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› CAI - RANCO Electronic Temperature Control, 24 VAC User Manual

CAI - RANCO Electronic Temperature Control, 24 VAC

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Model: Electronic Temperature Control, 24 VAC

1. INTRODUCTION

This manual provides essential instructions for the safe and efficient installation, operation, and maintenance of your CAI - RANCO Electronic Temperature Control, 24 VAC. Please read this manual thoroughly before using the device to ensure proper function and to prevent potential hazards. Keep this manual for future reference.

2. PRODUCT OVERVIEW

The CAI - RANCO Electronic Temperature Control is a versatile device designed for precise temperature management in heating, cooling, and refrigeration applications. It features a liquid crystal display (LCD) for continuous temperature readout and error code display. Key features include keypad lockout, settings memory, and a time delay on power-up. The unit is UL Listed and CSA Certified, ensuring compliance with safety standards.



Figure 1: Front view of the CAI - RANCO Electronic Temperature Control unit. The image shows a gray rectangular enclosure with an LCD screen and three buttons (SET, Up, Down) on the front panel. A gray cable with a black cylindrical sensor extends from the bottom of the unit.

3. SPECIFICATIONS

Feature	Detail
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Feature	Detail
Item	Electronic Temperature Control
Switch Type	SPDT (Single Pole Double Throw)
Switch Action	Open/Close on Rise
Voltage Range	24 VAC
Control Range	-30°F to 220°F (-34.4°C to 104.4°C)
Differential	1°F to 30°F (0.5°C to 16.7°C)
Number of Relay Inputs	1
Number of Relay Outputs	1
Full Load Amps @ 120VAC	16A (Normally Open), 5.8A (Normally Closed)
Full Load Amps @ 240VAC	8A (Normally Open), 2.9A (Normally Closed)
Sensor Type	Thermistor
Sensing Bulb Diameter	1/4"
Sensing Bulb Length	2"
Enclosure Type	NEMA 1
Height	6-1/2"
Width	2-3/4"
Depth	2-1/2"
Color	Gray
Display Type	LCD
Applications	Heating, Cooling, Refrigeration
Certifications	UL Listed, CSA Certified

4. WHAT'S IN THE BOX

- 1 x CAI - RANCO Electronic Temperature Control Unit with Integrated Sensor

Note: The product description mentioned "1 x Remote Control". Based on the product image and typical temperature controller components, it is assumed this refers to the main control unit with its integrated sensor.

5. SETUP AND INSTALLATION

Important: Installation should only be performed by qualified personnel in accordance with all local and national electrical codes. Ensure power is disconnected before beginning any installation procedures.

5.1 Mounting

- Select a suitable location for the controller, ensuring it is protected from direct moisture, excessive vibration,

and extreme temperatures outside its operating range.

- The enclosure type is NEMA 1, suitable for indoor use, providing protection against falling dirt.
- Secure the unit using appropriate fasteners through the mounting holes.

5.2 Wiring

- Connect the 24 VAC power supply to the designated terminals.
- Wire the load (e.g., compressor, heater) to the relay output terminals (Normally Open/Normally Closed) according to your application's requirements. Refer to the device's internal wiring diagram (if available on the unit itself or in a separate diagram) for precise connections.
- Ensure all connections are secure and properly insulated.

5.3 Sensor Placement

- Position the thermistor sensor in the area where temperature measurement and control are required.
- Avoid placing the sensor near heat sources, cold spots, or areas with poor air circulation that do not represent the true ambient temperature.

6. OPERATING INSTRUCTIONS

6.1 Power On

- Once installation is complete and verified, apply 24 VAC power to the unit.
- The LCD will display the current sensed temperature after a brief power-up delay.

6.2 Setting Temperature

1. Press the **SET** button to enter the setpoint adjustment mode. The display will show the current set temperature.
2. Use the **Up** (↑) and **Down** (↓) arrow buttons to adjust the desired temperature setpoint.
3. Press **SET** again to confirm the new setpoint and exit adjustment mode. The display will return to showing the sensed temperature.

6.3 Keypad Lockout

The unit features a keypad lockout function to prevent unauthorized changes to settings. Refer to the specific instructions provided with the unit for how to activate and deactivate this feature, as the exact button sequence may vary.

6.4 Settings Memory

The controller retains its settings in memory even during power outages, eliminating the need to reconfigure after a power cycle.

7. MAINTENANCE

- **Cleaning:** Periodically wipe the exterior of the unit with a soft, damp cloth. Do not use abrasive cleaners or solvents. Ensure no liquid enters the enclosure.
- **Inspection:** Regularly inspect wiring connections for tightness and signs of wear or damage. Check the sensor for any physical damage or accumulation of debris that might affect its accuracy.
- **Power Disconnection:** Always disconnect power to the unit before performing any maintenance or inspection.

8. TROUBLESHOOTING

The LCD display can show error codes to assist in diagnosing problems. While specific error codes are not detailed in this manual, general troubleshooting steps are provided below.

Problem	Possible Cause	Solution
No display/Unit not powering on	No power supply; Incorrect wiring; Blown fuse (external)	Check 24 VAC power connection. Verify wiring. Check external fuse if applicable.
Incorrect temperature reading	Faulty sensor; Improper sensor placement; Sensor wiring issue	Inspect sensor for damage. Relocate sensor to a representative area. Check sensor wiring connections.
Load not switching (e.g., heater not turning on)	Incorrect setpoint; Differential setting too wide; Faulty relay; Load wiring issue	Verify setpoint and differential. Check load wiring. If relay is suspected faulty, professional service is required.
Displaying error code	Specific system fault (e.g., sensor open/short, over-temperature)	Consult the specific error code documentation (if provided with the unit) or contact CAI - RANCO technical support for interpretation and resolution.
Keypad unresponsive	Keypad lockout active; Internal fault	Deactivate keypad lockout if enabled. If issue persists, contact support.

If troubleshooting steps do not resolve the issue, contact CAI - RANCO customer support for further assistance.

9. WARRANTY AND SUPPORT

For information regarding product warranty, technical support, or service, please contact CAI - RANCO directly. Details for contacting support are typically found on the manufacturer's website or included in the product packaging.

It is recommended to have your product model and serial number available when contacting support.