



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 7251.1-2023

**Low-voltage switchgear and controlgear assemblies - Part 1:
General rules**

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Introduction

GB/T 7251 adopts IEC international standards to meet the needs of international trade, technical and economic exchanges.

The purpose of this Document is to harmonize as far as practicable all rules and requirements of a general nature applicable to low-voltage switchgear and controlgear assemblies, in order to obtain uniformity of requirements and verification for assemblies and to avoid the need for verification in other standards. All those requirements for the various assembly standards which can be considered as general have therefore been gathered in this Document together with specific subjects of wide interest and application, e.g. temperature-rise, dielectric properties, etc.

For each type of low-voltage switchgear and controlgear assembly, only two main standards are necessary to determine all requirements and the corresponding methods of verification.

- the basic standard, (this Document) referred to as GB/T 7251.1 in the specific standards, covering the various types of low-voltage switchgear and controlgear assemblies;
- the specific assembly standard hereinafter also referred to as the relevant assembly standard.

If the basic rules are not applicable, the specific complete equipment standard does not require it, so it is not necessary to propose it; if the basic rules are not sufficient for special occasions, the specific complete equipment standard can add requirements; unless there are reliable and sufficient technical reasons, it is not allowed to violate the basic rules in the specific complete equipment standard.

In this Document, if another clause is cross-referenced, the reference applies to the clause revised by the specific complete equipment standard, if applicable.

Appendix N listed the "List of Notes of Certain Countries" that are different from this Document.

The other parts of GB/T 7251 are product standards, and the product standards quote a large number of technical requirements and test methods specified in this Document, so the other parts are used in conjunction with this Document.

GB/T 7251 is intended to consist of nine parts.

--- Part 1. General rules. It aims to specify common requirements for various types of complete equipment standards.

--- Part 2. Power switchgear and controlgear assemblies. It aims to specify specific requirements and verification methods for power switchgear and controlgear Low-Voltage Switchgear and Controlgear Assemblies - Part 1. General Rules

1 Scope

This Document lays down the general definitions and service conditions, construction requirements, technical characteristics and verification requirements for low-voltage switchgear and controlgear assemblies.

NOTE. Throughout this document, the term assembly(s) (see 3.1.1) is used for a low-voltage switchgear and controlgear assembly(s).

For the purpose of determining assembly conformity, the requirements of the relevant part of the IEC 61439 series, Part 2 onwards, apply together with the cited requirements of this document. For assemblies not covered by IEC 61439-3 onward, IEC 61439-2 applies.

This document applies to assemblies only when required by the relevant assembly standard as follows.

- assemblies for which the rated voltage does not exceed 1 000 V AC or 1 500 V DC;

- assemblies designed for a nominal frequency of the incoming supply or supplies not exceeding 1 000 Hz;
- assemblies intended for indoor and outdoor applications;
- stationary or movable assemblies with or without an enclosure;
- assemblies intended for use in connection with the generation, transmission, distribution and conversion of electric energy, and for the control of electrical energy consuming equipment.

This document does not apply to individual devices and self-contained components such as motor starters, fuse switches, power electronic converter systems and equipment (PECS), switch mode power supplies (SMPS), uninterruptible power supplies (UPS), basic drive modules (BDM), complete drive modules (CDM), adjustable speed power drives systems (PDS), and other electronic equipment which comply with their relevant product standards.

This document describes the integration of devices and self-contained components into an assembly or into an empty enclosure forming an assembly.

For some applications involving, for example, explosive atmospheres, functional safety, there can be a need to comply with the requirements of other standards or legislation in addition to those specified in the IEC 61439 (all parts).

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document.

GB/T 2423.2-2008 Environmental testing - Part 2. Test methods - Tests B. Dry heat (IEC 60068-2-2:2007, IDT)

GB/T 2423.4-2008 Environmental testing for electric and electronic products - Part 2. Test method - Test Db. Damp heat, cyclic (12h+12h cycle) (IEC 60068-2-30:2005, IDT)

GB/T 2423.17-2008 Environmental testing for electric and electronic products - Part 2. Test method - Test Ka. Salt mist (IEC 60068-2-11:1981, IDT)

GB/T 4025-2010 Basic and safety principles for man-machine interface, marking and identification - Coding principles for indicators and actuators (IEC 60073:2002, IDT)

GB/T 4026-2019 Basic and safety principles for man-machine interface, marking and identification - Identification of equipment terminals, conductor terminations and conductors (IEC 60445:2017, IDT)

GB/T 4205-2010 Basic and safety principles for man-machine interface (MMI), marking and

identification - Actuating principles (IEC 60447.2004, IDT)

GB/T 5094.1-2018 Industrial systems, installations and equipment and industrial products
-Structuring principles and reference designations - Part 1.Basic rules (IEC 81346-1.2009, IDT)

GB/T 5169.10-2017 Fire hazard testing for electric and electronic products - Part 10.

Glowing/hot-wire based test methods - Glow-wire apparatus and common test procedure
(IEC 60695-2-10.2013, IDT)

GB/T 5169.11-2017 Fire hazard testing for electric and electronic products - Part 11.

Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products
(GWEPT) (IEC 60695-2-11.2014, IDT)

GB/T 11021-2014 Electrical Insulation - Thermal Evaluation and Designation (IEC
60085.2007, IDT)

GB/T 16895.6-2014 Electric installations of buildings - Part 5-52.Selection and erection
disturbance characteristics - Limits and methods of measurement

3 Terms and Definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1 Low-voltage switchgear and controlgear assembly; Assembly

Combination of one or more low-voltage switching devices together with associated control, measuring, signaling, protective, regulating equipment, with all the internal electrical and mechanical interconnections and structural parts, as defined by the original manufacturer, which can be assembled in accordance with the original manufacturer's instructions.

3.1.2 Assembly system

Full range of mechanical and electrical components (enclosures, busbars, functional units, auxiliary circuits and associated controls, etc.), as defined by the original manufacturer, which can be assembled in accordance with the original manufacturer's instructions in order to produce various assemblies.

Organization taking the responsibility for the completed assembly.

NOTE. The assembly manufacturer can be the same or a different organization to the original manufacturer.

3.11 User

Party who will specify, purchase, use and/or operate the assembly, or someone acting on