

## Wisoqu MC701

# Wisoqu MC701 Digital PID Temperature Controller User Manual

Model: MC701

## 1. PRODUCT OVERVIEW

The Wisoqu MC701 is a digital PID temperature controller designed for precise temperature management in various industrial and scientific applications. It features a PVSV (Process Value/Set Value) display, supports both K-type thermocouples and PT100 RTD sensors, and offers integrated Relay and SSR outputs for versatile control. The unit also supports Celsius (°C) and Fahrenheit (°F) temperature display conversion.

## 2. KEY FEATURES

- **High Resolution Display:** When a thermocouple is used, the digital display resolution can be 0.1 °C / 0.1 °F.
- **Dual Output Integration:** Features integrated Relay and SSR outputs, allowing users to select the appropriate output type.
- **Temperature Unit Conversion:** Supports both Celsius (°C) and Fahrenheit (°F) temperature display.
- **Compact Design:** Short shell design with only 85mm depth for easy mounting and installation.
- **Accurate Control:** Built-in high-performance chip ensures high sensitivity and accurate temperature control.

## 3. SAFETY INFORMATION

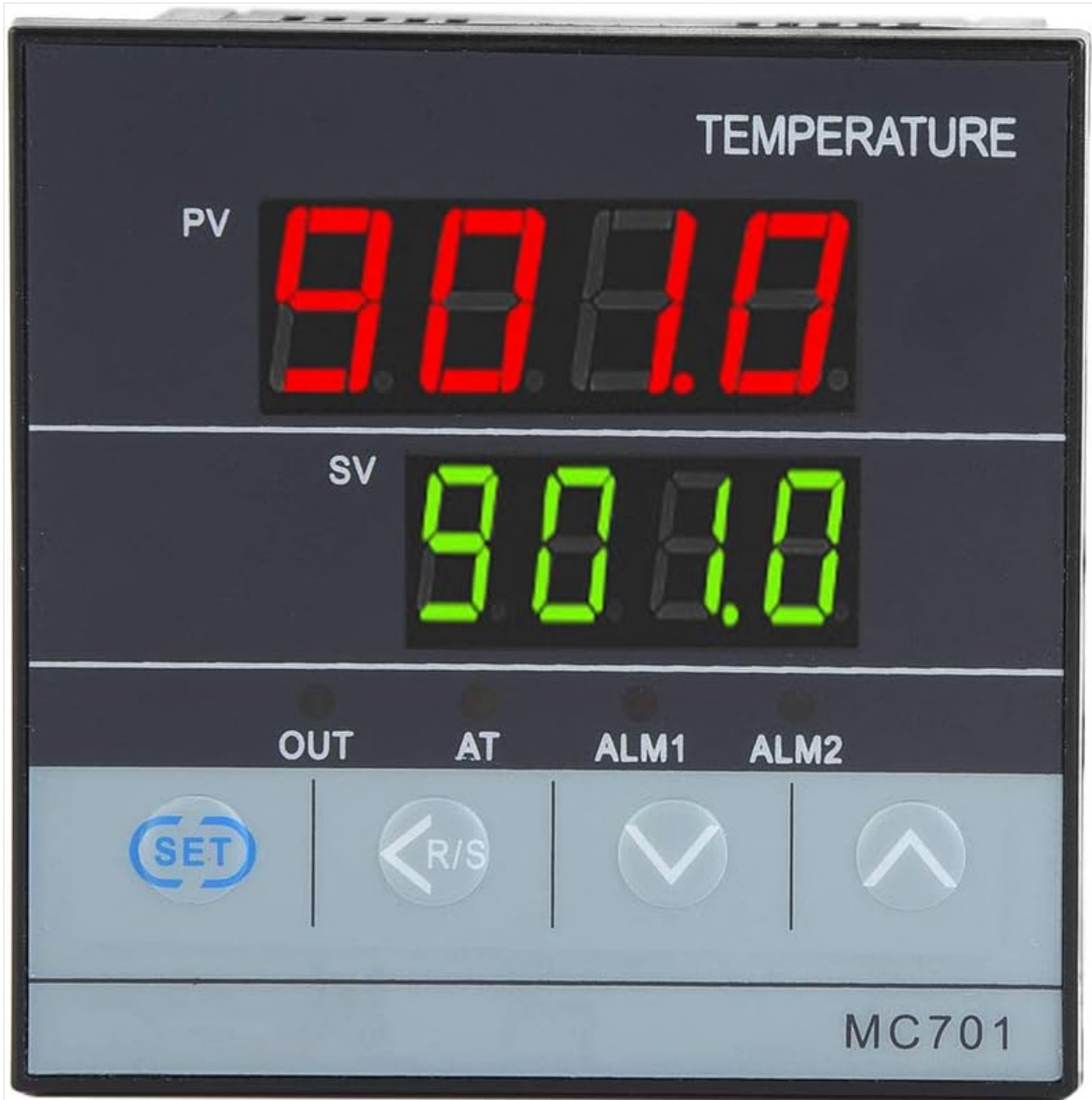
Please read all instructions carefully before installation and operation. Failure to follow these instructions may result in equipment damage, personal injury, or improper operation.

- **Electrical Safety:** Ensure all power connections are made by a qualified electrician and comply with local electrical codes. Disconnect power before wiring or servicing the unit.
- **Voltage Compatibility:** Verify that the power supply voltage matches the controller's specifications (85-265VAC).
- **Proper Grounding:** Ensure the unit is properly grounded to prevent electrical shock.

- **Environmental Conditions:** Do not expose the controller to excessive moisture, dust, corrosive gases, or extreme temperatures outside its operating range.
- **Intended Use:** Use this device only for its intended purpose of temperature control.

## 4. PRODUCT COMPONENTS AND DIAGRAM

Familiarize yourself with the controller's front panel and wiring terminals.



**Figure 4.1: Front Panel View**

This image displays the front panel of the MC701 controller, showing the red PV (Process Value) display, the green SV (Set Value) display, and the control buttons: SET, R/S (Run/Stop or Reset/Set), Down arrow, and Up arrow. Indicators for OUT (Output), AT (Auto-tuning), ALM1 (Alarm 1), and ALM2 (Alarm 2) are also visible.



**Figure 4.2: Wiring Terminal Diagram**

This image provides a top-down view of the MC701 controller's terminal block, illustrating the wiring connections. It shows terminals for 85-265VAC power input (8, 9), AL1 (Alarm 1) output (1, 2), SSR output (10, 11), RTD/TC input (3, 4, 5, 6, 7), and Relay output (12, 13, 14).



Figure 4.3: Product Dimensions

This image shows a side view of the MC701 controller with its physical dimensions indicated. The front panel measures 72mm x 72mm (2.8in x 2.8in), and the depth of the unit is 85mm (3.3in).

## 5. SETUP AND INSTALLATION

### 5.1 Mounting

The MC701 controller is designed for panel mounting. Refer to Figure 4.3 for dimensions. Ensure adequate space for ventilation and wiring connections at the rear of the unit.

### 5.2 Wiring Connections

Refer to Figure 4.2 for the wiring terminal diagram. All wiring should be performed with power disconnected.

1. **Power Supply (85-265VAC):** Connect the main power supply to terminals 8 and 9.
2. **Sensor Input:**
  - **K-Type Thermocouple (TC):** Connect the positive (+) lead to terminal 6 and the negative (-) lead to terminal 7.
  - **PT100 RTD:** Connect the two signal wires to terminals 4 and 5. If using a 3-wire PT100, connect the third compensation wire to terminal 3.
3. **SSR Output:** Connect the Solid State Relay (SSR) control input to terminals 10 (+) and 11 (-).
4. **Relay Output:** Connect the load to the relay contacts. Terminal 12 is Normally Open (NO), Terminal 13 is Common (COM), and Terminal 14 is Normally Closed (NC).
5. **Alarm Output (AL1):** Connect alarm devices to terminals 1 and 2.

### 5.3 Initial Power-Up

After all connections are securely made, apply power to the unit. The controller will perform a self-test, and the PV and SV displays will illuminate.

## 6. OPERATING INSTRUCTIONS

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### 6.1 Display Overview

- **PV (Process Value):** The upper red display shows the current measured temperature from the sensor.
- **SV (Set Value):** The lower green display shows the desired target temperature.
- **OUT Indicator:** Illuminates when the output (Relay or SSR) is active.
- **AT Indicator:** Illuminates during the auto-tuning process.
- **ALM1/ALM2 Indicators:** Illuminate when the respective alarm conditions are met.

### 6.2 Setting the Target Temperature (SV)

1. Press the **SET** button once. The SV display will begin to flash.
2. Use the **▲ (Up)** and **▼ (Down)** arrow buttons to adjust the SV to your desired temperature.
3. Press the **SET** button again to confirm and save the new SV. The display will stop flashing.

### 6.3 Accessing Parameter Settings

To access advanced parameters (e.g., PID settings, alarm values, sensor type, °C/°F conversion):

1. Press and hold the **SET** button for approximately 3-5 seconds until the first parameter code appears on the PV display.
2. Use the **▲ (Up)** and **▼ (Down)** arrow buttons to navigate through the parameter codes.
3. Press **SET** to view the value of the selected parameter.
4. Use the **▲ (Up)** and **▼ (Down)** arrow buttons to change the parameter value.
5. Press **SET** again to save the new value and move to the next parameter, or press **R/S** to exit the parameter setting mode without saving the current parameter change.

### 6.4 Auto-Tuning (AT)

Auto-tuning helps the controller optimize its PID parameters for your specific system, leading to more stable and accurate temperature control.

1. Set the desired SV.
2. Press and hold the **R/S** button for approximately 3-5 seconds. The **AT** indicator will illuminate, and the controller will begin the auto-tuning process.
3. Allow the system to cycle through several heating/cooling periods. The AT process is complete when the **AT** indicator turns off.
4. To stop auto-tuning manually, press and hold the **R/S** button again for 3-5 seconds.

## 7. MAINTENANCE

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The Wisoqu MC701 controller requires minimal maintenance to ensure long-term reliable operation.

- **Cleaning:** Periodically wipe the front panel with a soft, dry cloth. Do not use abrasive cleaners or solvents. Ensure no liquids enter the unit.
- **Environmental Check:** Regularly inspect the operating environment to ensure it remains free from

excessive dust, moisture, and corrosive substances.

- **Wiring Inspection:** Periodically check all wiring connections for tightness and signs of wear or damage.
- **Ventilation:** Ensure that the ventilation openings on the sides of the unit are not obstructed to prevent overheating.

## 8. TROUBLESHOOTING

If you encounter issues with your MC701 controller, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Controller does not power on	No power supply; Incorrect wiring; Blown fuse	Check power connections (terminals 8, 9); Verify power source; Inspect internal fuse (if accessible by qualified personnel).
PV display shows "HHHH" or "LLLL"	Sensor open circuit; Sensor short circuit; Incorrect sensor type selected	Check sensor wiring; Replace faulty sensor; Verify sensor type setting in parameters.
Output (OUT) indicator not activating	SV not reached; Output mode incorrect; Faulty output wiring/device	Ensure SV is set correctly; Check output parameter settings; Verify wiring to SSR/Relay and the connected load.
Temperature control is unstable (overshoot/undershoot)	PID parameters not optimized; System changes	Perform auto-tuning (Section 6.4); Manually adjust PID parameters if auto-tuning is insufficient.

If the problem persists after attempting these solutions, please contact Wisoqu customer support for further assistance.

## 9. SPECIFICATIONS

<b>Model</b>	MC701
<b>Control Type</b>	Temperature
<b>Control Mode</b>	PID control and self-tuning control
<b>Input Sensor Types</b>	K-Type Thermocouple, PT100 RTD
<b>Output Types</b>	Relay, SSR (Solid State Relay)
<b>Temperature Unit</b>	Celsius (°C), Fahrenheit (°F)
<b>Display Resolution</b>	0.1 °C / 0.1 °F (for thermocouple input)
<b>Power Supply</b>	85-265VAC, 50/60Hz
<b>Panel Dimensions</b>	72mm x 72mm (2.8in x 2.8in)

<b>Mounting Depth</b>	85mm (3.3in)
<b>Item Weight</b>	7.1 ounces
<b>Manufacturer Model Number</b>	Wisoqug8bup01y2h

## 10. WARRANTY AND SUPPORT

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Wisoqu products are designed for reliability and performance. For warranty information, technical support, or service inquiries, please refer to the documentation included with your purchase or contact Wisoqu customer service through their official channels. Please have your product model (MC701) and purchase details available when contacting support.