SLOVENSKI STANDARD
SIST EN IEC 62271-213:2021

01-oktober-2021

Visokonapetostne stikalne in krmilne naprave - 213. del: Sistem za detekcijo in indikacijo napetosti (IEC 62271-213:2021)

High-voltage switchgear and controlgear - Part 213: Voltage detecting and indicating system (IEC 62271-213:2021)

Hochspannungs-Schaltgeräte und -Schaltanlagen – Teil 213: Spannungsprüf- und -anzeigesysteme (IEC 62271-213:2021)

Appareillage à haute tension - Partie 213: Système détecteur et indicateur de tension (IEC 62271-213:2021)

Ta slovenski standard je istoveten z: **EN IEC 62271-213:2021**

ICS:

29.130.10	Visokonapetostne stikalne in krmilne naprave	High voltage switchgear and controlgear

SIST EN IEC 62271-213:2021 **en**

EUROPEAN STANDARD
NORME EUROPÉENNE
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English Version

High-voltage switchgear and controlgear - Part 213: Voltage detecting and indicating system (IEC 62271-213:2021)

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This European Standard was approved by CENELEC on 2021-07-29. 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.

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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 IEC 62271-213:2021 E

European foreword

The text of document 17C/787/FDIS, future edition 1 of IEC 62271-213, prepared by SC 17C "Assemblies" of IEC/TC 17 "High-voltage switchgear and controlgear" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62271-213:2021.

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) 2022–04–29
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2024–07–29

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.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice

The text of the International Standard IEC 62271-213:2021 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 60999-1 NOTE Harmonized as EN 60999-1

IEC 61243-5:1997 NOTE Harmonized as EN 61243-5:2001 (modified)

IEC 61243-1:2021 NOTE Harmonized as EN IEC 61243-1:2021 (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.

Publication	Year	Title	EN/HD	Year
IEC 60060-1	-	High-voltage test techniques - Part 1: General definitions and test requirements	EN 60060-1	-
IEC 60068-2–1	2007	Environmental testing - Part 2–1: Tests - Test A: Cold	EN 60068-2–1	2007
IEC 60068-2–2	2007	Environmental testing - Part 2–2: Tests - Test B: Dry heat	EN 60068-2–2	2007
IEC 60068-2–6	-	Environmental testing - Part 2–6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2–6	-
IEC 60068-2–11	-	Environmental testing - Part 2–11: Tests - Test Ka: Salt mist	EN IEC 60068-2–11	-
IEC 60068-2–31	-	Environmental testing - Part 2–31: Tests - Test Ec: Rough handling shocks, primarily for equipment-type specimens	EN 60068-2–31	-
IEC 60068-2–38	-	Environmental testing - Part 2–38: Tests - Test Z/AD: Composite temperature/humidity cyclic test	EN IEC 60068-2–38	-
IEC 60068-2–78	-	Environmental testing - Part 2–78: Tests - Test Cab: Damp heat, steady-state	EN 60068-2–78	-
IEC 60352-1	-	Solderless connections - Part 1: Wrapped connections - General requirements, test methods and practical guidance	EN 60352-1	-
IEC 60352-2	-	Solderless connections - Part 2: Crimped connections - General requirements, test methods and practical guidance	EN 60352-2	-
IEC 60352-5	-	Solderless connections - Part 5: Press-in connections - General requirements, test methods and practical guidance	EN IEC 60352-5	-
IEC 60417	-	Graphical symbols for use on equipment	-	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-

IEC 61000-4–2	-	Electromagnetic compatibility (EMC) - Part 4–2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4–2	-
IEC 61000-4–3	-	Electromagnetic compatibility (EMC) - Part 4–3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN IEC 61000-4–3	-
IEC 61010-031	2015	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 031: Safety requirements for hand-held probe assemblies for electrical measurement and test	EN 61010-031	2015
+ A1	2018		+ FprA1	2018
IEC 61210	-	Connecting devices - Flat quick-connect terminations for electrical copper conductors - Safety requirements	EN 61210	-
IEC 62262	-	Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)	EN 62262	-
IEC 62271-1	-	High-voltage switchgear and controlgear - Part 1: Common specifications for alternating current switchgear and controlgear	EN 62271-1	-

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

High-voltage switchgear and controlgear –
Part 213: Voltage detecting and indicating system

Appareillage à haute tension –
Partie 213: Système détecteur et indicateur de tension

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 213: Voltage detecting and indicating system

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 62271-213 has been prepared by subcommittee 17C:Assemblies, of IEC technical committee 17: High-voltage switchgear and controlgear.

This first edition cancels and replaces the first edition of IEC 61243-5 published in1997 and the first edition of IEC 62271-206 published in 2011. This edition constitutes a merging of the content of IEC 61243-5 and IEC 62271-206.

This edition includes the following significant technical changes with respect to the previous editions of IEC 61243-5 and IEC 62271-206:

a) an optional output signal is defined to be used for multipurpose use cases;
b) only one *interface* is defined for *voltage detecting and indicating system* (*VDIS*);
c) the measurement of the current carrying capacity of the *voltage limiting element* is considered as inaccurate and is not considered in this document. Experience shows that the probability of failure of the *coupling element* is negligible.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
17C/787/FDIS	17C/794/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English .

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

In this document, the following print types are used:

- Terms defined in Clause 3*: in italic type*.

The reader's attention is drawn to the fact that Annex B lists all of the "in-some-country" clauses on differing practices of a less permanent nature relating to the subject of this document.

A list of all parts in the IEC 62271 series, published under the general title *High-voltage switchgear and controlgear*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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

INTRODUCTION

This part of IEC 62271 has been prepared in accordance with the requirements of IEC 62271-1.

The products designed and manufactured in accordance with this document contribute to the safety of the users, provided they are used by skilled or instructed persons, in accordance with safe methods of work and the instructions for use.

The product covered by this document can have an impact on the environment during some or all stages of its life cycle. These impacts can range from slight to significant, be of short-term or long-term duration, and occur at the global, regional or local level.

IEC 62271-213 does not cover the phase comparison function of IEC 61243-5 which is covered by the new IEC 62271-215. Unless IEC 62271-215 is not published, the relevant subclauses in IEC 61243-5 related to UPCs are applicable.

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 213: Voltage detecting and indicating system

1 Scope

This part of IEC 62271 is applicable to the *voltage detecting and indicating system* (*VDIS*) to be installed on indoor and outdoor high-voltage *equipment*.

The *VDIS* as defined by this document includes a *coupling system* per phase (capacitive, resistive coupling or other technology) to connect to live parts (*main circuit*).

The *VDIS* is applicable on systems with *nominal voltage*s above 1 kV and service frequencies from 16,7 Hz up to and including 60 Hz. The *VDIS* is used to detect and indicate the presence or absence of *operating voltage*. It is not intended to distinguish between voltage not present (i.e. U < 10 % of *nominal voltage*) and dead circuit state (i.e. U = 0 V).

NOTE 1 The use of a specific means of connection to earth of the *main circuit* (e.g. by an earthing switch) provides the "dead circuit" (U = 0 V) state.

NOTE 2 The *VDIS* has the same threshold values as the voltage presence indicating system (VPIS) (IEC 62271-206) and the voltage detecting system (VDS) (IEC 61243-5) for not indicating presence of voltage and for detecting an absence of *operating voltage*, respectively.

The *VDIS* is fixed on *equipment* such as switchgear and controlgear according to the IEC 62271 series or transformers according to their own standards.

The products designed and manufactured in accordance with this document contribute to the safety of the users, provided they are used by skilled or instructed persons in accordance with safe methods of work and the instructions for use.

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

IEC 60068-2-1:2007, *Environmental testing – Part 2-1: Tests – Test A: Cold*

IEC 60068-2-2:2007, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

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

IEC 60068-2-11, *Basic environmental testing procedures – Part 2-11: Tests – Test Ka: Salt mist*

IEC 60068-2-31, *Environmental testing – Part 2-31: Tests – Test Ec: Rough handling shocks, primarily for equipment-type specimens*

IEC 60068-2-38, *Environmental testing – Part 2-38: Tests – Test Z/AD: Composite temperature/humidity cyclic test*

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

IEC 60352-1, *Solderless connections – Part 1: Wrapped connections; general requirements, test methods and practical guidance*

IEC 60352-2, *Solderless connections – Part 2: Solderless crimped connections – General requirements, test methods and practical guidance*

IEC 60352-5, *Solderless connections – Part 5: Press-in connections – General requirements, test methods and practical guidance*

IEC 60417, *Graphical symbols for use on equipment* (available at http://www.graphical-symbols.info/equipment)

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

IEC 61000-4-2, *Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*

IEC 61000-4-3, *Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test*

IEC 61010-031:2015, *Safety requirements for electrical equipment for measurement, control and laboratory use – Part 031: Safety requirements for hand-held probe assemblies for electrical measurement and test*
IEC 61010-031:2015/AMD1:2018

IEC 61210, *Connecting devices – Flat quick-connect terminations for electrical copper conductors – Safety requirements*

IEC 62262, *Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)*

IEC 62271-1, *High-voltage switchgear and controlgear – Part 1: Common specifications for alternating current switchgear and controlgear*

3 Terms and definitions

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:

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

3.1
active signal
audible or visual phenomenon of the *VDIS* whose presence, absence or variation is considered as representing information on the condition “voltage present” or “voltage not present”

[SOURCE: IEC 61243-1:2021 [15][1], 3.2, modified – "of the VDIS" is added, the Note 1 to entry is removed.]

3.2
adjustment element
part of the *coupling system*, connected to the earth, which is used to modify the signal of the *coupling element*

Note 1 to entry: Different components can be used for the *adjustment element*, for example, capacitive, resistive, or other.

3.3
connecting lead
element of the *VDIS* which provides electrical connection between the *coupling element* and all other parts being used in the construction of the *VDIS*

Note 1 to entry: The other parts can be, for example, the *testing points* and connecting points, integrated *indicator*, etc.

3.4
connecting point
rear accessible point of the *VDIS* which provides access to the signal

3.5
coupling element
part of the *coupling system* which establishes the connection with the *main circuit*

Note 1 to entry: Different physical principles can be used for the *coupling element*, for example, capacitive or resistive.

3.6
coupling system
part of the *VDIS* connected between the *main circuit* and earth, which transmits a signal to the indicating element

Note 1 to entry: The *coupling system* is generally designed as a voltage divider.

3.7
equipment
single apparatus or set of devices or apparatuses, or the set of main devices of an installation, or all devices necessary to perform a specific task

Note 1 to entry: The *VDIS* is used to be fixed on *equipment* such as switchgear and controlgear as per the IEC 62271 series or transformers according to their own standard.

[SOURCE: IEC 60050-151:2001 [1], 151-11-25, modified – the Note has been replaced by a new Note 1.]

3.8
equivalent threshold voltage
U_{et}
value of the *operating voltage* at the *main circuit* in the case of a test, when the *measuring voltage* has reached the *threshold voltage*

3.9
front
part of the *VDIS* accessible during functional operation

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1 Numbers in square brackets refer to the Bibliography.