

Features

The detector is designed with the latest scattering technology and excellent photoelectric components with the reliability, stability and reproducibility of the sensor greatly improved. With special optical sensing chamber, it has good ability of insect-proof, dust-proof, and interference-proof of external rays. With novel structure and attractive appearance, the detector has stable and reliable performance and high damp-proof ability and anti-corrosion ability.

Description

DC-9102(IS) Intrinsically Safe Conventional Photoelectric Smoke Detector is a non-addressable detector, applicable to zone 1 and zone 2 of areas with explosion-proof requirement in petroleum, chemical industries and vessels. It can be connected with fire alarm control panel (FACP) through I-9332 Interface.

Connection & Wiring

Warning: Installation must strictly comply with the relative explosion-proof code.

Mounting of the detector is shown in Fig. 1.

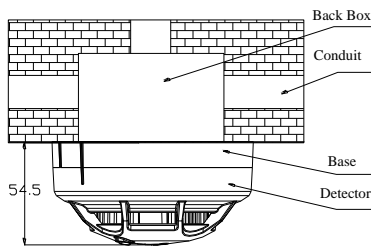


Fig. 1

Bottom and DB-01(IS) base are shown in Fig. 2 and Fig.3

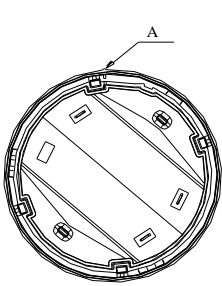


Fig. 2

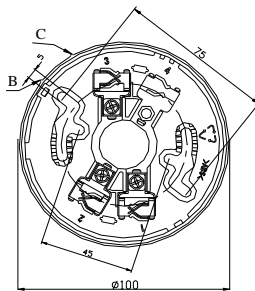


Fig. 3

The explosion-proof base of the detector is shown in Fig. 3. First secure the detector base with two tapping screws, and then connects the DC power supply cable of the detector and the positive end of power output cable to Terminal No. 1, 3 and 2 of the base. Please note to connect Terminal No. 1 to the positive of power supply and Terminal No. 3 to negative. Terminal No. 2 connects with positive power output cable; Terminal No. 4 doesn't connect to any cable.

There are two marks B and C on the orientation base, and mark A on the detector bottom. Aligning mark A to B of the base, and rotating the detector clockwise to mark C, the detector will be installed onto the base. Refer to Fig. 2 and Fig. 3.



Wiring:

1.0mm² or above intrinsically safe cable is recommended. Make sure distributed capacitance among cables is not over 0.083μF, and distributed inductance not over 4.1mH.

Note: Please use cables of different colors to avoid possible confusion.

Operation

- (1) After installation and connection of the system, turn on the FACP and enter commissioning state. Check if all interfaces are registered. If not, take down the number of the unregistered ones and check the problem.
- (2) After all interfaces and detectors are registered, making the system into normal standby state, there should be no fault or alarm from detectors.
- (3) After system commissioning, please do fire test.

Smoke test: Blowing smoke into the sensing chamber using a cigarette or smoke gun, the detector should give fire alarm, and light the fire LED. After the smoke is gone, pressing "Reset" key on the FACP to clear the fire alarm and reset the system back to normal standby state.

Note: To ensure every detector works normally, please make sure the base connection is correct. The method is as follows: power up the detector, and measure the voltage between terminals. There should be 24VDC between Terminal "1" and "3". "1" should be positive and "3" should be negative.

Application

System connection is shown in Fig. 4.

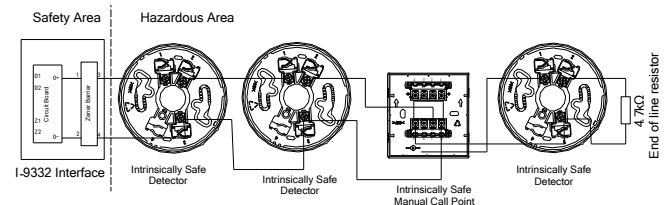


Fig. 4

When the detector is to be connected with I-9332 Interface or Explosion-proof Manual Call Point in series, a 4.7kΩ end-of-line resistor connected to the end of loop.

There are three conductive elements on the base with terminals. The bases are connected in series with an end-of-line resistor connected at the end. Please note polarity when connecting the system with the method shown in the above figure.

The interface is integrated with a safety barrier, which shall be installed in safe area. The total number of explosion-proof devices connected in the system shall not be over 10.

Troubleshooting

In case of any fault, please first check if there is incorrect connection of cables or loose screws, and then open the detector to see if there is loose welding or blown parts on the PCB.

Possible problems and solution:

- (1) No alarm: Check the IR LED, photodiode and the amplifying circuit.
- (2) False alarm: Check if the sensing chamber is dirty.

Maintenance

- ✧ The detector should be installed just before commission and kept well before installation, with corresponding measures taken for dust-proof, damp-proof and corrosion-proof.
- ✧ The dust-proof cover should not be removed until the project is put into usage.
- ✧ If detectors with false alarm are found in the project, clean or replace the chamber if necessary.

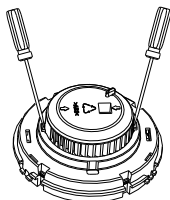


Fig. 5

Steps for cleaning sensing chamber:

- Open the detector cover and slightly lift the sides of the sensing chamber in turn with a straight screwdriver to draw it out (Fig. 6).
 - Clean the inside of the chamber with alcohol cotton or other clean liquid swab with tweezers. Make sure not to leave any fiber in the chamber.
 - Put back the chamber.
- ✧ Fire test should be done at least once every 6 months.

Cautions

- ✧ I-9332 interface box should be installed in safety area; the wires of "Safety Area" should be separated from those of "Hazardous Area", and be kept a certain distance (At least 50mm).
- ✧ The safety barrier should be well grounded. The screws should not be loose. Ground resistance should not be over 1Ω. The assigned parameters in the intrinsically safe loop should not be over the specified value, that is, the capacitance distributed among cables should not be over 0.083μF, and the inductance distributed should not be over 4.1mH.
- ✧ During maintenance, products passing the explosion-proof test should not be replaced and parts and structure affecting explosion-proof functions should not be modified.

This Data Sheet is subject to change without notice. Please contact GST for more information or questions.

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Specification

Operating Voltage	16VDC~28VDC
Static Current	≤60μA (Note: In standby state, the detector can work within 16VDC~28VDC)
Alarm Current	≤30mA (Warning: The alarm current depends on the current limit of the FACP. It's not allowed to power the detector directly by 24VDC. Otherwise the detector will be blown as a result of without current limiting resistor.)
Maximum Ripple Voltage	4V (peak-to-peak)
Alarm Reset	Instantaneous Power-off (5s Min, 2.5VDC Max)
Power-up Time	≤10s
Alarm Indicator	Red. Flashes (2s~4s) in normal condition. Illuminates when fire is reported.
Explosion-proof Mark	ExibIICT6 Gb
Explosion-proof Certificate No.	CE11.2130
Safety Barrier Parameters	U ₀ =28V, I ₀ =93mA
Wiring	Polarity-sensitive, two-wire for connecting with power supply
Operating Environment	Temperature: -10℃~+55℃ Relative Humidity ≤95%, non-condensing
Dimensions	Diameter: 100mm Height 54.5mm (with base)
Ingress Protection Rating	IP23
Material and Color of the Enclosure	ABS (surface resistance≤10 ⁹ Ω)
Weight	About 110g
Mounting Hole Spacing	45mm~75mm

Accessories and Tools

Model	Name	Remark
I-9332	Interface	Order separately
DB-01(IS)	Base	Order separately

Limited Warranty

GST warrants that the product will be free of charge for repairing or removing from defects in design, materials and workmanship during the warranty period. This warranty doesn't cover any product that is found to have been improperly installed or used in any way not in accordance with the instructions supplied with the product. Anybody, including the agents, distributors or employees, is not in the position to amend the contents of this warranty. Please contact your local distributor for products not covered by this warranty.