

DIN EN 62056-6-1

ICS 91.140.50

Ersatz für
DIN EN 62056-61:2007-08
Siehe Anwendungsbeginn

**Datenkommunikation der elektrischen Energiemessung –
DLMS/COSEM –****Teil 6-1: COSEM Object Identification System (OBIS)
(IEC 62056-6-1:2013);****Englische Fassung EN 62056-6-1:2013**

Electricity metering data exchange –
The DLMS/COSEM suite –
Part 6-1: Object Identification System (OBIS)
(IEC 62056-6-1:2013);
English version EN 62056-6-1:2013

Echange des données de comptage de l'électricité –
La suite DLMS/COSEM –
Partie 6-1: Système d'identification des objets (OBIS)
(CEI 62056-6-1:2013);
Version anglaise EN 62056-6-1:2013

Gesamtumfang 46 Seiten

DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik im DIN und VDE

Anwendungsbeginn

Anwendungsbeginn für die von CENELEC am 2013-07-04 angenommene Europäische Norm als DIN-Norm ist 2014-10-01.

Für DIN EN 62056-6-1:2007-08 besteht eine Übergangsfrist bis 2016-07-04.

Nationales Vorwort

Vorausgegangener Norm-Entwurf: E DIN EN 62056-6-1:2011-10.

Für dieses Dokument ist das nationale Arbeitsgremium K 461 „Elektrizitätszähler“ der DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik im DIN und VDE (www.dke.de) zuständig.

Die enthaltene IEC-Publikation wurde vom TC 13 „Equipment for electrical energy measurement and load control“ erarbeitet.

Das IEC-Komitee hat entschieden, dass der Inhalt dieser Publikation bis zu dem Datum (stability date) unverändert bleiben soll, das auf der IEC-Website unter „<http://webstore.iec.ch>“ zu dieser Publikation angegeben ist. Zu diesem Zeitpunkt wird entsprechend der Entscheidung des Komitees die Publikation

- bestätigt,
- zurückgezogen,
- durch eine Folgeausgabe ersetzt oder
- geändert.

Für den Fall einer undatierten Verweisung im normativen Text (Verweisung auf eine Norm ohne Angabe des Ausgabedatums und ohne Hinweis auf eine Abschnittsnummer, eine Tabelle, ein Bild usw.) bezieht sich die Verweisung auf die jeweils neueste gültige Ausgabe der in Bezug genommenen Norm.

Für den Fall einer datierten Verweisung im normativen Text bezieht sich die Verweisung immer auf die in Bezug genommene Ausgabe der Norm.

Der Zusammenhang der zitierten Normen mit den entsprechenden Deutschen Normen ergibt sich, soweit ein Zusammenhang besteht, grundsätzlich über die Nummer der entsprechenden IEC-Publikation. Beispiel: IEC 60068 ist als EN 60068 als Europäische Norm durch CENELEC übernommen und als DIN EN 60068 ins Deutsche Normenwerk aufgenommen.

Das Präsidium des DIN hat mit Präsidialbeschluss 1/2004 festgelegt, dass DIN-Normen, deren Inhalt sich auf internationale Arbeitsergebnisse der Informationsverarbeitung gründet, unter bestimmten Bedingungen allein in englischer Sprache veröffentlicht werden dürfen. Diese Bedingungen sind für die vorliegende Norm erfüllt.

Da sich die Benutzer der vorliegenden Norm der englischen Sprache als Fachsprache bedienen, wird die englische Fassung der EN 62056-6-1 veröffentlicht. Für viele der verwendeten Begriffe existieren keine gebräuchlichen deutschen Benennungen, da sich die deutschen Anwender in der Regel ebenfalls der englischen Benennungen bedienen. Diese Norm steht nicht in unmittelbarem Zusammenhang mit Rechtsvorschriften und ist nicht als Sicherheitsnorm anzusehen.

In IEC 62056-6-1:2013 ist folgender Hinweis enthalten:

Die Internationale Elektrotechnische Kommission (IEC) weist darauf hin, dass die Übereinstimmung mit diesem Dokument die Verwendung von Patenten hinsichtlich Protokoll-Stack in IEC 62056-6-1 bedeuten kann.

Die IEC nimmt keine Stellung zur Rechtmäßigkeit, zur Gültigkeit und zum Anwendungsbereich dieser Patentrechte.

Der Halter dieser Patentrechte hat IEC zugesichert, dass er bereit ist, über Lizenzen zu vernünftigen und nicht diskriminierenden Geschäftsbedingungen mit Antragstellern in der ganzen Welt zu verhandeln. In diesem Zusammenhang ist die Erklärung des Halters dieser Patentrechte bei IEC registriert. Informationen sind erhältlich bei:

DLMS User Association
Zug/Schweiz
www.dlms.ch

Änderungen

Gegenüber DIN EN 62056-61:2007-08 wurden folgende Änderungen vorgenommen:

- a) Diese dritte Ausgabe ersetzt die zweite Ausgabe, die 2006 veröffentlicht wurde. Sie ist eine technische Überarbeitung.
- b) Der Titel der überarbeiteten und neuen Teile der Reihe IEC 62056 wurde geändert.
- c) Die Benummerung wurde geändert von IEC 62056-XY in IEC 62056-X-Y; IEC 6256-61 wird z. B. IEC 62056-6-1.
- d) Der Aufbau des Schriftstücks folgt enger der Struktur der OBIS-Codes.
- e) Der Text der Einleitung wurde geändert.

Frühere Ausgaben

DIN EN 62056-61: 2003-01, 2007-08

– Leerseite –

**Electricity metering data exchange -
The DLMS/COSEM suite -
Part 6-1: Object Identification System (OBIS)
(IEC 62056-6-1:2013)**

Echange des données de comptage de
l'électricité -
La suite DLMS/COSEM -
Partie 6-1: Système d'identification des
objets (OBIS)
(CEI 62056-6-1:2013)

Datenkommunikation der elektrischen
Energiemessung -
DLMS/COSEM -
Teil 6-1: COSEM Object Identification
System (OBIS)
(IEC 62056-6-1:2013)

This European Standard was approved by CENELEC on 2013-07-04. 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.

CENELEC

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

Foreword

The text of document 13/1524/FDIS, future edition 1 of IEC 62056-6-1, prepared by IEC/TC 13 "Electrical energy measurement, tariff- and load control" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62056-6-1:2013.

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) 2014-04-04
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-07-04

EN 62056-6-1:2013 cancels and replaces EN 62056-61 published in 2007. It constitutes a technical revision.

The significant technical changes with respect to EN 62056-61 are listed in Annex B.

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.

Endorsement notice

The text of the International Standard IEC 62056-6-1:2013 was approved by CENELEC as a European Standard without any modification.

CONTENTS

INTRODUCTION.....	6
1 Scope	7
2 Normative references	7
3 Terms, definitions and abbreviations	8
4 OBIS code structure	8
4.1 General	8
4.2 Value group A	8
4.3 Value group B	8
4.4 Value group C	9
4.5 Value group D	9
4.6 Value group E	9
4.7 Value group F	9
4.8 Manufacturer specific codes	9
4.9 Reserved ranges	9
4.10 Summary of rules for manufacturer, utility, consortia and country specific codes ...	10
4.11 Standard object codes	10
5 Value group definitions common to all media	11
5.1 Value group A	11
5.2 Value group B	11
5.3 Value group C	11
5.3.1 General	11
5.3.2 Abstract objects	12
5.4 Value group D	12
5.4.1 General	12
5.4.2 Consortia specific identifiers	12
5.4.3 Country specific identifiers	13
5.4.4 Identification of abstract objects	14
5.5 Value group E	14
5.6 Value group F	14
5.6.1 General	14
5.6.2 Identification of billing periods	15
6 Abstract objects (A = 0)	15
6.1 Abstract objects, general service entries	15
6.2 Error registers, alarm registers and alarm filters – Abstract	18
6.3 List objects – Abstract	18
6.4 Register table objects – Abstract	19
6.5 Data profile objects – Abstract	19
7 Electricity (A = 1)	19
7.1 Value group C codes – Electricity	19
7.2 Value group D codes – Electricity	22
7.2.1 Processing of measurement values	22
7.2.2 Use of value group D for identification of other objects	24
7.3 Value group E codes – Electricity	24
7.3.1 General	24
7.3.2 Tariff rates	24

7.3.3	Harmonics	24
7.3.4	Phase angles.....	25
7.3.5	Transformer and line loss quantities	25
7.3.6	UNIPED voltage dips	28
7.3.7	Use of value group E for the identification of other objects.....	29
7.4	Value group F codes – Electricity.....	29
7.4.1	Billing periods.....	29
7.4.2	Multiple thresholds.....	29
7.5	OBIS codes – Electricity	30
7.5.1	General purpose objects – Electricity	30
7.5.2	Error register objects – Electricity.....	33
7.5.3	List objects – Electricity	33
7.5.4	Data profile objects – Electricity	34
7.5.5	Register table objects – Electricity.....	34
Annex A	(normative) Code presentation	35
Annex B	(informative) Significant technical changes with respect to IEC 62056-61	37
Bibliography		39
Index.....		40
Annex ZA	Normative references to international publications with their corresponding European publications	42
Figure 1	– OBIS code structure	8
Figure 2	– Quadrant definitions for active and reactive power	21
Figure 3	– Model of the line and the transformer for calculation of loss quantities.....	26
Figure A.1	– Reduced ID code presentation	35
Table 1	– Rules for manufacturer, utility, consortia and country specific codes.....	10
Table 2	– Value group A codes	11
Table 3	– Value group B codes	11
Table 4	– Value group C codes – Abstract objects.....	12
Table 5	– Value group D codes – Consortia specific identifiers	12
Table 6	– Value group D codes – Country specific identifiers	13
Table 7	– OBIS codes for abstract objects, general service entries	15
Table 8	– OBIS codes for error registers, alarm registers and alarm filters – Abstract.....	18
Table 9	– OBIS codes for list objects – Abstract	18
Table 10	– OBIS codes for Register table objects – Abstract	19
Table 11	– OBIS codes for data profile objects – Abstract	19
Table 12	– Value group C codes – Electricity	19
Table 13	– Value group D codes – Electricity	22
Table 14	– Value group E codes – Electricity – Tariff rates	24
Table 15	– Value group E codes – Electricity – Harmonics.....	25
Table 16	– Value group E codes – Electricity – Extended phase angle measurement	25
Table 17	– Value group E codes – Electricity – Transformer and line losses.....	26
Table 18	– Value group E codes – Electricity – UNIPED voltage dips.....	29

Table 19 – OBIS codes for general purpose objects – Electricity	30
Table 20 – OBIS codes for error register objects – Electricity	33
Table 21 – OBIS codes for list objects – Electricity	34
Table 22 – OBIS codes for data profile objects – Electricity	34
Table 23 – OBIS codes for Register table objects – Electricity	34
Table A.1 – Example of display code replacement	35
Table A.2 – Value group F – Billing periods	36

INTRODUCTION

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*.

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 standard are used for the identification of:

- logical names of the various instances of the ICs, or objects, as defined in IEC 62056-6-2¹;
- data transmitted through communication lines,
- data displayed on the metering equipment, see A.2.

This standard 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 standard fully defines the structure of the identification system for other media, the mapping of non-electrical energy related data items to ID codes needs to be completed separately.

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

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/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)*

¹ To be published simultaneously with this part of IEC 62056.

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

NOTE See also the Bibliography.

3 Terms, definitions and abbreviations

For the purposes of this document, the terms and definitions given in IEC/TR 62051 and IEC/TR 62051-1 and the following apply.

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

4 OBIS code structure

4.1 General

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

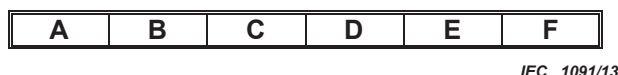


Figure 1 – OBIS code structure

4.2 Value group A

Value group A is used to identify the media (energy type) to which the metering is related. Non-media related information is handled as abstract data.

4.3 Value group B

Value group B is generally used to identify 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.

Value group B may also be used to identify the communication channel, and in some cases for other purposes.

The definitions for this value group are independent from the value group A.

4.4 Value group C

Value group C is used to identify the 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.

Further processing, classification and storage methods are defined by value groups D, E and F.

For abstract data, value groups D to F provide further classification of data identified by value groups A to C.

4.5 Value group D

Value group D is used to identify 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.

4.6 Value group E

Value group E is used to identify further processing or classification of quantities identified by values in value groups A to D.

4.7 Value group F

Value group F is used to identify historical 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.

4.8 Manufacturer specific codes

In value groups B, C, D, E and 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.

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 standard or in IEC 62056-6-2.

In addition, manufacturer specific ranges are defined in Table 7 with A = 0, C = 96, in Table 19 with A = 1, C = 96.

4.9 Reserved ranges

By default, all codes not allocated are reserved.²

² Reservation process administered by the DLMS User Association (see Foreword).

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

Table 1 summarizes the rules for handling manufacturer specific codes specified in 4.8, utility specific codes specified in 5.2, consortia specific codes specified in 5.4.2 and country specific codes specified in 0.

Table 1 – 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	128...199	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>
		<i>b</i>	128... 199, 240	<i>d</i>	<i>e</i>	<i>f</i>
		<i>b</i>	<i>c</i>	128...254	<i>e</i>	<i>f</i>
		<i>b</i>	<i>c</i>	<i>d</i>	128...254	<i>f</i>
		<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	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	0...64	96	50...99	0...255	0...255
Utility specific ³		65...127				
Consortia specific ⁴	0, 1, 4...9	1...64	93	See Table 5		
Country specific ⁵		1...64	94	See Table 6		

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 Clause 4 nor 5.

⁴ The usage of value group E and F is defined in consortia specific documents.

⁵ The usage of value group E and F is defined in country specific documents.

Objects for which this standard 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 standard.

4.11 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” signifies 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.