NSAI Standards

Irish Standard
I.S. EN 60027-7:2010

# Letter symbols to be used in electrical technology -- Part 7: Power generation, transmission and distribution (IEC 60027-7:2010 (EQV))

# I.S. EN 60027-7:2010

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# EN 60027-7

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English version

# Letter symbols to be used in electrical technology - Part 7: Power generation, transmission and distribution

(IEC 60027-7:2010)

Symboles littéraux à utiliser en électrotechnique - Partie 7: Production, transport et distribution de l'énergie électrique (CEI 60027-7:2010)

Formelzeichen für die Elektrotechnik - Teil 7: Energieerzeugung, -übertragung und -verteilung (IEC 60027-7:2010)

This European Standard was approved by CENELEC on 2010-09-01. 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, Croatia, 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

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Ref. No. EN 60027-7:2010 E

## Foreword

The text of document 25/391/CDV, future edition 1 of IEC 60027-7, prepared by IEC TC 25, Quantities and units, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60027-7 on 2010-09-01.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

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) | 2011-06-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2013-09-01 |

Annex ZA has been added by CENELEC.

## Endorsement notice

The text of the International Standard IEC 60027-7:2010 was approved by CENELEC as a European Standard without any modification.

# 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.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 60027-1<br>+ A1<br>+ A2 | 1995<br>1997<br>2005 | Letter symbols to be used in electrical technology -<br>Part 1: General | EN 60027-1<br>-<br>+ A2[1)] | 2006<br>-<br>2007 |
| IEC 60027-2 | 2005 | Letter symbols to be used in electrical technology -<br>Part 2: Telecommunications and electronics | EN 60027-2[2)] | 2007 |
| IEC 60038 | 2009 | IEC standard voltages | - | - |
| IEC 60050-121<br>+ A1 | 1998<br>2002 | International Electrotechnical Vocabulary (IEV) -<br>Part 121: Electromagnetism | -<br>- | -<br>- |
| IEC 60050-131<br>+ A1 | 2002<br>2008 | International Electrotechnical Vocabulary (IEV) -<br>Part 131: Circuit theory | -<br>- | -<br>- |
| IEC 60050-141 | 2004 | International electrotechnical vocabulary -<br>Part 141: Polyphase systems and circuits | - | - |
| IEC 60050-151 | 2001 | International Electrotechnical Vocabulary (IEV) -<br>Part 151: Electrical and magnetic devices | - | - |
| IEC 60050-195<br>+ A1 | 1998<br>2001 | International Electrotechnical Vocabulary (IEV) -<br>Chapter 195: Earthing and protection against electric shock | -<br>- | -<br>- |
| IEC 60050-411<br>+ A1 | 1996<br>2007 | International Electrotechnical Vocabulary (IEV) -<br>Chapter 411: Rotating machinery | -<br>- | -<br>- |
| IEC 60050-421 | 1990 | International electrotechnical vocabulary (IEV) -<br>Chapter 421: Power transformers and reactors | - | - |
| IEC 60050-441<br>+ A1 | 1984<br>2000 | International Electrotechnical Vocabulary (IEV) -<br>Chapter 441: Switchgear, controlgear and fuses | -<br>- | -<br>- |

[1)] EN 60027-1 includes A1 to IEC 60027-1.

[2)] EN 60027-2 is superseded by EN 80000-13:2008, which is based on IEC 80000-13:2008.

| Publication | Year | Title | EN/HD | Year |
|---|---|---|---|---|
| IEC 60050-442 | 1998 | International Electrotechnical Vocabulary - Part 442: Electrical accessories | - | - |
| IEC 60050-448 | 1995 | International Electrotechnical Vocabulary (IEV) - Chapter 448: Power system protection | - | - |
| IEC 60050-466 | 1990 | International electrotechnical vocabulary (IEV) - Chapter 466: Overhead lines | - | - |
| IEC 60050-601<br>+ A1 | 1985<br>1998 | International Electrotechnical Vocabulary (IEV) - Chapter 601: Generation, transmission and distribution of electricity - General | -<br>- | -<br>- |
| IEC 60050-603<br>+ A1 | 1986<br>1998 | International electrotechnical vocabulary - Chapter 603: Generation, transmission and distribution of electricity - Power system planning and management | -<br>- | -<br>- |
| IEC 60050-604<br>+ A1 | 1987<br>1998 | International Electrotechnical Vocabulary (IEV) - Chapter 604: Generation, transmission and distribution of electricity - Operation | -<br>- | -<br>- |
| IEC 60050-811 | 1991 | International electrotechnical vocabulary (IEV) - Chapter 811: Electric traction | - | - |
| IEC 60909-0 | 2001 | Short-circuit currents in three-phase a.c. systems - Part 0: Calculation of currents | EN 60909-0 | 2001 |
| IEC/TR 60909-1 | 2002 | Short-circuit currents in three-phase e.c. systems - Part 1: Factors for the calculation of short-circuit currents according to IEC 60909-0 | - | - |
| IEC/TR 60909-2 | 2008 | Short-circuit currents in three-phase a.c. systems - Part 2: Data of electrical equipment for short-circuit current calculations | - | - |
| IEC 60909-3 | 2003 | Short-circuit currents in three-phase a.c systems - Part 3: Currents during two separate simultaneous line-to-earth short-circuits and partial short-circuit currents flowing through earth | EN 60909-3[3)] | 2003 |
| IEC 62428 | 2008 | Electric power engineering - Modal components in three-phase a.c. systems - Quantities and transformations | EN 62428 | 2008 |
| IEC 80000-6 | 2008 | Quantities and units - Part 6: Electromagnetism | EN 80000-6 | 2008 |

[3)] EN 60909-3 is superseded by EN 60909-3:2010, which is based on IEC 60909-3:2009.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

# LETTER SYMBOLS TO BE USED IN ELECTRICAL TECHNOLOGY –

## Part 7: Power generation, transmission, and distribution

## FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60027-7 has been prepared by IEC technical committee 25: Quantities and units.

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

| CDV | Report on voting |
|---|---|
| 25/391/CDV | 25/406/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.

A list of all parts of the IEC 60027 series, under the general title *Letter symbols to be used in electrical technology* can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site 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.

# LETTER SYMBOLS TO BE USED IN ELECTRICAL TECHNOLOGY –

## Part 7: Power generation, transmission, and distribution

## 1 Scope

This part of IEC 60027 is applicable to generation, transmission, and distribution of electric energy. It gives names and letter symbols for quantities and units. In addition, rules for multiple subscripts and their succession are given.

This part of IEC 60027 is an addition to IEC 60027-1. Therefore letter symbols already given in IEC 60027-1 are repeated only if they have a special meaning in the field of power generation, transmission, and distribution or if they are used in this field with special subscripts.

Guidance on the use of capital and lower case letters, is given in IEC 60027-1, 2.1, and guidance on the representation of complex quantities,is given in IEC 60027-1, 1.6. Therefore in many cases only $U$ is given instead of $\underline{U}$, $|\underline{U}| = U$ or $u$.

## 2 Normative references

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.

IEC 60027-1:1992, *Letter symbols to be used in electrical technology – Part 1: General*
Amendment 1:1997
Amendment 2:2005

IEC 60027-2:2005, *Letter symbols to be used in electrical technology – Part 2: Telecommunications and electronics*

IEC 60038:2009, *IEC standard voltages*

IEC 60050-121:1998, *International Electrotechnical Vocabulary – Part 121: Electromagnetism*

Amendment 1 (2002)

IEC 60050-131:2002, *International Electrotechnical Vocabulary – Part 131: Circuit theory*

Amendment 1 (2008)

IEC 60050-141:2004, *International Electrotechnical Vocabulary – Part 141: Polyphase systems and circuits*

IEC 60050-151:2001, *International Electrotechnical Vocabulary – Part 151: Electrical and magnetic devices*

IEC 60050-195:1998, *International Electrotechnical Vocabulary – Part 195: Earthing and protection against electric shock*

Amendment 1 (1998)