FAP-440 Dual Ray Detectors

www.boschsecurity.com

BOSCH
Invented for life

- ▶ Dual Ray Technology provides better particle size differentiation resulting in fewer false alarms
- ▶ Smoke threshold is adjustable and automatically compensated
- ▶ Rotary switch addressing
- ▶ Flexible work modes determined by the control panel
- ▶ Selectable base locking mechanism prevents malicious removal of the detector

The FAP-440 Dual Ray Detectors are open-area smoke detectors of which some models are enhanced with heat or heat and CO sensors. The detectors work with the FPA-1000 Analog Addressable Fire Panels. Use the detectors with the FAA-440 bases to provide general life safety and property protection.

Functions

Address Range
The FAP-440 Dual Ray Detectors have a valid address range from 1 to 254. Set the address using rotary switches on the back of the detector.

Indicator LED
The detector head has a multi-color LED to indicate status. To verify detector power and analog addressable loop communication, the LED indicator flashes green when operating normally (polling). Through panel parameter setting, it is possible to turn on or off operation of the polling indicator. In the event of an alarm condition, the detector LED always shows a steady red light. Independent from the actual number of activated device LEDs and remote indicator LEDs, the number of activated LEDs is limited to five (called the rolling alarm function).

Modular Construction
The FAP-440 Dual Ray Detectors are part of a two-piece modular design for detector assemblies. An FAP-440 Dual Ray Detector attaches to an FAA-440 Series Analog Base. The base's security locking tab prevents any unauthorized detector removal from the base.

Advanced technology for false alarm reduction
Dual ray technology: The detector contains two emitters operating at different wavelengths. The different wavelengths enable better differentiation of particle sizes to distinguish smoke particles from other particles that may be present. This results in fewer false alarms due to dust, water vapor, or cigarette smoke.
Multi-sensor detector: The multi-sensor detector contains a photoelectric smoke sensor and a heat sensor. Either sensor can detect a fire and activate an alarm signal. The smoke threshold is adjustable (see Sensitivity Calibration and Compensation below). The heat sensor's threshold is set at 135°F.
Multi-criteria detector: The multi-criteria detector contains smoke and heat sensors that work independently of each other, but in conjunction with

the CO sensor. In this model, either one or both of the sensors activate an alarm signal only if the CO level is also exceeded.

ℹ Notice

Carbon monoxide sensors:

Detectors that contain carbon monoxide (CO) sensors must not be used as stand-alone CO detectors. The CO sensor is supplied to confirm the presence of CO as a by-product of combustion thereby reducing false alarms, but not to confirm the presence of CO as a hazardous gas.

Programming
Local programming is carried out at the panel keypad or by computer through a Web browser. Remote programming is carried out through a Web browser.

Sensitivity Calibration and Compensation
The sensitivity of the smoke sensor is programmable with 12 levels from which to choose. Throughout the normal life cycle, the smoke detector monitors itself against its factory calibrated level and periodically compensates itself to keep the sensitivity at the programmed level. When the detector is excessively contaminated, this condition is annunciated at the control panel.

Certifications and approvals

Region	Regulatory compliance/quality marks	
USA	UL	UROX Smoke-automatic Fire Detectors (ANSI/UL 268)
	CSFM	see the Bosch website (www.boschsecurity.com)

Installation/configuration notes

Compatible Products
The following products are compatible with the FAP-440 Dual Ray Detectors:

Category	Product ID	Product Description
Fire Panels	FPA-1000 Family	Analog Addressable Fire Panels
Fire Panel Accessories	FPE-1000-SLC	Signaling Line Circuit Plug-in Module
Detector Bases	FAA-440-B4	4-inch Analog Standard Base
	FAA-440-B6	6-inch Analog Standard Base
	FAA-440-B4-ISO	4-inch Analog Isolator Base
	FAA-440-B6-ISO	6-inch Analog Isolator Base

Mounting Considerations
Detectors are typically mounted on the ceiling. When wall-mounted, detectors must be ≥4 in. (10.2 cm) but ≤12 in. from the ceiling. To prevent unwanted activation of the test switch, the base must be at least 1 ft. (30 cm) from devices containing magnets or producing magnetic fields (for example, loudspeakers).
For UL Listing requirements, the spacing between smoke detectors should be no more than 30 ft. (9.14 m).

Wiring Considerations
The control panel communicates to the detectors via the SLC loop allowing standard non-twisted, non-shielded wiring for the SLCs.
The following wire gauges were tested and approved:

Wire Gauge	Maximum length
18 AWG (ISO 0.75 mm^2)	4000 ft. (1200 m)
16 AWG (ISO 1.5 mm^2)	6225 ft. (1900 m)
14 AWG (ISO 2.5 mm^2)	7200 ft. (2200 m)
12 AWG (ISO 4 mm^2)	9850 f.t (3000 m)

Remote Indicator
If a remote indicator is used in the circuit, it must be no more than 10 ft. (3 m) from the base.

Technical specifications

Electrical

Maximum current consumption (at 77°F (25°C) 39 V bus voltage) Standby Alarm When polled	0.17 mA 0.17 mA (5 mA with LED on) 22 mA ± 20%
Operating voltage (SLC loop)	24 V DC to 41 V DC
Maximum allowable line resistance	50 Ω

Environmental

Protection category	IP 42
Relative Humidity	< 95% (non-condensing)
Installation temperature	+32°F to +100°F (0°C to +38°C)
Storage temperatures With CO sensor Without CO sensor	+14°F to +122°F (-10°C to +50°C) -13°F to +176°F (-25°C to +80°C)

Mechanical

Dimensions (Ø x D)	4.4 in. x 2.0 in. (11.2 cm x 5.1 cm)
Housing Material	CYCOLOY/ABS

Sensor

Airflow	4000 ft./min (20 m/s) maximum
Sensitivities Smoke sensor Heat sensor	1.25%/ft. to 3.5%/ft. (4.1%/m to 11.48%/m) +135℉ (+57℃) + RoR

Trademarks

All hardware/software product names used in this document are likely to be registered trademarks and must be treated accordingly.

Ordering information

FAP-440-D Analog dual-photoelectric detector head
Analog dual-photoelectric smoke detector used with FAA-440 bases and FAP-1000 fire panels
Order number **FAP-440-D**

FAP-440-DT Analog detector head, dual, photo/heat
Analog dual-photoelectric smoke/heat multi-sensor detector used with FAA-440 bases and FAP-1000 fire panels
Order number **FAP-440-DT**

FAP-440-DTC Analog detector head, dual, heat/CO
Analog dual-photoelectric smoke/heat multi-criteria detector used with FAA-440 bases and FAP-1000 fire panels
Order number **FAP-440-DTC**