



ISO/IEC 15067-5

Edition 1.0 2026-03

INTERNATIONAL STANDARD

**Information technology - Home Electronic System (HES) application model -
Part 5: A safety framework and guidelines for control and data communication
messages**

Sample Document

get full document from standards.iteh.ai



THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2026 ISO/IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Secretariat
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search -
webstore.iec.ch/advsearchform

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD	2
INTRODUCTION	4
1 Scope	7
2 Normative references	7
3 Terms, definitions, and abbreviated terms	7
3.1 Terms and definitions	7
3.2 Abbreviated terms	9
4 Conformance	9
5 Enhancing safety for users of networked products	9
5.1 Objectives of safety protection	9
5.2 Messages creating unsafe conditions	10
5.3 Sources of unsafe message	10
5.4 Protection from unsafe messages	10
5.5 Safety protection benefits	11
6 General guidelines for product safety	11
6.1 Combining message and product safety	11
6.2 Design guidelines for product safety	12
6.3 Installation guidelines for product safety	12
7 Mitigating safety risks for networked products	12
7.1 Screening messages that cause unsafe options	12
7.2 Message types and risks	13
7.3 Safety and connectivity	13
7.3.1 Safety for hcs connectivity	13
7.3.2 Additional safety features for HES connectivity	14
7.4 Hazard severity for products	14
7.5 Factors affecting safety	15
7.6 Requirements for enhancing safe product operation	16
Annex A (informative) Examples of unsafe messages	17
A.1 Unsafe messages	17
A.2 Cook top	17
A.3 Lighting	17
A.4 Robotic cleaner	17
Bibliography	18
Table 1 – Factors affecting the operational safety of relatively safe products	15
Table 2 – Factors affecting the operational safety of relatively unsafe products	16

**Information technology -
Home Electronic System (HES) application model -
Part 5: A safety framework and guidelines for control and data
communication messages**

FOREWORD

- 1) ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.
- 2) The formal decisions or agreements of IEC and ISO on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC and ISO National bodies.
- 3) IEC and ISO documents have the form of recommendations for international use and are accepted by IEC and ISO National bodies in that sense. While all reasonable efforts are made to ensure that the technical content of IEC and ISO documents is accurate, IEC and ISO cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC and ISO National bodies undertake to apply IEC and ISO documents transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC and ISO document and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC and ISO do not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC and ISO marks of conformity. IEC and ISO are not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this document.
- 7) No liability shall attach to IEC and ISO or their directors, employees, servants or agents including individual experts and members of its technical committees and IEC and ISO National bodies for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this ISO/IEC document or any other IEC and ISO documents.
- 8) Attention is drawn to the Normative references cited in this document. Use of the referenced publications is indispensable for the correct application of this document.
- 9) IEC and ISO draw attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC and ISO take no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC and ISO had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch> and www.iso.org/patents. IEC and ISO shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 15067-5 has been prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology. It is an International Standard.

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

Draft	Report on voting
JTC1-SC25/3327/CDV	JTC1-SC25/3350A/RVC

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 the ISO/IEC Directives, JTC 1 Supplement available at www.iec.ch/members_experts/refdocs and www.iso.org/directives.

A list of all parts in the ISO/IEC 15067 series, published under the general title *Information technology - Home Electronic System (HES) application model*, can be found on the IEC and ISO websites.

Sample Document

get full document from standards.iteh.ai

INTRODUCTION

Improving safety for consumers using appliances connected to a local area network in a home or building (called "networked appliances") depends on many factors:

- appliance design;
- appliance installation;
- appliance configuration;
- appliance provisioning of features;
- appliance user interface;
- appliance operation;
- appliance field upgrades;
- appliance maintenance;
- appliance repairs.

A network in a home or apartment is also called a "home control system" (hcs). A home control system is any generic communications network used for home automation. The HES communications network specified by the HES series of standards (ISO/IEC 14543 series and related standards) is a subset of home control systems that conforms to the HES standards. Thus, all HESs are home control systems, but not all home control systems are HESs.

A "networked appliance" (also called a "networked product") is any appliance that can respond to some home control system commands. The connection can be as simple as a power switch interposed between the mains and the power cord of a traditional appliance. This power switch receives on/off hcs signals to apply or cut power to the appliance. A "smart appliance" has a data connection to an hcs so it can respond to commands beyond on/off, such as queries and commands regarding operating modes, sensor readings, actuator states, energy consumption, etc. The smart appliance connection technology is not specified; it can be wired or wireless using the Internet Protocol (IP) or non-IP.

This document focuses on the safety aspects of "appliance operation" related to network communications. It specifies safety enhancements for screening and processing digital messages intended for networked appliances, especially for remotely operated devices. Such messages include commands for

- turning an appliance on or off, or
- changing an operation setting such as temperature or speed.

These messages are not related to a specific communications protocol, but can use external and home area network communication protocols to convey the message contents.

This document was developed in consultation with the working group that wrote IEC 63044-4. IEC 63044-4 addresses many hazards and electrical safety issues. This document addresses the following issues that were not included in IEC 63044-4:

- screening out messages that can make the operation of appliances connected to a home network risky and less safe for consumers;
- enhancements provided by the Home Electronic System (HES) gateway such as data security and extensions of HES gateway services for safer operation of attached networked devices.

IEC 63044-4 specifies the identification and handling of corrupted messages by discarding or resending them. However, a particular challenge is recognizing and responding appropriately to a valid message that can create an unsafe operation because of the particular operating environment of appliances and devices attached to a home or building network. Examples are presented in this document.

The specifications in this document provide guidelines for making the operation of appliances safer when attached to a home control system (hcs) network. An HES network is a type of hcs that conforms to the family of HES standards consisting of documents related to the Home Electronic System (HES) prepared by ISO/IEC JTC 1/SC 25. An HES network that includes an HES gateway enhances the safety of operation of connected products. Thus, an HES network can provide a higher level of safety for consumers than a generic hcs network.

NOTE ISO/IEC HES standards are identified by HES or "Home Electronic System" in the title.

Additional HES safety protections can be provided by the HES gateway, which is responsible for:

- a communications interconnection between premises networks and wide area networks;
- a communications interconnection between dissimilar home and building area networks within the same premises;
- interoperability and functional interworking among dissimilar home devices and applications;
- a platform for hosting interoperable application services;
- cybersecurity protection of occupants' data, privacy, and safety.

The HES gateway functions are provided by gateway constituents called "service modules". The HES gateway capability for monitoring message traffic between the home and the outside provides cybersecurity protection and can enhance user safety when operating connected devices and appliances remotely.

The HES gateway can include service modules specialized for monitoring and possibly blocking external appliance messages that are determined to be unsafe. For example, the gateway can correlate an appliance message with local data about occupancy, time-of-day, and the operation of related appliances to determine if the message can cause an unsafe operation.

This document is based in part on the following safety-related documents:

- a) IEC Guide 110:2014 [1]¹ (second edition, replaced first edition published in 1996)
IEC Guide 110:2014 was developed to provide background information for technical committees when dealing with safety requirements for products intended to be integrated in a home control system. IEC Guide 110:2014 includes information on functional (operational) safety as well as conventional electrical safety aspects relevant to home control systems.
- b) ISO/IEC TR 14762:2000 [2]
ISO/IEC TR 14762:2000 extended IEC Guide 110 by providing requirements for functional safety of home control networks and associated equipment in homes and buildings.
- c) ISO/IEC 14762:2009 [3]
ISO/IEC 14762:2009 extensively revised ISO/IEC TR 14762:2000 by providing a list of hazards and measures to counter them. It specifies safety protections associated with power feeds (restarting, marking, and construction for proper connections), environmental issues (heat, mechanical stress, and useful lifetime), foreseeable misuse (configuration and proper firmware), operational software and communications, remote management, and operation.
- d) IEC 63044-4:2021 [4]
IEC 63044-4:2021 is an updated version of ISO/IEC 14762:2009 with most of the original content preserved, including the same sequence of normative clauses.

¹ Numbers in square brackets refer to the Bibliography.