

INSTALLATION AND MAINTENANCE INSTRUCTIONS FOR MODEL 1151EIS INTRINSICALLY SAFE LOW PROFILE IONISATION SMOKE DETECTOR

Before installing the sensor, please thoroughly read System Sensor's Guide to Conventional Fire Systems. This manual includes detailed information on sensor spacing, placement, zoning, and special applications. Copies of this manual are available at no charge from System Sensor.

GENERAL DESCRIPTION

Model 1151EIS ionisation smoke detectors use state-of-the-art sensing chambers and SMD circuitry for maximum reliability. These detectors are designed to afford open area protection and are for use in hazardous areas where potentially explosive atmospheres are likely to arise. The classification of equipment required must be confirmed with your responsible authority. 1151EIS detectors are designed to be used with compatible panels only and must be used in conjunction with a compatible zener barrier or galvanic isolator.

Two LEDs on each detector light to provide a local 360° visible alarm indication. Remote LED annunciator capability is available as an optional accessory wired to the standard base terminals. These detectors also have a latching alarm feature. The alarm can be reset only by a momentary power interruption. These detectors may be tested by activating an internal reed switch with a magnet.

SPECIFICATIONS

Size:	Cover Height:	43 mm
	Cover Diameter:	102 mm
Weight:		110 g
Operating Temperature Range:		-10°C to 40°C
Note: Do not install in locations where the normal ambient temperature range extends beyond 0°C to 50°C for extended periods		
Operating Humidity Range:		10% to 93% Relative Humidity, Non-condensing
Intrinsic Safety Rating:		Ex II 1 G EEx ia IIB T5
Latching Alarm:		Reset by momentary power interruption.

This detector has been independently tested and certified to EN54 part 7 and BASEEFA approved for intrinsic safety.

COVERAGE

As a general guide, the 1151EIS smoke detector should provide adequate protection of an area 70-90m², where the ceiling is smooth and there is no significant air movement. Where installation conditions or response requirements vary, different spacing may be necessary. It is essential to consult local codes of practice for the installation of fire alarm systems before installing smoke detectors.

BASE SELECTION AND WIRING GUIDE

Refer to the installation instructions supplied with the plug-in detector bases for wiring details. System Sensor detector bases B401 and B401DG are available for this smoke detector.

All bases are provided with screw terminals for power and remote indicator connections. The electrical ratings for each detector-base combination are also included in the base installation instructions.

NOTE: All wiring must conform to applicable local and national codes and regulations.

NOTE: Verify that all detector bases are installed, that the detector monitoring circuits have been tested and that the wiring is correct. (Refer to detector base instructions for testing procedure)

WARNING

Remove power from detector monitoring circuits before installing detectors.

INSTALLATION

- Place the detector into the detector base.
- Rotate the detector clockwise with gentle pressure until the detector drops into place.
- Continue rotating the detector clockwise to lock it in place.
- After all detectors have been installed, apply power to the detector monitoring circuits.
- Test the detector as described under **TESTING**.
- Reset the detector at the system control panel.
- Notify the proper authorities that the system is in operation.

Tamper-Resistance

The detector bases include a feature that, when activated, prevents removal of the detector without the use of a tool. See the installation instructions for the detector base for details of how to use this feature.

CAUTION

Dust covers are fitted to the detectors to help protect units during shipment and when first installed. They are not intended to provide complete protection against contamination; therefore detectors should be removed before beginning construction, major re-decoration or other dust producing activity. Dust covers must be removed before the system can be made operational.

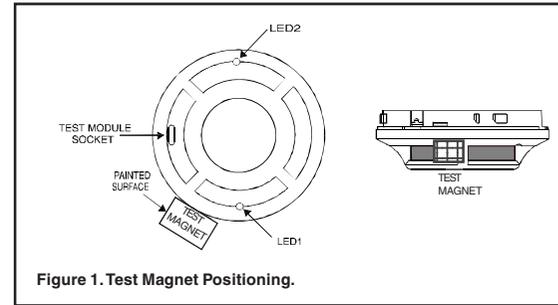


Figure 1. Test Magnet Positioning.

TESTING

Detectors must be tested after installation and following periodic maintenance. However, before testing, notify the proper authorities that the smoke detector system is undergoing maintenance and the system will be temporarily out of service. Disable the zone or system undergoing maintenance to prevent unwanted alarms.

IMPORTANT: If testing is carried out using non-intrinsically safe methods, it must be conducted outside the hazardous area.

Test the detector as follows:

Test Magnet (Model M02-04-00 - optional)

- Test the detector by positioning the test magnet against the detector body approximately 2cm from LED1 in the direction of the metering socket (see Figure 1).
- Both LEDs should latch on within 30 seconds, indicating an alarm and activating the panel.

Calibrated Sensitivity Test (MOD400R)

IMPORTANT: MOD400R is not intrinsically safe - the test must be conducted outside the hazardous area

- Use the MOD400R Test Module with a digital or analogue voltmeter to check detector sensitivity as described in the test module manual.

After completion of all tests notify the proper authorities that the system is operational.

Detectors that fail these tests should be cleaned as described under **MAINTENANCE** and re-tested. If the detectors still fail these tests they should be returned for repair.

MAINTENANCE

Before cleaning, notify the proper authorities that the system is undergoing maintenance and will be temporarily out of service. Disable the system to prevent unwanted alarms.

CAUTION

The Detector has a plastic enclosure that may present an electrostatic risk and must not be installed in a position where it may be subject to a high dust-laden air flow. Clean only with a damp cloth and do not rub.

- Remove the detector to be cleaned from the system.
- Remove the detector cover (Note: Regulations in some countries may prohibit this operation on ionisation type sensors). Use a small flat blade screwdriver to gently release each of the four cover removal tabs that hold the cover in place. (See Figure 2)
- Vacuum the outside of the screen carefully without removing it.
- Remove the sensor screen. Pull the screen straight away from the sensing chamber until it snaps out of place. Replacement screens are available.
- Use a vacuum cleaner and/or clean, compressed air to remove dust and debris from the sensing chamber.
- Reinstall or replace the sensing chamber screen by sliding the edge without the tabs over the sensing chamber. Make sure that one of the screen contacts engages with the PC board contact.
- Reinstall the detector cover. Use the test module socket and LEDs to align the cover with the sensor assembly. Snap the cover into place making sure all tabs are engaged.
- When all sensors have been cleaned, restore power to the system and test the sensor(s) as described in the **TESTING** section of this manual.

WARNING

LIMITATIONS OF SMOKE DETECTORS

This smoke detector is designed to activate and initiate emergency action but will do so only when used in conjunction with other equipment. **Smoke detectors will not work without power.**

Smoke detectors will not sense fires which start where smoke does not reach the detectors. Smoke from fires in chimneys, in walls, on roofs, or on the other side of closed doors may not reach the smoke detector and trigger the unit.

A detector may not detect a fire developing on another level of a building. For this reason, detectors should be located on every level of a building.

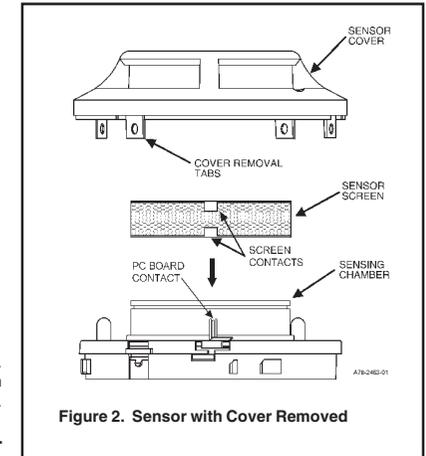
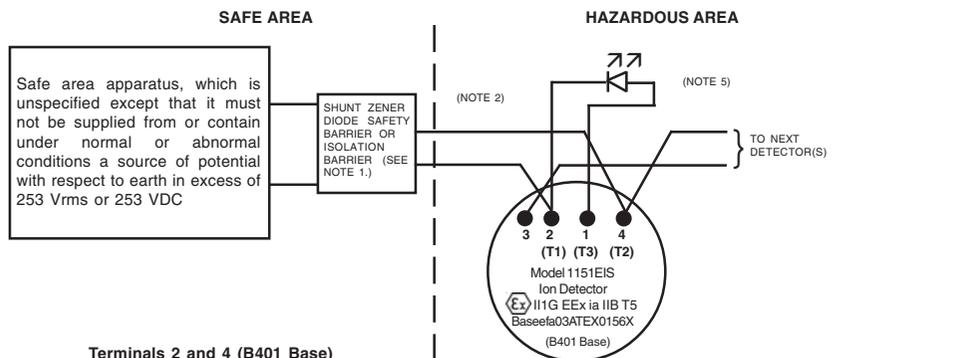


Figure 2. Sensor with Cover Removed

Smoke detectors also have sensing limitations. Ionisation detectors offer broad range fire-sensing capability but they are better at detecting fast, flaming fires than slow, smouldering fires. Photo-electronic detectors sense smouldering fires better than flaming fires. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is necessarily better and a given detector may not always provide warning of a fire. In general, detectors can not be expected to provide warnings for fires resulting from inadequate fire protection practices, violent explosions, escaping gas, improper storage of flammable liquids like cleaning solvents, other safety hazards, or arson. Smoke detectors used in high air velocity conditions may fail to alarm due to dilution of smoke densities created by such frequent and rapid air exchanges. Additionally, high air velocity environments may create increased dust contamination, demanding more frequent maintenance.

Smoke detectors cannot last forever. Smoke detectors contain electronic parts. Even though detectors are made to last over 10 years, any of these parts could fail at any time. Therefore, test your smoke detector system at least semi-annually. Clean and take care of your smoke detectors regularly. Taking care of the fire detection system you have installed will significantly reduce your liability risks.

Typical 1151EIS System Diagram



Terminals 2 and 4 (B401 Base)

Group	Capacitance µF	Inductance mH	L/R Ratio µH/OHM
IIB	0.64	12.6	210
IIA	2.14	33	444

Table 1

B401 Pins	Connection
1	Remote LED Indicator (if used)
2	- Vin
3	- Vout
4	+ Vin, + Vout

Table 2

Notes:

- Any single channel shunt zener diode safety barrier or single channel of a dual channel shunt zener diode safety barrier certified by Baseefa or any EEC approved certification body to [EEx ia] IIC having the following or lower output parameters:
 $U_z = 28V$; $I_{max} : out = 93.3 mA$; $W_{max} : out = 0.67 W$
 In any safety barrier used, the output current must be limited by a resistor "R", such that $I_{max} : out = U_z/R$. Or any of the following isolation barriers may be used:
 MTL : MTL4061 (BAS01ATEX7176), MTL5061 (BAS01ATEX7160)
 Pepperl + Fuchs : KFDO-CS-Ex1.51P (BAS98ATEX7343), KFDO-CS-Ex2.51P (BAS98ATEX7343)
- The capacitance and inductance or inductance/resistance (L/R) ratio of the hazardous area cables between the power terminals 2 and 4 (B401 base) must not exceed the values shown in Table 1.
- The installation must comply with the appropriate national installation requirements, e.g. in the U.K. BS5345:Part 4:1977 or BSEN60079-14: 1997.
- The electrical circuit in the hazardous area must be capable of withstanding an A.C. test voltage of 500 VRMS to earth or frame of the apparatus for one minute. This note does not apply when using an isolation barrier.
- An external light emitting diode (LED) may be fitted to terminals 2 and 1 (B401 base). The surface area of the LED must lie between 20mm² and 10cm². The LED and its terminations must be afforded a degree of protection of at least IP20, and be segregated from other circuits and conductors as defined in clause 6 of EN50020: 2002.
- The zone wiring of the detector bases should be checked before the detector heads are installed. To make this possible, this base contains a special spring-type shorting jumper. After a detector base is properly wired and mounted to an electrical box, make sure that the shorting spring is in contact with terminals 2 and 3. This temporary connection permits the wiring of the loop to be checked for continuity before installation of the detector heads. The shorting spring in the base automatically disengages when the detector head is removed from the base. DO NOT remove the shorting spring since it re-engages as the detector head is turned in the base, completing the circuit.
- The system must be marked with a durable label. The label should appear on or adjacent to the principle item of electrical equipment in the system or at the interface between intrinsically safe and non intrinsically safe circuits. This should show Baseefa 03Y0181 and SYST or System.

CAUTION

Please refer to control panel installation instructions for specific barrier/control panel compatibility information.



0832
0832-CPD-0284



EC DECLARATION OF CONFORMITY

Date of issue: 14 June 2012
 Manufacturer: Pittway Tecnologica Srl
 Via Caboto 19/3
 34147 TRIESTE
 Italy
 Product: 1151EIS E
 Bases: B401
 Description: Conventional Intrinsically Safe Ionization smoke detector

We hereby declare that the product identified above meets the requirements of the of the following EC Directives and therefore qualify for free movement within markets comprising the European Union (EU) and the European Economic Area (EEA):

- EMC Directive 2004/108/EC
- EU Construction Products Directive, 89/106/EEC

Conforms to: EN54-7: 2000 + A1: 2002
 Notified Body: BRE - LPCB
 Notified Body Number: 0832
 EC Certificate Number: 0832-CPD-0284

- ATEX 94/9/EEC
 Conforms to: EN 50014: 1997 + Amends 1 & 2; EN 50020: 2002
 EN50284: 1999
 Notified Body: BASEEFA (2001) Ltd
 Notified Body Number: 1180
 Certificate Number: Baseefa03 ATEX 0156X
 Rating: II G EEx ia II B T5

For and on behalf of
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