



Manuals.plus /

› COKYIS /

› COKYIS CH102 PID Temperature Controller Kit User Manual

COKYIS CH102

COKYIS CH102 PID Temperature Controller Kit User Manual

Model: CH102

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of the COKYIS CH102 PID Temperature Controller Kit. This kit is designed for precise temperature control applications and includes a CH102 digital thermostat, a K-type thermocouple probe, a 40DA Solid State Relay (SSR), and an aluminum heatsink.

2. PRODUCT OVERVIEW AND COMPONENTS

The COKYIS CH102 PID Temperature Controller Kit consists of the following main components:

- **CH102 Digital PID Temperature Controller:** The main control unit with a digital display for process value (PV) and set value (SV).
- **K-Type Thermocouple Probe:** A temperature sensor designed for a wide range of temperatures, typically 0-400°C (expandable to 1300°C with appropriate settings).
- **40DA Solid State Relay (SSR):** An electronic switching device used to control high-power loads based on the low-power output from the CH102 controller.
- **Aluminum Heatsink:** Essential for dissipating heat from the SSR during operation to ensure its longevity and stable performance.



Figure 2.1: The complete COKYIS CH102 PID Temperature Controller kit, including the CH102 digital thermostat, a K-type thermocouple probe, a 40DA Solid State Relay (SSR), and an aluminum heatsink for the SSR.

3. SPECIFICATIONS

Model No.	CH102FK02-MV*AN
Supply Voltage	85-265VAC
Dimensions (Controller)	48mm x 48mm x 78mm
Opening Size (Controller)	45mm x 45mm
Output	SSR (3-32V) / Electromagnetic Relay
Control Method	PID Automatic Control (Selectable On/Off)
Alarm Mode	1x High Temperature Alarm (Adjustable)
Applicable Thermocouple	K, J, PT100 (Default: K type)
Temperature Range	Factory settings 0-400°C (Adjustable up to 1300°C by changing thermocouple and input type)
SSR Rating	40DA (Suitable for loads below 4400W)
Thermocouple Probe Length	100mm probe + 1 meter cable



Figure 3.1: CH102 Digital Thermostat dimensions (48x48x78mm) and side view with basic specifications.

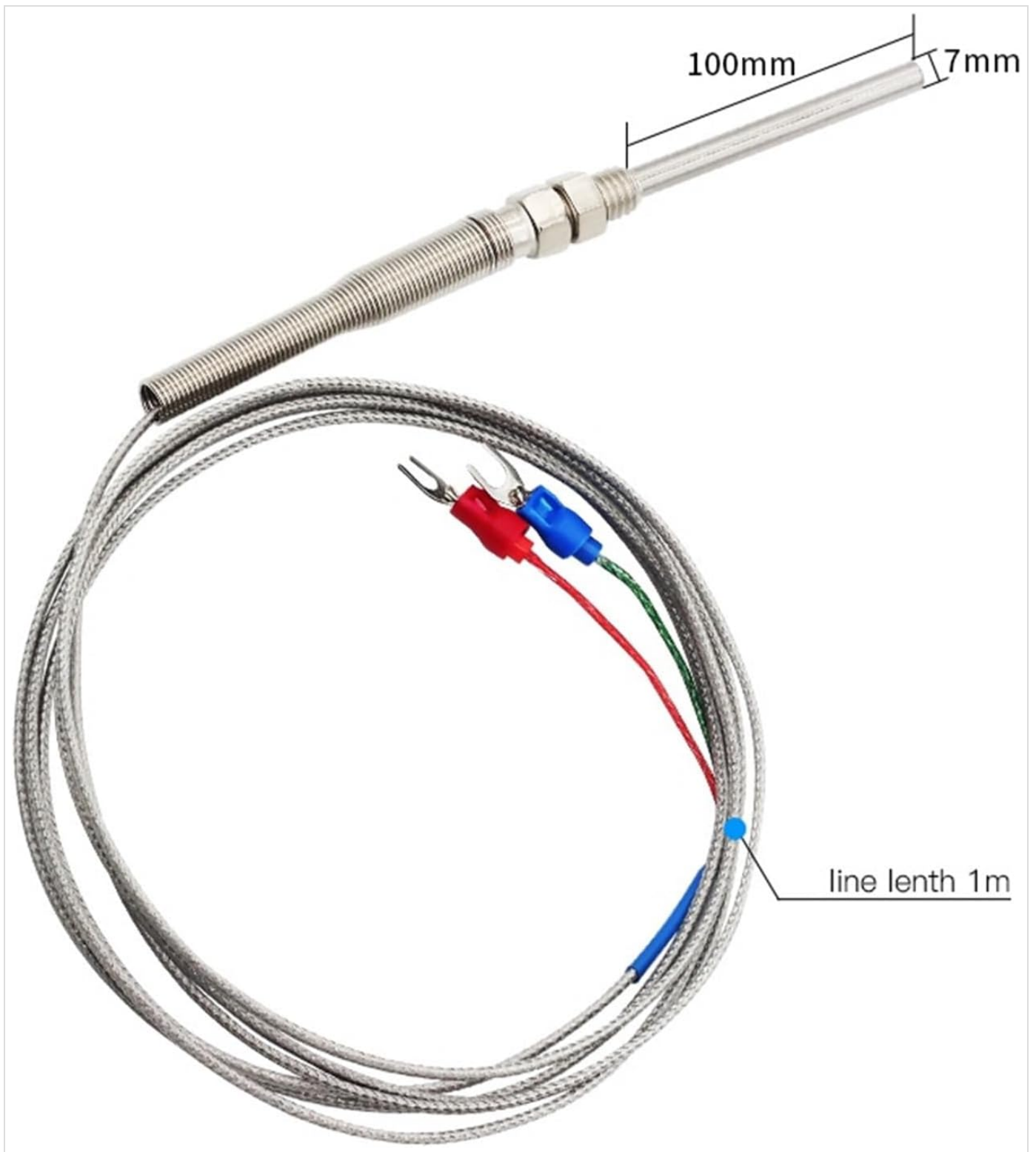


Figure 3.2: K-type thermocouple probe dimensions, showing 100mm probe length and 1-meter cable.



Figure 3.3: 40DA Solid State Relay (SSR) dimensions, indicating its compact form factor.

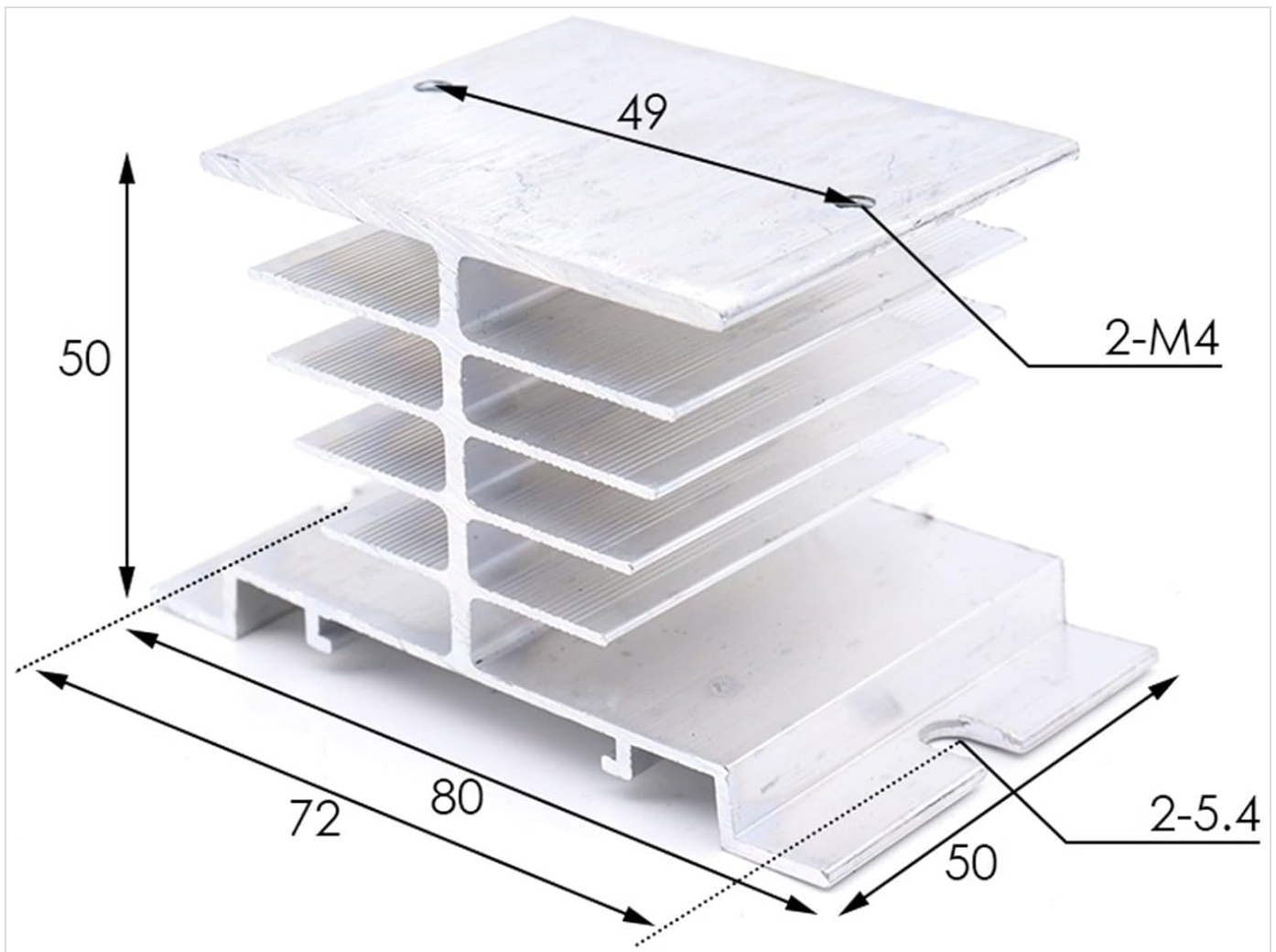


Figure 3.4: Aluminum heatsink dimensions, designed for efficient heat dissipation from the SSR.

4. SAFETY INFORMATION

Please read and understand all safety warnings before installing or operating this device. Failure to follow these instructions may result in electric shock, fire, or serious injury.

- **Electrical Hazard:** This device operates on high voltage (85-265VAC). Ensure power is disconnected before making any wiring connections.
- **Qualified Personnel:** Installation and wiring should only be performed by qualified personnel familiar with electrical systems.
- **Proper Grounding:** Ensure all components are properly grounded according to local electrical codes.
- **Ventilation:** Ensure adequate ventilation for the heatsink and SSR to prevent overheating.
- **Load Capacity:** Do not exceed the maximum load capacity of the 40DA SSR (4400W for 220V systems).
- **Environmental Conditions:** Operate the device within specified environmental conditions (temperature, humidity) to prevent malfunction.

5. SETUP AND INSTALLATION

Follow these steps for proper installation of the PID temperature controller kit.

5.1. Mounting the CH102 Controller

1. Cut an opening of 45mm x 45mm in your control panel.
2. Insert the CH102 controller into the opening from the front.

- Secure the controller using the provided mounting brackets from the rear.

5.2. Mounting the SSR and Heatsink

- Apply a thin layer of thermal paste (not included) between the base of the 40DA SSR and the heatsink for optimal heat transfer.
- Securely attach the SSR to the heatsink using screws.
- Mount the assembled SSR and heatsink in a well-ventilated area, preferably vertically to enhance convection cooling.

5.3. Wiring Connections

Refer to the wiring diagram on the side of the CH102 controller and Figure 5.1 for correct connections. Ensure all power is OFF before wiring.



Figure 5.1: CH102 Digital Thermostat wiring diagram, showing terminal assignments for power, sensor, and output.

- Power Supply (Terminals 1 & 2):** Connect your 85-265VAC power supply to terminals 1 (L) and 2 (N) of the CH102 controller.
- Thermocouple Input (Terminals 3 & 4):** Connect the K-type thermocouple probe to terminals 3 (+) and 4 (-) of the CH102. Ensure correct polarity (red wire to +, blue wire to - for standard K-type).
- SSR Control Output (Terminals 5 & 6):** Connect the control output from the CH102 (Terminals 5 and 6, which provide 3-32VDC) to the control input terminals of the 40DA SSR. Ensure correct polarity (+ to + and - to - on the SSR's control side).
- SSR Load Connections:** Connect your heating element or load to the main power terminals of the 40DA SSR. The SSR acts as a switch for the AC load. Connect one side of the AC power line to one SSR load terminal, and the other SSR load terminal to one side of your heating element. Connect the other side of the heating element to the other side of the AC power line.

6. OPERATING INSTRUCTIONS

Once wired and powered on, the CH102 controller will display the Process Value (PV) and Set Value (SV).

6.1. Display Overview

- **PV (Process Value):** The upper display shows the current measured temperature from the thermocouple.
- **SV (Set Value):** The lower display shows the desired target temperature.
- **Indicator Lights:** Various LEDs (AT, OUT1, OUT2, ALM1, ALM2) indicate operational status, output status, and alarm conditions.

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 the new SV. The display will stop flashing, and the controller will begin to regulate temperature.

6.3. Auto-Tuning (AT) Function

The Auto-Tuning function helps the controller determine optimal PID parameters for your specific system, improving temperature stability and response.

1. Set your desired target temperature (SV).
2. Press and hold the **AT** button for approximately 3-5 seconds until the AT indicator light starts flashing.
3. The controller will cycle the output to analyze your system's thermal characteristics. This process may take some time.
4. Once auto-tuning is complete, the AT indicator light will stop flashing, and the controller will operate with the newly calculated PID parameters.

7. PARAMETER SETTINGS

The CH102 controller has various configurable parameters to fine-tune its operation. Accessing and modifying these parameters requires careful attention.

7.1. Accessing Parameter Menus

Press and hold the **SET** button for approximately 3-5 seconds to enter the parameter setting menu. Subsequent presses of the **SET** button will cycle through different parameters. Use the **Up (▲)** and **Down (▼)** buttons to change values.

7.2. Key Parameters

- **Input Type (SL1):** This parameter defines the type of temperature sensor connected (e.g., K, J, PT100). Ensure this matches your K-type thermocouple. Incorrect setting will result in inaccurate readings.
- **Temperature Unit (C/F):** Select Celsius or Fahrenheit.
- **PID Parameters (P, I, D):** Proportional, Integral, and Derivative values. These are typically set automatically by the Auto-Tuning function. Manual adjustment is for advanced users only.
- **Alarm Settings (AL1):** Configure the high temperature alarm threshold.
- **Output Mode (OUT1):** Set to PID control or ON/OFF control.

Note: Refer to the full CH102 controller manual (if available from the manufacturer) for a complete list and detailed explanation of all parameters. Incorrect parameter settings can lead to unstable control or damage to the system.

8. MAINTENANCE

The COKYIS CH102 PID Temperature Controller Kit requires minimal maintenance.

- **Cleaning:** Periodically clean the controller's display and casing with a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Connections:** Periodically check all wiring connections for tightness and signs of corrosion.

- **Heatsink:** Ensure the heatsink remains free of dust and debris to maintain optimal cooling performance for the SSR.
- **Thermocouple:** Inspect the thermocouple probe and cable for any physical damage or signs of wear. Replace if necessary.

9. TROUBLESHOOTING

This section addresses common issues you might encounter.

Problem	Possible Cause	Solution
Controller does not power on.	No power supply; incorrect wiring.	Check power connections to terminals 1 & 2. Ensure voltage is within 85-265VAC.
PV display shows 'HHHH' or 'LLLL'.	Thermocouple open circuit or reverse polarity; incorrect input type setting.	Check thermocouple connections (terminals 3 & 4) for correct polarity and continuity. Verify input type (SL1 parameter) matches K-type.
Temperature control is unstable or inaccurate.	Incorrect PID parameters; sensor not properly placed; load too large/small.	Perform Auto-Tuning (AT function). Ensure thermocouple is in good thermal contact with the process.
SSR does not switch the load.	No control signal from CH102; SSR faulty; incorrect load wiring.	Check 3-32VDC output from CH102 (terminals 5 & 6). Verify SSR control input polarity. Check load wiring to SSR. Test SSR with a known good control signal.

10. WARRANTY AND SUPPORT

For warranty information or technical support, please refer to the seller or manufacturer's official channels. Keep your purchase receipt for any warranty claims.