

Multi functional Communication Model Manual (Intelligent Temperature Controller) Version 25-2

Product specifications	Product appearance and installing size		Panel effect classification diagram		
	External dimension Height × width × depth	Panel hole dimension Height × width	S□□-	M□□-	T□□-
S2□ / M2□ / T2□	48×48×66	46×46			
S3□ / M3□ / T3□	72×72×66	68×68			
S5□ / M5□ / T5□	48×96×66	46×92			
S7□ / M7□ / T7□	96×48×66	92×46			
S9□ / M9□ / T9□	96×96×66	92×92			

Measurement value **Set value**

AT: Self-tuning indication AL1: Alarm 1 indication AL2: Alarm 2 indication OUT: Control output indication

Press the "SET" key to activate the menu;
Long press the "SET" key to enter the first level menu item (the same way to exit after entering the menu).
Simultaneously press and hold the "SET <<<" key to enter the secondary menu item (the same way to exit after entering the menu).

Temperature unit

Main technical parameters

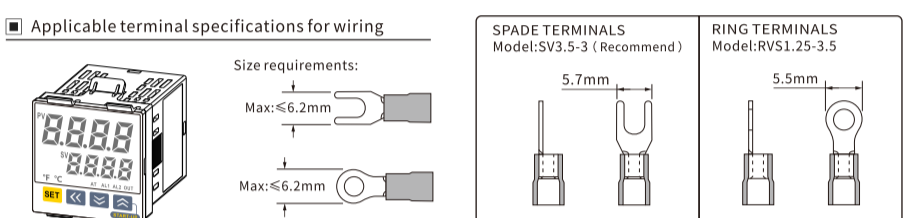
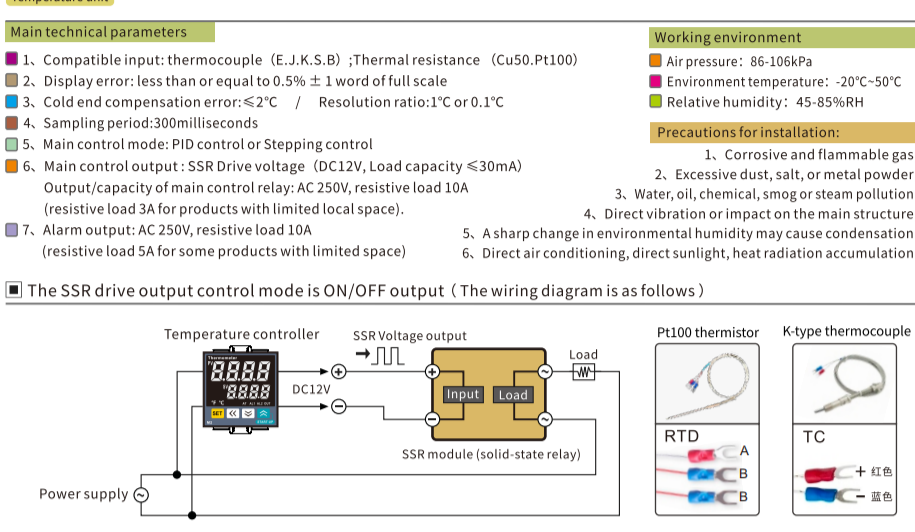
- Compatible input: thermocouple (E,J,K,S,B); Thermal resistance (Cu50,Pt100)
- Display error: less than or equal to 0.5% ± 1 word of full scale
- Cold end compensation error: ≤2°C / Resolution ratio: 1°C or 0.1°C
- Sampling period: 300 milliseconds
- Main control mode: PID control or Stepping control
- Main control output: SSR Drive voltage (DC12V, Load capacity ≤30mA)
Output/capacity of main control relay: AC 250V, resistive load 10A (resistive load 3A for products with limited local space).
- Alarm output: AC 250V, resistive load 10A (resistive load 5A for some products with limited space)

Working environment

- Air pressure: 86-106kPa
- Environment temperature: -20°C-50°C
- Relative humidity: 45-85%RH

Precautions for installation:

- Corrosive and flammable gas;
- Excessive dust, salt, or metal powder;
- Water, oil, chemical, smog or steam pollution;
- Direct vibration or impact on the main structure;
- A sharp change in environmental humidity may cause condensation;
- Direct air conditioning, direct sunlight, heat radiation accumulation.



06 Default 20S (range: 1-100S) (Relay action gap time) Constant temperature working cycle

07 Default: 2°C Poor temperature control switching

08 Constant temperature working cycle (SSR control action interval time) Default 2S (range: 1-100S) Enable self-tuning, the instrument will automatically switch to PID control

09 PV correction value (Default: 0000) Revised setting range: -500~500°C

05-7 Default 20S (range: 1-100S) (Relay action gap time) Constant temperature working cycle

05-4 Points (Range: 1-3600) 0120: PID control (recommended value)

05-6 Integral suppression (Range: 1-100%) 0080: PID control (recommended value)

05-5 Differential (Range: 1-3600) 0060: PID control (recommended value)

LCK data lock

10-1 Setting: 0000 (All parameters locked state)

10-2 Setting: 0001 (Only unlock SV, AL1, AL2)

10-3 Setting: 0011 (Unlock SV only) Factory default

10-4 Setting: 1000 (Unlock all status)

Temperature self-tuning Quick Settings

Press and hold the "SET <<<" key for 3 seconds in standby mode to quickly enter self-tuning. If it is currently in positional control, it will automatically switch to PID mode (default is positional control output if not turned on). After turning it on, it is necessary to restore the factory settings or enter the first level menu operation to return to positional control output;

Output quick shutdown (main control relay) Quick Settings

Press and hold the "SET <<<" key for 2 seconds in standby mode to quickly turn off the output. Repeat the operation to cycle on (SV flashing ON) or off (SV flashing OFF).

The following operations will enter the second level menu items; Press the "SET <<<" key to enter the corresponding menu, To save the set parameters and return to the work interface, long press the "SET <<<" key at the same time;

Tip: After setting up, it is recommended to re lock the menu as needed to avoid accidental manipulation and tampering of data that may cause the instrument to malfunction; Complete the locking operation steps to the LCK data lock interface setting (steps 10-3).

Secondary menu item settings Need to operate in unlocked state

Long press together SET <<<

Continue to the next page for instructions

12-2: Input sensor type selection 12-3: First Alarm (ALM1) Type Selection 12-6: Second Alarm (ALM2) Type Selection 12-7: Main control forward and reverse action selection 12-8: Incentive alarm/non incentive alarms selection

12-1 13-1 14-1

13-4 PGDP Measurement display value 13-3 Default: 650 (Highest value) Measurement range 13-2 Default: -199 Minimum measurement range

13-5 0001: °F 0000: °C (default) Temperature unit selection 13-6 Default: 1°C (First alarm) Return difference setting value

13-8 Default: 0000 (Minimum value) Transmission output 13-7 Default: 1°C (Second alarm) Return difference setting value

13-9 Default: 0600 (highest value) Transmission output 13-10 Default: 0050 Digital filtering constant value 13-11 Default: 0030 Overtemperature alarm shutdown

13-12 Default: 0005 Temperature control ratio with advance

13-13 Default: 0001 enabled Temperature setting shortcut key selection

Restore factory settings

Restart confirmation

Restart and return to the work interface

Note: For operation details of RS485 communication (MODBUS protocol), please refer to the "Temperature Controller 25-2 Communication Manual"

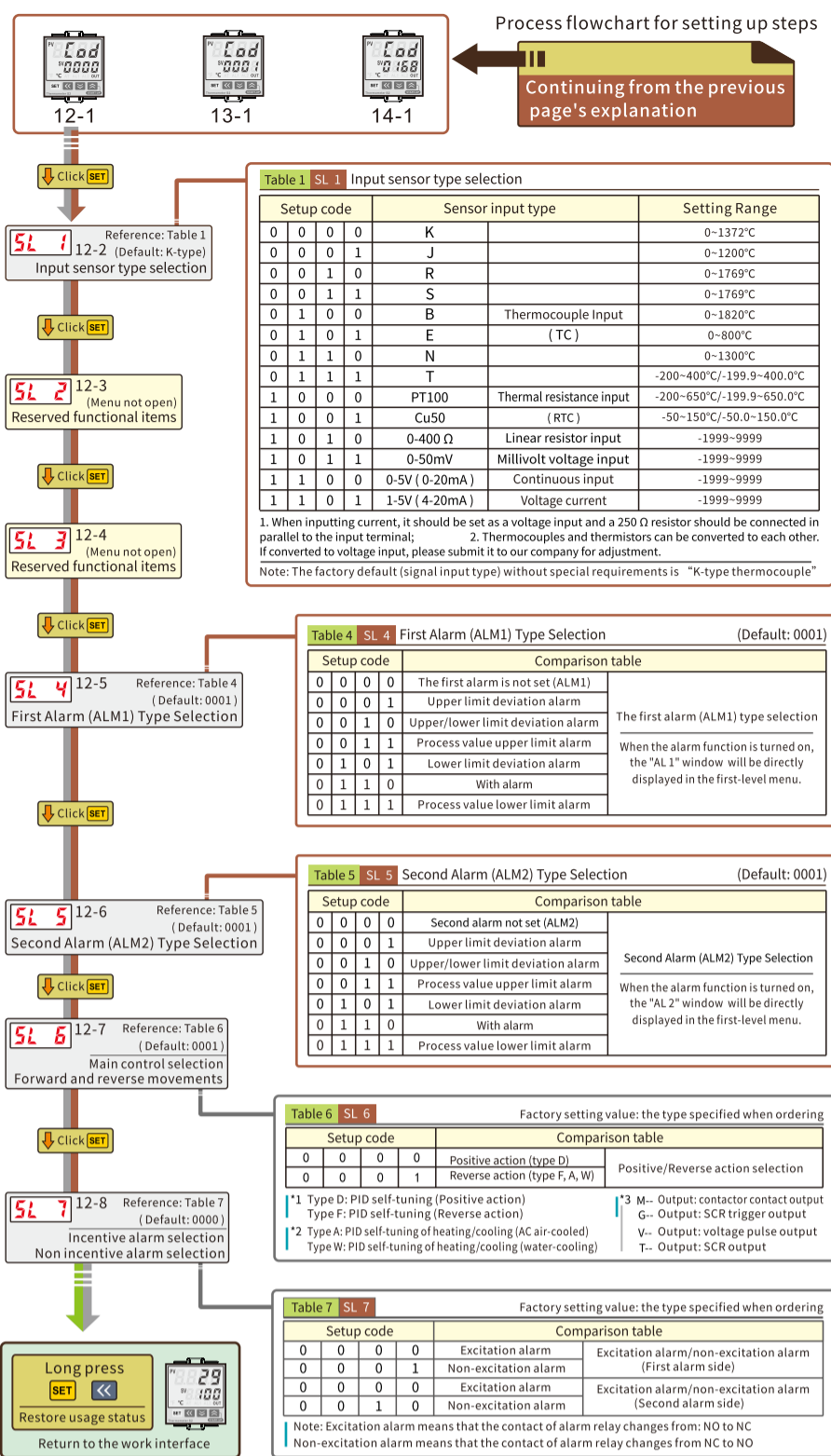
1-4800, 2-9600, 3-19200, 4-38400, 5-115200
The transmission speed depends on the optocoupler speed, Normal low-speed default: 9600

13-16 485 Baud rate 13-15 1-254, Default 1 485 Address 13-14 Close: 0000 Open: 0001 (default) Second alarm switch selection

Scan the code to check

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Process flowchart for setting up steps



Routine operations and common problem solving steps:

- 01 How to operate temperature setting?**
Press the "SET" keys to activate the menu while the instrument is in use, and then use the "← →" keys to set it to the desired temperature
- 02 No need to go through "SET" How to achieve direct temperature control operation by adding and subtracting keys?**
When confirming that the setting value of the data lock (LCK) (step number: 10-4) is set to the "1000" state (fully unlocked data state):
Select the operation step interface to "KEY - Temperature Setting Shortcut Key Selection" (step number: 13-13) and set it to "0001" to enable this function. In this way, the temperature adjustment can be directly operated through the "← →" key, without the need to activate the operation by pressing the "SET" key;
- 03 How to adjust when the displayed temperature does not match the actual temperature?**
When confirming that the setting value of the data lock (LCK) (step number: 10-4) is set to the "1000" state (fully unlocked data state):
Then select the operation step interface to "SC - PV correction value" (step number: 09); Change the default value of "0000" to the desired value, save and exit; (Example: If the displayed temperature is 20 degrees lower than the actual temperature, change the data column parameter to "0020" and save to exit.)
- 04 How to choose to change settings when sensors do not match?**
When confirming that the setting value of the data lock (LCK) (step number: 10-4) is set to the "1000" state (fully unlocked data state):
Select the operation step interface to "SL 1- Input Sensor Type Selection" (step number: 12-2); Refer to Table 1 and enter the corresponding code number. Save and exit to complete the setting;
- 05 How to turn on or off the temperature self-tuning function?**
When confirming that the setting value of the data lock (LCK) (step number: 10-4) is set to the "1000" state (fully unlocked data state):
A Select the operation step interface to "ATU - Self tuning" (step number: 04):
Set to "0001". Long press the "SET" key to enable self-tuning (step number: 05-2). After self-tuning is completed, the parameters will be automatically saved and returned to the work interface. At this time, the control mode is PID control;
Set to "0000" and long press the "SET" key to turn off self-tuning and return to the work interface. At this time, the control mode is positional control (ON/OFF control);
Set to "0001" and press the "SET" key to enter the PID control parameter menu.
The step interface will enter the "P - Proportional Band" (step number: 05-3, default value "0020") parameter menu, (This path menu is a professional menu. Non professionals are not allowed to adjust it arbitrarily)
Set to "0000" and press the "SET" key to enter the positional control parameter menu.
The step interface will enter the "P - Proportional Band" (step number: 05, default value "0000") parameter menu, (At this time, the control mode is positional control: ON/OFF control)
B Temperature self-tuning (quick setting)
Press and hold the "KK" key for 3 seconds in standby mode to quickly enter self-tuning. If it is currently in positional control, it will automatically switch to PID mode (default is positional control output if not turned on). After turning it on, it is necessary to restore the factory settings or enter the first level menu operation to return to positional control output; ;
- 06 How to turn off the main control relay when only SSR control is needed?**
Quick settings: Press and hold the "SET" key for 2 seconds while in standby mode to quickly turn off the output.
Repeat the operation to cycle on (SV flashing ON) or off (SV flashing OFF).
- 07 How to adjust when the heating speed is too slow or the temperature fluctuates too much?**
The heating speed is too slow under PID control, which can be adjusted by adjusting the "PI/I/D/AR/T/12" menu parameters (requires professional operation);
When the temperature fluctuates too much in the positional control state, the "OH - Temperature Control Switching Difference" parameter can be directly adjusted (step number: 07); Initial default: 2°C (It is recommended to increase the upward drift value to the corresponding parameter before making corrections)
- 08 How to switch between Fahrenheit and Celsius unit values?**
When confirming that the setting value of the data lock (LCK) (step number: 10-4) is set to the "1000" state (fully unlocked data state):
Select the operation step interface to "UNIT - Temperature Unit Selection" (step number: 13-5);
Set the code "0000" to be in "C" (default)/"0001" to be in "F", complete the settings, save and exit;
- 09 How to choose when measuring display values with decimal points?**
When confirming that the setting value of the data lock (LCK) (step number: 10-4) is set to the "1000" state (fully unlocked data state):
Select the operation step interface to "PGDP - Measurement Display Value" (step number: 13-4);
Set the code "0000" to display a minimum value of 1 (default)/"0001" to display a minimum value of 0.1, complete the settings, save and exit;
- 10 How to set the temperature upper and lower limit alarm output?**
When confirming that the setting value of the data lock (LCK) (step number: 10-4) is set to the "1000" state (fully unlocked data state):
Select the operation steps interface to "SL 4/SL 5- Input Sensor Type Selection" (step number: 12-5/12-6);
Refer to "Table 4/Table 5" and enter the corresponding code number. Save and exit to complete the setting;
- 11 How to use data lock to avoid misoperation and tampering of data, which may cause the instrument to malfunction**
To prevent the instrument from malfunctioning due to the modification of settings or self-tuning parameters caused by misoperation, After all parameter settings are completed, the operation steps interface needs to be re-selected to "LCK - Data Lock" (step number: 10), According to the required requirements, refer to "Step Number: 10-1/10-2/10-3/10-4" and enter the corresponding code number. Save and exit to complete the setting;
- 12 How to restore factory settings?**
When confirming that the setting value of the data lock (LCK) (step number: 10-4) is set to the "1000" state (fully unlocked data state):
Select the operation steps according to the flowchart to the "Step Number: 14-1" interface, set the corresponding code to "0168", and click the "SET" key to restart and restore the factory settings.

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