



Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

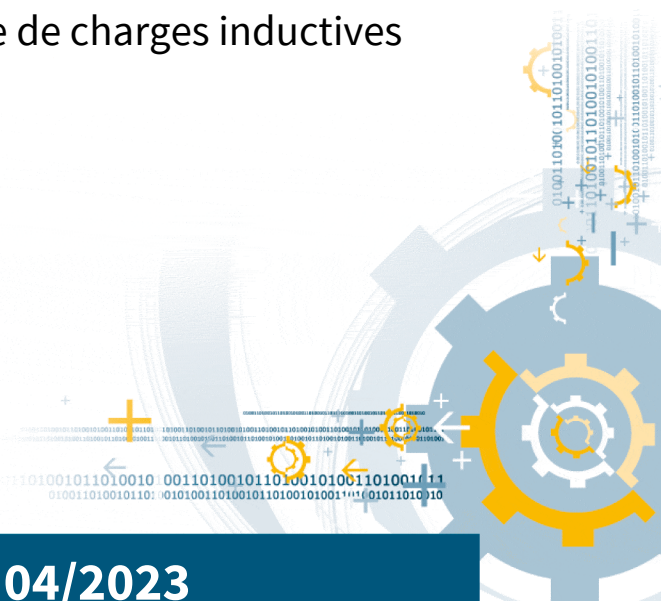
ILNAS-EN IEC 62271-110:2023

**High-voltage switchgear and
controlgear - Part 110: Inductive load
switching**

Hochspannungs-Schaltgeräte und -
Schaltanlagen - Teil 110: Schalten
induktiver Lasten

Appareillage à haute tension - Partie 110:
Ma■ œuvre de charges inductives

04/2023



National Foreword

This European Standard EN IEC 62271-110:2023 was adopted as Luxembourgish Standard ILNAS-EN IEC 62271-110:2023.

Every interested party, which is member of an organization based in Luxembourg, can participate for FREE in the development of Luxembourgish (ILNAS), European (CEN, CENELEC) and International (ISO, IEC) standards:

- Participate in the design of standards
- Foresee future developments
- Participate in technical committee meetings

<https://portail-qualite.public.lu/fr/normes-normalisation/participer-normalisation.html>

THIS PUBLICATION IS COPYRIGHT PROTECTED

Nothing from this publication may be reproduced or utilized in any form or by any mean - electronic, mechanical, photocopying or any other data carries without prior permission!

ILNAS-EN IEC 62271-110:2023

EUROPEAN STANDARD **EN IEC 62271-110**

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2023

ICS 29.130.10

Supersedes EN IEC 62271-110:2018;
EN IEC 62271-110:2018/AC:2018-03

English Version

**High-voltage switchgear and controlgear - Part 110: Inductive
load switching
(IEC 62271-110:2023)**

Appareillage à haute tension - Partie 110: Manœuvre de
charges inductives
(IEC 62271-110:2023)

Hochspannungs-Schaltgeräte und -Schaltanlagen - Teil
110: Schalten induktiver Lasten
(IEC 62271-110:2023)

This European Standard was approved by CENELEC on 2023-04-20. 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

European foreword

The text of document 17A/1368/FDIS, future edition 5 of IEC 62271-110, 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 62271-110:2023.

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) 2024-01-20
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2026-04-20

This document supersedes EN IEC 62271-110:2018 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 62271-110:2023 was approved by CENELEC as a European Standard without any modification.

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.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-441	-	International Electrotechnical Vocabulary (IEV) – Part 441: Switchgear, controlgear and fuses	-	-
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 62271-100	2021	High-voltage switchgear and controlgear - Part 100: Alternating-current circuit-breakers	EN IEC 62271-100	2021
IEC 62271-106	2021	High-voltage switchgear and controlgear - Part 106: Alternating current contactors, contactor-based controllers and motor-starters	EN IEC 62271-106	2021



INTERNATIONAL STANDARD

NORME INTERNATIONALE

**High-voltage switchgear and controlgear –
Part 110: Inductive load switching**

**Appareillage à haute tension –
Partie 110: Manœuvre de charges inductives**

CONTENTS

FOREWORD	4
1 Scope	6
2 Normative references	6
3 Terms and definitions	7
4 Type tests	8
4.1 General.....	8
4.2 Miscellaneous provisions for inductive load switching tests	8
4.3 High-voltage motor current switching tests	9
4.3.1 Applicability	9
4.3.2 General	9
4.3.3 Characteristics of the supply circuits.....	10
4.3.4 Characteristics of the load circuit	11
4.3.5 Test voltage.....	11
4.3.6 Test-duties	12
4.3.7 Test measurements	12
4.3.8 Behaviour and condition of switching device	12
4.3.9 Test report.....	13
4.4 Shunt reactor current switching tests	14
4.4.1 Applicability	14
4.4.2 General	15
4.4.3 Test circuits	15
4.4.4 Characteristics of the supply circuit	18
4.4.5 Characteristics of the connecting leads.....	18
4.4.6 Characteristics of the load circuits	18
4.4.7 Earthing of the test circuit	23
4.4.8 Test voltage.....	23
4.4.9 Test-duties	23
Annex A (normative) Calculation of t_3 values.....	27
Bibliography.....	29
Figure 1 – Motor switching test circuit and summary of parameters.....	10
Figure 2 – Illustration of voltage transients at interruption of inductive current for first phase clearing in a three-phase non-effectively earthed circuit	14
Figure 3 – Reactor switching test circuit – Three-phase test circuit for in-service load circuit configurations 1 and 2 (Table 2)	16
Figure 4 – Reactor switching test circuit – Single-phase test circuit for in-service load circuit configurations 1, 2 and 4 (Table 2)	17
Figure 5 – Reactor switching test circuit – Three-phase test circuit for in-service load circuit configuration 3 (Table 2).....	18
Figure 6 – Illustration of voltage transients at interruption of inductive current for a single-phase test	26
Table 1 – Test-duties at motor current switching tests.....	12
Table 2 – In-service load circuit configurations	15

Table 3 – Values of prospective transient recovery voltages – Rated voltages 12 kV to 170 kV for effectively and non-effectively earthed systems – Switching shunt reactors with isolated neutrals (Table 2: In-service load circuit configuration 1)	19
Table 4 – Values of prospective transient recovery voltages – Rated voltages 100 kV to 1 200 kV for effectively earthed systems – Switching shunt reactors with earthed neutrals (See Table 2: In-service load circuit configuration 2)	20
Table 5 – Values of prospective transient recovery voltages – Rated voltages 12 kV to 52 kV for effectively and non-effectively earthed systems – Switching shunt reactors with isolated neutrals (see Table 2: In-service load circuit configuration 3)	21
Table 6 – Values of prospective transient recovery voltages – Rated voltages 12 kV to 52 kV for effectively and non-effectively earthed systems – Switching shunt reactors with earthed neutrals (see Table 2: In-service load circuit configuration 4)	22
Table 7 – Load circuit 1 test currents	22
Table 8 – Load circuit 2 test currents	23
Table 9 – Test-duties for reactor current switching tests	24