I-9102 Intelligent Photoelectric Smoke Detector Installation and Operation Manual

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I General

I-9102 Intelligent Photoelectric Smoke Detector (hereinafter called the detector) is designed on the principle of scattering of infrared beam. With novelty structure and attractive appearance, the detector has stable and reliable performance and high ability of damp-proof, applicable to hotels, restaurants, office buildings, teaching buildings, banks, warehouses, libraries, computer rooms and switch rooms, etc.

II Features

1. The address code is written in by hand held programmer, making commission simple and reliable.
2. Microprocessor can collect and process data in real time, and can store 14 history records, displaying the field condition by curves.
3. Compensation for drift of temperature and humidity, and detection of dust accumulation fault.
4. Remote output terminals connecting with remote LED.
5. Non-polarized two-bus.

III Technical Specifications

1. Operating Voltage: Loop 24V (16V～28V)
2. Operating Current:
   Standby Current≤0.8mA
   Alarm Current≤5.0mA
3. Operating Environment:
   Temperature: -10℃～+50℃
   Relative Humidity≤95%, non condensing
4. Monitoring Area: When the space height is 6m～12m, the monitoring area of a detector is 80m^2 for normal protection area. When the space height is less than 6m, it's 60m^2.
5. Alarm Confirming LED: Red, flashes normally, constantly lights when alarming.
6. Programming Mode: Electronic programming within 1~242.
7. Remote Output: Connecting with LED（5.1k Resistor in series is inside, output voltage is 4.3V）
8. Dimension: Diameter: 100mm　Height: 43mm（excluding the base）
9. Ingress Protection Rating: IP22
10. Material and Color of Enclosure: ABS, ivory white
11. Weight: About 120g
12. Mounting Hole Distance: 45mm~75mm
13. According to Standard: EN 54-7

IV Structure and Operation Principle

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

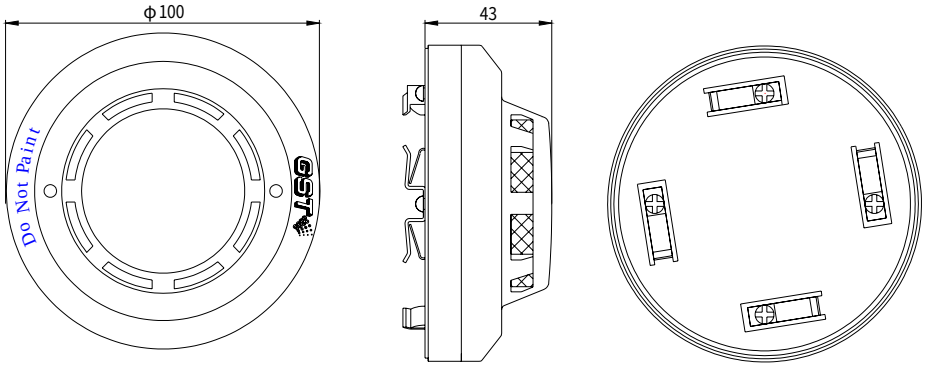

Fig. 1

2. Operation Principle

The detector detects fire by scattering of infrared beam. 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 in pulse mode to increase the life of emitting tube.

V Mounting and Wiring

1. Mounting of the detector is shown in Fig. 2.

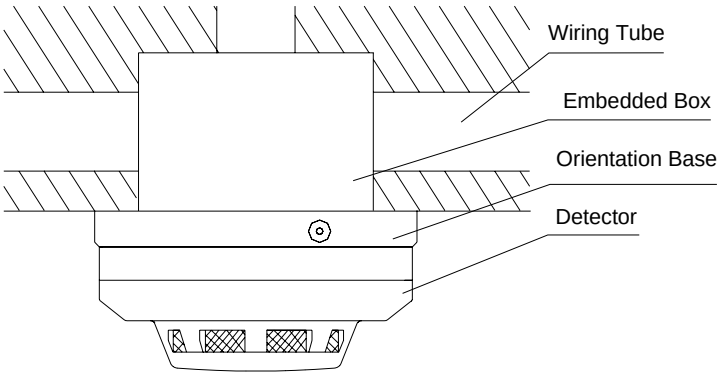

Fig. 2

Bottom of the detector is shown in Fig. 3 and orientation base in Fig. 4. There are four conducting pieces on the orientation base, each carrying a terminal with numbers. The two bus of detector in wiring tube is connected with “1” and “3”（non-polarized）respectively. “2” is for the anode of remote LED, and “4” for the cathode of remote LED. The detector has only installation position because of location elements (A and B on the orientation base, C on the bottom of the detector). Align mark C to mark A, rotate it to mark B clockwise, and the detector is installed.

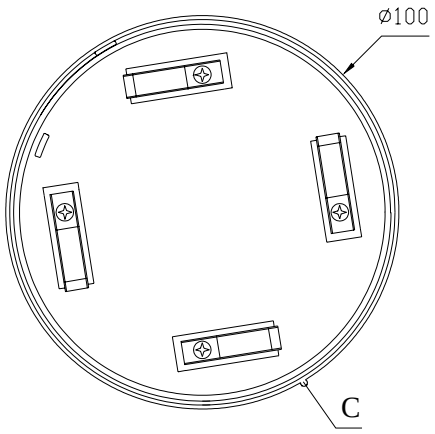

Fig. 3

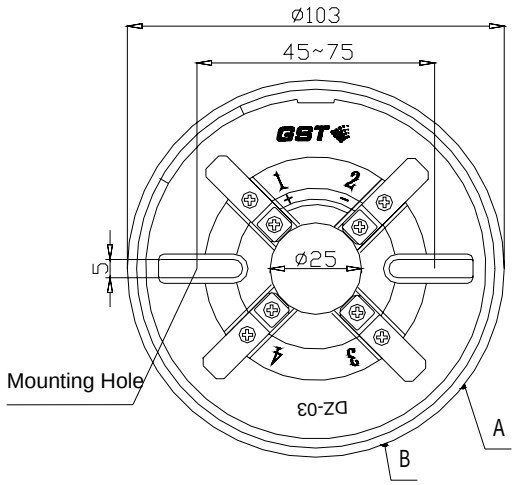

Fig. 4

2. Wiring

Twisted pair for detector two-bus with cross section not less than 1.0mm^2. The cables connecting with remote LED should be different colors to distinguish the polarity.

VI Operation

Electronic programming for the detector, it's easy to be programmed by P-9910B Hand Held Programmer in field. Connect the programmer with the bus terminal of the detector. The operation can be done.

1. Reading Code: Pressing *Read*, the screen will show the address code of the detector. If failure, "E" will be shown on the screen. Press *Clear* to display "0", then repeat the operation.

2. Programming: Input address code within 1～242. Press *Program*, the screen will show "P", this means the address code is programmed. Press *Clear* to display "0", repeat the operation. If failure, the screen will show "E". Press *Clear* to display "0", repeat the operation.

VII Troubleshooting

The possible trouble and solution in operation of the detector is as follows:

1. Fault instead of alarm or abnormal registration
   a) Mainly check diode VD1, VD2, VD3 and VD4 open or not and the voltage on node PN normal or not.
   b) Check whether there is ＋5V output on D2 (HT7150).
   c) Check whether the voltage on node PN among the base pins e, b, and c on triode VT1 and VT2 normal or not.
2. Short circuit on bus
   Mainly check whether diode VD1, VD2, VD3 and VD4 has broken down and shorted with ground, SMT resistor R1 and R2 shorted or not and bus terminal shorted with ground or not.
3. Nuisance alarm:

Check whether the sensing chamber too dirty.

VIII Maintenance

1. The detector should be installed just before commission and kept well before installation, taken corresponding measures for dust-proof, damp-proof and corrosion-proof.
2. The dust cover cannot be removed until the project has been plunged into usage.
3. If nuisance alarms are often found of the detector on site, the sensing chamber should be cleaned and replaced when necessary. Before clearing, notify the proper authorities that the system is undergoing maintenance and will temporarily be out of service. Disable the zone or system undergoing maintenance to avoid unwanted alarms. You can refer to the following steps when clearing.
   a) Remove the sensing chamber by slightly shaking it by hand.
   b) Clean the sensing chamber by alcohol cotton swab clipped by tweezers, note not to leave any cotton in the chamber.
   c) Install the sensing chamber back.
4. The detector should be tested again after reinstallation.
5. Fire simulation test should be made to the detector at least once half a year.

IX Cautions

1. There should not be 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. The detector should be installed horizontally. If it has to be installed aslant, the gradient angle should not be more than 45^{o}.
5. The detector base should be installed securely and the leads connected reliably.
6. The alarm confirming LED should face the main entrance where it's convenient for personnel to observe.
7. 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.
8. In maintenance, note to be careful to avoid damage to the detector.

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