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

GB/T 311.12-2025

**Insulation co-ordination - Part 12: Application guidelines for
LCC HVDC converter stations**

绝缘配合 第12部分：高压直流换流站（LCC）绝缘配合应用导则
(English Translation)

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 12 of GB/T 311 "Insulation Coordination". GB/T 311 has already published the following parts.

---Part 1: Definitions, Principles, and Rules;

---Part 2: Usage Guidelines;

---Part 3: Insulation Coordination Procedures for High Voltage Direct Current Converter Stations;

---Part 4: Calculation Guidelines for Power Grid Insulation Coordination and Simulation;

---Part 11: Definitions, principles, and rules for insulation coordination in high-voltage direct current systems;

---Part 12: Insulation Coordination Application Guidelines for High Voltage Direct Current Converter Stations (LCCs);

---Part 14: Insulation Coordination of AC/DC Filters in High Voltage DC Systems this document is modified to adopt IEC 60071-12:2022 "Insulation coordination - Part 12: Application of insulation coordination in high voltage DC converter stations (LCC)".

Guidelines.

This document has undergone significant structural adjustments compared to IEC 60071-12:2022. A comparison of the structural numbering changes between the two documents is provided below.

See Appendix A for the table of contents.

This document differs significantly from IEC 60071-12:2022. The relevant clauses are indicated in the margins using vertical markers.

Straight lines (|) are marked. A summary of these technical differences and their reasons can be found in Appendix B.

The following editorial changes have been made to this document.

---Appendix A (informative) "Comparison of Structure Numbers in this Document with IEC 60071-12:2022" has been added;

---Appendix B (Informative) has been added. "Technical Differences Between This Document and IEC 60071-12:2022 and Their Reasons";

---Added Appendix D (Informative) "Example of Insulation Coordination for Back-to-Back DC Converter Stations".

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Electrical Equipment Industry Association.

This document is under the jurisdiction of the National Technical Committee on Standardization of High Voltage Testing Technology and Insulation Coordination (SAC/TC163).

Introduction

GB/T 311 "Insulation Coordination" aims to establish the principles and guidelines for insulation coordination in high-voltage AC and high-voltage DC applications. Due to the nature of AC insulation coordination...

There is a significant difference between AC insulation coordination and DC insulation coordination. It needs to be divided into two aspects. AC insulation coordination and DC insulation coordination, which are proposed to consist of the following parts.

---Part 1: Definitions, Principles, and Rules. The purpose is to establish definitions, principles, and rules for insulation coordination and to provide guidelines for insulation coordination in AC systems.

Provide guidance in coordination.

---Part 2: Usage Guidelines. This section aims to provide guidance on the correct implementation of Part 1.

---Part 3: Insulation Coordination Procedures for High Voltage Direct Current Converter Stations. The purpose is to provide guidance on insulation coordination for high voltage direct current converter stations.

---Part 4: Calculation Guidelines for Power Grid Insulation Coordination and its Simulation. The purpose is to establish guidelines for the digital calculation of insulation coordination.

---Part 11: Definition, Principles, and Rules of Insulation Coordination in High Voltage Direct Current Systems. The purpose is to establish the principles,, and rules of insulation coordination in DC systems.

Defines, principles, and rules, and provides guidance for insulation coordination in high-voltage direct current systems.

---Part 12: Insulation Coordination Application Guidelines for High Voltage Direct Current Converter Stations (LCCs). The purpose is to provide guidance for high voltage direct current converters using LCCs.

Provides guidance on insulation coordination for DC converter stations.

---Part 13: Insulation Coordination Application Guidelines for High Voltage Direct Current Converter Stations (VSCs). The purpose is to provide guidance for high voltage direct current converters using VSCs.

Provides guidance on insulation coordination for DC converter stations.

---Part 14: Insulation Coordination of AC/DC Filters in High-Voltage DC Systems. The purpose is to determine the insulation coordination of AC and DC filters in high-voltage DC systems.

Insulation coordination of the current filter.

---Part 15: Insulation Coordination of DC Transmission Lines. The purpose is to determine the insulation coordination of DC transmission lines and grounding electrode lines.

This document is Part 12 of GB/T 311 "Insulation Coordination". With increasingly rich