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High-voltage switchgear and controlgear -- Part 108: High-voltage alternating current disconnecting circuit-breakers for rated voltages of 72,5 kV and above

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Also of interest to the following committees Intéresse également les comités suivants SC 17C	Supersedes documents Remplace les documents 17A/666/CD, 17A/676/CC and item 5.5 of 17A/685/RM	
Functions concerned Fonctions concernées ☐ Safety / Sécurité ☐ EMC / CEM ☐ Environment / Environnement ☐ Quality assurance / Assurance qualité		

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Titre : CEI 62271-108, Ed. 1: Appareillage à haute tension - Partie 108: Disjoncteur-sectionneur à courant alternatif à haute tension de tension assignée supérieure ou égale à 72,5 kV

Title : IEC 62271-108, Ed. 1: High-voltage switchgear and controlgear - Part 108: High voltage alternating current disconnecting circuit-breakers for rated voltages of 72,5 kV and above

Note d'introduction

Introductory note

ATTENTION	ATTENTION
CDV soumis en parallèle au vote (CEI) et à l'enquête (CENELEC)	**Parallel IEC CDV/CENELEC Enquiry**

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR

Part 108: High voltage alternating current disconnecting circuit-breakers for rated voltages of 72,5 kV and above

FOREWORD

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International Standard IEC 62271-108 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/XX/FDIS	XX/XX/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.

Annex A is for information only.

The committee has decided that the contents of this publication will remain unchanged until 2014. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

CONTENTS

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR – Part 108: High-voltage alternating current disconnecting circuit-breakers for rated voltages of 72,5 kV and above

1 General

1.1 Scope

This International Standard applies to high-voltage alternating current disconnecting circuit-breakers) for operation at frequencies of 50 Hz and 60 Hz on systems having voltages of 72,5 kV and above.

This standard identifies which requirements of IEC 60694, 62271-100 and 62271-102 standards are applicable. It also gives the additional requirements specific to these devices.

1.2 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 60050 (441): *International Electrotechnical vocabulary – Chapter 441: Switchgear, controlgear and fuses*

IEC 60694: *Common specifications for high-voltage switchgear and controlgear standards*

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

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

IEC 62271-310: *High-voltage switchgear and controlgear – Part 310: Electrical endurance testing for circuit-breakers rated 72,5 kV and above* [1]

1.101 Object

This standard covers a circuit-breaker which, when in the open position, satisfies the requirements of both a circuit-breaker and a disconnector.

As there is interaction between the requirements of the separate functions it is necessary to consider the standardisation of requirements. This standard details the requirements for a disconnecting circuit-breaker, identifying where these differ from the separate requirements of a discrete circuit-breaker and a disconnector.

NOTE For design examples of disconnecting circuit-breakers refer to Annex A.

2 Normal and special service conditions

Clause 2 of IEC 60694 is applicable.

[1] To be published.

3 Definitions

For the purpose of this international standard, the definitions of IEC 60050 (441) and IEC 60694 apply. Some of them are recalled here for ease of reference.

Additional definitions given here are classified in a manner that aligns with the classification used in IEC 60050 (441).

3.1 General terms

3.1.1
switchgear and controlgear
[IEV 441-11-01]

3.2 Assemblies of switchgear and controlgear

No particular definitions.

3.3 Parts of assemblies

No particular definitions.

3.4 Switching devices

3.4.101
circuit-breaker
[IEV 441-14-20]

3.4.102
disconnector
[IEV 441-14-05]

3.4.103
disconnecting circuit-breaker
circuit-breaker satisfying the requirements of a disconnector, when the contacts are in open position

3.5 Parts of switchgear and controlgear

No particular definitions.

3.6 Operation

3.6.101
closed position (of a mechanical switching device)
[IEV 441-16-22]

3.6.102
open position (of a mechanical switching device)
[IEV 441-16-23]

3.6.103
interlocking device
[IEV 441-16-49]

3.7 Characteristic quantities

3.7.101
insulation level
test voltage, under specified conditions, that the insulation of a device is designed to withstand
[IEV 151-04-14]

3.7.102
external insulation
distances in atmospheric air, and surfaces of solid insulation of disconnectors and earthing switches in contact with the air, which are subject to dielectric stresses and to the effect of atmospheric and other external conditions such as pollution, humidity, vermin, etc.
[IEV 604-03-02, modified]

NOTE External insulation is either weather-protected or non-weather-protected, designed to operate outside or inside closed shelters, respectively

3.7.103
internal insulation
internal solid, liquid or gaseous parts of the insulation of equipment which are protected from the effects of atmospheric and other external conditions
[IEV 604-03-03]

3.7.104
isolating distance (of a pole of a mechanical switching device)
[IEV 441-17-35]

4 Ratings

Clause 4 of IEC 62271-100 is applicable, unless stated otherwise.

The characteristics of a disconnecting circuit-breaker, including its operating devices, and auxiliary equipment, that shall be used to determine the rating are the following:

Rated characteristics to be given for all disconnecting circuit-breakers

a) rated voltage;
b) rated insulation level;
c) rated frequency;
d) rated normal current;
e) rated short-time withstand current;
f) rated peak withstand current;
g) rated duration of short-circuit;
h) rated supply voltage of closing and opening devices and of auxiliary circuits;
i) rated supply frequency of closing and opening devices and of auxiliary circuits;
j) rated pressures of compressed gas supply and/or of hydraulic supply for operation, interruption and insulation, as applicable;
k) rated short-circuit breaking current;
l) transient recovery voltage related to the rated short-circuit breaking current;
m) rated short-circuit making current;
n) rated operating sequence;
o) rated time quantities;
p) rated static terminal load;
q) rated line-charging breaking current;

Rated characteristics to be given in the specific cases indicated below

r) characteristics for short-line faults related to the rated short-circuit breaking current, for disconnecting circuit-breakers designed for direct connection to overhead transmission lines at more than 12,5 kA rated short-circuit breaking current;

s) rated cable-charging breaking current, for three-pole disconnecting circuit-breakers intended for switching cables.

Rated characteristics to be given on request

t) rated out-of-phase making and breaking current;

u) rated single capacitor bank breaking current;

v) rated back-to-back capacitor bank breaking current;

w) rated capacitor bank inrush making current;

x) rated back-to-back capacitor bank inrush making current.

The rated characteristics of the disconnecting circuit-breaker are referred to the rated operating sequence.

NOTE 1 Disconnecting circuit-breakers need not be assigned to ratings with respect to bus-transfer current switching. The bus-transfer current switching capability is covered by the making and breaking tests in IEC 62271-100.

NOTE 2 Rated contact zone is not applicable for disconnecting circuit-breakers.

4.2 Rated insulation level

Subclause 4.2 of IEC 62271-100 is applicable with the following exception:

The standard values of rated withstand voltages across the open disconnecting circuit-breaker are given in columns 3 and 5 of Table 1a, columns 3, 3a and 5 of Table 1b and columns 3, 6 and 8 of Tables 2a-2b in IEC 60694.

4.112 Rated static terminal load

The rated static terminal load is the maximum resulting terminal forces (simultaneous action of ice, wind and connected conductors) to which the terminal of a disconnecting circuit-breaker is allowed to be subjected to.

Recommended values of forces due to flexible and tubular connected conductors (not including wind or ice load or the dynamic loads on the disconnecting circuit-breaker itself) are given in Table 1.