C-9102 Conventional Photoelectric Smoke Detector Installation and Operation Manual

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I General

C-9102 Conventional Photoelectric Smoke Detector (hereinafter called the detector) is non-addressable, applicable to hotels, restaurants, office buildings, teaching buildings, banks, warehouses, libraries, computer rooms and switching houses. Used together with P-9907 Active End of Line Unit, it can connect with compatible control panel to conduct the processing of detector signals.

II Features

Application of scattering technology and excellent photoelectric components enhances the reliability, stability and coherence of its sensor. Special sensing chamber enables high insects-proof, dust-proof, and anti-interference of external rays. Besides novelty structure and aesthetical pleasing, the detector has stable and reliable performance and damp-proof ability.

III Technical Specifications

1. Operating Voltage: 12VDC～28VDC
2. Static Current ≤60μA (Note: The detector can work within 12VDC～28VDC in static state.)
3. Alarm Current: 10mA≤I≤30mA

   (Note: the alarm current depends on the current limit of the control panel. Don't supply electricity with 24VDC directly; otherwise the detector will be blown up for lack of current limiting resistor.)
4. Maximum Ripple Voltage: 4V (peak-to- peak value)
5. Alarm Reset: Instantaneous Cut out (5s MAX, 2.5VDCMAX)
6. Power up Time≤10s
7. Maximum Air Velocity: 7.6m/s (1500fpm)
8. Weight: About 120g
9. Monitoring Area: When the high space is in 6m～12m, protection area of a detector for normal monitoring area is 80m^2. When the space height is below 6m, it's 60m^2.
10. Operating Environment:

    Temperature: -10℃～+40℃

    Relative Humidity ≤95%, non condensing
11. Dimension: Diameter 100mm Height: 42mm（without base）
12. Wiring: Connecting with power line by polarized two-wire.
13. Alarm Confirming LED: Red, not lit when polling, constantly lit when alarming.
14. Ingress Protection Rating: IP22
15. Material and Color of Enclosure: ABS, ivory white
16. Mounting Hole Spacing: 45mm～75mm

17. According to Standard: EN 54-7

IV Structure and Principle

1. Appearance of the detector is shown in Fig. 1.

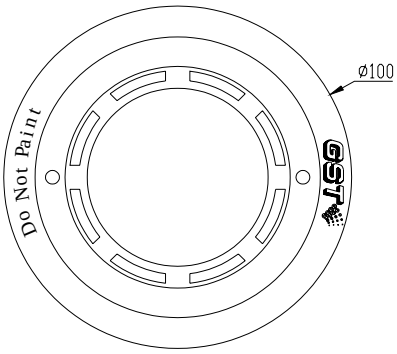

Fig. 1

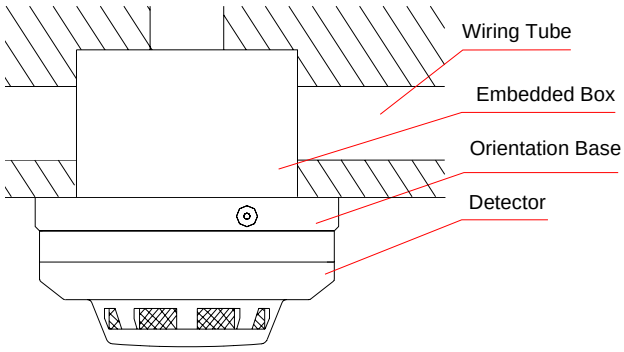

Fig. 2

2. Operation Principle

The detector detects fire on scattering of infrared beam, whose circuit is consisted of infrared beam emitting part and receiving part. The IR LED and photodiode are in the optical sensing chamber, which can screen interference of outside light without preventing entrance of smoke particles. In smokeless condition, it only receives very weak infrared light; When smoke particles enter, the received light signal increases by scattering; When smoke reaches certain density, it can output alarm signal. To reduce interference and power consumption, the emitting circuit works intermittently in order to increase IR LED life.

Output signal adopts current mode, convenient for several detectors in series, and for checking the fire and fault.

V Mounting and Wiring

Warning: Before installing the detector, disconnect the power from the loop and verify that all bases are securely installed and that the wiring polarity is correct at each base.

1. Mounting of the detector is shown in Fig. 2.
2. The bottom of the detector and orientation base are shown in Fig. 3 and Fig. 4. There are four terminals with numbers on the base, “1” connects with the anode of the output end of compatible control panel, “2” connects with the power anode of the next detector as output (terminal No. “1”), “3” connects with the power cathode of the next detector (terminal No. “3”) and the cathode of the output end of compatible control panel, “4” doesn’t connect with any wires but is used to fix the detector accessorily. There are location elements on the detector and the orientation base to ensure there is only one installing position. There are two marks

on point A and B of the orientation base, and a mark on point C of the side face of bottom of the detector. When installing, aligning the mark C of the detector to point A of the orientation base, rotate the detector clockwise to point B, then the detector is installed.

3. Wiring: Adopting RV cable or BVR cable with cross section not less than 1.0mm^2.

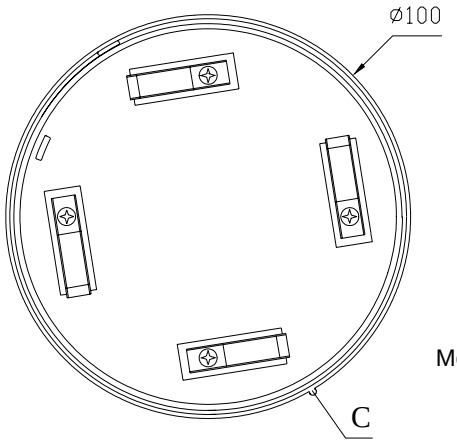

Fig. 3

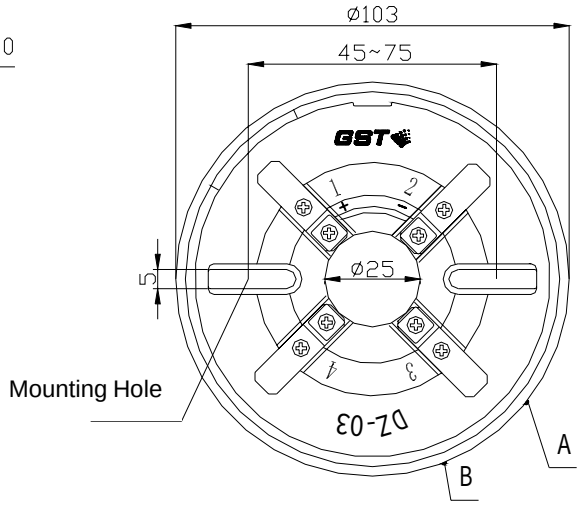

Fig. 4

VI Application

1. When the detector is connected with compatible fire alarm control panel in series, if P-9907 Active End of Line Unit is connected to the end of output loop, an IN5819 Diode should be connected to the detector base.

a) When P-9907 Active End of Line Unit (AEOL) is used as the detector base, that is to install a conventional detector on it. The system composition is shown in Fig. 5.

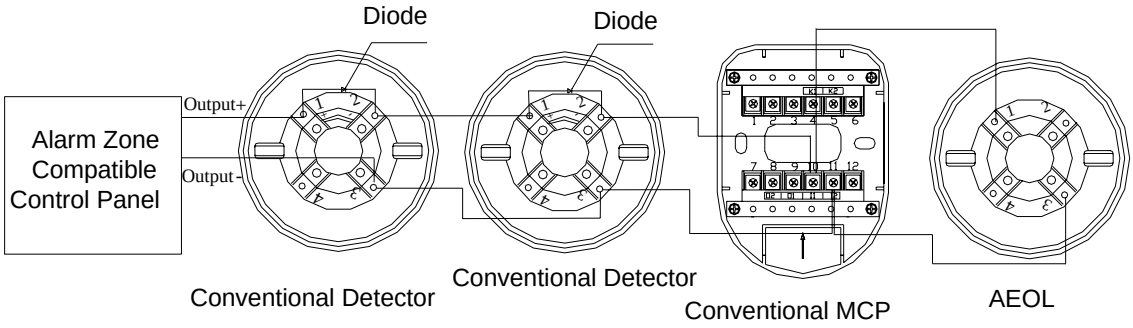

Fig. 5

b) When P-9907 Active End of Line Unit is not used as the detector base, a cover should be added to it. The system composition is shown in Fig. 6.

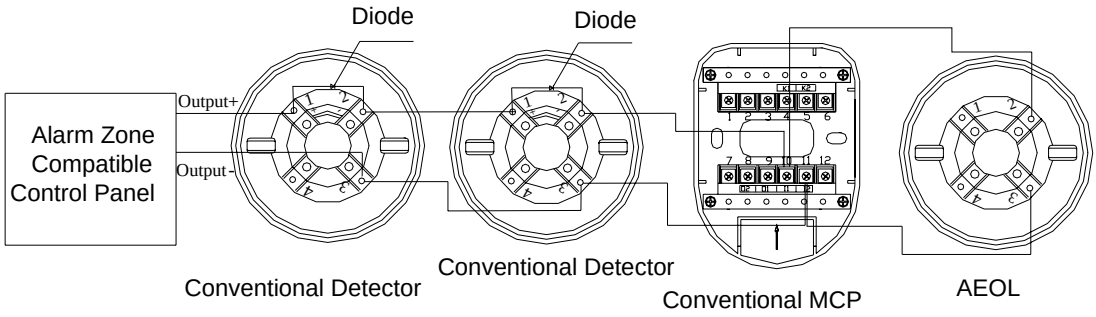

Fig. 6

2. When the detector is connected with compatible fire alarm control panel, if a terminal resistor is connected to the end of output loop, then no diode is connected to the detector base. The system composition is shown in Fig. 7.

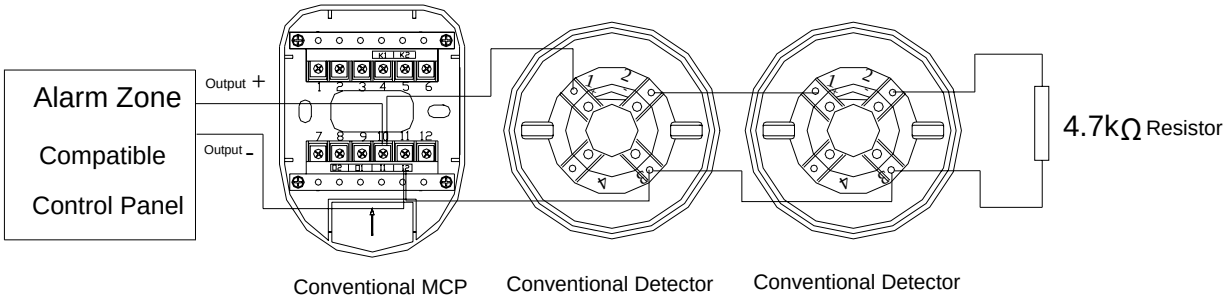

Fig. 7

Output loop of compatible control panel can be connected with up to 15 conventional field devices. The compatible control panel has the function of checking loop breakage. When any field device in the output loop is removed, the compatible control panel alarms fault. If a P-9907 Active End of Line Unit is connected, it will not affect the normal operation of other field devices.

VII Troubleshooting

1. No Alarm:

Check whether the detector is securely installed on the base. There should be 24VDC voltage on 1 and 3 terminals of the base. If not, check the cable with the control panel and the diode on the detector base open or not.

2. Nuisance Alarm:

Check the LED lit or not. If not, check the polarity of wiring and the active end of line unit and whether there are short circuits on other detectors. If it's lit, check whether the chamber in the detector is too dirty and needs to be cleaned. Otherwise, the circuit may be broken.

VIII Cautions

1. There should not any obstruction within 0.5m around the detector.
2. The horizontal distance from the detector to the blast hole of any air-conditioner should not be less than 1.5m.

3. The horizontal distance from the detector to the wall or the girder should not be less than 0.5m.
4. When installing detectors on corridor ceilings not wider than 3m, they should be placed in the middle. The spacing should not be more than 15m. The distance from the detector to end wall should not be more than half of the spacing.
5. The detector should be installed horizontally. If it has to be installed aslant, the gradient angle should not be more than 45^{o}.
6. The detector base should be installed securely and the leads connected reliably.
7. The alarm confirming LED should face the main entrance where it's convenient for personnel to observe.
8. The dust cover cannot be removed until the project has been plunged into usage. It should be well kept for future use.
9. Dust covers are an effective way to limit the entry of dust into smoke detector sensing chambers. However, they may not completely prevent airborne dust particles from entering the detector. Therefore, we recommend the removal of detectors before beginning construction or other dust producing activity. Be sure to notify the proper authority for the removal of the detectors.
10. In maintenance, be careful to avoid damage to the detector.

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