BRITISH STANDARD

BS EN 61643-331: 2003

Components for low-voltage surge protective devices —

Part 331: Specification for metal oxide varistors (MOV)

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ICS 31.040

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National foreword

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The UK participation in its preparation was entrusted by Technical Committee PEL/37, Surge arresters, to Subcommittee PEL/37/2, Surge arresters — Low voltage, 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;

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(IEC 61643-331:2003)

Composants pour parafoudres basse tension
Partie 331: Spécifications pour les varistances à oxyde métallique (MOV)
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European Committee for Electrotechnical Standardization
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Europäisches Komitee für Elektrotechnische Normung

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– latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2006-07-01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

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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*

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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 µs 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 µs 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

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