

CONTIA TC3-701T

CONTIA TC3-701T PID Temperature Controller

Instruction Manual

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of the CONTIA TC3-701T PID Temperature Controller. This device is designed for precise temperature and time control in various industrial and laboratory applications. Please read this manual thoroughly before operating the device to ensure safe and efficient use.



Image 1.1: Overview of CONTIA TC3 series PID Temperature Controllers, including the TC3-701T model.

2. SAFETY INFORMATION

Always observe the following safety precautions to prevent injury or damage to the device:

- Ensure the power supply voltage matches the device's specifications (AC100~220V).
- Do not operate the device in environments with high humidity, flammable gases, or corrosive substances.
- All wiring should be performed by qualified personnel to prevent electrical shock.
- Disconnect power before performing any maintenance or wiring.
- Do not disassemble or modify the device.

3. SETUP

3.1 Wiring Diagram

Refer to the following diagram for proper electrical connections. Ensure all connections are secure and correctly matched to their respective terminals.



Image 3.1: Wiring diagram for the CONTIA TC3-701T PID Temperature Controller.

Terminal Connections:

- **Terminals 8 & 9:** AC100-240V Power Input
- **Terminals 10 & 11:** Heating Plate Output
- **Terminals 3 & 4:** K-Type Thermocouple (TK) Input
- **Terminals 1 & 2:** Timing Start Input
- **Terminals 6 & 7:** Control Output (e.g., for a buzzer or external alarm)

3.2 Physical Installation

Mount the controller in a suitable panel cutout. Ensure adequate ventilation around the unit to prevent overheating. Secure the controller using the provided mounting clips.

4. OPERATING INSTRUCTIONS

4.1 Control Panel Overview

Familiarize yourself with the front panel controls and displays:

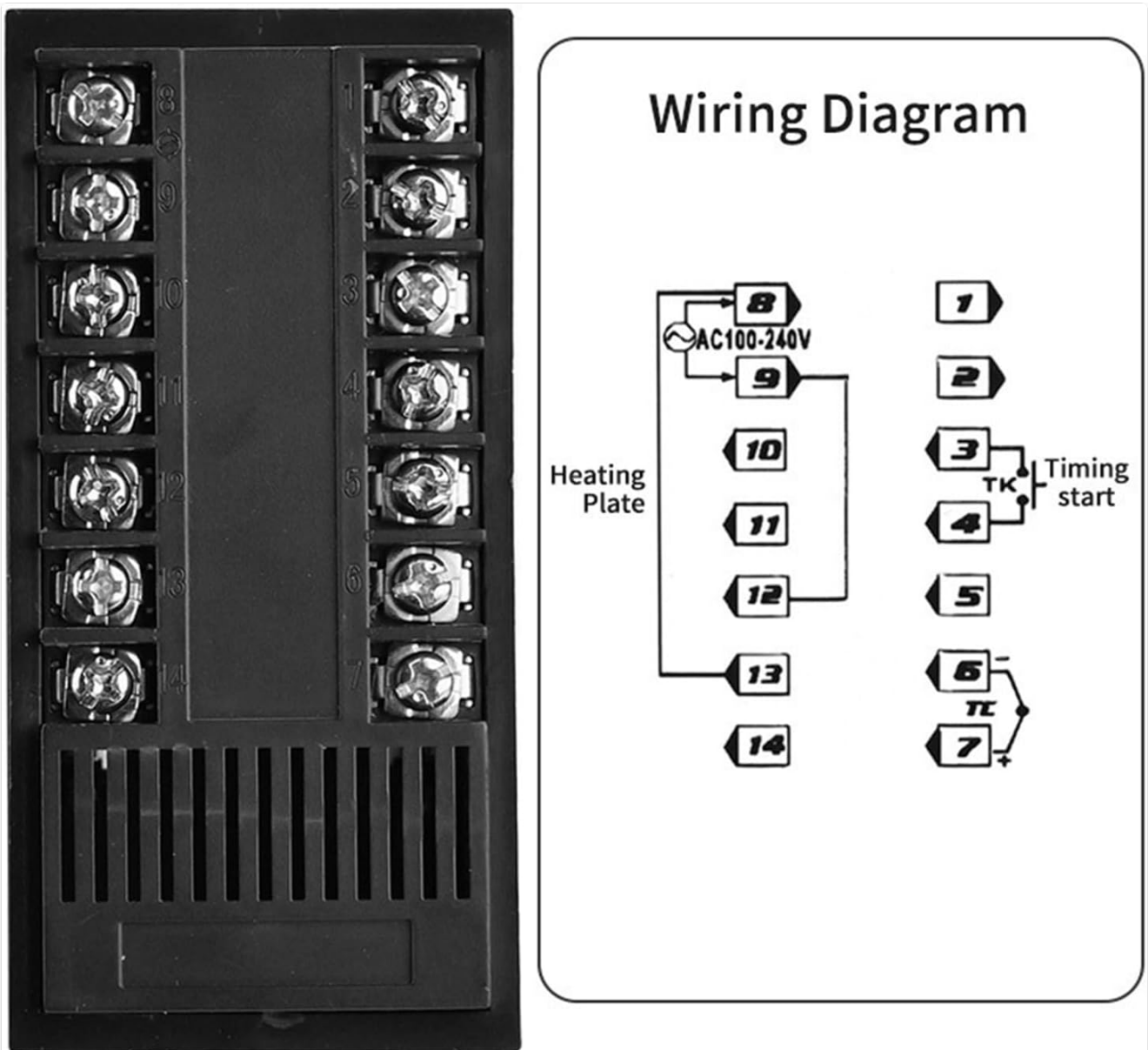


Image 4.1: Front panel and display indicators of the CONTIA TC3-701T.

- **Temperature Display (SV):** Shows the current measured temperature.
- **Time Display (ST):** Shows the current remaining time or set time.
- **Output Indication (OUT):** Illuminates when the control output is active.
- **Celsius/Fahrenheit (°C/°F):** Indicates the temperature unit.
- **Self-tuning (AT):** Illuminates when the auto-tuning function is active.
- **Countdown (AL):** Illuminates when an alarm condition is met or countdown is active.
- **TEMP Button:** Used to enter temperature setting mode.
- **TIME Button:** Used to enter time setting mode.
- **Up/Down Arrows:** Used to adjust values in setting modes.

4.2 Setting Temperature

1. Press the **TEMP** button. The temperature display (SV) will flash.
2. Use the **Up** and **Down** arrow buttons to adjust the desired set temperature.
3. Press the **TEMP** button again to confirm and exit the setting mode. The display will return to showing the current temperature.

4.3 Setting Time

1. Press the **TIME** button. The time display (ST) will flash.
2. Use the **Up** and **Down** arrow buttons to adjust the desired set time.
3. Press the **TIME** button again to confirm and exit the setting mode. The display will return to showing the current time or countdown.

4.4 Self-Tuning (AT) Function

The self-tuning function automatically calculates optimal PID parameters for your specific heating system. To activate:

1. Ensure the desired temperature is set.
2. Press and hold the **TEMP** button for approximately 3 seconds until the **AT** indicator illuminates.
3. The controller will cycle through heating and cooling to determine the optimal parameters. This process may take some time.
4. Once complete, the **AT** indicator will turn off, and the controller will operate with the newly optimized PID settings.

5. MAINTENANCE

To ensure the longevity and accurate performance of your controller:

- **Cleaning:** Wipe the front panel with a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Inspection:** Periodically check wiring connections for looseness or damage.
- **Environment:** Keep the controller in a clean, dry environment, free from excessive dust or vibrations.

6. TROUBLESHOOTING

Problem	Possible Cause	Solution
Controller does not power on	No power supply; incorrect wiring	Check power connections (Terminals 8 & 9); ensure power source is active.
Temperature reading is inaccurate or 'HHHH'/'LLLL' displayed	Thermocouple faulty; incorrect thermocouple type; wiring error	Verify K-type thermocouple is correctly connected (Terminals 3 & 4); replace faulty thermocouple.
Heating element not activating	Output wiring error; set temperature not reached; faulty heating element	Check heating plate wiring (Terminals 10 & 11); ensure set temperature is above current temperature; test heating element.
Self-tuning (AT) does not complete	System too slow or unstable; incorrect wiring	Ensure the heating system is functional; check all wiring; try manual PID tuning if auto-tuning consistently fails.

7. SPECIFICATIONS

- **Model:** TC3-701T
- **Brand:** CONTIA

- **Input Type:** K-Type Thermocouple
- **Temperature Range:** Up to 400°C (752°F)
- **Power Supply:** AC100~220V
- **Control Method:** PID Control with Auto-tuning
- **Output:** Relay Output
- **Alarm:** Buzzer Alarm Function
- **Weight:** Approximately 50 Grams

8. SUPPORT

For further assistance or technical support, please contact your vendor or the manufacturer. Ensure you have your product model number (TC3-701T) available when seeking support.