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Responsible committee: IST/6/-/12 Home Electronic Systems

Interested committees:

Title: BS ISO/IEC 18012-4 Information Technology—Home Electronic System—Guidelines for product interoperability—Part 4: Event encoding

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

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- iii) requires additional national guidance or information

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
- All comments should be submitted online at <https://standardsdevelopment.bsigroup.com/>. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



JTC1-SC25/3089/CD

COMMITTEE DRAFT (CD)

PROJECT NUMBER:

ISO/IEC 18012-4 ED1

DATE OF CIRCULATION:

2022-03-18

CLOSING DATE FOR COMMENTS:

2022-05-13

SUPERSEDES DOCUMENTS:

JTC1-SC25/3018/NP, JTC1-SC25/3041A/RVN

IEC ISO/IEC JTC 1/SC 25 : INTERCONNECTION OF INFORMATION TECHNOLOGY EQUIPMENT

SECRETARIAT:

Germany

SECRETARY:

Mr Marco Peter

OF INTEREST TO THE FOLLOWING COMMITTEES:

TC 23, SyC AAL, SEG 9, ISO/IEC JTC 1/SC 41

PROPOSED HORIZONTAL STANDARD:

☐

Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.

FUNCTIONS CONCERNED:

☐ EMC

☒ ENVIRONMENT

☐ QUALITY ASSURANCE

☐ SAFETY

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.

TITLE:

Information Technology—Home Electronic System—Guidelines for product interoperability—Part 4: Event encoding

NOTE FROM TC/SC OFFICERS:

The working parties supplied comments, which have been included.

The SC 25 WG 1 experts were also asked for comments according to the WG 1 action items from last September 2021.

No additional changes were proposed.

National Committees are kindly requested to submit their comments via the IEC Voting System before **2022-05-06** in view of the next JTC1 SC25 WG1 web meeting which will take place from 9th to 18th of May 2022.

CONTENTS

FOREWORD	4
INTRODUCTION.....	6
1 Scope	8
2 Normative references.....	8
3 Terms, definitions, abbreviations and conventions.....	9
3.1 Terms and definitions	9
3.2 Abbreviations	10
3.3 Conventions.....	10
4 Conformance requirements	11
5 HES Common Language Message Exchange (HES-CLME).....	11
5.1 HES – Common Language Internal Protocol (HES-CLIP).....	12
5.1.1 Requirements for the IP network	13
5.1.2 Discovery requirements for all devices.....	13
5.1.3 Requirements for lower layer communications for all devices.....	14
5.1.4 Packet structure	15
5.1.4.1 Scheme	15
5.1.4.2 Authority	15
5.1.4.3 Path	15
5.1.4.4 Query	15
5.1.5 Operations and Communication methods.....	15
5.1.6 Overall CoAP model	15
5.1.7 Client requirements	17
5.1.7.1 Retrieve – general; client requirements.....	17
5.1.7.2 Update – general; client requirements	19
5.1.7.3 Create; client requirements	20
5.1.7.4 Delete; client requirements	20
5.1.8 Server requirements	20
5.1.8.1 Retrieve – general; server requirements	20
5.1.8.2 Update – general; server requirements.....	21
5.1.8.3 Create; server requirements.....	24
5.1.8.4 Delete; server requirements.....	24
5.2 HES – Common Language Direct PDU Exchange (HES-CLDPE)	24
5.2.1 HES – Common Language Direct PDU Exchange (HES-CLDPE/G)	24
5.2.1.1 Packet structure	25
5.2.1.2 Lower communications layer	25
5.2.1.3 Communication methods.....	25
5.2.1.4 Discovery.....	26
5.2.2 HES – Common Language Direct PDU Exchange (HES-CLDPE/UART).....	26
Annex A.....	27
A.1 Packet Construction Overview.....	27
A.2 Packet Type: Lexicon representation ('lx').....	28
A.2.1 Lexicon Type: Lexicon representation ('ob')	28
A.2.1.1 User object ('uo').....	29
A.2.1.2 Remote object ('ro').....	29
A.2.1.3 Binding Map Service object ('bm')	29

49	A.2.1.4	Other Service object ('so').....	29
50	A.2.1.5	HAN Interface object ('hi').....	29
51	A.2.1.6	WAN Interface object ('wi').....	29
52	A.2.1.7	General object ('go').....	29
53	A.2.2	Lexicon Type: Actions ('ac')	29
54	A.2.2.1	Discovery ('dc')	29
55	A.3	Packet Type: Other types of packets	30
56	Annex B		31
57	B.1	Example Setup.....	31
58	B.2	Example Operation.....	32
59	B.3	Time Flow Diagram and PDU Construction for Example.....	33
60			
61			

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**Information technology –
Home Electronic System –
Guidelines for product interoperability –
DRAFT
Part 4: Event Encoding**

FOREWORD

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105 International Standard ISO/IEC 18012-4 has been prepared by subcommittee 25:
106 Interconnection of information technology equipment, of ISO/IEC joint technical committee
107 1:Information Technology.

108 This edition includes the following significant technical changes with respect to the previous
109 edition:

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

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

111
112 Full information on the voting for the approval of this International Standard can be found in the
113 report on voting indicated in the above table.

114 This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

115 The committee has decided that the contents of this document will remain unchanged until the
116 stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to
117 the specific document. At this date, the document will be

- 118 • reconfirmed,
- 119 • withdrawn,
- 120 • replaced by a revised edition, or
- 121 • amended.

122
123 The National Committees are requested to note that for this document the stability date
124 is 20XX..

125 this text is included for the information of the national committees and will be deleted at the
126 publication stage.

INTRODUCTION

The *Home Electronic System* (HES) is a set of standards representing a specific coherent communication, control, and monitoring environment (standardizing networks, applications, and a gateway) for homes and buildings. However, homes and buildings present a heterogeneous and changing networking environment and many of these networks and applications (including the HES standards) are not directly interoperable with each other. The *HES gateway* is a specific standardized modular gateway system intended to provide interoperability among all networks found in this environment.

The *HES gateway* anticipates conformance certification encouraging an open and adaptable market in compatible and interoperable products. The *HES gateway* relies on ISO/IEC 18012 *Guidelines for product interoperability* (all parts) to support functional interworking among heterogeneous home devices, applications, protocols, and networks. The HES interoperability system does not require modification of the various networks, applications, or protocols that use it—only definition of an appropriate network *interworking function*, as described below.

Interworking is achieved by a translation process by which each message from one network to another is first converted into a common HES (internal) linguistic expression and then back into an equivalent message for the other network. This conversion is accomplished by an *interworking function* (IWF) for each network. These messages are initiated by some network application object, and are known as an *event*. The HES *common language internal protocol* (CLIP) event messages employ a standardized syntax and semantic expressions defined by the HES *Lexicon* specified in Part 3 *Lexicon*. The format of the messages, (i.e., the message protocol data unit (PDU) are defined in this Part 4 *Event encoding*,

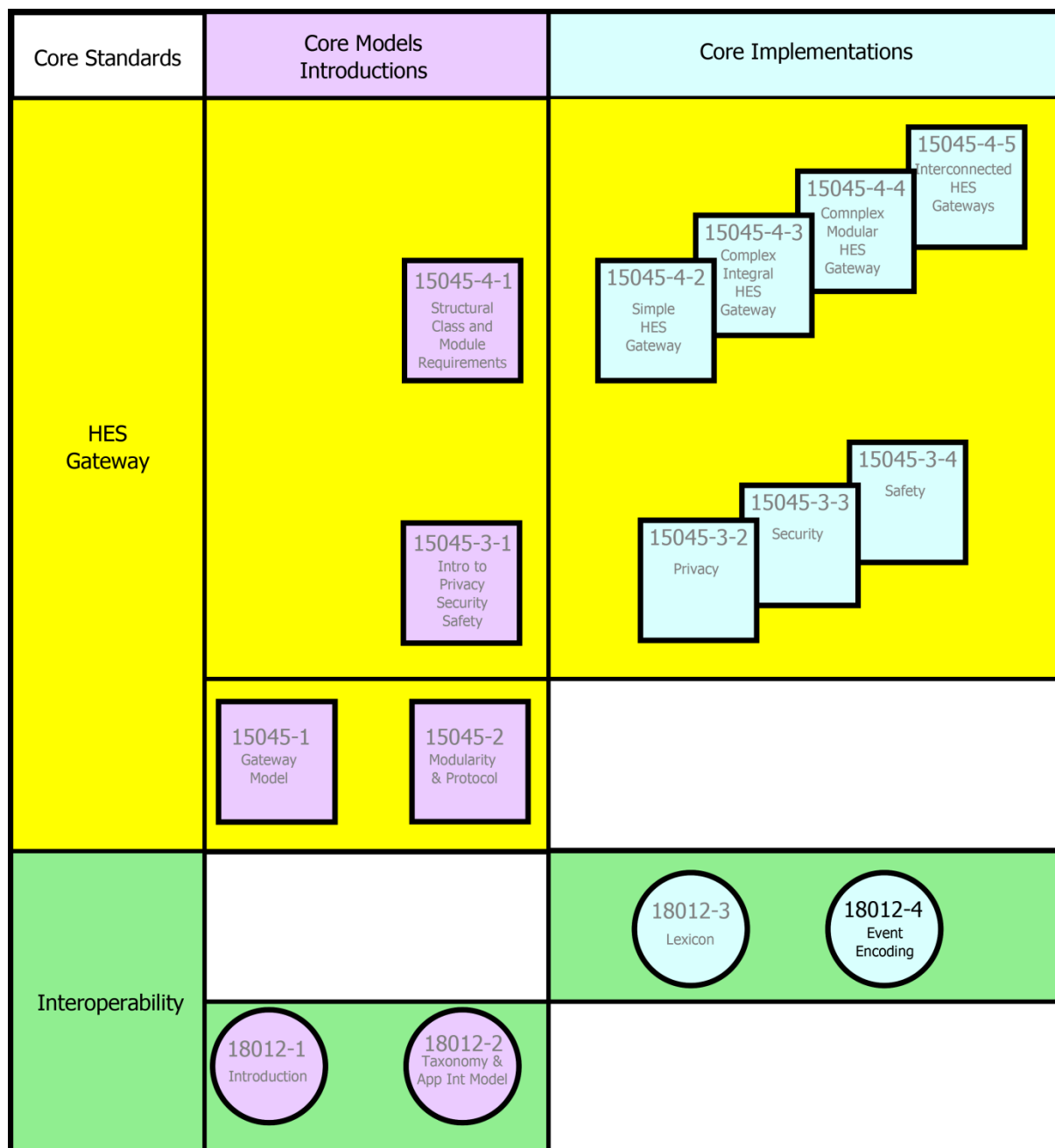
Relation to existing work

The HES gateway is described in ISO/IEC 15045-1 Home Electronic System (HES) gateway – Part 1: A residential gateway model for HES. Several structural configuration of the HES gateway are described in ISO/IEC 15045-4-1 HES gateway – Part 2: Physical structural classes. All classes use the HES interoperability system described above, however in some that use physically separated modules, communication among modular elements is provided by a dedicated private internet serial bus (i.e., Ethernet) and utilizes a set of protocols described in ISO/IEC 15045-2 HES gateway – Part 2: Modularity and protocol, which is now known as common language message exchange (HES-CLME). The interworking function (IWF) is described in ISO/IEC 18012-2 Guidelines for product Interoperability – Part 2: Taxonomy and application interoperability model. The message content (protocol data unit or PDU) is defined in ISO/IEC 18012-3 Guidelines for product Interoperability – Part 3: Lexicon and in ISO/IEC 18012-4 Guidelines for product Interoperability – Part 4: Event encoding. All HES gateway structural class configurations use the same interworking functions, including lexicon, and event encoding.

Lexicon and event encoding

The Part 3 *Lexicon* specifies the standardized HES application objects, functions (actions), and variables, as well as their expression (symbolic encoding) and their semantic meaning and syntactic usage. These are the elements needed to construct IWFs for each specific network. Because of the dynamic heterogeneous nature of the home and building networking environment, it is intended that these elements, including the IWFs for each network be maintained in a standardized online metadata registry. This Part 4 *Event encoding* specifies the specific format of the PDUs for various events to be utilized in serial bus data packet exchange (e.g., HES-CLIP), or direct API exchanges (e.g. HES-CLDPE), within a gateway.

173 Figure 1 shows the core interoperability and HES gateway series of standards and where this
174 ISO/IEC 18012-4 standard fits into series.



175
176 **Figure 1 – ISO/IEC 18012-4 Standard within the Core Interoperability and HES Gateway**
177 **Standards**

**INFORMATION TECHNOLOGY–
HOME ELECTRONIC SYSTEM (HES) –
GUIDELINES FOR PRODUCT INTEROPERABILITY**

Part 4: Event encoding

1 Scope

[Editor's note: Will be defined in the future.]

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 15045-1:2004, *Information technology – Home Electronic System (HES) gateway – Part 1: A residential gateway model for HES*

ISO/IEC 15045-2:2012, *Information technology – Home Electronic System (HES) gateway – Part 2: Modularity and protocol*

ISO/IEC 15045-3-1, *Information technology – Home electronic system (HES) gateway – Part 3-1: Introduction to privacy, security, and safety [In progress]*

ISO/IEC 15045-3-2, *Information technology – Home electronic system (HES) gateway – Part 3-2: Privacy framework [In progress]*

ISO/IEC 15045-4-1, *Information technology – Home electronic system (HES) gateway – Part 4-1: HES gateway structural class and module requirements [In progress]*

ISO/IEC 18012-1:2004, *Information technology – Home Electronic System (HES) – Guidelines for product interoperability – Part 1: Introduction*

ISO/IEC 18012-2:2012, *Information technology – Home Electronic System (HES) – Guidelines for product interoperability – Part 2: Taxonomy and application interoperability model*

ISO/IEC 18012-3, *Information technology – Home Electronic System (HES) – Guidelines for product interoperability – Part 3: Lexicon [In progress]*

RFC 0768; *User Datagram Protocol*

RFC 1918; *Address Allocation for Private Internets*

RFC 3986; *Uniform Resource Identifier (URI): Generic Syntax*

RFC 4180; *Common Format and MIME Type for Comma-Separated Values (CSV) Files*

RFC 6762; *Multicast DNS*

RFC 6763; *DNS-Based Service Discovery*

RFC 7252; *The Constrained Application Protocol (CoAP)*

RFC 7641; *Observing Resources in the Constrained Application Protocol (CoAP)*

RFC 7950; *Block-Wise Transfers in the Constrained Application Protocol (CoAP)*

RFC 8085; *UDP Usage Guidelines*

3 Terms, definitions, abbreviations and conventions

3.1 Terms and definitions

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

3.1.1

address designator

representative of an object that relates to addressing

3.1.2

comma-separated values

CSV

sequence of values that are separated by commas and records that are separated by carriage returns/line feeds according to RFC 4180

3.1.3

constrained application protocol

CoAP

transfer protocol for use with nodes with limited capability and on networks with limited capacity or that would limit impact on the networks used as specified in RFC 7252

3.1.4

controlling

setup and configuration

3.1.5

data reference address

complete address of an object including the hierarchical address that references data to which the object contains (instead of the name)

3.1.6

dns-based service discovery

DNS-SD

discovery of services through the domain name system as specified in RFC 6763

3.1.7

dns-sd txt records

format of records using the domain name system service discovery that allows for additional data to be discovered

3.1.8

event

change of state relating to an object (including user object, remote object, interface object and service object)

3.1.9

event encoding

specific details defining a change of state which involve messages relating to an object (including user object, remote object, interface object and service object)

3.1.10

hierarchical address

address of an object represented as a subordinate to other objects, but not including reference to data

3.1.11

home electronic system common language internal protocol

HES-CLIP

protocol for messaging within the HES gateway among physical modules

Note 1 to entry: This protocol is based on Ethernet on the lower OSI layers and IP on the middle layers