SLOVENSKI STANDARD

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Sestavni deli za nizkonapetostne naprave za zaščito pred prenapetostnimi udari - 311. del: Specifikacije za plinske odvodnike (GDT) (IEC 61643-311:2001)

Components for low-voltage surge protective devices – Part 311: Specification for gas discharge tubes (GDT) (IEC 61643-311:2001)

ICS 29.120.50; 29.240.10

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EUROPEAN STANDARD **EN 61643-311**

NORME EUROPÉENNE

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English version

Components for low-voltage surge protective devices Part 311: Specification for gas discharge tubes (GDT)

(IEC 61643-311:2001)

Composants pour parafoudres basse tension
Partie 311: Spécifications pour £les tubes à décharge dans un gaz (TDG)
(CEI 61643-311:2001)

Bauelemente für Überspannungsschutzgeräte für Niederspannung
Teil 311: Festlegungen für Gasentladungsableiter (ÜsAg)
(IEC 61643-311:2001)

This European Standard was approved by CENELEC on 2001-12-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and 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

Ref. No. EN 61643-311:2001 E

Foreword

The text of document 37B/57/FDIS, future edition 1 of IEC 61643-311, prepared by SC 37B, Specific components for surge arresters and surge protective devices, of IEC TC 37, Surge arresters, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61643-311 on 2001-12-01.

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) 2002-09-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow) 2004-12-01

Annexes designated "normative" are part of the body of the standard.
In this standard, annex ZA is normative
Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61643-311:2001 was approved by CENELEC as a European Standard with the following editorial modifications:

Throughout the document, **replace** "a.c." by "AC" and **replace** "d.c." by "DC".

Delete "µs" in all *x/y* indications of waveforms:

- 6.1.6 : Table 4 headings (four times) and note b);
- 7.7 : third paragraph (twice) and from "surge generator" in Figures 8 and 9;
- 7.9 : subclause title, in the first paragraph and in the key to Figures 12 and 13;
- 7.10 : subclause title, in the third paragraph and in the key to Figures 14 and 15.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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 this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

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 60068-2-1	1990	Environmental testing Part 2: Tests - Tests A: Cold	EN 60068-2-1	1993
IEC 60068-2-20	1979	Part 2: Tests - Test T: Soldering	HD 323.2.20 S3[1)]	1988
IEC 60068-2-21	1999	Part 2-21: Tests - Test U: Robustness of terminations and integral mounting devices	EN 60068-2-21	1999
IEC 61000-4-5	1995	Electromagnetic compatibility (EMC) Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	1995
IEC 61180-1	1992	High-voltage test techniques for low-voltage equipment Part 1: Definitions, test and procedure requirements	EN 61180-1	1994
ITU-T Recommendation K.20	2000	Resistibility of telecommunication equipment installed in a telecommunications centre to overvoltages and overcurrents	-	-

1) HD 323.2.20 S3 includes A2:1987 to IEC 60068-2-20.

NORME INTERNATIONALE

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Première édition
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Composants pour parafoudres basse tension –

Partie 311:
Spécifications pour les tubes à décharge dans un gaz (TDG)

Components for low-voltage surge protective devices –

Part 311:
Specification for gas discharge tubes (GDT)

International Electrotechnical Commission 3, rue de Varembé Geneva, Switzerland
Telefax: +41 22 919 0300 e-mail: inmail@iec.ch IEC web site http://www.iec.ch

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMPONENTS FOR LOW-VOLTAGE SURGE PROTECTIVE DEVICES –

Part 311: Specification for gas discharge tubes (GDT)

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the 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, the IEC publishes International Standards. 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. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61643-311 has been prepared by subcommittee 37B: Specific components for surge arresters and surge protective devices, of IEC technical committee 37: Surge arresters.

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

FDIS	Report on voting
37B/57/FDIS	37B/60/RVD

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 3.

The committee has decided that the contents of this publication will remain unchanged until June 2003. At this date, the publication will be

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

COMPONENTS FOR LOW-VOLTAGE SURGE PROTECTIVE DEVICES –

Part 311: Specification for gas discharge tubes (GDT)

1 Scope

Gas discharge tubes (GDTs) are used for applications up to 1 000 V a.c. or 1 500 V d.c. in communication or signalling circuits. They are defined as a gap, or series of gaps, in an enclosed discharge medium other than air. They are designed to protect apparatus or personnel, or both, from high transient voltages. This standard does not specify requirements applicable to complete surge protective devices, nor does it specify total requirements for GDTs employed within electronic devices, where precise coordination between GDT performance and surge protective device withstand capability is highly critical.

This part of IEC 61643

– deals with GDTs having two or three electrodes;
– does not deal with mountings and their effect on GDT characteristics. Characteristics given apply solely to GDTs mounted in the ways described for the tests;
– does not deal with mechanical dimensions;
– does not deal with quality assurance requirements;
– may not be sufficient for GDTs used on high-frequency or multi-channel systems;
– does not deal with electrostatic voltages;
– does not deal with GDTs connected in series with voltage-dependent resistors in order to limit follow-on currents in electrical power systems;
– does not deal with hybrid or composite GDT devices.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 61643. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 61643 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60068-2-1:1990, *Environmental testing – Part 2: Tests. Tests A: Cold*

IEC 60068-2-20:1979, *Environmental testing – Part 2: Tests. Test T: Soldering*

IEC 60068-2-21:1999, *Environmental testing – Part 2-21: Tests – Test U: Robustness of terminations and integral mounting devices*

IEC 61000-4-5:1995, *Electromagnetic compatibility (EMC) – Part 4: Testing and measurement techniques – Section 5: Surge immunity test*

IEC 61180-1:1992, *High-voltage test techniques for low voltage equipment – Part 1: Definitions, test and procedure requirements*

ITU-T Recommendation K.20:2000, *Resistibility of telecommunication equipment installed in a telecommunications centre to overvoltages and overcurrents*

3 Definitions and symbols

3.1 Definitions

For the purpose of this part of IEC 61643, the following definitions apply.

3.1.1
arc current
current that flows after sparkover when the circuit impedance allows a current to flow that exceeds the glow-to-arc transition current

3.1.2
arc voltage (arc mode voltage)
voltage drop across the GDT during arc current flow

3.1.3
arc-to-glow transition current
current required for the GDT to pass from the arc mode into the glow mode

3.1.4
current turn-off time
time required for the GDT to restore itself to a non-conducting state following a period of conduction. This applies only to a condition where the GDT is exposed to a continuous specified d.c. potential under a specified circuit condition

3.1.5
d.c. breakdown voltage
voltage at which the GDT transitions from a high-impedance off to a conduction state when a slowly rising d.c. voltage is applied

3.1.6
d.c. holdover
in applications where a d.c. voltage exists on a line, a holdover condition is one in which a GDT continues to conduct after it is subjected to an impulse large enough to cause breakdown. Factors that affect the time required to recover from the conducting state include the d.c. voltage and the d.c. current

3.1.7
d.c. holdover voltage
maximum d.c. voltage across the terminals of a GDT under which it may be expected to clear and to return to the high-impedance state after the passage of a surge, under specified circuit conditions

3.1.8
d.c. sparkover voltage
voltage at which the GDT sparks over when slowly increasing d.c. voltage is applied

3.1.9
GDT discharge current
current that flows through a GDT after sparkover occurs

NOTE In the event that the current passing through the GDT is alternating current, it will be r.m.s. value. In instances where the current passing through the GDT is an impulse current, the value will be the peak value.