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

**GB/T 28547-2023**

Replacing GB/T 28547-2012

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**Selection and application recommendations of metal oxide  
surge arresters for a. c. systems**

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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 replaces GB/T 28547-2012 "Guidelines for the Selection and Use of AC Metal Oxide Surge Arresters" and is consistent with GB/T 28547-2012

In comparison, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

---Added terms and definitions "gap metal oxide arrester", "DC reference voltage", "DC reference current", "rated repeated rotation"

Transfer charge", "Rated thermal transfer charge", "Rated thermal energy", "Pressure relief device", "Rated short-circuit current", "Tensile load", "Operating impulse"

"striking current" (see 3:12, 3:27:2, 3:28:2, 3:37, 3:38, 3:39, 3:42, 3:43, 3:59, 3:69), deleted "metal with gaps"

"Oxide arrester" (see D:14 of the:2012 edition);

---Changed the expression of "Scope I, Scope II" and changed "system nominal voltage" to "equipment maximum voltage" (see Section 4

Chapter,:2012 edition 1:3);

---Added the introduction of rated repeated transfer charge, rated thermal energy, and rated thermal transfer charge amount, and used these to replace line discharge

and long duration impulse current (see 5:2:2,:2012 edition 2:2:1:2);

---Changed the definitions and test methods of long-term load and short-term load (see 5:2:5:4:3,:2012 edition 2:3:1:6);

---Added EGLA installation location selection, installation method and schematic diagram (see 5:2:5:6:1);

---Deleted the content related to the "Y-type design" of the out-of-band series gap arrester (see 5:2:4:2:1 and 5:2:4:2:3,:2012 edition

2:2:3:2,2:2:3:2:2);

---Added illustrations and descriptions of typical overvoltage and duration under different grounding systems (see 6:2:3:1,:2012 edition 3:2:2);

---Added the introduction of rated repeated transfer charge, rated thermal energy, and rated thermal charge, and replaced the line discharge level with these

Selection and relevant content of lightning energy and energy of arrester under operating overvoltage (see 6:3:2,:2012 edition 3:3:1);

--- Added examples of arrester classification and arrester nominal discharge current selection and calculation (see 6:3:2:3);

---Added the calculation principle of adding a capacitor at the line end or substation entrance to reduce the steepness of the intruding wave (see 6:3:2:7);

---Added the selection principles for the installation location of gapped arresters (see 6:3:3:3:5:2);

---Changed Table 9 "Recommended values for lightning impulse discharge voltage and operating wet withstand voltage performance of gapped arresters" (see 6:3:3:3:4

Table 9,:2012 version 3:3:4:3:9 Table 10);

---Deleted the relevant content on line discharge level and long-duration impulse current tolerance (see:2012 edition 2:2:1:7:6, 2:2:3:2);

--- Added examples and instructions applicable to domestic voltage levels (see 6:3:2:3, Appendix D, Appendix F);

---Changed the contents related to the disconnecter (see 6:3:6,:2012 version 3:3:4:3:4);

---Changed the main technical parameter table of UHV surge arrester and UHV insulation coordination content (see 6:3:7,:2012 version 3:3:2);

---Changed the normal and abnormal operating conditions (see 6:4,:2012 edition 3:4), changed the diagnosis of metal oxide arresters in operation

(See Appendix I):

This document is modified to adopt IEC 60099-5:2018 "Surge Arrester Part 5: Guidelines for Selection and Use":

Compared with IEC 60099-5:2018, this document has made the following structural

adjustments:

---Added 6:3:3:5 application of gap line arresters;

---Appendix A corresponds to IEC 60099-5:2018 Appendix C, Appendix B corresponds to IEC 60099-5:2018 Appendix A, Appendix C corresponds

IEC 60099-5:2018 Appendix E, Appendix E corresponds to IEC 60099-5:2018 Appendix G, Appendix F corresponds to IEC 60099-5:

## **2018 Appendix I, Appendix I corresponds to IEC 60099-5:2018 Appendix D;**

---Deleted IEC 60099-5:2018 Appendix B and Appendix F:

The technical differences and reasons between this document and IEC 60099-5:2018 are as follows:

---In order to adapt to my country's technical conditions, IEC 60099-6:2002 was replaced with normatively cited GB/T 28182, which was replaced by normatively quoted GB/T 28182:

GB/T 11032-2020 replaces IEC 60099-4:2014 (see Chapter 1);

---In order to adapt to my country's technical conditions, IEC 60071-1:2006 has been replaced with the normatively cited GB/T 311.1-2012, and the normative

The sexually quoted GB/T 11032-2020 replaces IEC 60099-4:2014, and the normatively quoted GB/T 28182

IEC 60099-6:2002, replaced IEC 60099-8:2011 with normative reference GB/T 32520, added normative references

Use GB/T 2900.12-2008, GB/T 2900.19 (see Chapter 3);

---Adapting to the current status of domestic product manufacturing and application, the terms and definitions "gapless metal oxide arrester" and "power frequency reference circuit" are added:

"voltage", "DC reference voltage", "power frequency reference current", "DC reference current", "pressure relief device", "rated short circuit current", "stretch negative

load" and "operating impulse current" (see 3:9, 3:27:1, 3:27:2, 3:28:1, 3:28:2, 3:42, 3:43, 3:59, 3:69), the "series connection" has been modified

And (see 3:22);

---In order to be applicable to domestic power systems, the voltage of the division range I and range II is modified to 252kV (see Chapter 4, 6:2:1);

---In order to adapt to my country's technical conditions, IEC 60071-1:2006 has been

replaced with the normatively cited GB/T 311:1-2012, and the normative

The sexually quoted GB/T 311:2-2013 replaced IEC 60071-2:1996, and the normatively quoted GB/T 3906

IEC 62271-200, replaced IEC 62271-203 with normative reference GB/T 7674, with normative reference

GB/T 11032-2020 replaces IEC 60099-4:2014 and replaces the normatively cited GB/T 26218:1

IEC /T S60815-1:2008, replaced IEC /T S60815-1:2008 with normative reference GB/T 26218:1

The cited GB/T 32520 replaces IEC 60099-8:2011, and adds normative reference documents GB/T 11022, GB/T 13540,

GB/T 26218:2, GB/T 26218:3, DL/T 815-2021 (see 5:2);

---For ease of use, the introduction of gapless metal oxide arresters is added (see 5:2:1);

---Added lightning arrester protection level and insulation withstand voltage calculation examples applicable to domestic voltage levels (see 5:2:2:2);

---For ease of use, the appearance drawings and introduction of separate arresters and elbow arresters are added (see 5:2:2:5);

---Based on the current status of domestic product manufacturing and application, the nominal discharge current is divided into 5 levels, with an additional 1:5kA level (see 5:2:2:7:4);

---In order to ensure the operability of the test and be consistent with the requirements of the GB/T 11032-2020 standard, the rated repeated transfer current has been changed

The impact interval time for load tolerance is 50s~60s (5:2:2:7:6);

---Based on the current status of domestic product manufacturing and application, the typical appearance diagram of EGLA has been changed (see 5:2:4:1);

---Since only the "X" type design is used in China, the content related to the "Y" type design of the out-band series gap arrester has been deleted (see 5:2:4:2:3);

---Based on the current status of domestic product manufacturing and application, the typical layout diagram of arresters has been changed to the layout of my country's 500kV level arresters:

Figure (see 5:2:5:3:1);