

4. Special Hysteresis Mode : If the product model is followed by "F", it indicates that the instrument has the function of special hysteresis adjustment. For example: XMTA - 2201F (improved type). The instrument starts or stops output when below the lower - limit setting and stops or starts output when above the upper - limit setting. The output relay of the instrument has three terminals: high, common, and low.

**Hysteresis Heating Mode (F1):** If the lower - limit temperature of the instrument is set to 40° C and the upper - limit temperature is set to 80° C. When the measured temperature is lower than 40° C, the lower - limit output indicator light is on, the common - low is connected, and the common - high is disconnected, starting heating. When the measured temperature is higher than 40° C and lower than 80° C, the output state does not change. When the measured temperature is higher than 80° C, the upper - limit output indicator light is on, the lower - limit output indicator light is off, the common - low is disconnected, and the common - high is connected, stopping heating.

**Hysteresis Cooling Mode (F2):** If the lower - limit temperature of the instrument is set to 40° C and the upper - limit temperature is set to 80° C. When the measured temperature is higher than 80° C, the lower - limit output indicator light is on, the common - low is connected, and the common - high is disconnected, starting cooling. When the measured temperature is higher than 40° C and lower than 80° C, the output state does not change. When the measured temperature is lower than 40° C, the upper - limit output indicator light is on, the common - low is disconnected, and the common - high is connected, stopping cooling.

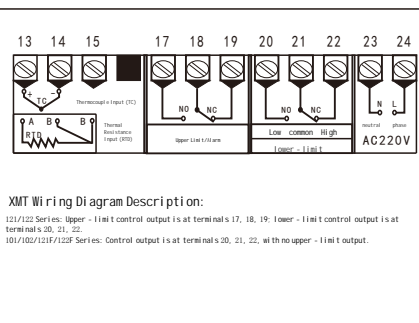
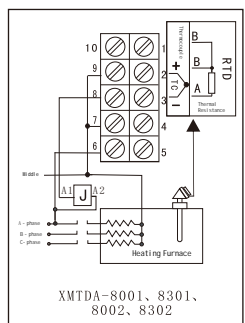
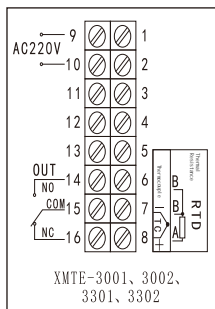
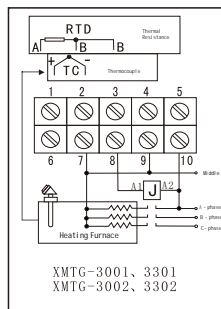
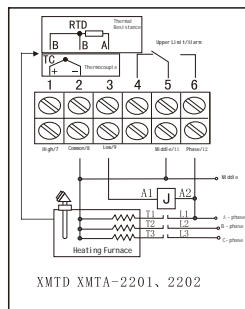
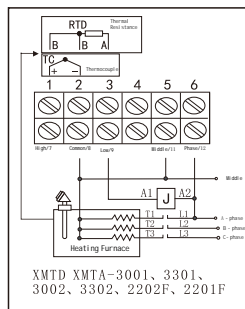
## VII. Sensor Usage Instructions

	Material Composition	Graduation Number	Instrument Measurement Range		Material Composition	Graduation Number	Instrument Measurement Range
Thermocouple	Ni ckel - chromi um - copper - ni ckel	E	0~800°C	Thermal Resi stance	Copper	Cu50	-50.0°C~150.0°C
	Ni ckel - chromi um - nickel - sil icon	K	0~1300°C		Platinum	Pt100	-100°C~500°C -100.0°C~199.9°C

a) Thermocouple: The positive and negative poles are in a short - circuit state when measured with a multimeter. For every 1° C change in temperature, the signal between the positive and negative poles of the K - type sensor changes by about 0.04mV, and that of the E - type sensor changes by about 0.063mV.

b) Thermal Resistance: For the Cu50 - type sensor, the two black wires are in a short - circuit state. At an ambient temperature of 0° C, the resistance between the red wire and the black wire is 50 , and the resistance changes by about 0.21 for every 1° C change in temperature. For the Pt100 - type sensor, the two black wires are in a short - circuit state. At an ambient temperature of 0° C, the resistance between the red wire and the black wire is 100 (standard value), and the resistance changes by about 0.38 for every 1° C change in temperature. ⑥

## . Wi ring Diagram (XMTD, XMTA - 2201, 2202)



Note 1: "High, Common" indicates a group of passive normally - closed contacts of the output relay within the instrument. "Common, Low" indicates a group of passive normally - open contacts of the output relay within the instrument. "Neutral (N)" indicates the neutral wire of the instrument's working power supply. "Phase (L)" indicates the live wire of the instrument's working power supply.

Note 2: The application wiring shall be based on the diagram attached to the instrument housing. In case of any changes, no separate notification will be given.

## IX. Maintenance and Precautions of the Instrument

To ensure accurate measurement and long - term reliable operation of the instrument, the following points should be noted:

- When connecting a thermocouple to the instrument, use the corresponding type of compensation wire as required. Using ordinary extension wires or reversing the positive and negative poles of the compensation wire will cause errors. The red color of the compensation wire indicates the "+" pole, and blue (black or white) indicates the "-" pole.
- Fault code indication:

Code	Fault Cause	Troubleshooting
LLLL	Measured temperature below range lower limit or sensor reverse - connected.	Check the sensor
HHHH	Measured temperature above range upper limit or sensor disconnected.	Check the sensor

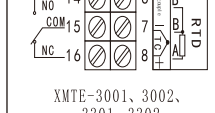
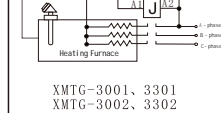
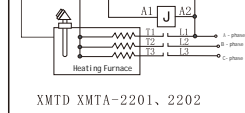
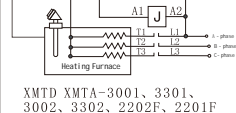
Brief "LLLL" may appear on the digital tube when the sensor is disconnected, finally showing "HHHH".

3. Connect thermal resistance to the instrument with a three - wire system, ensuring that each extension wire has the same thickness and length.

## X. Ordering Instructions

When placing an order, specify the product model, graduation number, measurement range, working power supply, and order quantity.

For example: XMTD - 3001 (improved type), K, full range, AC220V, 5 units.



**产品合格证**

符合标准: GB/T 13639

检验员: 检 01

出厂日期: 见产品或盒贴出厂编号

本产品经检验合格,准予出厂。

**C-Lin** 欣灵电气股份有限公司  
XINLING ELECTRICAL CO., LTD.

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国家高新技术企业 浙江省级知名商号

**C-Lin** 欣灵

使用说明书  
Products Instructions

**XMT (Improved Type) Series**  
Temperature Display Regulator

Thank you very much for using the C-Lin brand temperature controller. Please read the instruction manual before using the product!

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## I. Overview

The XMT improved series temperature display regulators (referred to as instruments) are designed with a single-chip microcomputer as the core and produced using SMT chip-mounting technology. The whole machine has advanced technology and stable performance, with advantages such as accurate temperature control, strong anti-interference ability, and simple operation. Fully digital calibration and automatic cold-end compensation of the thermocouple can meet different usage requirements. The product is widely used in temperature measurement and control in industries such as packaging machinery, food machinery, woodworking machinery, metalurgy, and ceramics.

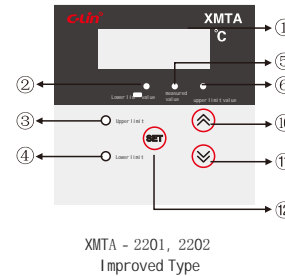
The XMT improved series temperature display regulators comply with the standard GB/T13639.

## II. Main Technical Parameters

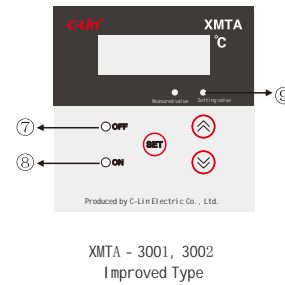
1. Display error:  $\pm (1.0\%FS + 1 \text{ digit})$ .
2. Cold-end compensation error:  $\pm 2$ .
3. Control sensitivity:  $0.75\%FS$ .
4. Instrument resolution: 1 or 0.1.
5. Instrument sampling period: 3 times/s.
6. Output contact capacity: Relay contact 220V resistive load 3A; Relay contact 220V inductive load 1A.
7. Output DC voltage: SSR drive level  $DC12V \pm 2V$  (30mA).
8. Time-proportion regulation: Output period 20s.
9. Signal input: Thermocouple: K or E; RTD: Pt100 or Cu50.
10. Control mode: two-position, three-position, time-proportion.
11. Working power supply:  $AC220V \pm 10\%$  50Hz ~ 60Hz (special power supply can be customized).
12. Working environment: Temperature 0 ~ 50 (non-freezing state), relative humidity 85%, in an environment without corrosive gases.
13. Atmospheric pressure: 86kPa ~ 106kPa.

①

## IV. Typical Explanation of the Instrument's Front Structure



XMTA - 2201, 2202  
Improved Type



XMTA - 3001, 3002  
Improved Type

Serial Number	Name	Description
①	Display Window	Displays measured values and parameter setting values.
②	Lower Limit Setting Value Indicator Light	When the indicator light is on, the window displays the lower limit setting value.
③	Temperature Upper Limit Output Indicator Light	When the indicator light is on, the upper-limit relay starts working (normally open).
④	Temperature Lower Limit Output Indicator Light	When the indicator light is on, the lower-limit relay starts working (normally open).
⑤	Measurement Indicator Light	When the indicator light is on, the window displays the measured value.
⑥	Upper Limit Setting Value Indicator Light	When the indicator light is on, the window displays the upper limit setting value.
⑦	Output Stop Indicator Light	When the indicator light is on, the relay stops working (normally closed).
⑧	Output Start Indicator Light	When the indicator light is on, the relay starts working (normally open).
⑨	Instrument Setting Value Indicator Light	When the indicator light is on, the window displays the current setting value.
⑩	Plus Key	Functions as an increment key in the parameter-setting state.
⑪	Minus Key	Functions as a decrement key in the parameter-setting state.
⑫	Function Setting Key	In the measurement state, it can switch between the measured value and the setting value.

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## III. Instrument Model Definition

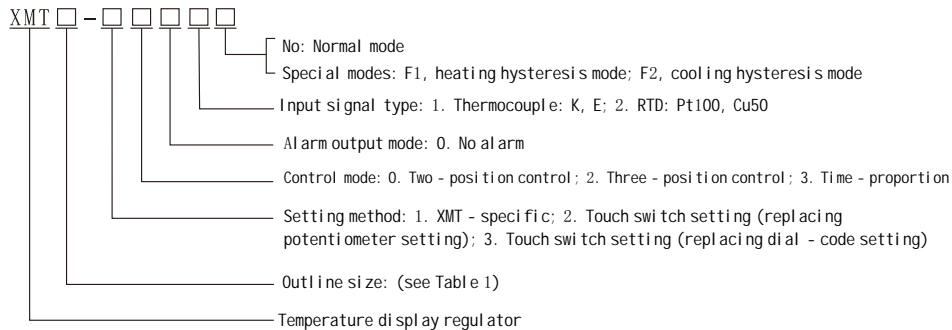


Table 1 (Unit: mm)

Model	Face frame size (height × width)	Cutout size (height × width)	Instrument insertion depth
XMTG improved type	48×48	45×45	85
XMTD improved type	72×72	68×68	90
XMTA improved type	96×96	92×92	90
XMT improved type	80×160	75×151	83
XMTE improved type	96×48	92×45	70
XMTDA improved type	120×60	115×55	90

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## V. Instrument Operation Instructions

After the instrument is correctly wired according to the wiring diagram and powered on, it will display the following parameters in sequence: version number, input type (sensor graduation number), output mode, and finally the current temperature measurement value.

After the instrument is powered on, the measurement indicator light is on, and the digital tube window displays the current measured value; press the "SET" key once, the lower-limit setting-value indicator light is on, and the digital tube window displays the lower-limit setting value; press "SET" again, the upper-limit setting-value indicator light is on, and the digital tube window displays the upper-limit setting value. In the measurement state, pressing the "SET" key can switch between the measured value and the setting value in the display window; pressing the plus and minus keys can modify the setting value.

## VI. Instrument Working Mode Instructions

1. Two-position control: When the measured value is lower than the set temperature, the instrument terminal is always low-connected, and the output-start indicator light (ON, green) is on; when the actual temperature is higher than the set temperature, the instrument terminal is always low-separated, and the output-stop indicator light (OFF, red) is on. When starting up, first set the setting value to 80% of the required temperature. After the instrument switches several times, then set the setting value to the required temperature. This can reduce the temperature overshoot during startup.

2. Three-position control: When the measured value is lower than the lower-limit setting value, the upper- and lower-limit temperature-output indicator lights are on, meaning both the upper- and lower-limit relays are always low-connected. When the actual temperature reaches or exceeds the lower-limit setting value but is lower than the upper-limit setting value, the lower-limit temperature-output indicator light (green) turns on and off, the upper-limit temperature-output indicator light (red) remains on, and the lower-limit relay (stop) is always low-disconnected. Generally, for temperature control, the output of the lower-limit relay can be used for heating control, and the upper-limit for heating control; alternatively, the output of the lower-limit relay can be used for temperature control, and the output of the upper-limit relay for over-temperature alarm. In this control mode, the upper and lower limits are set and output independently.

3. Time-proportion type: When the measured value does not enter the proportion band, the instrument relay is always low-connected, and the load heats up. When entering the proportion band, the relay starts to perform switching actions regularly. The closer the temperature is to the set temperature, the shorter the time of always low-connection, and vice versa. This instrument changes the temperature by adjusting the average heating power of the load. Therefore, when heat dissipation and heating are balanced, the temperature can be basically stabilized within a very small range.

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