

Signs and luminous-discharge- tube installations operating from a no-load rated output voltage exceeding 1 kV but not exceeding 10 kV —

Part 1: General requirements

The European Standard EN 50107-1:2002, with the incorporation of amendment A1:2004, has the status of a British Standard

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National foreword

This British Standard is the official English language version of EN 50107-1:2002, including amendment A1:2004. It supersedes BS EN 50107:1998 which will be withdrawn on 2005-01-01.

The UK participation in its preparation was entrusted by Technical Committee CPL/34, Lamps and related equipment, to Subcommittee CPL/34/11, Electric signs, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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English version

**Signs and luminous-discharge-tube installations operating
from a no-load rated output voltage exceeding 1 kV but not
exceeding 10 kV — Part 1: General requirements**
(including amendment A1:2004)

Installations d'enseignes et de tubes lumineux à décharge
fonctionnant à une tension de sortie à vide assignée
supérieure à 1 kV mais ne dépassant pas 10 kV
Partie 1: Prescriptions générales
(inclut l'amendement A1:2004)

Leuchtröhrengeräte und Leuchtröhrenanlagen mit einer
Leerlaufspannung über 1 kV aber nicht über 10 kV
Teil 1: Allgemeine Anforderungen
(enthält Änderung A1:2004)

This European Standard was approved by CENELEC on 2002-01-04. Amendment A1 was approved by CENELEC on 2004-03-01. 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.

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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

This European Standard was prepared by CENELEC BTTF 60-2, Electrical discharge lamp installations.

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This European Standard replaces EN 50107:1998.

The following dates were fixed:

- latest date by which the EN has to be implemented
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- latest date by which the national standards conflicting
with the EN have to be withdrawn (dow) 2005-01-01

Annexes designated "normative" are part of the body of the standard.
Annexes designated "informative" are given for information only.
In this standard, annex B is normative and annexes A & C are informative.

Foreword to amendment A1

This amendment was prepared by CENELEC BTTF 60-2, Electrical discharge lamp installations.

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1 Scope

This European Standard specifies the requirements and method of installation for signs and luminous-discharge-tube installations operating from a no-load rated output voltage exceeding 1 000 V but not exceeding 10 000 V, including the electrical components and wiring.

The standard covers installations used for publicity, decorative or general lighting purposes, either for external or internal use. Such signs or luminous-discharge-tube installations may be either fixed or portable supplied from a low-voltage (LV) or extra-low-voltage (ELV) source by means of a transformer, inverter or converter.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to the European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 50107-2¹⁾, *Signs and luminous-discharge-tube installations operating from a no-load rated output voltage exceeding 1 kV but not exceeding 10 kV – Part 2: Requirements for earth-leakage and open-circuit protective devices*

EN 50143:1997 + A1:200X¹⁾, *Cables for signs and luminous-discharge-tube installations operating from a no-load rated output voltage exceeding 1 kV but not exceeding 10 kV*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code)* (IEC 60529:1989)

EN 60598-1:2000, *Luminaires — Part 1: General requirements and tests* (IEC 60598-1:2000, mod.)

EN 61347-2-10, *Lamp controlgear — Part 2-10: Particular requirements for electronic inverters and converters for high-frequency operation of cold start tubular discharge lamps (neon tubes)* (IEC 61347-2-10)

EN 61050, *Transformers for tubular discharge lamps having a no-load output voltage exceeding 1 kV (generally called neon-transformers) — General and safety requirements* (IEC 61050:1991 + corrigendum March 1992, mod.)

HD 384 (series), *Electrical installations of buildings* (IEC 60364 series, mod.)

IEC 60050, *International Electrotechnical Vocabulary*

ISO 3864:1984, *Safety colours and safety signs*

¹⁾ To be published.

3 Definitions

For the purposes of this European Standard, the definitions given in IEC 60050 (IEV) apply, together with the following.

NOTE 1 Sections 602 - 605 of IEC 60050 contain definitions relating to the generation, transmission and distribution of electricity.

NOTE 2 Where the terms 'voltage' and 'current' are used, they refer to r.m.s. values, unless otherwise stated.

3.1

luminous-discharge tube

tube, or other vessel or device, which is constructed of translucent material, hermetically sealed, and designed for the emission of light arising from the passage of an electric current through a gas or vapour contained within it

NOTE The tube may be with or without a fluorescent coating.

3.2

no-load rated output voltage

maximum rated voltage between the terminals of the output winding(s) of the transformer, inverter or converter connected to the rated supply voltage at rated frequency, with no load on the output circuit

NOTE 1 For output circuits supplied by transformers, it is the peak value divided by the square root of 2 (see EN 61050).

NOTE 2 For output circuits supplied by inverters or converters, it is the r.m.s. value or the peak value divided by 2, whichever is the greater (see EN 61347-2-10).

3.3

creepage distance

shortest path between two conductive parts or between a live part and an accessible surface of an enclosure, earthed metalwork or flammable materials, measured along the surface of the insulation material

3.4

clearance

shortest distance between two conductive parts or between a live part and an accessible surface of an enclosure, earthed metalwork or flammable materials, measured through the air

3.5

transformer

a static piece of apparatus with two or more windings which, by electromagnetic induction, transforms a system of alternating voltage and current into another system of voltage and current usually of different values and at the same frequency for the purpose of transmitting electrical power

[IEV 421-01-01]

NOTE The high output impedance of most transformers designed for cold-cathode discharge tubes allows the characteristics of transformer and current-limiting components to be combined in one unit.

3.6

inverter

transducer that converts direct current to alternating current

3.7

converter

unit for the electronic conversion of an a.c. supply at one frequency to an a.c. supply at another frequency

NOTE The voltage may or may not be altered during the conversion.

3.8**insulating sleeve**

insulation designed to be placed over the exposed high-voltage connections at tube electrodes or over cable-end insulators

3.9**installer**

person, qualified in sign installation practice, who takes responsibility for the installation and its testing in accordance with this standard

3.10**earth-leakage protective device**

device which will remove the output power from one or more transformer(s), inverter(s) or converter(s) in the event of a short circuit between any relevant part of the output circuit and earth

3.11**open-circuit protective device**

device which will remove the output power from one or more transformer(s), inverter(s) or converter(s) in the event of an interruption of the secondary high voltage circuit

3.12**live part**

conductor or conductive part intended to be energized in normal operation, including a neutral conductor but, by convention, not a PEN conductor, PEM conductor or a PEL conductor.

NOTE This concept does not necessarily imply a risk of electric shock.

3.13**input circuit**

that part of the device or installation between the point at which electrical energy is supplied to an installation and the input terminals of the transformer, converter or inverter

NOTE Also known as a 'mains supply circuit'.

3.14**output circuit**

that part of the device or installation between the output terminals of the transformer, converter or inverter and the discharge tubes inclusive

NOTE Also known as a 'lamp circuit'.

3.15**arm's reach**

zone extending from any point on a surface where persons usually stand or move about to the limits which a person can reach with the hand in any direction without assistance

NOTE This zone of accessibility is shown in Figure 1 in which the values refer to bare hands without any assistance, e.g. from tools or from a ladder.

3.16**outdoors**

location where all or part of a sign or luminous-discharge-tube installation or its components are situated out of doors and are subject to the effects of weather

3.17**dry room; dry location**

room or location where condensation does not usually occur or the air is not saturated with moisture

3.18

damp or wet room

room where the safety of the sign or luminous-discharge-tube installation could be affected by humidity, condensation, chemical or similar influences

3.19

small portable sign

small sign which can easily be moved from one place to another; which is supplied with an integral transformer, inverter or converter, together with a flexible mains supply lead and plug; and which is intended to be installed and connected by the customer to a socket outlet of the mains supply

3.20

flasher

device for automatically switching one or more output circuits on and off continuously

NOTE The sequence of switching of the various output circuits may be suitably arranged to provide the impression of movement and other animated effects.

4 Means of attachment of signs

Electrical conductors shall be not used as means of suspension or attachment of signs.

5 Drain holes

In sign enclosures intended for external use, arrangements shall be made to allow moisture to drain away. Drain holes or similar apertures used for this purpose shall be sufficiently large to ensure that they do not become blocked with dirt or debris between maintenance visits.

6 Installation of the mains supply

Installation of the mains supply for signs and luminous-discharge-tube installations shall be carried out in accordance with HD 384.

NOTE Attention is drawn to the fact that wiring rules are not fully harmonized in CENELEC countries and, for this reason, national standards may apply.

7 Enclosures and protection of live parts

7.1 All high-voltage connections to discharge tubes shall be protected by means of insulating sleeves conforming to clause 13.

7.2 High-voltage connections situated within arm's reach (see 3.15) shall have additional protection conforming to 7.4 and 7.5.

7.3 High-voltage connections situated out of arm's reach shall have additional protection conforming to 7.4 or 7.6.

7.4 Additional protection shall consist of an enclosure or other means of protection conforming to the following:

- a) It shall provide a degree of protection corresponding to at least IP 2X as specified in EN 60529, Table 1.

NOTE 1 The requirements for protection against ingress of solid objects, specified in EN 60529, Table 2, do not apply.

NOTE 2 See Annex C, A-deviations.