

<b>STN</b>	<b>Vysokonapäťové spínacie a riadiace zariadenia Časť 214: Klasifikácia vnútorného oblúka pre kovové rozvádzače a ovládacie zariadenia namontované na stĺpoch striedavého prúdu pre menovité napätie nad 1 kV až do 52 kV vrátane</b>	<b>STN EN IEC 62271-214</b>  35 4220
------------	---	--

High-voltage switchgear and controlgear - Part 214: Internal arc classification for AC metal-enclosed pole-mounted switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 08/24

Obsahuje: EN IEC 62271-214:2024, IEC 62271-214:2024

Oznámením tejto normy sa od 21.05.2027 ruší  
STN EN IEC 62271-214 (35 4220) z februára 2020

EUROPEAN STANDARD

**EN IEC 62271-214**

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2024

ICS 29.130.10

Supersedes EN IEC 62271-214:2019

English Version

High-voltage switchgear and controlgear - Part 214: Internal arc classification for AC metal-enclosed pole-mounted switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV  
(IEC 62271-214:2024)

Appareillage à haute tension - Partie 214 : Classification arc interne des appareillages sous enveloppe métallique à courant alternatif de tensions assignées supérieures à 1 kV et inférieures ou égales à 52 kV montées sur poteau  
(IEC 62271-214:2024)

Hochspannungs-Schaltgeräte und -Schaltanlagen - Teil 214: Störlichtbogenklassifikation für metallgekapselte, mastmontierte Schaltanlagen für Bemessungsspannungen über 1 kV bis einschließlich 52 kV  
(IEC 62271-214:2024)

This European Standard was approved by CENELEC on 2024-05-21. 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye 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**

## EN IEC 62271-214:2024 (E)

### European foreword

The text of document 17C/924/FDIS, future edition 2 of IEC 62271-214, 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 62271-214:2024.

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) 2025-02-21
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2027-05-21

This document supersedes EN IEC 62271-214:2019 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.

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 62271-214:2024 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 standard indicated:

IEC 62271-200:2021	NOTE	Approved as EN IEC 62271-200:2021 (not modified)
IEC/TR 62271-307:2015	NOTE	Approved as CLC IEC/TR 62271-307:2019 (not modified)
IEC 60038:2009	NOTE	Approved as EN 60038:2011
IEC 60059:1999	NOTE	Approved as EN 60059:1999 (not modified)
IEC 60059:1999/A1:2009	NOTE	Approved as EN 60059:1999/A1:2009 (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.cencenelec.eu](http://www.cencenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-151	2001	International Electrotechnical Vocabulary - Part 151: Electrical and magnetic devices	-	-
+ AMD1	2013		-	-
+ AMD2	2014		-	-
+ AMD3	2019		-	-
+ AMD4	2020		-	-
+ AMD5	2021		-	-
IEC 60050-441	1984	International Electrotechnical Vocabulary. Switchgear, controlgear and fuses	-	-
+AMD1	2000			
IEC 62271-1	2017	High-voltage switchgear and controlgear - Part 1: Common specifications for alternating current switchgear and controlgear	EN 62271-1	2017
+ AMD1	2021		+ A1	2021
IEC 62271-200	2021	High-voltage switchgear and controlgear - Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	EN IEC 62271-200	2021



IEC 62271-214

Edition 2.0 2024-04

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**High-voltage switchgear and controlgear –  
Part 214: Internal arc classification for AC metal-enclosed pole-mounted  
switchgear and controlgear for rated voltages above 1 kV and up to and  
including 52 kV**

**Appareillage à haute tension –  
Partie 214 : Classification arc interne des appareillages sous enveloppe  
métallique à courant alternatif de tensions assignées supérieures à 1 kV et  
inférieures ou égales à 52 kV montées sur poteau**



**THIS PUBLICATION IS COPYRIGHT PROTECTED**  
**Copyright © 2024 IEC, Geneva, Switzerland**

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Secretariat  
3, rue de Varembe  
CH-1211 Geneva 20  
Switzerland

Tel.: +41 22 919 02 11  
[info@iec.ch](mailto:info@iec.ch)  
[www.iec.ch](http://www.iec.ch)

#### About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

#### About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

#### IEC publications search - [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

#### IEC Customer Service Centre - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: [sales@iec.ch](mailto:sales@iec.ch).

#### IEC Products & Services Portal - [products.iec.ch](http://products.iec.ch)

Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

---

#### A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

#### A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

#### Recherche de publications IEC -

#### [webstore.iec.ch/advsearchform](http://webstore.iec.ch/advsearchform)

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études, ...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

#### IEC Just Published - [webstore.iec.ch/justpublished](http://webstore.iec.ch/justpublished)

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

#### Service Clients - [webstore.iec.ch/csc](http://webstore.iec.ch/csc)

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: [sales@iec.ch](mailto:sales@iec.ch).

#### IEC Products & Services Portal - [products.iec.ch](http://products.iec.ch)

Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications, symboles graphiques et le glossaire. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

#### Electropedia - [www.electropedia.org](http://www.electropedia.org)

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 500 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 25 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.



IEC 62271-214

Edition 2.0 2024-04

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



**High-voltage switchgear and controlgear –  
Part 214: Internal arc classification for AC metal-enclosed pole-mounted  
switchgear and controlgear for rated voltages above 1 kV and up to and  
including 52 kV**

**Appareillage à haute tension –  
Partie 214 : Classification arc interne des appareillages sous enveloppe  
métallique à courant alternatif de tensions assignées supérieures à 1 kV et  
inférieures ou égales à 52 kV montées sur poteau**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

ICS 29.130.10

ISBN 978-2-8322-8431-5

**Warning! Make sure that you obtained this publication from an authorized distributor.  
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

## CONTENTS

FOREWORD.....	4
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references .....	7
3 Terms and definitions .....	8
3.1 General terms and definitions .....	8
3.8 Index of definitions.....	10
4 Normal and special service conditions .....	11
5 Ratings.....	11
5.1 General.....	11
5.2 Rated voltage ( $U_r$ ) .....	11
5.2.1 General .....	11
5.3 Rated insulation level ( $U_d$ , $U_p$ , $U_s$ ) .....	11
5.4 Rated frequency ( $f_r$ ).....	12
5.101 Ratings of the internal arc classification (IAC).....	12
5.101.1 General .....	12
5.101.2 Rated approach distance ( $D_{AP}$ ).....	12
5.101.3 Rated arc fault currents ( $I_A$ , $I_{Ae}$ ).....	12
5.101.4 Rated arc fault duration ( $t_A$ , $t_{Ae}$ ) .....	12
6 Design and construction .....	12
6.11 Nameplate .....	12
6.11.2 Application.....	12
6.101 Internal arc fault.....	13
6.102 Enclosure .....	13
7 Type tests .....	14
7.1 General.....	14
7.1.1 Basics .....	14
7.1.2 Information for identification of test object .....	15
7.1.3 Information to be included in type-test reports .....	15
7.101 Internal arc type test.....	16
7.101.1 General .....	16
7.101.2 Test conditions .....	16
7.101.3 Arrangement of the equipment.....	17
7.101.4 Indicators (for assessing the thermal effects of the gases).....	19
7.101.5 Arrangement of indicators.....	19
7.101.6 Test parameters .....	20
7.101.7 Test procedure .....	21
7.101.8 Criteria to pass the test .....	26
7.101.9 Transferability of the test results.....	26
8 Routine tests .....	27
9 Guide to the selection of switchgear and controlgear (informative) .....	27
9.1 General.....	27
9.101 Internal arc fault.....	27
9.101.1 General .....	27
9.101.2 Causes and preventive measures .....	28



9.101.3	Supplementary protective measures .....	28
9.101.4	Considerations for the selection and installation .....	29
9.101.5	Internal arc test .....	29
9.101.6	IAC designation .....	29
10	Information to be given with enquiries, tenders and orders (informative) .....	30
10.1	General.....	30
11	Transport, storage, installation, operation instruction and maintenance .....	30
11.1	General.....	30
11.2	Conditions during transport, storage and installation .....	31
11.3	Installation .....	31
11.3.1	General .....	31
11.101	Maintenance .....	31
12	Safety.....	31
12.1	General.....	31
13	Influence of the product on the environment .....	31
Annex A	(normative) Identification of the test objects .....	32
A.1	General.....	32
A.2	Data.....	32
A.3	Drawings.....	32
Bibliography	.....	33
Figure 1	– Examples of enclosures and compartment(s) in different arrangements .....	14
Figure 2	– Test arrangement for pole-mounted switchgear and controlgear.....	18
Figure 3	– Horizontal indicator .....	19
Figure 4	– Flow-chart for the choice of arc initiation depending on the construction .....	24
Table 1	– Nameplate information .....	13
Table 2	– Parameters for internal arc fault test according to enclosure and compartment construction.....	23
Table 3	– Locations, causes and examples of measures to decrease the probability of internal arc faults .....	28
Table 4	– Single-phase-to-earth arc fault current depending on the network neutral earthing .....	30

# INTERNATIONAL ELECTROTECHNICAL COMMISSION

## HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

### **Part 214: Internal arc classification for AC metal-enclosed pole-mounted switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV**

#### 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.
- 2) The formal decisions or agreements of 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 IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 62271-214 has been prepared by subcommittee 17C: Assemblies, of IEC technical committee 17: High voltage switchgear and controlgear. It is an International Standard.

This second edition cancels and replaces the first edition published in 2019. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) indicators positioning update;
- b) neutral earthing connection of the test circuit for three-phase tests;
- c) general review for consistency with IEC 62271-200, Ed.3.0:2021.

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

Draft	Report on voting
17C/924/FDIS	17C/931/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](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

This standard shall be read in conjunction with IEC 62271-1, second edition, published in 2017, to which it refers, and which is applicable unless otherwise specified in this standard. In order to simplify the indication of corresponding requirements, the same numbering of clauses and subclauses is used as in IEC 62271-1. Amendments to these clauses and subclauses are given under the same references whilst additional subclauses are numbered from 101. Any clause with the term "Not applicable" relates to the clause not being relevant to IEC 62271-214, and does not infer the clause is or is not relevant for its applicable switchgear standard.

A list of all parts of 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](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

## INTRODUCTION

IEC 62271-214 has been developed due to the requirement to remove IAC Type C designated pole-mounted switchgear from IEC 62271-200. IEC 62271-214 is to be considered independent of IEC 62271-200, however it is still related to other product standards of the IEC 62271 series.

Only open terminal pole-mounted switchgear and controlgear has been considered within this document.

This equipment relates to operation in three-phase, two-phase and single-phase systems.

## HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

### Part 214: Internal arc classification for AC metal-enclosed pole-mounted switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV

#### 1 Scope

This part of IEC 62271 specifies requirements for internal arc classification of AC metal-enclosed pole-mounted switchgear and controlgear with rated voltages above 1 kV and up to and including 52 kV with service frequencies up to and including 60 Hz.

This document is applicable to three-phase, two-phase and single-phase open terminal equipment for which an internal arc classification is assigned. Enclosures may include fixed and removable components and may be filled with fluid (liquid or gas) to provide insulation.

NOTE 1 The IAC classification takes into account the installation disposition of the high-voltage switchgear and controlgear and worker's operating area.

NOTE 2 For the use of this document, high-voltage (IEC 60050-601:1985, 601-01-27) is the rated voltage above 1 000 V. However, medium voltage (IEC 60050-601:1985, 601-01-28) is commonly used for distribution systems with voltages above 1 kV and generally applied up to and including 52 kV; refer to [1]<sup>1</sup>.

This document does not preclude that other equipment may be included in the same enclosure. In such a case, any possible influence of that equipment on the switchgear and controlgear is to be taken into account.

#### 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 60050-151:2001, *International Electrotechnical Vocabulary (IEV) – Part 151: Electrical and magnetic devices*

IEC 60050-151:2001/AMD1:2013

IEC 60050-151:2001/AMD2:2014

IEC 60050-151:2001/AMD3:2019

IEC 60050-151:2001/AMD4:2020

IEC 60050-151:2001/AMD5:2021

IEC 60050-441:1984, *International Electrotechnical Vocabulary (IEV) – Part 441: Switchgear, controlgear and fuses*

IEC 60050-441:1984/AMD1:2000

IEC 62271-1:2017, *High-voltage switchgear and controlgear – Part 1: Common specifications for alternating current switchgear and controlgear*

IEC 62271-1:2017/AMD1:2021

---

<sup>1</sup> Numbers in square brackets refer to the Bibliography.

IEC 62271-200:2021, *High-voltage switchgear and controlgear – Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**