
Komunikacijski sistemi za merilnike - Brežična zankasta omrežja za izmenjavo podatkov merilnikov - 3. del: Specifikacija energijskega profila namenske aplikacijske plasti

Communication systems for meters - Wireless mesh networking for meter data exchange - Part 3: Energy profile specification dedicated application layer

Kommunikationssysteme für Zähler - Drahtloses Mesh-Netzwerk für den Zählerdatenaustausch - Teil 3: Energie-Profilspezifikation der speziellen Anwendungsschicht

Systèmes de communication des compteurs - Réseau maillé sans fil pour l'échange de données de compteurs - Partie 3: Spécifications de la couche application spéciale <profil énergie>

Ta slovenski standard je istoveten z: EN 16836-3:2016

ICS:

33.200	Daljinsko krmiljenje, daljinske meritve (telemetrija)	Telecontrol. Telemetry
35.100.70	Uporabniški sloj	Application layer

SIST EN 16836-3:2017**en,fr,de**

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EUROPEAN STANDARD

EN 16836-3

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2016

ICS 33.200; 35.100.70

English Version

Communication systems for meters - Wireless mesh networking for meter data exchange - Part 3: Energy profile specification dedicated application layer

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This European Standard was approved by CEN on 3 September 2016.

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European foreword

This document (EN 16836-3:2016) 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of an identical text or by endorsement, at the latest by May 2017, and conflicting national standards shall be withdrawn at the latest by May 2017.

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.

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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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 16836-3:2016 (E)**Introduction**

The EN 16836 series of standards details requirements for gas meters, water meters and heat meters that can interoperate with products in a mesh network that conform to this standard through a smart energy profile application layer. This standard refers to documents made freely available by the ZigBee Alliance, an organization which manages a mesh network specification (see www.zigbee.org/about/centc294).

This series of standards specifies how a mesh networking radio specification applies within the scope of European standards at the application layer, networking layer and also medium access control/physical layer (MAC/PHY).

EN 16836 consists of the following parts:

- EN 16836-1, *Communication systems for meters — Wireless mesh networking for meter data exchange — Part 1: Introduction and standardization framework*
- EN 16836-2, *Communication systems for meters — Wireless mesh networking for meter data exchange — Part 2: Networking layer and stack specification*
- EN 16836-3, *Communication systems for meters — Wireless mesh networking for meter data exchange — Part 3: Energy profile specification dedicated application layer*

This standard series is created in compliance with the terms of a memorandum of understanding (MOU) between CEN/CELELEC and the ZigBee Alliance. The principles underpinning the relationship between CEN/CENELEC and the ZigBee Alliance are described in the Consortium Bridge procedure. A copy of the MOU and the Consortium Bridge can be obtained from CEN/CENELEC.

NOTE The term 'ZigBee' and the ZigBee Logo are registered trademarks of the ZigBee Alliance and their use is subject to the conditions of membership.

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1 Scope

This European Standard specifies requirements for the dedicated application layer of a communication protocol for the exchange of data from metering devices to other devices within a mesh network. This standard makes reference to a number of documents whereby core requirements are specified. This referencing is in compliance with the Bridge Consortium and additionally the Memorandum of Understanding between the ZigBee Alliance and CEN/CENELEC.

The EN 16836 series represents a feature subset of a larger standard and as such not all of the features specified in the referenced documents are specified in this standard, due to some features being outside the scope of CEN/TC 294. Where this is the case the out of scope feature has either been omitted or specified as excluded.

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 16836-1:2016, *Communication systems for meters and remote reading of meters — Wireless mesh networking for meter data exchange — Part 1: Introduction and standardization framework*

ZigBee Cluster Library – 07-5123 Rev 04, April 26, 2010

ZigBee Smart Energy Standard 07-5356 Rev 19, December 3, 2014

OTA Cluster Specification 09-5264 Rev 23, March 12, 2014

NOTE The above ZigBee documents and OTA Cluster Specification can be obtained from www.zigbee.org/about/cen294.

3 Terms and definitions

For the purposes of this document, the terms, definitions, acronyms and abbreviations given in

- ZigBee Cluster Library – 07-5123 Rev 04,
- ZigBee Smart Energy Standard 07-5356 Rev 19, and
- OTA Cluster Specification 09-5264 Rev 23

apply.

4 Requirements

4.1 General

The dedicated application layer shall be defined in this standard using the references specified in Tables 1 and 2.

This energy profile shall conform to the general framework given in EN 16836-1:2016, the network layer given in EN 16836-1:2016, and the requirements given in 4.2, 4.3, 4.4.

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4.2 Cluster library

The requirements given in Table 1 are the basic requirements for this part of EN 16836 and are detailed in the ZigBee Cluster Library – 07-5123 Rev 04.

Table 1 — Reference to ZigBee Cluster Library – 07-5123 Rev 04

Reference	Title
1.1	Scope and Purpose
1.2	Acronyms and Abbreviations
1.3	Definitions
1.4	Conformance Levels
1.5	References
2.2	Cluster Library Overview
2.2.1	Client/Server Model
2.2.2	Functional Domains
2.2.2.1	General
2.2.2.5	Measurement and Sensing
2.2.2.7	Protocol Interfaces
2.3	Command Frame Formats
2.4	General Command Frames
2.5	Addressing, Types and Enumerations
2.6	Functional Description
3	General Specification
3.2	Basic Cluster
3.3	Power Configuration Cluster
3.5	Identify Cluster
3.6	Groups Cluster
3.8	On/Off Cluster
3.11	Alarms Cluster
3.12	Time Cluster
3.13	RSSI Location Cluster
3.15	Commissioning Cluster
4.5	Pressure Measurement Cluster
4.6	Flow Measurement Cluster
4.7	Relative Humidity Measurement Cluster
9.2	Generic Tunnel cluster

4.3 Smart energy profile

Table 2 — ZigBee Smart Energy Standard 07-5356 Rev 19 Reference

Reference	Title
1	Introduction 1.1 Scope 1.2 Purpose 1.3 Provisional Features
2	References 2.1 References 2.1.2 External Reference Documents
3	Definitions 3.1 Conformance Levels 3.2 ZigBee Definitions 3.3 Smart Energy Definitions
4	Acronyms and Abbreviations
5	Chapter 5 Profile Description
5.1	5.1 A ZigBee Smart Energy Network
5.2	5.2 ZigBee Stack Profile 5.2.1 MAC Data Polling (NMLE_Requests) 5.2.2 Application Level Queries 5.2.3 ZigBee Coordinator and Trust Center Recommendations
5.3	5.3 Startup Attribute Set (SAS) 5.3.1 Startup Parameters 5.3.2 Join Parameters 5.3.3 Security Parameters 5.3.4 End Device Parameters 5.3.5 Link Status Parameters 5.3.6 Concentrator Parameters 5.3.7 APS Transport Parameters 5.3.8 APS Fragmentation Parameters 5.3.9 Binding Parameters
5.4	5.4 Smart Energy Profile Security 5.4.1 Joining with Preinstalled Trust Center Link Keys 5.4.1.1 Best Practices for Tracking Registered Devices 5.4.1.2 Best Practice for Coordinator Permit Joining Broadcasts 5.4.2 Re-Joining a Secured Network 5.4.2.1 Rejoining Node Operation 5.4.2.2 Trust Center Operation 5.4.3 Devices Leaving the Network