



# SLOVENSKI STANDARD SIST EN IEC 62271-109:2019

01-september-2019

Nadomešča:

SIST EN 62271-109:2009

SIST EN 62271-109:2009/A1:2013

---

**Visokonapetostne stikalne in krmilne naprave - 109. del: Stikala z zaporednimi kondenzatorji na izmenični tok (IEC 62271-109:2019)**

High-voltage switchgear and controlgear - Part 109: Alternating-current series capacitor by-pass switches (IEC 62271-109:2019)

**iTeh STANDARD PREVIEW**

Hochspannungs-Schaltgeräte und -Schaltanlagen - Teil 109: Wechselstrom-Überbrückungsschalter für Reihenkapazitoren (IEC 62271-109:2019)

[SIST EN IEC 62271-109:2019](#)

Appareillage à haute tension - Partie 109: Interrupteurs de contournement pour condensateurs série à courant alternatif (IEC 62271-109:2019)

**Ta slovenski standard je istoveten z: EN IEC 62271-109:2019**

---

**ICS:**

29.130.10	Visokonapetostne stikalne in krmilne naprave	High voltage switchgear and controlgear
-----------	--	---

**SIST EN IEC 62271-109:2019**

**en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN IEC 62271-109:2019](https://standards.iteh.ai/catalog/standards/sist/661984ab-1e91-4640-a2b3-0e2c7f1248bf/sist-en-iec-62271-109-2019)

<https://standards.iteh.ai/catalog/standards/sist/661984ab-1e91-4640-a2b3-0e2c7f1248bf/sist-en-iec-62271-109-2019>

EUROPEAN STANDARD

EN IEC 62271-109

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2019

ICS 29.130.10

Supersedes EN 62271-109:2009

English Version

## High-voltage switchgear and controlgear - Part 109: Alternating-current series capacitor by-pass switches (IEC 62271-109:2019)

Appareillage à haute tension - Partie 109: Interrupteurs de contournement pour condensateurs série à courant alternatif  
(IEC 62271-109:2019)

Hochspannungs-Schaltgeräte und -Schaltanlagen - Teil 109: Wechselstrom-Überbrückungsschalter für Reihenkondensatoren  
(IEC 62271-109:2019)

This European Standard was approved by CENELEC on 2019-05-13. 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.

SIST EN IEC 62271-109:2019

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

**EN IEC 62271-109:2019 (E)****European foreword**

The text of document 17A/1208/FDIS, future edition 3 of IEC 62271-109, prepared by SC 17A "Switching devices" of IEC/TC 17 "High-voltage switchgear and controlgear" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 62271-109:2019.

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) 2020-02-13
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2022-05-13

This document supersedes EN 62271-109:2009.

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.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

### Endorsement notice

[SIST EN IEC 62271-109:2019](https://standards.iteh.ai/catalog/standards/sist/661984ab-1e91-4640-a2b3-0e2c7f1248bf/sist-en-iec-62271-109-2019)

[https://standards.iteh.ai/catalog/standards/sist/661984ab-1e91-4640-a2b3-](https://standards.iteh.ai/catalog/standards/sist/661984ab-1e91-4640-a2b3-0e2c7f1248bf/sist-en-iec-62271-109-2019)

[0e2c7f1248bf/sist-en-iec-62271-109-2019](https://standards.iteh.ai/catalog/standards/sist/661984ab-1e91-4640-a2b3-0e2c7f1248bf/sist-en-iec-62271-109-2019)

The text of the International Standard IEC 62271-109:2019 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 60071-1	NOTE	Harmonized as EN 60071-1
IEC 60071-2	NOTE	Harmonized as EN IEC 60071-2
IEC 62271-200	NOTE	Harmonized as EN 62271-200
IEC 62271-203	NOTE	Harmonized as EN 62271-203
IEC 60296	NOTE	Harmonized as EN 60296
IEC 60529	NOTE	Harmonized as EN 60529

## 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](http://www.cenelec.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	-	-
IEC 60050-436	1990	International Electrotechnical Vocabulary. Chapter - 436: Power capacitors	-	-
IEC 60050-441	1984	International Electrotechnical Vocabulary. - Switchgear, controlgear and fuses	-	-
IEC 60050-614	2016	International Electrotechnical Vocabulary - Part 614: - Generation, transmission and distribution of electricity - Operation	-	-
IEC 60060	series	High-voltage test techniques	EN 60060	series
IEC 60137	2017	Insulated bushings for alternating voltages above 1000 V	EN 60137	2017
IEC 60143-1	2015	Series capacitors for power systems - Part 1: - General	EN 60143-1	2015
IEC 60143-2	2012	Series capacitors for power systems - Part 2: - Protective equipment for series capacitor banks	EN 60143-2	2013
IEC 60270	-	High-voltage test techniques - Partial discharge measurements	EN 60270	-
IEC 60376	-	Specification of technical grade sulphur hexafluoride (SF <sub>6</sub> ) and complementary gases to be used in its mixtures for use in electrical equipment	EN IEC 60376	-
IEC 60480	-	Specifications for the re-use of sulphur hexafluoride - (SF <sub>6</sub> ) and its mixtures in electrical equipment	-	-
IEC 62271-1	2017	High-voltage switchgear and controlgear - Part 1: - Common specifications for alternating current switchgear and controlgear	EN 62271-1	2017
IEC 62271-4	-	High-voltage switchgear and controlgear - Part 4: - Handling procedures for sulphur hexafluoride (SF <sub>6</sub> ) and its mixtures	EN 62271-4	-
IEC 62271-100	2008	High-voltage switchgear and controlgear - Part 100: - Alternating current circuit-breakers	EN 62271-100	2009

**EN IEC 62271-109:2019 (E)**

+ A1	2012		+ A1	2012
+ A2	2017		+ A2	2017
IEC 62271-101	-	High-voltage switchgear and controlgear - Part 101: Synthetic testing	EN 62271-101	-
IEC 62271-102	2018	High-voltage switchgear and controlgear - Part 102: Alternating current disconnectors and earthing switches	EN IEC 62271-102	2018

## **iTeh STANDARD PREVIEW (standards.iteh.ai)**

[SIST EN IEC 62271-109:2019](https://standards.iteh.ai/catalog/standards/sist/661984ab-1e91-4640-a2b3-0e2c7f1248bf/sist-en-iec-62271-109-2019)

<https://standards.iteh.ai/catalog/standards/sist/661984ab-1e91-4640-a2b3-0e2c7f1248bf/sist-en-iec-62271-109-2019>



IEC 60794-2-21

Edition 3.0 2019-04

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Optical fibre cables –**  
**Part 2-21: Indoor cables – Detailed specification for multi-fibre optical  
distribution cables for use in premises cabling**

**Câbles à fibres optiques –**  
**Partie 2-21: Câbles intérieurs – Spécification particulière pour les câbles  
optiques multifibres de distribution utilisés dans le câblage de locaux**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

ICS 33.180.10

ISBN 978-2-8322-6758-5

**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 .....	3
1 Scope .....	5
2 Normative references .....	5
3 Terms and definitions .....	5
4 General requirements .....	6
5 Particular requirements .....	6
5.1 Fibre selection for cable testing .....	6
5.2 Environmental requirements – Temperature cycling .....	6
5.3 Transmission requirements .....	7
5.3.1 Attenuation of cabled fibre .....	7
5.3.2 Fibre bandwidth requirements .....	7
Bibliography .....	8
Table 1 – Multimode cable maximum attenuation coefficient (dB/km) .....	7
Table 2 – Single-mode cable maximum attenuation coefficient (dB/km) .....	7
Table 3 – Minimum multimode fibre bandwidth (MHz·km) .....	7

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)

[SIST EN IEC 62271-109:2019](https://standards.iteh.ai/catalog/standards/sist/661984ab-1e91-4640-a2b3-0e2c7f1248bf/sist-en-iec-62271-109-2019)

<https://standards.iteh.ai/catalog/standards/sist/661984ab-1e91-4640-a2b3-0e2c7f1248bf/sist-en-iec-62271-109-2019>



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## OPTICAL FIBRE CABLES –

**Part 2-21: Indoor cables –  
Detailed specification for multi-fibre optical distribution cables  
for use in premises cabling**

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

International Standard IEC 60794-2-21 has been prepared by subcommittee 86A: Fibres and cables, of IEC technical committee 86: Fibre optics.

This third edition cancels and replaces the second edition published in 2012. It constitutes a technical revision.

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

- a) incorporation of the OM5 cabled fibre performance category;
- b) incorporation of the OS1a cabled fibre performance category;
- c) cabled fibre performance categories OM1, OM2 and OS1 are no longer normative, and are retained for information.