



A Division of Pittway
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2951 Intelligent Photoelectronic Smoke Sensor

Specifications

Operating Voltage Range:	15 to 30 VDC
Current:	270 μ A Max. Communication active but not to device in blink mode
LED Current:	6.5 mA Continuous ON
Operating Humidity Range:	10% to 93% Relative Humidity, noncondensing
Operating Temperature Range:	0° to 49° C (32° to 120° F)
Height:	1.95 inches (50 mm) installed in Base
Diameter:	4.0 inches (102 mm) installed in Base
Weight:	2.96 oz. (92 g)

Before Installing

This sensor must be installed in compliance with the control panel system installation manual. The installation must meet the requirements of the Authority Having Jurisdiction (AHJ). Sensors offer maximum performance when installed in compliance with the National Fire Protection Association (NFPA); see NFPA 72, and all applicable codes, ordinances and regulations.

General Description

Model 2951 is a plug-in type smoke sensor that combines a photoelectronic sensing chamber with addressable-analog communications. The sensor transmits an analog representation of smoke density over a communication line to a control panel. The sensor's address is set by the Hand Held Programmer (HHP). An LED on the sensor is controlled by the panel to indicate sensor status.

The Model 2951 requires compatible addressable communications to function properly. Connect this sensor to listed-compatible control panels only.

Spacing

System Sensor recommends spacing sensors in compliance with NFPA 72. In low air flow applications with smooth ceilings, space sensors 30 feet apart. For specific information regarding sensor spacing, placement, and special applications, refer to NFPA 72 or the System Sensor Guide For Proper Use of System Smoke Detectors, available at no charge from System Sensor (P/N I56-407-XX).

Wiring Instructions

All wiring must be installed in compliance with the National Electrical Code, applicable local codes, and any special requirements of the Authority Having Jurisdiction. Proper wire gauges should be used. The installation wires should be color-coded to limit wiring mistakes and ease system troubleshooting. Improper connections will prevent a system from responding properly in the event of a fire.

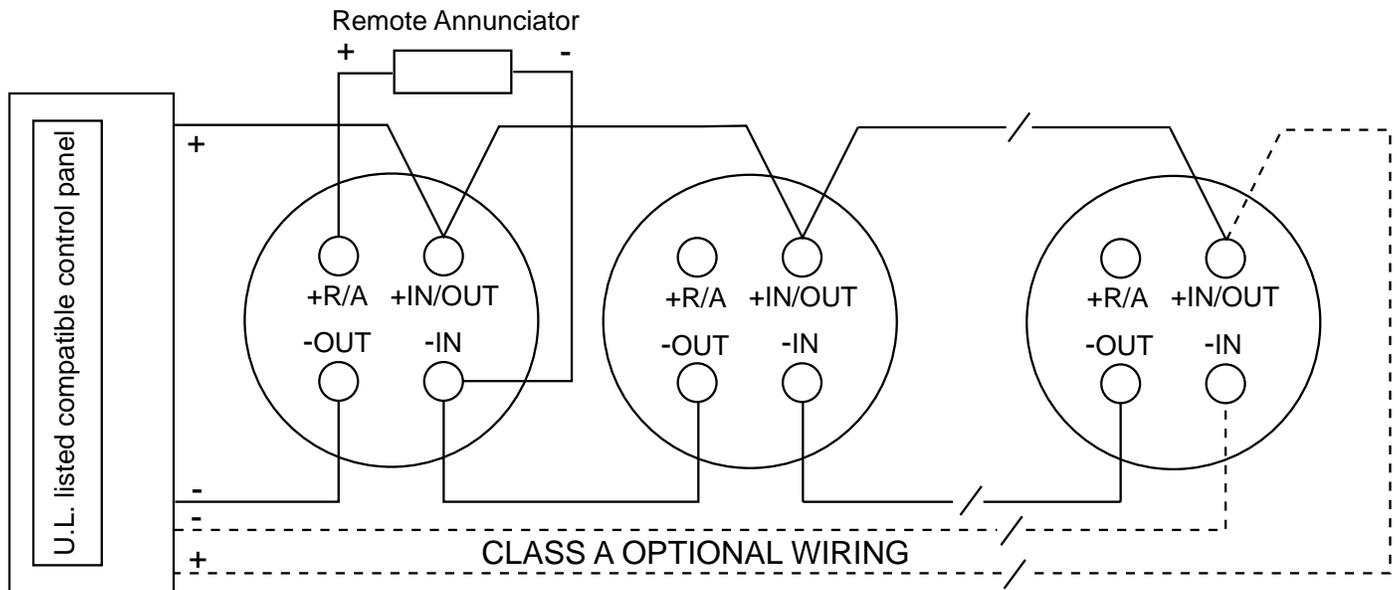
NOTE: The mounting base (B901) uses SEMS Plate terminals and can accommodate 2 wires each. The 2 wires can differ by a maximum of 2 wire gauges.

Remove power from the communication line before installing sensors.

All wiring must conform to applicable local codes, ordinances, and regulations.

1. Wire the sensor base (supplied separately) per the wiring diagram, see Figure 1.
2. Prior to installation, address the sensor using the Hand Held Programmer (HHP). See Hand Held Programmer instruction manual for proper operation.
3. Install the sensor into the sensor base. Push the sensor into the base while turning it clockwise to secure it in place.

Figure 1:



A78-2665-01

4. After all sensors have been installed, apply power to the control unit and activate the communication line.
5. Test the sensor(s) as described in the TESTING section of this manual.

CAUTION

Dust covers provide limited protection against airborne dust particles during shipping. Dust covers must be removed before the sensors can sense smoke. Remove sensors prior to heavy remodeling or construction.

Testing

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

All sensors must be tested after installation and periodically thereafter. Testing methods must satisfy the Authority Having Jurisdiction (AHJ). Sensors offer maximum performance when tested and maintained in compliance with NFPA 72 and all applicable codes, ordinances and regulations.

The sensor can be tested in the following ways:

A. Smoke Entry: Aerosol Generator

Aerosol generators for smoke entry testing are available from a number of third party manufacturers (e.g., Gemini Scientific). Following the manufacturer's instructions, apply aerosol until the panel alarms.

Coded signals, transmitted from the panel, can cause the LEDs to blink, latch on, or latch off. Refer to the control panel technical documentation for sensor LED status operation and expected delay to alarm.

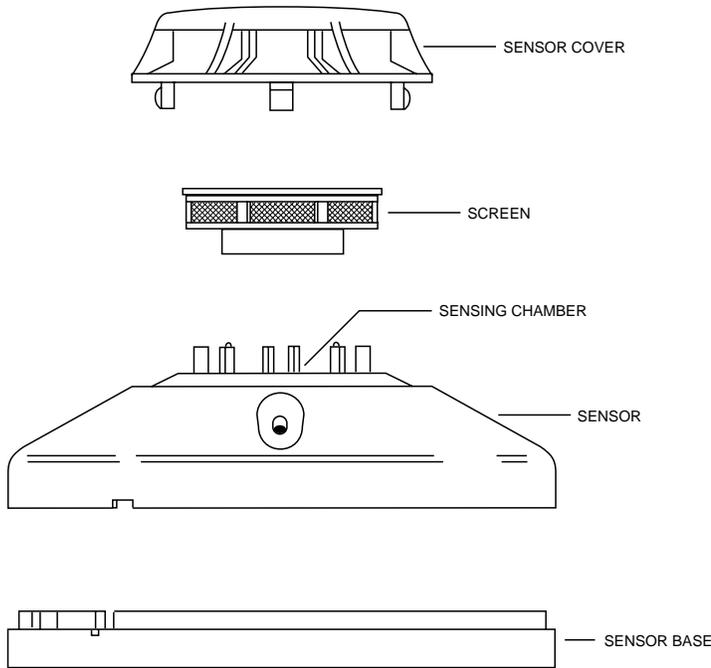
B. Sensitivity:

The sensitivity of the detector can be monitored and tested by the Hand Held Programmer. Refer to HHP documentation for sensitivity testing information. Certain control panels may also monitor and test the detector's sensitivity. Refer to control panel documentation for sensitivity testing information. The sensitivity indication is independent of communication. An acceptable sensitivity range is stamped on the back of the sensor.

A sensor that fails any of these tests should be cleaned as described under CLEANING, and retested. If the sensor fails after cleaning, it must be replaced and returned for repair.

When testing is complete, restore the system to normal operation and notify the proper authorities that the system is back in operation.

Figure 2:



A78-2666-00

Cleaning

It is recommended that the detector be removed from its mounting base to facilitate cleaning. The detector is cleaned as follows:

NOTE: Before removing the detector, notify the proper authorities that the smoke detector system is undergoing maintenance and will be temporarily out of service. Disable the zone or system undergoing maintenance to prevent unwanted alarms.

1. Remove the sensor cover, see Figure 2. Grasp the cover and the base, rotate the cover counter clockwise and remove from the sensor base assembly.
2. Vacuum the screen carefully without removing it. If further cleaning is required continue with Step 3, other wise skip to Step 6.
3. Remove the screen assembly by pulling it straight out (see Figure 2).
4. Clean the sensing chamber and the inside of the screen assembly. Use a vacuum or clean, compressed air to remove dust and debris.
5. Replace the screen assembly.
6. Replace the cover by locating it into the sensor base assembly and turning the cover clockwise until it locks into place.
7. Reinstall the sensor.
8. When all sensors have been cleaned and reinstalled, restore system operations for testing purposes and test the sensor(s) as described in the TESTING section of this manual.
9. Reconnect disabled circuits.
10. Notify the proper authorities that the system is back on line.

Remote Annunciator (RA400Z)

The remote annunciator is connected between the R/A terminal and either the - IN or - OUT terminal as shown in Figure 1.

It is not acceptable to have three stripped wires under the same wiring terminal unless they are separated by a washer or equivalent means. The spade lug supplied with the model RA400 is considered an equivalent means.



The Limitations of Property Protection Smoke Detectors

This smoke detector is designed to **activate and initiate** emergency action, but will do so only when it is used in conjunction with an authorized fire alarm system. This detector must be installed in accordance with NFPA standard 72.

Smoke detectors will not work without power. AC or DC powered smoke detectors will not work if the power supply is cut off.

Smoke detectors will not sense fires which start where smoke does not reach the detectors. Smoldering fires typically do not generate a lot of heat which is needed to drive the smoke up to the ceiling where the smoke detector is usually located. For this reason, there may be large delays in detecting a smoldering fire with either an ionization type detector or a photoelectric type detector. Either one of them may alarm only after flaming has initiated which will generate the heat needed to drive the smoke to the ceiling.

Smoke from fires in chimneys, in walls, on roofs or on the other side of a closed door(s) may not reach the smoke detector and alarm it. A detector cannot detect a fire developing on another level of a building quickly or at all. For these reasons, detectors **shall be located on every level and in every bedroom within a building.**

Smoke detectors have sensing limitations, too. Ionization detectors and photoelectric detectors are required to pass fire tests of the flaming and

smoldering type. This is to ensure that both can detect a wide range of types of fires. Ionization detectors offer a broad range of fire sensing capability but they are somewhat better at detecting fast flaming fires than slow smoldering fires. Photoelectric detectors sense smoldering fires better than flaming fires which have little, if any, visible smoke. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is always best, and a given detector may not always provide early warning of a specific type of fire.

In general, detectors cannot be expected to provide warnings for fires resulting from inadequate fire protection practices, violent explosions, escaping gases which ignite, improper storage of flammable liquids like cleaning solvents which ignite, other similar safety hazards, arson, smoking in bed, children playing with matches or lighters, etc. Smoke detectors used in high air velocity conditions may have a delay in alarm due to dilution of smoke densities created by 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 smoke detectors are made to last over 10 years, any part can fail at any time. Therefore, smoke detectors shall be replaced after being in service for 10 years. The smoke detector system that this detector is used in must be tested regularly per NFPA 72. This smoke detector should be cleaned regularly per NFPA 72 or at least once a year.

Three-Year Limited Warranty

System Sensor warrants its enclosed smoke detector to be free from defects in materials and workmanship under normal use and service for a period of three years from date of manufacture. System Sensor makes no other express warranty for this smoke detector. No agent, representative, dealer, or employee of the Company has the authority to increase or alter the obligations or limitations of this Warranty. The Company's obligation of this Warranty shall be limited to the repair or replacement of any part of the smoke detector which is found to be defective in materials or workmanship under normal use and service during the three year period commencing with the date of manufacture. After phoning System Sensor's toll free number 800-SENSOR2 (736-7672) for a Return Authorization number, send defective units postage prepaid to: System Sensor, Repair Depart-

ment, RA # _____, 3825 Ohio Avenue, St. Charles, IL 60174. Please include a note describing the malfunction and suspected cause of failure. The Company shall not be obligated to repair or replace units which are found to be defective because of damage, unreasonable use, modifications, or alterations occurring after the date of manufacture. In no case shall the Company be liable for any consequential or incidental damages for breach of this or any other Warranty, expressed or implied whatsoever, even if the loss or damage is caused by the Company's negligence or fault. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.