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**Sestavni deli za nizkonapetostne naprave za zaščito pred prenapetostnimi udari -
341. del: Specifikacije za tiristorske prenapetostne omejevalnike (TSS)**

Components for low-voltage surge protection -Part 341: Performance requirements and
test circuits for thyristor surge suppressors (TSS)

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31.080.10	Diode	Diodes

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EUROPEAN STANDARD

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Supersedes EN 61643-341:2001 and all of its
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English Version

Components for low-voltage surge protection - Part 341:
Performance requirements and test circuits for thyristor surge
suppressors (TSS)
(IEC 61643-341:2020)

Composants pour parafoudres basse tension - Partie 341:
Exigences de performance et circuits d'essai pour
parafoudres à thyristor (TSS)
(IEC 61643-341:2020)

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Niederspannung - Teil 341: Leistungsanforderungen sowie
Prüfschaltungen für Suppressordioden (TSS)
(IEC 61643-341:2020)

This European Standard was approved by CENELEC on 2020-06-17. 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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Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN IEC 61643-341:2020 (E)**European foreword**

The text of document 37B/218/FDIS, future edition 2 of IEC 61643-341, prepared by SC 37B "Components for low-voltage surge protection" of IEC/TC 37 "Surge arresters" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 61643-341:2020.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2021-03-17
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2023-06-17

This document supersedes EN 61643-341:2001 and all of its amendments and corrigenda (if any).

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

Endorsement notice

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The text of the International Standard IEC 61643-341:2020 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 60060-1:2010	NOTE	Harmonized as EN 60060-1:2010 (not modified)
IEC 60068-2-20:2008	NOTE	Harmonized as EN 60068-2-20:2008 (not modified)
IEC 60068-2-21:2006	NOTE	Harmonized as EN 60068-2-21:2006 (not modified)
IEC 60099-4:2014	NOTE	Harmonized as EN 60099-4:2014 (not modified)
IEC 60721-3-3:2019	NOTE	Harmonized as EN IEC 60721-3-3:2019 (not modified)
IEC 60721-3-9:1993	NOTE	Harmonized as EN 60721-3-9:1993 (not modified)
IEC 60749-1:2002	NOTE	Harmonized as EN 60749-1:2003 (not modified)
IEC 60950-1:2005	NOTE	Harmonized as EN 60950-1:2006 (modified)
IEC 61000-4-5:2014	NOTE	Harmonized as EN 61000-4-5:2014 (not modified)
IEC 61643-11:2011	NOTE	Harmonized as EN 61643-11:2012 (modified)
IEC 62475:2010	NOTE	Harmonized as EN 62475:2010 (not modified)

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-521	-	International Electrotechnical Vocabulary - Part 521: Semiconductor devices and integrated circuits	-	-
IEC 60068-2-20	2008	Environmental testing - Part 2-20: Tests - Test T: Test methods for solderability and resistance to soldering heat of devices with leads	EN 60068-2-20	2008

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Components for low-voltage surge protection –
Part 341: Performance requirements and test circuits for thyristor surge
suppressors (TSS)**

**Composants pour parafoudres basse tension –
Partie 341: Exigences de performance et circuits d'essai pour parafoudres
à thyristor (TSS)**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMPONENTS FOR LOW-VOLTAGE SURGE PROTECTION –**Part 341: Performance requirements and test circuits
for thyristor surge suppressors (TSS)**

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 61643-341 has been prepared by subcommittee 37B, Components for low-voltage surge protection, of IEC technical committee 37: Surge arresters.

This second edition of IEC 61643-341 cancels and replaces the first edition published in 2001. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition: Addition of performance values.

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

FDIS	Report on voting
37B/218/FDIS	37B/220/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.

A list of all parts of IEC 61643 series, under the general title *Components for low-voltage surge protective devices*, 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.

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COMPONENTS FOR LOW-VOLTAGE SURGE PROTECTION –

Part 341: Performance requirements and test circuits for thyristor surge suppressors (TSS)

1 Scope

This part of IEC 61643 specifies standard test circuits and methods for thyristor surge suppressor (TSS) components. These surge protective components, SPCs, are specially formulated thyristors designed to limit overvoltages and divert surge currents by clamping and switching actions. These SPCs are used in the construction of surge protective devices (SPDs) and equipment used in Information & Communications Technologies (ICT) networks with voltages up to AC 1 000 V and DC 1 500 V. This document is applicable to gated or non-gated TSS components with third quadrant (-v and -i) characteristics of blocking, conducting or switching.

This document contains information on

- terminology;
- letter symbols;
- essential ratings and characteristics;
- rating verification and characteristic measurement;

This document does not apply to the conventional three-terminal thyristors as covered by IEC 60747-6.

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2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60050-521, *International Electrotechnical Vocabulary – Chapter 521: Semiconductor devices and integrated circuits*

IEC 60068-2-20:2008, *Environmental testing – Part 2-20: Tests – Test T: Test methods for solderability and resistance to soldering heat of devices with leads*

3 Terms, definitions, abbreviated terms and symbols

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 Parametric terms, letter symbols and definitions

Where appropriate, terms, letter symbols and definitions are used from conventional thyristor (IEC 60747-6) and rectifier diode (IEC 60747-2) standards. TSS definitions are the same or similar to conventional thyristor definitions. To avoid the proliferation of terms, the word “thyristor”, as used in the terms of this document, is synonymous with “TSS”.

NOTE 1 IEC 60747-1, clause 2.1.1 Basic letters, states “IEC 60027 recommends the letters V and v only as reserve symbols for voltage; however, in the field of semiconductor devices, they are so widely used that in this publication they are on the same plane as U and u .” This document uses the letters V and v for voltage with the letters U and u as alternatives.

NOTE 2 Where several distinctive forms of letter symbol exist, the most commonly used form is given first.

3.2 General terms

3.2.1 information and communications technologies

ICT

group of applications using information and communications (telecommunications) technologies

[SOURCE: ISO/IEC 24704:2004, 3.1.5]

3.2.2

overcurrent

any current having a peak value exceeding the corresponding peak value of maximum steady-state current at normal operating conditions

[SOURCE: IEC 60664-2-1, ed. 2.0 (2011-01), 3.21, modified by replacing voltage with current]

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3.2.3

overvoltage

any voltage having a peak value exceeding the corresponding peak value of maximum steady-state voltage at normal operating conditions

[SOURCE: IEC 60664-2-1, ed. 2.0 (2011-01), 3.21]

3.2.4

surge protective device

SPD

device that restricts the voltage of a designated port or ports, caused by a surge, when it exceeds a predetermined level

Note 1 to entry: Secondary functions may be incorporated, such as a current limiting to restrict a terminal current.

Note 2 to entry: Typically, the protective circuit has at least one non-linear voltage-limiting surge protective component.

Note 3 to entry: An SPD is a complete assembly, having terminals to connect to the circuit conductors.

[SOURCE: IEC 61643-21:2008, 3.8]

3.3 Main terminal ratings

Listed ratings cover the appropriate requirements of the blocking, conducting and switching quadrants.