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

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**Special requirements for fire alarm and evacuation in
hazardous chemicals workplaces - Part 3: Combustible gas
detection and alarm systems**

危险化学品作业场所火灾报警与避难逃生特殊要求 第3部分：可燃气体探测报警
系统

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4 Requirements

4.1 General Requirements Combustible gas detectors shall meet the requirements of GB 15322.1-2026, and combustible gas alarm controllers shall meet the requirements of GB 16808.

Note. The combustible gas detection and alarm system includes a combustible gas alarm controller and a combustible gas detector.

4.2.1 Linkage Control Method

4.2.1.1 When the control requirements cannot be met due to the length of wires and cables between the controller with linkage control function and the controlled equipment, the following measures shall be taken. Use the following control method.

- a) Controlled fire-fighting equipment is powered by a fire-fighting power supply near the installation site; other controlled equipment is powered by a power supply near the installation site. The controller should monitor the power status of the controlled equipment;
- b) Control signals are transmitted using electro-optical conversion devices, optical fibers, and opto-electrical conversion devices to control the controlled equipment.

4.2.1.2 When a combustible gas alarm controller with linkage control function receives a combustible gas alarm signal and initiates linkage control, the alarm linkage... The motion time should not exceed 2 seconds.

4.2.2 Online component replacement function The combustible gas alarm controller should have the function of replacing combustible gas detectors without power interruption. When replacing parts, non-replacing parts should not be affected. Normal operation.

4.3.1 Basic Functional Requirements

4.3.1.1 The combustible gas alarm controller shall have two alarm functions. low limit and high limit. The low limit and high limit alarms shall have alarm sound and light signals.

4.3.1.2 When a combustible gas alarm signal is input, the controller shall issue a combustible gas alarm sound and light signal within 3 seconds.

4.3.1.3 For combustible gas alarm controllers using bus communication, if any point in the circuit is short-circuited or open-circuited, the combustible gas alarm controller should... Within 60 seconds, it emits an audible and visual fault signal that is clearly distinct from the

alarm signal, and the combustible gas alarm controller, combustible gas detector, and connected components... The connected alarm trigger device should communicate normally.

4.3.1.4 The combustible gas alarm controller should have a concentration output function, sending concentration information to the graphic display device in the fire control room, etc. equipment.

4.3.1.5 The operating data storage unit of the combustible gas alarm controller shall adopt an independent, detachable structure with a metal casing, and the casing protection level shall be [not specified]. The IP code should not be lower than the requirements of IP54 in GB/T 4208-2017, and the function should meet the requirements of Appendix A.

4.3.2 Redundancy Design Requirements

4.3.2.1 General Requirements The combustible gas alarm controller should adopt a redundant design, with each unit implementing the main control function, power control function, and communication function having at least One spare unit. The appearance, circuit board, components, and program of the main unit and the spare unit should be identical. The main unit and the spare unit should have different... The function of disconnecting the power supply for replacement.

4.4 Basic Performance of Combustible Gas Detectors

4.4.1 Combustible gas detectors should have low-limit and high-limit alarm functions.

4.4.2 If the low-limit alarm setting is adjustable, the alarm setting should have a manual query function.

4.4.3 When the concentration of combustible gas in the monitored area reaches the alarm condition, the combustible gas detector should issue an audible and visual alarm within 2 seconds. The low-limit and high-limit audible and visual alarm signals should be clearly distinguishable.

4.4.4 Under rated operating voltage conditions, the peak sound pressure level (A-weighted) of the detector's alarm sound signal at a distance of 1m directly in front of it should not be less than [a certain value]. It is between 75dB and no greater than 115dB.

4.5 Gas concentration display function Both the combustible gas alarm controller and the combustible gas detector should have a gas concentration display function, and the absolute value of the difference between the displayed values should be No more than 1% of full scale.

4.6 Enclosure Protection Rating The enclosure protection rating (IP code) of outdoor combustible gas alarm controllers and combustible gas detectors should not be lower than GB/T 4208- IP65 requirements in.2017.

4.7 Climate and Environmental Tolerance The combustible gas detector shall withstand all tests under the climatic conditions specified in Table 1, and shall meet the following requirements during and after the tests. Require.

4.8 Resistance to fluorescent UV lamp aging Outdoor combustible gas detectors should withstand the fluorescent ultraviolet lamp aging (operation) test specified in Table

2. During the test, combustible gas... The combustible gas detector should be kept in normal monitoring condition; after the test, the combustible gas detector should not show any damage to the coating or corrosion. The difference between the alarm action value and the alarm setting value should meet the following requirements.

a) For combustible gas detectors with a measurement range of 3% LEL to 100% LEL, the alarm activation value should not be less than 5% LEL, and should be consistent with the alarm... The absolute value of the difference between the alarm setpoints should not exceed 7% LEL;

b) For combustible gas detectors with a measurement range below 3% LEL, the absolute value of the difference between the alarm action value and the alarm set value should not exceed 3%. The larger of 7% of the range and 120×10^{-6} (volume fraction) is detected. This is the alarm value for a combustible gas detector that detects carbon monoxide. The action value should not be less than 50×10^{-6} (volume fraction), and the absolute value of the difference between it and the alarm setting value should not be greater than 120×10^{-6} (volume fraction). (Points).

4.9 Electromagnetic compatibility performance The combustible gas alarm controller and combustible gas detector shall withstand all tests under the electromagnetic interference conditions specified in Table 3, during the test period. The following requirements must be met during and after the test.

a) During the test, the combustible gas alarm controller and combustible gas detector should be kept in normal monitoring status.

b) After the test, the performance of the combustible gas alarm controller should meet the requirements of 4.3.1.2, and the alarm action value of the combustible gas detector should meet the following requirements. Require. 1) For combustible gas detectors with a measurement range of 3% LEL to 100% LEL, the alarm activation value should not be less than 5% LEL, and The absolute value of the difference between the alarm setting value and the alarm setting value should not exceed 5%LEL. 2) For combustible gas detectors with a measurement range below 3% LEL, the absolute value of the difference between the alarm activation value and the alarm setting value. It should not exceed the larger of 5% of the range and 80×10^{-6} (volume fraction). Combustible gas detection for carbon monoxide. The alarm action value of the device should not be less than 50×10^{-6} (volume fraction), and the absolute value of the difference between it and the alarm setting value should not be greater than [missing value]. At 80×10^{-6} (volume fraction).