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

GB/T 25843-2017

Replacing GB/Z 25843-2010

**Technical requirements for the control and protection
equipment of 800 kV ultra high voltage direct current
transmission**

800 kV特高压直流输电控制与保护设备技术要求

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard replaces GB /Z 25843-2010 "800kV UHV DC Transmission Control and Protection Equipment Technical Guidelines", and GB /Z 25843-2010 compared to the main technical changes are as follows:

- Standard name into "± 800kV UHV DC transmission control and protection equipment technical requirements";
- Modify the control and protection equipment factory test classification;
- Modify the DC system protection device protection zone and functional configuration;
- Increased UHV converter station secondary system and valve cold secondary system and valve-based electronic equipment interface design requirements;
- Increased valve cooling system for DC control of the special requirements;
- Added chapter 7 labels, instructions and Chapter 8 packaging, transportation, storage content. This standard proposed by the China Electrical Equipment Industry Association. This standard by the National Measurement Relay and Protection Equipment Standardization Technical Committee (SAC/TC154) centralized. This standard was drafted unit. Southern Power Grid Research Institute Co., Ltd., Xu Electric Co., Ltd., Nanjing NARI following insurance Electric Co., Ltd., China Southern Power Grid Power Dispatch Control

Center, Beijing Sifang Jibao Automation Co., Ltd., Xuchang Cape Electric Institute, China Electric Power Research Institute, State Grid Beijing Economic and Technological Research Institute, China Power Engineering Consultants Group Zhongnan Electric Power Design Institute Co., Ltd., China Source Construction Group Guangdong Electric Power Design and Research Institute Co., Ltd., China Power Engineering Consulting Group Southwest Power Design Institute Co., Ltd., China South Power Grid Co., Ltd. EHV Transmission and Maintenance Testing Center, China Southern Power Grid Co., Ltd. EHV Transmission Company Guangzhou Board, Xi'an West Power System Co., Ltd. The main drafters of this standard. Li Xiaolin, Zhang Ailing, Wang Junsheng, Li Yan, Yu Jiang, Qin Hongxia, Li Zhiyong, Xie Guoping, Shiyan, Zhangqiao Ling, Yang Huixia, Shi Shihong, Mu Xiaosong, Wang Zhen, Liang Binggang, Xiong Jiali, Li Ming, Chen Yijing. This standard replaces the standards previously issued as.

--- GB /Z 25843-2010. $\pm 800\text{kV}$ UHV DC transmission control and Protection equipment technical requirements

1 Scope

China's national technical requirements for the control and protection equipment of 800 kV class ultra high voltage direct current transmission. It specifies the requirements for the control and protection systems of UHVDC schemes at that voltage. Ultra high voltage direct current is the technology on which China's power system geography depends: the generation is in the west and the north and the load is on the coast, and moving several gigawatts over two thousand kilometres is economic only at these voltages. An 800 kV bipolar link carries as much power as a large nuclear station and it delivers it into one place, which is what makes the control and protection different in kind from the 500 kV equipment of GB/T 22390 rather than merely larger. The first difference is consequence. Losing a UHVDC link instantaneously removes several gigawatts from the receiving system and returns it to the sending one, and the frequency excursion at both ends is a system event that neighbouring grids feel - so the protection must discriminate finely enough not to trip the link for a fault it could ride through, while still clearing what it must. The second is the converter arrangement: at this voltage each pole is built as two series-connected twelve-pulse converter groups, so the scheme can run at half pole voltage with one group out, and the control must manage the balanced and unbalanced configurations and the transitions between them. The third is that a link this long is a system in its own right, with its own reactive power, harmonic and stability behaviour at each end. So the standard covers the control hierarchy, the protection functions and their coordination, the redundancy and the availability, and the testing. Issued on 29 December 2017 and in force since 1 July 2018, it replaces GB/Z 25843-2010.

This standard specifies the $\pm 800\text{kV}$ UHV DC transmission control and protection equipment (hereinafter referred to as the control of protection equipment) technical

requirements. This standard applies to $\pm 800\text{kV}$ each station consists of two 12-pulse converter series structure of the DC transmission system control protection Prepare Other voltage levels and different main circuit structure of the DC transmission system control and protection equipment can refer to the implementation.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 191-2008 Packaging - Pictorial signs General specifications for computerized premises GB/T 2887-2011

GB/T 4208-2017 enclosure rating (IP code) Computerized site safety requirements GB/T 9361-2011

GB/T 9969 Industrial Products Manual General

GB/T 11287-2000 Electrical relays - Part 21. Vibration, shock, bump and earthquakes of measuring relays and protection devices Test Part 1. Vibration test (sine) GB/T 13498 HVDC terms

GB/T 13729 Telecontrol terminal equipment Regional power dispatching automation system

GB/T 13730-2002 Shock and collision tests for measuring relays and protection equipment Measuring relays and protection equipment - Part 1. General requirements GB/T 14598.2-2011

GB/T 14598.24 Measuring relays and protection equipment - Part 24 - Power system transient data exchange (COMTRADE) Use format

GB/T 14598.26-2015 Measuring relays and protection equipment - Part 26. EMC requirements

GB/T 14598.27-2008 Measuring relays and protection equipment - Part 27. Product safety requirements Electromagnetic compatibility (EMC) - Testing and measurement techniques - Pulsed magnetic field immunity test

GB/T 17626.10-1998 Electromagnetic compatibility Testing and measurement techniques Shock magnetic field immunity test

GB/T 18700 (all parts) Telecontrol equipment and systems Transformers - Part 8. Electronic current transformers

GB/T 22390.1-2008 HVDC system control and protection equipment Part 1. Operating personnel control system

GB/T 22390.2-2008 HVDC transmission system control and protection equipment Part 2

AC and DC system station control equipment

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