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Open Smart Grid Protocol (OSGP)

National foreword

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Open Smart Grid Protocol (OSGP)

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Open Smart Grid Protocol (OSGP)

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European foreword

This document (CLC/TS 50586:2019) has been prepared by CLC/TC 13 “Electrical energy measurement and control”.

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Introduction

One of the outcomes of the mandate M/441 is the indentification of OSGP as one of the protocols which can be used for Smart Metering deployment in Europe.

1 Scope

This document describes the data interface model, application-level communication, management functionalities, and security mechanism for the exchange of data with smart-grid devices. The following five areas are referred to as the Open Smart Grid Protocol (OSGP).

- Data exchange with smart-grid devices allows Utility Suppliers to collect customer usage information such as billing data and load profiles, monitor and control grid utilization, provision scheduling of tariffs, detect theft and tampers, and to issue disconnects, to name a few. Meter features are described in Clauses 7 and 8.
- The OSGP data interface uses a representation-oriented model (tables and procedures) which require low overhead. The model is described in Clause 5, with specific tables specified in Annex A, Annex B, and procedures in Annex C and Annex D.
- The OSGP application protocol is designed to use the EN 14908-1:2014 communication stack over narrow-band power line channels. Clause 9 describes the messages that are used to access OSGP data. An essential feature of the protocol over power line channels is a repeating mechanism which gives the application layer the control and responsibility for forwarding packets among devices, independent of the routing protocol or limitations of underlying layers. Therefore OSGP can be adapted to other communication stacks and medium, although such adaptation is outside of the scope of this specification. The repeating mechanism is described in Annex G.
- OSGP management features include the discovery of devices and the routing topology in a protocol called Automated Topology Management (described in Clause 4) commissioning of devices for secured communication (Annex F), monitoring of device connectivity, and updating of device firmware.
- OSGP security covers authentication, encryption, and key management. This is detailed in Annex F.

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 14908-1:2014, *Information technology - Control network protocol - Part 1: Protocol stack*

ISO 8859-1 (or ECMA-94), *Information technology - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet No. 1*

ISO/IEC 646:1991, *Information technology - ISO 7-bit coded character set for information interchange*

IEEE Std 802.11ac-2013, *IEEE Standard for Information technology- Telecommunication and information exchange between systems – Local and metropolitan area networks – Specific requirements – Part 11 Wireless LAN Medium Access Control*

3 Terms, definitions and abbreviations

3.1 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:

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

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