ICS 17.220, 35.110, 91.140.50 SLOVENSKÁ TECHNICKÁ NORMA Máj 2018

STN	**Výmena údajov pri meraní elektrickej energie Súbor DLMS/COSEM Časť 8-5: Úzkopásmový komunikačný profil OFDM G3-PLC pre susedné siete**	**STN EN 62056-8-5** 35 6131

Electricity metering data exchange - The DLMS/COSEM suite - Part 8-5: Narrow-band OFDM G3-PLC communication profile for neighbourhood networks

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. 04/18

Obsahuje: EN 62056-8-5:2017, IEC 62056-8-5:2017

Oznámením tejto normy sa od 14.09.2020 ruší
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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62056-8-5

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Supersedes CLC/TS 52056-8-5:2015

English Version

Electricity metering data exchange - The DLMS/COSEM suite - Part 8-5: Narrow-band OFDM G3-PLC communication profile for neighbourhood networks (IEC 62056-8-5:2017)

Échange des données de comptage de l'électricité - La suite DLMS/COSEM - Partie 8-5 : Profil de communication OFDM G3-CPL à bande étroite pour les réseaux de voisinage
(IEC 62056-8-5:2017)

Datenkommunikation der elektrischen Energiemessung - DLMS/COSEM - Teil 8-5: Schmalband-OFDM-G3-PLC-Kommunikationsprofil für Nachbarschaftsnetzwerke
(IEC 62056-8-5:2017)

This European Standard was approved by CENELEC on 2017-09-14. 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, Serbia, 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

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EN 62056-8-5:2017

European foreword

The text of document 13/1708/CDV, future edition 1 of IEC 62056-8-5, prepared by IEC/TC 13 "Electrical energy measurement and control" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62056-8-5:2017.

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)	2018-06-14
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2020-09-14

This document supersedes CLC/TS 52056-8-5:2015.

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 62056-8-5:2017 was approved by CENELEC as a European Standard without any modification.

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 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
IEC 60050-300	-	International Electrotechnical Vocabulary - Electrical and electronic measurements and measuring instruments -- Part 311: General terms relating to measurements -- Part 312: General terms relating to electrical measurements -- Part 313: Types of electrical measuring instruments -- Part 314: Specific terms according to the type of instrument	-	-
IEC 62056-1-0	-	Electricity metering data exchange - The DLMS/COSEM suite - Part 1-0: Smart metering standardisation framework	EN 62056-1-0	-
IEC 62056-4-7	2015	Electricity metering data exchange - The DLMS/COSEM suite -- Part 4-7: DLMS/COSEM transport layer for IP networks	EN 62056-4-7	2016
IEC 62056-5-3	2017	Electricity metering data exchange - The DLMS/COSEM suite - Part 6-2: COSEM interface classes	EN 62056-5-3	2017
IEC 62056-6-1	-	Electricity metering data exchange - The DLMS/COSEM suite - Part 6-1: Object Identification System (OBIS)	FprEN 62056-6-1	-
IEC 62056-6-2	-	Electricity metering data exchange - The DLMS/COSEM suite - Part 6-2: COSEM interface classes	FprEN 62056-6-2	-
IEC 62056-9-7	2013	Electricity metering data exchange - The DLMS/COSEM suite -- Part 9-7: Communication profile for TCP-UDP/IP networks	EN 62056-9-7	2013
IEC/TR 62051	-	Electricity metering - Glossary of terms	-	-
IEC/TR 62051-1	-	Electricity metering - Data exchange for meter reading, tariff and load control - Glossary of terms -- Part 1: Terms related to data exchange with metering equipment using DLMS/COSEM	-	-
IEEE 802.15.4	-	IEEE Standard for Low-Rate Wireless Networks	-	-
IETF RFC 2460	-	Internet Protocol - Version 6 (IPv6) - Specification	-	-
IETF RFC 4193	-	Unique Local IPv6 Unicast Addresses	-	-
IETF RFC 4291	-	IP Version 6 Addressing Architecture	-	-
IETF RFC 4861	-	Neighbor Discovery for IP version 6 (IPv6)	-	-
IETF RFC 4862	-	IPv6 Stateless Address Autoconfiguration	-	-
IETF RFC 4944	-	Transmission of IPv6 Packets over IEEE 802.15.4 Networks	-	-

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IETF RFC 6282	-	Compression Format for IPv6 Datagrams over IEEE 802.15.4-Based Networks	-	-
IETF RFC 768	-	User Datagram Protocol	-	-
ITU-T G.9903	2014	SERIES G: TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS - Access networks - In premises networks - Narrow-band orthogonal frequency division multiplexing power line communication transceivers for G3-PLC networks	-	-

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INTERNATIONAL STANDARD

colour inside

Electricity metering data exchange –The DLMS/COSEM suite – Part 8-5: Narrow-band OFDM G3-PLC communication profile for neighbourhood networks

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INTERNATIONAL STANDARD

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Electricity metering data exchange –The DLMS/COSEM suite – Part 8-5: Narrow-band OFDM G3-PLC communication profile for neighbourhood networks

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTRICITY METERING DATA EXCHANGE – THE DLMS/COSEM SUITE –

Part 8-5: Narrow-band OFDM G3-PLC communication profile for neighbourhood networks

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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The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed that compliance with this International Standard may involve the use of a maintenance service concerning the stack of protocols on which the present standard IEC 62056-8-5 is based.

The IEC takes no position concerning the evidence, validity and scope of this maintenance service.

The provider of the maintenance service has assured the IEC that he is willing to provide services under reasonable and non-discriminatory terms and conditions for applicants throughout the world. In this respect, the statement of the provider of the maintenance service is registered with the IEC. Information may be obtained from:

G3-PLC Alliance
<Tour ENEDIS
34 Place des Corolles
92079 Paris La Défense Cedex>
www.g3-plc.com

International Standard IEC 62056-8-5 has been prepared by IEC technical committee 13: Electrical energy measurement and control.

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

CDV	Report on voting
13/1708/CDV	13/1740/RVC

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.

A list of all parts in the IEC 62056 series, published under the general title *Electricity metering data exchange – The DLMS/COSEM suite*, can be found on the IEC website.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

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.

A bilingual version of this publication may be issued at a later date.

The contents of the corrigendum of December 2017 have been included in this copy.

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.

INTRODUCTION

As defined in IEC 62056-1-0, the IEC 62056 DLMS/COSEM suite provides specific communication profile standards for communication media relevant for smart metering.

Such communication profile standards specify how the COSEM data model and the DLMS/COSEM application layer can be used on the lower, communication media-specific protocol layers.

Communication profile standards refer to communication standards that are part of the IEC 62056 DLMS/COSEM suite or to any other open communication standard.

This International Standard specifies the DLMS/COSEM communication profile for ITU-T G.9903:2014 PLC communication based on OFDM technology.

ITU-T G.9903 PLC is designed to meet the following aims:

- Robustness: the communication profile shall be suited to severe powerline environments (see 5.3.2);
- Performance and scalability: it embeds adaptive modulation to use the proper modulation according to the quality of the link (see 5.3.2) within dense environments (up to 2 000 nodes in the same PAN);
- Security: it shall offer a secure environment (see 7.4);
- Openness: it shall be based on open standards in order to support multi-supplier solutions (see Clause 5);
- Flexibility and future proof: it shall be able to support future applications through using IPv6 networking capabilities (see 5.3.4).

This standard follows the rules defined in IEC 62056-5-3:2017, Annex A.

ELECTRICITY METERING DATA EXCHANGE – THE DLMS/COSEM SUITE –

Part 8-5: Narrow-band OFDM G3-PLC communication profile for neighbourhood networks

1 Scope

This part of IEC 62056 specifies the IEC 62056 DLMS/COSEM communication profile for metering purposes based on the Recommendations ITU-T G.9901: *Narrowband orthogonal frequency division multiplexing power line communication transceivers – Power spectral density specification* and ITU-T G.9903:2014*, Narrowband orthogonal frequency division multiplexing power line communication transceivers for G3-PLC networks*, an Orthogonal Frequency Division Multiplexing (OFDM) Power Line Communications (PLC) protocol.

The physical layer provides a modulation technique that efficiently utilizes the allowed bandwidth within the CENELEC A (3 kHz – 95 kHz), CENELEC B (95 kHz – 125 kHz), ARIB (10 kHz – 450 kHz) and FCC (no specific frequency band limitations) bands, thereby allowing the use of advanced channel coding techniques. This enables a robust communication in the presence of narrowband interference, impulsive noise, and frequency selective attenuation.

The medium access control (MAC) layer allows the transmission of MAC frames through the use of the power line physical channel. It provides data services, frame validation control, node association and secure services.

The 6LoWPAN adaptation sublayer enables an efficient interaction between the MAC and the IPv6 network layer. The use of the IPv6 network protocol – the latest generation of IP protocols – opens a wide range of potential applications and services for metering purposes (but the applications are not limited to metering).

The transport layer, the application layer and the data model are as specified in the IEC 62056 DLMS/COSEM suite.

The scope of this communication profile standard is restricted to aspects concerning the use of communication protocols in conjunction with the COSEM data model and the DLMS/COSEM application layer. Data structures specific to a communication protocol are out of the scope of this communication profile standard.

NOTE They are specified in the specific protocol standards.

Any project specific definitions of data structures and data contents may be provided in project specific companion specifications.

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 60050-300, *International Electrotechnical Vocabulary – Electrical and electronic measurements and measuring instruments – Part 311: General terms relating to measurements – Part 312: General terms relating to electrical measurements – Part 313:*

Types of electrical measuring instruments – Part 314: Specific terms according to the type of instrument

IEC TR 62051, *Electricity metering – Glossary of terms*

IEC TR 62051-1, *Electricity metering – Data exchange for meter reading, tariff and load control – Glossary of terms – Part 1: Terms related to data exchange with metering equipment using DLMS/COSEM*

IEC 62056-1-0, *Electricity metering data exchange – The DLMS/COSEM suite – Part 1-0: Smart metering standardisation framework*

IEC 62056-4-7:2015, *Electricity metering data exchange – The DLMS/COSEM suite – Part 4-7: DLMS/COSEM transport layer for IP networks*

IEC 62056-5-3:2017, *Electricity metering data exchange – The DLMS/COSEM suite – Part 5-3: DLMS/COSEM application layer*

IEC 62056-6-1, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-1: Object identification system (OBIS)*

IEC 62056-6-2, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-2: COSEM interface classes*

IEC 62056-9-7:2013, *Electricity metering data exchange – The DLMS/COSEM suite – Part 9-7: Communication profile for TCP-UDP/IP networks*

Recommendation ITU-T G.9903:2014, *Narrowband Orthogonal Frequency Division Multiplexing Power Line Communication Transceivers for G3-PLC Networks available at http://www.itu.int/rec/T-REC-G.9903/en*

IETF RFC 768, *User Datagram Protocol. Edited by J. Postel. August 1980. Available from http://www.ietf.org/rfc/rfc768.txt*

IETF RFC 2460, *Internet Protocol, Version 6 (IPv6) Specification. Edited by S. Deering, R. Hinden. December 1998. Available from http://www.ietf.org/rfc/rfc2460.txt*

IETF RFC 4193, *Unique Local IPv6 Unicast Addresses. Edited by R. Hinden, B. Haberman. October 2005. Available from http://www.ietf.org/rfc/rfc4193.txt*

IETF RFC 4291, *IP Version 6 Addressing Architecture. Edited by R. Hinden, S. Deering. February 2006. Available from http://www.ietf.org/rfc/rfc4291.txt*

IETF RFC 4944, *Transmission of IPv6 Packets over IEEE 802.15.4 Networks. Available from http://www.ietf.org/rfc/rfc2460.txt*

IETF RFC 6282, *Compression Format for IPv6 Datagrams over IEEE 802.15.4-Based Networks. Available from http://www.ietf.org/rfc/rfc2460.txt*

IETF RFC 4861, *Neighbor Discovery for IP version 6 (IPv6). Available from http://www.ietf.org/rfc/rfc4861.txt*

IETF RFC 4862, *IPv6 Stateless Address Autoconfiguration. Available from http://www.ietf.org/rfc/rfc4862.txt*

IEEE 802.15.4:*IEEE Standard for Low-Rate Wireless Networks*