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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Electricity metering data exchange – The DLMS®/COSEM suite – Part 8-12: Communication profile for Low-Power Wide Area Networks (LPWANs)

Échange des données de comptage de l'électricité – La suite DLMS®/COSEM – Partie 8-12: Profil de communication pour réseaux étendus à basse consommation (LPWAN)



IEC 62056-8-12:2023-09(en-fr)



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ELECTRICITY METERING DATA EXCHANGE – THE DLMS®/COSEM SUITE –

Part 8-12: Communication profile for Low-Power Wide Area Networks (LPWANs)

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The text of this International Standard is based on the following documents:

Draft	Report on voting
13/1877/CDV	13/1901/RVC

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

A list of all 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 document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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ELECTRICITY METERING DATA EXCHANGE – THE DLMS®/COSEM SUITE –

Part 8-12: Communication profile for Low-Power Wide Area Networks (LPWANs)

1 Scope

This part of IEC 62056 describes the use of DLMS®/COSEM for Low-Power Wide Area Networks (LPWANs). It specifies how the COSEM data model and the DLMS®/COSEM application layer can be used over various LPWAN technologies using an adaptation layer based on IETF RFC 8724, and in particular over LoRaWAN.

This profile is intended to be used with LPWANs as defined in IETF RFC 8724, in particular LoRaWAN. Low-Power Wide Area Networks (LPWANs) are wireless technologies with characteristics such as large coverage areas, low bandwidth, possibly very small packet and application-layer data sizes, and long battery life operation. This document does not provide functionality to manage the lower layers of the LPWANs.

This part of the DLMS®/COSEM suite specifies the communication profile for Low-Power Wide Area Networks (LPWANs).

The DLMS®/COSEM LPWAN communication profiles use connection-less transport layer based on the Internet Standard User Datagram Protocol (UDP) and Internet Protocol (IPv6).

The adaptation layer is based on IETF RFC 8724 which provides both a header compression/decompression mechanism and an optional fragmentation/reassembly mechanism. SCHC compression is based on static context with small context identifier to represent full IPv6/UDP/COSEM wrapper headers. If required, SCHC fragmentation is used to support IPv6 MTU over the LPWAN technologies.

This document follows the rules defined in IEC 62056-5-3:2023, Annex A, and in IEC 62056-1-0, and IEC TS 62056-1-1:2016 for its structure. See also Annex A for examples.

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 62056-1-0, *Electricity metering data exchange – The DLMS®/COSEM suite – Part 1-0 Smart metering standardisation framework*

IEC TS 62056-1-1:2016, *Electricity metering data exchange – The DLMS®/COSEM suite – Part 1-1: Template for DLMS®/COSEM communication profile standards*

IEC 62056-4-7:2015, *Electricity metering data exchange – The DLMS®/COSEM suite – Part 4-7: DLMS®/COSEM transport layer for IP networks*

IEC 62056-5-3:2023, *Electricity metering data exchange – The DLMS®/COSEM suite – Part 5-3: DLMS®/COSEM application layer*

IEC 62056-6-1, Ed4[1], *Electricity metering data exchange – The DLMS®/COSEM suite – Part 6-1: Object Identification System (OBIS)*

IEC 62056-6-2:2023, *Electricity metering data exchange – The DLMS®/COSEM suite – Part 6-2: COSEM interface classes*

IEC 62056-9-7:2013, *Electricity metering data exchange – The DLMS®/COSEM suite – Part 9-7: Communication profile for TCP-UDP/IP networks*

IETF RFC 2460, *Internet Protocol*, Version 6 (IPv6) Specification. Edited by S. Deering, R. Hinden. December 1998. Available from http://www.ietf.org/RFC /RFC 2460.txt

IETF RFC 8376, *Low-Power Wide Area Network (LPWAN) Overview* (available from https://www.rfc-editor.org/rfc/pdfrfc/rfc8376.txt.pdf)

IETF RFC 8724, *SCHC – Generic Framework for Static Context Header Compression and Fragmentation* (available from https://www.rfc-editor.org/rfc/rfc8724.html)

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62056-5-3:2023, IETF RFC 8376 and IETF RFC 8724 apply.

ISO and IEC maintain terminology 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

3.2 Abbreviated terms

AA	Application Association
ABP	Activation by Personalization
APDU	Application Layer Protocol Data Unit
COSEM	Companion Specification for Energy Metering
C/D	Compression and Decompression
CSAP	Client Service Access Point
DevAddr	32-bit non-unique identifier assigned to an end-device statically or dynamically after a Join Procedure (depending on the activation mode)
DEVEUI	IEEE EUI-64 used to identify the device during the Join Procedure
DLMS	Device Language Message Specification
F/R	Fragmentation and Reassembly
HDLC	High-level Data Link Control
IP	Internet Protocol
LNAP	Local Network Access Point
NGW	Network Gateway
PAN	Personal Area Network

[1] Under preparation. Stage at the time of publication: IEC 13/1852/CDV