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

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Replacing GB 12791-2006

Point-type flame detectors

点型火焰探测器

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1 Scope

GB 12791 is the Chinese product standard for point-type flame detectors: the ultraviolet and infrared detectors that watch for the radiation of an open flame rather than for smoke or heat, and that are used where a fire develops too fast for a smoke detector to be useful, in aircraft hangars, on offshore platforms, in paint shops and around flammable liquid storage. The standard sets the classification and nomenclature, the requirements, the test methods, the inspection rules and the marking, packaging, transport and storage. The requirements are the ones that decide whether a detector works in practice: the response to standardised test fires at stated distances and angles, the freedom from false alarm on the standard interfering radiation sources, the behaviour under supply voltage variation, the environmental tests, and the fault and alarm signalling. Fire detection products sold in China need CCC certification, and it is granted against this text. The 2025 edition, effective 1 May 2026, replaces GB 12791-2006.

This document defines the terminology for point-type flame detectors; specifies their classification and naming, requirements, inspection rules, markings; describes the corresponding test methods. This document applies to the design, manufacture, inspection of point-type flame detectors (hereinafter referred to as "detectors") used in industrial and civil buildings.

2 Normative references

The following documents, through normative references in the text, constitute essential provisions of this document. For dated references, only the edition cited applies; for undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 4208-2017 Degrees of protection provide by enclosure (IP code)

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

GB 12978 Rules for test of fire electronic products

GB/T 16838 Environmental test 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 - Part

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Infrared flame detector A detector that generates an alarm decision-related response only to infrared radiation, which has a wavelength greater than 850 nm.

3.2 Ultraviolet flame detector A detector that generates an alarm decision-related response only to ultraviolet radiation, which has a wavelength less than 300 nm.

3.3 Response point D The maximum distance at which the detector, exposed to specific flame radiation, can emit a reliable fire alarm signal within 30 seconds.

Note. D_{max} , D_{min} , represent the maximum, minimum, average values of a set of response point D values, respectively. The response point D values are determined according to the method in 6.1.5.

3.4 Sensitivity A measure of the detector's ability to detect fires.

3.5 Sensitivity adjustment The function of adjusting the alarm conditions of the detector or its control and indication equipment to achieve sensitivity changes.

4 Classification and naming

4.1 Detectors are classified according to their detection principle as follows:

- a) Infrared flame detectors (hereinafter referred to as "infrared type");
- b) Ultraviolet flame detectors (hereinafter referred to as "ultraviolet type");
- c) Infrared-ultraviolet composite flame detectors (hereinafter referred to as "composite type").

4.2 Detectors are classified according to their environmental adaptability as follows:

Note. Type B, based on Type A, has improved requirements for resistance to light interference (see 5.15), climatic environmental tolerance (see 5.18), enclosure protection (see 5.22); it also adds requirements for optical surface contamination monitoring (see

5.14), resistance to sunlight interference (see 5.16), resistance to thermal interference (see 5.17). Based on low-temperature (operational) test conditions, it is designated as Type B (-25 °C) or Type B (-40 °C) (see 5.18.1).

4.3 Detectors are classified by sensitivity as follows:

- a) Class 1 (25 m);
- b) Class 2 (17 m);
- c) Class 3 (12 m);
- d) Class 1S [A distance greater than 25 m (Lm) as specified by the manufacturer is designated as Class 1S (Lm)].

5 Requirements

5.1 General requirements Detectors shall meet the requirements of this chapter and shall be tested in accordance with the provisions of Chapter 6, to confirm compliance with the requirements of this chapter.

5.2 Appearance Detectors shall be in their original packaging as when they left the factory. The detector surface shall bear product markings; the packaging shall include a quality inspection certificate and an instruction manual. The detector surface shall be free from corrosion, coating peeling, blistering; it shall be free from obvious scratches, cracks, burrs, or other mechanical damage. Fasteners shall be secure.

5.3 Indicator lights

5.3.1 The indicator lights of the detector shall indicate both fire alarm and normal monitoring status. The fire alarm status shall be indicated by red.

5.3.2 When the radiation source's illumination meets the requirements for the detector to issue a fire alarm response, the fire alarm indicator light shall illuminate and remain illuminated until the alarm state is reset. Except in commissioning mode, the detector's fire alarm status indication shall be clearly distinguishable from other operating status indications. For detachable detectors, the fire alarm indicator light shall be mounted on the probe or base.

5.3.3 Under ambient light conditions not exceeding 500 lx, when the indicator light is illuminated, at a distance of 6 m in front of it, it shall meet the following requirements.

- a) Clearly visible in any direction with an angle of no more than 5° to the detector's axis;
- b) Clearly visible in at least one direction with an angle of 45° to the detector's axis.

5.4 Auxiliary equipment connection When the detector is connected to auxiliary equipment (e.g., remote indicators, control relays, etc.), a short circuit or open circuit in the connection