



National Standards Authority of Ireland

IRISH STANDARD

**I.S. EN 60664-1:2007**

ICS 29.080.30  
29.080

**INSULATION COORDINATION FOR  
EQUIPMENT WITHIN LOW-VOLTAGE  
SYSTEMS -- PART 1: PRINCIPLES,  
REQUIREMENTS AND TESTS (IEC 60664  
-1:2007 (EQV))**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 60664-1**

July 2007

ICS 29.080.30; 29.080

Supersedes EN 60664-1:2003

English version

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

Coordination de l'isolement  
des matériels dans les systèmes  
(réseaux) à basse tension -  
Partie 1: Principes, exigences  
et essais  
(CEI 60664-1:2007)

Isolationskoordination  
für elektrische Betriebsmittel  
in Niederspannungsanlagen -  
Teil 1: Grundsätze, Anforderungen  
und Prüfungen  
(IEC 60664-1:2007)

This European Standard was approved by CENELEC on 2007-07-01. 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: rue de Stassart 35, B - 1050 Brussels**

## Foreword

The text of document 109/58/CDV, future edition 2 of IEC 60664-1, prepared by IEC TC 109, Insulation co-ordination for low-voltage equipment, was submitted to the IEC-CENELEC parallel Unique Acceptance Procedure and was approved by CENELEC as EN 60664-1 on 2007-07-01.

This European Standard supersedes EN 60664-1:2003.

In addition to a number of editorial improvements, the following main changes have been made with respect to EN 60664-1:2003:

- amendment of Japanese mains conditions with regard to the rated impulse voltages, the rationalized voltages and the nominal voltages of supply systems for different modes of overvoltage control;
- amendment of dimensioning of clearances smaller than 0,01 mm;
- alignment of the table and the corresponding formula regarding test voltages for verifying clearances at different altitudes;
- amendment of interpolation of the creepage distance values for functional insulation;
- amendment of creepage distance dimensioning taking into account ribs;
- revision of the former Clause 4 "Tests and measurements" (now Clause 6) to achieve a more detailed description of the tests and their purpose, the test equipment and possible alternatives;
- change of Annex C "Partial discharge test methods" from a former technical report, Type 2 (now called TS), to a normative Annex C.

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) 2008-04-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2010-07-01

Annex ZA has been added by CENELEC.

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## Endorsement notice

The text of the International Standard IEC 60664-1:2007 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

- |                 |      |   |
|-----------------|------|---|
| ISO/IEC Guide 2 | NOTE | Harmonized as EN 45020:1998 (not modified).           |
| IEC 60529 + A1  | NOTE | Harmonized as EN 60529:1991 + A1:2000 (not modified). |

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## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

| <u>Publication</u>    | <u>Year</u>  | <u>Title</u>   | <u>EN/HD</u>                          | <u>Year</u>          |
|-----------------------|--------------|--|---------------------------------------|----------------------|
| IEC 60038             | 1983         | IEC standard voltages <sup>1)</sup>  | HD 472 S1<br>+ corr. February<br>+ A1 | 1989<br>2002<br>1995 |
| IEC 60050-151         | 2001         | International Electrotechnical Vocabulary (IEV) -<br>Part 151: Electrical and magnetic devices   | -                                     | -                    |
| IEC 60050-212         | 1990         | International Electrotechnical Vocabulary (IEV) -<br>Chapter 212: Insulating solids, liquids and gases                                 | -                                     | -                    |
| IEC 60050-604<br>+ A1 | 1987<br>1998 | International Electrotechnical Vocabulary (IEV) -<br>Chapter 604: Generation, transmission and distribution of electricity - Operation | -                                     | -                    |
| IEC 60050-826         | 2004         | International Electrotechnical Vocabulary (IEV) -<br>Part 826: Electrical installations  | -                                     | -                    |
| IEC 60068-1           | 1988         | Environmental testing -<br>Part 1: General and guidance  | EN 60068-1 <sup>2)</sup>              | 1994                 |
| IEC 60068-2-2         | 1974         | Environmental testing -<br>Part 2: Tests - Tests B: Dry heat   | EN 60068-2-2 <sup>3)</sup>            | 1993                 |
| IEC 60068-2-14        | 1984         | Environmental testing -<br>Part 2: Tests - Test N: Change of temperature   | EN 60068-2-14 <sup>4)</sup>           | 1999                 |
| IEC 60068-2-78        | 2001         | Environmental testing -<br>Part 2-78: Tests - Test Cab: Damp heat, steady state  | EN 60068-2-78                         | 2001                 |
| IEC 60085             | 2004         | Electrical insulation - Thermal classification   | EN 60085                              | 2004                 |
| IEC 60099-1           | 1991         | Surge arresters -<br>Part 1: Non-linear resistor type gapped surge arresters for a.c. systems  | EN 60099-1                            | 1994                 |

<sup>1)</sup> The title of HD 472 S1 is: Nominal voltages for low voltage public electricity supply systems.

<sup>2)</sup> EN 60068-1 includes A1:1992 to IEC 60068-1 + corr. October.

<sup>3)</sup> EN 60068-2-2 includes supplement A to IEC 60068-2-2.

<sup>4)</sup> EN 60068-2-14 includes A1:1986 to IEC 60068-2-14.

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| <u>Publication</u>        | <u>Year</u>     | <u>Title</u>   | <u>EN/HD</u>               | <u>Year</u>        |
|---------------------------|-----------------|--|----------------------------|--------------------|
| IEC 60112                 | 2003            | Method for the determination of the proof and the comparative tracking indices of solid insulating materials   | EN 60112                   | 2003               |
| IEC 60216                 | Series          | Electrical insulating materials - Properties of thermal endurance  | EN 60216                   | Series             |
| IEC 60243-1               | 1998            | Electrical strength of insulating materials - Test methods - Part 1: Tests at power frequencies  | EN 60243-1                 | 1998               |
| IEC 60270                 | 2000            | High-voltage test techniques - Partial discharge measurements  | EN 60270                   | 2001               |
| IEC 60364-4-44 + A1 (mod) | 2001<br>2003    | Electrical installations of buildings - Part 4-44: Protection for safety - Protection against voltage disturbances and electromagnetic disturbances                            | -                          | -                  |
| IEC 60664-4               | 2005            | Insulation coordination for equipment within low-voltage systems - Part 4: Consideration of high-frequency voltage stress  | EN 60664-4 + corr. October | 2006<br>2006       |
| IEC 60664-5               | - <sup>5)</sup> | Insulation coordination for equipment within low-voltage systems - Part 5: A comprehensive method for determining clearances and creepage distances equal to or less than 2 mm | EN 60664-5                 | 2003 <sup>6)</sup> |
| IEC 61140 A1 (mod)        | 2001<br>2004    | Protection against electric shock - Common aspects for installation and equipment  | EN 61140 A1                | 2002<br>2006       |
| IEC 61180-1               | 1992            | High-voltage test techniques for low-voltage equipment - Part 1: Definitions, test and procedure requirements  | EN 61180-1                 | 1994               |
| IEC 61180-2               | 1994            | High-voltage test techniques for low-voltage equipment - Part 2: Test equipment  | EN 61180-2                 | 1994               |
| IEC Guide 104             | 1997            | The preparation of safety publications and the use of basic safety publications and group safety publications  | -                          | -                  |

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<sup>5)</sup> Undated reference.

<sup>6)</sup> Valid edition at date of issue.

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