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

GB 14287.1-2014

Replacing GB 14287.1-2005

**Electrical fire monitoring system - Part 1: Electrical fire
monitoring equipment**

电气火灾监控系统 第1部分：电气火灾监控设备

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Table of Contents

1	Scope
2	Normative references
3	Terms and definitions
4	Requirements
5	Tests...
5.1.4	Check before test sqrtb sqrt 2
5.2	Monitoring alarm function test sqrt sqrt 3
5.3	Fault alarm function test sqrt sqrt 4
5.3.1	MAKE the samples be in the fault state described in
5.4	Self-inspection function test
5.5	Information display and query function test
5.6	Power supply function test
5.7	Insulation resistance test sqrt 8
5.8	Leakage current test sqrt 9
5.9	Electrical strength test sqrt
6	Inspection rules...
7	Markings...

Foreword

Clauses 4, 6 and 7 of this Part of GB 14287 are mandatory and the rest is recommended. GB 14287 "Electric fire monitoring system" consists of the following parts. - Part 1. Electrical fire monitoring equipment; - Part 2. Residual current electrical fire monitoring detectors; - Part 3. Temperature sensing electrical fire monitoring detectors; ... This Part is Part 1 of GB 14287. This Part is drafted in accordance with the rules given in GB/T 1.1-2009. This Part replaces GB 14287.1-2005 "Electrical fire monitoring system - Part 1. Electrical fire monitoring equipment"; compared with GB 14287.1- 2005, main technical modifications are as follows: - ADD the requirements for receiving and displaying residual current value and temperature value of monitoring equipment (see 4.3.4); - ADD information display and query function (see 4.6); - ADD leakage current test (see 5.8); - ADD immunity test for radio frequency electromagnetic field radiation (see 5.10); - ADD immunity test for radio frequency field conducted harassment (see 5.11); - ADD electrostatic discharge immunity test (see 5.12); - ADD electrical fast transient burst immunity test (see 5.13); - ADD surge (impact) immunity test (see 5.14); - ADD immunity

test for voltage sags, short interruptions and voltage variations (see 5.15); - ADD power transient test (see 5.16); - ADD voltage fluctuation test (see 5.17); Electrical fire monitoring system - Part 1. Electrical fire monitoring equipment

1 Scope

Part 1 of China's mandatory series on electrical fire monitoring systems, covering the monitoring equipment itself - the panel that receives the signals from residual current and temperature detectors and raises the alarm before an electrical fault becomes a fire. It sets the requirements, the tests, the inspection rules and the markings for electrical fire monitoring equipment; clauses 4, 6 and 7 are mandatory and the rest is recommended. The 2014 edition tightened the equipment considerably against the 2005 one: the panel must now receive and display the residual current value and the temperature value reported by the detectors, and must provide information display and query functions, while the test programme gained a leakage current test and a full set of electromagnetic compatibility immunity tests - radiated radio-frequency field, conducted disturbance induced by radio-frequency fields, and electrostatic discharge - alongside the existing fast transient, surge and voltage dip tests of the GB/T 17626 series. The equipment must also meet the general safety requirements of GB 4706.1, the fire electronic product test rules of GB 12978, the environmental test methods and severities of GB 16838 and the protection requirements of GB 23757. GB 14287 is published in several parts, the others covering residual current detectors and temperature sensing detectors. Issued on 24 July 2014 and in force since 1 June 2015, it replaces GB 14287.1-2005.

This Part of GB 14287 specifies terms and definitions, requirements, tests, inspection rules and marking of electrical fire monitoring equipment. This Part applies to electrical fire monitoring equipment in electrical fire monitoring systems.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the dated edition cited applies. For undated references, the latest edition of the referenced document (including all amendments) applies.

GB 4706.1 Household and similar electrical appliances - Safety - Part 1. General requirements

GB/T 9969 General principles for preparation of instructions for use of industrial products

GB12978 Rules for test of fire electronic products

GB 16838 Environmental test methods and severities for fire electronic products

GB/T 17626.2 Electromagnetic compatibility - Testing and measurement techniques - Electrostatic discharge immunity test

GB/T 17626.3 Electromagnetic compatibility - Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test

GB/T 17626.4 Electromagnetic compatibility - Testing and measurement techniques - Electrical fast transient/burst immunity test

GB/T 17626.5 Electromagnetic compatibility - Testing and measurement techniques - Surge immunity test

GB/T 17626.6 Electromagnetic compatibility - Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields

GB/T 17626.11 Electromagnetic compatibility - Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests

GB 23757 Protection requirements for fire electronic products

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

3.1 electrical fire monitoring system A system capable of sending out alarm signals, control signals and indicating the alarm position when the detected parameters in the protected electrical circuit exceed the alarm set value, consisting of electric fire monitoring equipment and electric fire monitoring detector.

3.2 electrical fire monitoring equipment Equipment capable of receiving the alarm signal from the electrical fire monitoring detector, sending out sound and light alarm signals and control signals, indicating the alarm position, recording, saving and sending the alarm information.

3.3 electrical fire monitoring detector Detector used to detect changes in electrical fire hazard parameters such as residual current, temperature, fault arcs, etc. in the protected circuit, changes in smoke due to electrical faults and static and changes in insulation parameters that may cause electrical fires.

4 Requirements

4.1 General Electrical fire monitoring equipment (hereinafter referred to as monitoring equipment) shall be tested in accordance with the specifications of Clause 5, the test results shall meet the corresponding requirements in Clause 4.

4.2 General requirements under the following atmospheric conditions. - temperature. 15 °C ~ 35 °C; - relative humidity. 25 % ~ 75 %; - atmospheric pressure. 86 kPa ~ 106 kPa.

5.1.2 Unless otherwise stated in the relevant provisions, the tolerance of the test data shall be $\pm 5\%$; the deviation of the environmental condition parameters shall meet the

requirements of GB 16838.

5.1.3 The manufacturer shall provide two monitoring equipment as test samples (hereinafter referred to as samples) and the matched detectors.

5.1.4 The monitoring equipment shall be checked before the test as follows:

- a) the surface shall be free of corrosion, falling off and blistering of coating, obvious scratches, cracks, burrs and other mechanical damages;
- b) the fastening parts shall be free of loosening;
- c) the general requirements of the sample shall comply with the specifications of 4.2;
- d) the operation level of the sample shall meet the requirements of 4.8;
- e) the performance of the main components shall meet the requirements of 4.9;
- f) the use instruction shall meet the requirements of 4.19.

5.1.5 The test procedure of the monitoring equipment is shown in Table 4. Table

5.3.1 MAKE the samples be in the fault state described in

d) of 4.4.1, respectively, and observe the state of the sample and the information display condition.

5.3.2 When the sample is in the fault state, manually mute, and then set another fault state, observe the working state of the sample and the information display condition.

5.3.3 When the sample is in the fault state, remove the fault and observe the working state of the sample and the information display condition.

5.3.4 When the sample is in any fault state, check the working state of non-faulty parts.

5.4 Self-inspection function test

5.4.1 Manually operate the sample's self-inspection mechanism, observe and record the state of the sample; for samples with self-inspection time exceeding 1 min or with the self-inspection function unable to stop automatically, during the self-inspection, make any non-self-inspection circuit be in the alarm state, observe the state of the sample.

5.4.2 Manually operate the self-inspection function of the sample's audio components, indicator lights and display screens, observe the state of the sample.

5.5 Information display and query function test

5.5.1 SET the fault state and monitoring alarm state in different order, observe the state of the sample and the information display condition.

5.5.2 In the high-level information display state, manually operate the query function,