

400 Series™ Direct-Wire Photoelectronic Smoke Detector



A Division of Pittway
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<http://www.systemsensor.com>



Models Available

- 2400/2400A Photoelectronic**
- 2400TH Photoelectronic with Thermal**
- 2400AT Photoelectronic with Thermal and Horn**
- 2400AIT Photoelectronic with Isolated Thermal and Horn**
- 2412B/2412BA Photoelectronic**
- 2412THB Photoelectronic with Thermal**
- 2412AT Photoelectronic with Thermal and Horn**
- 2424 Photoelectronic**
- 2424TH Photoelectronic with Thermal**
- 2424AT Photoelectronic with Thermal and Horn**
- 2424AIT Photoelectronic with Isolated Thermal and Horn**

Features

- 12 or 24 volt operation
- Unique optical sensing chamber
- Removable cover and insect screen for easy cleaning
- Visible LED blinks in standby, latches on in alarm
- Sealed against dirt, insects, and back pressure
- Field sensitivity metering of detector to meet NFPA 72 requirements
- Twist-on mounting bracket with tamper option
- SEMS screws for easy wiring
- 3-year warranty
- Optional built-in 135°F (57°C) heat sensor
- Optional built-in 85 dBA horn

Specifications

Size: 3.2" (8.1 cm) h, 5.5" (13.9 cm) dia. with mounting bracket; add .5" (1.27 cm) to height for thermal

Shipping Weight: 0.5 lb. (227 g)

Operating Temperature Range:
Thermal Models: 32°F to 100°F (0°C to 38°C)
All Other Models: 32°F to 120°F (0°C to 49°C)

Operating Humidity Range: 10 – 93% RH noncondensing

Air Velocity Rating: 3000 fpm

Wiring Gauge: 12 – 18 AWG, twisted pair recommended

Mounting: 3 1/2" or 4" octagon box, 4" square box with plaster ring, 50, 60, 75 mm boxes

Sensitivity: 3.0% ± .7 ft. nominal

Test Features:

1. Test port – Insert 0.1 inch maximum diameter allen wrench or screwdriver into test port on detector housing.
2. Test card – After removing detector cover, insert calibrated test card into test slot on screen.
3. Test module – Using a standard voltmeter interface, insert MOD400R plug into detector's module port. Fulfills calibrated sensitivity test per NFPA 72.

Thermal Sensor Rating (thermal models only): 135°F fixed temperature restorable

Audible (AT/AIT models only): Piezoelectric horn, 85 dBA @ 10 ft.

Smoke Detector Spacing:
On smooth ceilings (as defined in NFPA 72), spacing of 30 feet (900 sq. ft.) may be used as a guide. Other spacing may be used depending on ceiling height, high air movements, and other conditions or response requirements.



General Description

System Sensor 400 Series photoelectronic detectors are specifically designed to meet the stringent performance requirements of industrial and commercial fire detection/ alarm systems. The design of these detectors emphasizes ease of installation and field maintenance.

The 400 Series offer 11 different photoelectronic detectors with a variety of voltages, wiring configurations, thermal options, and piezo horns.

Electrical Specifications

Model	Product	Control Panel	Operating Voltage	Auxiliary Contacts	Remote LED Option	Current Consumption	
						Standby (max.)	Alarm (max.)
2400	Photo Detector	2-wire	12/24 VDC	No	Yes	120 μ A	*
2400TH	Photo Detector w/Fixed Heat Sensor	2-wire	12/24VDC	No	Yes	120 μ A	*
2400AT	Photo Detector w/Fixed Heat Sensor & Horn	2-wire	24 VDC	No	Yes	120 μ A	67mA
2400AIT	Photo Detector w/Isolated Heat Sensor & Horn	2-wire	24 VDC	No	Yes	120 μ A	67mA
2412B	Photo Detector	4-wire	12 VDC	Yes	No	120 μ A	77mA
2412THB	Photo Detector w/Fixed Heat Sensor	4-wire	12 VDC	Yes	No	120 μ A	77mA
2412AT	Photo Detector w/Fixed Heat Sensor & Horn	4-wire	12 VDC	No	Yes	120 μ A	51mA
2424	Photo Detector	4-wire	24 VDC	Yes	No	120 μ A	41mA
2424TH	Photo Detector w/Fixed Heat Sensor	4-wire	24 VDC	Yes	No	120 μ A	41mA
2424AT	Photo Detector w/Fixed Heat Sensor & Horn	4-wire	24 VDC	No	Yes	120 μ A	43mA
2424AIT	Photo Detector w/Isolated Heat Sensor & Horn	4-wire	24 VDC	No	Yes	120 μ A	43mA

* Must be limited by control panel

Relay Contact Ratings: Resistive or inductive
(60% power factor) load

Alarm Contacts

Form A: 2.0A @ 30 VAC/DC

Form C: 2.0A @ 30 VAC/DC

0.6A @ 110 VDC, 1.0A @ 125 VAC

Reset Time: .3 sec. (max.)

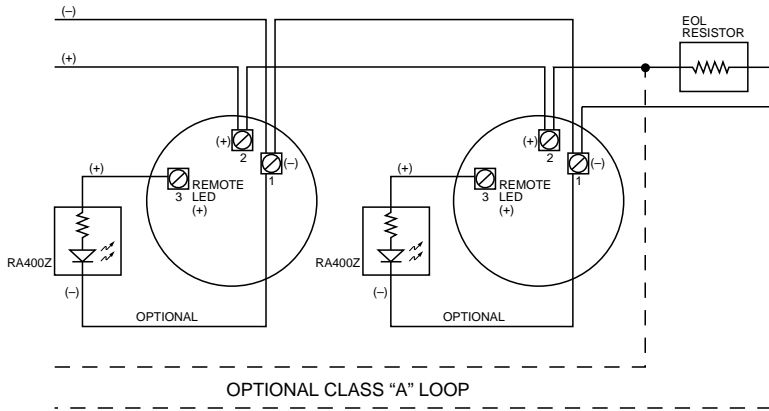
Startup Time: 34 sec. (max.)

Engineering Specifications

Smoke Detector shall be a photoelectronic type (model 2400, 2412, 2424) or a combination photoelectronic/ thermal (model 2400TH, 2412TH, 2424TH) with thermal sensor rated at 135° F as manufactured by System Sensor. Wiring connections shall be made by means of SEMS screws. The detector will have a visible LED which will blink in standby and latch on in alarm. The detector shall have a nominal sensitivity of 3% per foot as measured in the UL smoke box. The detector screen and cover should

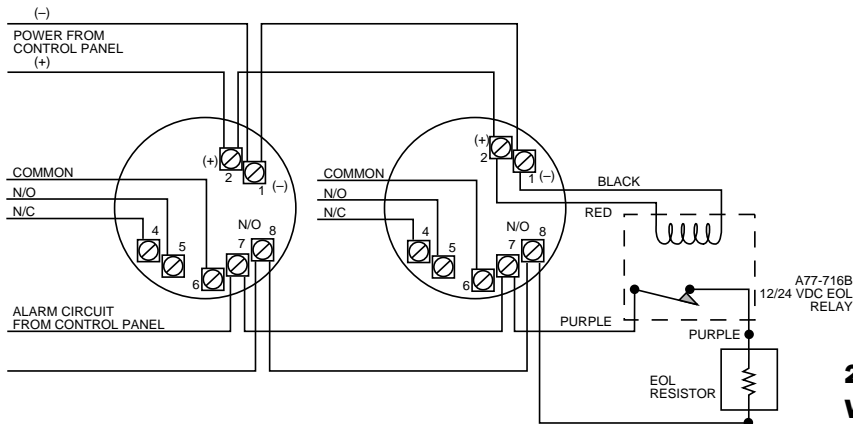
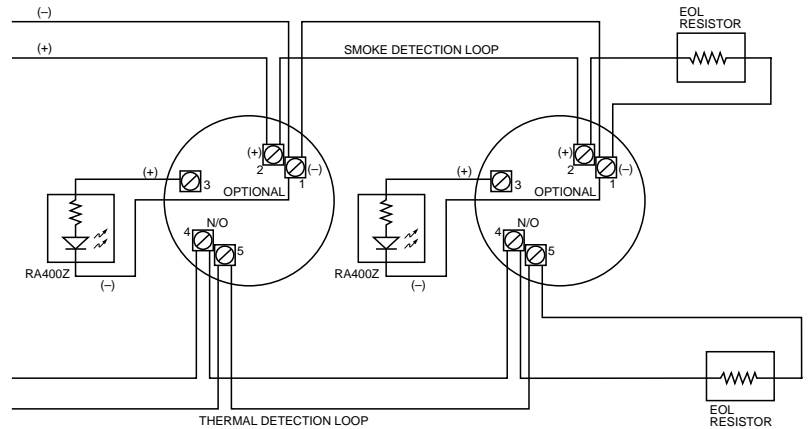
be easily removable for cleaning. It shall be possible to perform a sensitivity and functional test without the need of generating smoke. Detector circuitry shall perform a self test on the sensing chamber and internal electronics every 40 seconds. If circuitry fails, the detector LED shall stop blinking. The detector shall have a mounting bracket that allows for mounting to a 3¹/₂" or 4" octagon box or 4" square electrical box.

400 Series Wiring Guide



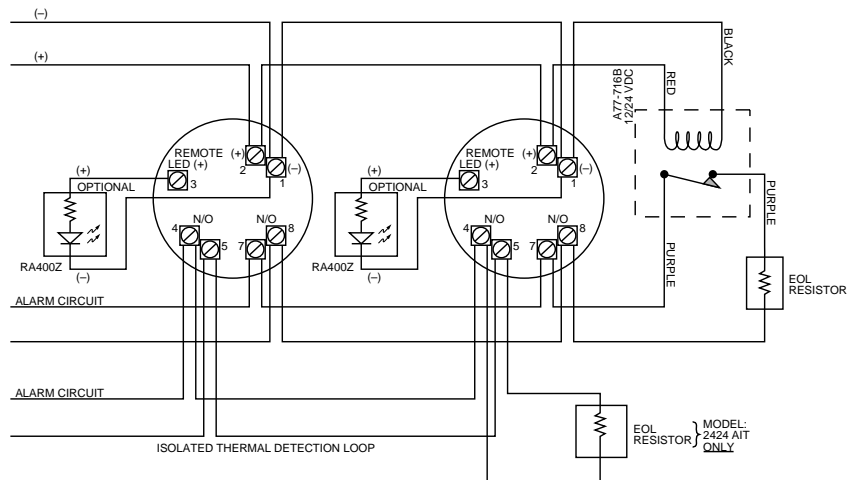
**2400/2400TH/2400AT
Wiring Diagram**

**2400AIT
Wiring Diagram**



**2412B/THB, 2424/TH
Wiring Diagram**

**2412AT, 2424AT, 2424AIT
Wiring Diagram**



Ordering Information

Part No. Description

Two-Wire Models

2400	Photoelectronic detector, 2-wire, 12/24 VDC
2400A	Same as above, Canadian model
2400TH	Photoelectronic detector, 2-wire, 12/24 VDC with built-in 135° F fixed heat sensor
2400AT	Photoelectronic detector, 2-wire, 24 VDC with integral 135° F fixed heat sensor and 85dBA horn
2400AIT	Photoelectronic detector, 2-wire, 24 VDC with isolated 135° F fixed heat sensor and 85dBA horn

Four-Wire Models

2412B	Photoelectronic detector, 4-wire, 12 VDC, with auxiliary contacts
2412BA	Same as above, Canadian model
2412THB	Photoelectronic detector, 4-wire, 12 VDC, with auxiliary contacts and integral 135° F fixed heat sensor
2412AT	Photoelectronic detector, 4-wire, 12 VDC, with integral 135° F fixed heat sensor and 85dBA horn
2424	Photoelectronic detector, 4-wire, 24 VDC, with auxiliary contacts

2424TH	Photoelectronic detector, 4-wire, 24 VDC, with auxiliary contacts and integral 135° F fixed heat sensor
2424AT	Photoelectronic detector, 4-wire, 24 VDC, with integral 135° F fixed heat sensor and 85dBA horn
2424AIT	Photoelectronic detector, 4-wire, 24 VDC, with isolated 135° F fixed heat sensor and 85dBA horn

Accessories

A77-716B	End of line relay for power supervision, 12/24 VDC
RA400Z	Remote annunciator for 2 or 4 wire systems, 3-32V – Use with ion and photo detectors. Fits standard U.S. single gang electrical box. (See below.)
MOD400R	Detector sensitivity test module – Use with most analog or digital multimeters. Satisfies requirement of NFPA 72 for sensitivity testing. (See below.)
RS24	Replacement insect screen for 2400, 2412B, 2424
RS24T	Replacement insect screen for 2400TH/AT/AIT, 2412THB/AT and 2424TH/AT/AIT
DUST45	Replacement protective dust cover for 400 Series



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).

*RA400Z Remote Annunciator, 3 – 32V
Use with ion and photo detectors that have remote annunciator output*



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