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

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**Fire detection and alarm systems -- Smoke alarms
(English Translation)**

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Foreword

Clauses 4 ~ 6 and Subclause 7.1 of this Standard are compulsory; the others are voluntary.

During the drafting process of this Standard, reference is made to ISO 12339, Fire detection and fire alarm systems - Smoke alarms (draft) and UL217, Single and multiple station smoke alarms.

This Standard was proposed by the Ministry of Public Security of the People's Republic of China.

This Standard shall be under the jurisdiction of Subcommittee 6 of National Technical Committee on Fire Protection of Standardization Administration of China.

The drafting organization of this Standard. Shenyang Fire Protection Research Institute of the Ministry of Public Security.

The participating drafting organization of this Standard. Xi'an System Sensor Electronics Co., Ltd.

1 Scope

This Standard specifies the product classification, technical requirements, test methods, inspection rules, marking, packaging and manufacturer's instructions for fire

detection and alarm systems (hereinafter referred to as smoke alarms).

This Standard applies to smoke alarms that are installed in civil architectures and operate using scattered light, transmitted light (photoelectric smoke sensing) and ionization (ion smoke sensing).

2 Normative References

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigenda) or revisions do not apply to this Standard. However, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB 4715-1993, Technical requirements and test methods for point type smoke fire detectors

4.1 When a fire occurs in the monitored area and its smoke parameters achieve the

preset values, the smoke alarm shall give acoustical and optical fire alarm signals at the same time.

4.2 For the multiple station smoke alarm, when one alarm gives fire alarm signals,

the other smoke alarms connected with it shall also give fire alarm signals.

4.6 Except battery and fuse, the smoke alarm shall not have components or parts which can be replaced or repaired by user; when the battery is removed, visual warning shall be provided.

4.7 The smoke alarm is capable of communicating with auxiliary equipment such as

remote display, but it shall not influence the fire detection performance of the smoke alarm in case of any disconnection or short-circuit fault during the communication

between the smoke alarm and the equipment.

4.8 For the smoke alarm having multiple indicator lights, indicator lights shall be marked by color. For the smoke alarm powered by an AC power supply, it shall have AC power supply working indicator lights. the AC power supply working indicator light shall be green; the fire indicator light shall be red; the fault indicator light shall be yellow.

4.10.1 For the internal battery smoke alarm and the external battery smoke alarm, the capacity of the battery shall ensure the smoke alarm is capable of working normally for not less than one year; it will provide a distinctive battery-low condition different from fire alarm signals before the battery is incapable of operating for alarm-condition purposes;

4.10.2 For smoke alarms intended for connection to the external power source and

equipped with the internal standby battery, when the external power supply fails to work normally, it will automatically switch to the standby battery for power supply.

5.1.1 This Standard specifies type test on not less than 18 test specimens which will

be numbered before test. During test, first carry out function, battery fault alarm, polarity reversal, sound output, directional dependence and conformity tests, and carry out other tests preferably in the sequence from top to bottom of Table 1.

5.1.2 Smoke alarms shall be subjected to appearance inspection before test; test can

only be carried out when the following requirements are met.

5.1.3 Unless otherwise stated in relevant clauses, carry out all tests under the standard atmospheric conditions for testing as follows.

conformity test, carry out test by setting the response threshold values to the maximum and minimum limit values; during fire sensitivity test, carry out test by setting the response threshold values to the maximum limit value; in other test items, carry out

test by setting the response threshold values to the minimum limit value.

5.2.1 Test aerosol

A test aerosol generated by liquid paraffin aerosol generator shall be used as the test aerosol. The particles comprising the aerosol shall also have a particle diameter between 0.2 μm and 1.0 μm shall not be less than 90% of the total of the particles. The test aerosol selected shall be used throughout the test in which the measurement of threshold values is required.

5.2.3 Test method

Mount the smoke alarm in its normal mounting position in the smoke tunnel; connect to power supply as specified in 5.1.4 to make the velocity of the air flow around the smoke alarm 0.2 m/s $\pm$ 0.04 m/s (except in the air movement test of 5.14), and the temperature of the air flow 23°C $\pm$ 5°C (except in the high temperature test of 5.15). Set the smoke alarm to the normal monitoring condition. After 15 min ~ 20 min, inject

5.2.4 Test apparatus

Test apparatus shall be as specified in 4.2.4 of GB 4715-1993.

5.3.1 Test

To test the functions of smoke alarms.

5.3.2.1 Mount the smoke alarm in the smoke tunnel (connect according to the

interconnecting method of interconnectable smoke alarms); connect to power supply as required in 5.1.4; operate the self-checking devices of the smoke alarm; observe whether the smoke alarm gives acoustical-optical fire alarm signals.

5.3.2.4 For the smoke alarm connected to the internal battery for power supply, and

the smoke alarm intended for connection to an external power supply and equipped with the internal standby battery, when the battery is removed, check whether there is any visual warning.