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

GB/T 31143-2025

Replacing GB/T 31143-2014

**General requirements for arc fault detection and protection
devices (AFDD)**

电弧故障检测和保护电器 (AFDD) 的一般要求
(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 supersedes GB/T 31143-2014 "General Requirements for Arc Fault Protection Devices (AFDD)" and is consistent with GB/T 31143-2014.

In comparison, aside from structural adjustments and editorial changes, the main technical changes are as follows.

---The rated voltage has been changed to no more than 440V AC (see Chapter 1, Chapter 1 of the 2014 edition);

---Added classifications and characteristics for tri- and quadri-polar AFDDs (see 4.3 and 5.3.1);

---Added performance requirements and tests for power connection failures (see 8.18 and 9.23);

---Added test requirements for the four-electrode AFDD in the temperature rise test (see 9.8.2);

---Added a test and test circuit diagram for the correct operation of a three-phase system with unbalanced load and arcing (see 9.9.2.8 and...).

Figure 38);

---Added a test and test circuit diagram for the correct operation of a three-phase system under load balancing when an electric arc occurs (see 9.9.2.9 and Figure 38);

---Added suppressive load shielding tests and test circuit diagrams for three-pole and four-pole AFDD (see 9.9.4.5 and Figure 39);

---Added test circuit diagrams for three-pole and four-pole AFDD circuits with various interference loads (see 9.9.5.5 and Figure 39);

---Added requirements and test circuit diagrams for three-pole and four-pole AFDD in short-circuit tests (see 9.11.2.2 and Figure 19);

---The marking of AFDD after the circuit breaker or RCD and AFD unit assembly has been changed (see D.4.2.3, D.4.2.3, 2014 version).

This document is modified to adopt IEC 62606:2022 "General requirements for arc fault detection and protection devices (AFDD)".

The technical differences between this document and IEC 62606:2022, and the reasons therefor, are as follows.

---IEC 60664-1:2007 (5.2.1.3, 8.2.3, 9.7.7.5, B.3) has been replaced by the normatively referenced GB/T 16935.1-2023.

and B.4).

---The requirements and tests for a rated voltage of 120V have been removed (see Table 2, 9.9.2.6, 9.9.3.2, 9.9.4.2, 9.9.4.3, 9.9.4.4, and 9.9).

4.5, 9.9.5.2, 9.9.5.4, and 9.9.5.5).

---Add footnote a to Table 1. This explains that the test arc current is the expected current in the test circuit before arcing occurs, and is consistent with the test current in Table 3.

The arc current specifications are the same. Also, delete the clause in 9.9.2.1 that states, "Considering the arc voltage value during the test, by applying a rated current..." A voltage drop of 50V is applied to adjust the test current so that no arc is generated in the cable test specimen. (This is a paragraph from a test method.) all locations using the minimum test current of 2.5A have been changed to 3A (see Tables 1, 9.9.2.1, 9.9.4.2, 9.9.4.3, 9.9.4.4, 9.9.4.5).

9.9.5.4, 9.9.5.5 and E.2).

---In Appendix E, for AFDDs that meet the classification of 4.1.2, the relevant test requirements are supplemented (see E.1).

The following editorial changes have been made to this document.

---Modify the table order, changing Table 22 to Table 21 in the original text (see 5.3.1 and Table 21);

---Modify Figure 8 by changing "1.27mm" to "3mm" to match the description in 9.9.3.2 (see Figure 8);

---GB/T 16917.1 (see 6.2.2) has been added to the AFDD-connectable protective electrical appliance standard;

---The appendices are renumbered in the order of A to N, with the structure consistent with the original international text.

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.