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GB/T 45648.2-2025

Controllable self-restoring energy dissipation devices - Part 2: AC side

高压直流输电用消能装置技术规范 第2部分：交流可控自恢复消能装置

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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 2 of GB/T 45648 "Technical Specification for Energy Dissipation Devices for High Voltage Direct Current Transmission". GB/T 45648 has been published. The following parts.

--- Part 1: DC controllable self-restoring energy dissipation device;

--- Part 2: AC controllable self-restoring energy dissipation device. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the 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 for Standardization of High Voltage Direct Current Transmission Equipment (SAC/TC333). This document was drafted by: State Grid Economic and Technological Research Institute Co., Ltd., Xi'an High Voltage Electrical Equipment Research Institute Co., Ltd., Xi'an Xidian Leiqi Co., Ltd., China Electric Power Research Institute Co., Ltd., Jinguan Electric Co., Ltd., China Southern Power Grid Research Institute Co., Ltd. Responsible Company, Nanjing NARI Relay Protection Engineering Technology Co., Ltd., Pinggao Toshiba (Langfang) Lightning Arrester Co., Ltd., China Southern Power Grid Energy Development Research Institute Co., Ltd., Changzhou Borui Electric Power Automation Equipment Co., Ltd., China Southern Power Grid Co., Ltd. Ultra-high Voltage Transmission Company, Dianpuri Electric Power Engineering Co., Ltd., State Grid Hubei Electric Power Co., Ltd. Electric Power Research Institute, State Grid

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Energy dissipation devices for high voltage direct current transmission are used to limit the overvoltage level caused by direct current system faults and consume surplus energy to achieve fault Crossing to ensure the reliable operation of the DC system. GB/T 45648 aims to standardize the design, manufacture and use of energy dissipation devices for high-voltage direct current transmission, and currently consists of two parts.

--- Part 1: DC controllable self-restoring energy dissipation device. The purpose is to standardize the terms and definitions of DC controllable self-restoring energy dissipation devices, Requirements for operating conditions, performance, key components, tests, etc.

--- Part 2: AC controllable self-restoring energy dissipation device. The purpose is to standardize the terms and definitions of AC controllable self-restoring energy dissipation devices, Requirements for operating conditions, performance, key components, tests, etc. Technical specification for energy dissipation devices for high voltage direct current transmission Part 2: AC controllable self-restoring energy dissipation device

1 Scope

Part 2 of China's national standard for controllable self-restoring energy dissipation devices, covering those on the AC side of DC transmission systems at plus or minus 100 kV and above. The purpose is the same as in Part 1 - absorbing the surplus energy of a renewable sending end when the DC link cannot take it - but the connection point changes the engineering substantially. On the AC side the device sees three-phase voltage rather than a DC pole, so its switching, its resistor arrangement and its control all differ, and its interaction with the sending end network has to be considered: it is a large controllable load appearing suddenly on a weak system, and it must not itself provoke the instability it exists to prevent. Where it is placed relative to the converter and the collector network determines what it can protect. The standard defines the terminology and specifies operating conditions, performance, key components, testing, marking, packaging, transport, storage and installation.

This document defines the terms and definitions of AC controllable self-restoring energy dissipation devices (hereinafter referred to as energy dissipation devices), and specifies the operation and operation of energy dissipation devices. Requirements on operating conditions, performance, key components, testing, marking, packaging, transportation,

storage and installation. This document is applicable to energy dissipation devices used on the AC side of DC transmission systems of ±100kV and above.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 191 Pictorial markings for packaging, storage and transportation

GB/T 1094.11-2022 Power transformers Part

3 Terms and definitions

The terms and definitions defined in GB/T 2900.12, GB/T 2900.20, GB/T 13498 and the following apply to this document.

3.1 It is composed of an energy dissipation element (3.2), a control switch (3.6), a measuring device, a control protection device and auxiliary equipment, and the like. (3.4) A device that limits overvoltage in the AC system and consumes energy.

Note. See Figure 1 for a typical structural diagram.

11 Dry-type transformers

GB/T 1984-2024 High voltage AC circuit breaker

GB/T 2900.12 Electrical terminology Lightning arresters, low voltage surge protectors and components

GB/T 2900.20 Electrical terminology High-voltage switchgear and control equipment

GB/T 7261-2016 Basic test methods for relay protection and safety automatic devices

GB/T 11022-2020 Common technical requirements for high-voltage AC switchgear and controlgear standards

GB/T 11032-2020 AC gapless metal oxide arresters

GB/T 13384 General technical requirements for packaging of electromechanical products

GB/T 13498 Terminology for high voltage direct current transmission

GB/T 16927.1 High voltage test technology Part