

## FINE AND SIMPLE FUNCTIONS ECONOMIC TYPE

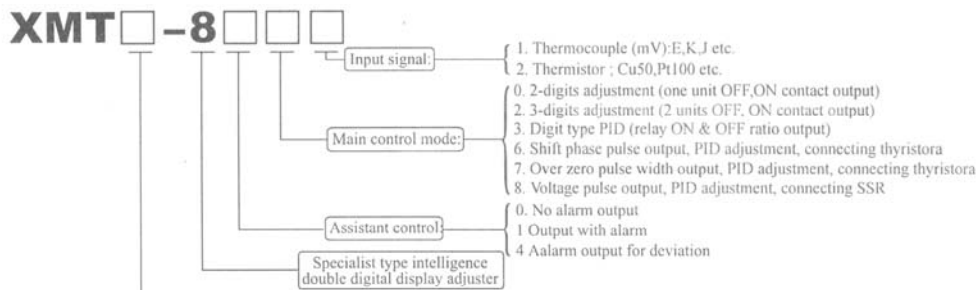
### XM□-8000 SERIES

## SPECIALIST INTELLIGENCE DOUBLE DIGITAL DISPLAY ADJUSTER OPERATION MANUAL

### BRIEF INTRODUCTION OF THE PRODUCT

8000 Series specialist type intelligence double digital display adjuster is an excellent instrument with 90's high and new technology specially used as temperature control. 2-digits type, 3-digits type and specialist type intelligence PID etc. classic and modern control technology are available by using new anti-strong interference micro-computer slip, two rows digital tube showing measured value and setting value and typing various data in panel. It is widely used as temperature automatic control in food, package, plastics, rubber, tobacco, stove machinery, electric power station, oil factory and chemical enterprise with good ratio of performance and price.

### 1.MODEL DESCRIPTION, OVERALL DIMENSION AND OPENING SIZE



Model	Panel dimension and depth (l×w×d) mm	Opening size (l×w) mm
XMTA	96×96×115	92 <sup>+0.8</sup> ×92 <sup>+0.8</sup>
XMTD	72×72×115	68 <sup>+0.7</sup> ×68 <sup>+0.7</sup>
XMTE	48×96×115	45 <sup>+0.6</sup> ×92 <sup>+0.8</sup>
XMTF	96×48×115	92 <sup>+0.8</sup> ×45 <sup>+0.6</sup>
XMTG	48×48×115	45 <sup>+0.6</sup> ×45 <sup>+0.6</sup>

EXAMPLE:

XMTA-8131/K/0-999℃

MEANS:

Panel dimension :96×96  
with K type thermocouple, control range 0-999℃  
PID data adjustable relay switch ON & OFF ratio output  
One way alarm output

### 2.SPECIFICATION OF THE INSTRUMENT

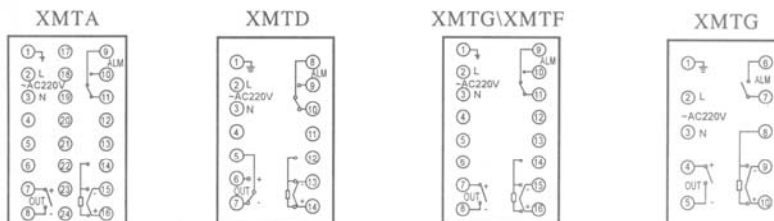
- Measure error: 1%±1 word, 0.5%±1 word two sections. Additional cold end compensating error: within 0-50℃, ≤±2℃, temperature rate ≤0.05%/℃.
- Control digit display range: -199-999.
- Over limit alarm range: full range free setting or error value alarm setting.
- Relay output contact capacity: 3A/220V (resistant load)
- Thyristora trigger signal: 5V/40 μS
- Solid relay output signal: 12V DC safe current.
- Manual data setting range:
 

rate band	P	1-999℃	integral calculus time	J	0-999 S
Differential calculus time	d	0-999 S	sensor rectify	Sc	±20 ℃
Rate time	T	1-99 S	power percentage for keeping temperature	UU	0-99 %
- Operation power source: 220V±10% 50 Hz ±Hz
- Operation environment: temperature 0-50℃, relative humidity 35%-85% RH, no corrosive and no strong electric magnet field.

### 3. FITTED SENSOR AND THE CONTROL RANGE

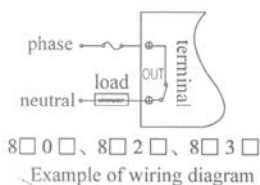
Sensor	description	graduation No.	measure range	Sensor	description	graduation No.	measure range
Thermocouple	Ni Cr-Cu Ni	E	0~800℃	Thermistor	Cu resistor	Cu50	-50~150
	Ni Cr- Ni Si	K	0~1300℃		Pt resisto	Pt100	-100~600
	Fe- Cu Ni	J	0~750℃				
	Other						

### 4. TERMINAL LAYOUT AND CONNCTION OF THE INSTRUMENT



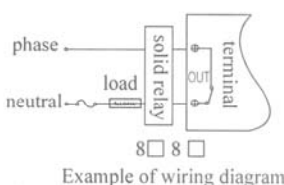
Note: OUT in all wiring diagram means main control output unit. The switch state means output of relay. +, - states mean voltage output terminal and pulse DC voltage output terminal whiling connecting solid relay. When connecting double direction thyristor output, - pole connects the trigger of thyristor. + terminal connects the negative pole of the double direction thyristor.

Example of wiring diagram of main control output:



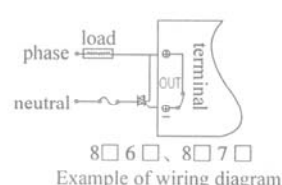
8□0□、8□2□、8□3□

Example of wiring diagram



8□8□

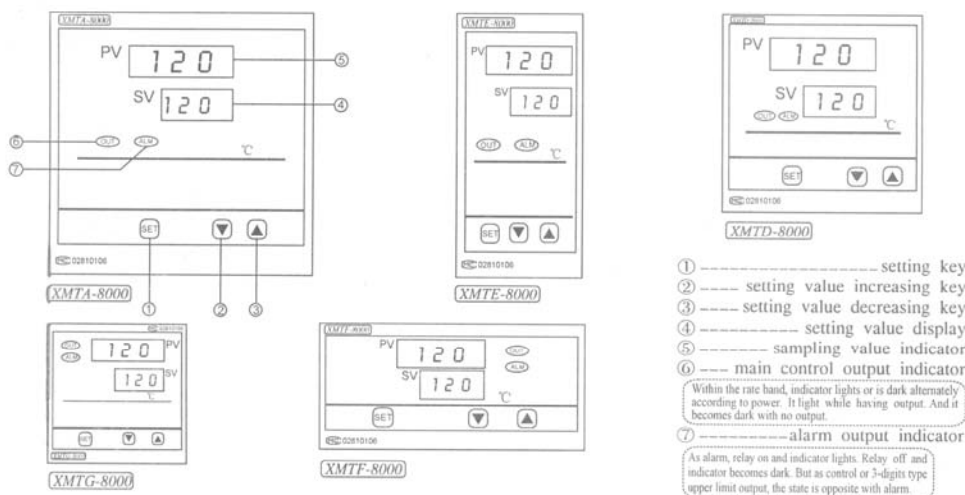
Example of wiring diagram



8□6□、8□7□

Example of wiring diagram

### 5. PANEL OF THE INSTRUMENT



- ① ----- setting key
- ② ----- setting value increasing key
- ③ ----- setting value decreasing key
- ④ ----- setting value display
- ⑤ ----- sampling value indicator
- ⑥ ----- main control output indicator
- ⑦ ----- alarm output indicator

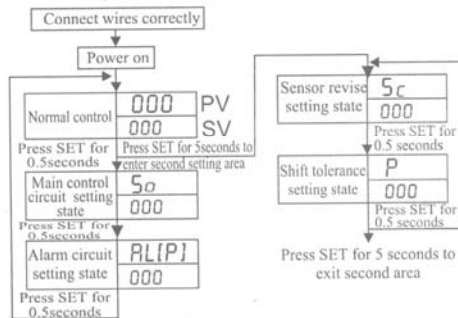
Within the rate band, indicator lights or is dark alternately according to power. It light while having output. And it becomes dark with no output.

As alarm, relay on and indicator lights. Relay off and indicator becomes dark. But as control or 3-digits type upper limit output, the state is opposite with alarm.

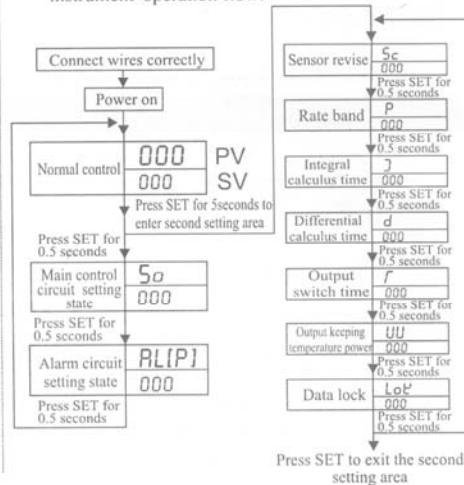
## 6. DESCRIPTION OF KEYS ON PANEL

There are three keys ranking at the panel: SET flow control key. ↓ set figure decreasing key ↑ set figure increasing key.

With these three keys, you can change data and set value. When you use this instrument first time, please read following operation flow and example carefully:  
1) Operate SET key A: digit type, digit type + alarm, 3 digits instrument operation flow: Connect wires correctly



B: Specialist type PID, specialist type PID + alarm etc. instrument' operation flow:



## 6. DESCRIPTION OF KEYS ON PANEL

Notes: 1. If instrument is in state of setting for over 30 seconds and no any key is pressed down, it will exit setting state automatically to normal control. Your setting data set at last time will not be reserved.

2. Shift tolerance functions only for main control. The shift tolerance of alarm circuit is a fixed data.

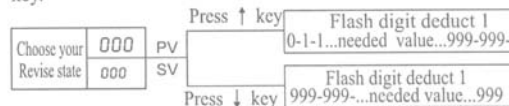
3. The revising range of sensor 5c is 20°C~20°C. It is 0.0°C while delivery.

4. Alarm circuit RL is absolute value setting alarm; RLP is deviation alarm of main control setting value.

Data permit setting key Lo8:00- All data are permitted to revise; 01-main control data is permitted to revise; 02- All data are not allowed to revise.

### 2) Operate other keys

While entering the data state, you can revise by operating other key.



When changing much, press down ↑ key or ↓ key so that setting value add or deduct quickly to shorten the setting time.

## 7.MAIN OPERATION INSTUCTION

1.Set main control value: Press SET for 0.5s. to enter the first setting area and PV window display "So". Press ↑ key or ↓ key so that SV window shows the required value. Then press SET for 0.5s. two times to exit. For example, if you need 300°C control temperature, let SV window shows 300.

2.Set alarm value:If your instrument has alarm function, press SET for 0.5s. to enter the first setting area. Then press SET for ↑ key or ↓ key till SV window shows the required value. Then press SET for 0.5 s. to exit. For example, if you need 350°Cas alarm temperature, just let SV display 350.

### 3) Description of setting mark:

Following marks appear in order while pressing SET key. Some marks may not exist in your instrument.

Marks	Name	Setting range	Description	Setting value before delivery
(1) So	Main control setting	0~999	Set main control point value	150
(2) RL	Alarm setting	0~999	Set alarm point value	200
(3) RLP	Deviation alarm setting	± 99	Set balance of alarm point and main control point	50
(4) Sc	Sensor revise	± 20	The shift tolerance of digit type instrument	0
(5) P	Shift tolerance	0~99	Revise balance between sensor and standard value	1
(6) I	Rate range	1~999	Set rate band	20
(7) d	Integral calculus range	0~999	Set integral calculus time	130
(8) T	Differential calculus range	1~999	Set differential calculus time	30
(9) f	Output time	1~99	Set relay output of output switch time	20
(10) UU	Output	1~99	Other output	2
(11) U	Percentage of keeping temperature power	0~99	Set the ratio of power at setting point and full power for heating up.	20
(12) LoL	Lok setting lock	00	No lock	
		01	Lock setting data except main control	00
		02	Lock all data	

3. Set deviation alarm value: If your instrument has this function, press SET for 0.5s. to enter the first setting area. Then press SET for 0.5s. and PV display shows "RLP". Press ↑ key or ↓ key to make SV display the required value (The balance between alarm point setting and main control setting.). Then press SET for 0.5s. to exit. For example, if you want 350℃ as alarm temperature and 300℃ as main control temperature, just let SV display 50 (350-300).

Please note that while changing main point value, the deviation alarm point will also change unless you readjust deviation alarm value.

4. Sensor revise: When the control system including sensor has error and cannot be same as finer instrument, use this function to catch the finer one. Press SET for 5 s. to enter the second setting area, then press SET for 0.5 s. to make PV display 5c. Press ↑ key or ↓ key, set the same but opposite value within +/-20, then press SET for 5 s. to exit. For example, if deviation is +3C, set 3.

5. Set keeping temperature power: Correct setting for keeping temperature power is very important to instrument' temperature control precision. The definition of keeping temperature power: the ratio of average heating up power to maintain control point temperature and rated full power. Its range is 0-99%. Setting method: Press SET for 5 s. to enter the second setting area, then press SET for 0.5 s. several times to make PV display "UU". Press ↑ key or ↓ key till SV display set keeping temperature power. For example, if 20% keeping temperature power can maintain steady control point temperature, let SV display 20.

## 8. NOTES

1. Insert the instrument into opening of the disc. The opening tolerance must be proper. Amount screw of installing plate and tighten it properly. Insert the instrument with self-lock shell into the opening.

2. Check whether the gradation specification and electric source of the instrument is same as your order.

3. Connect wiring according to name plate or wiring diagram in operation manual correctly. If there is any difference, subject to wiring name plate or ask information from manufacturer.

4. Use compensative wire suitable to thermocouple material for thermocouple input signal.

5. Use low resistor wire with same size for thermistor input signal, and the three wires resistor should be as same as possible.

6. Must note that do not disconnect electric source inlet and signal inlet. Do not let output terminal short-circuit by strong current.

7. Layout line by separating electric source inlet of instrument from signal inlet to reduce electric-magnet radiation to the greatest extent. Shield cable must be used if placing them together.

8. Take followings while placing order: (1) Instrument model. (2) Fitted sensor gradation

(3) Temperature measuring range

(4) Other special technical requirement (5) Quantity and time

## 9. TROUBLESHOOTING

After connecting proper electric source cord, sensor wire and output control line according the instrument specification, turn on it and PV display measuring value. SV display setting value and it is in the state of automatic control temperature.

1. If the instrument indicates abnormal, please check sensor and wiring.

2. If all functions and output on panel are normal, and the instrument is out of control, please check whether output control line connection is correct and inner components is damaged because of outside load short-circuit, break or wrong wiring etc. If necessary, power off and open the instrument to check whether outlet sheet copper and output protective resistor are burn etc.

3. The troubleshooting: a. When PV display HHH, mean input signal over range (measuring range) or inlet signal wire wrong connection, please check signal inlet.

The instrument here is a basic form of XM 8000 series of specialist type one. It may be a little different from each other according to user' requirement. Please refer to actual wiring diagram and operation of the instrument as final standard.