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**Sestavni deli za nizkonapetostne naprave za zaščito pred prenapetostnimi udari -  
311. del: Specifikacije za kovinsko-oksidge varistorje (MOV) (IEC 61643-331:2002)**

Components for low-voltage surge protective devices -- Part 331: Specification for metal oxide varistors (MOV)

Bauelemente für Überspannungsschutzgeräte für Niederspannung -- Teil 331:  
Festlegungen für Metalloxidvaristoren

Composants pour parafoudres basse tension -- Partie 331: Spécifications pour les  
varistances à oxyde métallique (MOV)

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**Ta slovenski standard je istoveten z: EN 61643-331:2003**

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**ICS:**

29.120.50	Varovalke in druga medtokovna zaščita	Fuses and other overcurrent protection devices
31.040.20	Potenciometri, spremenljivi upori	Potentiometers, variable resistors

**SIST EN 61643-331:2003**

**en**

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EUROPEAN STANDARD

**EN 61643-331**

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2003

ICS 31.040

English version

**Components for low-voltage surge protective devices**  
**Part 331: Specification for metal oxide varistors (MOV)**  
**(IEC 61643-331:2003)**

Composants pour parafoudres  
 basse tension  
 Partie 331: Spécifications pour les  
 varistances à oxyde métallique (MOV)  
 (CEI 61643-331:2003)

Bauelemente für  
 Überspannungsschutzgeräte für  
 Niederspannung  
 Teil 331: Festlegungen für  
 Metalloxidvaristoren  
 (IEC 61643-331:2003)

## iTeh STANDARD PREVIEW

This European Standard was approved by CENELEC on 2003-07-01. 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, 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**

## Foreword

The text of document 37B/67/FDIS, future edition 1 of IEC 61643-331, 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 61643-331 on 2003-07-01.

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) 2004-04-01
- latest date by which the national standards conflicting  
with the EN have to be withdrawn (dow) 2006-07-01

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

## Endorsement notice

The text of the International Standard IEC 61643-331:2003 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:

IEC 60060-1	NOTE	Harmonized as HD 588.1 S1:1991 (not modified).
IEC 61000-4-5	NOTE	Harmonized as EN 61000-4-5:1995 (not modified).
IEC 61180-1	NOTE	Harmonized as EN 61180-1:1994 (not modified).

## 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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60068-1	1988	Environmental testing Part 1: General and guidance	EN 60068-1 <sup>1)</sup>	1994
IEC 60068-2-6 + corr. March	1995 1995	Part 2: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	1995
IEC 60068-2-14	1984	Part 2: Tests - Test N: Change of temperature	EN 60068-2-14	1999
IEC 60068-2-20	1979	Part 2: Tests - Test T: Soldering	HD 323.2.20 S3 <sup>2)</sup>	1988
IEC 60068-2-29 + corr.	1987	Part 2: Tests - Test Eb and guidance: Bump	EN 60068-2-29	1993
IEC 60068-2-52	1996	Part 2: Tests - Test Kb: Salt mist, cyclic (sodium chloride solution)	EN 60068-2-52	1996
IEC 60068-2-78	2001	Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	2001
IEC 61643-1 (mod) + corr. December	1998 1998	Low-voltage surge protective devices Part 11: Surge protective devices connected to low-voltage power systems - Requirements and tests	EN 61643-11	2002

<sup>1)</sup> EN 60068-1 includes corrigendum october 1988 + A1:1992 to IEC 60068-1.

<sup>2)</sup> HD 323.2.20 S3 includes A2:1987 to IEC 60068-2-20.

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INTERNATIONALE  
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IEC**

**61643-331**

Première édition  
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2003-05

**Composants pour parafoudres basse tension –**

**Partie 331:  
Spécifications pour les varistances  
à oxyde métallique (MOV)**

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**Part 331:  
Specification for metal oxide varistors (MOV)**

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Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## COMPONENTS FOR LOW-VOLTAGE SURGE PROTECTIVE DEVICES –

## Part 331: Specification for metal oxide varistors (MOV)

## 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 61643-331 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/67/FDIS	37B/68/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 2.

The committee has decided that the contents of this publication will remain unchanged until 2005. At this date, the publication will be

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

## COMPONENTS FOR LOW-VOLTAGE SURGE PROTECTIVE DEVICES –

### Part 331: Specification for metal oxide varistors (MOV)

#### 1 Scope

This part of IEC 61643 is a test specification for metal oxide varistors (MOV), which are used for applications up to 1 000 V a.c. or 1 500 V d.c. in power line, or telecommunication, or signalling circuits. They are designed to protect apparatus or personnel, or both, from high transient voltages.

This specification applies to MOVs having two electrodes and does not deal with hybrid devices. This specification also does not apply to mountings and their effect on the MOV's characteristics. Characteristics given apply solely to the MOV mounted only in the ways described for the tests.

#### 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 60068-1:1988, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-6:1995, *Environmental testing – Part 2: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-14:1984, *Environmental testing – Part 2: Tests – Test N: Change of temperature*

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

IEC 60068-2-29:1987, *Environmental testing – Part 2: Tests – Test Eb and guidance: Bump*

IEC 60068-2-52:1996, *Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic (sodium, chloride solution)*

IEC 60068-2-78:2001, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat/ steady state*

IEC 61643-1:1998, *Surge protected devices connected to low-voltage power distribution systems – Part 1: Performance requirements and testing methods*

### 3 Parametric terms, letter symbols and definitions

#### 3.1 ratings

either a limiting capability or a limiting condition beyond which damage to the MOV may occur

NOTE A limiting condition may be either a maximum or a minimum.

##### 3.1.1

##### **single-pulse peak current $I_{TM}$**

rated maximum value which may be applied for a single impulse of specified waveform, without causing MOV failure

NOTE Unless otherwise specified, an 8/20  $\mu$ s waveshape is used. In some cases, the rated line voltage may also be applied.

##### 3.1.2

##### **multiple-pulse peak current $I_{TSM}$**

rated maximum value which may be applied for repetitive applications of an impulse of specified waveform, without causing MOV failure

NOTE Unless otherwise specified, an 8/20  $\mu$ s waveform is used.

##### 3.1.3

##### **multiple-pulse peak-current derating against pulse width**

graphical representation of rated multiple-pulse peak current against rectangular pulse width for different numbers of impulses

NOTE Typically, curves are provided for indefinite,  $10^6$ ,  $10^5$ ,  $10^4$ ,  $10^3$ ,  $10^2$  and 10 pulses together with a single-pulse curve.

##### 3.1.4

##### **temperature derating curve**

graphical representation of parameter derating against temperature

NOTE Typical parameters are rated voltage, impulse current, energy and average power dissipation.

##### 3.1.5

##### **single-pulse maximum energy $W_{TM}$**

rated maximum value which may be absorbed for a single pulse of a specified waveform

NOTE Unless otherwise specified, 2 ms rectangular pulse is used (IEC 60060).

##### 3.1.6

##### **maximum continuous voltage $V_M$ (see Figure 1)**

voltage that may be applied continuously at a specified temperature

##### 3.1.6.1

##### **maximum continuous a.c. voltage $V_{M(AC)}$**

r.m.s. a.c. sinusoidal voltage (less than 5 % total harmonic distortion) that may be applied continuously at a specified temperature

##### 3.1.6.2

##### **maximum continuous d.c. voltage $V_{M(DC)}$**

d.c. voltage that may be applied continuously at a specified temperature