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ETURBEV TC4-M

ETURBEV TC4-M Digital PID Temperature Controller User Manual

Model: TC4-M | Brand: ETURBEV

1. Introduction

This manual provides comprehensive instructions for the installation, operation, maintenance, and troubleshooting of the ETURBEV TC4-M Digital PID Temperature Controller. This device is designed for industrial applications requiring precise temperature control using various input types and output configurations.
Please read this manual thoroughly before operating the device to ensure correct usage and optimal performance.

2. Product Overview

The ETURBEV TC4-M is a 72x72mm digital PID temperature controller capable of accepting TC (Thermocouple) and RTD (Resistance Temperature Detector) inputs. It features a clear digital display for process value (PV) and set value (SV), and offers various output options including SSR, Relay, or 4-20mA, with 1 or 2 alarm functions. This specific model features a 4-20mA output and 1 alarm.
Key features include:

- Panel Size: 72x72mm
- Power Supply: 100-240VAC
- Input Types: TC (K, J, E, S) / RTD (PT100)
- Output Type: 4-20mA
- Alarm Functions: 1 Alarm
- Smart Device Capability: Yes



Figure 1: Front view of the TC4-M controller, displaying process value (PV) and set value (SV) with control buttons.



Figure 2: Detailed view of the TC4-M display, highlighting the PV and SV readouts and operational indicators like OUT, AT, ALM1, ALM2.

3. Setup and Installation

Proper installation is crucial for the safe and accurate operation of the temperature controller. Ensure all power is disconnected before proceeding with installation.

3.1 Panel Mounting

The TC4-M controller is designed for panel mounting with a 72x72mm cutout. Secure the controller using the provided mounting brackets.

3.2 Wiring Diagram

Refer to the wiring diagram on the side of the unit and the illustration below for correct electrical connections. Incorrect wiring can damage the unit or connected equipment.



Figure 3: Rear view of the TC4-M controller with its wiring diagram. This diagram illustrates connections for power supply (100-240VAC), SSR output, 4-20mA output, alarm output, and TC/RTD input terminals.

- **Power Supply (100-240VAC, 50/60Hz):** Connect to terminals 1 and 2.
- **SSR Output:** Connect to terminals 3 and 4. (Note: This model has 4-20mA output, not SSR. Refer to specific model for correct output wiring.)
- **4-20mA Output:** Connect to terminals 5 and 6.
- **Alarm Output (AL1):** Connect to terminals 8 and 9.
- **TC/RTD Input:** Connect the sensor to terminals 10, 11, 12, 13, 14 as per sensor type (TC or RTD). Refer to the specific sensor's wiring requirements.

Warning: Ensure all connections are secure and correctly polarized before applying power.

4. Operating Instructions

This section details the basic operation and parameter settings for the TC4-M controller.

4.1 Front Panel Controls



Figure 4: Front panel controls including the SET button and navigation arrow keys.

- **PV Display (Upper Red):** Shows the current process value (measured temperature).
- **SV Display (Lower Green):** Shows the set value (desired temperature).
- **OUT Indicator:** Illuminates when the control output is active.
- **AT Indicator:** Illuminates during auto-tuning.
- **ALM1/ALM2 Indicators:** Illuminates when alarm 1 or alarm 2 is active. (This model has 1 alarm, so only ALM1 is relevant).
- **SET Button:** Used to enter parameter setting mode and confirm selections.
- **Arrow Keys (Left, Down, Up):** Used to navigate through parameters and adjust values.

4.2 Setting the Set Value (SV)

1. In normal operating mode, press the **SET** button once. The SV display will begin to flash.
2. Use the **Up** and **Down** arrow keys to adjust the SV to the desired temperature.
3. Use the **Left** arrow key to move the cursor for faster adjustment of individual digits.
4. Press the **SET** button again to confirm the new SV and exit the setting mode.

4.3 Parameter Settings (Advanced)

To access advanced parameters (e.g., input type, control mode, alarm settings, auto-tuning), press and hold the **SET** button for several seconds until the first parameter code appears on the PV display.
Detailed parameter codes and their functions are typically provided in a separate, more comprehensive technical manual. Common parameters include:

- **Input Type Selection:** Configure for TC (K, J, E, S) or RTD (PT100).
- **Control Mode:** PID, ON/OFF.
- **Alarm Settings:** Set alarm type (high, low, deviation) and alarm value.
- **Auto-Tuning (AT):** Initiates the auto-tuning process to optimize PID parameters for the specific system.

Caution: Incorrect parameter settings can lead to unstable control or damage to the controlled process. Consult the full technical documentation for detailed parameter descriptions.

5. Maintenance

The ETURBEV TC4-M controller is designed for reliable operation with minimal maintenance. Regular checks can help ensure its longevity and performance.

- **Cleaning:** Periodically clean the front panel with a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Connections:** Annually inspect all wiring connections for tightness and signs of corrosion.
- **Ventilation:** Ensure the ventilation slots on the sides of the unit are not obstructed to prevent overheating.



Figure 5: Side view of the TC4-M controller, illustrating the ventilation grilles for heat dissipation.

Warning: Disconnect power to the unit before performing any maintenance or inspection.

6. Troubleshooting

This section provides solutions to common issues encountered with the TC4-M controller.

Problem	Possible Cause	Solution
No display/Power off	No power supply or incorrect wiring.	Check power connections (100-240VAC) and ensure power is supplied. Verify wiring according to Figure 3.
PV display shows "HHHH" or "LLLL"	Sensor open circuit, short circuit, or incorrect input type setting.	Check sensor wiring and ensure it is correctly connected. Verify the input type parameter matches the connected sensor (TC or RTD). Replace faulty sensor if necessary.

Problem	Possible Cause	Solution
Temperature control is unstable	Incorrect PID parameters or auto-tuning required.	Initiate auto-tuning (AT function) to optimize PID parameters. If auto-tuning fails, manually adjust PID parameters if familiar with the process.
Output (OUT) indicator not active	SV is equal to PV, control output is off, or output wiring issue.	Check if the SV is set correctly. Verify the control output settings. Inspect output wiring (4-20mA) for proper connection.

If the problem persists after attempting these solutions, contact technical support.

7. Specifications

Parameter	Value
Model	TC4-M
Panel Size	72x72mm
Power Supply	100-240VAC, 50/60Hz
Input Types	TC (K, J, E, S), RTD (PT100)
Output Type (Current Model)	4-20mA
Alarm Output (Current Model)	1 Alarm
Control Method	PID Control / ON-OFF Control
Item Weight	1.76 ounces (approx. 50g)
Package Dimensions	1.18 x 0.79 x 0.39 inches (approx. 30 x 20 x 10 mm)

8. Warranty Information

Specific warranty details for the ETURBEV TC4-M Digital PID Temperature Controller are not provided in the available product information. Please refer to your purchase documentation or contact the seller directly for warranty terms and conditions.

9. Support

For technical assistance, further documentation, or inquiries regarding the ETURBEV TC4-M controller, please contact your supplier or the manufacturer directly. Contact information is typically available on the product packaging or the seller's website.

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