

---

**Visokonapetostne stikalne in krmilne naprave - 112. del: Hitra ozemljitvena stikala na izmenični tok za ugašanje sekundarnega obloka na prenosnih vodih (IEC 62271-112:2013)**

High-voltage switchgear and controlgear - Part 112: Alternating current high-speed earthing switches for secondary arc extinction on transmission lines

Hochspannungs-Schaltgeräte und -Schaltanlagen - Teil 112: Schnellschaltender Wechselstrom-Erdungsschalter zum Löschen von sekundären Lichtbögen auf Freileitungen

Appareillage à haute tension - Partie 112: Sectionneurs de terre rapides à courant alternatif pour l'extinction de l'arc secondaire sur les lignes de transport

**Ta slovenski standard je istoveten z: EN 62271-112:2013**

---

**ICS:**

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

**SIST EN 62271-112:2014**

**en**

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

[SIST EN 62271-112:2014](https://standards.iteh.ai/catalog/standards/sist/52e0e99f-0e26-404f-8e19-d4e5aa4dcd44/sist-en-62271-112-2014)

<https://standards.iteh.ai/catalog/standards/sist/52e0e99f-0e26-404f-8e19-d4e5aa4dcd44/sist-en-62271-112-2014>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

# EN 62271-112

October 2013

ICS 29.130.10; 29.130.99

English version

## High-voltage switchgear and controlgear - Part 112: Alternating current high-speed earthing switches for secondary arc extinction on transmission lines (IEC 62271-112:2013)

Appareillage à haute tension -  
Partie 112: Sectionneurs de terre rapides  
à courant alternatif pour l'extinction de  
l'arc secondaire sur les lignes de transport  
(CEI 62271-112:2013)

Hochspannungs-Schaltgeräte und -  
Schaltanlagen -  
Teil 112: Schnellschaltende  
Wechselstrom-Erdungsschalter zum  
Löschen von sekundären  
Lichtbögen auf Freileitungen  
(IEC 62271-112:2013)

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

This European Standard was approved by CENELEC on 2013-09-10. 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

# CENELEC

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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 17A/1042/FDIS, future edition 1 of IEC 62271-112, prepared by subcommittee 17A, High-voltage switchgear and controlgear, of IEC/TC 17, "Switchgear and controlgear" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62271-112:2013.

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) 2014-06-10
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2016-09-10

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

## Endorsement notice

The text of the International Standard IEC 62271-112:2013 was approved by CENELEC as a European Standard without any modification.

[SIST EN 62271-112:2014](https://standards.iteh.ai/catalog/standards/sist/52e0e99f-0e26-404f-8e19-d4e5aa4dcd44/sist-en-62271-112-2014)

<https://standards.iteh.ai/catalog/standards/sist/52e0e99f-0e26-404f-8e19-d4e5aa4dcd44/sist-en-62271-112-2014>

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 62271-1	2007	High-voltage switchgear and controlgear - Part 1: Common specifications	EN 62271-1	2008
IEC 62271-100	2008	High-voltage switchgear and controlgear - Part 100: Alternating current circuit-breakers	EN 62271-100	2009
IEC 62271-102 + corr. April + corr. February + corr. May	2001 2002 2005 2003	High-voltage switchgear and controlgear - Part 102: Alternating current disconnectors and earthing switches	EN 62271-102 + corr. July + corr. March	2002 2008 2005
IEC 62271-203 + corr. July	2011 2013	High-voltage switchgear and controlgear - Part 203: Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV	EN 62271-203	2012

iTech STANDARD PREVIEW  
(standards.itech.ai)

[SIST EN 62271-112:2014](https://standards.itech.ai/catalog/standards/sist/52e0e99f-0e26-404f-8e19-d4e5aa4dcd44/sist-en-62271-112-2014)

<https://standards.itech.ai/catalog/standards/sist/52e0e99f-0e26-404f-8e19-d4e5aa4dcd44/sist-en-62271-112-2014>

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

[SIST EN 62271-112:2014](https://standards.iteh.ai/catalog/standards/sist/52e0e99f-0e26-404f-8e19-d4e5aa4dcd44/sist-en-62271-112-2014)

<https://standards.iteh.ai/catalog/standards/sist/52e0e99f-0e26-404f-8e19-d4e5aa4dcd44/sist-en-62271-112-2014>



IEC 62271-112

Edition 1.0 2013-08

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**High-voltage switchgear and controlgear –**  
**Part 112: Alternating current high-speed earthing switches for secondary arc**  
**extinction on transmission lines**

**Appareillage à haute tension –**  
**Partie 112: Sectionneurs de terre rapides à courant alternatif pour l'extinction de**  
**l'arc secondaire sur les lignes de transport**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

COMMISSION  
ELECTROTECHNIQUE  
INTERNATIONALE

PRICE CODE  
CODE PRIX

U

ICS 29.130.10; 29.130.99

ISBN 978-2-8322-1009-3

**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
1 General .....	6
1.1 Scope.....	6
1.2 Normative references .....	6
2 Normal and special service conditions .....	6
3 Terms and definitions .....	6
3.1 General terms .....	6
3.2 Assemblies of switchgear and controlgear .....	8
3.3 Parts of assemblies .....	8
3.4 Switching devices .....	8
3.5 Parts of switchgear and controlgear .....	8
3.6 Operation .....	8
3.7 Characteristics quantities .....	8
4 Ratings.....	8
5 Design and construction .....	10
6 Type tests .....	11
7 Routine tests .....	14
8 Guide to the selection of HSES .....	14
9 Information to be given with enquiries, tenders and orders .....	14
10 Rules for transport, storage, installation, operation and maintenance .....	15
11 Safety.....	15
Annex A (informative) Background information on the use of HSES .....	16
Annex B (informative) Induced current and voltage conditions for other cases .....	21
Figure 1 – Explanation of a multi-phase auto-reclosing scheme .....	7
Figure 2 – Timing chart of HSES and circuit-breakers .....	9
Figure A.1 – Single-line diagram of a power system.....	17
Figure A.2 – Timing chart of the HSESs in relation to the transmission line circuit-breakers .....	17
Figure A.3 – Typical timing chart showing the time between fault initiation and a successful re-close of the transmission line circuit-breakers .....	18
Figure B.1 – System condition to explain successive fault.....	22
Figure B.2 – Example of waveforms of delayed current zero phenomena .....	22
Figure B.3 – Typical test circuit for electromagnetic coupling test-duty of a HSES with delayed current zero crossings .....	24
Figure B.4 – Typical test circuit for electrostatic coupling test-duty of HSES with delayed current zero crossings .....	24
Table 1 – Standardized values of rated induced currents and voltages .....	10
Table 2 – Items to be listed on nameplate of a HSES.....	11
Table A.1 – Comparison of earthing switches.....	19
Table A.2 – Comparison of a four-legged reactor and HSES .....	20
Table B.1 – Preferred values for single-phase earth fault with delayed current zero phenomena in the presence of a successive fault .....	23



Table B.2 – Preferred values for multi-phase earth faults in a double-circuit system .....	25
Table B.3 – Preferred values for covering the cases of categories 0 and 1 .....	25

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

[SIST EN 62271-112:2014](https://standards.iteh.ai/catalog/standards/sist/52e0e99f-0e26-404f-8e19-d4e5aa4dcd44/sist-en-62271-112-2014)

<https://standards.iteh.ai/catalog/standards/sist/52e0e99f-0e26-404f-8e19-d4e5aa4dcd44/sist-en-62271-112-2014>

## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

**Part 112: Alternating current high-speed earthing switches  
for secondary arc extinction on transmission lines**

## 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 62271-112 has been prepared by subcommittee 17A: High-voltage switchgear and controlgear, of IEC technical committee 17: Switchgear and controlgear.

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

FDIS	Report on voting
17A/1042/FDIS	17A/1050/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.

This International Standard should be read in conjunction with IEC 62271-1:2007, to which it refers and which is applicable unless otherwise specified. 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 numbering, whilst additional subclauses, are numbered from 101.

A list of all parts in the IEC 62271, 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 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.

**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.**

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

[SIST EN 62271-112:2014](https://standards.iteh.ai/catalog/standards/sist/52e0e99f-0e26-404f-8e19-d4e5aa4dcd44/sist-en-62271-112-2014)

<https://standards.iteh.ai/catalog/standards/sist/52e0e99f-0e26-404f-8e19-d4e5aa4dcd44/sist-en-62271-112-2014>

## HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

### Part 112: Alternating current high-speed earthing switches for secondary arc extinction on transmission lines

## 1 General

### 1.1 Scope

This part of IEC 62271 applies to a.c. high-speed earthing switches designed for indoor and outdoor installation and for operation at service frequencies of 50 Hz and 60 Hz on systems having voltages of 550 kV and above.

High-speed earthing switches described in this standard are intended to extinguish the secondary arc remaining after clearing faults on transmission lines by the circuit-breakers.

### 1.2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62271-1:2007, *High-voltage switchgear and controlgear – Part 1: Common specifications*

IEC 62271-100:2008, *High-voltage switchgear and controlgear – Part 100: Alternating-current circuit-breakers*

IEC 62271-102:2001, *High-voltage switchgear and controlgear – Part 102: Alternating current disconnectors and earthing switches*

IEC 62271-203:2011, *High-voltage switchgear and controlgear – Part 203: Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV*

## 2 Normal and special service conditions

Clause 2 of IEC 62271-1:2007 is applicable.

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in Clause 3 of IEC 62271-1:2011, as well as the following apply.

### 3.1 General terms

#### 3.1.101

##### **secondary arc**

arc that remains at the faulted point after interruption of the short-circuit current fed by the network

Note 1 to entry: This secondary arc is supplied by electrostatic or electromagnetic induction from the adjacent healthy phases.