



**UL, ULC, and CSFM Listed, FM Approved**

**Light Source:** GaAlAs Infrared Emitting Diode

**Rated Voltage:** 17.7 - 33.0 VDC

**Working Voltage:** 15.0 - 33.0 VDC

**Maximum Voltage:** 42 VDC

**Supervisory Current:** 45  $\mu$ A Max. at 24 VDC

**Surge Current:** 160  $\mu$ A Max. at 24 VDC

**Alarm Current:** 150 mA Max. at 24 VDC

**Ambient Temperature:** 32°F to 120°F (0°C to 49°C)

**Sensitivity Test Feature:** Automatic Sensitivity window verification test.

**Mounting:** Refer to Potter SB Series Smoke Detector Base series, bulletin no. 8840008.

**Stock number:** 1430011

#### Standard Features

- Low profile, 1.8" high (with base)
- 2 or 4 wire base compatibility, relay bases available
- Highly stable operation, RF/Transient protection
- Low standby current, 45  $\mu$ A at 24 VDC
- Two built-in power/sensitivity supervision/alarm LED's
- Non-directional smoke chamber
- Vandal resistant security locking feature
- Built-in magnetic go/no go detector test feature
- Removable smoke labyrinth for cleaning or replacement
- Automatic Sensitivity window verification function meets outlined requirements in NFPA 72, Chapter 7, Inspection, Testing and Maintenance.
- Compatible with IS-24 ionization detectors
- Backwards compatible with Potter PS and IS detectors.
- Compatible with Potter releasing controls

#### Application

The PS-24 can be used in all areas where Photoelectric Smoke Detectors are required. The wide range smoke chamber makes the PS-24 well suited for fires ranging from smoldering to flaming fires.

SB Series Style bases may be used with the PS-24. Current interchangeable/compatible devices are the IS-24 ionization detector.

#### Operation

The PS-24 photoelectric smoke detector utilizes two bi-colored LED's for indication of status. In a normal standby condition the LED's flash *green* every 3 seconds. When the detector senses that its sensitivity has drifted outside the UL listed sensitivity window the LED's will flash *red* every 3 seconds. When the detector senses smoke and goes into alarm the status LED's will latch on *red*.

The detector utilizes an infrared LED light source and silicon photo diode receiving element in the smoke chamber. In a normal standby condition, the receiving element receives no light from the pulsing LED light source. In the event of a fire, smoke enters the detector smoke chamber and light is reflected from the smoke particles to the receiving element. The light received is converted into an electronic signal.

Signals are processed and compared to a reference level, and when two consecutive signals exceeding the reference level are received within a specified period of time, the time delay circuit triggers the SCR switch to activate the alarm signal. The status LED's light continuously during the alarm period.

#### **Engineering Specifications**

The contractor shall furnish and install where indicated on the plans, Potter Model PS-24 photoelectric smoke detectors. The combination detector head and twist-lock base shall be UL listed compatible with a UL listed fire alarm panel.

The base shall permit direct interchange with Potter, PS-24H, combination photoelectric/heat detector and IS-24 ionization type smoke detector. The base shall be appropriate twist-lock base SB Series. In the event of partial or complete retrofit, the PS-24 may be used in conjunction with, or as a replacement for, Potter detectors (PS-24, PS-24H and the IS-24) the SB base applications.

The smoke detector shall have two flashing status LED's for visual supervision. When the detector is in standby condition the LED's will flash *green*. When the detector is outside the UL listed sensitivity window the LED's will flash *red*. When the detector is actuated, the flashing LED's will latch on *red*. The detector may be reset by actuating the control panel reset switch.

The sensitivity of the detector shall be capable of being measured. It shall be possible to perform a functional test of the detector without the need of generating smoke. The sensitivity of the detector shall be monitored automatically and continuously to verify that it is operating within the listed sensitivity range.

To facilitate installation, the detector shall be non-polarized. Voltage and RF transient suppression techniques shall be employed to minimize false alarm potential. Auxiliary SPDT relays shall be installed where indicated.

The vandal-resistant, security locking feature shall be used in those areas as indicated on the drawing. The locking feature shall be field removable when not required.

Specifications subject to change without notice.

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#### **PS-24 Sensitivity Test Feature**

The PS-24 Photoelectric Smoke Detector has a built-in automatic sensitivity test feature.

1. In normal condition, both LED's flash *green*.
2. When the sensitivity drifts outside of its sensitivity limits, both LED's flash *red*.
3. In the alarm state both LED's are *red* continuously.
4. When the sensitivity drifts outside of its sensitivity limits and both LED's flash *red*, the device needs to be cleaned or returned to the factory for cleaning.