SP-ir

Issue: 4

Single Point Environmental Monitor

The SP-ir provides single point gas detection using non dispersive Infrared advanced technology for HFC, HFO, CO^2 and hydrocarbon refrigerants. The SP -ir offers the accuracy and selectivity of IR technology in an easy to install single point diffusion detector with a remote or local sensor.

The detector is provided within an IP65 rated main unit enclosure with a graphical LED indicators showing healthy and alarm/fault status. The SP-ir is supplied 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 an RS485 network interface or optional Ethernet interface. If an analogue signal is required to monitor the gas concentration the options are 0>5 volt, 0>10 volt or 0>20mA. Each leak detector is supplied ready to suit the target refrigerant with the ability to operate at ambient conditions between -25 DegC and +40 DegC without loss of performance.

Features at a glance

- -25DegC to +40DegC Operating range
- High accuracy (+/- 2% from 0-50% of range, +/- 5% from 50-100% of range for a Co2 0-10000ppm sensor)
- Graphical status LED's indicators
- Selectable Single or Dual alarm threshold modes
- Alarm & Fault or Critical alarm relays, selectable as volt-free contacts or switched supply (for direct drive of alarm beacons)
- Selectable alarm threshold limits and time delay
- Audible alarm with local mute facility
- RS485 communications interface
- Integrated self test facility
- Digital input for muting alarms and initiating a self test
- Android smartphone application with optional Bluetooth commissioning interface
- Optional analogue output, selectable 0-5 volt, 0-10 volt / 0-20mA
- Optional Ethernet interface with Modbus TCP and HTML

Technical Overview

Operation

Upon power up the green healthy LED will flash whilst the sensor warms up. After 60 seconds the healthy LED will switch on permanently to indicate the SP-ir is fully operational. If the refrigerant concentration rises above the alarm threshold the healthy LED switch OFF and the Alarm LED will slowly flash red until the alarm delay time has expired after which it will be permanently lit, the audible alarm will be initiated and the alarm relay will change state. If setup for dual alarm thresholds, and the refrigerant concentration continues to rise, once the critical alarm threshold is exceeded the Alarm LED will flash red at a fast rate and the critical 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 remote mute button which is connected to the digital input on the detector.

Operating range

Detectors can operate in either a single or dual alarm threshold mode (Alarm & Critical Alarm), selectable using bit switches..

Sensors are available for various ranges, depending on the target gas type and the desired application;

HFC sensors: 0-2000ppm
HFO sensors: 0-2000ppm or 0-100%LEL
Co2: 0-10000ppm or 0-20000ppm
Hydrocarbons: 0-100%LEL

Alarm thresholds can be defined automatically according to the bit switch configuration or alternatively custom alarm thresholds can be configured via the network connection or using the Site Assistant Android App.

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Alarm Configuration

Bit switches are used to select single or dual alarm threshold modes and also to select preset alarm thresholds, alternatively a network connection will allow custom alarm threshold values to be used. The alarm time out delay is also selected using bit switches with 0, 1 minute, 5 minutes or 30 minutes options available or custom configured via the network connection or Android App. Two bit switches are provided to enable the user to select failsafe/non failsafe operation of both the alarm and fault relays. A final pair of bit switches are used to configure if the alarm relays latch or do not latch following an alarm clearing.

Self Test

Depressing the reset button, or activating the reset digital input for 2 seconds (during normal healthy operating conditions) will initiate a 10 second self test cycle. The two relays change to alarm/fault condition, the LED indicators and buzzer will switch ON, after which normal operation is resumed. Self test initiation maybe logged by remote systems via the network connection.

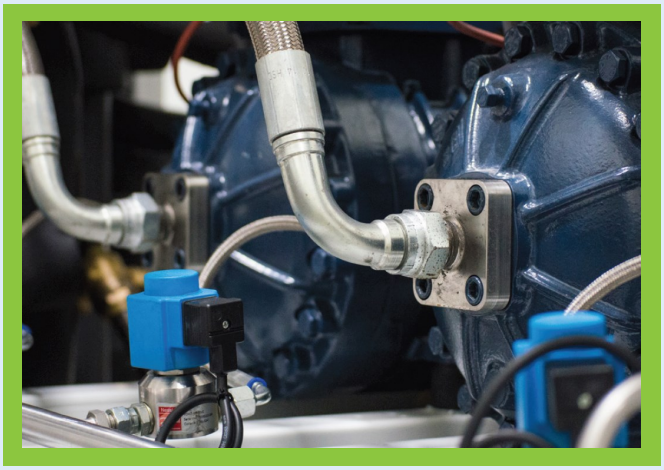
Analogue Output

A optional and voltage or current output can be provided to interface with third party equipment. The output type can be selected, and will indicate the unit status and current gas reading, for example :-

0 to 20 mA - 2 mA - Detector fault
3 mA - Detector in warm up mode
4 to 20 mA - Linear across PPM range

Remote or local sensor option

Remote or locally mounted sensor versions are available.
Remote sensors can be supplied with 3M to 15M cable lengths and wall mounting enclosure.



Remote Communications

An RS 485 serial interface or optional Ethernet interface enables communications between the detector and building management systems. Using the Modbus RTU protocol enables the following data to be viewed/changed :-

- PPM concentration
- Alarm threshold levels and alarm time delay
- Unit status (Normal, Warmup, Alarms etc..)
- Relay status and configuration
- Refrigerant type and sensor range
- Self test status

Android smartphone app.

Using the CPC Android application (Site Assistant), status and setup information can be easily accessed, simplifying and speeding up commissioning of systems on site.

Unit re-calibration and test features are also accessible through Site Assistant.

A simple commissioning report can also be generated if required.

A Bluetooth commissioning module or USB/RS485 connection kit is available to allow easy connection to your Smartphone.

Specification	
Standard Housing	IP65
Power Supply	24 volt AC or DC ~100mA
Output Relays	2 x SPDT relays
Ambient Temperature	–25DegC to +40DegC
Dimensions	110mmH x 180mmH x 63mmD
Classification	CE / UKCA

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