

INTERNATIONAL STANDARD

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

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International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch



Commission Electrotechnique Internationale
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CONTENTS

FOREWORD	9
1 General.....	17
1.1 Scope	17
1.2 Normative references.....	17
2 Normal and special service conditions	19
2.1 Normal service conditions	19
2.2 Special service conditions	19
3 Terms and definitions.....	21
4 Ratings	27
4.1 Rated voltage for equipment (U_r).....	27
4.2 Rated insulation level.....	27
4.3 Rated frequency (f_r)	33
4.4 Rated normal current and temperature rise	33
4.5 Rated short-time withstand current (I_k).....	33
4.6 Rated peak withstand current (I_p).....	33
4.7 Rated duration of short-circuit (t_k)	33
4.8 Rated supply voltage of closing and opening devices and of auxiliary and control circuits (U_a)	33
4.9 Rated supply frequency of closing and opening devices and of auxiliary circuits	33
4.10 Rated pressure of compressed gas supply for insulation and/or operation.....	33
5 Design and construction	35
5.1 Requirements for liquids in switchgear and controlgear	35
5.2 Requirements for gases in switchgear and controlgear	35
5.3 Earthing of switchgear and controlgear.....	35
5.4 Auxiliary and control equipment.....	37
5.5 Dependent power operation	37
5.6 Stored energy operation	37
5.7 Independent manual operation	37
5.8 Operation of releases.....	37
5.9 Low- and high-pressure interlocking and monitoring devices.....	37
5.10 Nameplates	39
5.11 Interlocking devices	39
5.12 Position indication	39
5.13 Degrees of protection by enclosures.....	39
5.14 Creepage distances	39
5.15 Gas and vacuum tightness	39
5.16 Liquid tightness.....	41
5.17 Flammability	41
5.18 Electromagnetic compatibility (EMC)	41
6 Type tests	55
6.1 General	55
6.2 Dielectric tests	59
6.3 Radio interference voltage (r.i.v.) test.....	67

6.4	Measurement of the resistance of circuits.....	67
6.5	Temperature-rise tests.....	67
6.6	Short-time withstand current and peak withstand current tests.....	69
6.7	Verification of the protection.....	71
6.8	Gas tightness tests.....	71
6.9	Electromagnetic compatibility tests (EMC).....	73
6.10	Additional tests on auxiliary and control circuits.....	73
7	Routine tests.....	81
7.1	Dielectric test on the main circuit.....	83
7.2	Tests on auxiliary and control circuits.....	83
7.3	Measurement of the resistance of the main circuit.....	83
7.4	Tightness test.....	83
7.5	Design and visual checks.....	83
8	Guide to the selection of switchgear and controlgear.....	87
9	Information to be given with enquiries, tenders and orders.....	87
10	Rules for transport, storage, installation, operation and maintenance.....	87
10.1	Conditions during transport, storage and installation.....	87
10.2	Installation.....	89
10.3	Operation.....	101
10.4	Maintenance.....	101
11	Safety.....	101
12	Environmental aspects.....	101
Annex A (normative) Test procedure for dielectric test on three-phase encapsulated GIS, range II.....		
		103
A.1	Dielectric procedures for three phases in one GIS enclosure.....	103
A.2	Application of test requirements.....	103
Annex B (normative) Methods for testing gas-insulated metal-enclosed switchgear under conditions of arcing due to an internal fault.....		
		105
B.1	Introduction.....	105
B.2	Short-circuit current arcing test.....	105
B.3	Composite verification by calculation and separate tests.....	111
Annex C (informative) Technical and practical considerations of site testing.....		
		113
C.1	Test voltage generators.....	113
C.2	Locating discharges.....	113
C.3	Special test procedures.....	115
C.4	Partial discharge measurements.....	115
C.5	Electrical conditioning.....	117
C.6	Repetition tests.....	117
C.7	Partial discharge detection method.....	119

Annex D (informative) Calculations related to an internal fault.....	125
D.1 Calculation of pressure rise due to an internal fault.....	125
Annex E (informative) Information to be given with enquiries, tenders and orders	127
E.1 Introduction.....	127
E.2 Normal and special service conditions	127
E.3 Ratings	129
E.4 Design and construction	129
E.5 Bus ducts.....	131
E.6 Circuit-breaker	131
E.7 Disconnecter and earthing switch	133
E.8 Bushing	133
E.9 Cable connection	133
E.10 Transformer connection.....	133
E.11 Current transformer.....	135
E.12 Inductive voltage transformer	135
E.13 Documentation for enquiries and tenders.....	135
Bibliography	137
Figure 101 – Pressure coordination	43
Figure 102 – Example of arrangement of enclosures and gas compartments.....	51
Table 101 – Reference table of service conditions relevant to GIS	21
Table 102 – Preferred rated insulation levels for rated voltages for equipment of range I.....	29
Table 103 – Preferred rated insulation levels for rated voltages for equipment of range II.....	31
Table 104 – Performance criteria.....	45
Table 105 – Example of grouping of type tests.....	57
Table 106 – Test voltage for measuring PD intensity.....	65
Table 107 – On site test voltages.....	95
Table A.101 – Switching impulse test conditions above 245 kV	103

INTERNATIONAL ELECTROTECHNICAL COMMISSION

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –**Part 203: Gas-insulated metal-enclosed switchgear
for rated voltages above 52 kV**

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.
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International Standard IEC 62271-203 has been prepared by subcommittee 17C: High-voltage switchgear and controlgear assemblies, of IEC technical committee 17: Switchgear and controlgear.

This first edition of IEC 62271-203 cancels and replaces the third edition of IEC 60517, published in 1990, and constitutes a technical revision.

With the revision, significant changes from the previous edition have been made. The most important changes are deleting not used technologies, like 3-phase PD measurements, adopting the content to IEC 62271-1 'Common Clauses' and harmonisation with IEEE C37.122. This standard is now more up to date to today's products on the world market.

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

FDIS	Report on voting
17C/312/FDIS	17C/316/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 60694, second edition, published in 1996, its Amendment 1 (2000) and its Amendment 2 (2001), 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 60694. Amendments to these clauses and subclauses are given under the same numbering, whilst additional subclauses, are numbered from 101.

The committee has decided that the contents of this publication will remain unchanged until 2010. At this date, the publication will be

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

**COMMON NUMBERING OF IEC 62271 PUBLICATIONS FALLING UNDER
THE RESPONSIBILITY OF SUBCOMMITTEES SC 17A AND SC 17C**

In accordance with the decision taken at the joint SC 17A/SC 17C meeting in Frankfurt, June 1998 (item 20.7 of 17A/535/RM), a common numbering system has been established for the publications falling under the responsibility of SC 17A and SC 17C. IEC 62271 – *High-voltage switchgear and controlgear* is the publication number and main title element for the common publications.

The numbering of these publications will apply the following principle.

- a) Common standards prepared by SC 17A and SC 17C will start with IEC 62271-1.
- b) Standards of SC 17A will start with IEC 62271-100.
- c) Standards of SC 17C will start with number IEC 62271-200.
- d) Publications prepared by SC 17A and SC 17C will start with number IEC 62271-300.

The table below relates the new numbers to the old numbers. The parts numbered (xxx) will be given a final number pending the decision to publish the revised publication as standard or technical report.

**Common numbering of IEC 62271 publications falling under the responsibility
of subcommittees SC 17A and SC 17C**

IEC 62271 series	HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR	Old IEC number, if any
Part	New title	
1	Common specifications	IEC 60694
2	Seismic qualification for rated voltages of 72,5 kV and above	-
100	High-voltage alternating current circuit-breakers	IEC 60056
101	Synthetic testing	IEC 60427
102	High-voltage alternating current disconnectors and earthing switches	IEC 60129
103	Switches for rated voltages above 1 kV and less than 52 kV	IEC 60265-1
104	Switches for rated voltages of 52 kV and above	IEC 60265-2
105	Alternating current switch-fuse combinations	IEC 60420
106	Alternating current contactors and contactor-based motor-starters	IEC 60470
107	Alternating current switchgear-fuse combinations	-
108	Switchgear having combined functions	-
109	Series capacitor by-pass switches	-
200	AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV	IEC 60298
201	Insulation-enclosed switchgear and controlgear for rated voltages up to and including 52 kV	IEC 60466
202	High-voltage/low-voltage prefabricated substations	IEC 61330
203	Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV	IEC 60517
204	High-voltage gas-insulated transmission lines for rated voltages of 72,5 kV and above	IEC 61640
(300)	Guide for seismic qualification of high-voltage alternating current circuit-breakers	IEC 61166
(301)	Guide for inductive load switching	IEC 61233
(302)	Guide for short-circuit and switching test procedures for metal-enclosed and dead tank circuit-breakers	IEC 61633
(303)	Use and handling of sulphur hexafluoride (SF ₆) in high-voltage switchgear and controlgear	IEC 61634
(304)	Additional requirements for enclosed switchgear and controlgear from 1 kV to 72,5 kV to be used in severe climatic conditions	IEC 60932
(305)	Cable connections for gas-insulated metal-enclosed switchgear for rated voltages above 52 kV	IEC 60859
(306)	Direct connection between power transformers and gas-insulated metal-enclosed switchgear for rated voltages above 52 kV	IEC 61639
(307)	Use of electronic and associated technologies in auxiliary equipment of switchgear and controlgear	IEC 62063
308	Guide for asymmetrical short-circuit breaking test duty T100a	-
309	TRV parameters for high-voltage switchgear and controlgear for rated voltages above 1 kV and less than 100 kV	-
310	Electrical endurance testing for circuit-breakers rated 72,5 kV and above	-

HIGH-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 203: Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV

1 General

1.1 Scope

This standard specifies requirements for gas-insulated, metal-enclosed switchgear in which the insulation is obtained, at least partly, by an insulating gas other than air at atmospheric pressure, for alternating current of rated voltages above 52 kV, for indoor and outdoor installation, and for service frequencies up to and including 60 Hz.

For the purpose of this standard, the terms “GIS” and “switchgear” are used for “gas-insulated metal-enclosed switchgear”.

The gas-insulated metal-enclosed switchgear covered by this standard consists of individual components intended to be directly connected together and able to operate only in this manner.

This standard completes and amends, if necessary, the various relevant standards applying to the individual components constituting GIS.

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.

Subclause 1.2 of IEC 60694 is applicable with the following additions:

IEC 60044-1, *Instrument transformers – Part 1: Current transformers*

IEC 60044-2, *Instrument transformers – Part 2: Inductive voltage transformers*

IEC 60068-2-11, *Environmental testing – Part 2: Tests. Test Ka: Salt mist*

IEC 60137, *Insulating bushings for alternating voltages above 1 000 V*

IEC 60141-1, *Tests on oil-filled and gas-pressure cables and their accessories – Part 1: Oil-filled, paper or polypropylene paper laminated insulated, metal-sheathed cables and accessories for alternating voltages up to and including 500 kV*

IEC 60840, *Power cables with extruded insulation and their accessories for rated voltages above 30 kV ($U_m = 36$ kV) up to 150 kV ($U_m = 170$ kV) – Test methods and requirements*

IEC 60859, *Cable connections for gas-insulated metal-enclosed switchgear for rated voltages of 72,5 kV and above – Fluid-filled and extruded insulation cables – Fluid-filled and dry type cable-terminations*

IEC 61462, *Composite insulators – Hollow insulators for use in outdoor and indoor electrical equipment – Definitions, test methods, acceptance criteria and design recommendations*

IEC 61639, *Direct connection between power transformers and gas-insulated metal-enclosed switchgear for rated voltages of 72,5 kV and above*

IEC 61672-1, *Electroacoustics – Sound level meters – Part 1: Specifications*

IEC 61672-2, *Electroacoustics – Sound level meters – Part 2: Pattern evaluation tests*

IEC 62067, *Power cables with extruded insulation and their accessories for rated voltages above 150 kV ($U_m = 170$ kV) up to 500 kV ($U_m = 550$ kV) – Test methods and requirements*

IEC 62155, *Hollow pressurized and unpressurized ceramic and glass insulators for use in electrical equipment with rated voltages greater than 1 000 V*

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: Alternating current disconnectors and earthing switches*

ISO 3231, *Paints and varnishes – Determination of resistance to humid atmospheres containing sulfur dioxide*

NOTE Other standards are referred to for information in this standard. They are listed in the Bibliography.