SVENSK STANDARD SS-EN 61643-31

Fastställd	Utgåva	Sida	Ansvarig kommitté
2019-06-12	1	1 (1+63)	SEK TK 37A

Överspänningsskydd för lågspänning – Del 31: Överspänningsskydd för solcellsanläggningar – Fordringar och provning

Low-voltage surge protective devices – Part 31: Requirements and test methods for SPDs for photovoltaic installations

Som svensk standard gäller europastandarden EN 61643-31:2019. Den svenska standarden innehåller den officiella engelska språkversionen av EN 61643-31:2019.

Nationellt förord

Europastandarden EN 61643-31:2019

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 61643-31, First edition, 2018 - Low-voltage surge protective devices - Part 31: Requirements and test methods for SPDs for photovoltaic installations**

utarbetad inom International Electrotechnical Commission, IEC.

Tidigare fastställd svensk standard SS-EN 50539-11, utgåva 1, 2013 och SS-EN 50539-11/A1, utgåva 1, 2014, gäller ej fr o m 2022-05-03.

ICS 29.240.01; 29.240.10

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Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61643-31

May 2019

ICS 29.240; 29.240.10

Supersedes EN 50539-11:2013

English Version

Low-voltage surge protective devices - Part 31: Requirements and test methods for SPDs for photovoltaic installations (IEC 61643-31:2018 , modified)

Parafoudres basse tension - Partie 31: Parafoudres pour usage spécifique y compris en courant continu - Exigences et méthodes d'essai des parafoudres pour installations photovoltaïques
(IEC 61643-31:2018 , modifiée)

Überspannungsschutzgeräte für Niederspannung - Teil 31: Anforderungen und Prüfungen für Überspannungsschutzgeräte in Photovoltaik-Installationen
(IEC 61643-31:2018 , modifiziert)

This European Standard was approved by CENELEC on 2018-02-14. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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

Ref. No. EN 61643-31:2019 E

SEK Svensk Elstandard

SS-EN 61643-31, utg 1:2019

European foreword

The text of document 37A/306/FDIS, future edition 1 of IEC 61643-31, prepared by SC 37A: “Low-voltage surge protective devices”, of IEC/TC 37: “Surge arresters” was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61643-31:2019.

A draft amendment, which covers common modifications to IEC 61643-31, was prepared by CLC/TC 37A "Low-voltage surge protective devices" and approved by CENELEC.

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2019-11-03
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2022-05-03

EN 61643-31:2019 supersedes EN 50539-11:2013.

Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 61643-31:2019 are prefixed “Z”.

EN 61643-31:2019 includes the following significant technical changes with respect to EN 50539-11:2013: It includes also guidance for verification of conformity for products already tested according EN 50539-11:2013.

The main changes with respect of EN 50539-11:2013 are the complete restructuring and improvement of the test procedures and test sequences.

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.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZZ, which is an integral part of this document.

Endorsement notice

The text of the International Standard IEC 61643:2018 was approved by CENELEC as a European Standard with agreed common modifications.

Add the following annexes:

Annex ZA
(informative)

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.

Publication	Year	Title	EN/HD	Year
IEC 60060-1	2010	High-voltage test techniques - Part 1: General definitions and test requirements	EN 60060-1	2010
IEC 60112	2003	Method for the determination of the proof and the comparative tracking indices of solid insulating materials	EN 60112	2003
IEC 60529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529	1991
IEC 60664-1	2007	Insulation coordination for equipment within low-voltage systems - Part 1: Principles, requirements and tests	EN 60664-1	2007
IEC 61000	series	Electromagnetic compatibility (EMC)	EN 61000	series
IEC 61000-6-1	2005	Electromagnetic compatibility (EMC) – Part 6-1: Generic standards – Immunity for residential, commercial and light-industrial environments	EN 61000-6-1	2007
IEC 61000-6-3	2006	Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments	EN 61000-6-3	2007
IEC 60068-2-78	2012	Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	2013
IEC 61180-1	1992	High-voltage test techniques for low-voltage equipment - Part 1: Definitions, test and procedure requirements	EN 61180-1	1994
IEC 60364-5-51	-	Electrical installation of buildings – Part 5-51: Selection and erection of electrical equipment; Common rules	HD 60364-5-51	2009

IEC 61643-11	2011	Low-voltage surge protective devices –Part 11: Surge protective devices connected to low-voltage power systems –Requirements and test methods	EN 61643-11 + A11	2012 2018
IEC 62475	-	High-current test techniques - Definitions and requirements for test currents and measuring systems	EN 62475	2010

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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LOW-VOLTAGE SURGE PROTECTIVE DEVICES –

Part 31: Requirements and test methods for SPDs for photovoltaic installations

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 61643-31 has been prepared by subcommittee 37A: Low-voltage 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
37A/306/FDIS	37A/310/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 the IEC 61643 series can be found, under the general title *Low-voltage surge protective devices*, 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 website 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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This part of IEC 61643 addresses safety and performance tests for surge protective devices (SPDs) to be installed on the DC side of photovoltaic installations to protect against induced and direct lightning effects.

There are three classes of tests:

1) The Class I test is intended to simulate partial conducted lightning current impulses. SPDs subjected to Class I test methods are generally recommended for locations at points of high exposure, e.g., line entrances to buildings protected by lightning protection systems.
2) SPDs tested to Class II or Class III test methods are subjected to impulses of shorter duration.
3) SPDs are tested on a “black box” basis as far as possible.

Tests take into account that photovoltaic generators:

- behave like current generators,
- that their output current depends on the incident light intensity and temperature,
- that their short-circuit current is slightly higher than the operating output current,
- are connected in series and/or parallel combinations leading to a great variety of voltages, currents and powers from a few hundreds of W (in residential installations) to several MW (photovoltaic fields).

The specific electrical parameters of PV installations on the DC side require specific test requirements for SPDs.

IEC 61643-32 addresses the selection and application principles of SPDs in practical situations for PV application (work in progress).

LOW-VOLTAGE SURGE PROTECTIVE DEVICES –

Part 31: Requirements and test methods for SPDs for photovoltaic installations

1 Scope

This part of IEC 61643 is applicable to Surge Protective Devices (SPDs), intended for surge protection against indirect and direct effects of lightning or other transient overvoltages. These devices are designed to be connected to the DC side of photovoltaic installations rated up to 1 500 V DC.

These devices contain at least one non-linear component and are intended to limit surge voltages and divert surge currents. Performance characteristics, safety requirements, standard methods for testing and ratings are established.

SPDs complying with this standard are exclusively dedicated to be installed on the DC side of photovoltaic generators and the DC side of inverters.

SPDs for PV systems with energy storage (e.g. batteries, capacitor banks) are not covered.

SPDs with separate input and output terminals that contain specific series impedance between these terminal(s) (so called two-port SPDs according to IEC 61643-11:2011) are not covered.

SPDs compliant with this standard are designed to be permanently connected where connection and disconnection of fixed SPDs can only be done using a tool. This standard does not apply to portable SPDs

NOTE 1 In general SPDs for PV applications do not contain a specific series impedance between the input/output terminals due to power efficiency considerations.

NOTE 2 Wherever reference is made to the electric power system or the power system within this document, this refers to the DC side of the photovoltaic installation.

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 60060-1:2010, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60068-2-78:2012, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60664-1:2007, *Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*

IEC 61000-6-3, *Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments*

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

IEC 61643-11:2011, *Low-voltage surge protective devices – Part 11: Surge protective devices connected to low-voltage power systems – Requirements and test methods*

IEC 62475:2010, *High-current test techniques – Definitions and requirements for test currents and measuring systems*