# Smoke Detectors with Sounder and Relay Option

*System Sensor i³™ sounder and relay smoke detectors apply the guiding principles of installation ease, intelligence, and instant inspection in a series of specialty conventional devices.*

## Features

- 85 dB sounder
- Form C relay
- Isolated thermal sensor
- Plug-in design (base included)
- In-line terminals
- Flexible mounting options
- Stop-Drop 'N Lock™ attachment to the base
- Removable cover and chamber
- Remote maintenance signaling
- Drift compensation and smoothing algorithms
- Simplified sensitivity measurement
- Dual-color LEDs

## Agency Listings

S911 · 3015195 · 7272-1653:164 · 372-02-E · 2133 · 3180932

**Installation ease.** Throughout the i³ series, installation is simple with its installer-friendly base and plug-in design. The base accommodates a broad range of back box and direct mounting options and provides ample space for pre-wiring the device. To complete the installation, the i³ detector plugs into its base with a simple Stop-Drop 'N Lock action.

**Intelligence.** To reduce the likelihood of nuisance alarms, all i³ detectors are equipped with both drift compensation and smoothing algorithms. These capabilities minimize both short- and long-term causes of nuisance alarms, such as RF interference and dust accumulation. When connected to the 2W-MOD2 loop test/maintenance module or an i³ Ready™ panel, 2-wire i³ detectors can generate a remote maintenance signal when in a maintenance or freeze trouble condition. To measure the sensitivity of any i³ detector, the SENS-RDR displays the reading, in terms of percent-per-foot obscuration, within seconds.

**Instant inspection.** i³ has red and green LEDs to simplify local status indication during power-up, standby, alarm, maintenance, and freeze trouble conditions. When in alarm, i³ sounder models generate an 85 dB temporal tone. If connected to the RRS-MOD reversing relay/synchronization module, all i³ sounders on the loop will activate when one detector is in alarm. The RRS-MOD also synchronizes i³ sounder output to ensure a clear audible signal.

Should the application call for differentiating between a local and a general alarm, the i³ line offers an isolated thermal model, which initiates a local alarm when smoke is detected, and a general alarm when the thermal sensor is activated.

# Smoke Detector Specifications

| Electrical Specifications | |
|---|---|
| **Operating Voltage** | Nominal: 12/24 V non-polarized<br>2-wire: 8.5 V to 35 V<br>4-wire: 10 V to 35 V |
| **Maximum Ripple Voltage** | 30% of applied voltage (peak to peak) |
| **Standby Current** | 2-wire: 50 μA maximum average<br>4-wire: 50 μA maximum average |
| **Peak Standby Current** | 2-wire: 100 μA<br>4-wire: n/a |
| **Maximum Alarm Current** | 2-wire: 2WTR-B: 130 mA limited by control panel<br>2WTA-B: 130 mA**<br>4-wire: 4WTA-B, 4WTR-B: 35 mA<br>4WTAR-B, 4WITAR-B: 50 mA<br>**Direct Power (Non-Reverse Polarity): 130 mA limited by panel. Reverse Polarity Power: 30 mA for the 2WTA-B in alarm; 12 mA for all other 2WTA-B units on the loop. Add 25 mA for the RRS-MOD reversing relay alarm current. |
| **Alarm Contact Ratings** | 2-wire: n/a<br>4-wire: 0.5 A @ 30 V AC/DC |
| **Form C Contact Ratings** | 2 A @ 30 V AC/DC |
| **Physical Specifications** | |
| **Operating Temperature Range** | 32°F to 100°F (0°C to 37.8°C) |
| **Operating Humidity Range** | 0 to 95% RH non-condensing |
| **Thermal Sensor** | 135°F (57.2°C) fixed |
| **Freeze Trouble** | 41°F (5°C) |
| **Sensitivity** | 2.5%/ft. nominal |
| **Input Terminals** | 14–22 AWG |
| **Dimensions (including base)** | 5.3 inches (134 mm) diameter, 2.0 inches (51 mm) height |
| **Approximate Weight** | 7.1 oz (200 g) |
| **Sound Pressure Output** | 85 dBA (models 2WTA-B, 4WTA-B, 4WTAR-B, and 4WITAR-B only) |
| **Mounting** | 3½-inch octagonal back box, 4-inch octagonal back box, single-gang back box, 4-inch square back box with a plaster ring, direct mount to ceiling |

| LED Modes | | | | |
|---|---|---|---|---|
| **LED Mode** | **Green LED** | **Red LED** | **Condition** | **Duration** |
| **Power up** | Blink every 10 seconds | Blink every 10 seconds | Initial LED status indication | 80 seconds |
| **Normal (standby)** | Blink every 5 seconds | off | | |
| **Out of sensitivity** | off | Blink every 5 seconds | | |
| **Freeze trouble** | off | Blink every 10 seconds | | |
| **Alarm** | off | Solid | | |

| Power-Up Sequence for LED Indication | |
|---|---|
| **Condition** | Duration |
| **Initial LED status indication** | 80 seconds |

**Architect/Engineer Specifications**

Smoke detector shall be a System Sensor i³ Series model number_____, listed to Underwriters Laboratories UL 268 for Fire Protection Signaling Systems. The detector shall be a combination photoelectric/thermal equipped with a sounder (model 2WTA-B, 4WTA-B), a Form C relay (model 2WTR-B), a combination sounder/relay (model 4WTAR-B), or an isolated thermal/sounder/relay (model 4WITAR-B). The detector shall include a mounting base for mounting to 3½-inch and 4-inch octagonal, single-gang, and 4-inch square back boxes with a plaster ring, or direct mount to the ceiling using drywall anchors. Wiring connections shall be made by means of SEMS screws. The detector shall allow pre-wiring of the base and the head shall be a plug-in type. The detector shall have a nominal sensitivity of 2.5 percent per foot as measured in the UL smoke box. The detector shall be capable of automatically adjusting its sensitivity by means of drift compensation and smoothing algorithms. The detector shall provide dual-color LED indication that blinks to indicate power-up, normal standby, out of sensitivity, alarm, and freeze trouble conditions. When used in conjunction with the 2W-MOD2 module, 2-wire models shall include a maintenance signal to indicate the need for maintenance at the alarm control panel and shall provide a loop testing capability to verify the circuit without testing each detector individually. When used in conjunction with the RRS-MOD module, all i³ sounder models on a loop shall sound when one sounder alarms, all shall be synchronized, and all sounders may be silenced from the panel.

# Ordering Information

| Model | Thermal | Wiring | Alarm Current |
|---|---|---|---|
| 2WTA-B | Yes | 2-wire | 130 mA max. limited by control panel |
| 2WTR-B | Yes | 2-wire | 130 mA max. limited by control panel |
| 4WTA-B | Yes | 4-wire | 35 mA |
| 4WTR-B | Yes | 4-wire | 35 mA |
| 4WTAR-B | Yes | 4-wire | 50 mA |
| 4WITAR-B | Yes | 4-wire | 50 mA |

| Model | Description |
|---|---|
| RRS-MOD | Reversing relay/synchronization module |
| 2W-MOD2 | 2-wire loop test/maintenance module |
| SENS-RDR | Sensitivity reader |
| RT | Removal/replacement tool |
| A77-AB2 | Retrofit adapter bracket |

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