FEATURES:

- Rejection of transient signals
- Dual status LED
- Five sensitivity 'mode" settings
- Drift Compensation
- Alarm Flag for fast alarm reporting
- 360 deg visibility
- Conventional alarm default
- Easy Installation and Operation
- Internal non-volatile memory
- Remote test
- Remote LED
- Digital Communications
- Multiple base configurations

EFD-PH

Addressable Photoelectric Smoke Detector

Evax Fire Photoelectric smoke detector

SMOKE OPERATING PRINCIPLES

The Evax Fire Discovery smoke detector has a molded white polycarbonate case with wind-resistant smoke inlets and is distinguished by the indicator LEDs which are clear when the detector is in quiescent state and red in alarm. Within the case is a printed circuit board which, on one side, has the light-proof chamber with integral gauze surrounding the optical measuring system and, on the other, the signal processing and communications electronics. An infra-red light emitting diode within its collimator is arranged at an obtuse angle to the photo-diode.

The photo-diode has an integral daylight-blocking filter. The IR LED emits a burst of collimated light every second. In clear air the photo-diode receives no light directly from the IR LED, because of the angular arrangement and the chamber baffles. When smoke enters the chamber it scatters light from the emitter IR LED onto the photo-diode in an amount related to the smoke characteristics and density. The photo-diode signal is processed to provide an analogue value for transmission when the detector is interrogated.

The Evax Fire Discovery optical smoke detector is suitable for slow burning or smoldering fires and should be positioned where these are most likely to occur. They can be set to a sensitivity mode best suited for the application

Sensitivity Selection

Each detector in the Evax Fire Discovery range can operate in one of five response modes, which can be selected from the control panel. Mode selection depends on application Mode 1 will give a higher sensitivity to fire than Mode 5. The selection of the most suitable mode depends on the application.

User bytes and other stored data

All Evax Fire Discovery devices contain non-volatile memory, in the form of Electrically Erasable Programmable Read Only Memory (EEPROM), which is included primarily to store data needed for the correct operation of the device. However, four bytes of this EEPROM are available to the user and can be accessed by the control panel through the protocol. This block of non-volatile memory can be used, for example, to store the installation date, the site code or date of last service.

Conventional alarm facility

Evax Fire Discovery devices should be polled at regular intervals to maintain communication with the control panel and therefore enable correct monitoring of the protected premises.
However, if the polling mechanism fails, for example because of a processor failure in the panel, the internal operation of the Evax Fire Discovery device will be unaffected as long as a DC supply is maintained. After 108± 4 seconds without protocol, the device will automatically switch to its conventional alarm mode. In this mode it will operate as if it were a conventional detector and will impose an alarm signal on the loop if an alarm condition is detected by the internal processing.

The alarm signal takes the form of periodic current pulses, which can be detected by simple hardware in the control panel.

Flashing LED

All Evax Fire Discovery detectors have two integral LED indicators, which can be illuminated at any time by the control panel to indicate devices in alarm. When activated, the LEDs will draw an extra 3mA from the loop. In addition to this mode of operation LEDs will flash each time the device is polled. The device does not draw extra current in this mode since the LED current is part of the normal current pulse reply from the device. It is possible to disable the flashing LED mode by writing to one of the memory locations.

Mode	Alarm Threshold %/m	Minimum time to alarm (seconds)
1	1.4	5
2	1.4	30
3	2.1	5
4	2.1	30
5	2.8	5

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Remote test feature

This feature, available on all Evax Fire Discovery detectors is enabled from the CIE by changing the state of a forward command bit. On receipt of the command the detector is forced by electrical means into an alarm condition. After a delay of approximately 10 seconds due to signal processing, an analogue value of between 54 and 120 nominally 85 is returned, provided that the detector is functioning correctly. This value is sustained until the forward command bit is changed back to its original state, after which a period of 40 seconds is required for the detector to return to its normal analogue value.

Rejection of transient signals

All Evax Fire Discovery detector algorithms are designed to give low sensitivity to very rapid changes in the sensor output, since these are unlikely to be caused by real fire conditions. This is achieved by digital low-pass filtering of the sensor values which optimizes the rejection of false alarm sources while maintaining the response to fire.

Servicing Note

The “minimum time to alarm” referred to above is important when detectors are tested in place, for example using aerosol test gas. A delay in response may be apparent.

Engineering Specification

The photoelectric smoke detector shall be capable of several mounting base operation options and be capable of 5 different modes of operation; each mode shall adjust the alarm threshold as well as the response time is seconds. The detector shall include automatic drift compensation and shall be mechanically addressed; detector shall permit change of detector without rewiring or re addressing. The base shall have a permanently addressable card with the address clearly visible. The detector shall contain integral LED that will latch in when the unit goes into alarm. RF suppression techniques shall be employed to minimize false alarms. Detector shall be capable of electronic storage of non-volatile memory. The detector shall have automatic conventional false alarm mode if the detectors polling mechanism should fail. The detector shall transmit using digital protocol and shall be Evax part number EFD-PH where indicated on plans.

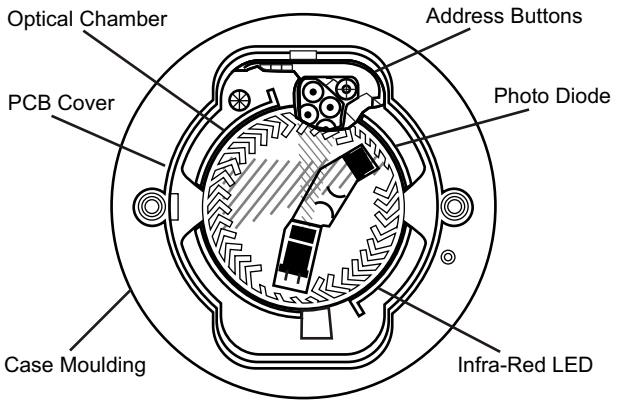
How to Order:

EFD-PH	**55000-650** Photo addressable Smoke Head
EFX-B4	**45681-210** 4” mounting base w/Xpert card
EFX-B4I	**45681-211** 4” Isolator mounting base
EFX-B4ISO	**45681-321** 4” base w built in isolator & Xpert card
EFX-B6LP	**45681-234** 6” low profile base w/Xpert card
EFX-B6R	**MB-RLYT-AA** 6” low profile base w/relay, Xpert card
EFX-B6SND	**MB-SDRT-AA** 6” low profile base w/ sounder, Xpert card
EFX-B6EZ	**45681-250** 6” E-Z fit mounting base w/ Xpert card
EFX-ISOH	**55000-750** Isolator head only use w/EFX-B4I
EFX-XPERT	**45682-127** Pre-programmed Xpert address cards 1-126
EFX-BLNKX	**38531-771** Blank Xpert programming cards (per 12)

TECHNICAL DATA

Evax Fire Discovery Optical Smoke Detector
Specifications are typical at 24V, 23°C and 50% relative humidity unless otherwise stated.

Detection principle: Photo-electric detection of light scattered in a forward direction by smoke particles
Chamber configuration:
Horizontal optical bench housing infra-red emitter and sensor, arranged radically to detect forward scattered light
Sensor: Silicon PIN photo-diode
Emitter: GaAlAs infra-red light emitting diode
Sampling frequency: 1 per second
Supply wiring: Two-wire supply, polarity insensitive
Terminal functions: L1 & L2 supply in and out connections
+R remote indicator positive connection (internal 2.2k resistance to positive)
R remote indicator negative connection (internal 2.2k resistance to negative)
Operating voltage: 1728V DC
Communication protocol: Evax Fire Discovery 59V peak to peak
Quiescent current: 400µA average 650µA peak
Power-up surge current: 1mA
Maximum power-up time: 10s
Alarm current, LED illuminated: 3.4mA
Remote output characteristics: Connects to positive line through 4.5 (5mA maximum)
Clean-air analogue value: 23 +4/0
Alarm level analogue value: 55
Alarm indicator: 2 colorless Light Emitting Diodes (LEDs); illuminating red in alarm, Optional remote LED
Temperature range: Max. continuous operating +140°F (+60°C) Min. continuous operating 32°F (0°C) Min. operating -4°F (20°C) (no condensation/icing) Storage -22°F to +176°F (30°C to +80°C)
Humidity: 0 to 95% relative humidity (no condensation)
Effect of temperature: Less than 15% change in sensitivity over rated range.
Note: slow changes in ambient conditions will automatically be compensated and will not affect sensitivity
Effect of atmospheric pressure: None
Effect of wind: None
Dimensions: 3.93” (100mm) diameter; 1.65” (42mm) height, 1.96” (50mm) (height in base)
Weight: Detector 3.68 oz (105g) Detector in base 5.62oz (160g)
Materials: Housing: White polycarbonate V0 rated to UL94
Terminals: Nickel plated stainless steel



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