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**NATIONAL STANDARD OF THE
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GB/T 42558.6-2026

**Seismic techniques for the electrical equipment of converter
stations on plateaus - Part 6: Technical specification for seismic
monitoring systems**

高原用换流站电气设备抗震技术 第6部分：地震监测系统技术规范

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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 6 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. China Southern Power Grid Co., Ltd. Ultra-High Voltage Transmission Company, Dali Branch, Tongji University, Wuhan Earthquake Science Instrument Research Institute Co., Ltd. China Electric Power Research Institute Co., Ltd., State Grid Electric Power Engineering Research Institute Co., Ltd., and Yunnan Power Grid Co., Ltd. Kunming Power Supply

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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 42558.6-2026 is the Chinese national standard covering the seismic monitoring system of a converter station - the accelerometers on the structures and the critical equipment, the thresholds that trigger an alarm or a shutdown, and the record that tells engineers afterwards what the station actually experienced. Part 6 of the series, first edition, in force since 1 May 2026, with Part 5 on maintenance. 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 systematic structure for monitoring ground motion and seismic

response of electrical equipment at monitoring sites within newly built, renovated, and expanded converter stations in plateau areas. The requirements for system structure, monitoring point layout, monitoring data management, system installation, commissioning and acceptance are described, and the testing methods for the monitoring system are also described. 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. Seismic monitoring system within the converter station. The earthquake monitoring systems of other substations/converter stations shall follow the same procedure.

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 14597 Climatic environmental conditions for electrical products at different altitudes

GB/T 17626 (all parts) Electromagnetic compatibility testing and measurement techniques

GB/T 17742 China Earthquake Intensity Scale

GB/T 20626.1 Electrical and electronic products for high-altitude environments under special conditions - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 42558.1, GB/T 42558.2, and GB/T 42558.3, as well as the following terms and definitions, apply to this document.

3.1 Used for real-time monitoring and recording of ground motion in free-field conditions and seismic response of electrical equipment within the station, generating and transmitting data after comprehensive analysis and processing.

10 Digital Strong Vibration Accelerometer DB/T

17 Seismic Station Construction Standard - Strong Motion Station DL/T 1087 Immune

Requirements for Secondary Equipment of $\pm 800\text{kV}$ UHVDC Converter Stations DL/T

1498.1 Technical Specification for Online Monitoring Devices for Power Equipment Part