



Discovery Optical Smoke Detector ▲ Part Number 58000-600

Mode	Alarm threshold %/m	Minimum time to alarm (sec)
1	1.4	5
2	1.4	30
3	2.1	5
4	2.1	30
5	2.8	5

Compensation rate complies with EN54-7:2000

Table 2 Optical detector operating modes

page
8

OPERATING PRINCIPLES

The Discovery optical detector uses the same outer case as the ionisation smoke detector and is distinguished by the indicator LEDs which are clear when the detector is in quiescent state and red in alarm. Within the case is a printed circuit board which, on one side, has the light-proof chamber with

integral gauze surrounding the optical measuring system and, on the other, the signal processing and communications electronics.

An infra-red light emitting diode within its collimator is arranged at an obtuse angle to the photo-diode. The photo-diode has an integral daylight-blocking filter (Fig.3).

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 chamber baffles. When smoke enters the chamber it

scatters light 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 to provide an analogue value for transmission when the detector is interrogated.

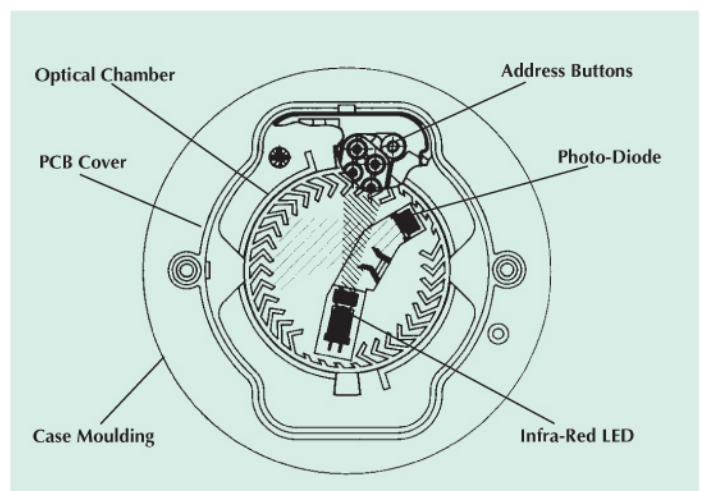


Fig.3 Top section - Discovery Optical Smoke Detector

TECHNICAL DATA

Discovery Optical Smoke Detector
Part No: 58000-600

Specifications are typical at 24V, 23°C 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 infra-red emitter and sensor, arranged radially to detect forward scattered light

Sensor:

Silicon PIN photo-diode

Emitter:

GaAlAs infra-red light emitting diode

Sampling frequency:

1 per second

Type code:

Bits 2 1 0 4 3 7 6 5
1 0 1 0 0 0 0 0

Supply wiring:

Two-wire supply, polarity insensitive

Terminal functions:

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

Operating voltage:

17–28V DC

Communication protocol:

Apollo Discovery 5–9V peak to peak

Quiescent current:

400μA average 650μA peak

Power-up surge current:

1mA

Maximum power-up time:

10s

Alarm current, LED illuminated:

3.4mA

Remote output characteristics:

Connects to positive line through 4.5Ω (5mA maximum)

Clean-air analogue value:

23 +4/–0

Alarm level analogue value:

55

Alarm indicator:

2 colourless Light Emitting Diodes (LEDs); illuminating red in alarm. Optional remote LED

Electro-magnetic compatibility:

CE marked

A copy of the relevant declaration is available on request

Temperature range:

Max. continuous operating +60°C
Min. continuous operating 0°C
Min. operating –20°C (no condensation/icing)
Storage –30°C to +80°C

Humidity:

0 to 95% relative humidity (no condensation)

Effect of temperature:

Less than 15% change in sensitivity over rated range. Note: slow changes in ambient conditions will automatically be compensated and will not affect sensitivity

Effect of atmospheric pressure:

None

Effect of wind:

None

Vibration, Impact and Shock:

To EN54–7:2000

IP rating:

43

Dimensions:

100mm diameter;
42mm height
50mm (height in base)

Weight:

Detector 105g
Detector in base 160g

Materials:

Housing: White polycarbonate V–0 rated to UL94
Terminals: Nickel plated stainless steel

technical data