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

**GB/T 43022.2-2023**

Replacing GB/T 25890.5-2010

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**Railway applications - DC surge arresters and voltage limiting  
devices - Part 2: Voltage limiting devices**

轨道交通 直流避雷器和电压限制装置 第2部分：电压限制装置

**(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 2 of GB/T 43022 "Rail Transit DC Arresters and Voltage Limiting Devices": GB/T 43022 has been the following sections were published:

---Part 1: Gap-free metal oxide surge arresters;

---Part 2: Voltage limiting device:

This document, together with Part 1 of GB/T 43022, replaces GB/T 25890.5-2010 "Direct Current Opening of Rail Transit Ground Installations":

Related Equipment Part 5: DC Arrester and Low Voltage Limiter", compared with GB/T 25890.5-2010, except for structural adjustments and editorial changes in addition, the main technical changes are as follows:

- a) Changed the scope (see Chapter 1, Chapter 1 of GB/T 25890.5-2010);
- b) Added terms and definitions (see Chapter 3);
- c) Changes in marking and classification (see Chapter 4, 5:1, 7:1 of GB/T 25890.5-2010);
- d) The conditions of use have been changed (see 5.2, 7:2:4 of GB/T 25890.5-2010);
- e) Added general features (see 5.3);
- f) Changed requirements (see 5.4, 7:3 of GB/T 25890.5-2010);
- g) Added electrical characteristics (see 5.5);
- h) Added lightning protection (see 5.6);
- i) Added command and control (see 5.7);
- j) The inspection rules and test methods have been changed (see Chapter 6, 7:4 and 7:5 of GB/T 25890.5-2010);
- k) The preferred value has been changed (see Appendix A, 7:2:1, 7:2:2, and 7:2:3 of GB/T 25890.5-2010);

This document is modified to adopt IEC 62848-2:2019 "Rail transit DC arresters and voltage limiting devices - Part 2: Voltage Limitation" Device":

Compared with IEC 62848-2:2019, this document has made the following structural adjustments: Chapter 6 corresponds to Chapter 6 of IEC 62848-2:2019:

Chapter 7, of which 6:2:1 and 6:3 correspond to 7:1 of IEC 62848-2:2019, 6:14 corresponds to 7:2 of IEC 62848-2:2019, and 7:3 is deleted:

There are technical differences between this document and IEC 62848-2:2019: Use vertical single words in the outer margins of the clauses involved:

The line (I) is marked: The specific technical differences and their reasons are as follows:

---Replaced IEC 60529:1989 (see 6.11) and GB/T 1402-2010 with normatively cited GB/T 4208-2017 Replaced IEC 60850:2014 (see 6.6:2, 6:10:2), GB/T 16422.1 replaced ISO 4892-1 (see 6.12), GB/T 16422.2 replaces ISO 4892-2 (see 6.12), GB/T 16422.3 replaces ISO 4892-3 (see 6.12), GB/T 18802.311 replaces IEC 61643-311 (see 5.4:2, 6:2:2:3), GB/T 43022.1 replaces IEC 62848-1 (See 5.6), GB/T 32350.1-2015 replaces IEC 62497-1 (see 5.2:1, 5:2:2), GB/T 32347.2-2015 replaces Changed to IEC 62498-2 (see 5.2:1) to adapt to my country's technical conditions and increase operability:

---Added the term "multi-stage setting" (see 3.20), corresponding to the technical requirements in the text:

---Deleted the terms "protection level" and "IP code" (see Chapter 3), which are general terms:

---Change "recoverable under certain conditions" to "depending on the size of the passing current" (see Table 1) and clarify the influencing factors:

---Deleted content that can be agreed upon by "manufacturers" and "users" (see Table 1, 5:2:3, 5:6, 5:7:2, 6:10:2), clear requirements and convenience use:

---Deleted the optional requirement for voltage limiting device category information in the mark (see 5.1), clarifying the requirements:

---The upper limit of ambient temperature is changed to 45°C (see 5.2:1, 5:2:3) to adapt to my country's national conditions:

--- Added requirements that malfunction of the device caused by overvoltage should not occur during the contactor breaking process (see 5.4:3): actual operations and Field tests show that the voltage limiting device generates hundreds of volts of overvoltage during the contactor breaking process, causing the station or related equipment to be damaged:

In the event that the voltage limiting device of a neighboring station malfunctions, this requirement is added to avoid the above situation:

---Added the requirement that the action time, voltage, and number of actions of the voltage limiting device should be set using multi-stage settings (see 5.4:3): Multi-segment the fixed value is conducive to reducing the number of actions of the voltage limiting device, and is one of the measures to solve the frequent actions of the voltage limiting device:

---Change "should have the following characteristics and measurement display" to "should have the following characteristics and measurement display" (see 5.7:1): involved in the article Characteristics and measurement display are common functions of voltage limiting devices in my country, so this change is made to comply with the current application status

in my country and to be unified:

One request:

---Change the "device in a closed state for a long time, with the final parameterization level at level 2 and above" in the alarm record to "device disconnection and "The number of segments corresponding to multi-segment settings" (see 5.7:3), in order to comply with the actual application habits of voltage limiting devices in my country:

---Change "Exceeds the given number of actions, and the final parameterization level is level 2 and above" in the alarm record to "Exceeds the given actions the number of times, the number of times is set to 3 times and above" (see 5.7:3): In my country, the setting of the number of actions of the voltage limiting device is generally as follows:

It will be locked after 3 actions within a certain period of time, so this change is made to make the alarm record consistent with the action settings in my country:

---Change "type inspection" to "inspection rules and test methods" (see Chapter 6) to adapt to my country's national conditions:

---Added type inspection requirements (see 6.1) to adapt to my country's national conditions:

---Added terms corresponding to inspection classification and technical requirements (see Table 2) to adapt to my country's national conditions:

---Change "The frequency range that should be used is 45Hz~65Hz" to "The frequency range that should be used is 45Hz~55Hz" (see 6.10:2), so it is consistent with GB/T 16927.1 and conforms to the actual situation of my country's power system:

---The maximum  $I_{2t}$  value of the short-time current withstand capability of the voltage limiting device has been changed from 625kA<sub>2s</sub> to 1200kA<sub>2s</sub> (see

Table A:4), to adapt to my country's national conditions:

---The maximum closing capacity value of the voltage limiting device is changed from 50000A to 100000A (see Table A:6) to adapt to my country's national conditions:

The following editorial changes have been made to this document:

---Change the working mode of the voltage limiting device (VLD) as Note (see Chapter 1);

---Deleted the note for term 3:4 (see 3.4);

---Deleted the note in Table 1 (see Table 1);

---Change "nominal trigger voltage and non-trigger voltage" in test item 1 of Table 2 to "trigger voltage and non-trigger voltage" (see Table 2);

---Change "nominal trigger voltage  $U_{Tn}$  and non-trigger voltage  $U_W$ " to "trigger voltage and