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General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS) -- Part 3: Electrical safety requirements

I.S. EN 50491-3:2009

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English version

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

Exigences générales relatives aux
systèmes électroniques pour les foyers
domestiques et les bâtiments (HBES)
et aux Systèmes de Gestion Technique
du Bâtiment (SGTB) -
Partie 3: Exigences de sécurité électrique

Allgemeine Anforderungen
an die Elektrische Systemtechnik
für Heim und Gebäude (ESHG) und an
Systeme der Gebäudeautomation (GA) -
Teil 3: Anforderungen an die elektrische
Sicherheit

This European Standard was approved by CENELEC on 2009-03-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

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

Central Secretariat: Avenue Marnix 17, B - 1000 Brussels

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Foreword

This European Standard was prepared by a joint working group of Technical Committee CENELEC TC 205, Home and Building Electronic Systems (HBES), and Technical Committee CEN TC 247, Building Automation, Controls and Building Management.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50491-3 on 2009-03-01.

This European Standard partially supersedes EN 50090-2-2:1996 + corrigendum March 1997 + A1:2002 + A2:2007.

The following dates were fixed:

- | | | |
|--|-------|------------|
| – latest date by which the EN has to be implemented
at national level by publication of an identical
national standard or by endorsement | (dop) | 2010-03-01 |
| – latest date by which the national standards conflicting
with the EN have to be withdrawn | (dow) | 2012-03-01 |

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Introduction

This European Standard shall be used for products connected to a home and building automation and control system (HBES/BACS).

The expression HBES/BACS covers any combination of HBES and/or BACS products including their separate connected/detachable devices linked together via one or more networks.

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

Introductory note

The joint working group CLC/TC 205 – CEN/TC 247 has decided to include this introductory note for a better understanding of the document.

The background for this European Standard is based on the philosophy that a device considered electrically safe according to an appropriate product safety standard harmonised under the LVD Directive also should remain safe when connected to a network. This European Standard specifies in addition to the specific product standard the electrical safety requirements necessary when a HBES/BACS device connected to a network shall remain safe under normal and single fault condition of the HBES/BACS network and in the same time under normal and single fault condition of one or more HBES/BACS devices connected to the HBES/BACS network. This includes protection from over voltages on the network, protection from hazards caused by connection of different type of circuits, 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 a telecommunication network with interfaces classified according to IEC/TR 62102 or a dedicated network classified as a Mains, ELV, FELV, SELV or PELV circuit.

For HBES/BACS products connected to a telecommunication network the requirements in EN 41003 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 2). These specifications of the electrical separations follow the principle in the basic safety publications EN 60664-1 and EN 61140 together with the installation requirements of HD 60364-4-41. The following compromises are used:

Impulse overvoltages considerations:

According to the principles of EN 60664-1 the rated impulse voltage for the separation shall be the highest of either the impulse voltage on the network or the rated impulse voltage of the device circuit to be connected to the network.

The overvoltages categories considered by EN 60664-1 refer to overvoltages derived directly from the mains through the power supply

The overvoltages coming from other sources (eg. capacitive couplings) are not specified in EN 60664-1. EN 60664-1 recommends that technical committees specify overvoltage categories or rated impulse voltages as appropriate.

For the purpose of this standard, the following impulse voltages have been specified:

- For networks galvanic electrical separated 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 telecommunication networks, particular requirements apply (see 5.3.2.1).

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