NOTIFIER®

Division of Pittway Corporation

LPX-751 INTELLIGENT LASER SMOKE SENSOR INSTALLATION INSTRUCTIONS

Before installing this sensor, please thoroughly read NEMA's *Guide for Proper Use of System Smoke Detectors*, which provides detailed information on detector spacing, placement, zoning, wiring, and special applications. Copies of this manual are available from the National Electrical Manufacturers Association (NEMA, 2101 L Street NW, Washington, DC 20037). This sensor must be installed in compliance with the control panel manufacturer's installation manual. Sensors offer maximum performance when installed in compliance with the National Fire Protection Association (NFPA); see NFPA 72. For installation in Canada, refer to CAN/ULC-S524-M91, Standard for the Installation of Fire Alarm Systems, and CEC Part 1, Section 32.

NOTICE: This manual should be left with the owner/user of this equipment.

IMPORTANT: This sensor must be tested and maintained regularly following NFPA 72 requirements. It should be cleaned at least once a year.

GENERAL DESCRIPTION

Model LPX-751 is a plug-in smoke sensor that combines a laser photoelectronic sensing chamber with addressable analog communications. The use of a laser diode provides substantial improvements in signal-to-noise ratio compared to a traditional LED light source. The sensor transmits an analog representation of smoke density over a communication line to a control panel. Rotary decade switches are provided for setting the sensor address (see figure 2). The sensor has two multicolored LED's controlled by the panel to indicate sensor status. Flashing green indicates normal operation and steady red indicates alarm, prealarm, or trouble. An output is provided for connection to an optional remote LED annunciator (Model RA400Z).

SPECIFICATIONS

Operating Voltage Range:	15 to 28 VDC
Max. Standby Current:	230µA @ 24 VDC (no communication)
Max. Average Standby Current:	255µA (one communication every 5 seconds with LED blink enabled)
Max. Alarm Current (LED on):	6.5mA @ 24 VDC
Operating Humidity Range:	10% to 93% Relative Humidity, noncondensing
Operating Temperature Range:	0° to 37.8°C (32° to 100°F)
	Height: 1.7 inches (43mm) installed in B710LP base
Diameter:	6.2 inches (155mm) installed in B710LP base
	4.1 inches (104mm) installed in B501 base
Weight:	3.6 oz. (102 g)

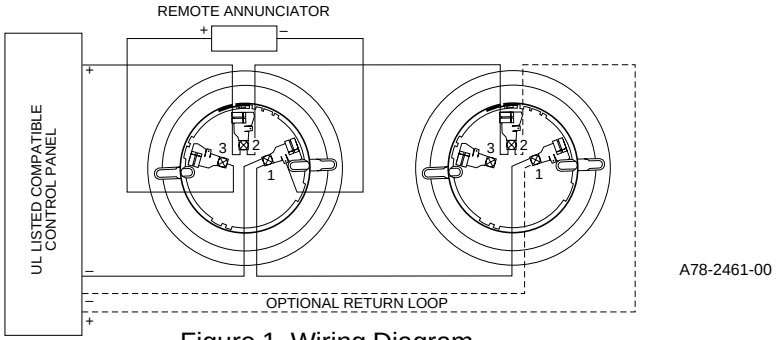

Figure 1. Wiring Diagram

Notifier, 12 Clintonville Rd., Northford, CT 06472-1653, (203) 484-7161

SPACING

Notifier 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 NEMA's *Guide For Proper Use of System Smoke Detectors.*

WIRING INSTRUCTIONS

All wiring must be installed in compliance with the National Electric Code (NEC), applicable local codes, and any special requirements of the Authority Having Jurisdiction (AHJ). 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.

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. Set the desired address on the sensor address switches.
3. Install the sensor in the sensor base. Push the sensor into the base while turning it clockwise to secure it in place.
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.

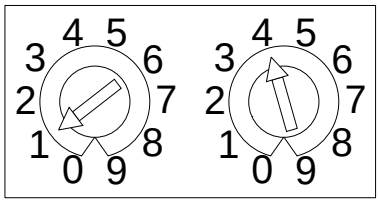

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Figure 2. Rotary Decade Address Switch

⚠CAUTION

Dust covers provide limited protection against airborne dust particles during shipment. 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 be temporarily out of service. Also, 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. The sensor can be tested in the following ways:

A. Functional Magnet Test (Model M02-04-01)

This sensor can be functionally tested using a test magnet. The test magnet electronically simulates smoke in the sensing chamber, testing the sensor electronics and connections to the control panel.

1. Hold the test magnet in the magnet test area as shown (see figure 3).
2. The sensor should alarm the panel.

Two LED's on the sensor are controlled by the panel to indicate sensor status. Coded signals transmitted from the panel can control LED color, as well as to "FLASH", latch "ON", or latch "OFF". Refer to the control panel manufacturer's technical documentation for sensor LED status operation.

B. Sensitivity Test

A sensitivity test module is provided for checking the sensor's sensitivity with the MOD400R test module (supplied separately). The test module is used with a digital or analog voltmeter to check the sensor sensitivity. An acceptable voltage range is stamped on the back of the sensor. Test the sensor as described in the test module's manual.

C. Smoke Entry: Aerosol Generator (Gemini 501)

The GEMINI model 501 aerosol generator can be used for smoke entry testing. Set the generator to represent 4%/ft. to 5%/ft. obscuration as described in the GEMINI 501 manual. Using the bowl shaped applicator, apply aerosol until the panel alarms. Smoke entry can also be simulated from the Notifier control panel.

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.

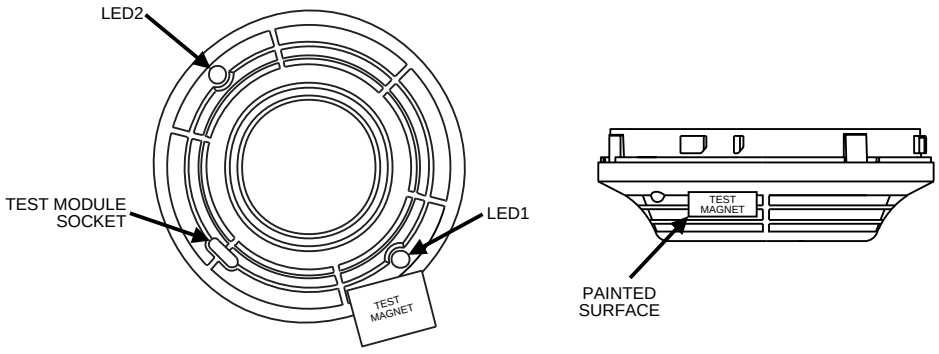

Figure 3. Test Magnet Position A78-2585-00

HIGH SENSITIVITY SETTING

The use of the 0.03% to 0.5% per foot sensitivity setting requires a 90-day test period to ensure that the detector's environment is suitable for this setting. The following steps must be followed to meet Notifier and UL requirements for this high sensitivity application:

1. Each detector intended for 0.03% to 0.5% per foot alarm application shall have its initial alarm setting set for 0.5% obscuration per foot alarm level. The initial prealarm setting for the detector shall be set to the intended alarm setting of the system. Prealarm shall be set for nonlatching operation.
2. Detectors set at 0.03% to 0.5% per foot are intended for use in smoke-free, environmentally controlled applications, such as computer rooms and clean rooms. In order to determine if an environment is suitable for installation, the detectors shall be operated continuously for 90 days with all environmental factors, including temperature, humidity, air flow, occupancy, etc., similar to the intended application for these detectors. An electronic history file or printer shall be used to record all events associated with the detectors under testing.
3. At the end of 90 days, the results of the test shall be inspected by an authorized Notifier representative or the end user, if trained by an authorized Notifier representative. If no alarms or prealarms are recorded for the detectors under testing, the system may be set to the tested prealarm level in the 0.03% to 0.5% per foot range.

⚠WARNING

Power must be removed before the unit is disassembled.

CLEANING

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.

1. Remove the sensor to be cleaned from the system.
2. Remove the sensor cover using a small standard screwdriver to release each of the four cover removal tabs that hold the cover in place (see figure 4).
3. Vacuum the outside of the screen carefully without removing it.
4. Remove the screen assembly by pulling it straight away from the sensing chamber base. Replacement screens are available (Model S08-33).
5. Use a vacuum or clean compressed air to remove dust and debris from the sensing chamber.
6. Reinstall or replace the screen assembly. Align the arrow on the screen assembly with the arrow on the sensor that points toward the sensing chamber. Push the screen down carefully until it snaps into place.
7. Reinstall the sensor cover using the LED's and test module socket to align the cover with the sensor. Carefully snap the cover into place.
8. When all the sensors have been cleaned, restore system operation for testing purposes and test the sensors as described in the TESTING section of this manual.

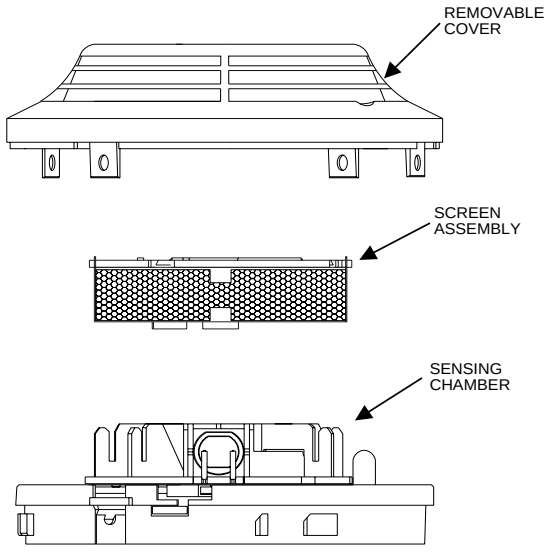

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Figure 4. Screen Assembly and Sensing Chamber

LASER SAFETY INFORMATION

This smoke detector does not produce any hazardous laser radiation and is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968.

Any radiation emitted inside the smoke detector is completely within the protective housings and external covers. The laser beam cannot escape from the detector during any phase of operation.

The Center of Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured after August 1, 1976. Compliance is mandatory for products marketed in the United States.

⚠CAUTION

Use of controls, adjustments, or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

⚠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 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 for any reason.

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 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 may not reach the smoke detector and alarm it. A detector cannot quickly detect, or sense at all, a fire developing on another level of a building. For this reason, **detectors shall be located on every level and in every bedroom within a building.**

Smoke detectors shall be located in any room where an alarm control is located, or in any room where alarm control connections to an AC source or phone lines are made. If detectors are not so located, a fire within any of these rooms could prevent the control from reporting a fire.

Smoke detectors have sensing limitations, too. Ionization detectors and photoelectronic detectors are required to pass fire tests of the flaming and smoldering types. This is to ensure that both can detect a wide range 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. Photoelectronic 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 that ignite, improper storage of flammable liquids like cleaning solvents that 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 detector maintenance.

Smoke detectors cannot last forever. Smoke detectors contain electronic parts. Even though 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.