XMT*-7000 intelligent temperature control meter
Operation Instruction

1. **Product characteristic:**
   - The core of the product adopts the up-to-date microprocessor chip.
   - Red and green double-bank nixie tube display the measured value and setting value.
   - Easy operation in the four keys, & fast setting in the parameter.
   - Control in high precision’s PID intelligent and two or three bit location check program.
   - Upper-bank display the measured value, & bottom-bank display the setting value under normal working conditions.

2. **Primary technical standard:**
   - **Input:** Thermocouple: K, E, J, S; Thermal resistance: PT100, CU50
   - **Range:**
     - K (0~400℃, 0~1300℃), E (0~400℃, 0~800℃), J (0~1000℃)
     - S (0~1600℃), PT100 (-100.0~200.0℃, 0~600℃), CU50 (-50.0~150.0℃)
   - **Measure error:** ±0.5%F.S±byte
   - **Silicon control trigger signal (over zero):**
     - Range ≥3V, Width ≥ 40us
   - **The output contact potential of the relay:** impedance load 7A
   - **Input power:** AC220V 50/60Hz
   - **Environment:** Temperature: 0 to 50℃, Humidity: ≤85%RH
   - **Size:**
     - XMT: 80×160×80mm hole:76×152; XMTA: 96×96×80mm hole:92×92;
     - XMTE: 48×96×80mm hole:44×92; XMTF: 96×48×80mm hole:92×48;
     - XMTD: 72×72×100mm hole:68×68; XMTG: 48×48×90mm hole:44×44

3. **Name and functions of the sections**

   ![Diagram](image)

   (1) **PV display:** Indicates the process variable (PV) with a red LED.
   (2) **SV display:** Indicates the setting value (SV) with a green LED.
   (3) **AT indicator:** When auto tuning function is ON, a green LED lights.
   (4) **ALM1 indicator:** When ALM1 output is ON, a red LED lights.
   (5) **ALM2 indicator:** When ALM2 output is ON, a red LED lights
   (6) **OUT indicator:** When OUT is ON, a green LED lights.
(7) Mode key (SET): Switches the setting mode and registers the setting value and selected value.

(Setting value and selected value are registered by pressing the mode key.)

(8) Data shift key (<)

(9) Decrease key (\(\vee\)): Decreases numeric value of the setting value.

(10) Increase key (\(\wedge\)): Increases numeric value of the setting value.

### 4. Setup flow chart

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Setting Range</th>
<th>Instruction</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>Setting control point</td>
<td>Whole range</td>
<td>°C or 1 defined unit</td>
<td></td>
</tr>
<tr>
<td>AL1</td>
<td>Alarm 1</td>
<td>Whole range</td>
<td>°C or 1 defined unit</td>
<td></td>
</tr>
<tr>
<td>AL2</td>
<td>Alarm 2</td>
<td>Whole range</td>
<td>°C or 1 defined unit</td>
<td></td>
</tr>
<tr>
<td>SC</td>
<td>Measurement update</td>
<td>-20.0 to 20.0</td>
<td>Measuring value can be modified through increasing or decreasing this data. Note: It may be cause inaccurateracy of measuring value when you use this function. Please use the function carefully according to your situation.</td>
<td>0</td>
</tr>
<tr>
<td>P</td>
<td>Proportional band</td>
<td>0 to 100</td>
<td>Proportional range is ten for set value</td>
<td>5</td>
</tr>
<tr>
<td>I</td>
<td>Integration time</td>
<td>0 to 2000s</td>
<td>It’s mainly used to adjust the static difference. To increase it, the static difference will be reduced, but when it is too high, the static difference will drift instability.</td>
<td>300</td>
</tr>
<tr>
<td>d</td>
<td>Differential time</td>
<td>0 to 200</td>
<td>It’s used to adjust the overshoot in the fist time, to increase it can reduce the overshoot.</td>
<td>20</td>
</tr>
</tbody>
</table>
| Lock | Key lock         | 0 to 1                | 0-All parameter can rework  
1-Only SP value can rework | 0       |
| t    | Control period   | 1 to 120s             | Only relay output                                                           | 20      |
| Hy   | Deadband         | 0 to 50 or 0.0 to 50.0 | ON/OFF control only                                                         | 1.0     |
| At   | Auto-man         | 0 to 1                | 0-Close auto-man function  
1-Open auto-man function | 0       |

### 5. Display Status
Connect the power, the sensor and the external control circuit to the instrument refer to the connection figure. After these, turn on the power and then the instrument will at first begin to auto-test according to the program A, Band C.

A: All LEDs and all indicating lamps will be lighted to test the lighting-system whether good or not. If unlighted LED or indicating lamp were found, please stop using and transmit it to for repairation. (This procedure lasts for 0.5s)

B: The window PV( upper window) display “CJ”, the window SV is not display.

C: The window PV display model.

After the three procedures, the instrument will step into the normal measure-control state. The upper window PV display the value that the instrument is measuring and the lower window SV display the value set.

If want to modify the value in the window SV, press the SET key 3second when the instrument is in its normal display state, then the window PV will display “SP” and the window SV will point wink. At this moment press the key ∧ to increase the value or the key ∨ to decrease (Press the key ∧ or ∨ for a longer time to accelerate the speed of value setting). Press <key shift ( like cursor). Press the key SET to certain the modified value. If no any other operation after modification, the instrument will automatically return to the normal display state and accept the modified value at the same time.

If want to modify the value other than “SP”, press the key (SET +∧) 3 second when the instrument is in its normal display state to set the internal parameter. Please set the value in terms of the actual application. But please pay more attention to the three items “P 、I 、d”, these must be set by experienced engineer.
- Auto-man: the first set value is Ok, after At being “1”, the “AT” indicating to it will light. The instrument begin working as the ordinary one with two control points and three states. After 3 cycles, it will certain the best PID value to the set point and store it forever unless the user’s modification or opening the “AT” function.

- The signal “HH” or “LL” in the window PV means that the sensor is out of connection or the measured value is overflow.

6. Connection figure.