SECTION 23 65 55

RFRIGERANT LEAK DETECTION

PART 1 – GENERAL

1. SUMMARY
2. General: Provide Detectors and Monitors to protect occupants from Refrigerant Leak and provide DDC input for facilities management in accordance with requirements of the Contract Documents.
3. Section includes:

1. NDIR (Non-Dispersive Infrared) VRF Detector

2. Refrigerant Shut Down Solenoid

3. Latching Control with Manual Re-set

C. Manufacturers:

 1. Canadian Gas Safety (CGS).

 2.

 3.

D. Submittals

 1. Product Data:

 a. Manufacturers/Model Number.

 b. Indicate all options and accessories.

 c. Wiring diagrams for all components and connections.

1.2 REFERENCES

A. Reference standards

1. American Society of Heating, Refrigerant and Air-Conditioning Engineers

(ASHRAE)

a. ASHRAE 15

b. ASHRAE 34

* 1. RELATED DOCUMENTS
1. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 01 Specifications Sections, apply to this section.
2. Provide a complete installation of a refrigerant leak protection solution including detectors, audible/visual alarm devices, shut down solenoid valves and latching re-set relay devices. This solution can be linked to a controller or to a DDC /BMS
3. The solution design shall consist of diffusion type detectors and a latching control relay for refrigerant shut down. Sample draw systems with sample tubing are unacceptable. Detectors must install flush with finished surface and mount inside a double gang rough in box.
4. The system shall include, but not be limited to, the following:

1. Future Expandability

2. Replaceable sensors

3. Test and calibration functionality

4. Audible / visual display

5. Valve status indication

6. RS485 RTU Slave Protocol

7. Manual re-set after alarm

8. Flush mounted fascia

9. Designed for detection in occupied spaces

PART 2 – PRODUCTS

1. REFRIGERANT DETECTOR
	1. Operating principal: the principal operation shall be a non-dispersive infrared type by Canadian Gas Safety.
		1. Appearance: Detector shall provide a clean, white flush mount fascia with vent grill. Detector shall fully mount within a 2gang rough in box with only the fascia proud of the finished surface.
		2. Visual Indication. Multicolor status LED indication.
		3. Installation: Mounted 18” from the floor.
		4. Dimensions: Width 5.11in Height 5.11in Depth 2.36in
		5. Accuracy: ±5% full scale range under 50% full-scale, ±7% full scale range above 50% of full-scale.
		6. Audible Alarm: 85dB @ 10F
		7. Serial Communications: RS485 RTU Slave
		8. Range:5000PPM
		9. Warranty: Limited 3years
		10. Maximum System Maintenance Requirements – The detectors shall require no periodic maintenance other than yearly zero and span checking with calibrated zero and span gas. Periodic checking or adjustments of the unit shall be capable of being accomplished by one person at the unit location.
		11. Calibration: Any adjustments, Zero or span must be made through the front facia via the operating magnet.
		12. IP Rating: IP42
		13. Approvals: EN 61000-6-3:2007 + A1:201; EN 50270:2015, IEC 60335-2-40Annex LL,
2. EN 378-3, EN 50676 and EN 14624, ISP5149-3, REACH/RoHS, CE Mark
	* 1. Model: CGS-NDIR-R410a
	1. ALARM LEVELS
		1. Low Level: 1000PPM SPDT relay changes state
		2. High Level: 2000PPM Alarm SPDT relay changes state and audible / visual alarm initiated.
3. C.CONNECTIONS

1. 110v or 24vac power

2. 2 x SPDT relays

3. RS485 RTU Slave (2)wire

2.2 LATCHING RELAY

1. Operating Principle: The principle operation shall be to accept alarm signal from remote detector and provide a latching logic output to a refrigerant valve requiring manual re-set.

1. Relays & Contact Type: One (1) DPDT Continuous Duty Coil

2. Expected Relay Life: 10 million cycles minimum

3. Operating Temp: -30 - 140°F

4. Humidity Range: 5 to 95% (noncondensing)

5. Dimensions: 4in x 2.75in x 1.25in

6. Reset Switch: Pushbutton min 30ms

7. Contact Ratings: 10amp resistive @30vdc, 10amp general use @ 277Vac

8. Power Input Ratings: 53mA @ 24vac, 25mA @ 24vdc, 50/60Hz

9. Model: RIBMNLB-1

2.3 REFRIGERANT SHUT OFF VALVE

1. Operating Principle: The principal operations shall be to shut off the refrigerant flow activated by an alarm signal from the refrigerant leak detector via the latching manual reset relay.
	1. Valve Body: Brass compatible for R410A
	2. Pressure: High Pressure complying with R410A
	3. Connections: Extended end sweat connections enable brazing installation without disassembly.
	4. Coil: AC 110V
	5. Valve Position: Normally closed.
	6. Size: See Drawings

PART 3 – EXECUTION

1. INSTALLATION

A. Install complete as per manufacturer’s instructions and guidelines

B. The refrigerant leak detector shall be mounted in a 2gang electrical rough in box 18”

 A.F.F. located as per drawings.

B. Normally Closed Dry Contact Loop circuit wired to latching relay. 2# 16AWG

C. 110v through latching relay to refrigerant shut off valve 2 # 14AWG plus ground.

3.2 COMMISSIONING

The Refrigerant Leak Detection system shall be inspected and commissioned on site by a factory trained and authorized Honeywell Analytics technician. A factory generated certification document shall be presented certifying the operation of the unit and the alarm system.

3.3 WARRANTY.

The system shall be warranted by the manufacturer to be free from defects in workmanship and materials for a period of one year.

3.4 SEQUENCE OF OPERATION

Detection Level 1: 1000PPM Local audible and visual alarm indication.

Detection Level 2: 2000PPM Local audible and visual indication. VRF detector shall signal Latching Relay to de-energize refrigerant solenoid. Relay requires manual re-set after alarm condition.