

# IR-em2

## For Air Conditioning

Issue: 05/14

### Infrared Aspirated Environmental Monitor

The IR-em2 offers intelligent, reliable and accurate refrigerant monitoring which is ideally suited to refrigeration and air-conditioning applications. The IR-em2 sequentially samples air through 6mm OD sampling pipe from each location in rotation. Distances up to 150m can be easily accommodated without compromising performance. The high sensitivity and selectivity ensures gas leaks are detected at the earliest opportunity, therefore reducing unnecessary losses, providing personnel protection, reducing environmental pollution and enabling compliance with all the appropriate directives and regulations.

### Zone Based Operation

The IR-em2 is an aspirated gas monitoring system with the ability to monitor up to 8/16/32 zones independently. The system uses a high capacity vacuum pump to sequentially sample air from potential leak locations back to the IR-em2 where it passes through a valve manifold and water trap arrangement before entering the sample cell where the analysis is conducted.

The result of the analysis is displayed clearly on the backlit LCD screen together with the associated zone name. Historic data from previous measurements is retained on the system to enable technicians to identify leak patterns and rectify problems easier. In the event of the refrigerant concentration exceeding any of the three alarm thresholds the appropriate relays will change state.

### Features at a glance

- » Detects HCFC's, HC's, HFC's, CO2 and ammonia
- » 8, 16 and 32 Channel models
- » Simple 6 key user interface with password protection
- » Individual zone naming and alarm thresholds
- » Optional fail-safe relay alarm operation
- » Self diagnostics detect system faults
- » Highly selective to minimize issues with cross sensitivity
- » RS485 Modbus RTU + XML & SNMP communication protocols supported
- » On-board web server enables viewing and configuration from a web browser



### Technical Information

Weight	19kg (8c) 20kg (16c) 21kg (32c)
Refrigerants	Ammonia, CO2, R22, R404a, R507a, R407a, R410a, R422d (Other refrigerants available upon request).
Operating Environment	Ambient 0°C to 40°C < 95%rh
Alarm Relay Rating	SPDT 24 Volt AC 2 amp
Power	230V 120va (optional 110V AC)
Classification	CE

### Self Diagnostics

The airflow is constantly monitored and if it drops below an acceptable level due to a blocked filter or kinked sampling pipe which may impair the performance of the system, a fault condition is initiated. In addition, a daily-self test is conducted to verify the internal pneumatics of the IR-em2, and if a problem is identified a fault is displayed. All fault conditions are logged to enable problems to be quickly & easily resolved.

### Alarms

Each zone can be assigned up to three alarm thresholds, leak, zone and spill. The leak and zone alarms have an optional delay which require refrigerant above the alarm threshold to be measured over a number of consecutive cycles before being flagged whilst the spill alarm is instantaneous. In the event of a leak, spill or fault occurring, the corresponding LED and relay will be energised. Each of the zones has a dedicated relay which is energised in the event of a zone alarm. All relays can be configured fail-safe and have both N/O and N/C contacts

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### High Accuracy

The high sensitivity and selectivity of the unit is achieved as the IR-em2 uses the unique 'infrared signature' to identify the refrigerant and hence eliminate nuisance alarms from potential contaminant gases. As a result the IR-em2 can accurately detect refrigerant concentrations in parts per million levels.

### Interfaces

The IR-em2 can be interfaced to third party BMS systems using either the on board RS485 Modbus or Ethernet interface. Up to 6 off IR-em2 units can be interfaced via the Ethernet port to our Remote Display which provides a summary of alarm and status information from each of the leak detectors. Since the IR-em2 includes a web server it can be connected across a LAN or WAN to a PC with a standard web browser.

### Air-conditioning

The IR-em2 is ideally suited to monitor for refrigerant leaks in hotels, offices and residential properties where multi split air conditioning systems are installed. A decorative faceplate is fitted in the room which connects via the small bore tube to the IR-em2. In the event of a refrigerant leak an optional audible/visual alarm can be initiated in the room which is discreetly fitted within the room faceplate. In addition a warning signal can be provided to a central monitoring location and a refrigeration system pump down initiated. Up to 32 rooms can be individually monitored from a single IR-em2.

### Conformity

The IR-em2 enables customers to meet and exceed the requirements of EN378:2008, 'F' gas directive and BREEAM. The 8 & 16 channel IR-em2 are also included on the Carbon Trust's Energy Technology list and as a result owners can benefit from the enhanced capital allowance scheme.

