

# SERIES 65 HEAT DETECTOR



Series 65 Heat Class A1R	▲ Part nos
Standard detector	55000-122
Detector with flashing LED	55000-121
Detector with magnetic test switch & flashing LED	55000-120
Series 65 Heat Class BR	
Standard detector	55000-127
Detector with flashing LED	55000-126
Detector with magnetic test switch & flashing LED	55000-125
Series 65 Heat Class CR	
Standard detector	55000-132
Detector with flashing LED	55000-131
Detector with magnetic test switch & flashing LED	55000-130
Series 65 Heat Class CS	
Standard detector	55000-137
Detector with flashing LED	55000-136
Detector with magnetic test switch & flashing LED	55000-135

## OPERATING PRINCIPLES

The detector has a moulded self-extinguishing white polycarbonate case. Nickel plated stainless steel wiper contacts connect the detector to the base. Inside the case a printed circuit board holds the signal processing electronics.

A pair of matched negative temperature co-efficient

thermistors are mounted on the PCB in such a way that one thermistor is exposed to give good thermal contact with the surrounding air while the other thermistor is thermally insulated.

Under stable conditions both thermistors are in thermal equilibrium and have the same value of resistance. If air temperature increases rapidly the resistance of the exposed thermistor becomes less than that of the insulated

thermistor. The ratio of the resistance of the thermistors is monitored electronically and an alarm is initiated if the ratio exceeds a factory preset level. This feature determines the 'rate of rise' response of the detector.

If air temperature increases slowly, no significant resistance difference develops between the thermistors, but at high temperatures a fixed value resistance connected in series with the insulated thermistor becomes significant.

When the sum of the resistance of the insulated thermistor and the fixed resistor compared to the resistance of the exposed thermistor reaches a preset value, an alarm is initiated. The value of the fixed resistor is selected to set the detector into alarm state at a specified fixed temperature.

The detector signals an alarm state by switching an alarm latch on, increasing the current drawn from the supply from about 50µA to a maximum of about 75mA. This fall in the impedance of the detector is recognised by the control panel as an alarm signal.

The alarm current also illuminates the detector integral LED. A remote indicator connected between the L1 IN terminal and the -R terminal will have a voltage equal to the supply voltage less 1 volt across it and so will illuminate.

To ensure correct operation of the detector the control panel must be arranged to supply a maximum of 33 volts DC and a minimum of 9 volts DC in normal operation. The supply may fall to 6 volts DC in alarm

conditions if a supply current of at least 10mA is available at this voltage. To ensure effective illumination of the integral LED and any remote indicator, the supply to the detector should exceed 12 volts.

To restore the detector to quiescent condition, it is necessary to restore a normal temperature level and interrupt the electrical supply to the detector for a minimum of one second.

## OPTIONS

1. Flashing LED: The integral LED flashes when the detector is in a quiescent state.
2. Magnetic test switch and Flashing LED: A magnetic test switch in the circuit of the detector can be magnetically activated from outside the case to initiate an alarm condition for test and commissioning purposes. A flashing LED, as outlined above, is also included.

## RESPONSE TIME

European Standard EN54-5:2000 classifies heat detectors according to the alarm temperature and ambient operating temperature.

Each heat detector classification has a static response (changing to alarm at a preset temperature) and may also have a rate of rise response (changing to alarm at or above a preset increase of temperature). The heat detector classes available in Series 65 are A1R, BR, CR, CS.

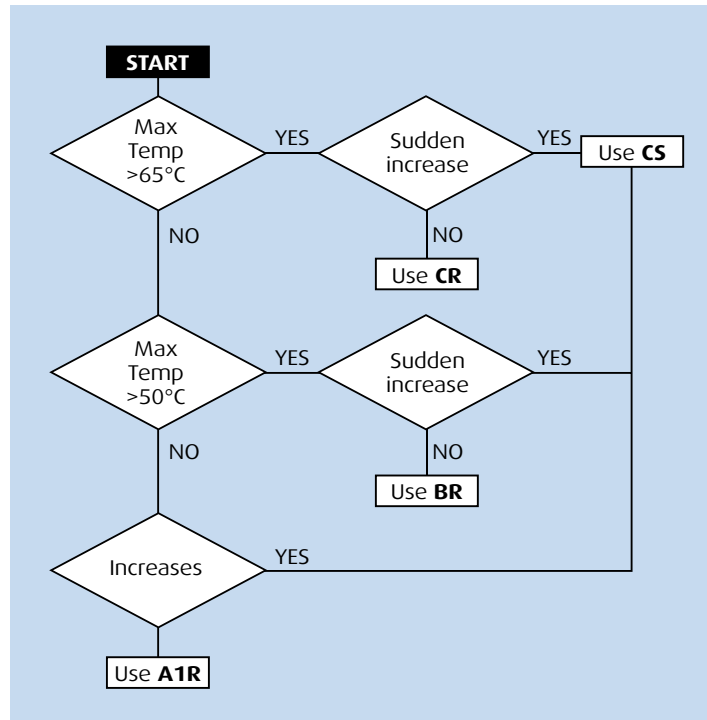
The suffix R indicates that the detector has been tested and approved as a 'rate-of-rise' detector. The suffix 'S' indicates that the detector has been tested and approved as a 'static' detector.

Supply Voltage (V)	A1R Standard		A1R Flashing LED		A1R Flashing LED/ Magnetic test switch	
	Quiescent	Alarm	Quiescent	Alarm	Quiescent	Alarm
24	45µA	52mA	55µA	52mA	55µA	52mA
9	40µA	17mA	50µA	17mA	50µA	17mA

**Table 1** Typical current against voltage characteristics for quiescent and alarm states

Class	Max application temperature °C	Max static response temperature °C	Part number		
			Standard	Flashing LED	Flashing LED/ Magnetic test switch
A1R	50	65	<b>55000-122</b>	<b>55000-121</b>	<b>55000-120</b>
BR	65	85	<b>55000-127</b>	<b>55000-126</b>	<b>55000-125</b>
CR	80	100	<b>55000-132</b>	<b>55000-131</b>	<b>55000-130</b>
CS	80	100	<b>55000-137</b>	<b>55000-136</b>	<b>55000-135</b>

**Table 2** Series 65 Heat Detector temperatures and part numbers



**Fig. 3** Choosing a heat detector

## TECHNICAL DATA

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

### Detector Type:

Point type heat detector for fire detection and alarm systems for buildings

### Supply Wiring:

Two wire monitored supply, polarity insensitive

### Terminal Functions:

L1 IN and L2: supply in connections (polarity insensitive).  
L1 OUT and L2: supply out connections (polarity insensitive)  
-R: remote indicator negative connection

### Supply Voltage:

9 to 33V

### Ripple Voltage:

2V peak to peak maximum at 0.1 Hz to 100 kHz

### Quiescent Current:

See table 1

### Switch-on Surge Current:

As per Quiescent Current

### Alarm Voltage:

6 to 28V

### Alarm Current:

See table 1

### Alarm Indicator:

Red light emitting diode

### Design Alarm Load:

420Ω in series with a 2V drop

### Holding Voltage:

6V

### Holding Current:

10mA

### Minimum Voltage Required to Light Alarm Indicator:

12V

### Remote Output Characteristics:

Remote is a current sink to the negative line limited to 17mA

### Storage Temperature Range:

-30°C to 120°C.

Operating Temperature:

-20°C to +90°C (no icing)

### Humidity:

0% to 95% relative humidity

### Atmospheric Pressure:

Unaffected

### IP Rating:

23D in accordance with BS EN 60529

### EMC, approvals and regulatory compliance:

Refer to Page 18 of this document

### Dimensions: (dia. x height)

Detector: 100x42mm

Detector in Base: 100x50mm

### Weights:

Detector: 80g

Detector in Base: 131g

### Materials:

Detector housing: White polycarbonate rated V-0 in accordance with UL 94.  
Terminals: Nickel plated stainless steel



CE 0832

technical data