

# DIN EN 13757-1:2003-03 (D/E)

Kommunikationssysteme für Zähler und deren Fernablesung - Teil 1:  
Datenaustausch; Englische Fassung EN 13757-1:2002

Communication systems for meters and remote reading of meters - Part 1: Data  
exchange; English version EN 13757-1:2002

---

## Inhalt/Contents

Seite

Vorwort .....	4
1 Anwendungsbereich .....	5
2 Normative Verweisungen .....	5
3 Begriffe .....	5
4 Allgemeine Beschreibung .....	5
4.1 Grundwortschatz .....	5
4.2 Schichtenprotokoll .....	6
4.3 Anwenderschicht für Zähler .....	7
4.4 Begleitspezifikation .....	7
4.5 COSEM-Grundprinzipien .....	8
4.6 Management eines COSEM-Gerätes .....	10
4.7 Untere Schichten .....	10
Anhang A (normativ) Grundklassenzähler .....	12
A.1 Grundanforderungen an Heizkostenverteiler .....	12
A.2 Grundanforderungen an Wärme/Kälte-Zähler .....	12
A.3 Grundanforderungen an Gaszähler .....	13
A.4 Grundanforderungen an Kalt-/Warmwasserzähler .....	13
Anhang B (informativ) Mengenumwertung für Gas .....	14
B.1 Einleitung .....	14
B.2 Vorwort zum abstrakten Datenmodell von Mengenumwertern Gas .....	14
B.3 Abstrakte Datenmodelle von Mengenumwerter für Gas .....	15
B.3.1 Definitionen .....	15
B.3.2 Gängige Objekte bei der Gasumwertung und Energieberechnung .....	16
B.4 Prinzip der Messungen für Volumenumwertung und Energieberechnung .....	17
B.5 Datenfluss in der Mengenumwertung und Energieberechnung .....	19
Anhang C (normativ) Begriffe .....	20
C.1 Einleitung .....	20
C.2 Aktivierungsmaske .....	20
C.3 Aktivitätskalender .....	20
C.4 LN-Assoziation .....	20
C.5 SN-Assoziation .....	20
C.6 Automatische Erfassung .....	21
C.7 Berechtigte Gruppe .....	21
C.8 Berechnungszeitraum .....	21
C.9 Kalender .....	21
C.10 Erfassung .....	21
C.11 Kanal .....	21

C.12	Takt .....	21
C.13	Aktueller und letzter Durchschnittswert .....	22
C.14	Datum und Zeit .....	22
C.15	Sommer-/Winterzeitumstellung .....	22
C.16	Bedarf .....	23
C.17	Geräte-ID .....	24
C.18	Fehlerwerte .....	24
C.19	Erweitertes-Register-Schnittstellenklasse .....	25
C.20	Handterminal .....	25
C.21	Hohe Sicherheit .....	25
C.22	Schnittstellenmodellierung .....	25
C.23	Eingangs/Ausgangs-Steuersignale (I/O-Steuersignale) .....	25
C.24	Kompatibilität .....	25
C.25	Logisches Gerät .....	26
C.26	"Logical name"-Bezugnahme .....	26
C.27	Niedrige Sicherheit .....	26
C.28	Herstellerdefinierte ID-s .....	27
C.29	Herstellerspezifische abstrakte Objekte .....	27
C.30	Herstellerspezifischer Identifikationscode der Klasse (class_id) .....	27
C.31	Herstellerspezifische Daten und Parameter .....	27
C.32	Herstellerspezifische OBIS-Codes .....	27
C.33	Maximal- und Minimalwert-Objekte .....	27
C.34	Messung verschiedener Medien .....	27
C.35	Messmethoden und Tarife .....	28
C.36	Messwertereihen .....	28
C.37	Fehlende Messwerte .....	28
C.38	Passwort .....	28
C.39	Physikalisches Gerät .....	28
C.40	Handhabung bei Netzausfall .....	29
C.41	Netzausfallüberwachung .....	29
C.42	Bevorzugte Ablesewerte .....	29
C.43	Profil-Objekte .....	29
C.44	Profil für Berechnungszeiträume .....	30
C.45	Schnittstellenklasse Profilauswahl .....	30
C.46	Schnittstellenklasse Register .....	30
C.47	Rücksetzen, Schnittstellenklasse Bedarfsregister .....	30
C.48	Rücksetzen, Schnittstellenklasse Erweitertes Register .....	31
C.49	Rücksetzen, Schnittstellenklasse Profilauswahl .....	31
C.50	Rücksetzen, Schnittstellenklasse Register .....	31
C.51	Rücksetzen, Quellenanzeige .....	31
C.52	Festwertmultiplikator-Einheit .....	31
C.53	Zeitplan .....	31
C.54	Skript .....	31
C.55	Skripttabelle .....	32
C.56	Jahreszeit .....	32
C.57	Selektiver Zugriff .....	32
C.58	Datumsvorgabe .....	32
C.59	Bezugnahme mit Kurznamen .....	32
C.60	Schnittstellenklasse Tabelle der speziellen Tage .....	32
C.61	Standardablesungsdefinitionen .....	32
C.62	Tarif .....	33
C.63	Tarifierung .....	33
C.64	Schwelle .....	33
C.65	Zeitintegralwert-Objekte .....	33
C.66	Einstellen der Zeit, in Verbindung mit der Schnittstellenklasse "Zeitplan" .....	33
C.67	Zeitmarken (in Beziehung zur Schnittstellenklasse PSTN-Auto-dial) .....	34
C.68	Zeitmarken (in Beziehung zu Berechnungszeiträumen) .....	34
C.69	Zeitsynchronisation .....	34
C.70	Einheitliche Identifizierung .....	34
C.71	Hilfstabellen .....	35

# Contents

	page
Foreword.....	6
1 Scope.....	7
2 Normative references .....	7
3 Terms and definitions .....	8
4 General description .....	8
4.1 Basic vocabulary.....	9
4.2 Layered protocols .....	9
4.3 Application Layer for Metering .....	10
4.4 Companion Specification .....	10
4.5 COSEM Basic Principles .....	11
4.6 Management of a COSEM Device.....	12
4.7 Lower layers .....	13
5 Network Architecture.....	13
5.1 General.....	13
5.2 Basic architecture .....	14
5.3 Metering Architecture .....	15
5.4 One unique access point at any time : a tree structure .....	16
5.5 Self configurable network .....	16
5.6 Hand Held Unit for local access .....	16
5.7 Network layers.....	16
5.8 Multiple access.....	16
6 Data exchange using local connections.....	17
6.1 General.....	17
6.2 Physical layer .....	17
6.2.1 Optical interface .....	17
6.2.2 Electrical current loop interface .....	17
6.2.3 Electrical V.24/V.28 interface .....	17
6.3 Link Layer .....	17
7 Data exchange using local area network (LAN).....	18
7.1 Twisted pair, baseband signalling.....	18
7.1.1 Physical layer .....	18
7.1.2 Link layer.....	18
7.2 Twisted pair, carrier signalling .....	18
7.2.1 Physical layer .....	18
7.2.2 Link layer.....	18
8 Data exchange using wide area network (WAN).....	18
8.1 General.....	18
8.2 Physical Layer IEC 62056-42.....	19
8.3 Link Layer IEC 62056-46 .....	20
8.3.1 Introduction .....	20
8.3.2 The LLC sub-layer.....	20
8.3.3 The MAC sub-layer.....	21
8.3.4 Specification method.....	21
9 Data exchange using radio communication.....	22
10 Upper Layer Protocols.....	22
10.1 Introduction .....	22

10.2	Transport sub-layer .....	22
10.2.1	Introduction .....	22
10.2.2	IEC 62056-46 related Transport sub-layer .....	23
10.2.3	EN 60870-5-2 related Transport sub-layer .....	23
10.3	Presentation sub-layer .....	24
10.3.1	Abstract syntax .....	24
10.3.2	Encoding rules .....	25
10.4	Application sub-layer.....	25
10.4.1	Introduction .....	25
10.4.2	Application layer structure .....	25
10.4.3	Service specification .....	26
10.4.4	Protocol specification.....	26
11	Extensions to COSEM .....	27
11.1	Introduction .....	27
11.2	New interface classes.....	27
11.2.1	M-Bus interface class .....	27
11.3	Mapping of Data Items to Cosem Objects and Attributes .....	28
11.3.1	M-Bus Setup .....	28
11.4	Specific object types .....	28
11.4.1	Error reporting object.....	28
12	Object Identification System (Variable naming rules).....	30
12.1	Introduction .....	30
12.2	Structure .....	30
12.3	Manufacturer specific codes .....	31
12.4	Common value groups .....	31
12.4.1	Value group A.....	31
12.4.2	Value group B.....	31
12.4.3	Value group C (abstract objects).....	32
12.4.4	Notes for value group C (abstract objects) .....	33
12.4.5	Value group E.....	34
12.4.6	Value group F .....	34
12.5	Media specific value groups .....	35
12.6	Value groups specific to Heat Cost Allocators.....	36
12.6.1	Introduction .....	36
12.6.2	Value group C for HCA .....	36
12.6.3	Value group D for HCA .....	37
12.7	Value groups specific to Heat or Cooling Meters.....	37
12.7.1	Introduction .....	37
12.7.2	Value group C for Heat .....	37
12.7.3	Value group D for Heat .....	39
12.8	Value groups specific to Gas Meters .....	40
12.8.1	Introduction .....	40
12.8.2	Value group C for Gas .....	40
12.8.3	Value group D for Gas .....	41
12.9	Value groups specific to Water Meters.....	41
12.9.1	Introduction .....	41
12.9.2	Value group C for Water .....	41
12.9.3	Value group D for Water .....	42
13	Object codes (Variable names).....	42
13.1	Introduction .....	42
13.2	Abstract object codes.....	43
13.3	Object codes for HCA.....	44
13.3.1	General purpose codes and profiles for HCA.....	44
13.3.2	Media related codes for HCA .....	45
13.4	Object codes for heat / cooling .....	46
13.4.1	General purpose codes and profiles for heat / cooling .....	46
13.4.2	Media related codes for heat / cooling.....	48
13.5	Object codes for gas.....	49

13.5.1	General purpose codes and profiles for gas.....	49
13.5.2	Media related codes for gas.....	51
13.6	Object codes for water .....	53
13.6.1	General purpose codes and profiles for water .....	53
13.6.2	Media related codes for water.....	54
<b>Annex A</b>	<b>(normative) Basic class meters .....</b>	<b>55</b>
A.1	Basic requirements for Heat Cost Allocators .....	55
A.2	Basic requirements for Heat / Cooling meters.....	55
A.3	Basic requirements for Gas meters .....	56
A.4	Basic requirements for Cold / Hot water meters.....	56
<b>Annex B</b>	<b>(informative) Gas Volume Conversion.....</b>	<b>57</b>
B.1	Introduction .....	57
B.2	Foreword to abstract data model of gas volume converter .....	57
B.3	Abstract data model of gas volume converter.....	57
B.3.1	Definitions.....	57
B.3.2	Common objects in gas conversion and energy calculation.....	58
B.4	Principle of measurement for volume conversion and energy calculation .....	60
B.5	Data flow in volume conversion and energy calculation.....	61
<b>Annex C</b>	<b>(normative) Terms and definitions.....</b>	<b>62</b>
C.1	Introduction .....	62
C.2	Activation mask.....	62
C.3	Activity calendar.....	62
C.4	Association LN .....	62
C.5	Association SN .....	62
C.6	Automatic capturing .....	62
C.7	Authorised party.....	62
C.8	Billing period .....	63
C.9	Calendar .....	63
C.10	Capture.....	63
C.11	Channel .....	63
C.12	Clock.....	63
C.13	Current and last average value objects .....	64
C.14	Date and time.....	64
C.15	Daylight saving.....	64
C.16	Demand .....	64
C.17	Device ID .....	66
C.18	Error values .....	66
C.19	Extended register interface class.....	67
C.20	Hand held terminal.....	67
C.21	High level security.....	67
C.22	Interface modelling .....	67
C.23	I/O Control Signals.....	67
C.24	Interoperability .....	67
C.25	Logical device.....	68
C.26	Logical name referencing.....	68
C.27	Low level security .....	68
C.28	Manufacturer defined ID-s.....	68
C.29	Manufacturer specific abstract objects .....	68
C.30	Manufacturer specific class id.....	68
C.31	Manufacturer specific data and parameters.....	69
C.32	Manufacturer specific OBIS codes.....	69
C.33	Maximum and minimum value objects .....	69
C.34	Measurement of different media.....	69
C.35	Measurement method and tariffs.....	69
C.36	Measurement values series .....	69
C.37	Missing measurement values .....	70
C.38	Password .....	70
C.39	Physical device.....	70

C.40	Power failure handling.....	70
C.41	Power failure monitoring.....	70
C.42	Preferred readout-values .....	71
C.43	Profile objects .....	71
C.44	Profile for billing periods.....	71
C.45	Profile, generic interface class .....	71
C.46	Register interface class.....	71
C.47	Reset, IC Demand register .....	72
C.48	Reset, IC Extended register .....	72
C.49	Reset, IC Profile generic.....	72
C.50	Reset, IC Register .....	72
C.51	Reset, indication of source .....	72
C.52	Scaler-unit.....	72
C.53	Schedule .....	72
C.54	Script.....	73
C.55	Script table interface class .....	73
C.56	Season .....	73
C.57	Selective access.....	73
C.58	Set date .....	73
C.59	Short name referencing.....	73
C.60	Special days table interface class.....	73
C.61	Standard readout definitions .....	73
C.62	Tariff .....	74
C.63	Tariffication.....	74
C.64	Threshold.....	74
C.65	Time integral value objects .....	74
C.66	Time setting, in relation with IC Schedule.....	74
C.67	Time stamps (in relation with IC PSTN Auto dial) .....	75
C.68	Time stamp (in relation with billing periods) .....	75
C.69	Time synchronisation.....	75
C.70	Unique identifier.....	75
C.71	Utility tables.....	76