XMT*- 908P 64 Program Control instrument
Operation Instruction

Ⅰ、Main Technical Indexes

1、Basic error： ≤±0.5%F.S±1B
2、Cold end compensating deviation： ≤±2.0℃
3、Sampling period：0.5 second
4、Control cycl：relay output 2～120S , other is 2S.
5、Alarm output the drop in level：0.5 or 5
6、Relay output contact capacity：AC220V/5A (resistance load) or AC220V/0.3A (perceptual load)
7、Driving controllable pulse output：≥3V scope，≥50μS width contact with pulse when move to exceed zero
8、Driving solid relay signal output: driving electric current≥15mA, voltage≥9V.
9、Continuous PID: 0～10mA (load 500±200Ω), 4～20mA (load 250±100Ω),
or 0～5V (load≥100kΩ) , 1～5V (load≥100kΩ)
10、Power: AC90V～242V, 50/60Hz
11、Work environment: temperature 0～50.0℃, humidity≤85%RH, without corrode and strong electric radiation.

Ⅱ、Product code:

XMT □ 9 □ 8 □ P
(1) (2) (3) (4) (5) (6)

(1) Meter faceplate and Installation dimension (mm)

Blank: 160×80×130 156×76； A: 96×96×110 92×92；
D: 72×72×110 68×68； E: 48×96×110 44×92；
F: 96×48×110 92×44； S: 80×160×130 76×156；
G: 48×48×110 44×44

(2)Design serial number

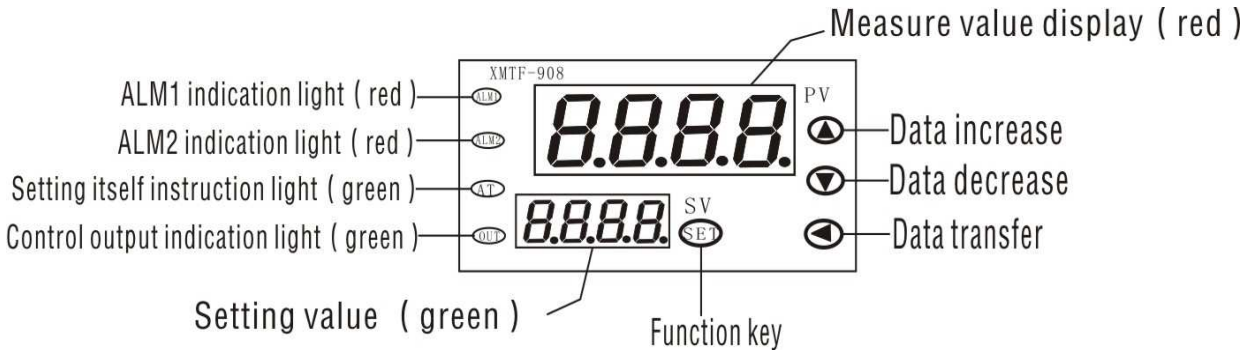
(3)Alarm: “ 0”: no set alarm “ 1 or 2”: one alarm “5”: voice alarm
“3”: two group alarm (Alarm mode can be selected by the parameter ALP)

(4)Input signal： “8”: Free exchange of the input signal

(5)Control method： Blank: Relay contact; “G”: Solid state relay;
“A”: Zero passed trigger of controlled silicon； “ A3”: Three-phase over-zero trigger adjustment;
“ B”: Controlled silicon phase-shifted trigger； “C”: 0-10mA or 4-20mA constant electric current output;

(6)“P”：64 segment program(It contains 32 rise temperature segments and 32 constant temperature segments.)

Ⅲ、Panel schematic diagram(consult)



Ⅳ、Code setting mode

Series	Code	Name	Manual	Setting range	Ex-Factory
0	SP	Setting value	When run = 0, it makes sense.	Determined by P-SL P-SH	100

The first setting area					
1	AL-1	Alarm 1	please refer to **ALP** Corresponds to "ALM1" indicator light	Determined by P-SL, P-SH when the upper and lower limit alarm, other alarm range is 0 ~ 50.0	300
2	AL-2	Alarm 2	please refer to **ALP** Corresponds to "ALM2" indicator light		100
3	Pb	Deviation revisal	The sensor have deviation can use item to revisal	±20.0	0.0
4	P	Proportion modulus	When the P↑, the proportion and differential function↑; if the P ↓, the proportion and differential function↓. **When P=0,the meter is ON/OFF control**	1 ~ 9999	100
5	I	Calculus time	When the I↓, the calculus function↑; I ↑the calculus function↓. When I=0,no calculus function, it is PD adjustment instrument	0 ~ 3000	500
6	d	Differential time	When the d↓, the proportion and calculus function↑; If d↑, the proportion and calculus function ↓, but the differential function↑. when d≤t, it has no differential function.	0 ~ 2000S	100S
7	t	Control period	Control relay output period	2 ~ 120	20S
8	FILT	Filt modulus	Is the software filter constants of measurement sampling. The constant ↑, the measurements antijamming capability↑, but the measurement and system time ↓	0 ~ 99	20
9	Hy	Main control by drop in level	When the meter is ON/OFF control, the value lower the control is good, But when the relay output it will detriment to the service life.	0.1 ~ 50.0	0.5
10	dp	Decimal position	When thermocouple and thermal resistance input, the decimal point set up the range of 0 ~ 1; when current and voltage input ,the decimal point set up the range of 0 ~ 3	0 ~ 3	0
11	outH	Allow exports max value	Can achieve low and high output limiter. Meaningless when manual and ON/OFF control	outL ~ 200	200
12	outL	Allow exports min value		0 ~ outH	0
13	AT	Setting itself	ON: open function of setting itself OFF: close function of setting itself	0 ~ 1	0
14	LocK	Electronics lock	LOCK=0, all the parameter can be revised LOCK=1, only the **SP** can be revised LOCK **>** 1, all the parameter can not be revised	0 ~ 50	0
15	Sn	Input type	Cu50(Cu50)–50.0 ~ 150.0□; Pt100(Pt 1) –199.9 ~ 200.0□; Pt100 (Pt2)–199.9 ~ 600.0□; K(K) -30.0 ~ 1300□; E(E) -30.0 ~ 700.0□; J (J)-30.0 ~ 900.0□; T(t) -199.9 ~ 400.0□; S(S) -30 ~ 1600□; R(r) -30.0 ~ 1700.0□; WR25(r25) -30.0 ~ 2300□; N(n) -30.0 ~ 1200.0□; F2(F2); 0 ~ 50mV(0_50); 10 ~ 50mV(A_50); 0 ~ 5V/0 ~ 10mA(0_5u); 1 ~ 5V/4 ~ 20mA(1_5u)	——	K
16	OP-A	Main control by output method	'0'no output '1'relay output '2'solid relay output '3'phase over zero trigger adjustment '4'phase trigger adjustment '5'0 ~ 10mAor 0 ~ 5V ; '6'4 ~ 20mAor 1 ~ 5V ; '7'valve control	0 ~ 7	According to the request
17	OP-B	Vice control by output method	'0'no output; '1'RS232 or RS48; '2'contact the micro-printer; '3'0 ~ 10mA or 0 ~ 5V output '4'4 ~ 20mAor 1 ~ 5V output	0 ~ 4	According to the request
18	ALP	Alarm output definition	'0'no alarm ; '1'upper limit alarm ; '2'lower limit alarm ; '3'upper,lower limit alarm '4'positive deviation alarm '5'negative deviation alarm. '6'positive,negative deviation alarm	0 ~ 10	According to the request

			‘7’outside the interval alarm ‘8’inside the interval alarm ‘9’two high limit alarm ‘10’ two low limit alarm		
19	COOL	System function choice	‘0’:reverse control(heat) ‘1’:positive control(cool)	0 ~ 1	0
20	P-SH	Set upper limit	They are used to reset proper temperature range as per user’application.	P-SL ~ 9999	1300
21	P-SL	Set lower limit	As for the Max. temperature range for different inputs, please refer to **Sn,** **P-SH≥P-SL**	-1999 ~ P-SH	0
22	Addr	Communication address	The meter’s number in the control system	0 ~ 63	1
23	bAud	Communication baud rate	1200； 2400； 4800； 9600	____	9600
24	m-A	Manual output			
The second setting area (Partial parameter of curve program control)					
25	AL_P	Automatic pause(△SP)	When the systematic difference (the error between PV window measured value with SV window program segment running value) absolute value is larger than this value, the instrument enter into the suspension state automatically; smaller than this value, the program segment continues to run.	0 ~ 100.0	10.0
26	run	running state	‘0’stop：SP as routine thermostatic control ‘1’hold：After finish the curve program control ,the meter turn to this state, the meter will be closed, and output in the state of single display ‘2’pause：the setting value □SP as thermostatic control , the meter stop timing . ‘3’run :the meter run as according to the slope temperature and time parameter.	0 ~ 3	0
27	Pro	program segmentation	The present running zone, change this parameter can skip at random. Running time TE to reset at time	0 ~ 64	0
28	TE	Run time	The run time of nonce segment（only read）	≤setting time of this section, the unit is minute	According to The request
29	r1	Slope of brae 1	The unit is □/min when r=0 finish this curve control, and enter the stand by state（run=1 pro=1）when r=200.0, skip this slope section to enter the next platform.	0-200.0 □/min	According to the request
30	t1	Running time of Platform 1	Soaking time of Platform 1, when the time is 0 , the program will skip to next section.	0 ~ 9999 minute	According to the request
31	C1	Target temperature value of Platform 1		Determined by P-SL P-SH	According to the request
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122	r32	The slope of ramp 32	The same as above		___
123	t32	The running time of platform 32	The same as above		___
124	C32	Target temperature value	The same as above		___

Time parameter :the third setting area（only use when with the print function）

Series	symbol	Name	Remark	Setting range	Ex-Factory
125	year	year		0 ~ 99	
126	yue	Month		1 ~ 12	
127	dA	Day		1 ~ 31	
128	Ho	Hour		1 ~ 23	
129	Fen	Second		0 ~ 59	

Ⅴ、Operation

5.1、The first setting area:

Press the SET key 3S enter into the first setting area, the meter will display the parameter code 1～23 in the window at the upper row and display the parameter data at the low row. In this time press the ▲、▼ or ◀ key to adjust the parameter, then press the SET key to preserve. If within 10 seconds do not press every key then it will automatically to preserve the data and withdraw the setting.

The LOCK is electronics lock, when Lock=0, all the parameter can be revised; when Lock=1, only the "SP" can be revised; when the Lock **>** 1, all the parameter can not be revised. But don't set the Lock **>** 50

5.2、The second setting area (Partial parameter of curve program control):

Curve parameter setting area, press SET+◀ 3 Second to enter into the other operation is the same as above.

5.3、The third setting area (Time parameter):

When the power on, press SET **+** ▲ **+** ▼key to enter into the setting area, the other is the same as above.

5.4、When run=0, The setting value amend(SP) :

Press the ▲ key 3 second to enter into the setting value amend area(SP), the other is the same as above.

5.5、Manual regulation:

When the meter is set up with the electricity, press the ◀ key about 3S enter into the manual regulation, it will display "H" at the lower row, in this time can set the output power; press the ◀ key about 3S again it will withdraw the manual regulation.

When the control object is valve, the manually operation value >50,and is co rotating，whereas is reversal，stable output duty ratio is 100%。

5.6、reposition: press ◀ +▼key about 1 second, the program will reposition the first stage, run according to the running state.

5.7、Normal using ,it shows the measurement data in the window at the upper row and display the setting data SV at the lower row, press the▼ key it will display the main control output data, the first LED display "F" ,latter three LED 0～100 output data.

5.8、Suspension and recycling operation :

When the instrument is in the normal operation, pressing ▲ key for 3 seconds program segment will enter into the suspension state, this time AM indicator light is flashing; pressing ▲ key for 3 seconds again, the program segment resume running. When the program segment finish running, then enter standby mode; pressing ▲ key for 3 seconds the program segment start to re-run from the first segment.

Ⅵ、Operation method of running curve program

1、Three work state of the meter

State of stop:

when the meter is in the state of stop, the meter is used as the thermostatic control, the setting value is the basic setting value（SP）,display in the window below, the running indicator light turn off.

State of running：

When the meter is in the state of running ,the meter constantly modify the setting value （SV）according to the setting curve，make the measured value（PV） changing according to the curve program, so as to achieve the purpose of curve program control, and the indicator light turn bright.

State of interim ：

When the meter is in the state of interim, the calculagraph stop timing ,the setting value（SV）maintain unchanged, and it also will prolong the running time of the curve program, the indicator light will coruscate.

State of automatic pause：

The state of automatic pause is the special form of the state of interim, created by the meter itself, not can be controlled by artifial. In the running state, when the deviation absolutevalue of themeasured value and present setting value （SV）>automatic pause strap (AL_P)，the meter enter into the pause state，the indicator light will coruscate.，the calculagraph stop timing ,the setting value（SV）will not change. when the deviation absolutevalue of themeasured value and present setting value（SV）< automatic pause strap (AL_P),the meter will automatically resume the running state.

Hold state：

when the meter finish the curve program, and some section r=0 时,the meter will enter into the hold state (run=1)， and the main control output closed, the indicator light turn off, the below window display the first setting value. When the outer switch touch off or set the meter Run parameter to 3, it can restart.

2、Disposal on the power-cut

During the running process of the curve program，the meter will for every 5 minutes to save the running parameter and the running state data，so when the power is off and then on ，the meter only run according to the last saved data to continue ，not from the beginning(if it need to start from beginning, press reposition key to start.

Ⅶ、Setting itself

The meter use in the first time or the surroundings have changer, finding it control not good, in this time you need use the setting itself. For example:

Set the HY is 0.5～1℃, if the output is relay set the t=2S, then set the AT=1, A-M(or AT) light flickered, in this time the meter enter into setting itself. It have three times vibrate, automatic preserved P, I, D parameter and the A-M(or AT) light off, the setting itself finish.

Note：①when Setting itself, the instrument should not change the set value.

② When the power off during setting itself, as the meter has the memory, it will restart setting itself next time.

③ When it need artificially exit during setting itself, set the parameter to 0 so that can exit，but the setting result will not be valid.

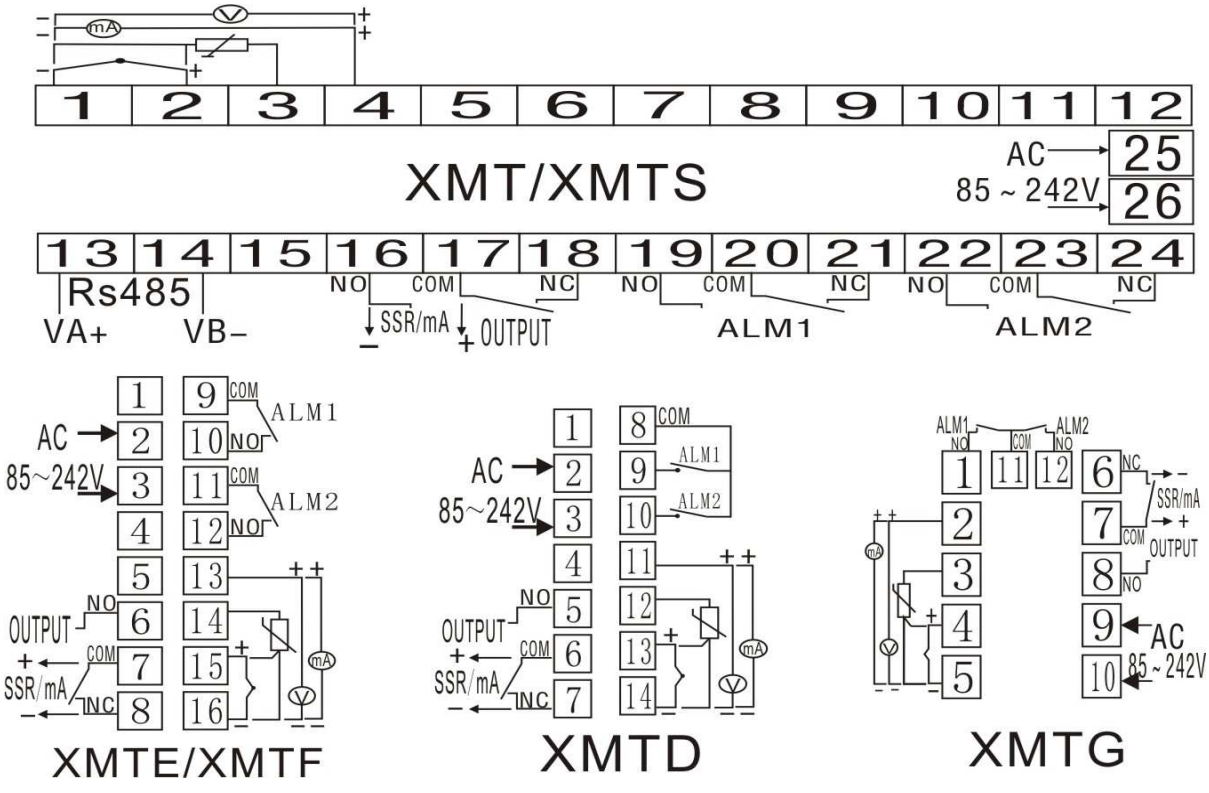
④The parameter set suitable for most of the system, but not for the minority system. so we can adjust P、I、D value. when artificially adjust, look into the response curve. If it is the short cycle oscillate (about the same long as the oscillation cycle of setting itself or on-off control), decrease P (priolity), increase I and D; If it is the long cycle oscillate (more times as on-off control), increase I(priolity), increase P、D; if with no oscillate but with steady-state error. decrease I(priolity), increase P; if last can control steady but need long time decrease D(priolity), increase P, decrease I. The adjustment can adopt step-by –step method, first to increase or decrease 30-50% with one parameter of P、I、D. If the control result is get better, then keep on increasing or decreasing the parameter till the result is best. In general, we modify P first, then I, if the result is also not well, and modify D parameter. When modify these three parameter, we should consider the overshoot and control precision these two index.

When output control valve, as the cycle of open and closed is too long, it should artificially modify PID parameter on the basis of Ex-Factory value if the result of setting itself is not well. (In general P↑ on the basis of Ex-Factory value, diminish and in order to avoid continual action, D should adjust smaller.

Ⅷ、Connection(consult)

Note①: Only one way for alarm use Alarm 1.only when alarm method ALP is 3(upper and lower limit alarm)、6(upper and lower deviation alarm)、9(upper and upper limit alarm)、10 (lower and lower limit alarm),it should use Alarm 2,when upper and lower limit alarm or upper and lower deviation alarm, it should use Alarm 2 as lower limit or lower deviation alarm. The indicator light will be lighten when the alarm output.

Note ②: when input current signal 0-10mAor 4-20mA, it should respectively combine 1K or 250 250Ω to input port. Change the current signal to voltage signal.



- **As below take the surface of the paste solder equipment for instance setting the program section parameter：**

1、 Prewarming zone: Rise the stove temperature from the starting temperature to soaking zone. r1=30□/minutes；

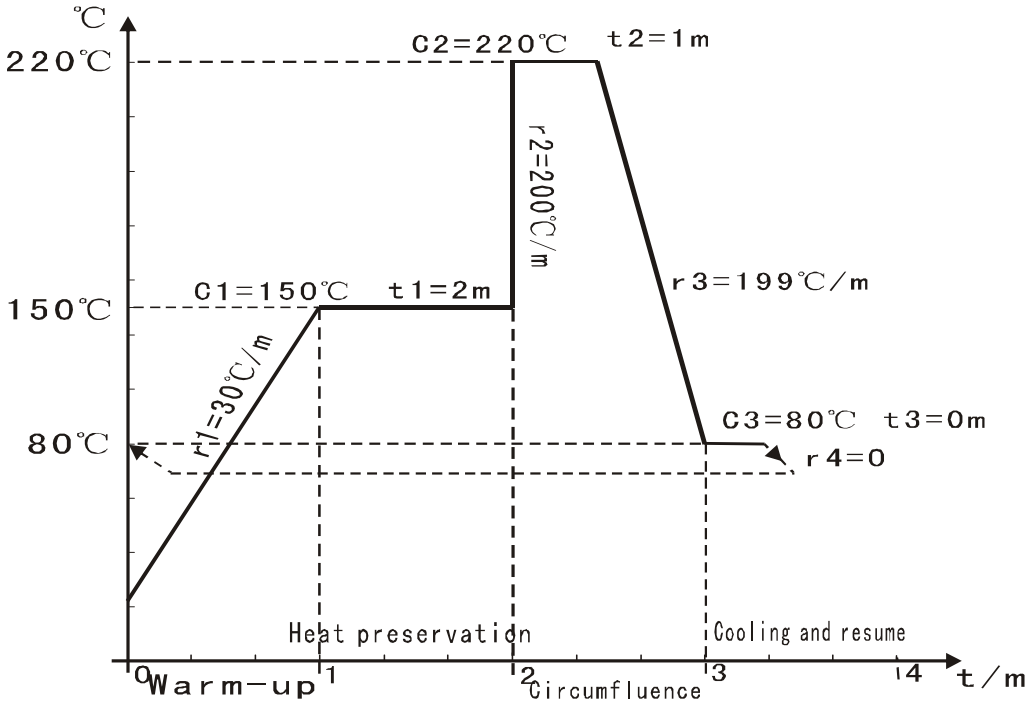
2、 Soaking zone：namely the first platform section C1=150□ heat preservation T1=2minute；

3、 Circumfluence zone：the program skip from the first platform to the second platform（ r2=200□/minute ）,to make the stove rise to the soldering temperature C2=220□,heat preservation T2=1minute；

4、 Cooling zone：set r3=199□/minute，andC3=80□ to make cooling rapidly. and set T3=0 minute so as to finish the whole jointing process.

5、 Reposition switch to stand by state：After the temperature decrease to 80□ to enter into the third platform zone, but as T3=0, then enter into the fourth slope zone directly. when r4=0, so the meter skip to the first program zone to enter into the stand by state（ pro=1 ； run=1 ）。

- **Temperature Curve chart as below：**



Attached 1：Statement of meter’s parameter attention letter and English letter

A	B	C	D	E	F	G	H	I	J	K	L	M
A	b	C	d	E	F	G	H	I	J	K	L	n
N	O	P	Q	R	S	T	U	Y				
n	o	P	q	r	S	t	u	y				

□**Note: Our company will continue to improve product technology, design specification. If change, please subject to the material object, without notice.**