Communication systems for meters - Part 1: Data exchange

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 13757-1:2021 sisaldab Euroopa standardi EN 13757-1:2021 ingliskeelset teksti.	This Estonian standard EVS-EN 13757-1:2021 consists of the English text of the European standard EN 13757-1:2021.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 01.12.2021.	Date of Availability of the European standard is 01.12.2021.
Standard on kättesaadav Eesti Standardimis- ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 33.200, 35.100.70, 35.240.99, 91.140.50

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13757-1

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English Version

Communication systems for meters - Part 1: Data exchange

Systèmes de communication pour compteurs - Partie 1 : Échange de données

Kommunikationssysteme für Zähler - Teil 1: Datenaustausch

This European Standard was approved by CEN on 16 August 2021.

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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 CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

European foreword

This document (EN 13757-1:2021) 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of an identical text or by endorsement, at the latest by June 2022, and conflicting national standards shall be withdrawn at the latest by June 2022.

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 supersedes EN 13757-1:2014.

Significant technical changes between this document and EN 13757-1:2014 are:

- The text has been updated to reflect increased use of IPv6 in 4.2.3;

- Figure 4 has been replaced with Table 3;

- Key wrapping has been added in 4.3.3.1;

- A description of pre-established Application Associations has been added in 4.3.4;

- Figure 11 has been replaced with a table and enhanced;

- A reference to GSM CSD has been added in 7.4.2;

- A security clause has been added in 7.5.4;

- 8.2.1 has been updated in line with 8.2.2 and 8.2.3, and now references EN 62056-4-7;

- Previous subclause 9.2.2.3 has been removed;

- New content has been added in 9.3 to align with EN 13757-3:2018, Annex H;

- Interface classes now refer to EN IEC 62056-6-1 and EN IEC 62056-6-2 to remove duplication;

- Clause 11 has had minor updates and been aligned with DLMS/COSEM object model;

- Mandatory COSEM Objects have been added in A.2;

- Annex B has been updated in line with EN 62056-6-1 and EN 62056-6-2;

- Annex D now references EN62056-6-1;

- The bibliography has been updated.

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

The OBIS and COSEM Clause 6 to Clause 11 of this document are prepared in liaison with the DLMS User Association based in Zug, Switzerland, and more information about DLMS/COSEM can be obtained from www.dlms.com.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document is referred to in the CEN/CLC/ETSI TR 50572:2011, *Functional Reference Architecture for Communications in Smart Metering Systems*, as a standard for communications between elements in the Smart Metering Architecture. The M/441 Mandate, which led to the CEN/CLC/ETSI TR 50572, is driving significant development of standards in smart metering.

This document has been amended to reflect significant updates in Security practices, and updates to the OBIS model to reflect the state of the art. COSEM Classes have been removed from this document, as they are published in the EN IEC 62056-6-2 standard and there is a risk of contradiction.

For an overview of activities, see M/490, the mandate for standardization for smart grid, available from https://ec.europa.eu/energy/sites/ener/files/documents/2011_03_01_mandate_m490_en.pdf, and more generally https://ec.europa.eu/energy/en/topics/markets-and-consumers/smart-grids-and-meters/smart-grids-task-force.

This document describes the data exchange and communications for meters and remote reading of meters in a generic way. It is Part 1 of EN 13757.

The main use of EN 13757-1 is to provide an overview of the protocols at the different levels and to provide a specification for the DLMS/COSEM application Layer for meters.

Additional parts to the series of standard EN 13757 are:

— Part 2: Wired M-Bus communication;

— Part 3: Application protocols;

— Part 4: Wireless M-Bus communication;

— Part 5: Wireless M-Bus relaying;

— Part 6: Local Bus;

— Part 7: Transport and security services.

The world of metering is going through a period of rapid change, and it is anticipated that this and other parts of the standard will require amending in a short period of time.

NOTE 1   This document makes repeated reference to EN 62056 standards. While the list of references is helpful, an essential companion to this document is the EN IEC 62056-6-2 standard.

NOTE 2   Some of the ISO/IEC documents listed under Clause 2 could be available only from ISO or IEC directly. If the document you require is not available from your national standards organization, ISO or IEC can be contacted to establish the status of the document and its availability. ISO can be contacted via www.iso.org.

NOTE 3   Clause 3 contains the terms and definitions special to remote reading of meters. Annex B is used to explain terms related to the object oriented model used in COSEM, detailed in EN IEC 62056-6-2 and OBIS, detailed in EN 62056-6-1.

1 Scope

This document specifies data exchange and communications for meters in a generic way.

This document establishes a protocol specification for the Application Layer for meters and establishes several protocols for meter communications which can be applied depending on the application being fulfilled.

This document also 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.

NOTE   Electricity meters are not covered by this document, as the standardization of remote readout of electricity meters is a task for CENELEC/IEC.

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.

EN 13757-2:2018, *Communication systems for meters - Part 2: Wired M-Bus communication*

EN 13757-3:2018, *Communication systems for meters - Part 3: Application protocols*

EN 13757-4:2019, *Communication systems for meters - Part 4: Wireless M-Bus communication*

EN 13757-5:2015, *Communication systems for meters - Part 5: Wireless M-Bus relaying*

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

EN 13757-7:2018, *Communication systems for meters - Part 7: Transport and security services*

EN 60870-5-2, *Telecontrol equipment and systems - Part 5: Transmission protocols - Section 2: Link transmission procedures (IEC 60870-5-2)*

EN 62056-3-1, *Electricity metering data exchange - The DLMS/COSEM suite - Part 3-1: Use of local area networks on twisted pair with carrier signalling (IEC 62056-3-1)*

EN 62056-4-7:2016, *Electricity metering data exchange - The DLMS/COSEM suite - Part 4-7: DLMS/COSEM transport layer for IP networks (IEC 62056-4-7)*

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

EN 62056-6-1:2017, *Electricity metering data exchange - The DLMS/COSEM suite - Part 6-1: Object Identification System (OBIS) (IEC 62056-6-1:2017)*

EN 62056-6-2:2018,[1] *Electricity metering data exchange - The DLMS/COSEM suite - Part 6-2: COSEM interface classes (IEC 62056-6-2:2017)*

EN 62056-9-7, *Electricity metering data exchange - The DLMS/COSEM suite - Part 9-7: Communication profile for TCP-UDP/IP networks (IEC 62056-9-7)*

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1)   The EN 62056 series of standards are in the process of revision/renumbering.

EN 62056-21:2002, *Electricity metering - Data exchange for meter reading, tariff and load control - Part 21: Direct local data exchange (IEC 62056-21:2002)*

EN 62056-42, *Electricity metering - Data exchange for meter reading, tariff and load control - Part 42: Physical layer services and procedures for connection-oriented asynchronous data exchange (IEC 62056-42)*

EN 62056-46:2002, *Electricity metering - Data exchange for meter reading, tariff and load control - Part 46: Data link layer using HDLC protocol (IEC 62056-46:2002)*

ITU-T V.250, *Serial asynchronous automatic dialling and control*

3   Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
authorized party
utility, energy retailer, network operator, meter operator or data collection company authorized to access the information stored in the meter that is accessible to them according to the application association they can use

3.2
base conditions
fixed conditions used to express the volume of gas independently of the measurement conditions

EXAMPLE: temperature of 273,15 K and absolute pressure of 1,013 25 bar or temperature of 288,15 K and absolute pressure of 1,013 25 bar

3.3
billing period
period over which a consumer bill is calculated

Note 1 to entry: See also B.7.

3.4
calendar
mechanism to program changes to active registers for Time-of-Use Tariffs

Note 1 to entry: See Activity Calendar B.3.

3.5
concentrator
intelligent station in a hierarchical communications network where incoming data (generated by multiple meters) is processed as appropriate and then repackaged, relayed, retransmitted, discarded, responded to, consolidated, prioritized and/or increased to multiple messages