

SLOVENSKI STANDARD**SIST EN 61784-1:2015****01-marec-2015**

Industrijska komunikacijska omrežja - Profili - 1. del: Profili procesnih vodil (IEC 61784-1:2014)

Industrial communication networks - Profiles - Part 1: Fieldbus profiles (IEC 61784-1:2014)

Industrielle Kommunikationsnetze - Profile - Teil 1: Feldbusprofile (IEC 61784-1:2014)

iTeh STANDARD PREVIEW

Réseaux de communication industriels - Profils - Partie 1: Profils de bus de terrain (CEI 61784-1:2014)

[SIST EN 61784-1:2015](#)

<https://standards.iteh.ai/catalog/standards/sist/6f774f4f-36f4-e5c-b67c-7c/c11a113d3/sist-en-61784-1-2015>

ICS:

25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
35.100.05	Večslojne uporabniške rešitve	Multilayer applications

SIST EN 61784-1:2015

en

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

[SIST EN 61784-1:2015](#)

<https://standards.iteh.ai/catalog/standards/sist/6f774f4f-a36f-4e5c-b67c-7c7c11a113d3/sist-en-61784-1-2015>

**EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM**

EN 61784-1

October 2014

ICS 35.100.20; 35.240.50

Supersedes EN 61784-1:2010

English Version

**Industrial communication networks - Profiles - Part 1: Fieldbus
profiles
(IEC 61784-1:2014)**

Réseaux de communication industriels - Profils - Partie 1:
Profils de bus de terrain
(CEI 61784-1:2014)

Industrielle Kommunikationsnetze - Profile - Teil 1:
Feldbusprofile
(IEC 61784-1:2014)

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.

**iTeh STANDARD PREVIEW
(standardsitch.ai)**

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/760/FDIS, future edition 4 of IEC 61784-1, prepared by IEC/TC 65C "Industrial networks, of IEC technical committee 65: Industrial-process measurement, control and automation was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61784-1:2014.

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 61784-1:2010.

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.

Endorsement notice

iTeh STANDARD PREVIEW

The text of the International Standard IEC 61784-1:2014 was approved by CENELEC as a European Standard without any modification. (standards.iteh.ai)

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

IEC 60079-14	NOTE	Harmonised as EN 60079-14. https://standards.iteh.ai/standard/iec-60079-14f-a36f-4e5c-b67c-7c7c11a113d3/sist-en-61784-1-2015
IEC 60793 (Series)	NOTE	Harmonised as EN 60793 (Series).
IEC 61131-3	NOTE	Harmonised as EN 61131-3.
IEC 61158-1	NOTE	Harmonised as EN 61158-1.
IEC 61800-7-204	NOTE	Harmonised as EN 61800-7-204.
ISO/IEC 7498-3	NOTE	Harmonised as EN ISO/IEC 7498-1.

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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60079-11	-	Explosive atmospheres -- Part 11: Equipment protection by intrinsic safety "i"	EN 60079-11	-
IEC 60079-25	-	Explosive atmospheres -- Part 25: Intrinsically safe electrical systems	EN 60079-25	-
IEC 61010	series	Safety requirements for electrical equipment for measurement, control and laboratory use	+AC	2013 series
IEC 61131-2	-	Programmable controllers -- Part 2: Equipment requirements and tests	EN 61131-2	-
IEC 61158	series	Industrial communication networks - Fieldbus specifications	EN 61158	series
IEC 61158-2	2014	Industrial communication networks - Fieldbus specifications - Part 2: Physical layer specification and service definition	EN 61158-2	2014
IEC 61158-3-1	2014	Industrial communication networks - Fieldbus specifications - Part 3-1: Data-link layer service definition - Type 1 elements	EN 61158-3-1	2014
IEC 61158-3-2	2014	Industrial communication networks - Fieldbus specifications - Part 3-2: Data-link layer service definition - Type 2 elements	EN 61158-3-2	2014
IEC 61158-3-3	2014	Industrial communication networks - Fieldbus specifications - Part 3-3: Data-link layer service definition - Type 3 elements	EN 61158-3-3	2014
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	2014
IEC 61158-3-7	2007	Industrial communication networks - Fieldbus specifications - Part 3-7: Data-link layer service definition - Type 7 elements	EN 61158-3-7	2008
IEC 61158-3-8	2007	Industrial communication networks - Fieldbus specifications - Part 3-8: Data-link layer service definition - Type 8 elements	EN 61158-3-8	2008
IEC 61158-3-16	2007	Industrial communication networks - Fieldbus specifications - Part 3-16: Data-link layer service definition - Type 16 elements	EN 61158-3-16	2008
IEC 61158-3-18	2007	Industrial communication networks - Fieldbus specifications - Part 3-18: Data-link layer service definition - Type 18 elements	EN 61158-3-18	2008
IEC 61158-3-19	2014	Industrial communication networks - Fieldbus specifications - Part 3-19: Data-link layer service definition - Type 19 elements	EN 61158-3-19	2014

IEC 61158-3-20	2014	Industrial communication networks - Fieldbus specifications - Part 3-20: Data-link layer service definition - Type 20 elements	EN 61158-3-20	2014
IEC 61158-3-24	2014	Industrial communication networks - Fieldbus specifications - Part 3-24: Data-link layer service definition - Type-24 elements	EN 61158-3-24	2014
IEC 61158-4-1	2014	Industrial communication networks - Fieldbus specifications - Part 4-1: Data-link layer protocol specification - Type 1 elements	EN 61158-4-1	2014
IEC 61158-4-2	2014	Industrial communication networks - Fieldbus specifications - Part 4-2: Data-link layer protocol specification - Type 2 elements	EN 61158-4-2	2014
IEC 61158-4-3	2014	Industrial communication networks - Fieldbus specifications - Part 4-3: Data-link layer protocol specification - Type 3 elements	EN 61158-4-3	2014
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	2014
IEC 61158-4-7	2007	Industrial communication networks - Fieldbus specifications - Part 4-7: Data-link layer protocol specification - Type 7 elements	EN 61158-4-7	2008
IEC 61158-4-8	2007	Industrial communication networks - Fieldbus specifications - Part 4-8: Data-link layer protocol specification - Type 8 elements SIST EN 61784-1:2015	EN 61158-4-8	2008
IEC 61158-4-16	2007	Industrial communication networks - Fieldbus specifications - Part 4-16: Data-link layer protocol specification - Type 16 elements	EN 61158-4-16	2008
IEC 61158-4-16	2007	Industrial communication networks - Fieldbus specifications - Part 4-16: Data-link layer protocol specification - Type 16 elements	EN 61158-4-16	2008
IEC 61158-4-18	2010	Industrial communication networks - Fieldbus specifications -- Part 4-18: Data-link layer protocol specification - Type 18 elements	EN 61158-4-18	2012
IEC 61158-4-18	2010	Industrial communication networks - Fieldbus specifications -- Part 4-18: Data-link layer protocol specification - Type 18 elements	EN 61158-4-18	2012
IEC 61158-4-19	2014	Industrial communication networks - Fieldbus specifications - Part 4-19: Data-link layer protocol specification - Type 19 elements	EN 61158-4-19	2014
IEC 61158-4-20	2014	Industrial communication networks - Fieldbus specifications - Part 4-20: Data-link layer protocol specification - Type 20 elements	EN 61158-4-20	2014
IEC 61158-4-24	2014	Industrial communication networks - Fieldbus specifications - Part 4-24: Data-link layer protocol specification - Type 24 elements	EN 61158-4-24	2014

iTEN STANDARD PREVIEW
STANDARD PREVIEW

Standard Preview

Standard Preview

IEC 61158-5-2	2014	Industrial communication networks - Fieldbus specifications -- Part 5-2: Application layer service definition - Type 2 elements	EN 61158-5-2	2014
IEC 61158-5-3	2014	Industrial communication networks - Fieldbus specifications - Part 5-3: Application layer service definition - Type 3 elements	EN 61158-5-3	2014
IEC 61158-5-4	2014	Industrial communication networks - Fieldbus specifications - Part 5-4: Application layer service definition - Type 4 elements	EN 61158-5-4	2014
IEC 61158-5-5	2014	Industrial communication networks - Fieldbus specifications - Part 5-5: Application layer service definition - Type 5 elements	EN 61158-5-5	2014
IEC 61158-5-7	2007	Industrial communication networks - Fieldbus specifications - Part 5-7: Application layer service definition - Type 7 elements	EN 61158-5-7	2008
IEC 61158-5-8	2007	Industrial communication networks - Fieldbus specifications - Part 5-8: Application layer service definition - Type 8 elements	EN 61158-5-8	2008
IEC 61158-5-9	2014	Industrial communication networks - Fieldbus specifications - Part 5-9: Application layer service definition - Type 9 elements	EN 61158-5-9	2014
IEC 61158-5-16	2007	Industrial communication networks - Fieldbus specifications - Part 5-16: Application layer service definition - Type 16 elements	EN 61158-5-16	2008
IEC 61158-5-18	2010	Industrial communication networks - Fieldbus specifications - Part 5-18: Application layer service definition - Type 18 elements	EN 61158-5-18	2012
IEC 61158-5-19	2014	Industrial communication networks - Fieldbus specifications - Part 5-19: Application layer service definition - Type 19 elements	EN 61158-5-19	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 61158-5-24	2014	Industrial communication networks - Fieldbus specifications - Part 5-24: Application layer service definition - Type 24 elements	EN 61158-5-24	2014
IEC 61158-6-2	2014	Industrial communication networks - Fieldbus specifications - Part 6-2: Application layer protocol specification - Type 2 elements	FprEN 61158-6-2	2014
IEC 61158-6-3	2014	Industrial communication networks - Fieldbus specifications - Part 6-3: Application layer protocol specification - Type 3 elements	EN 61158-6-3	2014
IEC 61158-6-4	2014	Industrial communication networks - Fieldbus specifications - Part 6-4: Application layer protocol specification - Type 4 elements	EN 61158-6-4	2014

iTEN STANDARD PREVIEW

STANDARD SPECIFICATION

IEC 61158-5-18:2012

SIST EN 61784-1:2015

IEC 61158-6-5	2014	Industrial communication networks - Fieldbus specifications - Part 6-5: Application layer protocol specification - Type 5 elements	EN 61158-6-5	2014
IEC 61158-6-7	2007	Industrial communication networks - Fieldbus specifications - Part 6-7: Application layer protocol specification - Type 7 elements	EN 61158-6-7	2008
IEC 61158-6-8	2007	Industrial communication networks - Fieldbus specifications - Part 6-8: Application layer protocol specification - Type 8 elements	EN 61158-6-8	2008
IEC 61158-6-9	2014	Industrial communication networks - Fieldbus specifications - Part 6-9: Application layer protocol specification - Type 9 elements	EN 61158-6-9	2014
IEC 61158-6-16	2007	Industrial communication networks - Fieldbus specifications - Part 6-16: Application layer protocol specification - Type 16 elements	EN 61158-6-16	2008
IEC 61158-6-18	2010	Industrial communication networks - Fieldbus specifications - Part 6-18: Application layer protocol specification - Type 18 elements	EN 61158-6-18	2012
IEC 61158-6-19	2014	Industrial communication networks - Fieldbus specifications - Part 6-19: Application layer protocol specification - Type 19 elements	EN 61158-6-19	2014
IEC 61158-6-20	2014	Industrial communication networks - Fieldbus specifications - Part 6-20: Application layer protocol specification - Type 20 elements	EN 61158-6-20	2014
IEC 61158-6-24	2014	Industrial communication networks - Fieldbus specifications - Part 6-24: Application layer protocol specification - Type-24 Elements	EN 61158-6-24	2014
IEC 61784-2	2014	Industrial communication networks - Profiles - Part 2: Additional fieldbus profiles for real-time networks based on ISO/IEC 8802-3	EN 61784-2	2014
IEC 61784-5-2	2013	Industrial communication networks - Profiles -- Part 5-2: Installation of fieldbuses - Installation profiles for CPF 2	EN 61784-5-2	2013
IEC 61918 (mod)	2013	Industrial communication networks - Installation of communication networks in industrial premises	EN 61918	2013
		+AC		2014
		+AA		201X
IEC 62026-3	-	Low-voltage switchgear and controlgear Controller-device interfaces (CDIs) -- Part 3: Device Net	-	-
IEC 62591	2010	Industrial communication networks - Wireless communication network and communication profiles - WirelessHART™	EN 62591	2010
ISO 15745-3	2003	Industrial automation systems and integration - Open systems application integration framework -- Part 3: Reference description for IEC 61158 based control systems	-	-

ISO 15745-4	2003	Industrial automation systems and integration - Open systems application integration framework - Part 4: Reference description for Ethernet-based control systems	-	-
ISO/IEC 8482	-	Information technology - Telecommunications and information exchange between systems - Twisted pair multipoint interconnections	-	-
ISO/IEC 8802-2	1998	Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements -- Part 2: Logical link control	-	-
ISO/IEC 8802-3	2000	Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications	-	-
ISO/IEC 15802-3	-	Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Common specifications - Part 3: Media Access Control (MAC) Bridges	-	-
ANSI TIA/EIA-485-A		Electrical Characteristics of Generators and Receivers for Use in Balanced Digital Multipoint Systems	-	-
IEEE 802.3	2002	Information technology - Telecommunications and information exchange between systems; Local and metropolitan area networks; Specific requirements - Part 3: Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications	-	-
IETF RFC 1112	-	Host Extensions for IP Multicasting	-	-
IETF RFC 1122	-	Requirements for Internet Hosts - Communication Layers	-	-
IETF RFC 1123	-	Requirements for Internet Hosts - Application and Support	-	-
IETF RFC 1127	-	A Perspective on the Host Requirements RFCs	-	-
IETF RFC 2236	-	Internet Group Management Protocol	-	-
IETF RFC 768	-	User Datagram Protocol	-	-
IETF RFC 791	-	Internet Protocol - DARPA Internet Program Protocol Specification	-	-
IETF RFC 792	-	Internet Control Message Protocol	-	-
IETF RFC 793	-	Transmission Control Protocol - DARPA Internet Program Protocol Specification	-	-
IETF RFC 826	-	An Ethernet Address Resolution Protocol - or - Converting Network Protocol Addresses to 48.bit Ethernet Address for Transmission on Ethernet Hardware	-	-
IETF RFC 894	-	Standard for the Transmission of IP Datagrams over Ethernet Networks	-	-

iTels STANDARD PREVIEW
TECHNICAL PLAN

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 61784-1:2015](#)

<https://standards.iteh.ai/catalog/standards/sist/6f774f4f-a36f-4e5c-b67c-7c7c11a113d3/sist-en-61784-1-2015>



INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Industrial communication networks – Profiles –
Part 1: Fieldbus profiles (standards.iteh.ai)**

**Réseaux de communication industriels – Profils –
Partie 1: Profils de bus de terrain**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

PRICE CODE
CODE PRIX XH

ICS 35.100.20; 35.240.50

ISBN 978-2-8322-1706-1

**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	15
INTRODUCTION	17
1 Scope	18
2 Normative references	19
3 Definitions	23
3.1 Terms and definitions	23
3.2 Abbreviations and symbols	23
3.2.1 IEC 61158 abbreviations and symbols	23
3.2.2 Other abbreviations and symbols	24
3.3 Conventions	24
3.3.1 Conventions common to all layers	24
3.3.2 Physical layer	26
3.3.3 Data-link layer	26
3.3.4 Application layer	27
4 Conformance to communication profiles	27
5 Communication Profile Family 1 (FOUNDATION™ fieldbus)	28
5.1 General overview	28
5.2 Profile 1/1 (FOUNDATION™ H1)	29
5.2.1 Physical layer	29
5.2.2 Data-link layer	47
5.2.3 Application layer	118
5.3 Profile 1/2 (FOUNDATION™ HSE)	120
5.3.1 Physical layer	120
5.3.2 Data-link layer	120
5.3.3 Network layer	120
5.3.4 Transport layer	120
5.3.5 Application layer	120
5.4 Profile 1/3 (FOUNDATION™ H2)	121
5.4.1 Physical layer	121
5.4.2 Data-link layer	124
5.4.3 Application layer	124
6 Communication Profile Family 2 (CIP™)	124
6.1 General overview	124
6.2 Profile 2/1 (ControlNet)	125
6.2.1 Physical layer	125
6.2.2 Data-link layer	126
6.2.3 Application layer	128
6.3 Profile 2/2 (EtherNet/IP)	129
6.3.1 Physical layer	129
6.3.2 Data-link layer	130
6.3.3 Application layer	131
6.4 Profile 2/3 (DeviceNet)	133
6.4.1 Physical layer	133
6.4.2 Data-link layer	133
6.4.3 Application layer	135
7 Communication Profile Family 3 (PROFIBUS & PROFINET)	136

7.1	General overview	136
7.2	Profile 3/1 (PROFIBUS DP).....	138
7.2.1	Physical layer	138
7.2.2	Data-link layer	140
7.2.3	Application layer	164
7.3	Profile 3/2 (PROFIBUS PA).....	223
7.3.1	Physical layer	223
7.3.2	Data-link layer	228
7.3.3	Application layer	240
7.4	Profile 3/3 (PROFINET CBA)--- <i>Void</i>	241
8	Communication Profile Family 4 (P-NET®)	241
8.1	General overview	241
8.2	Profile 4/1 (P-NET RS-485).....	241
8.2.1	Physical layer	241
8.2.2	Data-link layer	242
8.2.3	Application layer	243
9	Communication Profile Family 5 (WorldFIP®)	244
9.1	General overview	244
9.2	Profile 5/1 (WorldFIP)	245
9.2.1	Physical layer	245
9.2.2	Data-link layer	247
9.2.3	Application layer	249
9.3	Profile 5/2 (WorldFIP)	255
9.3.1	Physical layer	255
9.3.2	Data-link layer	255
9.3.3	Application layer	255
9.4	Profile 5/3 (WorldFIP)	261
9.4.1	Physical layer	261
9.4.2	Data-link layer	261
9.4.3	Application layer	261
10	Communication Profile Family 6 (INTERBUS®)	262
10.1	General overview	262
10.2	Profile 6/1	263
10.2.1	Physical layer	263
10.2.2	Data-link layer	265
10.2.3	Application layer	267
10.3	Profile 6/2	268
10.3.1	Physical layer	268
10.3.2	Data-link layer	269
10.3.3	Application layer	270
10.4	Profile 6/3	271
10.4.1	Physical layer	271
10.4.2	Data-link layer	271
10.4.3	Application layer	272
11	Communication Profile Family 7 – <i>Void</i>	273
12	Communication Profile Family 8 (CC-Link).....	274
12.1	General overview	274
12.1.1	General	274

12.1.2	Profile 8/1	274
12.1.3	Profile 8/2	275
12.1.4	Profile 8/3	275
12.2	Profile 8/1	275
12.2.1	Physical layer	275
12.2.2	Data-link layer	276
12.2.3	Application layer	279
12.3	Profile 8/2	282
12.3.1	Physical layer	282
12.3.2	Data-link layer	282
12.3.3	Application layer	282
12.4	Profile 8/3	282
12.4.1	Physical layer	282
12.4.2	Data-link layer	283
12.4.3	Application layer	286
13	Communication Profile Family 9 (HART [®])	289
13.1	General Overview	289
13.2	Profile 9/1, HART [®]	289
13.2.1	Physical layer	289
13.2.2	Data-link layer	290
13.2.3	Application layer	291
13.3	Profile 9/2, WirelessHART [®]	292
14	Communication Profile Family 16 (SERCOS)	292
14.1	General overview	292
14.2	Profile 16/1 (SERCOS I) http://sintechstandards.iteh.ai/catalog/standards/sist/61774/1fa36f4e5c1b67c70747a132147741f1f	292
14.2.1	Physical layer selection	292
14.2.2	Data-link layer	293
14.2.3	Application layer	294
14.3	Profile 16/2 (SERCOS II)	294
14.3.1	Physical layer	294
14.3.2	Data-link layer	295
14.3.3	Application layer	296
15	Communication Profile Family 19 (MECHATRLINK)	296
15.1	General overview	296
15.2	Profile 19/1 (MECHATROLINK-II)	296
15.2.1	Physical layer selection	296
15.2.2	Data-link layer	298
15.2.3	Application layer	307
15.3	Profile 19/2 (M-III)	313
15.3.1	Physical layer	313
15.3.2	Data-link layer	313
15.3.3	Application layer	323
Annex A (informative)	Communication concepts	328
A.1	CPF 1 (FOUNDATION Fieldbus) communication concepts	328
A.1.1	Overview	328
A.1.2	Physical layer characteristics	328
A.1.3	Data-link layer characteristics	328
A.1.4	Application layer characteristics	329

A.1.5	Management characteristics	329
A.2	CPF 2 (CIP) communication concepts.....	329
A.2.1	Overview.....	329
A.2.2	CIP common characteristics.....	330
A.2.3	ControlNet	330
A.2.4	EtherNet/IP	331
A.2.5	DeviceNet	332
A.3	CPF 3 (PROFIBUS & PROFINET) communication concepts	332
A.3.1	Basic characteristics	332
A.3.2	Physical layer profiles	333
A.3.3	Communication feature list (GSD).....	334
A.3.4	PROFINET---Void	334
A.4	CPF 4 (P-NET) communication concepts	334
A.5	CPF 5 (WorldFIP) communication concepts	336
A.5.1	Physical layer characteristics	336
A.5.2	Data-link layer characteristics	336
A.5.3	Application layer characteristics	336
A.6	CPF 6 (INTERBUS) communication concepts	336
A.7	CPF 8 (CC-LINK) communication concepts.....	338
A.7.1	Basic characteristics	338
A.7.2	Variants	338
A.8	CPF 9 (HART) communication concepts	339
A.9	CPF 16 (SERCOS) communication concepts	339
Annex B (informative)	<small>SIST EN 61784-1-2015 https://standards.iteh.ai/7c7c11a113d3/sist-en-61784-1-2015</small>	341
Bibliography	342
Figure 1	– Communication profile families and profiles	18
Figure 2	– Example optical power budget for a 100/140 µm fiber system with a 16/16 optical passive star coupler.....	46
Figure 3	– CP 3/2 Slave devices usable in applications.....	138
Figure A.1	– Ring structure	339
Figure A.2	– Topology example.....	340
Table 1	– Relations of Communication Profile Families to type numbers	19
Table 2	– Layout of profile (sub)clause selection tables	24
Table 3	– Contents of (sub)clause selection tables	25
Table 4	– Layout of service selection tables.....	25
Table 5	– Contents of service selection tables	26
Table 6	– Layout of parameter selection tables	26
Table 7	– Contents of parameter selection tables	26
Table 8	– Layout of class attribute selection tables	27
Table 9	– Contents of class attribute selection tables.....	27
Table 10	– CPF 1: overview of profile sets	29
Table 11	– CP 1/1: PhL selection for communicating devices and their MAUs.....	29
Table 12	– CP 1/1: PhL classification of MAUs and attached devices.....	31