

**Electricity metering data exchange -
The DLMS®/ COSEM suite -
Part 6-2: COSEM interface classes**

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NATIONAL FOREWORD

<p>See Eesti standard EVS-EN IEC 62056-6-2:2023 sisaldab Euroopa standardi EN IEC 62056-6-2:2023 ingliskeelset teksti.</p> <p>Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas</p> <p>Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 03.11.2023.</p> <p>Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.</p>	<p>This Estonian standard EVS-EN IEC 62056-6-2:2023 consists of the English text of the European standard EN IEC 62056-6-2:2023.</p> <p>This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.</p> <p>Date of Availability of the European standard is 03.11.2023.</p> <p>The standard is available from the Estonian Centre for Standardisation and Accreditation.</p>
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ICS 31.220.10

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NORME EUROPÉENNE

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**Electricity metering data exchange - The DLMS®/COSEM suite -
Part 6-2: COSEM interface classes
(IEC 62056-6-2:2023)**

Échange des données de comptage de l'électricité - La
suite DLMS®/COSEM - Partie 6-2: Classes d'interfaces
COSEM
(IEC 62056-6-2:2023)

Datenkommunikation der elektrischen Energiemessung -
DLMS®/COSEM - Teil 6-2: COSEM Interface-Klassen
(IEC 62056-6-2:2023)

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European foreword

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- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2024-08-02
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2026-11-02

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The text of the International Standard IEC 62056-6-2:2023 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 standard indicated:

IEC 61334-6:2000 NOTE Approved as EN 61334-6:2000 (not modified)

IEC 62056-8-5:2017 NOTE Approved as EN 62056-8-5:2017 (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.cencenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
-	-	Communication system for and remote reading of meters - Part 2: Physical and link layer	EN 13757-2	2004
-	-	Communication system for and remote reading of meters - Part 3: Dedicated application layer	EN 13757-3	2004
-	-	Communication system for and remote reading of meters - Part 3: Dedicated application layer	EN 13757-3	2013
-	-	Communication system for and remote reading of meters - Part 4: Wireless meter (Radio meter reading for operation in SRD bands)	EN 13757-4	2013
-	-	Communication system for meters - Part 5: Wireless M-Bus relaying	EN 13757-5	2015
IEC 61334-4-32	1996	Distribution automation using distribution line carrier systems - Part 4: Data communication protocols - Section 32: Data link layer - Logical link control (LLC)	EN 61334-4-32	1996
IEC 61334-4-41	1996	Distribution automation using distribution line carrier systems - Part 4: Data communication protocols - Section 41: Application protocol - Distribution line message specification	EN 61334-4-41	1996
IEC 61334-4-511	2000	Distribution automation using distribution line carrier systems - Part 4-511: Data communication protocols - Systems management - CIASE protocol	EN 61334-4-511	2000
IEC 61334-4-512	2001	Distribution automation using distribution line carrier systems - Part 4-512: Data communication protocols - System management using profile 61334-5-1 - Management Information Base (MIB)	EN 61334-4-512	2002

IEC 61334-5-1	2001	Distribution automation using distribution line carrier systems - Part 5-1: Lower layer profiles - The spread frequency shift keying (S-FSK) profile	EN 61334-5-1	2001
IEC/TR 62055-21	2005	Electricity metering - Payment systems - Part 21: Framework for standardization	-	-
IEC 62056-21	2002	Electricity metering - Data exchange for meter reading, tariff and load control - Part 21: Direct local data exchange	EN 62056-21	2002
IEC 62056-31	1999	Electricity metering - Data exchange for meter reading, tariff and load control - Part 31: Use of local area networks on twisted pair with carrier signalling	EN 62056-31	2000
IEC 62056-3-1	2013	Electricity metering data exchange - The DLMS/COSEM suite - Part 3-1: Use of local area networks on twisted pair with carrier signalling	EN 62056-3-1	2014
IEC 62056-3-1	2021	Electricity metering data exchange - The DLMS/COSEM suite - Part 3-1: Use of local area networks on twisted pair with carrier signalling	EN IEC 62056-3-1	2021
IEC 62056-46	2002	Electricity metering - Data exchange for meter reading, tariff and load control - Part 46: Data link layer using HDLC protocol	EN 62056-46	2002
AMD1	2006		A1	2006
IEC 62056-5-3	2023	Electricity metering data exchange - The DLMS@/COSEM suite - Part 5-3: DLMS@/COSEM application layer	EN IEC 62056-5-3	2023
IEC 62056-6-1	2023	Electricity metering data exchange - The DLMS/COSEM suite - Part 6-1: Object Identification System (OBIS)	EN IEC 62056-6-1	20XX ¹
IEC 62056-7-3	2017	Electricity metering data exchange - The DLMS/COSEM suite - Part 7-3: Wired and wireless M-Bus communication profiles for local and neighbourhood networks	EN 62056-7-3	2017
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
IEC 62056-8-4	2018	Electricity metering data exchange - The DLMS/COSEM suite - Part 8-4: Communication profiles for narrow-band OFDM PLC PRIME neighbourhood networks	EN IEC 62056-8-4	2019
IEC 62056-8-6	2017	Electricity metering data exchange - The DLMS/COSEM suite - Part 8-6: High speed PLC ISO/IEC 12139-1 profile for neighbourhood networks	EN 62056-8-6	2017

¹ Under preparation. Stage at the time of publication: prEN IEC 62056-6-1:2022.

IEC 62056-8-8	2020	Electricity metering data exchange - The DLMS/COSEM suite - Part 8-8: Communication profile for ISO/IEC 14908 series networks	EN IEC 62056-8-8	2020
IEEE 802.15.4	2006	Standard for Information technology - Local and metropolitan area networks - Specific requirements - Part 15.4: Wireless Medium Access Control (MAC) and Physical Layer (PHY) Specifications for Low Rate Wireless Personal Area Networks (WPANs)	-	-
IETF STD 51	1994	The Point-to-Point Protocol (PPP)	-	-
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 12139-1	2009	Information technology - Telecommunications and information exchange between systems - Powerline communication (PLC) - High speed PLC medium access control (MAC) and physical layer (PHY) - Part 1: General requirements	-	-
ISO/IEC 14908-1	2012	Information technology - Control network protocol - Part 1: Protocol stack	-	-
ISO/IEC 60559	2020	Information technology - Microprocessor Systems - Floating-Point arithmetic	-	-
ISO 4217	-	Codes for the representation of currencies	-	-
ITU-T E.212	2008	Series E: Overall network operation, telephone service, service operation and human factors - International operation - Maritime mobile service and public land mobile service - The international identification plan for public networks and subscriptions	-	-
ITU-T G.9903 Amd. 1	2013	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	-	-
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	-	-
ITU-T G.9903 Amd. 1	2017	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	-	-

ITU-T G.9904	2012	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 PRIME networks	-	-
ETSI GSM 05.08	1996	Digital cellular telecommunications system - (Phase 2+); Radio subsystem link control	-	-

INTERNATIONAL STANDARD

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

**Échange des données de comptage de l'électricité – La suite DLMS/COSEM –
Partie 6-2: Classes d'interfaces COSEM**



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INTERNATIONAL STANDARD

NORME INTERNATIONALE



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

**Échange des données de comptage de l'électricité – La suite DLMS/COSEM –
Partie 6-2: Classes d'interfaces COSEM**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRICITY METERING DATA EXCHANGE –
THE DLMS®/COSEM SUITE –****Part 6-2: COSEM interface classes**

FOREWORD

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IEC 62056-6-2 has been prepared by IEC technical committee 13: Electrical energy measurement and control. It is an International Standard.

This fourth edition cancels and replaces the third edition of IEC 62056-6-2 published in 2017. It constitutes a technical revision.

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

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

Draft	Report on voting
13/1891/FDIS	13/1906/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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 document will remain unchanged until the stability date indicated on the IEC website under 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 document 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 fourth edition of IEC 62056-6-2 has been prepared by IEC TC13 WG14 with a significant contribution of the DLMS® User Association, its A-type liaison partner.

This edition is in line with the DLMS® UA Blue Book Edition 14. The main new features are the “Array manager” IC, version 1 of the “Compact data” IC, version 1 of the “GSM diagnostic” IC, the “LTE monitoring” IC, the “NTP setup” IC, the HS-PLC setup ICs and the related new OBIS codes.

Object modelling and data identification

Driven by the business needs of the energy market participants – generally in a liberalized, competitive environment – and by the desire to manage natural resources efficiently and to involve the consumers, the utility meter became part of an integrated metering, control and billing system. The meter is not any more a simple data recording device but it relies critically on communication capabilities. Ease of system integration, interoperability and data security are important requirements.

COSEM, the *Companion Specification for Energy Metering*, addresses these challenges by looking at the utility meter as part of a complex measurement and control system. The meter has to be able to convey measurement results from the metering points to the business processes which use them. It also has to be able to provide information to the consumer and manage consumption and eventually local generation.

COSEM achieves this by using *object modelling* techniques to model all functions of the meter, without making any assumptions about which functions need to be supported, how those functions are implemented and how the data are transported. The formal specification of COSEM interface classes forms a major part of COSEM.

To process and manage the information it is necessary to uniquely identify all data items in a manufacturer-independent way. The definition of OBIS, the *Object Identification System* is another essential part of COSEM. It is based on DIN 43863-3:1997, *Electricity meters – Part 3: Tariff metering device as additional equipment for electricity meters – EDIS – Energy Data Identification System*. The set of OBIS codes has been considerably extended over the years to meet new needs.

COSEM models the utility meter as a *server* application – see 4.1.7 – used by *client* applications that retrieve data from, provide control information to, and instigate known actions within the meter via controlled access to the COSEM objects. The *clients* act as agents for third parties, i.e. the business processes of energy market participants.

The standardized COSEM interface classes form an extensible library. Manufacturers use elements of this library to design their products that meet a wide variety of requirements.

The server offers means to retrieve the functions supported, i.e. the COSEM objects instantiated. The objects can be organized to *logical devices and application associations* and to provide specific access rights to various clients.

The concept of the standardized interface class library provides different users and manufacturers with a maximum of diversity while ensuring interoperability.

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 62056-6-2 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:

DLMS¹ User Association
www.dlms.com

Acknowledgement

The actual document has been established by the WG Maintenance of the DLMS® UA.

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¹ Device Language Message Specification.

ELECTRICITY METERING DATA EXCHANGE – THE DLMS®/COSEM SUITE –

Part 6-2: COSEM interface classes

1 Scope

This part of IEC 62056 specifies a model of a meter as it is seen through its communication interface(s). Generic building blocks are defined using object-oriented methods, in the form of interface classes to model meters from simple up to very complex functionality.

Annexes A to F (informative) provide additional information related to some interface classes.

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.

EN 13757-2:2004, *Communication system for and remote reading of meters – Part 2: Physical and link layer*

EN 13757-3:2004, *Communication systems for and remote reading of meters – Part 3: Dedicated application layer*

NOTE This standard is referenced in the “M-Bus client setup” interface class version 0.

EN 13757-3:2013, *Communication systems for and remote reading of meters – Part 3: Dedicated application layer*

NOTE This standard is referenced in the M-Bus client setup interface class version 1.

EN 13757-4:2013, *Communication system for and remote reading of meters – Part 4: Wireless meter (Radio meter reading for operation in SRD bands)*

EN 13757-5:2015, *Communication systems for meters – Part 5: Wireless M-Bus relaying*

IEC 61334-4-32:1996, *Distribution automation using distribution line carrier systems – Part 4: Data communication protocols – Section 32: Data link layer – Logical link control (LLC)*

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 61334-4-511:2000, *Distribution automation using distribution line carrier systems – Part 4-511: Data communication protocols – Systems management – CIASE protocol*

IEC 61334-4-512:2001, *Distribution automation using distribution line carrier systems – Part 4-512: Data communication protocols – System management using profile 61334-5-1 – Management Information Base (MIB)*

IEC 61334-5-1:2001, *Distribution automation using distribution line carrier systems – Part 5-1: Lower layer profiles – The spread frequency shift keying (S-FSK) profile*

IEC TR 62055-21:2005, *Electricity metering – Payment systems – Part 21: Framework for standardization*

IEC 62056-21:2002, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 21: Direct local data exchange*

IEC 62056-31:1999, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 31: Using local area networks on twisted pair with carrier signalling*

NOTE This Edition is referenced in the interface class “IEC twisted pair (1) setup” (class_id: 24, version: 0).

IEC 62056-3-1:2013, *Electricity metering data exchange – The DLMS®/COSEM suite – Part 3-1: Use of local area networks on twisted pair with carrier signalling*

NOTE This Edition is referenced in the interface class “IEC twisted pair (1) setup” (class_id: 24, version: 1).

IEC 62056-3-1:2021, *Electricity metering data exchange – The DLMS®/COSEM suite – Part 3-1: Use of local area networks on twisted pair with carrier signalling*

IEC 62056-46:2002/AMD1:2006, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 46: Data link layer using HDLC protocol*

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3 Terms, definitions and abbreviated terms

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>