



F900-650 Addressable Photoelectric Smoke Detector

Description

The F900-650 Addressable Photoelectric Smoke Detector has a moulded self-extinguishing white polycarbonate case with wind resistant smoke inlets. It uses the same outer case as the F900-550 Addressable Ionization Smoke Monitor 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 communication electronics.

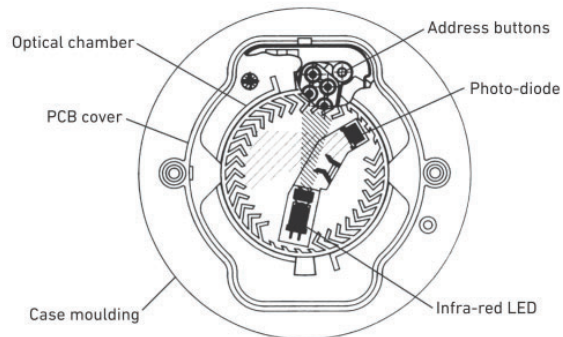
An infra-red (IR) light emitting diode (LED) within its collimator is arranged at an obtuse angle to the photo-diode. The photo-diode has an integral daylight filter.

The IR LED emits a burst of collimated light every 0.5 seconds. 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 light from the emitter IR LED onto the photo-diode proportionally 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 detector is designed to be connected to a two wire loop circuit carrying both data and a 17V to 28V dc supply. The detector 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.

When the device is energized the ASIC regulates the flow of power and control the data processing. The optical ASIC is controlled by the communications ASIC and pulses the IR LED. The signal from the photo-diode is processed by the sensor ASIC and transferred to the A/D converter in the communications ASIC where it is then stored. When smoke enters the chamber the photo-diode signal increases. The information to the A/D converter is updated once per second or when either the monitor or the preceding address is interrogated. When the device is interrogated this data is sent to the control equipment.



Top Section
F900-650 Addressable Photoelectric Smoke Detector

Approvals and Listings

Underwriters Laboratories (File No. S6349)
 NYC MEA (MEA No. 32-95-E)
 California State Fire Marshal (7272-1496:123)
 City of Chicago



MEA CITY OF NEW YORK



Electrical Specifications

Specifications are typical and given at 23°C and 50% relative humidity unless otherwise specified.

Detector Type:

Products of combustion (smoke) addressable detector.

Detection Principle:

Photoelectric detection of light scattered in a forward direction by smoke particles.

Chamber Configuration:

Horizontal optical 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.

Smoke Sampling Frequency:

0.5 second.

Supply Wiring:

Two wire supply

Terminal Functions:

L1 and L2; supply in and out connections
+R; remote indicator positive connection (internal 2KΩ resistance to supply +ve).
-R; remote indicator negative connection (internal 2KΩ resistance to supply -ve).

Supply Voltage:

17 to 28 Volts dc.

Modulation Voltage at Monitor:

5 to 9 Volts peak to peak

Quiescent Current:

340μA.

Power-up Surge Current:

1mA.

Normal Surge Current:

(synchronized to ADC operation)
600μA.

Duration of power-up Surge Current:

0.3 seconds.

Maximum power-up time:

(measured from application of power and protocol)
4 seconds for communications
10 seconds to exceed 10 counts in 7 bits or 20 counts in 8 bits
35 seconds for stable clean air value.

Operating Temperature:

0°C to 49°C.

Alarm Indicator:

Clear light emitting diode (LED) emitting red light.

Alarm LED Current:

4mA.

Remote LED Current:

4mA at 5V (measured across remote load).

Sensitivity:

Nominal threshold of 2.4% light grey smoke obscuration per meter.

Humidity:

(no condensation)
0% to 95% relative humidity.

Wind Speed:

3,000 ft./min (15m/s). Caution: monitors subjected to continuous velocities above 300 ft./min may require more frequent maintenance.

Atmospheric Pressure:

Unaffected.

Dimensions:

Monitor: 4 in x 1.65 in (diameter x height)

Weights:

Monitor: 3.6 oz.

Materials:

Housing: White polycarbonate V-O rated to UL 94.
Terminals: Stainless Steel, nickel plated.

Ordering Information

Model No.	Part No.	Description
F900-650	75002	Addressable Photoelectric Smoke Detector

It is our intention to keep the product information up to date and accurate. We cannot cover all specific applications or anticipate all requirements. All specifications are subject to change without notice. For more information contact: FIRECOM, INC.

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2 of 2