

Household appliances network and grid connectivity -
Part 1: General requirements, Generic data modelling
and neutral messages

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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English Version

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

Appareils domestiques connectés au réseau et réseau
intelligent - Partie 1: Exigences générales, modélisation de
données génériques et messages neutres génériques

Netzwerk- und Stromnetz-Konnektivität von
Haushaltsgeräten - Teil 1: Allgemeine Anforderungen,
allgemeine Datenmodellierung und neutrale Meldungen

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

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Contents

Page

European foreword	5
Introduction	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	7
4 Process and requirements to enable interoperability	11
4.1 Introduction	11
4.2 Process	11
4.3 Architecture	13
5 Reader's guide	15
5.1 Finding the right information	15
5.2 Reading the tables	15
5.3 Reading the graphics	16
5.3.1 Flowcharts	16
5.3.2 Sequence diagram	16
6 User Stories	17
6.1 Introduction	17
6.2 User stories	17
6.2.1 General	17
6.2.2 Appliance Energy Flexibility	17
6.2.3 Remote Control of a Smart Appliance	20
6.2.4 Remote Monitoring of a Smart Appliance	20
6.2.5 Manual Operation of a Smart Appliance	21
7 Use cases	21
7.1 Introduction	21
7.2 User Stories and Use Cases	22
7.3 Flexible Start for White Goods	23
7.3.1 General	23
7.3.2 Actors	25
7.3.3 Scenario overview	26
7.3.4 Scenario support requirements	26
7.3.5 Scenario flow	27
7.3.6 Scenario details	29
7.3.7 Scenarios and Use Case Functions (UCFs)	31
7.3.8 Dependencies to other Use Cases	31
7.3.9 Assumptions and Prerequisites	31
7.4 Incentive Table-based Power Consumption Management	31
7.4.1 Actors	31
7.4.2 Scenario Overview	31
7.4.3 Scenario support requirements	32
7.4.4 Scenario Flow	32
7.4.5 Scenario Details	33
7.4.6 Scenarios and Use Case Functions (UCFs)	44
7.4.7 Dependencies to other Use Cases	44
7.4.8 Assumptions and Prerequisites	44
7.5 Install/Remove Device	44
7.5.1 General	44
7.5.2 Actors	44
7.5.3 Scenario Overview	45

7.5.4	Scenario support requirements	45
7.5.5	Scenario Flow	45
7.5.6	Scenario details	46
7.5.7	Scenarios and Use Case Functions (UCFs).....	46
7.5.8	Dependencies to other Use Cases	47
7.5.9	Assumptions and Prerequisites	47
7.6	Limitation of Power Consumption	47
7.6.1	General	47
7.6.2	Actors	49
7.6.3	Scenario Overview	49
7.6.4	Scenario support requirements	49
7.6.5	Scenario Flow	50
7.6.6	Scenario details	50
7.6.7	Scenarios and Use Case Functions (UCFs).....	53
7.6.8	Dependencies to other Use Cases	53
7.6.9	Further information and rules	54
7.6.10	Assumptions and Prerequisites	54
7.7	Limit Consumption to own Production	54
7.8	Manual Operation	54
7.8.1	General	54
7.8.2	Actors	55
7.8.3	Scenario Overview	55
7.8.4	Dependencies to other Use Cases	55
7.8.5	Assumptions and Prerequisites	55
7.9	Monitoring and Control of Smart Grid Ready Conditions.....	55
7.9.1	General	55
7.9.2	Actors	57
7.9.3	Scenario overview	57
7.9.4	Scenario support requirements	57
7.9.5	Scenario flow	58
7.9.6	Scenario details	58
7.9.7	Scenarios and Use Case Functions	59
7.9.8	Dependencies to other Use Cases	59
7.9.9	Assumptions and Prerequisites	59
7.10	Monitoring of Power Consumption	59
7.10.1	General	59
7.10.2	Actors	60
7.10.3	Scenario Overview	60
7.10.4	Scenario Support Requirements	61
7.10.5	Scenario Flow	62
7.10.6	Scenario details	62
7.10.7	Scenarios and Use Case Functions (UCFs).....	64
7.10.8	Dependencies to other Use Cases	65
7.10.9	Assumptions and Prerequisites	65
7.11	Optimization of Self Consumption by Heat Pump Compressor Flexibility	65
7.11.1	General	65
7.11.2	User Story as an example.....	66
7.11.3	Detailed background information	66
7.11.4	Actors	68
7.11.5	Scenario Overview	68
7.11.6	Scenario Support Requirements	69
7.11.7	Scenario Flow	69
7.11.8	Scenario Details.....	72
7.11.9	Scenarios and Use Case Functions (UCFs).....	74
7.11.10	Dependencies to other Use Cases	74
7.11.11	Assumptions and Prerequisites	74
8	Use Case Function (UCF) details	75
8.1	General	75
8.2	Concepts	75

8.3	UCF_AC_Measurement	76
8.3.1	Generic Description	76
8.3.2	Additional Information	91
8.4	UCF_Characteristics	91
8.4.1	Generic Description	91
8.4.2	Additional Information	93
8.5	UCF_Configure_Current_Power_Sequence	93
8.5.1	Generic Description	93
8.5.2	Additional Information	95
8.6	UCF_Consumption_Curve	95
8.6.1	Generic Description	95
8.6.2	Additional Information	100
8.7	UCF_Device_Configuration	100
8.7.1	Generic Description	100
8.7.2	Additional Information	106
8.8	UCF_Device_Connected	106
8.8.1	Generic Description	106
8.8.2	Additional Information	107
8.9	UCF_Heartbeat	107
8.9.1	Generic Description	107
8.9.2	Additional Information	108
8.10	UCF_Incentive_Table	108
8.10.1	Generic Description	108
8.10.2	Additional Information	131
8.11	UCF_Overrun	131
8.11.1	Generic Description	131
8.11.2	Additional Information	132
8.12	UCF_Plan_With_Power_Sequences	133
8.12.1	Generic Description	133
8.12.2	Additional Information	142
8.13	UCF_Power_Limit	142
8.13.1	Generic Description	142
8.13.2	Additional Information	144
8.14	UCF_Report_Status_Of_Power_Sequence	144
8.14.1	Generic Description	144
8.14.2	Additional Information	148
8.15	UCF_Select_Power_Sequence	148
8.15.1	Generic Description	148
8.15.2	Additional Information	151
8.16	UCF_Shift_Preferred_Power_Sequence	151
8.16.1	Generic Description	151
8.16.2	Additional Information	152
8.17	UCF_System_Function	152
8.17.1	Generic Description	152
8.17.2	Additional Information	154
9	Glossary of definitions for UCFs	154
	Bibliography	162

European foreword

This document (EN 50631-1:2023) has been prepared by WG 7 “Smart Household Appliances” of CLC/TC 59X “Performance of household and similar electrical appliances”.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2024-02-07
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2026-02-07

This document supersedes EN 50631-1:2017 and all of its amendments and corrigenda (if any).

EN 50631-1:2023 includes the following significant technical changes with respect to EN 50631-1:2017:

- Simplified adoption of the series of standards through logical partitioning of the document structure;
- Ensured interoperability through more precise, neutral definition of information and sequences to be exchanged;
- Neutralization of requirements and description of information to be exchanged on a generic level, permitting mapping to different data models and languages;
- Extension of use cases and data models to Heating, Ventilation, Cooling devices for a holistic approach regarding energy management at home / on premises;
- Definition of possible transport protocols to ensure more complete interoperability;
- Primary focus on energy management;
- Preparation for further developments.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

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 EN 60335 series [2].

The EN 50631 series will provide interoperability on information exchange among various appliances in the home. The EN 50631 document series will be re-arranged regarding the further development and will be split into 6 parts:

EN 50631-1, *Household appliances network and grid connectivity — Part 1: General Requirements, Generic Data Modelling and Neutral Messages*

EN 50631-2, *Household appliances network and grid connectivity — Part 2: Product Specific mappings, details, requirements and deviations*

EN 50631-3-x, *Household appliances network and grid connectivity — Part 3: Specific Data Model Mapping*

EN 50631-4-x, *Household appliances network and grid connectivity — Part 4: Communication Protocol Specific Aspects*

EN 50631-5, *Household appliances network and grid connectivity — Part 5: General Test-Requirements and -Specification*

EN 50631-6, *Household appliances network and grid connectivity — Part 6: SPINE Data Model Toolbox*

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, SPINE-IoT, 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.

Part 5 defines testing requirements and testing specifications. This part will be covered in the future by a New Work Item Proposal.

Part 6 provides the technical reference specification for the SPINE data model. This part will be covered in the future by a New Work Item Proposal.

1 Scope

This document defines data models for Interoperable Connected Household Appliances. The data models are derived from a logical decomposition of use cases into functional blocks that themselves were realized by abstract actions on the data model itself.

This document is part of the EN 50631 series, which defines the information exchange between Smart Appliances and management systems in homes and buildings including energy management.

2 Normative references

There are no normative references in this document.

3 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 <https://www.electropedia.org/>

3.1

“alternatives” group

grouping of one or more Power sequences over a specified time

3.2

appliance

electrical apparatus intended for household or similar use

EXAMPLES Refrigerators, dishwashers, clothes washers, clothes dryers, air conditioners, water heaters, circulation pumps, heat pumps, etc.

3.3

Appliance Energy Flexibility

ability of an appliance to change power consumption in response to an external stimulus

3.4

client

role that specifies that a node uses data from a “server” or can request for change

3.5

command

functional part of a Message

3.6

CCM

Customer Connectivity Manager

component or set of functions with the capability to:

1. Receive and process Grid Information, Appliance Information and User Instructions, and
2. Manage one or more Smart Appliances

Note 1 to entry: A CCM may be integrated with a Smart Appliance or may be physically separate.

Note 2 to entry: A CCM manages the energy-using behaviour as well as other aspects of device behaviour (e.g. setting of job status like starting, stopping, pausing, parameters like temperature, notifications...) of one or more Smart Appliances.