System Sensor®

400 Series Plug-in Smoke Detectors

System Sensor's 400 Series plug-in smoke detectors

meet the performance criteria designated by

Underwriters Laboratories.

Features

- Low standby current
- Two visible LEDs "blink" in standby and provide a 360° field viewing angle
- Wide variety of mounting bases with built-in shorting spring
- Detector head plugs easily into base
- Built-in test switch
- Field sensitivity metering of detector to meet the requirements of NFPA 72
- Built-in tamper resistant feature
- SEMS screws for easy wiring
- Optional recessed mounting
- Removable cover and insect screen for field cleaning

The ion unit has a sensing chamber that is sealed from back pressure air flow, dirt, and insects. This chamber is protected by a fine mesh screen which can be cleaned or replaced. Additional key features include a recessed mounting option, interchangeable ion, thermal detectors, a variety of mounting bases, and a full line of optional accessories.

Ionization. The 1451 ionization smoke detector includes a dual source, dual unipolar detector chamber designed to sense the presence of a broad range of smoke particles including those produced by fast combustion as well as slow smoldering fires. This chamber's increased stability significantly reduces nuisance alarms and provides better performance at higher air velocities.

Thermal. The Model 5451 thermal detector meets the needs for applications where rapid response is vital and in locations where rapid temperature increases would only be caused by a fire emergency.

This detector contains a unique dual thermistor heat sensing circuit that provides maximum performance and solid-state reliability. It initiates an alarm in response to both rapid rate-of-rise conditions (increases in excess of 15°F per minute) and fixed heat (135°F). This enables the heat detector to communicate an alarm to the central control panel prior to reaching its fixed set point for high rates of rise, providing a timely response to both rapid and slow temperature increases.

Agency Listings

UL LISTED	FM APPROVED		MEA approved	MSFM approved
1451:	S911	OQ1AO.AY	7271-1653:108	4271-91-EV.3	2185
5451:	S2101	OB3AO.AY	7270-1653:104	167-93-E	—

400 Series Plug-in Smoke Detector Specifications

Physical/Operating Specifications	
Size	3.2 in (8.1 cm) H; 4.0 in (10.2 cm) Dia., unflanged base; 6.2 in (15.7 cm) Dia., flanged base
Weight	1451: 0.5 lb (227 gm) 5451: 0.3 lb (136 gm)
Operating Temperature Range	1451: 32°F to 120°F (0°C to 49°C) 5451: 32°F to 100°F (0°C to 38°C)
Humidity Range	10% to 93% RH non-condensing
Air Velocity Rating	Ionization: 1200 fpm maximum
Construction	Flame retardant Noryl® plastic
Alarm Point, Thermal	135°F (57.2°C) or 15°F/min rate-of-rise
Sensitivity	1.9% ± 6%/ft Ion
Smoke Detector Spacing	For ion detectors on smooth ceilings (as defined in NFPA 72), spacing of 30 feet (900 sq ft) may be used as a guide. For thermal detectors on smooth ceilings (as defined in NFPA 72), spacing of 50 feet (2500 sq ft) may be used. Other spacing may be used depending on ceiling height, high air movements, and other conditions or response requirements.
Standby Current	Ion: 120 μA maximum Thermal: 100 μA maximum
Operating Voltage/Alarm Current	Mounting base dependent (see Mounting Base Selection Guide below)

Mounting Base Selection Guide						
Base Model Number	**Version**	**Loop Type**	**Current Limit Resistor**	**Alarm Contact Type**	**Nominal Voltage**	**Current Draw on Alarm (mA)**
B401B	UL/ULC	2-wire*	No	—	12/24 VDC††	10 to 100**
B401BR	UL/ULC	2-wire*	Yes	—	24 VDC	10 to 62
B402B	UL/ULC	4-wire	Yes	Form A&C	24 VDC	14 to 39
B404B	UL/ULC	4-wire	Yes	Form A&C+A Supervisory	120 VAC	75 mA AC Max.
B406B	UL/ULC/EN-54	2-wire*	No	Form C	24 VDC	12 to 100**
B401†	UL/EN-54	2-wire*	No	—	12/24 VDC††	10 to 100**
B401R†	EN-54	2-wire*	Yes	—	24 VDC	10 to 62

*Functionality contingent on panel compatibility.
**Must be limited by control panel.

Relay Contact Ratings:
Resistive or Inductive (60% power factor) load.
Form A: 2.0 A at 30 VAC/DC
Form C: 0.6 A at 110 VDC, 2.0 A at 30 VDC
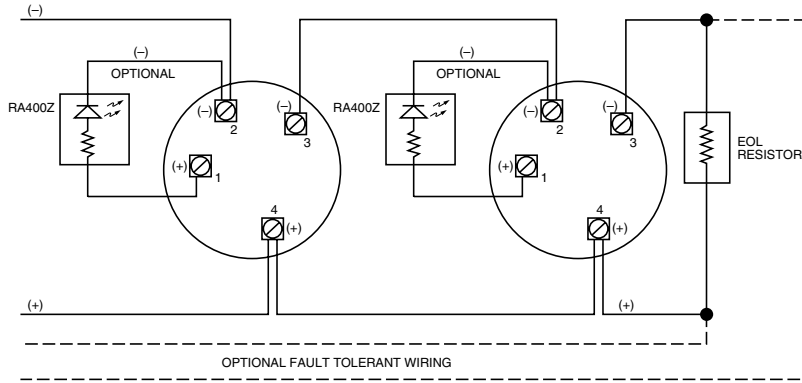   1.0 A at 125 VAC, 2.0 A at 30 VAC

† Flangeless base
†† Although B401B and B401 bases are capable of operating at 12 and 24 VDC, they cannot be used with the 5451 in 12 V applications.
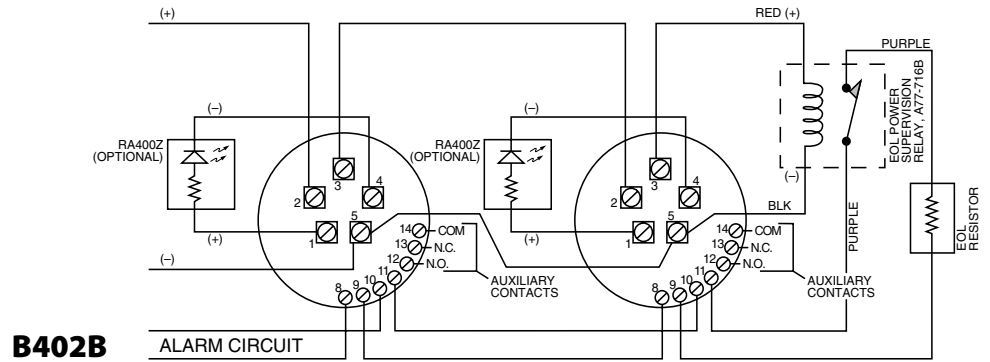
Junction Box Selection Guide*							
	Single Gang	**3.5" Octagon**	**4" Octagon**	**4" Square**	**50 mm**	**60 mm**	**75 mm**
B401/B401R	No	No	No	No	Yes	Yes	No
B401B/BR	Yes	Yes	Yes	Yes	No	No	No
B402B/B406B	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B404B	No	No	Yes	Yes	No	No	No

*Box depth contingent on base and wire size. Refer to National Electrical Code of local applicable codes for appropriate recommendations.
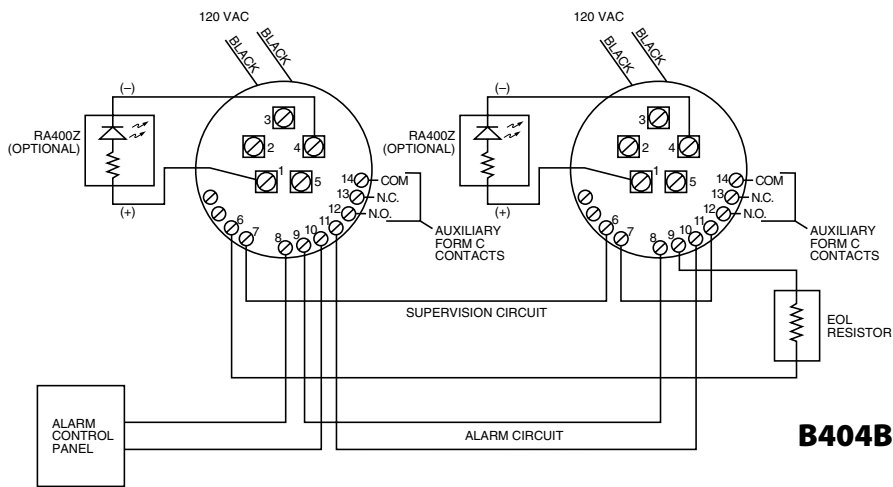
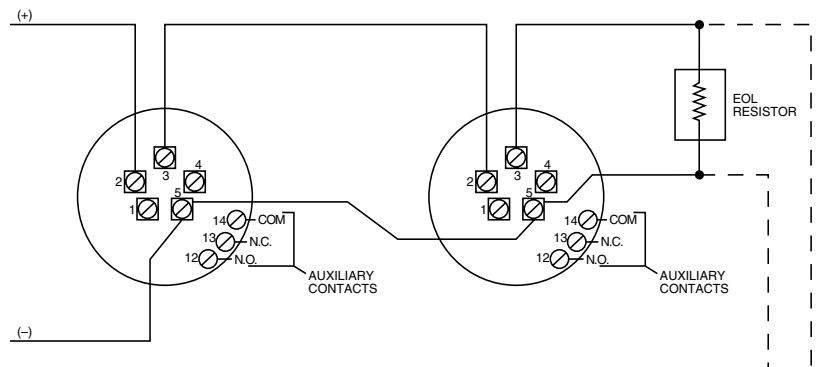A05-0205-006

Wiring

B401 Series

OPTIONAL FAULT TOLERANT WIRING

B402B

ALARM CIRCUIT

B404B

B406B

OPTIONAL NFPA CLASS "A" WIRING

A05-0205-006

Accessories

The MOD400R Field Sensitivity Test Module can be used with any standard DC voltmeter or multimeter to check the sensitivity range of System Sensor's detectors (satisfies NFPA 72 requirement for sensitivity testing).

System Sensor's Recessed Mounting Kit, RMK400, provides a simple installation solution where applications demand a lower profile smoke detector and reduces the depth of any 400 Series plug-in detector by almost an inch. A special metal mounting bracket secures the kit and the base to the junction box and ceiling panel. (For use with B401 and B401R bases only.)

Ordering Information

Part No.	Description
1451	Ionization detector. Must be mounted to one of the 400 Series bases listed in Mounting Base Guide.
1451A	Same as above, Canadian model
5451	Fixed heat detector with rate-of-rise. Alarm point at 57.2°C (135°F). Must be mounted to one of the 400 Series Bases listed in Mounting Base Guide.
Accessories	
RA400Z	Remote annunciator for 2- or 4-wire systems, 3 to 32 V. Use with ion and photo plug-in detectors. Fits standard U.S. single gang electrical box.
B401BH	Sounder base with B401. Requires an external 24 VDC power supply. Mounts to 4 in square electrical box (1½ in minimum depth).
MOD400R	Detector sensitivity test tool. (See above.) Use with most analog or digital multimeters. Satisfies requirement of NFPA 72 for sensitivity testing. (See above.)
RMK400	Recessed mounting kit for use with B401 or B401R mounting bases only. (See above.)
SMK400	Surface mounting kit provides for entry of surface wiring conduit. For use with B401 or B401R mounting bases only.
EOLR-1	End of line relay for power supervision, 12/24 VDC, 4-wire only.
RS14	Replacement insect screen for 1451.
DUST45	Replacement protective dust cover for plug-in 400 Series.
CRT400	Cover removal tool for 1451.
M02-04-01	Test magnet.
M02-09-00	Test magnet with 32 inch telescoping handle.
XR5	Detector removal tool. Allows installation and/or removal of ion and thermal detector heads from base in high ceiling installations.
XP-4	Extension pole for XR5. Comes in three 5 ft sections.

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