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ICM Controls ICM-UA2L-24C-DUAL

ICM-UA2L-24C-DUAL Universal Refrigerant Leak Detection and Mitigation System Manual

Model: ICM-UA2L-24C-DUAL | Brand: ICM Controls

1. INTRODUCTION

The ICM-UA2L-24C-DUAL A2L Refrigerant Leak Detection & Mitigation Control is a safety solution designed to support HVAC systems utilizing low-GWP A2L refrigerants. This system provides reliable refrigerant leak detection and coordinates mitigation responses for equipment using R-32 and R-454B refrigerants. It continuously monitors refrigerant concentration levels with compatible A2L refrigerant sensors. Upon leak detection, the control board activates alarm and mitigation signals to reduce risk and support safe system operation.

2. SAFETY INFORMATION

Important Safety Notice: Installation and servicing of this product must be performed by a qualified, professional HVAC technician. Improper installation or maintenance can lead to system malfunction, property damage, or personal injury. Always disconnect power before installing or servicing the unit.



Requires installation by a
professional or qualified
person

This icon signifies that installation requires a professional or qualified person to ensure safety and proper function.



The UL Listed mark indicates that this product has been tested by UL and meets nationally recognized safety standards.

3. PRODUCT OVERVIEW

The ICM-UA2L-24C-DUAL is powered by 24VAC and features dual sensor capability, allowing integration with multiple detection points within a single system. Built-in MODBUS communication enables efficient data exchange with sensors and HVAC control systems, supporting advanced diagnostics, monitoring, and automation.

Key Features

- **Designed for A2L Refrigerants:** Engineered to provide leak detection and safety mitigation for low-GWP A2L refrigerants such as R-32 and R-454B, meeting industry requirements.
- **Comprehensive Safety Monitoring:** Includes fault status monitoring, power LED indicators, and configurable alarm outputs to alert when A2L refrigerant leaks are detected.
- **Advanced Control Outputs:** Features a dry contact alarm output and dedicated outputs to turn off the compressor and activate a fan if refrigerant is detected in the air.
- **OEM-Grade Reliability:** Designed for robust performance in commercial and industrial applications, supporting multiple sensors and flexible configuration for alarm and mitigation settings.

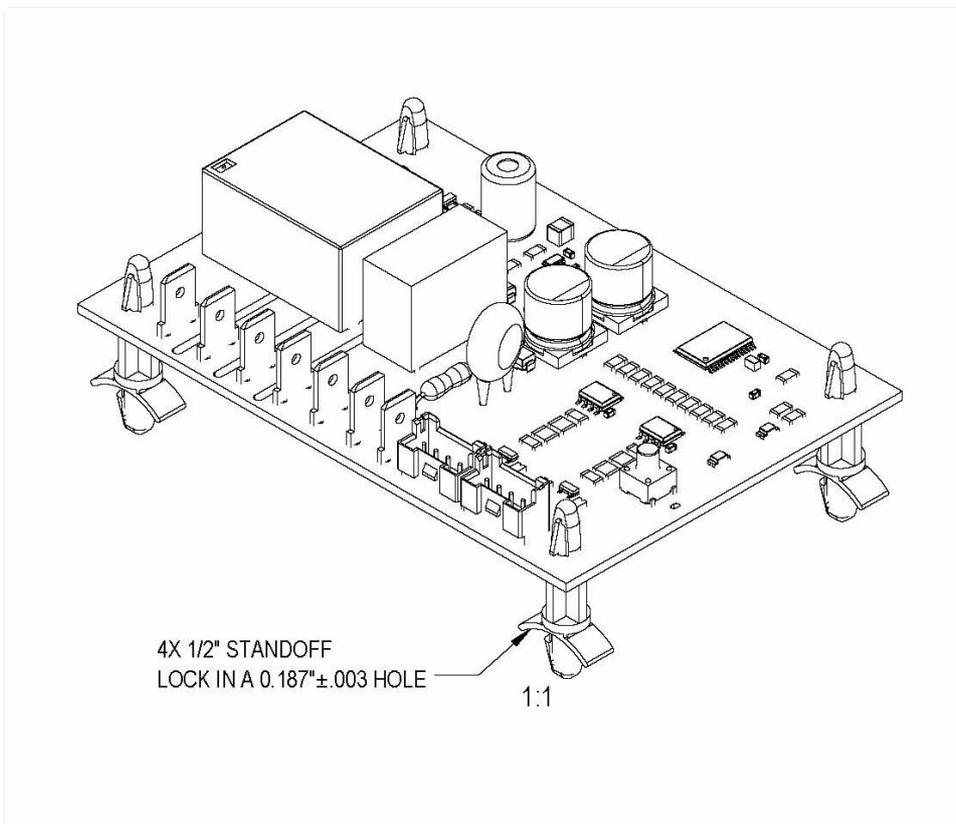


The image shows the ICM-UA2L-24C-DUAL control board installed, with a connected refrigerant sensor being held by a gloved hand. This illustrates the system's primary components.

4. INSTALLATION

4.1 Mounting

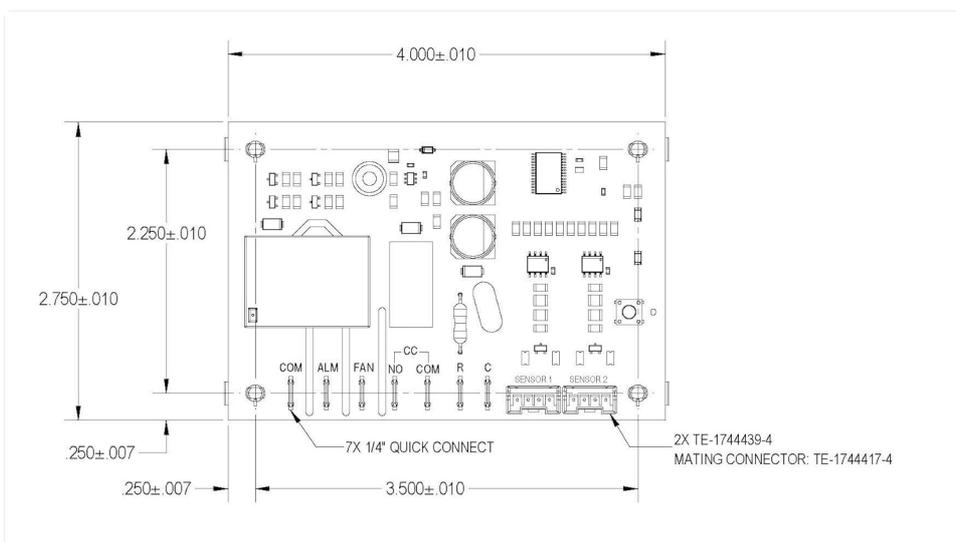
The control board is designed for secure mounting within an HVAC system enclosure. Utilize the four 1/2-inch standoffs provided. These standoffs are designed to lock into a 0.187-inch ± 0.003 hole for stable installation.



This technical drawing illustrates the control board's mounting points, specifically highlighting the four 1/2-inch standoffs and the required hole size for secure installation.

4.2 Wiring

Connect the 24VAC power supply to the designated terminals. The unit supports dual sensors, which should be connected to the 'SENSOR 1' and 'SENSOR 2' terminals. Alarm, fan, and control outputs are available via 1/4-inch quick connect terminals for integration with external mitigation devices such as ventilation fans or compressor shutdown circuits. Refer to the wiring diagram for specific connections.



This technical drawing provides detailed dimensions of the control board and labels for all wiring terminals, including common (COM), alarm (ALM), fan (FAN), normally open (NO), normally closed (NC), and sensor inputs (SENSOR 1, SENSOR 2).

5. OPERATION

5.1 Power-Up and Self-Test

Upon initial power-up, the system will perform a self-diagnostic check. During this period, the power LED will illuminate, and other indicator LEDs may cycle. Once the self-test is complete, the system will enter normal operating mode, indicated by a steady power LED.

5.2 Leak Detection and Mitigation Sequence

When a connected A2L refrigerant sensor detects refrigerant concentration exceeding a predefined threshold, the control board initiates a mitigation sequence:

- **Alarm Activation:** The alarm output (ALM) is activated, triggering any connected alarm systems.
- **Fan Activation:** The fan output (FAN) is activated, engaging ventilation systems to disperse refrigerant.
- **Compressor Shutdown:** The control output for the compressor is activated, shutting down the HVAC unit to prevent further refrigerant release.

5.3 LED Indicators

The control board features visual LED indicators to provide system status at a glance:

- **Power LED:** Indicates the unit is receiving power.
- **Alarm LED:** Illuminates when a refrigerant leak is detected.
- **Fault LED:** Indicates a system malfunction or sensor error.
- **Sensor 1/2 LEDs:** Indicate the status of individual connected sensors.

6. MAINTENANCE

Regular maintenance ensures the continued reliability and accuracy of the leak detection system. It is recommended to:

- Periodically inspect the control board and sensor connections for any signs of damage or corrosion.
- Ensure that the area around the sensors is clear of obstructions to allow for proper air circulation and detection.
- Consult the sensor manufacturer's guidelines for specific calibration or replacement schedules.
- Keep the unit free from dust and debris.

7. TROUBLESHOOTING

This section provides solutions to common issues encountered with the ICM-UA2L-24C-DUAL system.

Problem	Possible Cause	Solution
System not powering on	No 24VAC power supply; loose wiring connection	Verify 24VAC power is supplied to the unit; check all power connections.
Alarm LED is active without a known leak	Sensor malfunction; false alarm; high background refrigerant level	Inspect sensor for damage; verify sensor calibration; ventilate area and re-evaluate.
Fault LED is active	Sensor disconnected or faulty; internal system error	Check sensor connections; replace faulty sensor; if issue persists, contact technical support.
Mitigation actions (fan/compressor shutdown) not activating	Wiring error to external devices; external device malfunction	Verify wiring to fan/compressor control circuits; test external devices independently.

8. SPECIFICATIONS

Specification	Value
Model	ICM-UA2L-24C-DUAL
Power Input	24VAC
Refrigerant Compatibility	R-32, R-454B (A2L refrigerants)
Sensor Capability	Dual sensor support
Communication	MODBUS
Outputs	Dry contact alarm, fan, control outputs
Package Dimensions	8 x 6 x 2.5 inches
Item Weight	1.2 pounds
Manufacturer	ICM Controls

9. WARRANTY INFORMATION

ICM Controls products are manufactured to high standards and are backed by a manufacturer's warranty. For specific warranty terms and conditions, please refer to the documentation included with your product or visit the official ICM Controls website. Keep your proof of purchase for warranty claims.



This seal highlights the manufacturer's commitment to quality and warranty support for products made in America.

10. TECHNICAL SUPPORT

If you encounter issues not covered in this manual or require further assistance, please contact ICM Controls technical support. Have your product model number and any relevant diagnostic information ready when you call or email. For the most up-to-date contact information, please visit the official ICM Controls website: www.icmcontrols.com