F-900 Series Dual-loop
Intelligence PID Controller

Operation Manual

Thanks for purchasing our F-900 series controllers.This manual mainly describes some knowledge and instructions required while using our products.Please read this through carefully forthe full understanding of operating procedure.Keep this manual at hand for your reference

1:Attention

(1)Please do not use this products in the place full of explosive or inflammable gas.(2)Please pre-determined power supply voltage is within rated operatign range, and make sure terminal position is correct before power supply, otherwise controllers might be damaged seriously after power on.(3)Dissociating,adapting or repairing the products is not allowed.(4)Please do not use the products in the following situation:

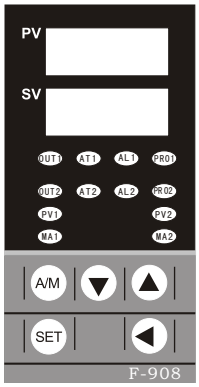
- The place with furious temperature variation.
- The place with high humidity and dew.
- The place with fierce vibration or action
- The place with corrosive gases or dust.
- The place with splashing water,oil or chemicals

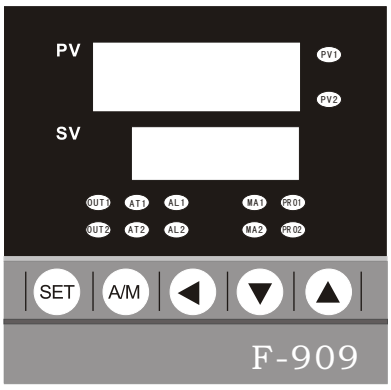
(5)To avoid interference,please keep the power wires supplied distance from high voltage,high current power wire.Please make sure wire harness be connected with right terminal.
(6)Please notice the outer covering of the products are easy to be corroded by organic colvents,acides or alkalis.

2:General Characteristic

Power voltage:AC85-265V,50/60HZ,(DC input is selective)
Power consumption:5VA max
Control mode：PID,PD,PI,P
Operating ambience temperature:0-50℃
Operating ambience humidity:50-85%RH
Sampling cycle:150ms
(1):It is a dual-loop control with independent two-loop input,output (PV1,OUT1 and PV2,OUT2).(2):It is selective randomly human machine operating surface displaying PV1,SV1 or PV2,SV2.(3):It is selective randomly checking and setting value parameters' surface of displaying PV1,SV1 or PV2,SV2.(4):It can seperately start the first , second loop's At PID,and also can start At work simultaneously.(5): The first ,second loop is seperately with corresponding AL1 and AL2 as alarm output.(6):Installing independent preset,seperately start and stop's human machine operation for the first ,second loop,with soft start function.(7):It can be with MODBUS or RS-485 Communication

3:Operation Panle and Functions Instruction





NO	Panel Words	Content Instruction
1	PV	Measuring value/mode indicator
2	SV	Setting value/mode content indicator
3	OUT1	Output 1 indicator
4	OUT2	Output 2 indicator
5	AT1、AT2	Automatic calculation indicator
6	AL1	Alarm 1 indicator
7	AL2	Alarm 2 indicator
8	PV1、PV2	Present panel display loop No indicato
9	MA1、MA2	Loop manual indicator
10	PR01、PR02	Loop slope control indicator
11	▲	Up key
12	▼	Down Key
13	◄	Shift key
14	SET	Cycles/Confirm key
15	A/M	Automatic/manual key

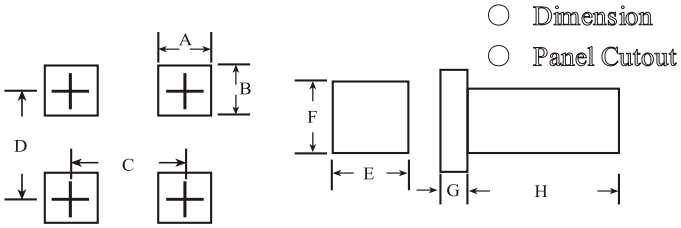
4:Signal Input/Alarm mode selective list

Input Range	Signal	Range
K	K	0-1370℃/0-2192°F
J	J	0-1200℃/0-2192°F
R	r	0-1760℃/0-3216°F
S	S	0-1760℃/0-3216°F
B	b	0-1820℃/0-3308°F
E	E	0-1000℃/0-1832°F
T	t	0-600.0℃/0-999.0°F
DPT100	dPt	-199.9℃-600.0℃/-199.9-999.0°F
LN	Ln	Linear analogy signa 4-20mA, 0-1V,0-50MV,0-100MV,0-5V
Cu	Cu	-50℃-150℃

Code	Note
0	Deviation high alarm
1	Deviation low alarm
2	Absolute value high alarm
3	Absolute value low alarm
4	In-band alarm
5	Out-zone alarm
6	Deviation low alarm(no alarm for the first time)
7	Absolute low alarm(no alarm for the first time)
8	Interruption alarm
9	Thermostat timing alarm
10	In-zone alarm(no alarm for the first time)

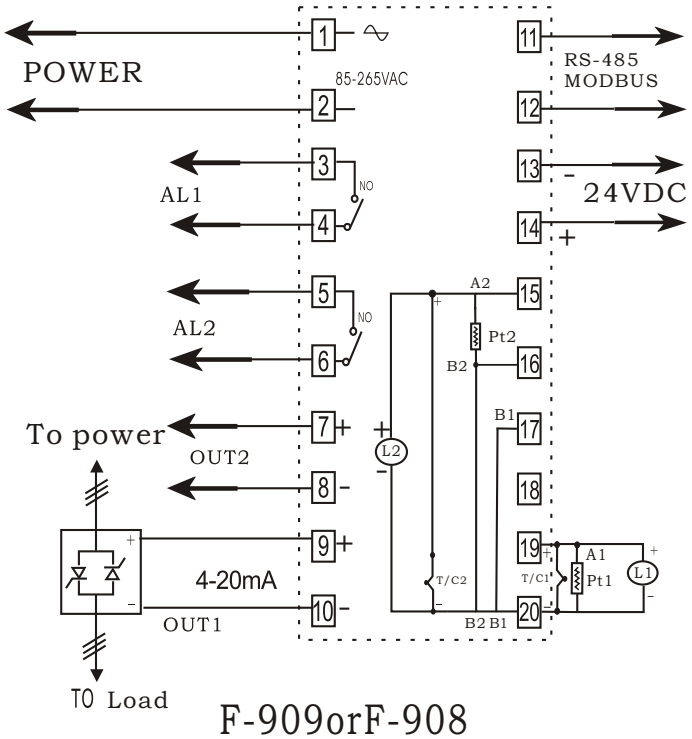
5:Dimension and Panel Cutout (Unit：mm)

○ Dimension
○ Panel Cutout



Model\ Dimension	A	B	C	D	E	F	G	H
F-908	44+0.5	90+0.5	90	126	48	96	14	80
F-909	90+0.5	90+0.5	126	126	96	96	14	80
F-910	152+0.5	74-0.5	188	110	160	80	14	80

6:Descriotion of wiring



7:Information for error code

Error code	Instruction	Solutions
	The first group sensor wire broken,electrode oppistion,or our of the range;The first group input signal higher than USP	Check input siganl whether wrong or not Check the range if input whether reasonable
-0.0.0	The first group input signal lower than UPS	Check the range of input whether reasonable
CJCE	Noraml temperature compensation failure	Check the diode of temperature compensation broken or not
	Broken Thermal coupls	Check T/C or wire of compensation

8:Operatio Instruction

1:Basic Operation

Step 1:Choose the first group input signal mode

A:Press SET KEY and SHIFT KEY at the same time,enter into Level 2.

B:Under INP,press SHIFT KEY one time,then SV indicator lighting.

C:Press ▲ key or ▼ key to choose input signal mode.(refer to the input signal chart.)

D:Press SET KEY to confirm

Choose the second group input signal mode

A:Press SET KEY and ▼ KEY at the same time,enter into Level 3.

B:Press SET KEY to choose IN2, and select graduation No.

C:Press SET KEY,choose LS2,and set SV2's lower value.

D:Press SET KEY,choose US2,and set SV2's upper value.

E:Choose NL2 verify,input measuring range's zero point (corresponding to input type Omv,0 ohms,or 4ma),input PV2's lower value.Press SHIFT KEY to lighting,press SET KEY again to confirm.

F:Choose NH2,corresponding to 50MV,313.59 OHMS,or 20mA input,press SHIFT KEY to lighting,press SET KEY again to confirm.

G:Press SET KEY and ▼ KEY back to level 0,check PV2 display value's corresponding relationship with input signal. If there is any mistake,please use PS2 unit to set repair value in level 3

Step 2:Alarm mode setting Ad1 (Same way to set Ad2)

A:Press SET KEY several times until AL1,Press SHIFT KEY once ,the first byte of SV indicator will light.B: Press ▼key or ▲key to set value,and press SHIFT KEY to next byte,and can set in the same way.C:After finish setting ,press SET KEY to confirm.D:Press SET KEY 5 secs back to LEVEL 0.Note:AL1,AL2 value is SV's deviation score when they are in alarm mode 0.1.4.5.6 and 9;is alarm's absolute value temperature when in mode 2.3 and 7;and no rule in mode 8;AL1 is offered for the first loop,and AL2 is offeredfor the second loop

Step 3:Alarm value setting AL1(Same way to set AL2)

A:Press SET KEY several times until AL1,Press SHIFT KEY once ,the first byte of SV indicator will light.B: Press ▼key or ▲key to set value,and press SHIFT KEY to next byte,and can set in the same way. C:After finish setting ,press SET KEY to confirm.

D:Press SET KEY 5 secs back to LEVEL 0.Note:AL1,AL2 value is SV's deviation score when they are in alarm mode 0.1.4.5.6 and 9;is alarm's absolute value temperature when in mode 2.3 and 7;and no rule in mode 8;AL1 isoffered for the first loop,and AL2 is offered for the second loop.

Step 4:Setting control temperature value(SV)

A:Press SET KEY serveral times,choose LOP item,press SHIIFT KEY,the first byte of SV indicator will lighting,press ▼▲ keys to choose "1",then press SET KEY several times back to PV/SV fix-point display status.B:At this time the SV value in the panel is the setting value(SV1) of the first loop,PVvalue is the first loop's measuring value(PV1),Please press SHIFT KEY and ▼▲ keys to change SV1'preset value.C:And so on,When LOP item choose "2",PV/SV set-point display PV2 and SV2'value.use B item to change SV2' setting value.

Step 5:Setting Automatic Calculation(AT)

A:Under LEVEL 0,press SET KEY several times until AT item.B:Press SHIFT KEY,the first byte of SV indicator will light,press ▲ key,there are fours way to choose:When At=0， both loops do not start At functions.When At=1,Only start PV1 loop to make At work.When At=2,Only start PV2 loop to make At work.When At=3,PV1 and PV2 loops both start At work.C:After choose At mode, the corresponding At1 or At2 indicator will light,and will light off when finish.D:The At calculation function will not fail in heat engineering parameters.Note: 1:AT setting must be after setting SV setting,and in the situation of PV value at least less than 15 degree than SV value.2:AT automatic calculation success then At indicator will off,which means controllers have worked with one group of suitable PID control parameters and predicted syestem paramters according to system present situation.3:Under some special situation,such as high requirement for control quality or AT calculation can not work ,manual setting still need.

2:Operation

1):Manual/automatic undisturbed switch(effective in set-point display condition) Press A/M KEY,MAN indicator light,enter into manual condition.The present SV display value is output percentage,PV display is OU1 or OU 2.Use SHIFT KEY and ▼▲ keys to change outpupercentage manually. Press A/M key again,Man indicator off,controller enter into automatical condition,at this time display shows originasetting value,PV display value is maeasuring value.Note:The controlelrs can enterinto manual /automatci conditon under any situations.

2):Manually modify PID parameters Under LEVEL 0,press SET KEY for 5 secs enter into LEVEL1, press SET KEY to choose P,I,D or P1.I1,D1 parameters and can set.

3)Indoor temperature modify.(effective in set-point display condition)When input thermocpuple graduation NO,if input terminal short connect,the controllers' display value is close to indoor temperature;if there is big difference,please press SET KEY and SHIFT KEY at the same time enter into LEVEL 2,then press SET KEY several times until PS1 item,manually set and modify PV1 value (plus or reduce);or enter into LEVEL 3 and find PS2 item to modify PV2 value.

4):Soft start preset slope control (selective)When your system need to start softly(SV preset slope temperature rise),please operate the controllers according to the following order:Set-up SV value → under LEVEL 0,Press SET KEY to find RA1 item,set slope temperature value→press SET KEY again to find RT1 item,set slope time(mins)(for example:set slope 10℃/mins,RA1 or RA2 is setted as 10.0,RT1 or RT2 is setted as 001.0)→set-up done,soft start will temperature up from present PV value according to slope until PV=SV ,then stop.

here are RA1,RT1 and RA2,RT2 two slope preset units in LEVEL 0 process,for the fist loop and second loop to preset indenpendently. When slope start,user can choose if SV's dynamic change display or not,please enter into LEVEL 2 ,press SET KEY several times,choose RSL unit to preset. When RSL=0 ,the SV of first and second loop both have no dynamic display.When RS;=1,only the fist loop's SV has ynamic display. When RSL=2,only the second loop's SV has dynamic display. When RSL=3 ,both SV of the fist and second loop have dynamic display.

Note:If need to stop slope temperature rise,please press SET KEY and ▲ KEY at the same time,SV value can be modified randomly for set-value control.If need to cancel soft start function,please set0.0℃/0 min value .There are two ways for slope control start,one is start after control power on,one is manaully press SET KEY and ▲ KEY once at the same time to start. Note:No matter which process the controllers in,stop operation for one mins,it will be back to PV/SV display condition automatically(means the main working surface)

9: Operational processes