

ICS 29.080
CCS K 40



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

GB/T 311.11-2025

**Insulation co-ordination - Part 11: Definitions, principles and
rules for HVDC system
(English Translation)**

Issued on: June 30, 2025

Implemented on: January 1, 2026

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is Part 11 of GB/T 311 "Insulation Coordination". GB/T 311 has been published in the following parts.

--- Part 1: Definitions, principles and rules;

--- Part 2: Guidelines for use;

--- Part 3: Insulation coordination procedures for HVDC converter stations;

--- Part 4: Calculation guide for network insulation coordination and simulation;

--- Part 11: Definitions, principles and rules for insulation coordination of high voltage DC systems;

--- Part 14: Insulation coordination of AC/DC filters for high voltage DC systems.

This document is modified to adopt IEC 60071-11:2022 "Insulation coordination - Part 11: Definitions and principles of insulation coordination for high-voltage direct current systems" and Rules.

This document has the following structural adjustments compared to IEC 60071-11:2022.

a) Chapter 3 corresponds to Chapter 3 of IEC 60071-11:2022, where 3.5 to 3.8 correspond to 3.4 to 3.6 of IEC 60071-11:2022.

3.7; 3.9~3.10 correspond to 3.7.1~3.7.2 of IEC 60071-11:2022; 3.10.1~3.10.4 correspond to IEC 60071-11.

2022 3.7.2.1~3.7.2.4; 3.12 corresponds to 3.8 of IEC 60071-11:2022; 3.13~3.15 correspond to IEC 60071-11.

3.9~3.11 of IEC 60071-11:2022; 3.16 corresponds to 3.12 of IEC 60071-11:2022; 3.17~3.19 corresponds to IEC 60071-11:2022 3.14~3.16; 3.20~3.23 of IEC 60071-11:2022 correspond to 3.18~3.21 of IEC 60071-11:2022. IEC 60071-11:2022 has been deleted.

2022 3.3, 3.7.2.5, 3.8.1, 3.8.2, 3.8.3, 3.11.1, 3.11.2, 3.11.3, 3.13, 3.17. Added 3.3~3.4, 3.11.

b) Chapter 4 corresponds to Chapter 4 of IEC 60071-11:2022, where 4.2 to 4.3 correspond to 4.3 to 4.4, and IEC 60071-11:2022 is deleted.

4.2 of 2022.

c) Chapter 8 corresponds to Chapter 8 of IEC 60071-11:2022, where 8.1 to 8.2 correspond to 8.1 to 8.2, and IEC 60071-11:2022 is deleted.

August 3rd to August 5th, 2022.

d) Appendix D of IEC 60071-11:2022 has been deleted.

This document has many technical differences compared to IEC 60071-11:2022.

These technical differences and their reasons are as follows.

a) The voltage range description has been added to the scope, "applicable to HVDC systems with a nominal voltage of 1.5kV or above".

The following DC projects are common, but are relatively rare internationally except in China. The purpose of clarifying the voltage range is to adapt to the actual needs of Chinese projects.

At the same time, it is also consistent with the description of voltage range in GB/T 311.1.

b) Regarding normative references, this document has made adjustments to technical differences to adapt to my country's technical conditions. The specific adjustments are as follows.

- The normative reference GB/T 311.1 replaces IEC 60071-1:2019. There is no consistency between the two documents.

relation;

- The normative reference GB/T 311.2 replaces IEC 60071-2:2018. There is no consistency between the two documents.

relation;

- The normative reference GB/T 11032-2020 replaces IEC 60099-4:2014, and the consistency between the two documents to modify;

- The normative reference GB/T 16927.1 replaces IEC 60060-1, and there is no consistency correspondence between the two documents;

- The normative reference GB/T 26218 (all parts) replaces IEC/T S60815-1.2008 and IEC/T S60815-2.

2008, IEC/T S60815-3.2008, there is no consistency correspondence between the two documents;

- Newly added references to GB/T 2900.19-2022 and GB/T 22389.

c) The relevant terms have been modified to better comply with the basic standard requirements of insulation coordination and adapt to the content of this document. The specific adjustments are as follows.

- Added the terms "grid-commutated converter", "voltage source converter", and "standard voltage waveform for testing" (see 3.3, 3.4, 3.11);

- The terms "maximum DC voltage", "combined overvoltage", "representative slow-front overvoltage", and "representative fast-front overvoltage" have been deleted.

"Representative steep wave front overvoltage", "Switching impulse withstand voltage", "Lightning impulse withstand voltage", "Steep wave front impulse withstand voltage" "Equivalent continuous operating voltage of lightning arresters" "Equipment directly protected" (see 3.3, 3.7.2.5, 3.8.1, 3.8.2, 3.8.3, 3.11.1, 3.11.2, 3.11.3, 3.13, 3.17);

- Adjust the terms "switching impulse protection level", "lightning impulse protection level" and "steep wavefront impulse protection level" (see IEC 60071-11.

2022), merged into. "Operational (or lightning/steep wavefront) impulse protection level" (see 3.20).