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**Energy efficiency - Customer energy management system -
Part 2-2: Data model and messaging - Interface between the customer energy manager and resource managers**

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FOREWORD

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IEC 63402-2-2 has been prepared by subcommittee 23K: Electrical energy efficiency products, of IEC technical committee 23: Electrical accessories. It is an International Standard.

It has the status of a group energy efficiency publication in accordance with IEC Guide 118, *Preparation of basic and group energy efficiency publications including energy efficiency aspects*.

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

Draft	Report on voting
23K/134/FDIS	23K/138/RVD

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/publications.

A list of all parts in the IEC 63402 series, published under the general title *Energy efficiency - Customer energy management systems*, 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– withdrawn, or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

Over recent decades, energy production and its consumption patterns have changed dramatically. Although central energy production is still dominant, the trend for distributed production is distinctive following an increasing number of renewables. Alternative energy sources are highly fluctuating in their production capabilities, which can result in the grid operators having difficulty to keep a balance between energy production and consumption. The complexity of keeping the grid reliable is further increased by the change in the electric energy consumption and production of the customer itself, e.g., the use of electric vehicles and personal generation facilities.

A Smart Grid allows the grid operator to be flexible and reactive. Such reactivity uses communication between energy consuming and producing entities, from single family houses to large factories.

This document describes aspects of the smart grid that relate specifically to the premises (home or building) part of the smart grid and describes the common interface between equipment in the premises and the smart grid. This document defines the fundamental aspects of semantic interoperability for the S2 interface and the related data exchange between a CEM and the Resource Managers within the premises.

Different use cases are explained in Annex A, which help to understand the philosophy of this document.

This document is based on EN 50491-12-2 [1] which also served as a basis for ETSI TS 103 410-1 SAREF4ENER [2].

1 Scope

This document specifies the fundamental aspects of semantic interoperability for the S2 interface and the related data exchange between a CEM and the resource managers within the premises. It provides a technology independent set of data models and interaction patterns in order to enable applications for energy management within the premises. This document does not include:

– mappings to concrete data representations (XML, JSON and similar);

– mappings to application protocols for the message passing;

– security related aspects.

This group EE publication is primarily intended to be used as an EE standard for the products mentioned in the scope, but is also intended to be used by TCs in the preparation of publications for products which are included in the boundary mentioned in the scope of this document.

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 TR 62746-2:2015, *Systems interface between customer energy management system and the power management system - Part 2: Use cases and requirements*

IEC 63402-1, *Energy Efficiency - Customer Energy Management Systems -- Part 1: General Requirements and Architecture*

ISO 4217, *Codes for the representation of currencies*

ISO 15118-20, *Road vehicles - Vehicle to grid communication interface - Part 20: Network and application protocol requirements*

Bibliography

[1] EN 50491-12-2, *General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Part 12-2: Smart grid - Application specification - Interface and framework for customer - Interface between the Home / Building CEM and Resource manager(s) - Data model and messaging*

[2] ETSI TS 103 410-1 SAREF4ENER: SAREF extension for the Energy domain

[3] IEC 63402-1:2025, *Energy Efficiency - Customer Energy Management Systems -- Part 1: General Requirements and Architecture*

[4] IEC 60050-617:2009, *International Electrotechnical Vocabulary (IEV) - Part 617: Organization/Market of electricity*

[5] IEC 63402-1, *Energy Efficiency - Customer Energy Management Systems -- Part 1: General Requirements and Architecture*

[6] CEN CENELEC ETSI, Smart Grid Coordination Group - Sustainable Processes, 2012

[7] IEC 63402 (all parts), Data efficiency - Customer energy management systems

[8] ISO 4217, *Codes for the representation of currencies*

[9] IEC TR 62746-2:2015, *Systems interface between customer energy management system and the power management system - Part 2: Use cases and requirements*

[10] ISO 15118 (series), *Road vehicles - Vehicle to grid communication interface*

[11] ISO 15118-20, *Road vehicles - Vehicle to grid communication interface - Part 20: Network and application protocol requirements*

[12] ISO 15118-2:2014, *Road vehicles — Vehicle-to-Grid Communication Interface — Part 2: Network and application protocol requirements*

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