Odyssey Intelligent Optical Smoke Detector (200-503)

The Odyssey intelligent optical detector uses the same outer case as the ionisation smoke detector 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 daylight-blocking 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.

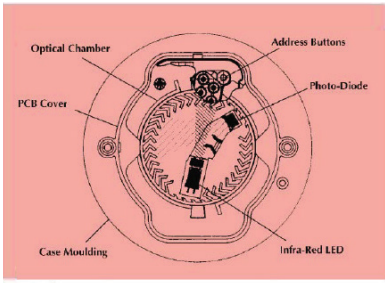

Fig.7 Top Section- Odyssey Intelligent Optical Smoke Detector

The detector is designed to be connected to a two wire loop circuit carrying both data and a 17V to 28V de supply. The detector is connected to the incoming and outgoing supply via terminals LI and L2 in the mounting base. A remote LED indicator requiring not more than 4mA at SV may be connected between the +Rand -R terminals. An earth connection terminal is also provided. When the device is energised the ASICs regulate 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 optical ASIC and transferred to the communications ASIC where it is then stored.

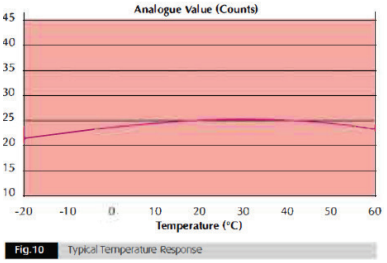

Fig.10 Typical Temperature Response

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. Whenever the device is interrogated, this data is sent to the control equipment. EN54 threshold alarm levels are calibrated within the processing ASIC. If the device is not addressed within one second of its last polling and the analogue value is greater than the EN54 alarm level the alarm flag is initiated and the device address is added to the data stream every 32 polling cycles from its last polling for the duration of the alarm level condition, except when the alarming device is being interrogated. This can provide a location identified alarm from any device on the loop in approximately two seconds.

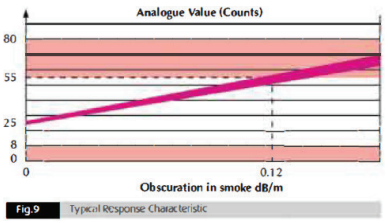

Fig.9 Typical Response Characteristic

The detector is calibrated to give an analogue value of 25±7 counts in clean air. This value increases with smoke density. A count of 55 corresponds to the EN54 alarm sensitivity level. See Fig. 9.

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TECHNICAL SPECIFICATION

Detector Type	Point Type Smoke Detector
Detector Principles	Photo-Electric Detection
Chamber Configuration	Horizontal optical bench housing an infrared emitter and sensor arranged dially
Sensor	Silicon PIN photo-diode
Emitter	GaAs Infrared LED
Sampling Frequency	1 sec
Sensitivity	Nominal response value threshold value of 0.12 dB/m when measured with EN43-7: 2000
TERMINAL FUNCTIONS	
L1 & L2	Supply In & Out Connections
+R	Remote Indicator Positive Connection
-R	Remote Indicator Negative Connection
Supply Wiring	2 Wire Supply, Polarity Insensitive
Supply Voltage	17 to 28 Vdc
Quiescent Current	340 uA average, 600 uA peak
Power-up Surge Current	1 mA
Duration of Power-Up Surge	0.3 secs
Max Power-Up Time	4 secs for communications
Alarm Level Analogue Value	55
Clean Air Analogue Value	25 +/= 7 counts
Alarm Indicator	Clear LED emiting red light
Alarm LED Current	4 mA
Remote LED Current	4 mA 5V
Storage Temp	- 30 C to + 80 C
Operating Temp	- 20 C to + 60 C
Humidity (non-condensing)	95% RH
Wind Speed	Unaffected by wind
Atmospheric Pressure	Unaffected
IP Rating	23 D
Vibration, Impact & Shock	to EN45-7: 2000
Dimensions	100 mm x 42 mm
Weight	105 g
Materials	White polycarbonate Housing

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