

SECTION 28 35 00: REFRIGERANT DETECTION & ALARM SYSTEMS

1. GENERAL

- A. Refrigerant leak detection system should be capable of continuously transmitting alarm and trouble conditions, and gas concentration levels to the Building Automation System (BAS).
- B. Refrigerant monitors, alarm indicators and chiller room ventilation systems to be connected to building standby power system where available.
- C. Where multiple refrigerant types are used, it is the system supplier’s responsibility to properly select the quantity and type of refrigerant detectors and monitoring systems required to safely monitor the equipment room.
- D. Operation of the chiller room emergency ventilation system to be initiated from the refrigerant gas leak monitor panel and from manual switches located outside the mechanical room entrance door(s).
- E. All equipment and components to be new, and the manufacturer’s current model.
- F. Manufacturers:
 - Mine Safety Appliance (MSA)
 - Bacharach
- G. Locate control panel outside the mechanical room where the chiller equipment is located, near the most frequently accessed door to the chiller room for emergency responders. If the location is not secured from public access, provide adequate tamper protection for the control panel yet allowing responders to view the display without opening.
- H. Leak Detection Alarm Levels: guidance on refrigerant leak alarm actions and alarm levels for select refrigerants is noted below:

ALARM	ACTION
Trouble	* BAS alarm
Level 1	Not used
Level 2	<ul style="list-style-type: none"> · Activate emergency ventilation system · BAS alarm
Level 3	<ul style="list-style-type: none"> · Activate emergency ventilation system · Activate local alert horns/lights · BAS alarm

- I. Alarms & Signage
 - Provide audio and visual alarms both inside the mechanical space (or other protected space) and outside each entrance, positioned ~ 96 inches AFF.
 - 1. Visual alarms to be colored yellow. Audio horn to be distinct tone separate from Carbon Monoxide and fire alarm systems. Label each device with REFRIGERANT LEAK ALARM to indicate its purpose.
 - Place warning signs inside the mechanical room and outside each door to the refrigeration equipment room; the warning sign to read:

WARNING

Authorized Personnel Only — Stay out when refrigerant alarm sounds
Call Facilities Management immediately (401) 863-7800 and
EHS Emergency Response team (401) 863-4111
If police, fire, or medical is required, call Public Safety (401) 863-4111

2. **IDENTIFICATION/LABELING**

- A. Refer to [MEPS Identification/Labeling](#) in addition to the below information.
- B. Provide engraved nameplates for leak detection monitor panels. The plate to contain the equipment identification and the control power circuit source panel name and breaker number.
- C. Provide machine-labeled directories for all equipment controls and indicators.
- D. Junction and splice boxes containing refrigerant leak detection system wiring, circuits, and conductors: provide with yellow covers and marked refrigerant leak detection in $\frac{3}{4}$ " (three-quarter inch) white letters.
- E. All sample tubing to be marked refrigerant leak detection.

3. **SUBMITTALS, STARTUP & TRAINING**

- A. Submit the following for reference/or approval:
 - Refrigerant leak detection control panel and sensors
 - Audible and visual signaling devices
 - Interconnection wiring diagrams
 - Installation and operating instruction
- B. Refer to [Project Turnover Requirements](#) in addition to the information below.
- C. Prior to project completion, manufacturer's factory trained representative must:
 - Program
 - Startup
 - Thoroughly test and calibrate
 - Set alarm threshold levels
 - Verify system is in compliance with operational sequence
 - Provide safety certification documentation including:
 1. Air flow profile report for each sample point location
 2. Calibration report with before and after results of each analyzer
 3. Alarm/interface report stating all threshold levels, alarm and interface action at each level of alarm with field verification report
 4. BAS alarm report for each alarm threshold
 5. Safety training checklist