DISCOVERY OPTICAL SMOKE DETECTOR

Part N. 5000-200

The Discovery Optical Detector has a white moulded polycarbonate case with wind-resistant smoke inlets. The indicator LEDs are colourless 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. 1).

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.

The Discovery Optical Detector Operating modes as shown in Table 1 comply with European Standard EN 54-7. The mode of operation for this detector is selected at the fire control panel.

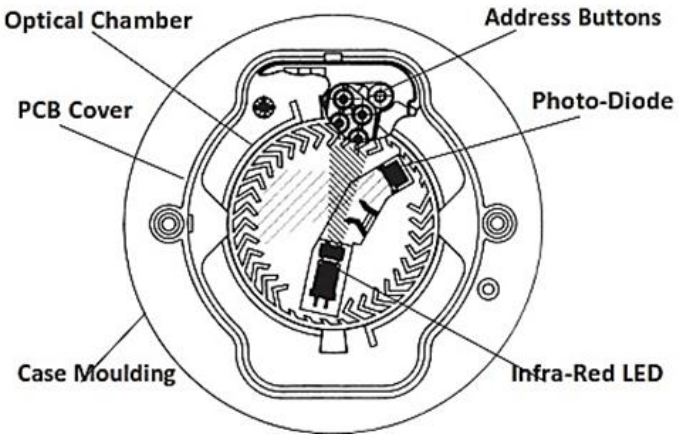

Figure 1 Discovery Optical Detector top section

Mode	Alarm Threshold (%/m)	dB/m	Minimum Time to Alarm (seconds)
1	1.4	**0.06**	**5**
2	1.4	**0.06**	**30**
3	2.1	**0.09**	**5**
4	2.1	**0.09**	**30**
5	2.4	**0.11**	**5**
Compensation rate complies with EN 54-7			

Table 1: Discovery Optical Detector operating modes

TECHNICAL DATA

Discovery Optical Smoke Detector

Part No. 5000-200

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	
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 positive)	
Operating voltage:	17–28V DC	
Communication protocol:	Discovery, XP95 & Core Protocol compatible 5-9V peak to peak	
Quiescent current:	440µA	
Power-up surge current:	1mA	
Maximum power-up time:	10s	
Alarm current, LED illuminated:	3.4mA	
Remote output characteristics:	Connects to positive line through 4.5kΩ (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	
Temperature range:	–40°C to 70°C	
Humidity:	0% to 95% RH (no condensation or icing)	
Effect of atmospheric pressure:	None	
Effect of wind:	None	
Vibration, impact & shock:	EN 54-7	
Designed to IP Rating:	IP44 in accordance with BS EN 60529	
Standards & approvals:	EN 54-7 - LPCB	
Dimensions:	100mm diameter x 42mm height (50mm height with XPERT 7 Mounting Base)	
Weight:	Detector Detector with XPERT 7 Mounting Base	105g 160g
Materials:	Housing Terminals	White polycarbonate UL94-V0 Nickel plated stainless steel