected functional safety communication profile within this system.

NOTE 5 Annex C explains the numbering scheme used for the technology-specific parts (IEC 61784-3-x) as well as their common general structure.

NOTE 6 Annex D provides a guideline for the assessment and test of safety communication profiles as well as safety-related devices using these profiles.

2 Normative references

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.

IEC 61000-6-7, *Electromagnetic compatibility (EMC) – Part 6-7: Generic standards – Immunity requirements for equipment intended to perform functions in a safety-related system (functional safety) in industrial locations*

[1] In the following pages of this document, “IEC 61508” will be used for “IEC 61508 (all parts)”.

IEC 61010-2-201, *Safety requirements for electrical equipment for measurement, control and laboratory use – Part 2-201: Particular requirements for control equipment*

IEC 61158 (all parts), *Industrial communication networks – Fieldbus specifications*

IEC 61326-3-1, *Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 3-1: Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety) – General industrial applications*

IEC 61326-3-2, *Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 3-2: Immunity requirements for safety-related systems and for equipment intended to perform safety-related functions (functional safety) – Industrial applications with specified electromagnetic environment*

IEC 61508 (all parts), *Functional safety of electrical/electronic/programmable electronic safety-related systems*

IEC 61508-1:2010, *Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 1: General requirements*

IEC 61508-2, *Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems*

IEC 61784-1, *Industrial communication networks – Profiles – Part 1: Fieldbus profiles*

IEC 61784-2, *Industrial communication networks – Profiles – Part 2: Additional fieldbus profiles for real-time networks based on ISO/IEC/IEEE 8802-3*

IEC 61784-3 (all parts), *Industrial communication networks – Profiles – Part 3: Functional safety fieldbuses*

IEC 61784-3-1, *Industrial communication networks – Profiles – Part 3-1: Functional safety fieldbuses – Additional specifications for CPF 1*

IEC 61784-3-2, *Industrial communication networks – Profiles – Part 3-2: Functional safety fieldbuses – Additional specifications for CPF 2*

IEC 61784-3-3, *Industrial communication networks – Profiles – Part 3-3: Functional safety fieldbuses – Additional specifications for CPF 3*

IEC 61784-3-6, *Industrial communication networks – Profiles – Part 3-6: Functional safety fieldbuses – Additional specifications for CPF 6*

IEC 61784-3-8, *Industrial communication networks – Profiles – Part 3-8: Functional safety fieldbuses – Additional specifications for CPF 8*

IEC 61784-3-12, *Industrial communication networks – Profiles – Part 3-12: Functional safety fieldbuses – Additional specifications for CPF 12*

IEC 61784-3-13, *Industrial communication networks – Profiles – Part 3-13: Functional safety fieldbuses – Additional specifications for CPF 13*

IEC 61784-3-14, *Industrial communication networks – Profiles – Part 3-14: Functional safety fieldbuses – Additional specifications for CPF 14*

IEC 61784-3-17, *Industrial communication networks – Profiles – Part 3-17: Functional safety fieldbuses – Additional specifications for CPF 17*

IEC 61784-3-18, *Industrial communication networks – Profiles – Part 3-18: Functional safety fieldbuses – Additional specifications for CPF 18*

IEC 61784-5 (all parts), *Industrial communication networks – Profiles – Part 5: Installation of fieldbuses*

IEC 61918:2018, *Industrial communication networks – Installation of communication networks in industrial premises*

IEC 62443 (all parts), *Industrial communication networks – Network and system security*