SVENSK STANDARD SS-EN 62056-5-3

Fastställd	Utgåva	Sida	Ansvarig kommitté
2017-02-15	2	1 (1+200)	SEK TK 13

Elmätare – Datakommunikation för avläsning av elmätare och för styrning av tariff och belastning – Del 5-3: Tillämpningsskikt DLMS/COSEM

Electricity metering data exchange – The DLMS/COSEM suite – Part 5-3: DLMS/COSEM application layer

Som svensk standard gäller europastandarden EN 62056-5-3:2016. Den svenska standarden innehåller den officiella engelska språkversionen av EN 62056-5-3:2016.

Nationellt förord

Europastandarden EN 62056-5-3:2016

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 62056-5-3, Second edition, 2016 - Electricity metering data exchange - The DLMS/COSEM suite - Part 5-3: DLMS/COSEM application layer**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 62056-5-3, utgåva 1, 2014, gäller ej fr o m 2019-12-09.

ICS 17.220.00; 35.110.00; 91.140.50

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62056-5-3

December 2016

ICS 17.220; 35.110; 91.140.50

Supersedes EN 62056-5-3:2014

English Version

Electricity metering data exchange - The DLMS/COSEM suite - Part 5-3: DLMS/COSEM application layer (IEC 62056-5-3:2016)

Échange des données de comptage de l'électricité - La suite DLMS/COSEM - Partie 5-3: Couche application DLMS/COSEM
(IEC 62056-5-3:2016)

Datenkommunikation der elektrischen Energiemessung - DLMS/COSEM - Teil 5-3: DLMS/COSEM-Anwendungsschicht
(IEC 62056-5-3:2016)

This European Standard was approved by CENELEC on 2016-04-08. 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

Ref. No. EN 62056-5-3:2016 E

SEK Svensk Elstandard

European foreword

The text of document 13/1648/FDIS, future edition 2 of IEC 62056-5-3, prepared by IEC/TC 13 "Electrical energy measurement and control" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62056-5-3:2016.

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)	2017-06-09
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2019-12-09

This document supersedes EN 62056-5-3:2014.

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 62056-5-3:2016 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 61334-4-3:1996	NOTE	Harmonized as EN 61334-4-32:1996 (not modified).
IEC 61334-4-511:2000	NOTE	Harmonized as EN 61334-4-511:2000 (not modified).
IEC 61334-4-512:2001	NOTE	Harmonized as EN 61334-4-512:2002 (not modified).
IEC 61334-5-1:2001	NOTE	Harmonized as EN 61334-5-1:2001 (not modified).
IEC 62056-7-6:2013	NOTE	Harmonized as EN 62056-7-6:2013 (not modified).
IEC 62056-9-7:2013	NOTE	Harmonized as EN 62056-9-7:2013 (not modified).
ISO/IEC 7498-1:1994	NOTE	Harmonized as EN ISO/IEC 7498-1:1994 [1)] (not modified).

[1)] Withdrawn publication.

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
IEC 61334-4-41	1996	Distribution automation using distribution line carrier systems - Part 4: Data communication protocols - Section 41: Application protocols - Distribution line message specification	EN 61334-4-41	1996
IEC 61334-6	2000	Distribution automation using distribution line carrier systems - Part 6: A-XDR encoding rule	EN 61334-6	2000
IEC/TR 62051	1999	Electricity metering - Glossary of terms	-	-
IEC/TR 62051-1	2004	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	EN 62056-1-0	-
IEC 62056-6-1	2015	Electricity metering data exchange - The DLMS/COSEM suite - Part 6-1: Object Identification System (OBIS)	EN 62056-6-1	2016
IEC 62056-6-2	2016	Electricity metering data exchange - The DLMS/COSEM suite - Part 6-2: COSEM interface classes	EN 62056-6-2	2016
IEC 62056-8-3	2013	Electricity metering data exchange - The DLMS/COSEM suite - Part 8-3: Communication profile for PLC S-FSK neighbourhood networks	EN 62056-8-3	2013
ISO/IEC 8824-1	2008 [2)]	Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation	-	-

[2)] Superseded by ISO/IEC 8824-1:2015.

Publication	Year	Title	EN/HD	Year
ISO/IEC 8825-1	2008 [3)]	Information technology - ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)	-	-
ISO/IEC 15953	1999	Information technology - Open Systems Interconnection - Service Definition for the Application Service Object Association Control Service Element	-	-
ISO/IEC 15954	1999	Information technology - Open Systems Interconnection - Connection-mode protocol for the Application Service Object Association Control Service Element	-	-
FIPS PUB 180-4	2012	Secure Hash Standard (SHS)	-	-
FIPS PUB 197	2001	Advanced Encryption Standard (AES)	-	-
NIST SP 800-38D	2007	Recommendation for Block Cipher Modes of Operation: Galois/Counter Mode (GCM) and GMAC	-	-
NIST SP 800-57	2007	Recommendation for key management - Part 1: General	-	-
RFC 1321	1992	The MD5 Message-Digest Algorithm. Edited by R. Rivest (MIT Laboratory for Computer Science and RSA Data Security, Inc.)	-	-
RFC 3394	2002	Advanced Encryption Standard (AES) Key Wrap Algorithm. Edited by J. Schaad (Soaring Hawk Consulting) and R. Housley (RSA Laboratories)	-	-
RFC 4106	-	The Use of Galois/Counter Mode (GCM) in IPsec Encapsulating Security Payload (ESP)	-	-

[3)] Superseded by ISO/IEC 8825-1:2015.

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTRICITY METERING DATA EXCHANGE – THE DLMS/COSEM SUITE –

Part 5-3: DLMS/COSEM application layer

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 62056-5-3 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:

DLMS[1] User Association
Zug/Switzerland
www.dlms.com

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1 Device Language Message Specification.

International Standard IEC 62056-5-3 has been prepared by IEC technical committee 13: Electrical energy measurement and control.

This second edition cancels and replaces the first edition of IEC 62056-5-3 published in 2013. It constitutes a technical revision.

The significant technical changes with respect to the previous edition are listed in Annex G (informative).

The text of this standard is based on the following documents:

FDIS	Report on voting
13/1648/FDIS	13/1657/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

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

A list of all the 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.

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

INTRODUCTION

This second edition of IEC 62056-5-3 has been prepared by IEC TC13 WG14 with a significant contribution of the DLMS User Association, its D-type liaison partner.

This edition is in line with the DLMS UA Green Book Edition 7.0 Amendment 3. The main new features are the DataNotification service, the general protection and the general block transfer mechanisms and the SMS short wrapper.

In 2014, the DLMS UA has published Green Book Edition 8.0 adding several new features regarding functionality, efficiency and security while keeping full backwards compatibility.

The intention of the DLMS UA is to bring also these latest developments to international standardization. Therefore, IEC TC13 WG14 launched a project to bring these new elements also to the IEC 62056 series that will lead to Edition 3.0 of the standard.

Clause 5 and Annex F are based on parts of NIST documents. Reprinted courtesy of the National Institute of Standards and Technology, Technology Administration, U.S. Department of Commerce.

ELECTRICITY METERING DATA EXCHANGE – THE DLMS/COSEM SUITE –

Part 5-3: DLMS/COSEM application layer

1 Scope

This part of IEC 62056 specifies the DLMS/COSEM application layer in terms of structure, services and protocols for COSEM clients and servers, and defines how to use the DLMS/COSEM application layer in various communication profiles.

It defines services for establishing and releasing application associations, and data communication services for accessing the methods and attributes of COSEM interface objects, defined in IEC 62056-6-2:2016, using either logical name (LN) or short name (SN) referencing.

Annex A (normative) defines how to use the COSEM application layer in various communication profiles. It specifies how various communication profiles can be constructed for exchanging data with metering equipment using the COSEM interface model, and what are the necessary elements to specify in each communication profile. The actual, media-specific communication profiles are specified in separate parts of the IEC 62056 series.

Annex B (normative) specifies the SMS short wrapper.

Annex C, Annex D and Annex E (informative) include encoding examples for APDUs.

Annex F (informative) provides an overview of cryptography.

Annex G (informative) lists the main technical changes in this edition of the standard.

2 Normative references

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.

IEC 61334-4-41:1996, *Distribution automation using distribution line carrier systems – Part 4: Data communication protocols – Section 41: Application protocols – Distribution line message specification*

IEC 61334-6:2000, *Distribution automation using distribution line carrier systems – Part 6: A-XDR encoding rule*

IEC TR 62051:1999, *Electricity metering – Glossary of terms*

IEC TR 62051-1:2004, *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 62056-6-1:2015, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-1: Object Identification System (OBIS)*

IEC 62056-6-2:2016, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-2: COSEM interface classes*

IEC 62056-8-3:2013, *Electricity metering data exchange – The DLMS/COSEM suite – Part 8-3: Communication profile for PLC S-FSK neighbourhood networks*

ISO/IEC 8824-1:2008, *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation*

ISO/IEC 8825-1:2008, *Information technology – ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)*

ISO/IEC 15953:1999, *Information technology – Open Systems Interconnection – Service definition for the Application Service Object Association Control Service Element*

NOTE This standard cancels and replaces ISO/IEC 8649-1:1999 and its Amd. 1:1997 and Amd. 2:1998, of which it constitutes a technical revision.

ISO/IEC 15954:1999, *Information technology – Open Systems Interconnection – Connection-mode protocol for the Application Service Object Association Control Service Element*

NOTE This standard cancels and replaces ISO/IEC 8650-1:1999 and its Amd. 1:1997 and Amd. 2:1998, of which it constitutes a technical revision.

FIPS PUB 180-4:2012, *Secure hash standard*

FIPS PUB 197:2001, *Advanced Encryption Standard (AES)*

NIST SP 800-38D:2007, *Recommendation for Block Cipher Modes of Operation: Galois/Counter Mode (GCM) and GMAC*

NIST SP 800-57:2006, *Recommendation for Key Management – Part 1: General* (Revised)

The following RFCs are available online from the Internet Engineering Task Force (IETF): http://www.ietf.org/rfc/std-index.txt, http://www.ietf.org/rfc/

RFC 1321, *The MD5 Message-Digest Algorithm.* Edited by R. Rivest (MIT Laboratory for Computer Science and RSA Data Security, Inc.) April 1992

RFC 3394, *Advanced Encryption Standard (AES) Key Wrap Algorithm.* Edited by J. Schaad (Soaring Hawk Consulting) and R. Housley (RSA Laboratories) September 2002

RFC 4106, *The Use of Galois/Counter Mode (GCM) in IPsec Encapsulating Security Payload (ESP)*