Discovery Marine

Heat Detector

58000-400MAR
Discovery Marine Heat Detector

0729

Operating principles

Discovery Marine Heat Detectors have a common profile with ionisation and optical smoke detectors but have a low air flow resistance case made of self-extinguishing white polycarbonate.

The Discovery Marine Heat Detector uses a single thermistor to sense the air temperature at the detector position. The thermistor is connected in a resistor network, which produces a voltage output dependent on temperature. The design of the resistor network, together with the processing algorithm in the microcontroller, gives an approximately linear characteristic from 10°C to 80°C. This linearised signal is further processed, depending on the response mode selected, and converted to an analogue output.

For the European standard version of the detector, the five modes correspond to five "classes" as defined in EN54–5:2001. The classes in this standard correspond with different response behaviour, each of which is designed to be suitable for a range of application temperatures. All modes incorporate "fixed temperature" response, which is defined in the standard by the "static response temperature". The application temperatures and static response temperatures for all response modes are given in Table 4.

In addition to the basic classification, a detector may be given an "R" or "S" suffix. The "R" suffix indicates that the detector has been shown to have a rate-of-rise characteristic. Such a detector will still give a rapid response even when starting from an ambient temperature well below its typical application temperature. This type of detector is therefore suitable for areas such as unheated warehouses in which the ambient temperature may be very low for long periods.

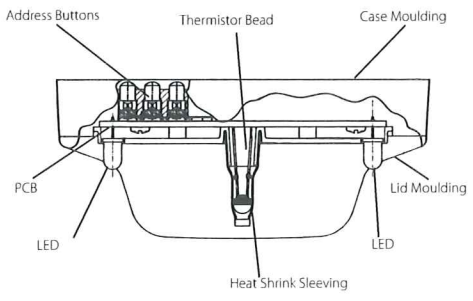
The "S" suffix on the other hand indicates that the detector will not respond below its minimum static response temperature even when exposed to high rates of rise of air temperature. This type is therefore suitable for areas such as kitchens and boiler rooms where large, rapid temperature changes are considered normal.

Table 4: Response Modes

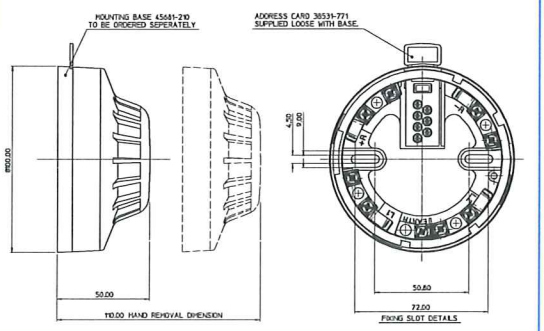
Mode	Class (EN54–5:2001)	Application Temperature		Static Response Temperature °C		
		Typical	Max	Min	Typ	Max
1	A1R	25	50	54	57	65
2	A2R	25	50	54	61	70
3	A2S	25	50	54	61	70
4	CR	55	80	84	90	100
5	CS	55	80	84	90	100

For air temperatures in the range 15°C to 55°C, the analogue value for a detector in mode 1 will correspond approximately to the air temperature.

Sectional View



Dimensional Drawings



Technical Data

Specifications are typical at 24V, 23°C and 50% relative humidity unless otherwise stated.

Detection principle:	Heat sensitive resistance	
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	
Power-up surge current:	1mA	
Maximum power-up time:	10s	
Alarm current, LED illuminated:	3.5mA	
Remote output characteristics:	Connects to positive line through 4.5kΩ (5m maximum)	
Alarm level analogue value:	55	
Alarm indicator:	2 red Light Emitting Diodes (LEDs) Optional remote LED	
Temperature range:	Maximum operating Minimum operating (no condensation/icing) Storage	see Table 4 –40°C –40°C to +80°C
Humidity:	0 to 95% relative humidity (no condensation or icing)	
Vibration, impact and shock:	To EN54–5:2001	
IP rating:	54 in accordance with BSEN60529	
Dimensions:	100mm diameter x 42mm height	
Weight:	Detector Detector in base	105g 160g
Materials:	Housing: White polycarbonate V–0 rated to UL94 Terminals: Nickel plated stainless steel	