400 Series™ Direct-Wire Photoelectronic Smoke Detector

SYSTEM SENSOR®
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Models Available

2400/2400A Photoelectronic
2400TH Photoelectronic with Thermal
2412B/2412BA Photoelectronic
2412THB Photoelectronic with Thermal
2424 Photoelectronic
2424TH Photoelectronic with Thermal

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

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

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.

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

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This document is not intended to be used for installation purposes.

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 6 different photoelectronic detectors with a variety of voltages, wiring configurations, and thermal options.

Electrical Specifications

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

* 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

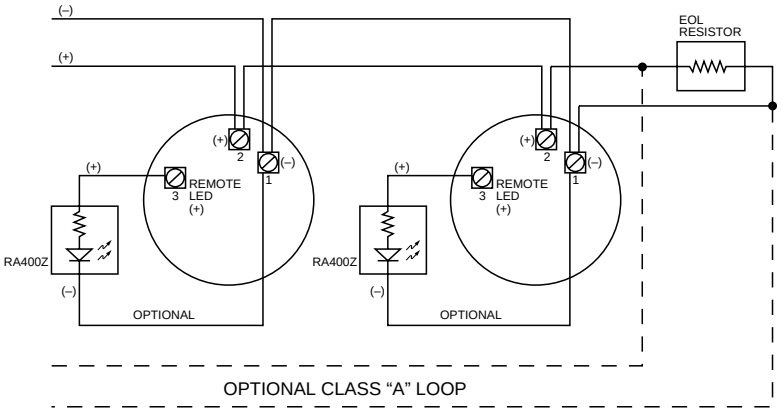
Reset Time: .3 sec. (max.)

Startup Time: 34 sec. (max.)

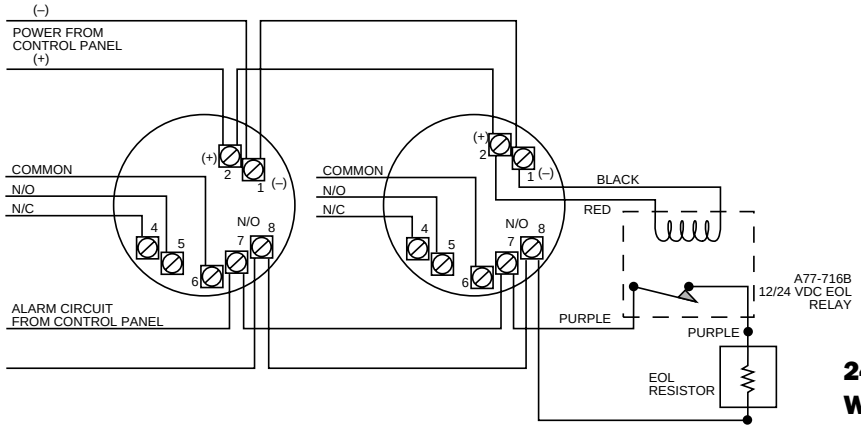
Engineering Specifications

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 $3^1/_2$″ or 4″ octagon box or 4″ square electrical box.

400 Series Wiring Guide



2400/2400TH
Wiring Diagram



2412B/THB, 2424/TH
Wiring Diagram

Ordering Information

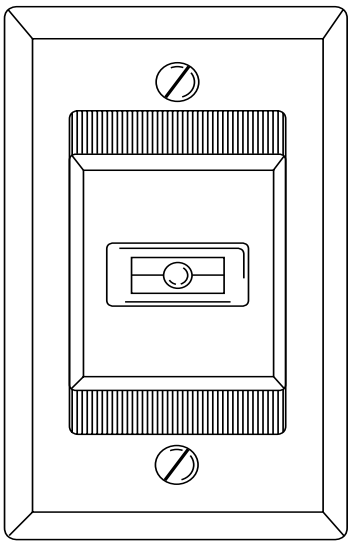
Part No.	Description
Two-Wire Models	
2400	Photoelectronic detector, 2-wire, 12/24 VDC
2400A	Same as above, Canadian model
2400TH	Photoelectronic detector, 2-wire, 12/24 VDC with built-in 135°F fixed heat sensor
Four-Wire Models	
2412B	Photoelectronic detector, 4-wire, 12 VDC, with auxiliary contacts
2412BA	Same as above, Canadian model
2412THB	Photoelectronic detector, 4-wire, 12 VDC, with auxiliary contacts and integral 135°F fixed heat sensor
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

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, 2412THB and 2424TH
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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