

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) –
Part 3: Electrical safety requirements**

**Systèmes Electroniques pour les Foyers Domestiques et les Bâtiments (HBES)
et Systèmes de Gestion Technique du Bâtiment (SGTB) –
Partie 3: Exigences de sécurité électrique**



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

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references	6
3 Terms, definitions and abbreviated terms	7
3.1 Terms and definitions.....	7
3.2 Abbreviated terms.....	10
4 Classification of HBES/BACS network interfaces	10
4.1 General.....	10
4.2 ICT network	10
4.3 Dedicated network	10
5 Safety requirements and compliance criteria.....	10
6 Requirements	10
6.1 General.....	10
6.2 Classification requirements of installation areas.....	11
6.2.1 Overvoltage category.....	11
6.2.2 Pollution degree	11
6.3 Electrical safety requirements.....	11
6.3.1 Protection from hazards in the device	11
6.3.2 Protection from overvoltage on the network and from hazards caused by different types of circuit	11
6.3.3 Protection from touch current.....	13
6.3.4 Protection of the communication wiring from overheating.....	15
6.4 Installation	15
Annex A (informative) List of product standards for electrical safety.....	16
Bibliography.....	18
Table 1 – Requirements for connection of devices to a dedicated HBES/BACS network.....	12

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOME AND BUILDING ELECTRONIC SYSTEMS (HBES) AND BUILDING AUTOMATION AND CONTROL SYSTEMS (BACS) –

Part 3: Electrical safety requirements

FOREWORD

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International Standard IEC 63044-3 has been prepared by IEC technical committee 23: Electrical accessories.

A list of all parts in the IEC 63044 series, published under the general title *Home and Building Electronic Systems (HBES) and Building Automation Control Systems (BACS)*, can be found on the IEC website.

The text of this standard is based on the following documents:

CDV	Report on voting
23/735/CDV	23/747/RVC

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

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

In this publication, the following print types are used:

- Requirements proper: in roman type.
- *Test specifications: in italic type.*

This document shall be used in conjunction with relevant product safety standards.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

The IEC 63044 series deals with developing and testing Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS).

This document deals with electrical safety requirements for HBES/BACS.

This document is based on the philosophy that a device considered electrically safe according to an appropriate product safety standard should also remain safe when connected to a network. This document specifies in addition to the specific product standard the electrical safety requirements necessary in order for an HBES/BACS device connected to a network to remain safe under normal and single-fault conditions of the HBES/BACS network and at the same time under normal and single-fault conditions of one or more HBES/BACS devices connected to the HBES/BACS network. This includes protection from overvoltages on the network, protection from hazards caused by connection of different types of circuit, the limitation of the touch current to a network and protection of the communication wiring from overheating.

The HBES/BACS network is any interconnection between HBES/BACS products. The HBES/BACS networks can be either an ICT network with interfaces classified according to IEC 62949 or a dedicated network classified as a mains, ELV, FELV, SELV or PELV circuit.

For HBES/BACS products connected to an ICT network, the requirements in IEC 62949 apply.

For HBES/BACS products connected to a dedicated HBES/BACS network, the requirements for the electrical separation between the device and the network circuit are specified (see Table 1). These specifications of the electrical separations follow the principle in the basic safety publications IEC 60664-1 and IEC 61140, together with the installation requirements of IEC 60364. The following compromises are used.

- According to the principles of IEC 60664-1, the rated impulse voltage for the separation shall be the higher of the impulse voltage on the network and the rated impulse voltage of the device circuit to be connected to the network.
- The overvoltage categories considered by IEC 60664-1 refer to overvoltages derived directly from the mains through the power supply.
- The overvoltages coming from other sources (e.g. capacitive couplings) are not specified in IEC 60664-1. IEC 60664-1 recommends that technical committees specify overvoltage categories or rated impulse voltages as appropriate.

For the purposes of this document, the following impulse voltages have been specified.

- For networks with galvanic electrical separation from mains (FELV, SELV or PELV circuit), the impulse overvoltage coming from the network side of the separation has been limited to 2,5 kV for fixed installed networks and 1,5 kV for detachable networks.
- For ICT networks, particular requirements apply (see 6.3.2.1).

HOME AND BUILDING ELECTRONIC SYSTEMS (HBES) AND BUILDING AUTOMATION AND CONTROL SYSTEMS (BACS) –

Part 3: Electrical safety requirements

1 Scope

This part of IEC 63044 provides the electrical safety requirements related to the HBES/BACS network in addition to the product safety standards for HBES/BACS devices.

It also applies to devices used within an HBES/BACS network for which no specific HBES/BACS product safety standard exists.

In addition, it defines safety requirements for the interface of equipment intended to be connected to an HBES/BACS network. It does not apply to interfaces to other networks.

NOTE An example of other networks is a dedicated ICT network covered by IEC 62949.

This document is applicable to

- operator stations and other human–system interface devices,
- devices for management functions,
- control devices, automation stations and application-specific controllers,
- field devices and their interfaces, and
- cabling and interconnection of devices

used within a dedicated HBES/BACS network.

This document covers the following requirements and compliance criteria:

- protection from hazards in the device;
- protection from overvoltages on the network;
- protection from touch current;
- protection from hazards caused by different types of circuit;
- protection of the communication wiring from overheating caused by excessive current.

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.

IEC 60038:2009, *IEC standard voltages*

IEC 60364 (all parts), *Low-voltage electrical installations*

IEC 60364-5-52, *Low-voltage electrical installations – Part 5-52: Selection and erection of electrical equipment – Wiring systems*

IEC 60664-1, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 61180, *High-voltage test techniques for low-voltage equipment – Definitions, test and procedure requirements, test equipment*

IEC 62151:2000, *Safety of equipment electrically connected to a telecommunication network*

IEC 62949, *Particular safety requirements for equipment to be connected to information and communication networks*¹

IEC 63044-1, *Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) – Part 1: General requirements*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 63044-1 and the following 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

ICT network

information and communication technology network

metallically terminated transmission medium consisting of two conductors intended for communication between equipment that may be located in separate buildings, excluding:

- the mains system for supply, transmission and distribution of electrical power, if used as a communication transmission medium;
- dedicated HBES/BACS networks;
- external circuits using ES1 connecting units of audio/video, information and communication technology equipment

Note 1 to entry: This may include twisted pairs, and may include circuits which are subjected to transients as indicated in Table 14, ID1 of IEC 62368-1:2014 (assumed to be 1,5 kV).

Note 2 to entry: An ICT network may be:

- publicly or privately owned;
- subject to transient overvoltages due to atmospheric discharges and faults in power distribution systems;
- subject to longitudinal (common mode) voltages induced from nearby power lines or electric traction lines.

Note 3 to entry: Examples of ICT networks are:

- a public switched telephone network;
- a public data network;
- an Integrated Services Digital Network (ISDN);

¹ Under preparation. Stage at the time of publication: IEC/FDIS 62949:2016.