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Household appliances network and grid connectivity -
Part 4-1: Communication Protocol Specific Aspects: SPINE, SPINE-IoT and SHIP

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IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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Household appliances network and grid connectivity – Part 4-1: Communication Protocol Specific Aspects: SPINE, SPINE-IoT and SHIP

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IEC 63510-4-1 has been prepared by IEC technical committee 59: Performance of household and similar electrical appliances. It is an International Standard.

It is based on EN 50631-4-1:2023 and was submitted as a Fast-Track document.

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

Draft	Report on voting
59/820/CDV	59/836/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

The structure and editorial rules used in this publication reflect the practice of the organization which submitted it.

This document was 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/publications.

A list of all parts in the IEC 63510 series, published under the general title *Household appliances network and grid connectivity*, 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

- reconfirmed,
- withdrawn, or
- revised.

INTRODUCTION

Energy management systems will more and more become necessary due to change from fossil and nuclear to renewable production and the associated decentralization. Since an appropriate standard for a home and building management is in preparation this document specifies how sets of products from multiple manufacturers can exchange information with Home and Building / Customer Energy Management Systems, located in a home network or in the cloud.

This document focuses on interoperability of household appliances and describes the necessary control and monitoring. It defines a set of functions of household and similar electrical appliances. The functions in this document cover next to energy-management main remote-control and – monitoring use cases.

This document does not deal with safety and security requirements. Safety requirements have been set in the IEC 60335 series [1][1].

IEC 63510 series provides interoperability on information exchange among various appliances in the home. The IEC 63510 series is split into 4 parts:

– IEC 63510-1, *Household appliances network and grid connectivity – Part 1: General requirements, generic data modelling and neutral messages*

– IEC 63510-2, *Household appliances network and grid connectivity – Part 2: Product Specific mappings, details, requirements and deviations*

– IEC 63510-3-x, *Household appliances network and grid connectivity – Part 3: Specific Data Model Mapping*

– IEC 63510-4-x, *Household appliances network and grid connectivity – Part 4: Communication Protocol Specific Aspects*

Data communication heavily depends on the environment of appliances. Sometimes low bitrate or energy efficient communication puts strict requirements to selected communication technologies. Therefore, popular and de facto standards had been and will be developed by the industry to fulfil such requirements. To not influence common data modelling for appliances because of such restrictions, the standardized data models and neutral message structures need to be applied to communication technologies.

This standard series therefore is intended to separate data modelling and neutral message structure from the attached communication.

Part 1 defines general requirements, generic data modelling and generic neutral messages without relation to any specific communication technology or any product specific layout.

Part 2 lists and specifies product specific requirements and implementation guidance based on the generic data model and generic neutral messages.

Part 3 defines the mapping of neutral messages to examples of typical data models like SPINE, OCF, and so forth. These data models are neither mandatory nor to be seen as complete spectrum of data models.

Part 4 defines the mapping of neutral messages to examples of typical communication protocols. These communication protocols are neither mandatory, nor do they provide an exhaustive list of communication protocols.

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[1] Numbers is square brackets refer to the Bibliography.

1 Scope

This document specifies the application of relevant transport protocols for Home and Wide Area Networks as well as cloud connectivity; in this case, SPINE (Smart Premises Interoperable Neutral-Message Exchange), SPINE-IoT, and SHIP (Smart Home IP).

This document is part of the IEC 63510 series, which defines the information exchange between Smart Appliances and management systems in homes and buildings including energy management.

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.

IETF RFC 793:1981, *Transmission Control Protocol*

IETF RFC 3280:2002, *Internet X.509 Public Key Infrastructure Certificate Revocation List (CRL) Profile*

IETF RFC 6455:2011, *The WebSocket Protocol*

IETF RFC 6763, *DNS-Based Service Discovery*