

General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Smart grid - Application specification - Interface and framework for customer - Part 12-1: Interface between the CEM and Home/Building Resource manager - General Requirements and Architecture

EESTI STANDARDI EESSÕNA

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See Eesti standard EVS-EN 50491-12-1:2018 sisaldab Euroopa standardi EN 50491-12-1:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 50491-12-1:2018 consists of the English text of the European standard EN 50491-12-1:2018.
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English Version

General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - Smart grid - Application specification - Interface and framework for customer - Part 12-1: Interface between the CEM and Home/Building Resource manager - General Requirements and Architecture

Exigences générales relatives aux systèmes électroniques pour les foyers domestiques et les bâtiments (HBES) et aux systèmes de gestion technique du bâtiment (SGTB) Réseau intelligent Spécification d'application Interface et cadre pour le client - Partie 12-1 : Interface entre le gestionnaire d'énergie pour le client (CEM, Customer Energy Manager) et le gestionnaire de ressources pour foyers domestiques/ bâtiments. Exigences et Architecture générales

Allgemeine Anforderungen an die Elektrische Systemtechnik für Heim und Gebäude (ESHG) und an Systeme der Gebäudeautomation (GA) - Smart grid - Anwendungsspezifikation - Struktur der Schnittstelle für Anwender - Teil 12-1: Schnittstelle zwischen CEM und Heim-/Gebäude-Ressourcenmanager - Allgemeine Anforderungen und Architektur

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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European foreword

This document (EN 50491-12-1:2018) has been prepared by the Technical Committee CLC/TC 205, "Home and Building Electronic Systems (HBES)".

The following dates are fixed:

- latest date by which this document has (dop) 2019-06-18
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publication of an identical national
standard or by endorsement
- latest date by which the national (dow) 2021-06-18
standards conflicting with this document
have to be withdrawn

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EN 50491-12-1 is part of the EN 50491 series of European Standards - General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) - which will comprise the following parts:

- Part 1: General requirements;
- Part 2: Environmental Conditions;
- Part 3: Electrical Safety Requirements;
- Part 4-1: General functional safety requirements for products intended to be integrated in Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS);
- Part 5-1: EMC requirements, conditions and test set-up;
- Part 5-2: EMC requirements for HBES/BACS used in residential, commercial and light industry environment;
- Part 5-3: EMC requirements for HBES/BACS used in industry environment
- Part 6-1: HBES installations - Installation and planning;
- Part 6-3: HBES installations - Assessment and definition of levels;
- Part 11: Smart Metering – Application Specification – Simple External Consumer Display;
- Part 12: Smart grid - Application specification - Interface and framework for customer;
- Part 12-1: Interface between the CEM and Home/Building Resource manager– General Requirements and Architecture
- Future Part 12-2: Interface between the Home/Building CEM and Resource manager(s)– Data model and messaging
- Future Part 12-3: Home/Building Customer Energy Manager (CEM)
- Future Part 12-4: Resource manager

Introduction

Traditional electricity networks make use of a primarily one-way flow of energy and communication from the generator to the consumer 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 according to generation and/or transmission/distribution grid conditions. Generation equipment is controlled according to the open-ended (uncontrolled) demand of the consumer.

Today we are faced with an increase of energy consumption, this is directly connected to an increase of CO₂ production. The increased CO₂ density in the atmosphere supports the climate warming of the earth.

One significant way to cope with the increased energy consumption without increasing the CO₂ 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. To reach this goal communication between the various equipment and systems of the stakeholders within the energy field is necessary. This grid, exchanging information and energy between producers, consumers, distributors and metering is known as the "Smart Grid".

The EN 50491-12 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 specifies General Requirements and Architecture of an application layer interface between the Customer Energy Manager (CEM) and Smart Devices (SD) operating within the smart grid premises-side system (i.e. home or building but not industrial premises).

This document 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, in Clause 4 some high-level design guidelines for data security are provided.

- 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 EN 50491 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*

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:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

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 Smart Grid Connection Point 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