

**High-voltage switchgear and controlgear -
Part 304: Design classes for indoor enclosed switchgear and controlgear
for rated voltages above 1 kV up to and including 52 kV
to be used in severe climatic conditions
(IEC/TS 62271-304:2008)**

Appareillage à haute tension -
Partie 304: Classes de construction
pour l'appareillage d'intérieur
sous enveloppe pour tensions assignées
à partir de 1 kV jusqu'à 52 kV inclus
pour usage sous conditions
climatiques sévères
(CEI/TS 62271-304:2008)

Hochspannungs-Schaltgeräte und -
Schaltanlagen -
Teil 304: Auslegungsklassen
für gekapselte Schaltgerätekombinationen
und Hochspannungsschaltanlagen
von 1 kV bis einschließlich 52 kV
für den Einsatz unter erschwerten
klimatischen Bedingungen
(IEC/TS 62271-304:2008)

This Technical Specification was approved by CENELEC on 2008-10-01.

CENELEC members are required to announce the existence of this TS in the same way as for an EN and to make the TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force.

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CENELEC

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

The text of document 17C/402/CDV, future edition 1 of IEC/TS 62271-304, prepared by SC 17C, High-voltage switchgear and controlgear assemblies, of IEC TC 17, Switchgear and controlgear, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as CLC/TS 62271-304 on 2008-10-01.

The following date was fixed:

- latest date by which the existence of the CLC/TS
has to be announced at national level (doa) 2009-01-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the Technical Specification IEC/TS 62271-304:2008 was approved by CENELEC as a Technical Specification without any modification.

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 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 60060-1	- ¹⁾	High-voltage test techniques - Part 1: General definitions and test requirements	HD 588.1 S1	1991 ²⁾
IEC 60068-1	Series	Environmental testing	EN 60068	Series
IEC 62271-1	2007	High-voltage switchgear and controlgear - Part 1: Common specifications	EN 62271-1	2008
IEC 62271-200	- ¹⁾	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 62271-200	2004 ²⁾
IEC 62271-201	- ¹⁾	High-voltage switchgear and controlgear - Part 201: AC insulation-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	EN 62271-201 + corr. November	2006 ²⁾ 2006

¹⁾ Undated reference.

²⁾ Valid edition at date of issue.

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HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 304: Design classes for indoor enclosed switchgear and controlgear for rated voltages above 1 kV up to and including 52 kV to be used in severe climatic conditions

1 Scope and object

This part of IEC 62271 applies to indoor enclosed switchgear and controlgear complying with IEC 62271-200 and IEC 62271-201, intended to be used in service conditions more severe with respect to condensation and pollution than the normal service conditions specified in IEC 62271-1.

This technical specification covers equipment where any of the insulation is exposed to indoor climatic conditions.

The test detailed in this technical specification has been designed primarily to investigate the behaviour of electrical insulation and not corrosion on equipments. Nevertheless, the performance of mechanical components, such as mechanisms, interlocks and enclosures may also be recorded.

This technical specification proposes definitions for two degrees of severe service conditions with respect to condensation and pollution. It also proposes test procedures for assessing the performance of enclosed switchgear and controlgear under specified conditions so that conclusions may be drawn concerning their suitability for service under those severe service conditions.

In this technical specification, the term "equipment" is used in accordance with the scope for an "enclosed assembly of switchgear and controlgear" (see IEC 60050-441, definition 441-12-02).

NOTE The testing procedures described in this technical specification may also be applied to internal insulation of outdoor equipment.

2 Normative references

The following referenced documents are indispensable for the application 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 test requirements*

IEC 60068 (all parts), *Environmental testing*

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

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

IEC 62271-201, *High-voltage switchgear and controlgear – Part 201: AC insulation-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV*

3 Degrees of severity of service conditions under condensation and pollution

Indoor equipment installed inside a building or room and thus normally protected against the outdoor climatic conditions may be subjected to condensation due to rapid temperature changes and to pollution due to the environment inside the building.

The service conditions with respect to condensation and pollution around the enclosed switchgear and controlgear are designated and characterized as follows:

C_o : Condensation does not normally occur (not more than twice a year)

- Equipment to be used in locations with humidity and/or temperature control in order to avoid condensation. The building or room provides protection from daily variations of outside climate.

C_L : Non-frequent condensation (not more than twice a month)

- Equipment to be used in locations without humidity and/or temperature control. The building or room provides protection from daily variations of outside climate, but condensation cannot be excluded.

C_H : Frequent condensation (more than twice a month)

- Equipment to be used in locations without temperature control. The building or room provides only minimal protection from daily variations of outside climate, so that frequent condensation may occur.

P_L : Light pollution (as given in 2.1.1, item d) of IEC 62271-1) (see note 2 below)

- In order to reach light pollution in heavy polluted locations precautions may be necessary.

P_H : Heavy pollution (any value exceeding P_L)

P_H does not include areas subject to conductive dust and/or to industrial smoke, producing thick conductive deposits.

- The location has no special precautions to minimize the presence of deposits, or the equipment is situated in close proximity to pollution sources.

NOTE 1 Absence of pollution is considered as unrealistic. At least light pollution is assumed.

NOTE 2 IEC 62271-1, 2.1.1, item d): "The ambient air is not significantly polluted by dust, smoke, corrosive and/or flammable gases, vapours or salt. The manufacturer will assume that, in absence of specific requirements from the user, there are none."

NOTE 3 Precautions to minimize the amount of deposits inside the enclosure of the equipment may be taken by the choice of an appropriate degree of protection of the enclosed switchgear and controlgear.

Taking into account the fact that the equipment is especially influenced by the combination of humidity and pollution, three degrees of severity of service conditions are defined as follows: