

## INSTALLATION AND MAINTENANCE INSTRUCTIONS

### B116LPA Plug-in Detector Base

For use with the following smoke detectors:

1151A ionization

2151A photoelectric



**SYSTEM  
SENSOR**



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#### Specifications

Base Diameter:	6.2 inches (157 mm)
Base Height:	0.95 inches (24 mm)
Weight:	0.3 lb. (130 g)
Mounting:	4-inch square box with or without plaster ring. Min. Depth—1.5 inches 4-inch octagon box. Min. Depth—1.5 inches 3-1/2 inch-octagon box. Min. Depth—1.5 inches 50 mm box 60 mm box 70 mm box

Operating Temperature Range: 0° to +49°C (32° to 120°F)

Operating Humidity Range: 10% to 93% Relative Humidity

#### Electrical Ratings – includes base and detector

System Voltage: 24 VDC

Maximum Ripple Voltage: 4 Volts peak to peak

Start-up Capacitance: 0.02 $\mu$ F Maximum

Standby Ratings:  
15 VDC Minimum  
35 VDC Maximum  
120  $\mu$ A Maximum

Alarm Ratings:  
8 V Minimum at 16 mA  
12 V Maximum at 100 mA  
(Alarm current MUST be limited to 100 mA maximum by the control panel.)

Relay Contact Ratings: Resistive or Inductive (60% power factor) Load

Form C: 2.0A @ 30 VAC/DC

Reset Voltage: 1.4 VDC Minimum

Reset Time: 0.3 Seconds Maximum

Start-up Time: 34.0 Seconds Maximum

#### Before Installing

Please thoroughly read the System Sensor manual I56-407, *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 at no charge from System Sensor. Please also refer to CAN4-S524, Standard for the Installation of Fire Alarm Systems and CEC Part 1, Sec. 32.

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

**IMPORTANT:** The detector used with this base must be tested and maintained regularly following ULC-S536 requirements. The detector used with this base should be cleaned at least once a year.

#### General Description

The model B116LPA plug-in detector base is used with System Sensor model 1151A ionization detector heads and model 2151A photoelectric detector heads. The capability of plugging these detectors into a variety of special bases makes them more versatile than equivalent direct-wired models. Refer to the System Sensor catalog for other available plug-in detector bases.

The B116LPA base is intended for use in 2-wire systems, with screw terminals provided for power and relay contact connections. These bases MUST be current limited by the system control panel in the alarm state.

#### Mounting

This detector base mounts directly to 3-1/2-inch and 4-

inch octagon boxes, and 4-inch square boxes (with or without plaster rings). To mount, remove decorative ring by turning it in either direction to unhook the snaps, then separate the ring from the base. Install the base to the box using the screws supplied with the junction box and the appropriate mounting slots in the base. Place decorative ring onto base, then turn in either direction until the ring snaps in place (see Figure 1).

### Installation Guidelines

All wiring must be installed in compliance with the Canadian Electrical Code and the local codes having jurisdiction. Proper wire gauges should be used. The conductors used to connect smoke detectors to control panels and accessory devices should be color-coded to prevent wiring mistakes. Improper connections can prevent a system from responding properly in the event of a fire.

For signal wiring (the wiring between inter-connected detectors), it is recommended that the wire be no smaller than 18 gauge. Wire sizes up to 12 gauge may be used with the base. For best system performance, the power (+) and (-) loop wires should be twisted pair and installed in separate grounded conduit to protect the loop from extraneous electrical interference.

Smoke detectors and alarm system control panels have specifications for allowable loop resistance. Consult the control panel manufacturer's specifications for the total loop resistance allowed for the particular model control panel being used before wiring the detector loops.

Locate installations where normal ambient temperatures do not exceed 100°F.

### Wiring Instructions

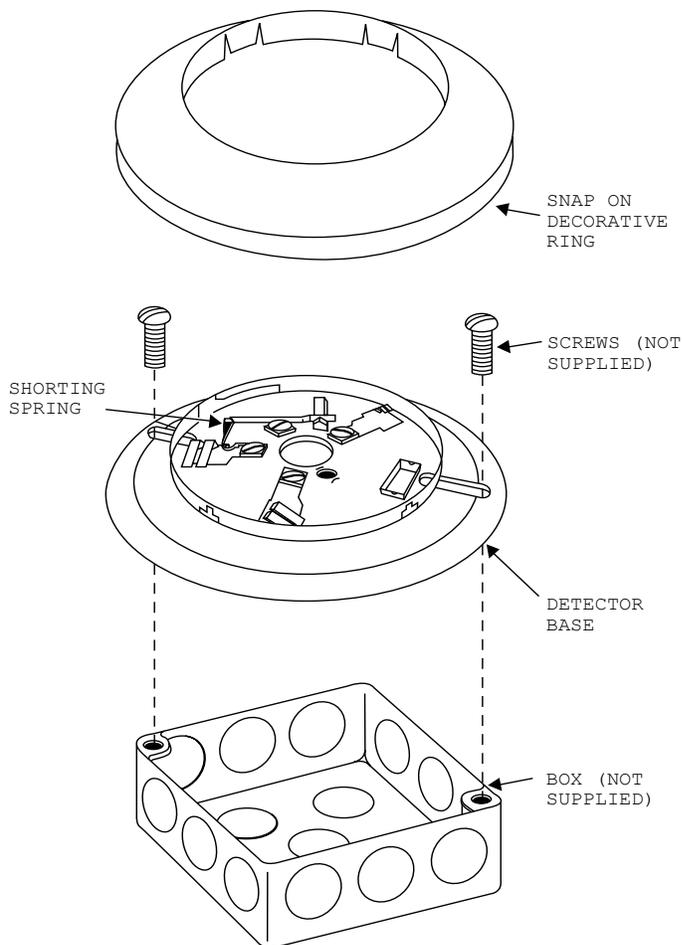


For system supervision — For terminals 2, 3, and 5 do not use looped wire under terminals. Break wire run to provide system supervision of connections.

Wire connections are made by simply stripping insulation from the end of the wire, sliding the bare end of the wire under the clamping plate, and tightening the clamping plate screw. Use the strip gauges molded into the inside and underside of the base for ease of wiring to terminals 1 through 5, and to terminals 12 through 14, respectively.

The zone wiring of the detector base should be checked before the detector heads are installed in them. To make this possible, this base contains a special spring-type shorting jumper. After a detector base is properly wired and mounted on an electrical box, make sure that the

**Figure 1. Mounting base to box:**



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jumper spring is in contact with the base of Terminal 3. This temporary connection shorts the positive-in and positive-out leads and permits the wiring of the loop to be checked for continuity.

Once all the detector bases have been wired and mounted, and the loop wiring has been checked, the detector heads may be installed in the bases. The shorting spring in the base will disengage automatically when the detector head is removed from the base. DO NOT remove the shorting spring since it reengages as the detector head is fully turned into the base, completing the circuit.

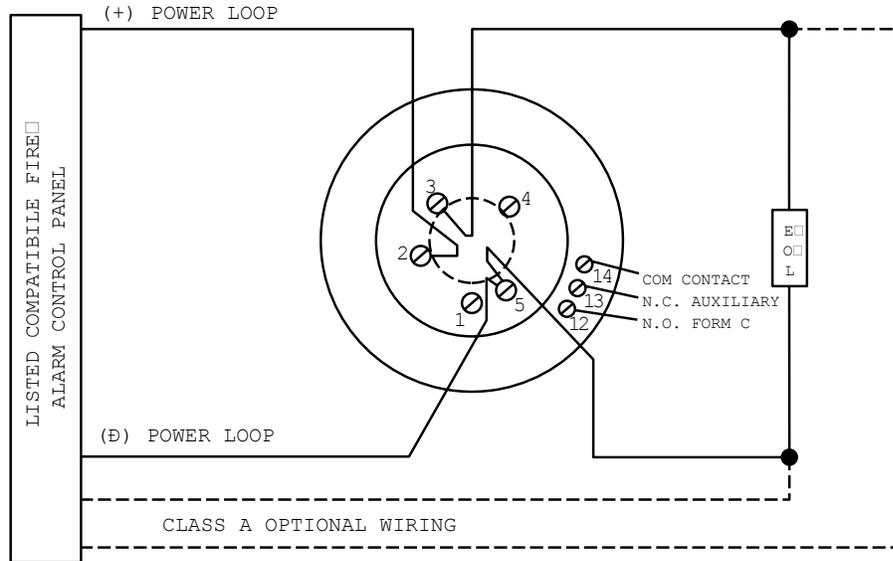
### Tamper-resistance Feature



Do NOT use the tamper-resistance feature if the XR2 Removal Tool will be used.

This detector base includes a tamper-resistance feature that prevents removal of the detector without the use of a

**Figure 2. Typical wiring diagram:**



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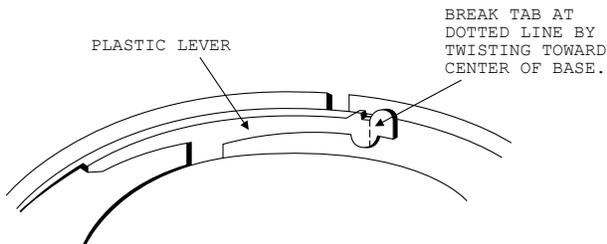
tool.

To activate this feature, break off the tab on the detector base shown in Figure 3A, then install the detector. To remove the detector from the base once the tamper-resistance feature has been activated, place a small-bladed screwdriver into the small hole on the side of the base and push plastic lever away from the detector head (see Figure 3B). This will allow the detector to be rotated counterclockwise for removal.

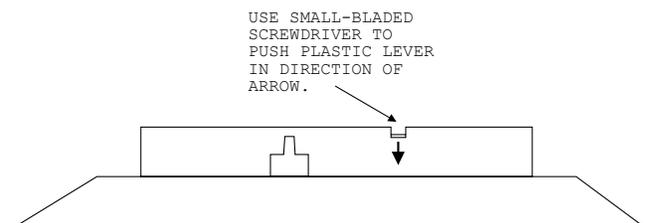
The tamper-resistance feature can be defeated by breaking and removing the plastic lever from the base, however this prevents using the feature again.

**NOTE:** Head removal after the tamper-resistance feature has been activated requires removal of the decorative ring.

**Figure 3A. Activating tamper-resistance feature:**



**Figure 3B. Removing detector head from base:**



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### The Limitations of Property Protection Smoke Detectors

The smoke detector used with this base 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 CAN/ULC-S524.

**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.

To keep your equipment in excellent working order, ongoing maintenance is required per the manufacturer's recommendations and ULC standards. At a minimum, the requirements of the National Fire Alarm Code, shall be followed. A preventative maintenance agreement should be arranged through the local manufacturer's representative. Though smoke detectors are designed for long life, they may fail at any time. Any smoke detector, fire alarm equipment or any component of that system which fails shall be repaired or replaced as soon as possible.

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### Three-Year Limited Warranty

System Sensor warrants its enclosed smoke detector base 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 base. 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 base 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 De-

partment, RA # \_\_\_\_\_, 6581 Kitimat Rd., Unit #6, Mississauga, ON, L5N 3T5. 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 legislations 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 under common law.