

VF5691-00

Series 65A Photoelectric

Smoke Detector



Standard Features

- Responds well to slow-burning, smouldering fires
- Well suited for bedrooms and escape routes
- Unaffected by wind or atmospheric pressure
- Wide operating voltage
- Flashing LED option
- Flashing LED and magnet operated test switch option

Operation

The Series 65A Photoelectric Smoke Detector has a moulded self-extinguishing white polycarbonate case with wind resistant smoke inlets. Nickel plated stainless steel wiper contacts connect the detector to the base. Inside the case a printed circuit board has the optical system mounted on one side and the signal processing electronics on the other. The sensing chamber is a black moulding configured as a labyrinth which prevents penetration of ambient light.

The labyrinth has a fine gauze Top section, Series 65A Photoelectric Smoke Detector insect-resistant cover. The chamber houses an infrared light emitting diode (LED) and a photo-diode which has an integral visible-light filter as extra protection against ambient light.

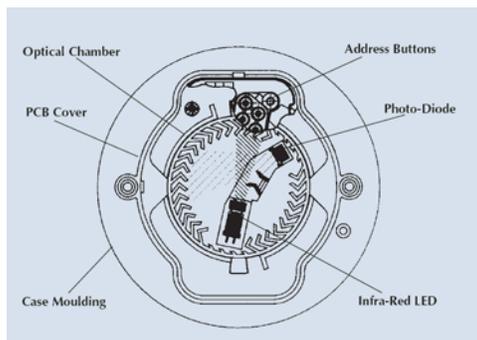
Every three seconds the LED emits a burst of collimated light, modulated at 4kHz. In clear air, light from the LED does not fall directly on the diode because the LED is positioned at an obtuse angle to the diode.

When smoke enters the chamber, a fraction of the collimated light is scattered onto the photo-diode. If the resulting signal from the photo-diode is above a preset threshold, the LED emits two more bursts of light, this time at two-second intervals. If light is scattered onto the photo-diode by both these pulses – due to the presence of smoke – the detector signals an alarm state by switching the alarm latch on, increasing the current drawn from the supply from about 40µA to a maximum of 75mA. This fall in the impedance of the detector is recognised by the control panel as an alarm signal.

The alarm current also illuminates the detector integral LED. A remote indicator connected between the L1 IN terminal and the –R terminal will have a voltage equal to the supply voltage less 1 volt across it and so will illuminate.

To ensure correct operation of the detector the control panel must be arranged to supply a maximum of 33 volts DC and a minimum of 9 volts DC in normal operation. The supply may fall to 6 volts DC in alarm conditions if a supply current of at least 10mA is available at this voltage. To ensure effective illumination of the integral LED and any remote indicator, the supply to the detector should exceed 12 volts.

To restore the detector to quiescent condition, it is necessary to expel any smoke and interrupt the electrical supply to the detector for a minimum of one second.



Options

1. Flashing LED: The integral LED flashes when the detector is in a quiescent state.
2. Magnetic test switch and Flashing LED: A magnetic test switch in the circuit of the detector can be magnetically activated from outside the case to initiate an alarm condition for test and commissioning purposes. A flashing LED, as outlined above, is also included.

Technical Specifications

Specifications are typical and given at 73°F and 50% relative humidity unless otherwise stated.

Detection Principle: Photoelectric detection of light scattered in a forward direction by smoke particles

Chamber Configuration: Horizontal photoelectric bench housing an infra-red emitter and sensor arranged radially to detect forward scattered light

Sensor: Silicon PIN photo-diode

Emitter: GaAs infra-red light emitting diode

Sampling Frequency: Once every 3 seconds

Supply Wiring: Two wire monitored supply, polarity insensitive

Terminal Functions:

L1 IN and L2 supply in connections (polarity insensitive)
L1 OUT and L2 supply out connections (polarity insensitive)
-R remote indicator negative connection

Supply Voltage: 9 to 33 V DC

Ripple Voltage: 2V peak to peak maximum at 0.1Hz to 100kHz

Quiescent Current: 30-50µA at 24V

Switch on Surge Current: 115µA at 24V

Alarm voltage: 6 to 28V

Normal Alarm Current: 61mA at 28V, 52mA at 24V, 18mA at 10V

Design Alarm load: 420µA in series with 2V drop

Alarm Reset Voltage: 12V

Alarm Reset Time: 1 second

Temperature range: -4°F to +140°F (No condensation or icing)

Humidity: (No condensation or icing) 0% to 95% relative humidity

Wind Speed: Insensitive to wind

Atmospheric Pressure: Insensitive to atmospheric pressure

IP Rating: 23D

Detector weight: 3.49 oz

Detector with base weight: 5.29 oz

Dimensions: Diameter: 3.93", Height: 1.65", Height in base: 1.96"

Materials: Detector Housing: White polycarbonate V-0 rated to UL 94
Terminals: Nickel plated stainless steel

Ordering Codes

Part number	Description
VF5691-01	Photoelectric Smoke Detector with flashing LED
VF5691-02	Photoelectric Smoke Detector with flashing LED and Magnetic Test Switch
VF5695-00	4" Standard Base
VF5696-00	6" Standard Base
VF5698-00	4" Standard Relay Base