Blue Book Edition 17 Part 1

TECHNICAL REPORT

Comprehensive Semantic Model

for Energy Management

OBIS CODES

Excerpts

DLMS UA 1000-1 Ed. 17 Part 1

Version 1.0

28th February 2025

DLMS User Association

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FOREWORD

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Acknowledgement

The document has been written by members of DLMS UA Core Specification Working Group (previously the Maintenance Working Group).

Status of standardisation

The contents of this edition is the basis of future revisions to:

- IEC 62056-6-1, Electricity Metering Data Exchange – The DLMS/COSEM suite – Part 6-1: Object identification system (OBIS).

Revision history

Version	Date	Author	Comment
Edition 15		DLMS UA	References and modifications added for DC, two new attributes for direction of flow in Table 64
Edition 16	30th October 2023	DLMS UA	Added indication that document refers to all media, added two objects (“Reconnect loading rate” and “Load reduction shedding rate”), new C codes for Distortion Power, "Measurement data monitoring profile" and OBIS code values
Edition 17	28th February 2025	DLMS UA	See table below

List of main technical changes in Edition 17

Item	Clause	Description
1.	7.1.3.3	Extended range of D values in the header of Table 16 in order to to support average values for period 1 to 3 as well as minimum and maximum values over these periods. From Contribution 135
2.	7.1.3.4	Inserted new sub-clause “7.1.3.4 Qualification of “Any current” and “Any voltage””, from Contribution 131
3.	7.1.5.5	Table 24 – added entry for harmonics measurement for voltage, current and power as defined in Table 16. From Contribution 135
4.		

Introduction

Object modelling and data identification

COSEM was originally developed to address the requirements for interoperability and data security requirements in metering and control applications. The specification is not however limited to metering and control, it can be used to model any type of device that is designed to be connected to a communications network. (The COSEM acronym originally was *Companion Specification for Energy Metering* but this no longer applies.*)*

COSEM uses *object modelling* techniques to model all functions of devices, without making any assumptions about which functions need to be supported, how those functions are implemented and how the data is 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 standard 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 requirements.

Data identification

OBIS codes, based on DIN 43863-3:1997, *Electricity meters – Part 3: Tariff metering device as additional equipment for electricity meters – EDIS – Energy Data Identification System,* were originally developed 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 concept has been extended and the scope expanded to cover a wide range of equipment for energy management applications.

1 Scope

This part of DLMS UA 1000-1:Ed15 specifies the overall structure of the OBject Identification System (OBIS) and the mapping of all commonly used data items in equipment for energy management to their identification codes.

OBIS provides a unique identifier for all data within the equipment, including measurement values and abstract values used for configuration or for retrieving information about the behaviour of the 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 DLMS UA 1000-1 Ed. 17 Part 2:2025;
- data transmitted over communication media;
- data displayed on the equipment, see Clause A.2.

This document applies to all types of equipment.

For metering applications, the concepts of medium and channels are introduced. This allows meter data originating from different sources to be identified. This document fully defines the structure of the identification system and the mapping of data items to ID codes for all media.

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

2 Referenced documents

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.

DLMS UA 1000-1 Ed. 17 Part 2:2025, COSEM Interface Classes, Blue Book Part 2

EN 1434-1 Heat meters – Part 1: General requirements

EN 1434-2 Heat meters – Part 2: Constructional requirements

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 62053-23:2020, *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*

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, and the following 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

3.2 Abbreviated terms

AC	Alternating current
AGA	American Gas Association
AGA 8	Method for calculation of compressibility (Gas Metering)
COSEM	Comprehensive Semantic Model for Energy Management
COSEM object	An instance of a COSEM interface class
DC	Direct current
DLMS	Device Language Message Specification
DLMS UA	DLMS User Association
EVCS	Electrical Vehicle Charging System
GSM	Global System for Mobile Communications
HCA	Heat Cost Allocator
IC	Interface Class
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
OBIS	OBject Identification System
SGERG 88	Method for calculation of compressibility (Gas Metering)
VZ	Billing period counter

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. It may also identify the communication channel, and in some cases it may identify other elements. 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. 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.
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.

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.

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 DLMS UA 1000-1 Ed. 17 Part 2:2025.

In addition, manufacturer specific ranges are defined in Table 8 with A = 0, C = 96 and in Table 22 with A = 1, C = 96, in Table 38 with A = 4, C = 96, in Table 46 with A = 5/6, C = 96, in Table 62 with A = 7, C = 96 and in Table 69 with A = 8/9, C = 96.

4.3 Reserved ranges

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

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

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.

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

Code type	Value group					
	A	B	C	D	E	F
Manufacturer specific, NOTE 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, NOTE 2	0	0…64	96	50…99	0…255	0…255
Manufacturer specific, media related general purpose, NOTE 2	1, 4…9, F	0…64	96	50…99	0…255	0…255
Utility specific, NOTE 3	0, 1, 4…9, F	65…127	0…255	0…255	0…255	0…255
Consortia specific, NOTE 4	0, 1, 4…9, F	0…64	93	See Table 6.		
Country specific, NOTE 5		0…64	94	See Table 7.		

NOTE 1 “b”, “c”, “d”, “e”, “f” means any value in the relevant value group.

NOTE 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.

NOTE 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 DLMS UA 1000-1 Ed. 17 Part 2:2025.

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

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

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

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	AC Electricity related objects
2	DC Electricity related objects
3	Reserved
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.

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

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 DLMS UA 1000-1 Ed. 17 Part 2:2025.

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:

- AC electricity related codes specified in 7.1.1;
- DC electricity related codes are specified in 7.2.1;
- heat cost allocator related codes specified in 8.1;
- thermal energy related codes specified in 8.2;
- gas related codes specified in 8.3;
- water related codes specified in 8.4;
- other media related codes specified in 9.2.

5.3.2 Abstract objects

Abstract objects are data items, which are not related to a certain type of physical quantity. See Table 5.

Table 5 – Value group C codes – Abstract objects

Value group C Abstract objects (A = 0)	
0…89	Context specific identifiers [a]
93	Consortia specific identifiers (See 5.4.2).
94	Country specific identifiers (See 5.4.3)
96	General and service entry objects – Abstract (See 6.1)
97	Error register objects – Abstract (See 6.2)
98	List objects – Abstract (See 6.3, 6.4)
99	Data profile objects – Abstract (See 6.5)
…	
127	Inactive objects [b]
128…199, 240	Manufacturer specific codes
All other	Reserved

[a] Context specific identifiers identify objects specific to a certain protocol and/or application. For the COSEM context, the identifiers are defined in DLMS UA 1000-1 Ed. 17 Part 2:2025, 6.2.

[b] An inactive object is an object, which is defined and present in a meter, but which has no assigned functionality.

5.4 Value group D

5.4.1 General

The range for value group D is 0 to 255.

5.4.2 Consortia specific identifiers

Table 6 specifies the use of value group D for consortia specific applications. In this table, there are no reserved ranges for manufacturer specific codes. The usage of value group E and F are defined in consortia specific documents.

Objects that are already identified in this document shall not be re-identified by consortia specific identifiers.

Table 6 – Value group D codes – Consortia specific identifiers

Value group D Consortia specific identifiers (A = any, C = 93)	
0	Reserved
1	STS Association
2…255	Reserved

5.4.3 Country specific identifiers

Table 7 specifies the use of value group D for country specific applications. Wherever possible, the country calling codes are used. In this table, there are no reserved ranges for manufacturer specific codes. The usage of value group E and F are defined in country specific documents.

Objects that are already identified in this document shall not be re-identified by country specific identifiers.

Table 7 – Value group D codes – Country specific identifiers

Value group D Country specific identifiers[a] (A = any, C = 94)			
00	Finland (Country calling code = 358)	**50**	
01	USA (= Country calling code)	**51**	Peru (= Country calling code)
02	Canada (Country calling code = 1)	**52**	South Korea (Country calling code = 82)
03	Serbia (Country calling code = 381)	**53**	Cuba (= Country calling code)
04		**54**	Argentina (= Country calling code)
05		**55**	Brazil (= Country calling code)
06		**56**	Chile (= Country calling code)
07	Russia (Country calling code = 7)	**57**	Colombia (= Country calling code)
08		**58**	Venezuela (= Country calling code)
09		**59**	
10	Czech Republic (Country calling code = 420)	**60**	Malaysia (= Country calling code)
11	Bulgaria (Country calling code = 359)	**61**	Australia (= Country calling code)
12	Croatia (Country calling code = 385)	**62**	Indonesia (= Country calling code)
13	Ireland (Country calling code = 353)	**63**	Philippines (= Country calling code)
14	Israel (Country calling code = 972)	**64**	New Zealand (= Country calling code)
15	Ukraine (Country calling code = 380)	**65**	Singapore (= Country calling code)
16	Yugoslavia [a]	**66**	Thailand (= Country calling code)

Value group D Country specific identifiers[a] (A = any, C = 94)			
17	Qatar (Country calling code = 974)	**67**	
18		**68**	
19		**69**	
20	Egypt (= Country calling code)	**70**	
21		**71**	Latvia (Country calling code = 371)
22	Morocco (Country calling code = 212)	**72**	
23	Algeria (Country calling code = 213)	**73**	Moldova (Country calling code = 373)
24	Nigeria (Country calling code = 234)	**74**	
25	Ivory Coast (Country calling code = 225)	**75**	Belarus (Country calling code = 375)
26	Tunisia (Country calling code = 216)	**76**	
27	South Africa (= Country calling code)	**77**	
28		**78**	
29		**79**	
30	Greece (= Country calling code)	**80**	
31	Netherlands (= Country calling code)	**81**	Japan (= Country calling code)
32	Belgium (= Country calling code)	**82**	Mexico
33	France (= Country calling code)	**83**	
34	Spain (= Country calling code)	**84**	
35	Portugal (Country calling code = 351)	**85**	Hong Kong (Country calling code = 852)
36	Hungary (= Country calling code)	**86**	China (= Country calling code)
37	Lithuania (Country calling code = 370)	**87**	Bosnia and Herzegovina (Country calling code = 387)
38	Slovenia (Country calling code = 386)	**88**	
39	Italy (= Country calling code)	**89**	
40	Romania (= Country calling code)	**90**	Turkey (= Country calling code)
41	Switzerland (= Country calling code)	**91**	India (= Country calling code)
42	Slovakia (Country calling code = 421)	**92**	Pakistan (= Country calling code)
43	Austria (= Country calling code)	**93**	
44	United Kingdom (= Country calling code)	**94**	
45	Denmark (= Country calling code)	**95**	
46	Sweden (= Country calling code)	**96**	Saudi Arabia (Country calling code = 966)
47	Norway (= Country calling code)	**97**	United Arab Emirates (Country calling code = 971)
48	Poland (= Country calling code)	**98**	Iran (= Country calling code)
49	Germany (= Country calling code)	**99**	
	All other codes are reserved		

5.4.4 Identification of general and service entry objects

For the use of value group D to identify:

- abstract general and service entry objects see 6.1, Table 8;
- AC electricity related general and service entry objects see 7.1.5, Table 22;
- DC electricity related general and service entry objects see 7.2.5, Table 30;
- HCA related general and service entry objects see Table 38;
- thermal energy related general and service entry objects see Table 46;
- gas related general and service entry objects see Table 62;
- water related general and service entry objects see Table 69.

5.5 Value group E

The range for value group E is 0 to 255. It can be used for identifying further classification or processing of values defined by values in value groups A to D, as specified in the relevant energy type specific clauses. The various classifications and processing methods are exclusive.

For the use of value group E to identify:

- abstract general and service entry objects see 6.1, Table 8;
- AC electricity related general and service entry objects see Table 22;
- DC electricity related general and service entry objects see Table 30;
- HCA related general and service entry objects see Table 38;
- thermal energy related general and service entry objects see Table 46;
- gas related general and service entry objects see Table 62;
- water related general and service entry objects see Table 69.

5.6 Value group F

5.6.1 General

The range for value group F is 0 to 255. In all cases, if value group F is not used, it is set to 255.

5.6.2 Identification of billing periods

Value group F specifies the allocation to different billing periods (sets of historical values) for the objects defined by value groups A to E, where storage of historical values is relevant. A billing period scheme is identified with its billing period counter, number of available billing periods, time stamp of the billing period and billing period length. Several billing period schemes may be possible. For more, see 7.1.4.1, Clause A.3 and DLMS UA 1000-1 Ed. 17 Part 2:2025, 6.2.2.