The IIR-FREON provides Refrigerant gas concentration measurement for leak detection. The proprietary designed infrared sensing element is the result of extensive research and development. The technology is accurate to +/- 3% with minimal zero drift. The transmitter provides an RS-485 communication for continuous sensing status report to the IQ4C or IM-CONTROL controllers. Input voltages of 24 VDC or 24 VAC with wide tolerances are acceptable. Calibration is very easy - simply apply the calibration gas and adjust the potentiometer to the desired zero and span value.

**MODEL NUMBER ORDERING CODE**

I I R - F R E O N - R 1 3 4 A

**PRINCIPLE OF OPERATION**

The IIR-FREON Smart Sensor is a microprocessor controlled FREON gas Sensor/Transmitter using infrared sensing technology. The concentration of Freon is measured by determining the amount of absorption of light in a specific frequency band.

Most gases have their characteristic spectra in infrared. They are driven by molecular composition in such a way that no two molecular gases have the same IR spectrum. IR spectra are the fingerprints of gases and thus allow unique identification.

By transmitting a beam of IR radiation through the air, or through any particular gas volume, and recording how much is transmitted at selected spectral lines, one may decide which gases are present and in what concentration. This is a standard and well-proven principle, routinely used in laboratory analyses of chemical species, and is also the basis on which our sensors are made.

An IR detector is essentially a temperature sensor and is, therefore, potentially every sensitive to changes in the ambient temperature. However, our IR-Freon smart sensor modules do it better, faster, and more precisely. The IR-FREON smart sensors are entirely electronic with no moving parts, and are built around our unique QT Gas Sample Cell with constant temperature control integrated with IR Source and IR Detector together. This makes our IR smart sensors work from -49°F to 149°F without being susceptible to ambient temperature fluctuations.

Comparing with conventional gas detector, gases to be detected are often corrosive and reactive. With most sensor types, the sensor itself is directly exposed to the gas, often causing the sensor to drift or die prematurely. The main advantage of IR sensor or transmitter is that the detector does not directly interact with the gas (or gases) to be detected. In the IR-Freon Smart Sensor, the major functional components are protected with optical parts. In other words, gas molecules interact only with a light beam. The IR Source and IR Detector can be treated, making them resistant to corrosion, and are designed such that they are easily removable for maintenance or replacement.
SPECIFICATIONS

Input Power: 24V +/- 4 VAC or VDC
Fuse: F1: 1.6 A  F2: 2 A very fast
Enclosure: NEMA 12 Type General Purpose
Enclosure Material: ABS plastic
Dimensions: 7” X 4.7” X 3.5” (180 X 120 X 90 mm)
Temperature: -49°F to +149°F (-45°C to +65°C)
Humidity: Continuous 5 to 95% RH, non-condensing
Sensor Type: Infrared Freon, R134a
Range: 0 - 1000 ppm
Accuracy: +/- 3% of reading
Repeatability: +/- 1% of full scale
Sampling: Diffusion
Output Ports: RS-485 to host IQ4C or IM-CONTROL
Recommended Cable: Power - Twisted shielded pair
                Communication (RS-485) - Belden 9841 or equivalent twisted shielded pair, 120 ohm
Approvals: CSA NRTL/C C22-205 pending

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This brochure includes general specifications which are subject to change without notice. Ensure a complete understanding of all applicable Federal, State, Provincial and Local Health and Safety laws and regulations before using these products. Read and understand fully all instructions before using these products.