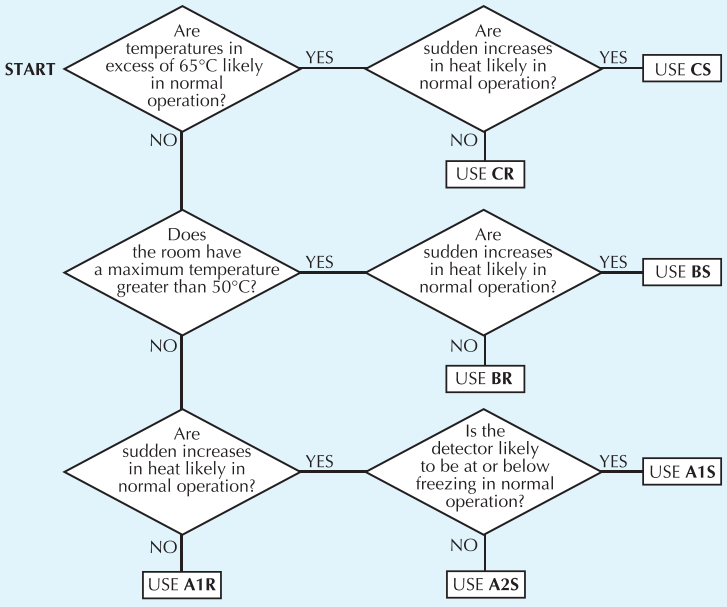
REF.: SI: ORB-HT-51145

orbis™

heat detector



MAXIMUM APPLICATION TEMPERATURE	
A1R, A1S, A2S	50°C
BR, BS	65°C
CR, CS	80°C

Fig.3 **Choosing a heat detector**

Where to use heat detectors

Heat detectors are used in applications where smoke detectors are unsuitable. Smoke detectors are used wherever possible since smoke detection provides earlier warning of fire than heat detection. There are, however, limits to the application of smoke detectors and these are described in the section 'Choosing a detector' on page 4.

Heat detectors may be used if there is a danger of nuisance alarms from smoke detectors.

orbis IS heat detector

The Orbis IS range incorporates seven heat detector classes to suit a wide variety of operating conditions in which smoke detectors are unsuitable.

The European standard EN54-5:2000 classifies heat detectors according to the highest ambient temperature in which they can safely be used without risk of false alarm. The classes are identified by the letters A to G. (Class A is subdivided into A1 and A2.) In addition to the basic classification, detectors may be identified by a suffix to show that they are rate-of-rise (suffix R) or fixed temperature (suffix S) types.

All heat detectors in the Orbis IS range are tested as static or rate-of-rise detectors and are classified as A1R, A1S, A2S, BR, BS, CR and CS.

Choosing the correct class of heat detector

Heat detectors have a wide range of response characteristics and the choice of the right type for a particular application may not always seem straightforward. It is helpful to understand the way that heat detectors are classified as explained earlier and to memorise a simple rule: use the most sensitive heat detector available consistent with avoiding false alarms.

In the case of heat detectors it may be necessary to take an heuristic approach, ie, trial and error, until the best solution for a particular site has been found. The flowchart (Fig. 3) will assist in choosing the right class of heat detector.

apollo FIRE DETECTORS LIMITED

If the fire detection system is being designed to comply with BS 5839–1: 2002 heat detectors should be installed at heights of less than 12 metres with the exception of class A1 detectors, which can be installed at heights up to 13.5 metres.

How do orbis IS heat detectors work?

Orbis IS heat detectors have an open-web casing which allows air to flow freely across a thermistor which measures the air temperature every 2 seconds. A microprocessor stores the temperatures and compares them with pre-set values to determine whether a fixed upper limit–the alarm level–has been reached.

In the case of rate-of-rise detectors the microprocessor uses algorithms to determine how fast the temperature is increasing.

Static heat detectors respond only when a fixed temperature has been reached. Rate-of-rise detectors have a fixed upper limit but they also measure the rate of increase in temperature. A fire might thus be detected at an earlier stage than with a static detector so that a rate-of-rise detector is to be preferred to a static heat detector unless sharp increases of heat are part of the normal environment in the area protected by the heat detector.

Environmental performance

The environmental performance is similar to that of the Orbis IS optical smoke detector but it should be noted that heat detectors are designed to work at particular ambient temperatures (see Fig 3).

Also classification and BASEEFA certificate number are the same as for the optical smoke detector.

technical data

All data is supplied subject to change without notice. Specifications are given at 23°C and 50% relative humidity unless otherwise stated.

DETECTOR OPERATING PRINCIPLES

Principle of detection:
Measurement of heat by means of a thermistor.

Sampling frequency:
Once every 2 seconds

ELECTRICAL

Supply voltage:
14—28V DC

Supply wiring:
2 wires, polarity sensitive

Polarity reversal:
Not allowed

Power-up time:
<20 seconds

Minimum 'detector active' voltage: 12V

Switch-on surge current at 24V:
105µA

Average quiescent current at 24V:
80µA

Alarm load:
325Ω in series with a 1.0V drop

Minimum holding voltage:
5V

Minimum voltage to light alarm LED:
6V

Alarm reset voltage:
<1V

Alarm reset time:
1 second

Remote output LED (–) characteristic:
4.7kΩ connected to negative supply

MECHANICAL

Material:
Detector and base moulded in white polycarbonate.

Alarm Indicator:
Integral indicator with 360° visibility (See Table 1 on page 14 for details of flash rate)

Dimensions and weight of detector:
100mm diameter x 42mm height, 70g

Dimensions and weight of detector in base:
100mm diameter x 50mm height, 130g

ENVIRONMENTALAL

Operating and storage temperature
–40°C to +70°C
Operating temperature is restricted by the intrinsic safety gas classification.
Class T5: –40°C to +40°C
Class T4: –40°C to +60°C
The detector must be protected from conditions of condensation or icing.

Humidity:
0% to 98% relative humidity (no condensation)

Wind speed:
Unaffected by wind

Atmospheric pressure:
Insensitive to pressure

IP rating to EN 60529: 1992*:
23D

Electromagnetic Compatibility:
The detector meets the requirements of BS EN 61000-6-3 for emissions and BS EN50 130-4 for susceptibility.

*The IP rating is not a requirement of EN54–5 : 2000 since most heat detectors feature open-web casings to allow air to flow freely over the thermistor. An IP rating is therefore not as significant as with other electrical products.

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