# IEC 62056-6-1

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# INTERNATIONAL STANDARD

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**Electricity metering data exchange – The DLMS®/COSEM suite –**
**Part 6-1: Object Identification System (OBIS)**

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IEC 62056-6-1:2023-12 RLV(en)

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INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 17.220, 35.110, 91.140.50

ISBN 978-2-8322-7997-7

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

## Part 6-1: Object Identification System (OBIS)

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**This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 62056-6-1:2013. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.**

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IEC 62056-6-1 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 62056-6-1, published in 2017. This edition constitutes a technical revision.

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

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

| Draft | Report on voting |
|---|---|
| 13/1852/CDV | 13/1883/RVC |

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.

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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

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# INTRODUCTION

This ~~third~~ fourth edition of IEC 62056-6-1 has been prepared by IEC TC13 ~~WG14~~ with a significant contribution of the DLMS® User Association, its ~~D~~A-type liaison partner.

This edition is in line with the DLMS® UA Blue Book Edition ~~12.2~~14. This edition specifies new OBIS codes related to new applications ~~and includes some editorial improvements~~.

**Data identification**

The competitive electricity market requires an ever-increasing amount of timely information concerning the usage of electrical energy. Recent technology developments enable to build intelligent static metering equipment, which is capable of capturing, processing and communicating this information to all parties involved.

To facilitate the analysis of metering information, for the purposes of billing, load, customer and contract management, it is necessary to uniquely identify data items, whether collected manually or automatically, via local or remote data exchange, in a manufacturer-independent way. The definition of identification codes to achieve this – the OBIS codes – 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 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 62056-6-1 is based.

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

## Part 6-1: Object Identification System (OBIS)

## 1 Scope

This part of IEC 62056 specifies the overall structure of the OBject Identification System (OBIS) and the mapping of all commonly used data items in metering equipment to their identification codes.

OBIS provides a unique identifier for all data within the metering equipment, including not only measurement values, but also abstract values used for configuration or obtaining information about the behaviour of the metering equipment. The ID codes defined in this document are used for the identification of:

- logical names of the various instances of the ICs, or objects, as defined in IEC 62056-6-2:2023;
- data transmitted through communication lines;
- data displayed on the metering equipment, see Clause A.2 in Annex A.

This document applies to all types of metering equipment, such as fully integrated meters, modular meters, tariff attachments, data concentrators, etc.

To cover metering equipment measuring energy types other than electricity, combined metering equipment measuring more than one type of energy or metering equipment with several physical measurement channels, the concepts of medium and channels are introduced. This allows meter data originating from different sources to be identified. While this document fully defines the structure of the identification system for other media, the mapping of non-electrical energy related data items to ID codes is completed separately.

NOTE EN 13757-1:2014 defines identifiers for metering equipment other than electricity: heat cost allocators, thermal energy, gas, cold water and hot water.

## 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 TR 61000-2-8:2002, *Electromagnetic compatibility (EMC) – Part 2-8: Environment – Voltage dips and short interruptions on public electric power supply systems with statistical measurement results*~~

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 62053-23:2003, *Electricity metering equipment (a.c.) – Particular requirements – Part 23: Static meters for reactive energy (classes 2 and 3)*~~

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

IEC 62056-6-2:~~2017~~2023, *Electricity metering data exchange – The DLMS®/COSEM suite – Part 6-2: COSEM interface classes*

# 3 Terms, definitions and abbreviated terms

## 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC TR 62051:1999 and IEC TR 62051-1:2004 apply.

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

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

## 3.2 Abbreviated terms

| | |
|---|---|
| COSEM | Companion Specification for Energy Metering |
| COSEM object | An instance of a COSEM interface class |
| DLMS | Device Language Message Specification |
| DLMS UA | DLMS User Association |
| GSM | Global System for Mobile Communications |
| IC | Interface Class |
| IEC | International Electrotechnical Commission |
| ISO | International Organization for Standardization |
| OBIS | OBject Identification System |
| VZ | Billing period counter |

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# 4 OBIS code structure

## 4.1 Value groups and their use

OBIS codes identify data items used in energy metering equipment, in a hierarchical structure using six value groups A to F, see Table 1.

**Table 1 – OBIS code structure and use of value groups**

| Value group | Use of the value group |
|---|---|
| **A** | Identifies the media (energy type) to which the metering is related. Non-media related information is handled as abstract data. |
| **B** | Generally, identifies the measurement channel number, i.e. the number of the input of a metering equipment having several inputs for the measurement of energy of the same or different types (for example in data concentrators, registration units). Data from different sources can thus be identified.<br>It may also identify the communication channel, and in some cases it may identify other elements.<br>The definitions for this value group are independent from the value group A. |
| **C** | Identifies abstract or physical data items related to the information source concerned, for example current, voltage, power, volume, temperature. The definitions depend on the value in the value group A.<br>Further processing, classification and storage methods are defined by value groups D, E and F.<br>For abstract data, value groups D to F provide further classification of data identified by value groups A to C. |
| **D** | Identifies types, or the result of the processing of physical quantities identified by values in value groups A and C, according to various specific algorithms. The algorithms can deliver energy and demand quantities as well as other physical quantities. |
| **E** | Identifies further processing or classification of quantities identified by values in value groups A to D. |
| **F** | Identifies historical values of data, identified by values in value groups A to E, according to different billing periods. Where this is not relevant, this value group can be used for further classification. |

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### 4.2 Manufacturer specific codes

In value groups B to F, the following ranges are available for manufacturer-specific purposes:

- group B: 128…199;
- group C: 128…199, 240;
- group D: 128…254;
- group E: 128…254;
- group F: 128…254.

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If any of these value groups contain a value in the manufacturer specific range, then the whole OBIS code shall be considered as manufacturer specific, and the value of the other groups does not necessarily carry a meaning defined in this document or in IEC 62056-6-2:2023.

In addition, manufacturer specific ranges are defined in Table 8 with A = 0, C = 96 and in Table 20 with A = 1, C = 96.

### 4.3 Reserved ranges

By default, all codes not allocated are reserved[1].

### 4.4 Summary of rules for manufacturer, utility, consortia and country specific codes

Table 2 summarizes the rules for manufacturer specific codes specified in 4.2, utility specific codes specified in 5.2, consortia specific codes specified in 5.4.2 and country specific codes specified in 5.4.3.

[1] Administered by the DLMS® User Association (see ~~Foreword~~ Introduction).

**Table 2 – Rules for manufacturer, utility, consortia and country specific codes**

| Code type | Value group | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| Manufacturer specific [1] | 0, 1, 4…9, F | 128…199 | *c* | *d* | *e* | *f* |
| | | *b* | 128… 199, 240 | *d* | *e* | *f* |
| | | *b* | *c* | 128…254 | *e* | *f* |
| | | *b* | *c* | *d* | 128…254 | *f* |
| | | *b* | *c* | *d* | *e* | 128…254 |
| Manufacturer specific abstract [2] | 0 | 0…64 | 96 | 50…99 | 0…255 | 0…255 |
| Manufacturer specific, media related general purpose [2] | 1, 4…9, F | 0…64 | 96 | 50…99 | 0…255 | 0…255 |
| Utility specific [3] | 0, 1, 4…9, F | 65…127 | 0…255 | 0…255 | 0…255 | 0…255 |
| Consortia specific [4] | 0, 1, 4…9, F | 0…64 | 93 | See Table 6. | | |
| Country specific [5] | | 0…64 | 94 | See Table 7. | | |

[1] "b", "c", "d", "e", "f" means any value in the relevant value group.

[2] The range D = 50…99 is available for identifying objects, which are not represented by another defined code, but need representation on the display as well. If this is not required, the range D = 128…254 should be used.

[3] If the value in value group B is 65…127, the whole OBIS code should be considered as utility specific and the value of other groups does not necessarily carry a meaning defined neither in this document nor in IEC 62056-6-2:2023.

[4] The usage of value group E and F are defined in consortia specific documents.

[5] The usage of value group E and F are defined in country specific documents.

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Objects for which this document defines standard identifiers shall not be re-identified by manufacturer, utility, consortia or country specific identifiers.

On the other hand, an object previously identified by a manufacturer-, utility-, consortia- or country-specific identifier may receive a standard identifier in the future, if its use is of common interest for the users of this document.

### 4.5 Standard object codes

Standard object codes are meaningful combinations of defined values of the six value groups.

Notation: In the following tables, in the various value groups, *"b", "c", "d", "e", "f"* signify any value in the respective value group. If only one object is instantiated, the value shall be 0. If a value group is shaded, then this value group is not used.

NOTE The DLMS® UA maintains a list of standard COSEM object definitions at www.dlms.com. The validity of the combination of OBIS codes and class_id-s as well as the data types of the attributes are tested during conformance testing.

## 5 Value group definitions – overview

### 5.1 Value group A

The range for value group A is 0 to 15; see Table 3.

**Table 3 – Value group A codes**

| Value group A | |
|---|---|
| **0** | Abstract objects |
| **1** | Electricity related objects |
| **…** | |
| **4** | Heat cost allocator related objects |
| **5, 6** | Thermal energy related objects |
| **7** | Gas related objects |
| **8** | Cold water related objects |
| **9** | Hot water related objects |
| **…** | |
| **15** | Other media |
| **All other** | Reserved |

The following subclauses contain value group definitions B to F common for all values of value group A.

## 5.2 Value group B

The range for value group B is 0 to 255; see Table 4.

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**Table 4 – Value group B codes**

| Value group B | |
|---|---|
| **0** | No channel specified |
| **1…64** | Channel 1..64 |
| **65…127** | Utility specific codes |
| **128…199** | Manufacturer specific codes |
| **200…255** | Reserved |

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If channel information is not essential, the value 0 shall be assigned.

The range 65…127 is available for utility specific use. If the value of value group B is in this range, the whole OBIS code shall be considered as utility specific and the value of other groups does not necessarily carry a meaning defined neither in this document nor in IEC 62056-6-2:2023.

## 5.3 Value group C

### 5.3.1 General

The range for value group C is 0 to 255. The definitions depend on the value in value group A. The codes for abstract objects are specified in 5.3.2. See also:

- electricity related codes specified in 7.1;
- ~~heat cost allocator, thermal energy, gas and water related codes specified in EN 13757-1:2014;~~
- other media related codes specified in 8.2.