

VF5670-00

XP95A Photoelectric Smoke Sensor



Standard Features

- UL Listed and FM Approved
- Wind resistant smoke inlets
- Insect resistant screen
- Alarm flag for fast alarm reporting
- Automatic addressing with the XPERT card
- Electronics free 4" or 6" bases
- Ease of installation
- Elegant design
- Responds well to slow burning, smouldering fires
- Well suited for bedrooms and escape routes
- Unaffected by atmospheric pressure

Overview

The VF5670 Photoelectric Smoke Sensor works on the light scatter principle and is ideal for applications where slow burning or smouldering fires are likely.

Operation

The VF5670 Photoelectric Sensor uses the same outer case as the ionization smoke Sensor and is distinguished by the indicator LED which is clear in standby and red in alarm. Within the case is a printed circuit board which on one side has the light proof labyrinth chamber with integral gauze surrounding the optical measuring system and on the other the address capture, signal processing and communications electronics.

An infrared light emitting diode within its collimator is arranged at an obtuse angle to the photo-diode. The photodiode has an integral daylightblocking 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 dual mask. When smoke enters the chamber it scatters photons 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 by the optical ASIC and passed to the A/D converter on the communications ASIC ready for transmission when the device is interrogated.

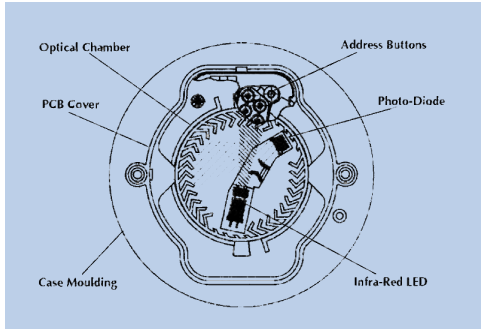
Electrical Description

The VF5670 Sensor is designed to be connected to a two wire loop circuit carrying both data and a 17V to 28V dc supply. The Sensor is connected to the incoming and outgoing supply via terminals L1 and L2 in the mounting base. A remote LED indicator requiring not more than 4mA at 5V may be connected between the +R and -R terminals. An earth connection terminal is also provided.

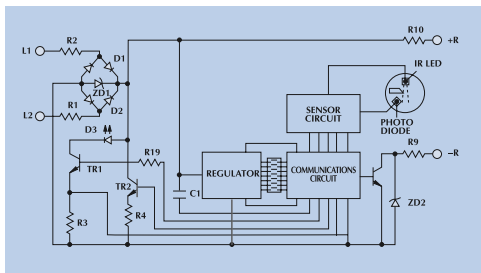
The Sensor is calibrated to give an analog value of 25 ± 7 counts in clean air. This value increases with smoke density. A count of 55 corresponds to the UL alarm sensitivity level.

Environmental Characteristics

The VF5670 Photoelectric smoke Sensor is unaffected by wind or atmospheric pressure and operates over the temperature range -4°F to $+140^{\circ}\text{F}$.



Top section - XP95A Photoelectric Smoke Sensor



Schematic Diagram - XP95A Photoelectric Smoke Sensor

	Photoelectric Detector
Overheating/thermal combustion	Very Good
Smouldering/ glowing combustion	Moderate/ Good
Flaming combustion	Very Good
Flaming with high heat output	Very Good
Flaming - clean burning	Poor

Response characteristics of the VF5670 Photoelectric Sensor

Technical Specifications

Specifications are typical and given at 73°F 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 an infrared emitter and sensor arranged radially to detect scattered light

Sensor: Silicon PIN photo-diode

Emitter: GaAs infra-red light emitting diode

Sampling Frequency: 1 second

Sensitivity: Nominal response threshold value of 0.12 dB/m when measured in accordance with UL

Supply Wiring: Two wire supply, polarity insensitive

Terminal Functions:

- L1&L2** supply in and out connections (polarity insensitive)
- +R** remote indicator positive connection (internal 2.2kΩ resistance to supply +ve)
- R** remote indicator negative connection (internal 2.2kΩ resistance to supply - ve)

Quiescent Current: 340µA average, 600µA peak

Power-up Surge Current: 1 mA

Alarm Indicator: Clear light emitting diode (LED) emitting red light

Alarm LED Current: 4mA

Remote LED Current: 4mA at 5V (measured across remote load)

Storage Temperature: -22°F to +176°F

Operating Temperature: -4°F to +140°F

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

Wind Speed: Unaffected by wind

Atmospheric Pressure: Unaffected

IP Rating: 23D

Detector weight: 3.7 oz

Detector with base weight: 5.54 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