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Autonics TZ4H-24C

Autonics TZ4H-24C Temperature Controller User Manual

Model: TZ4H-24C

1. Introduction

This user manual provides detailed instructions for the safe and efficient installation, operation, and maintenance of the Autonics TZ4H-24C Temperature Controller. Please read this manual thoroughly before using the product to ensure correct usage and to prevent accidents or damage.

The Autonics TZ4H-24C is a standard type temperature controller designed for precise temperature regulation in various industrial applications. It features a 4-digit 7-segment LED display and supports multiple control methods and input specifications.

Figure 1: Front view of the Autonics TZ4H-24C Temperature Controller. The display shows PV (Process Value) and SV (Set Value) in red and green, respectively, along with indicator lights for various functions.

2. Safety Information

Always observe the following safety precautions to prevent electric shock, fire, or product malfunction.

- **Electrical Safety:** Ensure power is disconnected before installation or maintenance. All wiring must comply with local electrical codes.
- **Proper Installation:** Install the unit in an environment free from excessive vibration, dust, moisture, and corrosive gases.
- **Qualified Personnel:** Installation and maintenance should only be performed by qualified personnel.
- **Voltage Check:** Verify that the power supply voltage matches the specifications of the controller (100-240VAC~ 50/60Hz).
- **Grounding:** Ensure proper grounding to prevent electrical hazards.

3. Product Features

The Autonics TZ4H-24C Temperature Controller offers a range of features for precise and reliable temperature control:

- **Display Method:** 4-digit 7-segment LED for clear process value (PV) and set value (SV) indication.
- **Control Methods:** Supports ON/OFF control, P (Proportional), PI (Proportional-Integral), PD (Proportional-Derivative), PIDF (PID with Fuzzy), and PIDS (PID with Self-tuning) control.
- **Input Specifications:**
  - Thermocouple: K(CA), J(IC), E(CR), T(CC), R(PR), S(PR), N(NN), W(TT)
  - RTD: DPt100Ω, JPt100Ω
  - Analog: 1-5VDC, 0-10VDC, DC4-20mA
- **Sampling Cycle:** Fast 500ms sampling for responsive control.
- **Control Output:** Current output (DC4-20mA).
- **Power Supply:** Wide range 100-240VAC~ 50/60Hz.

4. Setup and Installation

Follow these steps for proper installation and wiring of the temperature controller.

4.1 Mounting

The TZ4H-24C is designed for panel mounting. Ensure adequate space for ventilation and access to wiring terminals. Refer to the product dimensions for cutout size requirements.

4.2 Wiring

Before wiring, ensure all power is disconnected. Connect the power supply, input sensor, and control output according to the terminal diagram (typically found on the side or top of the unit, or in a separate wiring diagram sheet). Ensure all connections are secure.

- **Power Input:** Connect 100-240VAC~ 50/60Hz to the designated power terminals.
- **Sensor Input:** Connect your chosen thermocouple, RTD, or analog sensor to the input terminals. Observe polarity for analog inputs and correct wiring for thermocouples/RTDs.
- **Control Output:** Connect the DC4-20mA current output to your heating/cooling element or other control device.

Note: *Always consult the specific wiring diagram provided with your unit for exact terminal assignments.*

5. Operating Instructions

Once installed and powered, the controller will display the Process Value (PV) and Set Value (SV).

5.1 Basic Operation

- **Power On:** Apply power. The unit will perform a self-test and then display the current process value (PV) and the set value (SV).
- **PV Display:** The upper 4-digit 7-segment LED displays the current measured temperature (Process Value).
- **SV Display:** The lower 4-digit 7-segment LED displays the desired temperature (Set Value).

5.2 Setting the Set Value (SV)

To change the Set Value (SV), typically press a dedicated 'SET' or 'MODE' button, then use the up/down arrow keys to adjust the value. Press 'SET' or 'MODE' again to confirm and exit the setting mode. Refer to the detailed programming

manual for specific button functions and menu navigation.

5.3 Control Parameter Settings

The TZ4H-24C supports various control methods (ON/OFF, P, PI, PD, PIDF, PIDS). Accessing and adjusting these parameters (e.g., proportional band, integral time, derivative time, hysteresis) requires navigating through the controller's menu system. Consult the comprehensive programming guide for detailed instructions on parameter configuration and auto-tuning procedures.

6. Maintenance

Regular maintenance ensures the longevity and accurate operation of your temperature controller.

- **Cleaning:** Periodically clean the front panel with a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Inspection:** Regularly inspect wiring connections for looseness or damage. Check for any signs of overheating or unusual odors.
- **Environmental Conditions:** Ensure the operating environment remains within specified temperature and humidity ranges.

Caution: *Disconnect power before performing any cleaning or inspection.*

7. Troubleshooting

This section provides solutions to common issues. For problems not listed here, contact technical support.

- **No Display/Power:**
  - Check power supply connections.
  - Verify power source voltage.
  - Check for blown fuses (if applicable).
- **Incorrect Temperature Reading (PV):**
  - Ensure the sensor type configured in the controller matches the connected sensor (e.g., K-type thermocouple, DPt100 RTD).
  - Check sensor wiring for correct polarity and secure connections.
  - Inspect the sensor for damage or improper placement.
- **Controller Not Controlling:**
  - Verify the control output wiring (DC4-20mA) to the heating/cooling element.
  - Check if the control method and parameters (e.g., ON/OFF hysteresis, PID settings) are correctly configured.
  - Ensure the set value (SV) is appropriate for the desired control action.

8. Specifications

Detailed technical specifications for the Autonics TZ4H-24C Temperature Controller are provided below:

Display method	4-digit 7-segment LED
Control method	ON/OFF control, P, PI, PD, PIDF, PIDS control
Input specification	Thermocouple: K(CA), J(IC), E(CR), T(CC), R(PR), S(PR), N(NN), W(TT) RTD: DPt100Ω, JPt100Ω Analog: 1-5VDC ⎓, 0-10VDC ⎓, DC4-20mA
Sampling cycle	500ms
Control output	Current output(DC4-20mA)
Option output	Event 1/2
Power supply	100-240VAC~ 50/60Hz
Approval	CE cULus
Display accuracy	F.S ± 0.3% or 3℃, select the higher one
Alarm output hysteresis	1 to 100℃ (0.1 to 100.0℃) variable
Proportional band	0.0 to 100.0%
Integral time	0 to 3,600 sec
Derivative time	0 to 3,600 sec
Control period	1 to 120 sec
LBA setting	1 to 999 sec
Ramp setting	Ramp Up, Ramp Down: 1 to 99 min each
Environment_Ambient temperature	-10 to 50℃, storage: -20 to 60℃
Environment_Ambient humidity	35 to 85% RH, storage: 35 to 85% RH
Weight	Approx. 365g(approx. 246g)

Figure 2: Detailed technical specifications including display method, control method, input specifications, and environmental conditions.

Specification	Value
Display method	4-digit 7-segment LED
Control method	ON/OFF control, P, PI, PD, PIDF, PIDS control
Input specification	Thermocouple: K(CA), J(IC), E(CR), T(CC), R(PR), S(PR), N(NN), W(TT) RTD: DPt100Ω, JPt100Ω Analog: 1-5VDC, 0-10VDC, DC4-20mA
Sampling cycle	500ms
Control output	Current output (DC4-20mA)
Power supply	100-240VAC~ 50/60Hz
Display accuracy	F.S ± 0.3% or 3°C, select the higher one
Alarm output hysteresis	1 to 100°C (0.1 to 100.0°C variable)
Proportional band	0.0 to 100.0%
Integral time	0 to 3,600 sec
Derivative time	0 to 3,600 sec
Control period	1 to 120 sec

Specification	Value
LBA setting	1 to 999 sec
Ramp setting	Ramp Up, Ramp Down: 1 to 99 min each
Environment Ambient temperature	-10 to 50°C, storage: -20 to 60°C
Environment Ambient humidity	35 to 85% RH, storage: 35 to 85% RH
Weight	Approx. 365g (approx. 246g)

9. Warranty and Support

For warranty information, technical support, or service inquiries, please contact the manufacturer or your authorized distributor. Keep your purchase receipt as proof of purchase.
Manufacturer: Vanky Industry (as per product listing)
For further assistance, refer to the official Autonics website or contact their customer service.

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