

# 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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## CONTENTS

FOREWORD.....	10
INTRODUCTION.....	12
1 Scope.....	14
2 Normative references .....	14
3 Terms, definitions and abbreviated terms .....	17
3.1 Terms and definitions related to the Image transfer process (see 5.3.6).....	17
3.2 Terms and definitions related to the S-FSK PLC setup classes (see 5.9) .....	18
3.3 Terms and definitions related to the PRIME NB OFDM PLC setup ICs (see 5.11).....	19
3.4 Terms and definitions related to ZigBee® (see 5.13).....	21
3.5 Terms and definitions related to Payment metering interface classes (see 5.5).....	22
3.6 Terms and definitions related to the Arbitrator IC (see 5.4.12) .....	27
3.7 Abbreviated terms.....	27
4 Basic principles .....	31
4.1 General.....	31
4.2 Referencing methods .....	32
4.3 Reserved base_names for special COSEM objects .....	33
4.4 Class description notation.....	33
4.5 Common data types .....	35
4.6 Data formats .....	37
4.6.1 Date and time formats .....	37
4.6.2 Floating point number formats .....	39
4.7 The COSEM server model .....	41
4.8 The COSEM logical device .....	42
4.8.1 General .....	42
4.8.2 COSEM logical device name (LDN) .....	42
4.8.3 The “association view” of the logical device .....	42
4.8.4 Mandatory contents of a COSEM logical device.....	43
4.8.5 Management logical device.....	43
4.9 Information security .....	43
5 The COSEM interface classes .....	44
5.1 Overview .....	44
5.2 Interface classes for parameters and measurement data .....	48
5.2.1 Data (class_id = 1, version = 0) .....	48
5.2.2 Register (class_id = 3, version = 0) .....	49
5.2.3 Extended register (class_id = 4, version = 0) .....	53
5.2.4 Demand register (class_id = 5, version = 0).....	54
5.2.5 Register activation (class_id = 6, version = 0).....	57
5.2.6 Profile generic (class_id = 7, version = 1) .....	59
5.2.7 Utility tables (class_id = 26, version = 0) .....	64
5.2.8 Register table (class_id = 61, version = 0).....	65
5.2.9 Status mapping (class_id = 63, version = 0) .....	67
5.2.10 Compact data .....	69
5.3 Interface classes for access control and management .....	77
5.3.1 Overview .....	77
5.3.2 Client user identification .....	78



5.3.3	Association SN (class_id = 12, version = 4) .....	78
5.3.4	Association LN (class_id = 15, version = 3) .....	83
5.3.5	SAP assignment (class_id = 17, version = 0) .....	90
5.3.6	Image transfer .....	90
5.3.7	Security setup (class_id = 64, version = 1) .....	98
5.3.8	Push interface classes and objects .....	105
5.3.9	COSEM data protection .....	111
5.3.10	Function control (class_id: 122, version: 0) .....	129
5.3.11	Array manager (class_id = 123, version = 0) .....	131
5.4	Interface classes for time- and event bound control .....	138
5.4.1	Clock (class_id = 8, version = 0) .....	138
5.4.2	Script table (class_id = 9, version = 0) .....	140
5.4.3	Schedule (class_id = 10, version = 0) .....	142
5.4.4	Special days table (class_id = 11, version = 0) .....	145
5.4.5	Activity calendar (class_id = 20, version = 0) .....	146
5.4.6	Register monitor (class_id = 21, version = 0) .....	149
5.4.7	Single action schedule (class_id = 22, version = 0) .....	150
5.4.8	Disconnect control (class_id = 70, version = 0) .....	151
5.4.9	Limiter (class_id = 71, version = 0) .....	154
5.4.10	Parameter monitor (class_id = 65, version = 0) .....	157
5.4.11	Sensor manager interface class .....	158
5.4.12	Arbitrator .....	162
5.4.13	Modelling examples: tariffication and billing .....	166
5.5	Payment metering related interface classes .....	168
5.5.1	Overview of the COSEM accounting model .....	168
5.5.2	Account (class_id = 111, version = 0) .....	170
5.5.3	Credit interface class .....	180
5.5.4	Charge (class_id = 113, version = 0) .....	190
5.5.5	Token gateway (class_id = 115, version = 0) .....	196
5.6	Interface classes for setting up data exchange via local ports and modems .....	199
5.6.1	IEC local port setup (class_id = 19, version = 1) .....	199
5.6.2	IEC HDLC setup (class_id = 23, version = 1) .....	200
5.6.3	IEC twisted pair (1) setup (class_id = 24, version = 1) .....	202
5.6.4	Modem configuration (class_id = 27, version = 1) .....	204
5.6.5	Auto answer (class_id = 28, version = 2) .....	206
5.6.6	Auto connect (class_id = 29, version = 2) .....	209
5.6.7	GPRS modem setup (class_id = 45, version = 0) .....	211
5.6.8	GSM diagnostic (class_id: 47, version: 1) .....	212
5.6.9	LTE monitoring (class_id: 151, version: 0) .....	214
5.7	Interface classes for setting up data exchange via M-Bus .....	215
5.7.1	Overview .....	215
5.7.2	M-Bus slave port setup (class_id = 25, version = 0) .....	216
5.7.3	M-Bus client (class_id = 72, version = 1) .....	216
5.7.4	Wireless Mode Q channel (class_id = 73, version = 1) .....	221
5.7.5	M-Bus master port setup (class_id = 74, version = 0) .....	222
5.7.6	DLMS/COSEM server M-Bus port setup (class_id = 76, version = 0) .....	222
5.7.7	M-Bus diagnostic (class_id = 77, version = 0) .....	225
5.8	Interface classes for setting up data exchange over the Internet .....	227
5.8.1	TCP-UDP setup (class_id = 41, version = 0) .....	227

5.8.2	IPv4 setup (class_id = 42, version = 0) .....	228
5.8.3	IPv6 setup (class_id = 48, version = 0) .....	231
5.8.4	MAC address setup (class_id = 43, version = 0) .....	234
5.8.5	PPP setup (class_id = 44, version = 0) .....	235
5.8.6	SMTP setup (class_id = 46, version = 0).....	239
5.8.7	NTP setup (class_id = 100, version = 0) .....	240
5.9	Interface classes for setting up data exchange using S-FSK PLC .....	242
5.9.1	General .....	242
5.9.2	Overview .....	242
5.9.3	S-FSK Phy&MAC set-up (class_id = 50, version = 1) .....	244
5.9.4	S-FSK Active initiator (class_id = 51, version = 0) .....	249
5.9.5	S-FSK MAC synchronization timeouts (class_id = 52, version = 0).....	251
5.9.6	S-FSK MAC counters (class_id = 53, version = 0).....	253
5.9.7	IEC 61334-4-32 LLC setup (class_id = 55, version = 1) .....	256
5.9.8	S-FSK Reporting system list (class_id = 56, version = 0).....	257
5.10	Interface classes for setting up the LLC layer for ISO/IEC 8802-2 .....	258
5.10.1	General .....	258
5.10.2	ISO/IEC 8802-2 LLC Type 1 setup (class_id = 57, version = 0).....	258
5.10.3	ISO/IEC 8802-2 LLC Type 2 setup (class_id = 58, version = 0).....	259
5.10.4	ISO/IEC 8802-2 LLC Type 3 setup (class_id = 59, version = 0).....	260
5.11	Interface classes for setting up and managing DLMS/COSEM narrowband OFDM PLC profile for PRIME networks .....	262
5.11.1	Overview .....	262
5.11.2	Mapping of PRIME NB OFDM PLC PIB attributes to COSEM IC attributes .....	263
5.11.3	61334-4-32 LLC SSSS setup (class_id = 80, version = 0).....	265
5.11.4	PRIME NB OFDM PLC Physical layer parameters .....	266
5.11.5	PRIME NB OFDM PLC Physical layer counters (class_id = 81, version = 0) .....	266
5.11.6	PRIME NB OFDM PLC MAC setup (class_id = 82, version = 0) .....	267
5.11.7	NB OFDM PLC MAC functional parameters (class_id = 83 version = 0) .....	268
5.11.8	PRIME NB OFDM PLC MAC counters (class_id = 84, version = 0) .....	270
5.11.9	PRIME NB OFDM PLC MAC network administration data (class_id = 85, version = 0) .....	271
5.11.10	PRIME NB OFDM PLC MAC address setup (class_id = 43, version = 0) .....	274
5.11.11	PRIME NB OFDM PLC Application identification (class_id = 86, version = 0) .....	274
5.12	Interface classes for setting up and managing the DLMS/COSEM narrowband OFDM PLC profile for G3-PLC networks .....	275
5.12.1	Overview .....	275
5.12.2	Mapping of G3-PLC PIB attributes to COSEM IC attributes .....	275
5.12.3	G3-PLC MAC layer counters (class_id = 90, version = 1).....	277
5.12.4	G3-PLC MAC setup (class_id = 91, version = 1) .....	278
5.12.5	G3-PLC 6LoWPAN adaptation layer setup (class_id = 92, version = 1).....	283
5.13	Interface classes for setting up and managing DLMS/COSEM HS-PLC ISO/IEC 12139-1 neighbourhood networks.....	290
5.13.1	Overview .....	290
5.13.2	HS-PLC ISO/IEC 12139-1 MAC setup (class_id = 140, version = 0).....	290
5.13.3	HS-PLC ISO/IEC 12139-1 CPAS setup (class_id = 141, version = 0) .....	291
5.13.4	HS-PLC ISO/IEC 12139-1 IP SSAS setup (class_id = 142, version = 0).....	292

5.13.5	HS-PLC ISO/IEC 12139-1 HDLC SSAS setup (class_id = 143, version = 0) .....	293
5.14	ZigBee® setup classes .....	293
5.14.1	Overview .....	293
5.14.2	ZigBee® SAS startup (class_id = 101, version = 0).....	295
5.14.3	ZigBee® SAS join (class_id = 102, version = 0).....	297
5.14.4	ZigBee® SAS APS fragmentation (class_id = 103, version = 0) .....	298
5.14.5	ZigBee® network control (class_id = 104, version = 0).....	298
5.14.6	ZigBee® tunnel setup (class_id = 105, version = 0) .....	305
5.15	Maintenance of the interface classes .....	307
5.15.1	New versions of interface classes .....	307
5.15.2	New interface classes .....	307
5.15.3	Removal of interface classes .....	307
6	Relation to OBIS .....	307
6.1	General.....	307
6.2	Abstract COSEM objects.....	308
6.2.1	Use of value group C .....	308
6.2.2	Data of historical billing periods .....	309
6.2.3	Billing period values / reset counter entries .....	310
6.2.4	Other abstract general purpose OBIS codes .....	310
6.2.5	Clock objects (class_id = 8).....	311
6.2.6	Modem configuration and related objects.....	311
6.2.7	Script table objects (class_id = 9) .....	311
6.2.8	Special days table objects (class_id = 11) .....	313
6.2.9	Schedule objects (class_id = 10) .....	313
6.2.10	Activity calendar objects (class_id = 20) .....	314
6.2.11	Register activation objects (class_id = 6).....	314
6.2.12	Single action schedule objects (class_id = 22).....	314
6.2.13	Register monitor objects (class_id = 21).....	315
6.2.14	Parameter monitor objects (class_id = 65).....	315
6.2.15	Limiter objects (class_id = 71) .....	315
6.2.16	Array manager objects (class_id = 123).....	315
6.2.17	Payment metering related objects.....	315
6.2.18	IEC local port setup objects (class_id = 19) .....	316
6.2.19	Standard readout profile objects (class_id = 7) .....	316
6.2.20	IEC HDLC setup objects (class_id = 23) .....	317
6.2.21	IEC twisted pair (1) setup objects (class_id = 24) .....	317
6.2.22	Objects related to data exchange over M-Bus .....	318
6.2.23	Objects to set up data exchange over the Internet .....	319
6.2.24	Objects for setting up data exchange using S-FSK PLC.....	320
6.2.25	Objects for setting up the ISO/IEC 8802-2 LLC layer .....	321
6.2.26	Objects for data exchange using narrowband OFDM PLC for PRIME networks.....	321
6.2.27	Objects for data exchange using narrow-band OFDM PLC for G3-PLC networks.....	322
6.2.28	ZigBee® setup objects.....	322
6.2.29	Objects for data exchange using HS-PLC ISO/IEC 12139-1 ISO/EC 12139-1 networks .....	323
6.2.30	Association objects (class_id = 12, 15).....	323
6.2.31	SAP assignment object (class_id = 17).....	323

6.2.32	COSEM logical device name object .....	324
6.2.33	Information security related objects .....	324
6.2.34	Image transfer objects (class_id = 18) .....	325
6.2.35	Function control objects (class_id = 122) .....	325
6.2.36	Utility table objects (class_id = 26) .....	325
6.2.37	Compact data objects (class_id = 62) .....	326
6.2.38	Device ID objects .....	326
6.2.39	Metering point ID objects .....	327
6.2.40	Parameter changes and calibration objects .....	327
6.2.41	I/O control signal objects .....	327
6.2.42	Disconnect control objects (class_id = 70) .....	327
6.2.43	Arbitrator objects (class_id = 68) .....	328
6.2.44	Status of internal control signals objects .....	328
6.2.45	Internal operating status objects .....	328
6.2.46	Battery entries objects .....	329
6.2.47	Power failure monitoring objects .....	329
6.2.48	Operating time objects .....	330
6.2.49	Environment related parameters objects .....	330
6.2.50	Status register objects .....	330
6.2.51	Event code objects .....	330
6.2.52	Communication port log parameter objects .....	331
6.2.53	Consumer message objects .....	331
6.2.54	Currently active tariff objects .....	331
6.2.55	Event counter objects .....	331
6.2.56	Profile entry digital signature objects .....	332
6.2.57	Meter tamper event related objects .....	332
6.2.58	Error register objects .....	332
6.2.59	Alarm register, Alarm filter and Alarm descriptor objects .....	333
6.2.60	General list objects .....	334
6.2.61	Event log objects .....	334
6.2.62	Inactive objects .....	334
6.3	Electricity related COSEM objects .....	335
6.3.1	Value group D definitions .....	335
6.3.2	Electricity ID numbers .....	335
6.3.3	Billing period values / reset counter entries .....	335
6.3.4	Other electricity related general purpose objects .....	336
6.3.5	Measurement algorithm .....	337
6.3.6	Metering point ID (electricity related) .....	339
6.3.7	Electricity related status objects .....	339
6.3.8	List objects – Electricity (class_id = 7) .....	339
6.3.9	Threshold values .....	340
6.3.10	Register monitor objects (class_id = 21) .....	341
6.4	Coding of OBIS identifications .....	341
7	Previous versions of interface classes .....	342
7.1	General .....	342
7.2	Profile generic (class_id = 7, version = 0) .....	342
7.3	Association SN (class_id = 12, version = 0) .....	345
7.4	Association SN (class_id = 12, version = 1) .....	348
7.5	Association SN (class_id = 12, version = 2) .....	350

7.6	Association SN (Class_id = 12, version =3).....	353
7.7	Association LN (class_id = 15, version = 0).....	358
7.8	Association LN (class_id = 15, version = 1).....	362
7.9	Association LN (class_id = 15, version = 2).....	368
7.10	Security setup (class_id = 64, version = 0).....	374
7.11	IEC local port setup (class_id = 19, version = 0) .....	376
7.12	IEC HDLC setup, (class_id = 23, version = 0) .....	377
7.13	IEC twisted pair (1) setup (class_id = 24, version = 0) .....	378
7.14	PSTN modem configuration (class_id = 27, version = 0) .....	379
7.15	Auto answer (class_id = 28, version = 0).....	381
7.16	PSTN auto dial (class_id = 29, version = 0) .....	383
7.17	Auto connect (class_id = 29, version = 1).....	384
7.18	GSM diagnostic (class_id = 47, version = 0) .....	385
7.19	S-FSK Phy&MAC setup (class_id = 50, version = 0) .....	387
7.20	S-FSK IEC 61334-4-32 LLC setup (class_id = 55, version = 0) .....	391
7.21	Compact data (class_id = 62, version = 0) .....	392
7.22	M-Bus client (class_id = 72, version = 0).....	395
7.23	G3 NB OFDM PLC MAC layer counters (class_id = 90, version = 0) .....	400
7.24	G3 NB OFDM PLC MAC setup (class_id = 91, version = 0).....	401
7.25	G3 NB OFDM PLC 6LoWPAN adaptation layer setup (class_id = 92, version = 0).....	405
Annex A	(informative) Additional information on Auto answer and Auto connect ICs .....	411
Annex B	(informative) Additional information to M-Bus client (class_id = 72, version 1) .....	413
Annex C	(informative) Additional information on IPv6 setup class (class_id = 48, version = 0) .....	415
C.1	General.....	415
C.2	IPv6 addressing .....	415
C.3	IPv6 header format .....	416
C.4	IPv6 header extensions.....	417
C.4.1	Overview .....	417
C.4.2	Hop-by-Hop options .....	418
C.4.3	Destination options .....	418
C.4.4	Routing options .....	418
C.4.5	Fragment options.....	419
C.4.6	Security options.....	419
Annex D	(informative) Overview of the narrow-band OFDM PLC technology for PRIME networks .....	420
Annex E	(informative) Overview of the narrow-band OFDM PLC technology for G3-PLC networks .....	421
Annex F	(informative) Significant technical changes with respect to IEC 62056-6-2, Edition 2.0:2016.....	422
Bibliography	.....	423
Index	.....	425
Figure 1	– The meaning of the definitions concerning the Image .....	18
Figure 2	– An interface class and its instances .....	32
Figure 3	– The COSEM server model.....	41
Figure 4	– Combined metering device .....	42

Figure 5 – Overview of the interface classes – Part 1.....	44
Figure 6 – Overview of the interface classes – Part 2.....	45
Figure 7 – The time attributes when measuring sliding demand .....	54
Figure 8 – The attributes in the case of block demand .....	54
Figure 9 – The attributes in the case of sliding demand (number of periods = 3) .....	55
Figure 10 – Image transfer process flow chart.....	96
Figure 11 – COSEM model of push operation .....	105
Figure 12 – Push windows and delays .....	107
Figure 13 – COSEM model of data protection .....	113
Figure 14 – Example: Read <i>protection_buffer</i> attribute.....	115
Figure 15 – Example of managing an array .....	132
Figure 16 – The generalized time concept.....	138
Figure 17 – State diagram of the Disconnect control IC.....	152
Figure 18 – Definition of upper and lower thresholds.....	161
Figure 19 – COSEM tariffication model (example).....	167
Figure 20 – COSEM billing model (example).....	167
Figure 21 – Outline Account model .....	169
Figure 22 – Diagram of attribute relationships.....	170
Figure 23 – Credit States when priority >0 .....	181
Figure 24 – Operation of <i>current_credit_status</i> flags .....	183
Figure 25 – Interaction of <i>current_credit_amount</i> and <i>available_credit</i> with Token “Credit” and Emergency “Credit” .....	189
Figure 26 – Object model of DLMS/COSEM servers .....	242
Figure 27 – Object model of DLMS/COSEM servers .....	263
Figure 28 – Example of a ZigBee® network .....	294
Figure 29 – Data of historical billing periods – example with module 12, VZ = 5.....	309
Figure A.1 – Network connectivity example for a GSM/GPRS network .....	411
Figure B.1 – Encryption key status diagram .....	413
Figure C.1 – IPv6 address formats.....	415
Figure C.2 – IPv6 header format .....	416
Figure C.3 – Traffic class parameter format .....	417
Table 1 – Reserved base_names for SN referencing.....	33
Table 2 – Common data types .....	36
Table 3 – List of interface classes by class_id .....	46
Table 4 – Enumerated values for physical units .....	50
Table 5 – Examples for scaler_unit .....	53
Table 6 – Daily billing data.....	73
Table 7 – Attributes of the “Compact data” object .....	74
Table 8 – A-XDR encoding of the data (SEQUENCE OF Get-Data-Result).....	74
Table 9 – Diagnostic and Alarm data .....	75
Table 10 – Attributes of the “Compact data” object .....	75
Table 11 – Encoding the data read from the buffer attribute of a “Profile generic” object.....	75

Table 12 – Logbook data .....	76
Table 13 – Attributes of the “Compact data” object .....	76
Table 14 – Attributes of the “Compact data” object .....	77
Table 15 – A-XDR encoding of the data read from the <i>buffer</i> attribute.....	77
Table 16 – Encoding of selective access parameters with <i>data_index</i> .....	111
Table 17 – Key information required to establish data protection keys .....	124
Table 18 – Protection parameters of <i>protection_parameters_get</i> attribute .....	125
Table 19 – Protection parameters of <i>protection_parameters_set</i> attribute .....	126
Table 20 – Protection parameters of <i>get_protected_attributes</i> method .....	127
Table 21 – Protection parameters of <i>set_protected_attributes</i> method .....	128
Table 22 – Protection parameters of <i>invoke_protected_method</i> method .....	129
Table 23 – Schedule .....	142
Table 24 – Special days table .....	142
Table 25 – Disconnect control IC – states and state transitions.....	153
Table 26 – Explicit presentation of threshold value arrays.....	162
Table 27 – Explicit presentation of <i>action_sets</i> .....	162
Table 28 – Credit states.....	180
Table 29 – Credit state transitions .....	181
Table 30 – ADS address elements .....	204
Table 31 – Fatal error register .....	204
Table 32 – Mapping IEC 61334-4-512:2001 MIB variables to COSEM IC attributes / methods.....	243
Table 33 – MAC addresses in the S-FSK profile.....	249
Table 34 – Mapping of PRIME NB OFDM PLC PIB attributes to COSEM IC attributes.....	264
Table 35 – Mapping of G3-PLC IB attributes to COSEM IC attributes.....	276
Table 36 – Use of ZigBee® setup COSEM interface classes .....	295
Table 37 – Use of value group C for abstract objects in the COSEM context.....	308
Table 38 – Representation of various values by appropriate ICs .....	335
Table 39 – Measuring algorithms – enumerated values.....	338
Table 40 – Threshold objects, electricity .....	340
Table 41 – Register monitor objects, electricity.....	341
Table B.1 – Encryption key is preset in the slave and cannot be changed.....	414
Table B.2 – Encryption key is preset in the slave and new key is set after installation.....	414
Table B.3 – Encryption key is not preset in the slave, but can be set, case a).....	414
Table B.4 – Encryption key is not preset in the slave, but can be set, case b).....	414
Table C.1 – IPv6 header vs. IPv6 IC .....	417
Table C.2 – Optional IPv6 header extensions vs. IPv6 IC.....	418

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

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Zug/Switzerland  
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<sup>1</sup> Device Language Message Specification.



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

This third edition cancels and replaces the second edition of IEC 62056-6-2 published in 2016. 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 standard is based on the following documents:

FDIS	Report on voting
13/1746/FDIS	13/1750/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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 publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

**IMPORTANT – The 'colour inside' logo on the cover page of this publication 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 third edition of IEC 62056-6-2 has been prepared by IEC TC13 WG14 with a significant contribution of the DLMS User Association, its D-type liaison partner.

This edition is in line with the DLMS UA Blue Book Edition 12.2. 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 4.7 – 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.

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### **Acknowledgement**

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

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## 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.

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

IEC 62056-5-3:2017, *Electricity metering data exchange – The DLMS/COSEM suite – Part 5-3: DLMS/COSEM application layer*

IEC 62056-6-1:2017, *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 62056-8-6:2017, *Electricity metering data exchange – The DLMS/COSEM suite – Part 8-6: High speed PLC ISO/IEC 12139-1 profile for neighbourhood networks*

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/IEEE 60559:2011, *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*

3GPP TS 24.301 V13.4.0 (2016-01), *Technical Specification Group Core Network and Terminals; Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS); Stage 3*

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.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*

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