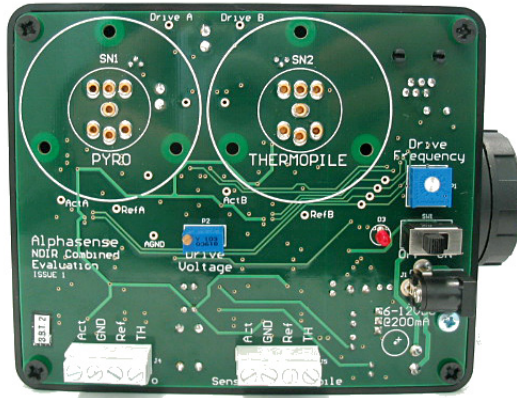




NDIR Evaluation Board

Figure 1 NDIR Evaluation Board



The Alphasense NDIR Evaluation Board is designed to allow user evaluation of up to two Alphasense IRC-A1 NDIR sensors.

Powered by either internal batteries or an external power supply, the board provides a suitable lamp drive signal with user-selectable amplitude and frequency.

Raw outputs from the Active and Reference channels of the sensors are filtered and amplified, before the amplitude of the AC components are output as DC signals.

POWER SUPPLY

Power can be provided to the board either internally, via 2 x C cell batteries, or externally, using a 6 - 12 VDC 200mA power supply. If batteries are used the ON/OFF switch on the board is used to turn the unit on and off. If external power is used the ON/OFF switch on the board becomes redundant and power must be removed to turn the board off.

MOUNTING SENSORS

It is recommended that power be removed from the board before adding or removing sensors. Sensors should be pushed firmly into the sockets SN1 and SN2. It is not necessary to load two sensors for the board to operate. If only one sensor is required it can be placed in either socket.

SETTING DRIVE VOLTAGE AND FREQUENCY

The Alphasense NDIR Evaluation board supplies power to the lamp in the form of a square wave. The factory settings for the amplitude and frequency are 5V and 2.0Hz. However, the amplitude and frequency of this lamp drive can be changed via potentiometers on the board. The drive signal can be measured between the AGND and Drive A (or B) pins using an oscilloscope or other suitable measuring device. The drive voltage can be changed from 0V to 5V continuously. The drive frequency can be changed from 1.0Hz to 2.75Hz in 0.25Hz steps.

BOARD OUTPUTS

Active & Reference Signals

The raw output from the sensors consists of a DC offset superimposed with an AC signal in sympathy with the lamp drive. It is the amplitude of the AC component, which is of interest.

The evaluation board extracts the AC component from the raw signal, amplifies it and then outputs the amplitude via the screw terminals labeled Act and Ref. These should be measured against the GND terminal. The amplified AC component can be viewed via the Act A (or B) and Ref A (or B) pins on the board (measured against GND).

Thermistor Output

The thermistor screw terminal (labeled TH) is the output direct from the internal thermistor in an IRC-A NDIR sensor. In order to use the thermistor output it is necessary to apply a reference voltage through a resistor to the thermistor output. The voltage measured between the thermistor output and ground can then be used to determine the thermistor resistance and temperature (see Application Note AAN 202-01).