



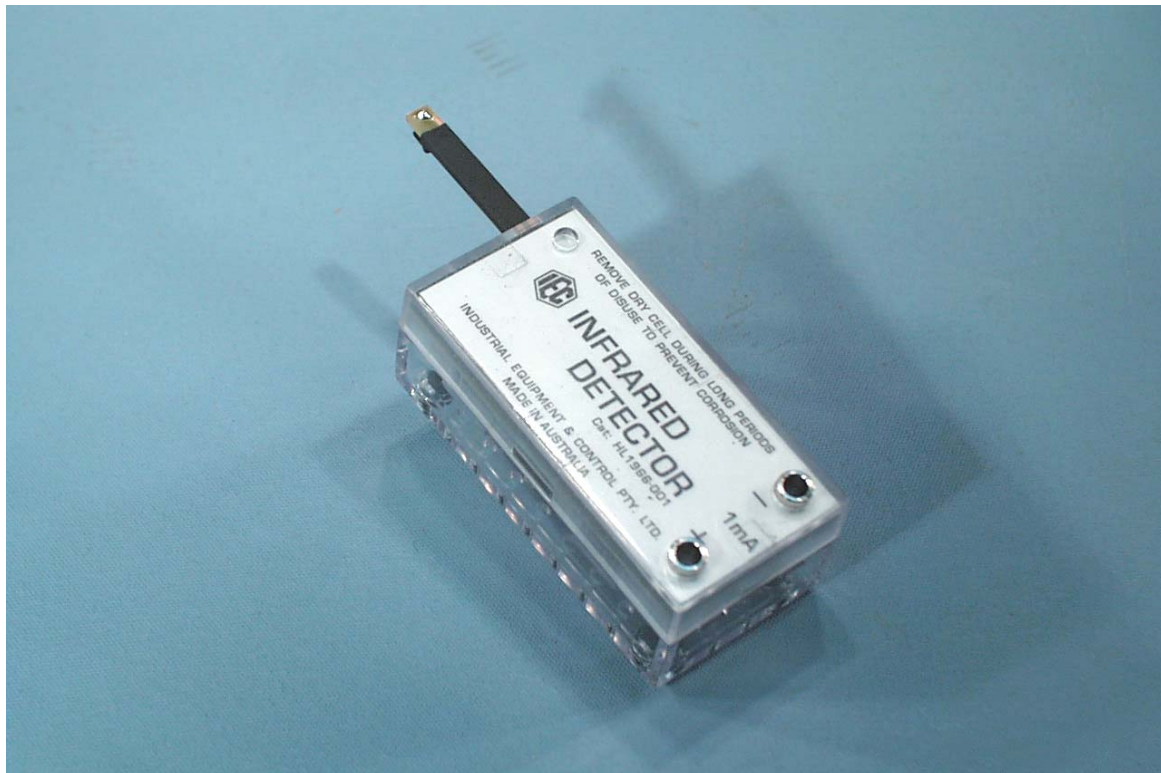
INFRA RED DETECTOR

Cat: HL1966-001 with internal 'AA' cell

DESCRIPTION:

The IEC **Infra red Detector** is a special photo transistor which has maximum sensitivity to electromagnetic radiation extending from visible light into the infra red wavelength region. The narrow circuit board mounted to the housing has the detector mounted at the tip. The infra red energy is detected from the side of the strip and at the face of the detecting device.

HL1966-001 infra red detector



Physical size: 109x38x34mm LxWxH

Weight: 0.066 kg

THE SPECTRUM OF ELECTROMAGNETIC RADIATION:

Brief explanation: The range of electromagnetic radiation as seen with the human eye extends from the higher frequencies (shorter wavelengths) of blue/violet colour down to the lower frequencies (longer wavelengths) of red colour. Electromagnetic radiation with a frequency lower than visible red is called 'Infra red' which means 'below red'. Electromagnetic radiation with a frequency higher than visible blue/violet is called 'Ultraviolet' which means 'above violet'. Neither infra red nor ultraviolet wavelengths are visible to the human eye although in some ways they behave in a similar way to visible light.

As frequencies become lower and lower, they enter the frequencies of radar and radio until finally the frequency is zero. As frequencies become higher they enter the Xray and cosmic ray frequencies which are dangerous and destructive to tissue.

**USE OF THE INFRARED DETECTOR:**

The unit detects infra red radiation and drives a 0-1mA bench meter connected to the 4mm sockets provided. The protected photo transistor must be pointed towards (aimed at) the radiation source to ensure maximum detection strength. Incandescent lamps emanate infra red radiation together with visible light. The readings as seen on the meter are only comparative and are not absolute or calibrated measurements of IR radiation.

EXPERIMENTS WHICH MAY BE PERFORMED:

- Prove that the unit is sensitive to electromagnetic radiation.
- Prove that the unit responds to invisible radiation at a wavelength longer (a frequency lower) than visible red light.
- Study reflection of infra red radiation from non-absorbing surfaces.
- Study the penetration of infra red radiation through objects that are opaque to visible light. This explains why radio waves pass through brick walls.

Refer to class notes or text books for actual details of experiments.

Battery Test:

A simple battery test can be performed from time to time. Point the instrument to a bright incandescent light source (say a 60W globe) from a distance of about 20cm. A full scale deflection should be seen on the 0-1mA meter.

To replace the cell:

Squeeze the sides of the housing firmly with the fingers to remove the base. The dry cell is 1.5V type 'AA' (penlight).

Designed and manufactured in Australia