

Communication systems for meters - Part 3: Application protocols

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NATIONAL FOREWORD

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ICS 33.200, 35.100.70, 35.240.99, 91.140.50

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EUROPEAN STANDARD

EN 13757-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 33.200; 35.100.70; 35.240.99; 91.140.50

Supersedes EN 13757-3:2013

English Version

Communication systems for meters - Part 3: Application protocols

Systèmes de communication pour compteurs - Partie 3
: Protocoles d'application

Kommunikationssysteme für Zähler - Teil 3:
Anwendungsprotokolle

This European Standard was approved by CEN on 8 February 2018.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents	Page
European foreword.....	4
Introduction	6
1 Scope	6
2 Normative references.....	8
3 Terms and definitions	8
4 Abbreviations and symbols	9
4.1 Abbreviations	9
4.2 Symbols.....	10
5 Selection of an application protocol.....	10
6 M-Bus protocol	10
6.1 General.....	10
6.2 M-Bus data record.....	11
6.3 Data Information Block (DIB).....	11
6.4 Value Information Block (VIB).....	15
6.5 Manufacturer specific unstructured data block	27
7 Application reset and application select	28
7.1 Application reset	28
7.2 Application select with subcode	28
7.3 Overview about CI-Fields for Application reset and Application select.....	30
7.4 Rules for application selection.....	31
7.5 Rules for block selection.....	32
7.6 Selected application block in M-Bus Application protocol	32
8 Clock synchronization	32
9 Report of alarm status (slave to master)	33
10 Report of application error	33
10.1 General.....	33
10.2 Status field	33
10.3 General application layer errors	33
11 Switching baud rate for M-Bus link layer according to EN 13757-2.....	34
12 Synchronize action	35
13 Manufacturer specific protocols.....	35
14 Other application protocols	35
15 Image transfer	35
Annex A (normative) Coding of data records.....	36
Annex B (normative) Interpretation of hex-codes A _h -F _h in BCD-data fields.....	44
B.1 General description standard reference	44

B.2	Definition.....	44
	Annex C (normative) VIF coding for special units.....	45
C.1	Non-metric units	45
C.2	Plain text units.....	45
C.3	Remote enablement/disablement of valve/breaker.....	46
	Annex D (informative) Alarm protocol.....	47
D.1	M-Bus according EN 13757-2	47
D.2	Wireless M-Bus according to EN 13757-4.....	47
	Annex E (informative) Special sequences for M-Bus devices.....	48
E.1	VIF/VIFE/VIFE = FD_h 97_h 1D_h (error flag)	48
E.2	VIF/VIFE/VIFE = FD_h 9F_h 1D_h for passing remote control on a node.....	50
E.3	Clock synchronization.....	51
	Annex F (normative) Transmission of profiles	53
F.1	The standard load profile	53
F.2	The M-Bus compact profile	53
	Annex G (normative) Compact M-Bus frame.....	59
G.1	General	59
G.2	CI-fields of the Full and the Compact M-Bus frame.....	59
G.3	Calculation of the Full-Frame-CRC.....	61
G.4	Calculation of the Format Signature	61
G.5	Frame examples	61
	Annex H (normative) Translating M-Bus type record descriptors to OBIS-type record descriptors	64
H.1	General	64
H.2	Translation of predefined data record types	64
H.3	Online addition of an entry for the M-Bus to OBIS conversion table.....	82
	Annex I (normative) Image Transfer	83
I.1	Image Transfer Phases	83
I.2	Commands for Image Transfer	85
I.3	Overview Image Transfer	101
	Bibliography	104

European foreword

This document (EN 13757-3:2018) has been prepared by Technical Committee CEN/TC 294 “Communication systems for meters”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2018 and conflicting national standards shall be withdrawn at the latest by October 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document together with EN 13757-7:2018 and CEN/TR 17167:2018 will supersede EN 13757-3:2013.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This document falls under Mandate EU M/441 “Standardisation mandate to CEN, CENELEC and ETSI in the field of measuring instruments for the development of an open architecture for utility meters involving communication protocols enabling interoperability” by providing the relevant definitions and methods for meter data transmission on application layer level. The M/441 Mandate is driving significant development of standards in smart metering.

The following significant technical changes have been incorporated in the new edition of this European Standard:

- extension of application select;
- introduction of second level table for VIFE = FDh;
- introduction of inverse compact load profile;
- introduction of new VIFE for descriptor;
- extension of VIFE = FCh table;
- extension of definitions for DIF = 0Fh/1Fh;
- transport and security services were moved to EN 13757-7;
- informative annexes from previous version of EN 13757-3 were moved to a new technical report CEN/TR 17167.

EN 13757 is currently composed with the following parts:

- *Communication systems for meters — Part 1: Data exchange;*
- *Communication systems for meters — Part 2: Wired M-Bus communication;*
- *Communication systems for meters — Part 3: Application protocols ;*

- *Communication systems for meters and remote reading of meters — Part 4: Wireless meter readout (Radio meter reading for operation in SRD bands);*
- *Communication systems for meters — Part 5: Wireless M-Bus relaying;*
- *Communication systems for meters — Part 6: Local Bus;*
- *Communication systems for meters — Part 7: Transport and security services ;*
- *CEN/TR 17167, Communication systems for meters — Accompanying TR to EN 13757-2,-3 and -7, Examples and supplementary information.*

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This European Standard belongs to the EN 13757 series, which covers communication systems for meters. EN 13757-1 contains generic descriptions and a communication protocol. EN 13757-2 contains a physical and a link layer for twisted pair based Meter-Bus (M-Bus). EN 13757-4 describes wireless communication (often called wireless M-Bus or wM-Bus). EN 13757-5 describes the wireless network used for repeating, relaying and routing for the different modes of EN 13757-4. EN 13757-6 describes a twisted pair local bus for short distance (Lo-Bus). EN 13757-2 describes transport mechanism and security methods for data. The Technical Report CEN/TR 17167 contains informative annexes for EN 13757-2, EN 13757-3:2018 and EN 13757-7.

These upper M-Bus protocol layers can be used with various Physical Layers and with Data Link Layers and Network Layers, which support the transmission of variable length binary transparent messages. Frequently, the Physical and Link Layers of EN 13757-2 (twisted pair) and EN 13757-4 (wireless) as well as EN 13757-5 (wireless with routing function) or the alternatives described in EN 13757-1 are used. These upper M-Bus protocol layers have been optimized for minimum battery consumption of meters, especially for the case of wireless communication, to ensure long battery lifetimes of the meters. Secondly, it is optimized for minimum message length to minimize the wireless channel occupancy and hence the collision rate. Thirdly, it is optimized for minimum requirements towards the meter processor regarding requirements of RAM size, code length and computational power.

An overview of communication systems for meters is given in EN 13757-1, which also contains further definitions.

This standard concentrates on the meter communication. The meter communicates with one (or occasionally several) fixed or mobile communication partners which again might be part of a private or public network. These further communication systems might use the same or other application layer protocols, security, privacy, authentication, and management methods.

To facilitate common communication systems for CEN-meters (e.g. gas, water, thermal energy and heat cost allocators) and for electricity meters, in this standard occasionally electricity meters are mentioned. All these references are for information only and are not standard requirements. The definition of communication standards for electricity meters (possibly by a reference to CEN standards) remains solely in the responsibility of CENELEC.

NOTE 1 CEN/TR 17167:2018, Annex C specifies how parts of this standard and of EN 13757-2 and EN 13757-4 can be used to implement smart meter functionalities. Similar functionalities could also be implemented using other physical and link layers.

NOTE 2 For information on installation procedures and their integration in meter management systems, see CEN/TR 17167:2018, Annex D.

The European Committee for Standardization (CEN) draws attention to the fact that it is claimed that compliance with this document may involve the use of a patent concerning Image Transfer given in Annex I.

CEN takes no position concerning the evidence, validity and scope of this patent right.

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1 Scope

This European Standard specifies application protocols for communication systems for meters.

This European Standard specifies application protocols, especially the M-Bus application protocol.

This European Standard is intended to be used with the lower layer specifications determined in EN 13757-2, EN 13757-4, EN 13757-5, EN 13757-6 and EN 13757-7.

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.

EN 13757-2, *Communication systems for meters - Part 2: Wired M-Bus communication*

EN 13757-4, *Communication systems for meters and remote reading of meters - Part 4: Wireless meter readout (Radio meter reading for operation in SRD bands)*

EN 13757-5, *Communication systems for meters - Part 5: Wireless M-Bus relaying*

EN 13757-6, *Communication systems for meters - Part 6: Local Bus*

EN 13757-7, *Communication systems for meters — Part 7: Transport and security services*

ISO/IEC 8859-1, *Information technology — 8-bit single-byte coded graphic character sets — Part 1: Latin alphabet No. 1*

ISO/IEC/IEEE 60559:2011, *Information technology — Microprocessor Systems — Floating-Point arithmetic*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

byte

octet of bits

3.2

datagram

unit of data transferred from source to destination

Note 1 to entry: In previous versions of EN 13757-3 datagram was called telegram.

3.3

fragment

datagram of a fragmented message

3.4

Final DIFE

additional last DIFE with the value 00h that marks a storage number as a register number