VF5603-00

Discovery Multisensor Sensor

Standard Features

- Compatible with Elite and Elite RS control panels
- 5 operating modes
- Combines photo, smoke, and thermal sensor value for enhanced detection performance and false alarm reduction
- Address is set by X-Pert addressing and is stored in the sensor base
- Rate of rise heat signals
- Drift compensation
- Polarity insensitive
- Fits 4", 6", or 6" low profile bases
- 6" audible base
- 4" relay base

Note:

Bases and cards are not included with Sensors, please order separately.

Overview

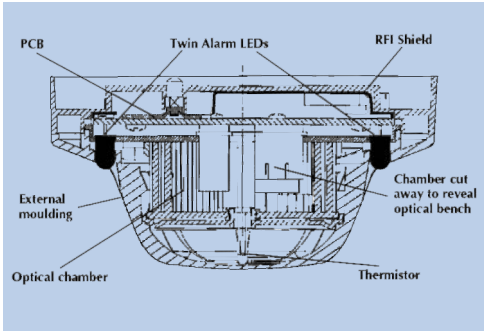
The VF5603 Discovery Multisensor Sensor contains a photo smoke sensor and a thermistor temperature sensor whose outputs are combined to give the final analog value. The way in which the signals from the two sensor are combined depends on the response mode selected. The five modes provide response behavior which incorporated pure heat detection, pure smoke detection, and a combination of both. The multisensor is therefore useful over the widest range of applications. The outer smoke chamber has inlet apertures fitted with insect resistant mesh.

The Multisensor construction is similar to that of the Photo Sensor but uses a different lid and optical moldings to accommodate the thermistor temperature sensor. The sectional view shows the arrangement of the optical chamber and the thermistor.

Operation

The signals form the optical smoke sensing element and the temperature sensor are independent, and represent the smoke level and the air temperature respectively in the vicinity of the detector. The Sensor's micro-controller processes the two signals according to the mode selected. When the sensor is operating as a multisensor (i.e. Modes 1, 3, and 4) the temperature signal processing extracts only rate-of-rise information for combination with the optical signal.

In these modes the Sensors will not respond to a slow temperature increase- even if the temperature reaches a high level. A large sudden change in temperature can, however, cause an alarm without the presence of smoke, if sustained for 20 seconds. The process algorithms in modes 1 to 4 incorporate drift compensation.



Sectional view - Multisensor Sensor

VES Fire Detection Systems,
620 Allendale Road, King of Prussia, PA. 19406
Tel (US): 800.270.3066 (Toll free) **Tel (non US):** (001) 610.992.3378
Fax: 610.992.3380
E-mail: info@ves-network.com
Web: www.ves-network.com

Modes

The characteristics of the five response modes are summarized below.

Mode 1 has a very high smoke sensitivity combined with high temperature sensitivity. This gives a high overall sensitivity to both smoldering and flaming fires.

Mode 2 has smoke sensitivity similar to that of a normal Photoelectric Sensor, but has no response to temperature. This mode is therefore equivalent to a standard Photo Sensor. This mode is suitable for applications in which wide temperature changes occur under normal conditions.

Mode 3 has moderate smoke sensitivity combined with moderate sensitivity to heat. This combination is considered the optimum for most general applications since it offers good response to both smoldering and flaming fires.

Mode 4 has lower than normal smoke sensitivity combined with high heat sensitivity. This makes it suitable for applications in which a certain amount of fumes or smoke is considered normal.

Mode 5 has no smoke sensitivity at all, but give a pure Heat Sensor response. In this mode the Sensor will respond to slowly changing temperature and has a "fixed temperature" alarm threshold at 135°F. The analog value in this mode will give the approximate air temperature over the range of 59°F to 131°F. In Mode 5, the smoke sensor is still active though it does not contribute to the analog signal. As a consequence, if the detector is used in a dirty or smoky environment the optical sensor drift flag may be activated in the heat-only mode.

Engineering Specification

The photo/heat multisensor Sensor shall be VF5603, where indicated on the plans, with one of the several addressable mounting base options available. The combination sensor head and twist-lock mounting base shall be UL Listed and UL Listed as compatible with the Elite addressable fire alarm control panels. The photo/heat multisensor Sensor shell have 5 programmable sensitivity modes. The base shall permit free interchange of sensor heads without requiring any additional wring or additional programming of the head or base. The smoke sensor shall contain an integral LED that shall latch in then the unit goes Into alarm.

Note: *In testing of the multisensor sensor should be carried out as for smoke sensor in response modes 1-4, and for heat detection in response mode 5.*

Design Note: *If the multi-sensor is to be used in mode 5, heat sensor spacing/coverage should be applied.*

Technical Specifications

Stand current: 500µA
Alarm current: 3.5mA
Operating voltage: 17-28 VDC
Max. continuous operating temp: 140°F
Min. continuous operating temp: 32°F
Min. Operating temp: -4°F (no condensation/icing)
Storage: -22°F to 176°F
Detector weight: 3.68 oz
Detector with base weight: 5.62 oz
Dimensions: Diameter: 3.93", Height: 1.65", Height in base: 1.96"

Ordering Codes

Part number	Description
VF5603-00	Multisensor Sensor
VF5630-00	4" Mounting Base
VF5632-00	6" Low Profile Relay Base
VF5633-00	Isolator Base
VF5636-00	6" E-Z Fit Low Profile Base
VF5631-00	6" Sounder Base
VF5640-00	Blank XPERT Cards
VF5641-00	Pre-addressed XPERT Cards

Mode	Pre-Alarm (%/fT)	Alarm (%/fT)	Heat Classification	20 Second Alarm Delay
1	0.9	1.3	140° ROR	Yes
2	1.3	1.9	140° ROR	Yes
3	1.7	2.6	140° ROR	Yes
4	2.2	3.3	140° ROR	Yes
5	No Response	No Response	135° FT & ROR	No

Multisensor Sensor operating modes

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