

NUZCZCJG TCN7 Series 72x72 4-20mA

NUZCZCJG TCN7 Series Digital PID Temperature Controller User Manual

MODEL: TCN7 SERIES (72x72 4-20mA VARIANT)

1. Introduction and Overview

This manual provides comprehensive instructions for the installation, operation, and maintenance of the NUZCZCJG TCN7 Series Digital PID Temperature Controller. This device is designed for industrial applications requiring precise temperature regulation. Please read this manual thoroughly before installation and operation to ensure proper functionality and safety.

2. Product Features

- Large LCD display with clear white Process Value (PV) characters for easy readability.
- Advanced PID control algorithm for stable and accurate temperature management.
- Versatile output options: Relay and Solid State Relay (SSR) combined.
- Universal input compatibility for various sensor types.
- Integrated RS485 communication support for remote monitoring and control.
- SSR drive output (SSRP function) with control modes including ON/OFF, cycle control, and phase control.
- High-speed 50ms sampling rate ensuring rapid response.
- High display accuracy of $\pm 0.3\%$.
- Compact and space-saving design for efficient panel integration.
- Two independent alarm outputs (ALM1, ALM2).

3. Technical Specifications

Specification	Value
Model Variant	72x72 4-20mA

Specification	Value
Power Supply	100-240VAC
Display Type	LCD
Display Size	2.0 - 3.9 Inches
Output	Relay + SSR
Communication	RS485
Sampling Rate	50ms
Display Accuracy	±0.3%
Alarm Outputs	ALM1, ALM2
Usage Environment	Industrial
Cable Length	1M (approximate)
Dimensions (Package)	1.18 x 0.79 x 0.39 inches
Item Weight	1.76 ounces (50 Grams)
Smart Device	No

4. Safety Information

Adherence to safety guidelines is crucial for preventing injury and damage to the device. Always observe the following:

- **Power Disconnection:** Always disconnect all power to the controller and connected equipment before performing any installation, wiring, or maintenance.
- **Proper Grounding:** Ensure the controller is properly grounded according to local electrical codes and standards.
- **Environmental Conditions:** Do not operate the device in environments exceeding its specified temperature, humidity, or corrosive gas limits.
- **Qualified Personnel:** Installation and wiring should only be performed by qualified electricians or technicians.
- **Wiring Integrity:** Verify all wiring connections are secure and correct before applying power. Incorrect wiring can cause damage or fire.
- **Ventilation:** Ensure adequate ventilation around the controller to prevent overheating.

5. Setup and Installation

Careful installation and wiring are essential for the correct operation of the temperature controller.

5.1 Physical Installation

Mount the controller securely into a panel cutout of appropriate dimensions. Ensure sufficient space for wiring and ventilation at the rear of the unit.

5.2 Wiring Connections

Refer to the wiring diagram on the side of the unit and the terminal labels for correct connections. Ensure all wires

are properly stripped and securely fastened to their respective terminals. Use appropriate wire gauges for power and load connections.



Figure 1: Rear view of the TCN7 Series controller, illustrating the terminal block for wiring connections.



Figure 2: Side view of the TCN7 Series controller, showing specific wiring labels and connection points.

- **Power Input:** Connect the 100-240VAC power supply to the designated power terminals.
- **Sensor Input:** Connect your universal temperature sensor (e.g., thermocouple, RTD) to the sensor input terminals. Observe polarity for certain sensor types.
- **Output Connections:** Connect your heating/cooling elements to the Relay and/or SSR output terminals as required. Ensure the load current does not exceed the controller's specifications.
- **RS485 Communication:** Connect the RS485 A and B lines to the corresponding communication terminals for integration with a master device.
- **Alarm Outputs:** Connect external alarm indicators or devices to the ALM1 and ALM2 terminals if alarm functionality is desired.

5.3 Initial Power-Up

After verifying all connections, apply power to the controller. The LCD display will illuminate, showing the current Process Value (PV) and Set Value (SV).

6. Operating Instructions

The TCN7 Series controller features an intuitive LCD display and control buttons for easy operation.



Figure 3: Front view of the TCN7 Series controller, highlighting the LCD display and user interface buttons.

6.1 Display Overview

- **PV (Process Value):** Displays the current measured temperature from the sensor.
- **SV (Set Value):** Displays the target temperature set by the user.
- **MV (Manipulated Value):** Indicates the output power percentage or state.
- **OUT1 Indicator:** Illuminates when the primary output is active.
- **°C Indicator:** Shows the temperature unit (Celsius).

6.2 Setting the Set Value (SV)

1. Press the **SET** button (often labeled with a 'P' or 'SET' icon) to enter the SV setting mode. The SV display will blink.
2. Use the **Up** and **Down** arrow buttons to adjust the SV to the desired temperature.
3. Press the **SET** button again to confirm the new SV and exit the setting mode.

6.3 Parameter Settings (Advanced)

To access advanced parameters for PID tuning, alarm settings, input type, and output modes, refer to the detailed parameter menu section in the full product manual (if available). Typically, this involves pressing and holding the **SET** button for several seconds to enter the parameter configuration menu. Navigate using arrow keys and confirm with the **SET** button.

- **PID Parameters:** Adjust Proportional band (P), Integral time (I), and Derivative time (D) values for optimal control performance.
- **Alarm Settings:** Configure alarm types (e.g., deviation, absolute) and set alarm thresholds for ALM1 and ALM2.
- **Input Type:** Select the correct sensor type (e.g., K-type thermocouple, Pt100 RTD) to match your connected sensor.
- **Output Mode:** Configure SSR drive output (SSRP function) for ON/OFF, cycle, or phase control as needed for your application.

7. Maintenance

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

- **Cleaning:** Periodically clean the display and front panel with a soft, dry cloth. Do not use abrasive cleaners or solvents. Ensure no liquids enter the unit.
- **Inspection:** Regularly inspect wiring connections for looseness or signs of damage. Check for any physical damage to the controller casing.
- **Ventilation:** Ensure that ventilation openings are not obstructed to prevent internal heat buildup.
- **Calibration:** If precise temperature control is critical and deviations are suspected, consider professional calibration of the sensor and controller.

8. Troubleshooting

This section addresses common issues you might encounter with the TCN7 Series controller.

Problem	Possible Cause	Solution
Display is blank	No power, incorrect wiring, or internal fault.	Check power supply and wiring connections. Ensure power is applied. If problem persists, contact support.

Problem	Possible Cause	Solution
PV reading is incorrect or 'HHHH' / 'LLLL' displayed	Sensor disconnected, faulty sensor, incorrect input type setting, or sensor out of range.	Verify sensor wiring. Check sensor for damage. Ensure correct input type is selected in parameters. Confirm sensor operating range.
Output not activating	Incorrect SV, output mode setting, faulty output component, or wiring issue.	Check SV and ensure it's within operating range. Verify output mode (e.g., heating/cooling). Inspect output wiring and load.
Temperature oscillates widely	PID parameters not tuned correctly for the system.	Perform PID auto-tuning or manually adjust P, I, D parameters. Consult the full manual for tuning procedures.
RS485 communication failure	Incorrect wiring, address mismatch, baud rate mismatch, or software issue.	Verify RS485 A/B wiring. Check device address and baud rate settings. Ensure communication software is configured correctly.

For issues not listed here or if troubleshooting steps do not resolve the problem, please contact NUZEZCJG customer support.

9. Warranty and Support

For information regarding product warranty, technical assistance, or service, please contact NUZEZCJG customer support through their official channels. Keep your purchase receipt or proof of purchase for warranty claims.

© 2023 NUZEZCJG. All rights reserved. Information in this manual is subject to change without notice.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page’s manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question