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

GB/T 42558.5-2026

**Seismic techniques for the electrical equipment of converter
stations on plateaus - Part 5: Directives for equipment
maintenance**

高原用换流站电气设备抗震技术 第5部分：设备运维导则

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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 5 of GB/T 42558 "Seismic Resistance Technology for Electrical Equipment of Converter Stations for High-Altitude Applications". GB/T 42558 has been published. The following section.

- 1. Seismic Testing and Evaluation Guidelines;
- 2. Seismic Design Code;
- 3. Seismic Isolation and Vibration Reduction Design Code;
- 5. Equipment Operation and Maintenance Guidelines;

6. Technical Specifications for Earthquake Monitoring Systems 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 Environmental Technology Standardization for High-Altitude Electrical Products (SAC/TC330). This document was drafted by: China Southern Power Grid Co., Ltd. Ultra-High Voltage Transmission Company Electric Power Research Institute and Kunming Electrical Science Research Institute. Tongji University, Dali Bureau of China Southern Power Grid Co., Ltd. Ultra-High Voltage Transmission Company, China Electric Power Research Institute Co., Ltd. State Grid Electric Power Engineering Research Institute Co., Ltd., Kunming Power Supply Bureau of Yunnan Power Grid Co., Ltd., and China Electric Equipment Group Science and Technology Research Institute Limited Liability Company, China Electric Power Research Institute Co., Ltd.,

Institute of Engineering Mechanics, China Earthquake Administration, Xi'an XD High Voltage Switchgear Co., Ltd. Company, China Energy Engineering Group Guangdong Electric Power Design Institute Co., Ltd., Henan Pinggao Electric Co., Ltd., Shandong Taikai High Voltage Opening Guan Co., Ltd., Tibet Guoji Plateau Electromechanical Equipment Scientific Research Co., Ltd., Wuhan Earthquake Science Instrument Research Institute Co., Ltd., Shenzhen Electric Scientific Research Institute, Kunming Bureau of China Southern Power Grid Co., Ltd. Ultra-High Voltage Transmission Company, Yunnan Power Grid Co., Ltd. Electric Power Research Institute Institute, Yunnan Transformer Electric Co., Ltd., TBEA Hengyang Transformer Co., Ltd., Chongqing University, Guangzhou University, Central South University, Shanghai Xiakai Construction Technology Co., Ltd., Nanjing Forestry University, Yunnan Power Grid Co., Ltd. Honghe Power Supply Bureau, Huazhong University of Science and Technology, State Grid Sichuan Province Electric Power Research Institute of State Grid Qinghai Electric Power Company, Shanghai Nuclear Engineering Research and Design Institute Co., Ltd. Company, State Grid Economic and Technological Research Institute Co., Ltd., Shenzhen University, Yunnan Power Grid Co., Ltd., Baoding Tianwei Baobian Electric Co., Ltd. Company, China Energy Engineering Group Yunnan Electric Power Design Institute Co., Ltd., China Southern Power Grid Co., Ltd. Ultra-High Voltage Transmission Company, Yunnan Electric Power Testing and Research Institute (Group) Co., Ltd. The main drafters of this document are. Zhou Haibin, Zhang Changhong, Yang Ajuan, Xie Qiang, Yang Xu, Li Qiang, Huo Feng, Lu Zhicheng, Wang Jun, Wang Qingbo, and Zhang Bo. Zhang Zhijin, Wang Liu, Zhao Ronghao, Ma Yue, Deng Jun, Zhan Chuanxiang, Gao Jun, Liu Gang, Wang Liuhuo, Lü Tianyi, Zhu Zhubing, Ou Tonggeng, Xia Jiening, Yu Jinyun Zhang Lingxin, Yang Zhenyu, Yang Xiqing, Li Qiaoying, Zhu Guofu, Zhou Fangrong, Long Qi, Li Weiguo, Lin Gang, Qiu Yinan, Zhang Shihong, He Chang, Shi Gaoyang Wen Jiayi, Lu Jun, Sun Yong, Liu Liping, Liu Jinsong, Peng Hui, Xiao Mingying, Song Jindong, Tian Feng, Wang Yanxiang, Zhang Yi, Zhou Wenli, Zhu Mengmeng, He Tingyi Fan Songhai, Ma Yongfu, Liang Shibin, Xu Xueqin, Li Lixiao, Xu Zifeng, Liu Shenghua, Fan Cunzheng, Cai Wen.

DC transmission is an important means of achieving high-voltage, large-capacity, and long-distance power transmission. However, due to factors such as power source location and environment, some substations... Built in a plateau region, it features high altitude and high voltage levels. Compared with similar electrical equipment at lower altitudes, it differs in structure, height, length, and weight. The surface exhibits significant differences, being taller, heavier, and more flexible, placing more stringent demands on the seismic performance of equipment in high-seismic-intensity areas. To make this type of... The seismic design, modeling calculation, testing and evaluation, operation and maintenance, seismic monitoring, service performance assessment and emergency response of electrical equipment in converter stations are all included. In accordance with this standard, GB/T 42558 "Seismic Resistance Technology for Electrical Equipment of Converter Stations for High-Altitude Applications" was specifically formulated. GB/T 42558 is proposed to consist

of eight parts.

1. Seismic Testing and Evaluation Guidelines. The purpose is to establish electrical systems suitable for use in converter stations in high-seismic-intensity areas, particularly in high-altitude regions. General requirements and evaluation principles for equipment seismic testing.

2. Seismic Design Code. The purpose is to specify the seismic design requirements for electrical equipment in converter stations located in high-seismic-intensity areas, particularly in high-altitude regions. General requirements, seismic calculations, seismic design of electrical equipment and connection circuits, and seismic structural measures for equipment.

3. Seismic Isolation and Reduction Design Code. The purpose is to standardize the seismic isolation and reduction design of electrical equipment in converter stations located in high-seismic-intensity areas, particularly in high-altitude regions. Seismic design calculation methods, selection of seismic isolation and damping devices, and structural requirements.

4. Technical Requirements for High Voltage Direct Current Equipment. The purpose is to provide guidance on electrical equipment in converter stations located in high-altitude, high-seismic-intensity areas. The selection, structure, materials, and parameters are more scientific and reasonable, improving the seismic performance of electrical equipment.

5. Equipment Operation and Maintenance Guidelines. The purpose is to guide operators in better managing converter stations in high-altitude, high-seismic-intensity areas. It provides a standard basis for the monitoring, inspection, evaluation, maintenance and repair of internal electrical equipment.

6. Technical Specifications for Seismic Monitoring Systems. The purpose is to specify the monitoring field specifications for newly built, renovated, and expanded converter stations in plateau areas. System structure of ground motion and seismic response of electrical equipment, layout of monitoring points, management of monitoring data, testing of monitoring system, and safety. Installation, debugging and acceptance.

1 Scope

GB/T 42558.5-2026 is the Chinese national standard covering maintaining the seismic protection of a converter station on the Tibetan plateau - the anchors, dampers and flexible connections that only matter during an earthquake and that quietly degrade in the years between, at altitude and in a seismically active region. Part 5 of the series, first edition, in force since 1 May 2026. It was issued on 28 January 2026 and has been in force since 1 May 2026, as a first edition. The document is under the responsibility of the China Electrical Equipment Industry Association. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the

English translation.

This document specifies the operation and maintenance categories and requirements, daily operation and maintenance, and post-earthquake operation and maintenance of electrical equipment in newly built, renovated, and expanded converter stations in plateau areas. Maintenance, status assessment, and handling of assessment results. This document applies to voltage levels of $\pm 400\text{kV}$ and above, altitudes of 1000m to 5000m, and seismic fortification intensity of 6 to 9 degrees. Operation and maintenance of electrical equipment within the converter station. The seismic maintenance of electrical equipment in other substations/converter stations shall be carried out in accordance with the same guidelines.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 7674 Gas-insulated metal-enclosed switchgear with rated voltage of 72.5kV and above

GB/T 8905 Guidelines for Gas Management and Testing in Sulfur Hexafluoride Electrical Equipment

GB/T 11804 Environmental Conditions Terminology for Electrical and Electronic Products

GB/T 14527 Composite Damping Vibration Isolators and Composite Dampers

GB/T 42558.1 Seismic technology for electrical equipment in converter stations for high-altitude applications - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 11804, GB/T 44380, and GB 50260, as well as the following terms and definitions, apply to this document.