

# 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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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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://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](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- withdrawn,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.

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## 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:

DLMS<sup>1</sup> User Association  
[www.dlms.com](http://www.dlms.com)

### **Acknowledgement**

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

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<sup>1</sup> 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*

IEC 62056-5-3:2023, *Electricity metering data exchange – The DLMS®/COSEM suite – Part 5-3: DLMS®/COSEM application layer*

IEC 62056-6-1:2023, *Electricity metering data exchange – The DLMS®/COSEM suite – Part 6-1: Object identification system (OBIS)*

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*

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

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*

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*

IEC 62056-8-8:2020, *Electricity metering data exchange – The DLMS®/COSEM suite – Part 8-8: Communication profile for ISO/IEC 14908 series networks*

IEEE 802.15.4:2006, *Standard for Information technology – Telecommunications and information exchange between systems – 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)*

NOTE This standard is also available as ISO/IEC/IEEE 8802-15-4:2010.

IETF STD 51, *The Point-to-Point Protocol (PPP)*, 1994. (Also RFC 1661, RFC 1662)

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 (05.2008), *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*

NOTE This Recommendation is referenced in version 0 of the G3-PLC setup classes.

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*

NOTE This Recommendation is referenced in version 1 of the G3-PLC setup classes.

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*

### 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>