Industrial networks - Wireless communication network and communication profiles - ISA 100.11a

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EVS-EN 62734:2015

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 62734:2015 sisaldab Euroopa standardi EN 62734:2015 ingliskeelset teksti.	This Estonian standard EVS-EN 62734:2015 consists of the English text of the European standard EN 62734:2015.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 23.01.2015.	Date of Availability of the European standard is 23.01.2015.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 25.040, 33.040, 35.100

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 62734

January 2015

English Version

Industrial networks - Wireless communication network and communication profiles - ISA 100.11a
(IEC 62734:2014)

Réseaux industriels - Réseau de communication sans fil et profils de communication - ISA 100.11a (IEC 62734:2014)

Industrielle Kommunikationsnetze - Drahtlose Kommunikationsnetze und Kommunikationsprofile - ISA 100.11a (IEC 62734:2014)

This European Standard was approved by CENELEC on 2014-12-02. 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.

CENELEC

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/778/FDIS, future edition 1 of IEC 62734, 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 62734:2015.

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)   2015-09-02

- latest date by which the national standards conflicting with the document have to be withdrawn   (dow)   2017-12-02

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

The text of the International Standard IEC 62734:2014 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 Series	NOTE	Harmonized as EN 61158 Series.
IEC 61499-4:2005	NOTE	Harmonized as EN 61499-4:2006 [1] (not modified).
IEC 61512-1	NOTE	Harmonized as EN 61512-1.
IEC 61804-3	NOTE	Harmonized as EN 61804-3.
IEC 62264-1:2013	NOTE	Harmonized as EN 62264-1:2013 (not modified).
IEC 62591	NOTE	Harmonized as EN 62591.
ISO 3166-1	NOTE	Harmonized as EN ISO 3166-1.

[1] Superseded by EN 61499-4:2013 (IEC 61499-4:2013): DOW = 2016-03-06.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

Publication	Year	Title	EN/HD	Year
ISO/IEC 646	-	Information technology; ISO 7-bit coded character set for information interchange	-	-
ISO/IEC 10731	-	Information technology - Open Systems Interconnection - Basic Reference Model - Conventions for the definition of OSI services	-	-
ISO/IEC 18033-3	-	Information technology - Security techniques - Encryption algorithms - Part 3: Block ciphers	-	-
ISO/IEC 19772	-	Information technology - Security techniques - Authenticated encryption	-	-
ANSI X 9.63	2011	Public Key Cryptography for Financial Services Industry - Key Agreement and Key Transport Using Elliptic Curve Cryptography	-	-
IETF RFC 2460	1998	Internet Protocol - Version 6 (IPv6) - Specification	-	-
IETF RFC 2464	-	Transmission of IPv6 Packets over Ethernet Networks	-	-
IETF RFC 2529	-	Transmission of IPv6 over IPv4 Domains without Explicit Tunnels	-	-
IETF RFC 3168	-	The Addition of Explicit Congestion Notification (ECN) to IP	-	-
IETF RFC 4213	-	Basic Transition Mechanisms for IPv6 Hosts and Routers	-	-
IETF RFC 4291	2006	IP Version 6 Addressing Architecture	-	-
IETF RFC 4944	-	Transmission of IPv6 Packets over IEEE 802.15.4 Networks	-	-
IETF RFC 6282	2011	Compression Format for IPv6 Datagrams over IEEE 802.15.4-Based Networks	-	-
IETF RFC 6298	-	Computing TCP's Retransmission Timer	-	-

Publication	Year	Title	EN/HD	Year
IEEE 802.15.4	2011	IEEE Standard for Local and metropolitan area networks - Part 15.4: Low-Rate Wireless Personal Area Networks (LR-WPANs)	-	-
SEC 1	2009	Elliptic Curve Cryptography, version 2		
SEC 4		Elliptic Curve Qu-Vanstone Implicit Certificate Scheme (ECQV), version 0.97		

CONTENTS

EVS-EN 62734:2015

0   Introduction

0.1   General

This standard provides specifications in accordance with the OSI Basic Reference Model, ISO/IEC 7498–1, (e.g., PhL, DL, etc.), and also provides security and management (including network and device configuration) specifications for wireless devices serving Annex C's usage classes 1 through 5, and potentially class 0, for fixed, portable, and moving devices.

This standard is intended to provide reliable and secure wireless operation for non-critical monitoring, alerting, supervisory control, open loop control, and closed loop control applications. This standard defines a protocol suite, including system management, gateway considerations, and security specifications, for low-data-rate wireless connectivity with fixed, portable, and slowly-moving devices, often operating under severe energy and power constraints. The application focus is the performance needs of process automation monitoring and control where end-to-end communication latencies on the order of at least 100 ms can be tolerated.

To meet the needs of industrial wireless users and operators, the technology specified in this document provides robustness in the presence of interference found in harsh industrial environments or caused by wireless systems not covered by this international standard. As described in Clause 4, this standard addresses coexistence with other wireless devices anticipated in the industrial workspace, such as cell phones and devices based on IEC 62591 (based on WirelessHART™[1]), IEC 62601 (based on WIA-PA), IEEE 802.11 (WiFi), IEEE 802.15, IEEE 802.16 (WiMax), and other relevant standards. Furthermore, this standard supports interoperability of devices compliant with this international standard, as described in Clause 5, in those aspects of operation that are covered by this international standard.

This standard does not define or specify plant infrastructure or its security or performance characteristics. However, it is important that the security of the plant infrastructure be assured by the end user.

0.2   Document structure

This document is organized into clauses focused on unique network functions and protocol suite layers. The clauses describe system, system management, security management, physical layer, data-link layer, network layer, transport layer, application layer, and provisioning. Generic considerations that apply to protocol gateways are also included, though specifications of specific protocol gateways are not. Each clause describes a functionality or protocol layer and dictates the behavior required for proper operation. When a clause describes behaviors related to another function or layer, a reference to the appropriate other clause is supplied for further information.

The mandatory and optional communication protocols defined by this document are referred to as native protocols, while those protocols used by other networks such as legacy fieldbus communication protocols are referred to as foreign protocols.

0.3   Potentially relevant patents

The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this document may involve the use of multiple patents:

a) concerning elliptic curve (asymmetric) cryptography, given in 7.4.6 and 7.2.2.3;

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[1]   Property of the HART Communication Foundation. This information is given for the convenience of users of the standard and does not constitute an endorsement of the trademark holder or any related products. Compliance to this profile does not require use of the registered trademark. Use of the trademarks requires permission of the trade name holder.

b) concerning synchronizing clocks and assessing link quality, given in 9.1.9.3 and 9.1.15;

c) concerning unspecified subject areas;

d) concerning wireless provisioning, and selection and routing among multiple gateways.

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

The holders of these patent rights have assured the IEC that they are willing to negotiate licences either free of charge (free) or under reasonable and non-discriminatory terms and conditions (RAND) with applicants throughout the world. In this respect, the statements of the following holders of those patent rights are registered with IEC.

Information on these patent rights and their licensing may be obtained from:

a)	Certicom Corporation 4701 Tahoe Blvd, Bldg A L4W 0B5 Mississauga, ON CANADA Attn: Patent licensing Licensing terms: presumably RAND Relevant patents: unknown; not stated by patent holder	b)	NIVIS LLC 1000 Circle 75 Pkwy, Suite 300 Atlanta, GA 30339-6051 USA Attn: Patent licensing Licensing terms: RAND Relevant patents: – US 20100027437 – US 20100098204
c)	General Electric 1 Research Cir Schenectady, NY 12309-1027 USA Attn: Patent licensing Licensing terms: presumably RAND, reciprocity Relevant patents: unknown; not stated by patent holder	d)	Yokogawa Electric Corporation 2-9-32 Nakachou, Musashina-shi Tokyo JAPAN Attn: Patent licensing Licensing terms: RAND, reciprocity Relevant patents: – JP 4129749 – US 8005514 – US 8031727 – US 8305927 – US 2009080394
The above patent holders, patents, and licensing terms are those declared to the IEC as relevant to IEC 62734, as of the date of preparation of this text.			

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

ISO (http://www.iso.org/patents) and IEC (http://patents.iec.ch) maintain on-line databases of patents relevant to their standards. Users are encouraged to consult these databases for the most up-to-date information concerning patents.