Full Gauge TC-900E

Full Gauge TC-900E Electronic Freeze Control Instruction Manual

Model: TC-900E

1. Introduction

The Full Gauge TC-900E is an electronic freeze control device designed for applications such as walk-in and display freezers. It automates the defrosting process based on system requirements, ensuring efficient operation for frozen goods. This device operates with two sensors, one for room temperature and another for evaporator control, and features three outlets, one digital inlet, and an internal buzzer.

This manual provides essential information for the safe and effective installation, operation, and maintenance of your TC-900E controller.

2. Safety Information

- Always disconnect power before installation or maintenance.
- Installation should be performed by qualified personnel only.
- Ensure proper grounding to prevent electrical shock.
- Verify the power supply voltage (110/220V) matches the device specifications before connecting.
- Do not expose the device to water or excessive humidity.
- Use appropriate tools and follow local electrical codes.

3. Product Overview

The TC-900E controller is equipped with advanced features for precise temperature management in refrigeration systems. It includes:

- **Two Sensors:** One for ambient room temperature and another for evaporator defrost control.
- **Three Outlets:** For controlling various components of the refrigeration system.
- **One Digital Inlet:** Configurable for various functions, including a third sensor for condenser temperature monitoring.
- **Internal Buzzer:** For audible alerts.

- **16-Amp Relay Output:** Capable of controlling compressors up to 1 HP.
- **10-Amp Defrost Output:** For managing defrost heating elements.

Figure 1: Front view of the Full Gauge TC-900E Electronic Freeze Control, showing the digital display, control buttons, and the wiring diagram on the top label. The diagram illustrates connections for power, sensors, compressor, fan, and defrost heater.

Figure 2: Side view of the Full Gauge TC-900E Electronic Freeze Control, illustrating its compact size and approximate dimensions of 3.2 inches (8 cm) in height, providing a visual reference for installation space.

4. Setup and Installation

Careful installation is crucial for the proper functioning of the TC-900E. Refer to the wiring diagram on the device label (Figure 1) for specific connection points.

4.1. Mounting

- Mount the controller in a dry, protected location, away from direct heat sources or excessive vibration.
- Ensure adequate ventilation around the unit.

4.2. Electrical Connections

All electrical connections must comply with local and national electrical codes.

1. **Power Supply:** Connect the 110/220V AC power supply to the designated terminals as indicated on the wiring diagram. Ensure correct voltage is applied.
2. **Sensor Connections:** Connect the room temperature sensor and the evaporator sensor to their respective terminals. Ensure sensors are placed correctly for accurate readings. The room sensor should be in the controlled environment, and the evaporator sensor should be fastened to the evaporator coil.
3. **Output Connections:** Connect the compressor, fan, and defrost heater loads to their corresponding relay outputs. Observe maximum current ratings (16A for compressor, 10A for defrost).
4. **Digital Input:** If utilizing, connect the digital input as required. This can be configured as a third sensor for condenser temperature monitoring or other functions.

After all connections are made, double-check wiring for correctness and security before applying power.

5. Operating Instructions

The TC-900E is designed for intuitive operation, but understanding its functions is key to optimal performance.

5.1. Initial Power-Up

Upon initial power-up, the device will display the current room temperature. The internal buzzer may sound briefly as part of the self-test.

5.2. Temperature Control

The device features a normal setpoint and an economy setpoint for room temperature control. These can be adjusted to suit specific application requirements. Consult the detailed programming guide (typically provided with the product or available from the manufacturer) for instructions on setting these parameters.

5.3. Defrosting Process

The TC-900E intelligently automates the defrosting process. The evaporator sensor monitors ice buildup, and the system initiates defrost cycles as needed. Parameters related to defrost frequency and duration are programmable.

5.4. Fast Freezing Functionality

The controller includes a fast freezing function, which can be activated to rapidly lower the temperature in the controlled environment when required.

5.5. Digital Inputs

The digital inputs can be configured for various purposes, such as door switches, external alarms, or as a third sensor to monitor condenser temperature, providing enhanced system monitoring capabilities.

6. Maintenance

Regular maintenance ensures the longevity and accuracy of your TC-900E controller.

- **Cleaning:** Periodically clean the device's exterior with a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Sensor Check:** Inspect sensors for physical damage or corrosion. Ensure they are securely fastened and properly positioned.
- **Wiring Inspection:** Annually check all electrical connections for tightness and signs of wear or damage.

- **Software Updates:** Check the manufacturer's website for any available firmware updates, if applicable.

7. Troubleshooting

This section provides basic troubleshooting steps for common issues. For complex problems, contact technical support.

- **No Power:** Check the power supply connection and circuit breaker. Ensure the voltage is correct.
- **Incorrect Temperature Reading:** Verify sensor connections and placement. Ensure sensors are not damaged.
- **Compressor Not Activating:** Check the compressor's power supply and connections. Verify the setpoint and differential settings. Inspect the compressor relay output.
- **Defrost Cycle Issues:** Check the evaporator sensor. Verify defrost parameters in the settings. Inspect the defrost heater and its relay output.
- **Buzzer Alarms:** Refer to the device's programming manual for specific alarm codes and their meanings.

8. Specifications

Feature	Detail
Manufacturer	FULL GAUGE
Part Number	TC900E
Item Model Number	TC900E
Power Supply	110/220V
Compressor Output	16 Amp (up to 1 HP)
Defrost Output	10 Amp
Number of Sensors	2 (Room, Evaporator) + 1 Digital Input configurable as Sensor 3
Digital Inputs	1
Internal Buzzer	Yes
Item Weight	10.2 ounces
Product Dimensions	4.5 x 3.5 x 3.2 inches
Batteries Required	No

9. Warranty Information

Specific warranty terms and conditions for the Full Gauge TC-900E Electronic Freeze Control are provided by the manufacturer or the seller at the time of purchase. Please retain your proof of purchase and refer to the warranty documentation included with your product for details on coverage, duration, and how to make a claim. For any warranty-related inquiries, contact the point of purchase or the Full Gauge customer service directly.

10. Support

For technical assistance, programming guidance, or further support regarding your Full Gauge TC-900E controller, please contact:

- Your authorized Full Gauge distributor or reseller.
- The official Full Gauge technical support channels, which can typically be found on the manufacturer's website.

When contacting support, please have your product model (TC-900E) and any relevant purchase information readily available.