Features

✧ Integrated algorithm of analyzing fire, recognize black smoke quickly.
✧ Drift sensitivity, suit to environment extensively.
✧ Featuring magnetic test.
✧ Removable innovative sensing chamber, easy for maintenance.
✧ The fire LED allows 360° viewing.
✧ Providing remote terminals connect with remote indicator.
✧ 3-level sensitivities (complying with EN 54-7 just when sensitivity is level 1).

Description

DC-9102 Innovation Optical Detector is a new-generation product. With built-in microprocessor, the detector is highly fixed with reliable fire judging program, which make it stable and reliable performance.

When the detector checks fire signal, it will send fire information to the control panel or addressable zone monitor unit by means of current changing. The detector keeps turning on the LED to indicate alarm state until it is reset.

The detector is developed from sensing chamber by scattering theory. It has the ability to resist dust contamination and environmental light.

The detector utilizes drift compensation algorithm: When the environment is changing, such as dust accumulation, humidity and temperature changing, the detector can figure out these drift variation to make up for sensitivity, thus the amount of smoke needed to generate an alarm remains constant, irrespective of environmental conditions. The principle diagram is shown as Fig. 1.
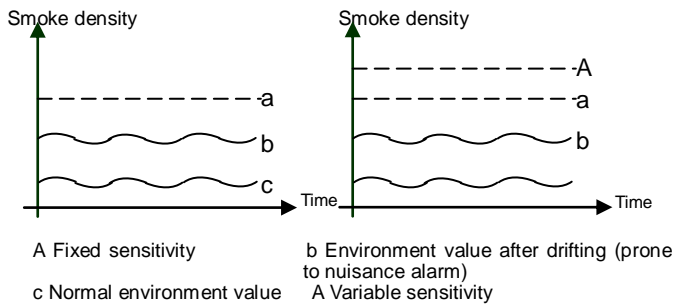

A Fixed sensitivity
c Normal environment value
b Environment value after drifting (prone to nuisance alarm)
A Variable sensitivity

Fig. 1

Connection and cabling

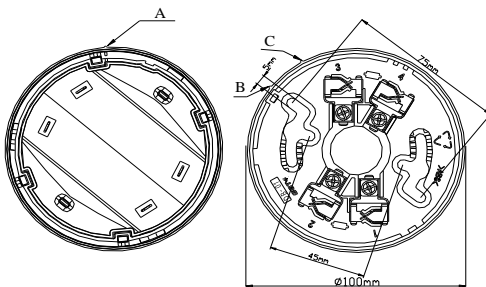The orientation base is shown in Fig. 3.

Fig. 2   Fig. 3

There are four terminals with number on the base. "1" is connected with output anode of addressable zone monitor unit or the anode of the power supply; "2" is used as output, connected with anode of next detector (Terminal 1) and also connected with anode of remote indicator; "3" is connected with output cathode of addressable zone monitor unit or the cathode of the power supply as well as the cathode of next detector; "4" connects with the cathode of remote indicator.

Recommended Wiring

$1.0mm^2$ or above fire cable for all terminals laid through metal conduit or flame proof conduit, subject to local codes.

Note: Different color cables are used to avoid wiring mistake.

Installation

Fix the base with two taping screws. Then align A (Fig.2) on the bottom of the detector to B (Fig.3) of the base, and rotate the detector clockwise to mark C.
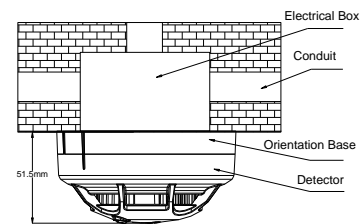
Mounting of the detector is shown in Fig.4.

Fig. 4

Application

Notes: 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.

The detector is suitable for hotels, restaurants, office buildings, teaching buildings, banks, warehouses, libraries, computer rooms and switch rooms, etc.

✧ When the detector connects with conventional fire alarm control panel or addressable zone monitor unit from GST, and if DP-9907 Active End of Line Unit is connected to the end of output loop, DB-01D base should be used.

➤ Used as the detector base, DP-9907 Active End of Line is used to be installed a conventional detector on it. The system composition is shown in Fig. 5.
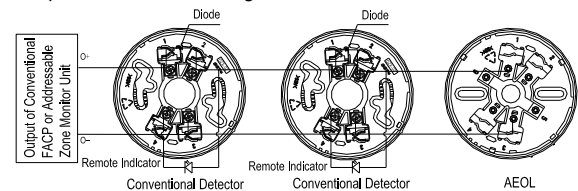

Fig. 5

➤ When DP-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.
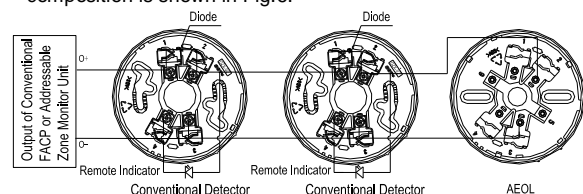

Fig. 6

✧ When the detector is connected with conventional fire alarm control panel or the addressable zone monitor unit from GST, if a 4.7KΩ terminal resistor is connected to the end of output loop, then DB-01 base is used. The system composition is shown in Fig. 7.
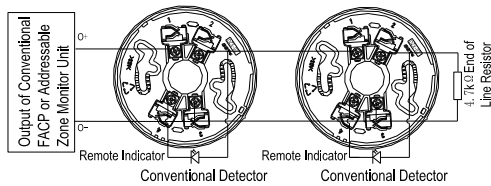

Fig. 7

✧ When a remote indicator connects with a few of detectors, a diode 1N5819 needs connecting with Terminal 4 of the orientation base in series and with anode of the remote indicator. Either DB-01 or DB-01D is used depends on which DP-9907 Active End of Line Unit or 4.7KΩ terminal resistor is connected. The system composition is shown in Fig. 8.
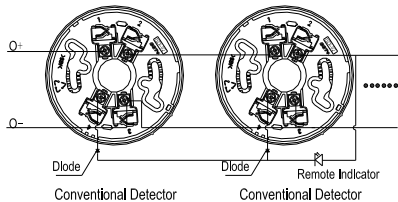

Fig. 8

Output loop of the addressable zone monitor unit can be connected with up to 15 conventional field devices. The addressable zone monitor unit features loop checking. When the loop is broken, the addressable zone monitor unit will send fault signal to fire alarm control panel. When any field device in the output loop is removed, the addressable zone monitor unit reports fault. If a DP-9907 Active End of Line Unit is connected, it will not affect the normal operation of other field devices.

Testing

Before testing, please ensure that the detector has been installed correctly and powered up. After 10 seconds, testing can begin.
1. The detector must be tested after installation and periodical maintenance.
2. Testing method
1) Magnetic test
Magnetic test zone is shown in Fig. 9. Put the magnet of commission tool close to that of the detector and hold on for a few seconds until the detector generates alarm.
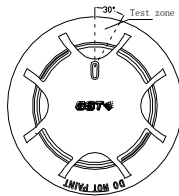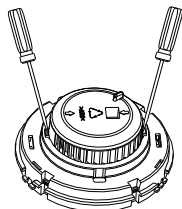

Fig. 9   Fig. 10

2) Smoke test
Taking a cotton rope burning without flame close to the detector, blow the smoke into the detector until the detector generates alarm.
3. After testing, cut power for 5 seconds at least and reset the detector. Notify the proper authorities that the system returns to normal state.

Clean the failure detector in the test according to *Maintenance*, and test it again. If it is still fail to pass, please return it to repair.

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. Otherwise it can't alarm normally.

3. Clean the detector at least once a year to ensure normal operation of the system.
4. If nuisance alarms are often found of the detector on site, the sensing chamber should be cleaned and replaced when necessary.
   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. 10.
   b) Clean the sensing chamber by alcohol cotton swab clipped by tweezers, and also by clear water and brush. Please note not to leave any cotton in the chamber.
   c) Install the sensing chamber and top cover back.
5. Before cleaning, 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.
6. The detector should be tested again after cleaning and re-installing.
7. Protect the metal dome on the PCB against damp and improper distortion.
8. Fire simulation test should be made to the detector at least once half a year.

Specification

Operating Voltage	16VDC～28VDC
Standby Current	≤60µA
Alarm Current	10mA≤I≤30mA
Fire LED	Red, flash in polling and illuminate in alarming.
Remote indication output	Directly connecting with remote indicator (built in 10k resistor in series, output voltage is 14~26V); don't illuminate when in normal; flash in alarming.
Max. ripple voltage	2V(peak to peak value)
Alarm reset	Instant power down (2s Min, 1.0VDC Max
Sensitivity setting	The sensitivity can be set by hand held programmer. There are three sensitivity levels: level 1, level 2 and level 3.
Wiring	Two-wire, polarity sensitive. When the polarity is reversed, the detector can give alarm but the remote indicator doesn't work normally.
Environment Temperature	-10℃～+50℃
Relative Humidity	≤95%, non condensing
Material and color	ABS, white (RAL 9016)
Ingress Protection Rating	IP23
Dimension	Diameter:100mm Height: 44.5mm (without base)
Mounting Hole Spacing	45mm～75mm
Weight	About 110g

Accessories and Tools

Model	Name	Remark
P-9910B	Hand held programmer	Supplied separately
DB-01	Base	Supplied separately
DB-01D	Base	Supplied separately
JTY-HM-GST102	Commission tool	Supplied separately

Limited Warranty

GST warrants that the product will be free from defects in design, materials and workmanship during the warranty period. This warranty shall not apply to 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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