SLOVENSKI STANDARD
oSIST prEN IEC 63402-1:2024

01-junij-2024

Sistemi energijske učinkovitost - Pametno omrežje - Specifikacije aplikacije - Vmesnik in okvir za odjemalca; Vmesnik med upravljalcem stanovanjskih in stavbnih virov (CEM) - Splošne zahteve in arhitektura

Energy efficiency systems - Smart grid - Application specification - Interface and framework for customer; interface between the CEM and home/building resource manager - General requirements and architecture

Systèmes pour l'efficacité énergétique - Réseau intelligent - Spécification d'application - Interface et cadre pour le client; interface entre le gestionnaire d'énergie pour le client et le gestionnaire de ressources pour foyers domestiques/bâtiments - Exigences générales et architecture

Ta slovenski standard je istoveten z: **prEN IEC 63402-1:2024**

ICS:

27.015	Energijska učinkovitost. Ohranjanje energije na splošno	Energy efficiency. Energy conservation in general
35.240.67	Uporabniške rešitve IT v gradbeništvu	IT applications in building and construction industry
97.120	Avtomatske krmilne naprave za dom	Automatic controls for household use

oSIST prEN IEC 63402-1:2024 **en**

23K/92/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: **IEC 63402-1 ED1**	
DATE OF CIRCULATION: **2024-03-29**	CLOSING DATE FOR VOTING: **2024-06-21**
SUPERSEDES DOCUMENTS: **23K/84/CD, 23K/91/CC**	

IEC SC 23K : ELECTRICAL ENERGY EFFICIENCY PRODUCTS

SECRETARIAT: France	SECRETARY: Mr Philippe Vollet
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 13,TC 23,TC 57,TC 64,TC 69,SyC Smart Energy	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.

FUNCTIONS CONCERNED:

☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY

☒ SUBMITTED FOR CENELEC PARALLEL VOTING	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

Attention IEC-CENELEC parallel voting

The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting.

The CENELEC members are invited to vote through the CENELEC online voting system.

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any relevant “In Some Countries” clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE AC/22/2007 OR NEW GUIDANCE DOC).

TITLE:

Energy efficiency systems - Smart grid - Application specification - Interface and framework for customer; Interface between the CEM and Home/Building Resource manager - General Requirements and Architecture

PROPOSED STABILITY DATE: 2027

NOTE FROM TC/SC OFFICERS:

After resolution of 23K/84/CD comments, officiers support the circulation of this CVD.

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No table of figures entries found.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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Smart grid - Application specification - Interface and framework for customer;

Interface between the CEM and Home/Building Resource manager General Requirements and Architecture

FOREWORD

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The IEC 63402-1 ED1 has been prepared by subcommittee WG3: Customer Energy Management Systems, of IEC technical committee SC23K: Electrical Energy Efficiency products. It is an International Standard.

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

Draft	Report on voting
XX/XX/FDIS	XX/XX/RVD

Note This standard applies to have the status of a group energy efficiency publication in accordance with IEC Guide 118 Edition 2

This document is currently submitted to the Enquiry.

The following dates are proposed:

• latest date by which the existence of this document has to be announced at national level	(doa)	dor + 6 months
• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	dor + 12 months
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	dor + 36 months (to be confirmed or modified when voting)

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INTRODUCTION

In traditional electricity networks, energy flows in one direction and communications from the generator to the consumer is generally via the transmission and distribution systems.

Although there is some monitoring and control of equipment in the transmission and distribution systems, there is no communication with, or control of, consumer equipment. In particular, there is no means of requesting short-term control of consumer equipment to match the prevailing generation and/or transmission/distribution grid conditions. Generation equipment is controlled to match the open-ended (uncontrolled) demand of the consumer.

Today we are faced with an increase of energy consumption, this is directly linked to an increase of CO_2 production. The increased CO_2 density in the atmosphere supports the climate warming of the earth.

One significant way to cope with the increased energy consumption without increasing the CO_2 production is to use more renewable energy resources.

Unfortunately, the available renewable energy supply is not aligned with the energy demand. To increase efficiency, the energy demand should be aligned as much as possible with the available energy supply. The future grid will become generation led rather than demand led as it is today. In order to reach this goal, communications between the various equipment and systems of the stakeholders within the energy field is necessary. This new form of grid which exchanges information and energy between producers, consumers, distributors and metering is known as the “Smart Grid”.

The IEC 63402 series describes aspects of this smart grid that relate specifically to the premises (home/building) part of the smart grid, including the common interface between equipment in the premises and the smart grid.

1 Scope

This document General Requirements and Architecture of an application layer interface between the Point of common coupling (PCC) and Smart Devices (SD) operating within the smart grid premises-side system (i.e. residential / commercial but not industrial premises).

This standard does not include requirements for:

– Safety;

– EMC;

– Data security; it is assumed that the underlying protocols will take the data security aspect into account;

Note: Although data security is not within the scope of this standard, clause 4 provides some high-level design guidelines for data security.

– Special equipment (e.g. legacy heat pumps) with a direct physical connection to the grid, as such equipment bypasses the CEM and is not HBES/BACS enabled (covered by other standards than the IEC 63402 series).

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 50491-12 (all parts), *General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems*

IEC63110-1 *Protocol for management of electric vehicles charging and discharging infrastructures - Part 1: Basic definitions, use cases and architectures*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply:

3.1.1
Customer Energy Manager
CEM
internal automation function for optimizing the energy consumption, production and storage within the premises according to the preferences of the customer using internal flexibilities and typically based on external information received through the Energy Management Gateway and possibly other data sources

3.1.2
Customer Energy Manager System
CEM system
allows the management of energy consumption, production and storage within the premises, consisting of a CEM connected to one or more Resource Managers which themselves act as gateways to HBES / BACS, SASS and / or Smart Appliances

3.1.3
Energy Management Gateway
EMG
access point (functional entity) sending and receiving smart grid related information and commands between an actor in the Grid and the CEM, letting the CEM decide how to process the events

Note to entry: The communication is often ensured through an internet connection.

3.1.4
Building Energy Management
BEM
internal automation function for observing the Point of common coupling (PCC), to avoid an overload of the PCC and share the available energy between the different Sub systems which are represented by the connected CEM´s. The BEM gets additional information (Voltage, Frequency, Cos Phi) from a Grid observer which allows to support the grid even in the case the IP communication is broken.

Note to entry: BEM is also called sometimes Facility Energy Manager (FEM)

3.1.5
Head End System
HES
system that receives metering data in the advanced metering infrastructure

3.1.6
Home and Building Electronic Systems / Building Automation Control Systems
HBES / BACS
logical group of devices which uses a multi-application communication system where the functions are distributed and linked through a common communication process

Note 1 to entry: HBES/BACS is used in homes and buildings plus their surroundings. Functions of the system are e.g.: switching, open loop controlling, closed loop controlling, monitoring and supervising.

Note 2 to entry: In literature, HBES/BACS may be referred also as “home control system/network“, „home electronic systems” “building automation systems” etc.

Note 3 to entry: Examples of HBES/BACS applications are the management of lighting, heating, energy, water, fire alarms, blinds, different forms of security, etc.”. See introduction in EN 50491–4-1.

3.1.7
Schema
abstract model that documents and organizes the data required in a defined way, so it can be used for different purposes such as exchanging and / or storing information

3.1.8
Meter Data management
MDM
software system that performs long-term data storage and management for the vast quantities of data delivered by smart metering systems

3.1.9
Resource Manager
function that exclusively represents a logical group of devices or a single smart device, and is responsible for sending unambiguous instructions to the logical group of devices or to a single device, typically using a device-specific protocol

Note 1 to entry: In the context of this document the Resource Manager manages the energy flexibility of a logical group of devices or a single smart device.

Note 2 to entry: The Resource Manager may be implemented in a special device, in the smart device itself or outside of the device

3.1.10
premises
can be a public or private building/home where energy is used and/or produced

3.1.11
Smart Appliance
device that consumes energy that can be controlled by a Resource Manager, such as a washing machine, a freezer, a dishwasher

3.1.12
Smart Device
SD
device that can consume, produce or store energy (or a combination thereof) and that can be controlled by a Resource Manager for the purpose of energy management, such as a lighting controller, an electric vehicle, a smart appliance, a renewable power source, an energy storage system

3.1.13
Single Application Smart System
SASS
group of devices having a communication interface for a single application such as heating or lighting, that consume, produce or store energy (or a combination thereof) and that can be controlled by a Resource Manager for the purpose of energy management

3.1.14
Aggregator
party who contracts with a number of other network users (e.g. energy consumers) in order to combine the effect of smaller loads or distributed energy resources for actions such as demand response or for ancillary services

3.1.15
Point of Common Coupling (PCC)
point of common coupling PCC - point in an electric power system, electrically nearest to a particular load, at which other loads are, or may be, connected

Note 1 to entry: These loads can be either devices, equipment or systems, or distinct network users' installations

Note to entry: Point Of Common coupling is equal to Grid connection Point

3.1.16
Point of common coupling monitor
Measures the Voltage, Frequency, Current at the PCC and sends this information to the BEM

3.1.17
Energy Management System
EMS
is a Hardware with different functions included according to the system requirements. Every underlying subsystem, to be connected to the EMS, is connected via the RM function. A minimum EMS consists of a CEM and at least one RM.

3.1.18
Energy Metering Service Provider
party providing energy metering services

3.1.19
Distribution System Operator (DSO)
securely operates and develops an active distribution system comprising networks, demand, generation and other flexible distributed energy resources

3.1.20
Energy Service Provider
party providing energy (utility) or energy services (Aggregator, E-mobility Service provider, etc)

3.2 Abbreviations

BACS	Building Automation Control Systems
BEM	Building Energy Manager (sometimes also called FEM)