

Discovery Ionization Smoke Sensor: VF5600-0M SLC Devices



USCG Type Approved
161.002/A53/0



Standard Features

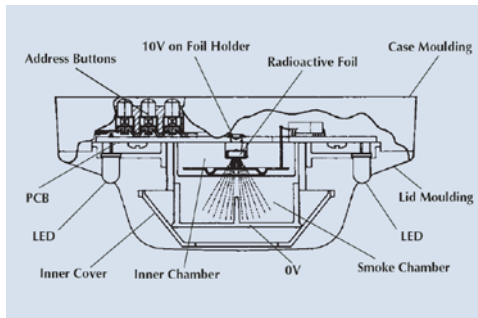
- Compatible with Elite and Elite RS-M control panels
- 5 operating modes
- Drift compensation
- Address is set by X-Pert card and is stored in base
- User memory
- Alarm flag for fast alarm reporting
- Conventional false safe mode
- Polarity insensitive
- Fits 4" & 6" low profile base
- 6" audible base
- 4" wire relay base

Overview

The VF5600-0M Discovery Ionization Smoke Detector has a molded white polycarbonate case with wind resistant smoke inlets. Inside the case is a printed circuit board which has the ionization chamber mounted on one side and the signal processing and communications electronics on the other. The ionization chamber consists of a reference chamber contained inside a smoke chamber. The outer smoke chamber has inlet apertures fitted with insect resistant mesh.

Operation

The radioactive source holder and the smoke chamber form positive and negative electrodes respectively. An Americium 241 radioactive source mounted within the reference chamber irradiates the air in both chambers, producing positive and negative ions. A voltage across the electrodes produces an electric field. Ions are attracted to the Electrode of the opposite sign to their own charge; many recombine but a small electric current flows between the electrodes. At the junction between reference and smoke chambers, the sensing electrode converts variations in chamber current into voltage hanges. When smoke particles enter the ionization chamber, ions become attached to them with the result that the current flowing through the chamber decreases. This effect is greater in the smoke chamber than in the reference chamber, and the imbalance causes the sensing electrode to become more positive. The analog voltage at the sensor electrode is converted to a digital format which is processed to provide on analog value or transmission to the control panel when the device is polled.



Sectional View - Ionization Smoke Detector

Note:

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

Mode	Pre-Alarm (%/ft)	Alarm (%/ft)	30 Second Alarm Delay
1	0.5	0.7	No
2	0.5	0.7	Yes
3	0.7	1.0	No
4	0.7	1.0	Yes
5	1.0	1.5	No

Ionization Detector Operating Modes

Operation - continued

The VF5600-0M Discovery Ionization Detector, like all Ionization detectors, has some sensitivity to air movement (wind). The extent to which the analog value will change depends on the wind speed and on the orientation of the detector relative to the wind direction. Relatively small changes in wind direction can cause significant changes in analog value. For wind speeds up to 200 ft/min the change in analog value will not exceed 5 counts. Continuous operation in wind speeds greater than 400 ft/min is not however recommended. It will not under any conditions increase the probability of false alarms. Ionization smoke detectors are supplied in individual packing with a red lid serving as a dust cover which can be left in place after fitting to prevent ingress of foreign material until commissioning of the system takes place. At this point, the covers must be removed.

Engineering Specification

The Ionization smoke sensor shall be VF5600-0M, where indicated on the plans, with one of the several addressable mounting base options available. The ionization smoke detector shall include compensation for sensor drift as part of the internal signal-processing algorithm. The ionization 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 base shall permit free interchange of sensor heads without requiring any additional wiring or additional programming of the head or base. The smoke sensor shall contain an integral LED that shall latch in when the unit goes into alarm. RF suppression techniques shall be employed to minimize false alarms. The ionization smoke sensor shall have automatic conventional false safe mode if the detectors polling mechanism fails.

Technical Specifications

Stand current: 500µA

Alarm current: LED Illuminated 3.4mA

Radioactive isotope: Americium 241

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
VF5600-0M	Ionization Smoke Detector
VF5630-0M	4" Mounting Base
VF5633-0M	Isolator Base