

Features

- ✧ Sensitivities programmable.
- ✧ Strong environmental adaptability due to drift compensation.
- ✧ Integrated algorithm for analyzing fire, improving the sensitivity highly.
- ✧ Self-diagnostic.
- ✧ Reed switch testing.
- ✧ Removable innovative sensing chamber, easy for maintenance.
- ✧ Reporting dirt fault for contaminated chamber.
- ✧ Fire LED allows 360° viewing.
- ✧ 3-level sensitivities and fixed temperature or rate of rise programmable.

Description

DC-9101 (IS) Intrinsically Safe Conventional Combination Heat Photoelectric Smoke Detector (the detector), non-addressable, is a kind of combination detector consisting of smoke sensing parts and semi-conductor heat sensing parts in technological structure and circuit structure. It's applicable to zone 1 and zone 2 of areas with explosion-proof requirement in petroleum and chemical industries. It can match with fire alarm control panel, I-9332 Interface, explosion-proof detector and end-of-line resistor produced by GST to conduct the processing of detector signals. The detector has the advantages of both conventional photoelectric detector and rate of rise and fixed temperature heat detector. Just because of the combination of smoke detector and heat detector, it overcomes the non-sensitivity to dark smoke particles of ordinary scattering photoelectric detectors. It can also pick up fire with obvious rise of temperature such as alcohol flame, thus extending the application range.

Connection and Cabling

Fig.1 shows the detector bottom and Fig. 2 the base.

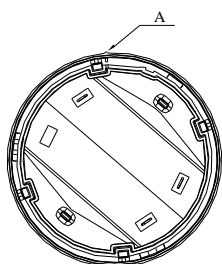


Fig. 1

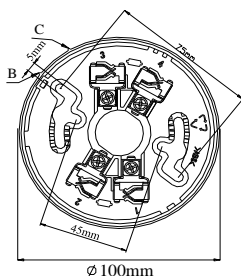


Fig. 2

There are four terminals with numbers on the base.

- 1: Detection zone positive IN
- 2: Detection zone positive OUT
- 3: Detection zone negative IN and OUT
- 4: No connection.

Recommended Cabling

1.0mm² or above fire cable. The capacitance distributed among cables should not be over 0.083μF, and the inductance distributed should not be over 4.1mH. Laid out through metal conduit or flame-retardant conduit, subject to local codes.

Installation

Fix the base with two tapping screws, and then align mark A on the detector bottom with B on the base, rotate the detector to align mark A with mark C (Refer to Fig. 1 and 2 for the position of the marks), the detector will be fitted to the base.



Fig.3 shows the mounting of the detector.

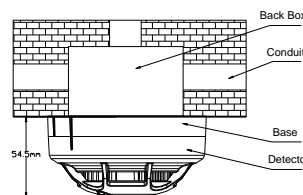


Fig. 3

Application

Warning: The alarm current depends on the current limit of the control panel. 24VDC cannot power the detector directly. Otherwise the detector will be blown up for lack of current limit resistor.

The sensitivity level 1 is defaulted, which can be modified by P-9910B programmer. Refer to P-9910B Hand Held Programmer Installation and Operation Manual for details. In power-on state, input unlocking password and press *Clear* to unlock. Press *Function*, then number "3", the screen shows "-" at the last digit.

Note: Programming should be done in safety zones because handheld programmers belong to non-intrinsically safety devices.

Input corresponding sensitivity or parameter and press *Program*, the screen will show a "P", the corresponding sensitivity or parameter is programmed. Press *Clear* to clear the "P". Input locking password and press *Clear* to return. Rate of rise and level 1 is defaulted.

Parameters set using programmer

Input Number	Smoke Sensitivity	Heat Sensitive
1	Level 1	Rate of rise
2	Level 2	Rate of rise
3	Level 3	Rate of rise
11	Level 1	Fixed temperature
12	Level 2	Fixed temperature
13	Level 3	Fixed temperature

If the detector connects with fire alarm control panel, I-9332 interface and other exposition proof products in series, a 4.7kΩ end-of-line resistor should be connected to the end of loop. System connection is shown in Fig. 4. Note the polarity of power line.

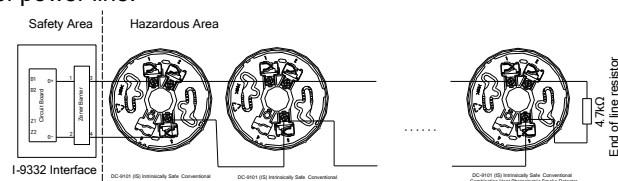


Fig. 4

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.

Safety Barrier Parameters: $U_0=28V$, $I_0=93mA$, $C_0=0.083\mu F$, $L_0=4mH$, $P_0=651mW$, Explosion-proof Mark: [Exi][ExibGb] IIC, Explosion-proof Certificate Number:

CE16.2010

Testing

Before testing, please ensure that the detector has been installed correctly and powered up. After 10 seconds, testing begins.

- 1) The detector must be tested after installation and periodical maintenance.
- 2) Testing method
 - a) Reed Switch Testing
Magnetic test zone is shown in Fig. 5. Put the magnet of commission tool close to that of the detector and hold on for a few seconds until the detector generates alarm.

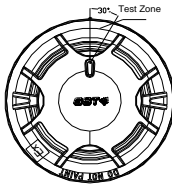


Fig. 5

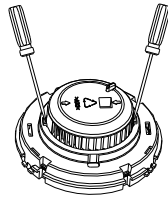


Fig. 6

- b) Smoke test
Taking a smoldering cotton rope close to the detector, blow the smoke into the detector until the detector generates alarm.
 - c) Temperature test
Approach a heater (such as a hair drier) to the thermistor of the detector until it alarms.
- 3) After testing, disconnect the power to the detector for over 5 seconds to reset it. Notify the proper authorities that the system is back to normal operation.

Maintenance

- ✧ The detector should be installed just before commissioning and kept well before installation, taken corresponding measures for dust-proof, damp-proof and corrosion-proof.
- ✧ The dust-proof cover cannot be removed until the project has been plunged into usage. Otherwise it can't report alarms.
- ✧ Clean the detectors regularly, at least once a year to ensure normal operation of the system.
- ✧ If nuisance alarms are often found of the detector on site, the sensing chamber should be cleaned and replaced when necessary.

Steps for chamber cleaning:

- a) Open the top cover of detector, and draw out the sensing chamber by slightly lifting its two sides using a straight screwdriver, as shown in Fig 6.
 - b) Clean the internal of the chamber by alcohol cotton swab with tweezers or using clean water and brush. Make sure not to leave any fiber in the chamber.
 - c) Put back the chamber and the top cover.
- ✧ Before cleaning, notify the proper authorities that the system is under maintenance and will temporarily be out of service. Disable the automatic controls relating to the zone or system under maintenance to avoid unwanted actions.
 - ✧ The detector should be tested after re-installed to ensure normal operation.
 - ✧ Fire simulation test should be made to the detector once half a year.

Cautions

- ✧ The explosion-proof 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 4.0mH.

- ✧ During maintenance, products passing the explosion-proof test should not be replaced and parts and structure affecting explosion-proof functions should not be modified.

Specification

Operating Voltage	16VDC~28VDC
Standby Current	≤60 μA
Alarm Current	10mA≤I≤30mA
Explosion-proof Mark	Ex ib IIC T6 Gb
Explosion-proof Certificate Number	CE16.2247
Zener Barrier	U ₀ =28V, I ₀ =93mA, C ₀ =0.083uF, L ₀ =4mH, P ₀ =651mW
Max Input Parameters	U _i =28V、I _i =93mA、C _i =0、L _i =0、P _i =651mW
Indicator	Red (flashes in normal and illuminates in alarm)
Maximum Ripple Voltage	2V (peak-to-peak value)
Alarm Clear	Instantaneous Power-off (2s Min., 1.0VDC MAX.)
Power-up Time	≤5s
Heat Sensitivity	Action Temperature: 135°F (57.2°C) Response Velocity: 15°F/min (8.3°C /min)
Wiring	2-core cable for power line.
Environment Temperature	0°C~+37.8°C
Relative Humidity	≤95%, non condensing
Material of Enclosure	ABS (surface resistance≤10 ⁹ Ω)
Dimensions	Diameter: 100mm Height: 54.5mm (with base)
Mounting Hole Distance	45mm~75mm
Weight	110g

Accessories and Tools

Model	Name	Remark
I-9332	Interface	Order separately
DB-01(IS)	Base	Order separately
T-MT	Commission Tool	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.

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

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