



## Single Point Environmental Monitor

The SP-ir provides single point gas detection using non dispersive Infrared advanced technology for HFC, HFO and CO<sup>2</sup> refrigerants. Until now most IR based refrigerant leak detection systems have been aspirated like our IR-em2, which are more suited to medium and large installations. An SP-ir offers the accuracy and selectivity of IR technology in an easy to install single point diffusion detector.

Each detector is supplied in an IP65 rated polycarbonate enclosure with high intensity LED's to confirm operational and alarm status. Available to operate from either a 24 volt AC or 230 volt AC supply the SP-ir is supplied fully configured and ready to monitor your refrigeration system. 4 fixing screws and a power supply are required and 60 seconds later the warm-up is completed and the SP-ir is ready to detect leaking refrigerant.

Cross sensitivity and poor accuracy often associated with other technologies are overcome with the SP-ir detector to enable users to set low alarm thresholds with confidence. Fitted with an integral audible alarm and volt free alarm relays the detector can either be used as a standalone device or connected to a management system via the RS485 network interface. If an analogue output is required to monitor the gas concentration the options are 0 to 10 volt and 0 to 20mA. Each leak detector is supplied fully configured to suit the target refrigerant with the ability to operate at ambient conditions between -40Deg C and 40 Deg C without loss of performance.

### Features at a glance

- » -40Deg C to +40 Deg C Operating range
- » High accuracy (< +/- 5%)
- » High intensity tri-colour LED status indication
- » Leak & fault alarm relays
- » Analogue outputs, 0 – 10 volt/0 to 20mA
- » Preconfigured alarm/time delay thresholds
- » Audible alarm with local/remote mute
- » RS485 communications interface
- » Self test facility



## Technical Overview

### Operation

Upon power up the status LED will be illuminated orange whilst the sensor warms up which takes approximately 60 seconds after which the status LED will change to green to indicate the SP-ir is fully operational. In the event of a sensor fault or malfunction the LED will indicate red and the fault relay will change state. If the refrigerant concentration rises above the alarm threshold the leak alarm LED will slowly flash red until the time delay has expired when it will be permanently lit, the audible alarm initiated and the alarm relay will change state. A mute button is fitted to the front cover of the detector to silence the audible alarm or if not easily accessible can be silenced via an optional remote digital input.

### Operating Range

HFC and HFO detectors will operate in the 0 to 1000 PPM range with preconfigured alarm thresholds of 50 PPM, 100 PPM, 200 PPM and 500 PPM which are selectable using bit switches. Alternative alarm thresholds can be configured via the network connection.

CO<sup>2</sup> detectors are available in the 0 to 10,000 PPM and 0 to 20,000 PPM range. The lower range sensor has preconfigured alarm thresholds of 1000 PPM, 2000 PPM, 5000 PPM and 9500 PPM whilst the higher sensor has preset thresholds at 2,000 PPM, 4000 PPM, 10,000 PPM and 19,000 PPM.

Alternative alarm thresholds can be configured via the network connection.

# SP-ir



Issue: 10/16

## Alarm Configuration

Bit switches are used to select any of the 4 preset alarm thresholds or a network connection will allow custom values to be selected. The alarm time out delay is also selected using bit switches with 0, 10 minute, 20 minute or 30 minute options available or custom configured via the network connection. Two bit switches are provided to enable the user to select failsafe/non failsafe of both the alarm and fault relay. A final pair of bit switches are used to configure latch/ no latch of the alarm relays.

## Self Test

Depressing the reset button for 10 seconds in normal operating mode will initiate a self test in which the two relays change to alarm/fault condition for 5 seconds after which normal operation is resumed.

## Analogue Outputs

Voltage and a current outputs are provided to interface with third party equipment. The outputs are as follows :-

- 0.5 volt/2mA – Sensor fault
- 0.75 volt/3mA – Detector in warm up mode
- 1 to 10 volt/4 to 20mA – Linear across PPM range



## Remote Communications

An RS 485 serial interface is provided to enable third party communications between the detector and a BMS. The Modbus RTU protocol enables the following data to be viewed/changed :-

- PPM concentration
- Alarm concentration and alarm time delay
- Operating temperature
- Unit status (normal, warm up & warning)
- Relay status, and configuration

## Dimensions



Specification	
Standard Housing	Polycarbonate IP65
Power Supply	24 volt AC or 230 volt AC
Status Indication	Power/Warmup/Active LED Leak Alarm LED
Output Relays	2 SPDT relays rated 230V max 2A.
Ambient Temperature	Models to suit applications from -40 Deg C to +40 Deg C
Dimensions (Footprint)	160mmW x 185mmH x 90mmD
Classification	CE