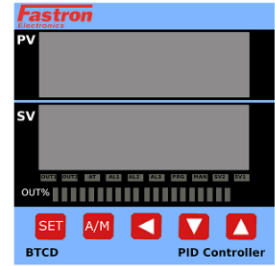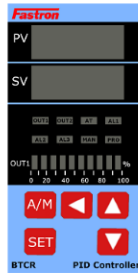# BTC Series
Microcomputer PID Temperature Controller
Operation Guide

Thanks for purchasing **BTC** Series Controller. This manual mainly describessome knowledge and instructions required while using our product. Please read this through carefully for the full understanding of operating procedure. Keep this manual at hand for your reference.

1 Attention

⚠ **Dangerous**

1. Attention! Dangerous to sense!
2. Do not touch the power terminal after supply AC power, in order to avoid electric shocks.
3. When connect with Instrument power, please make sure to power off!

⚠ **Admonition**

1. Please make sure of terminal position is correct before AC power supply in order to avoid of serious damage.
2. Please pre-determined power supply voltage and instrument specifications (AC85~265V or DC24V) correspond in order to avoid of serious damage.
3. Please confirm receipt of proper use of wiring (Input, Output, Alarm) terminals.
4. Please select of proper pressure terminal with the type of M3 screw and its biggest torque must be within the range such as 8kG. .
5. Please do not be installed under the conditions of easy to interfere, corrosive gases, high temperature and humidity.
6. To avoid other interference, please keep the power wires supplied distance from power wire and load wire.
7. When the input sensors is T/C, if necessary to extend the lead wire, Please use compensation wire according to the T/C.
8. When input the sensor is RTD, if we need to extend the lead wire, please use smaller impedance value, and the same wire.

2 Dimension and Panel cut out

3 Operation instruction

BTC1 Series Jumper Settings Table
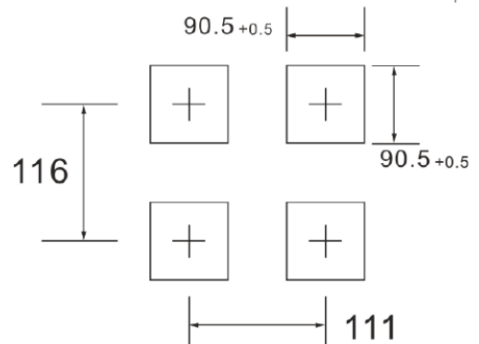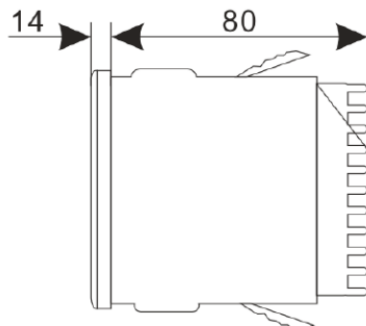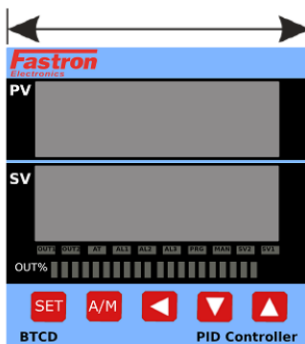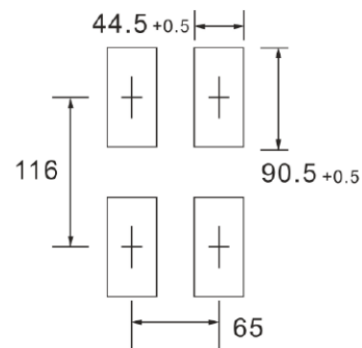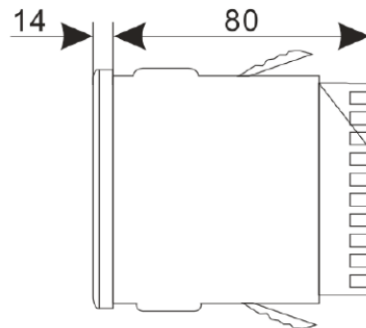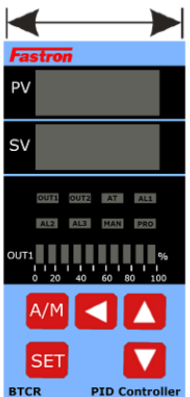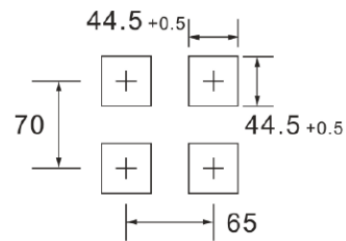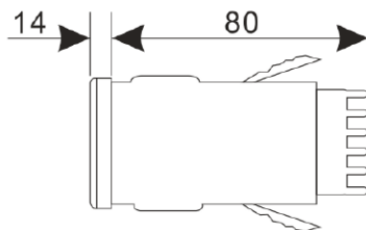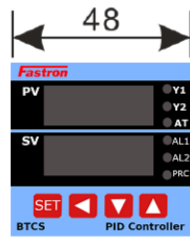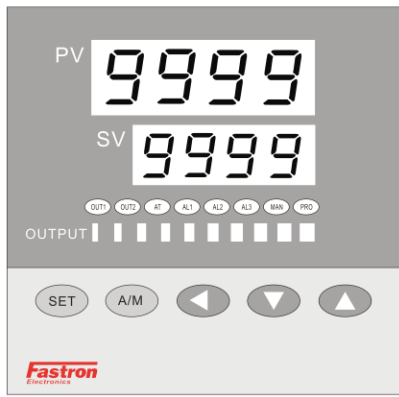
PCB Jumper ->	P13	P12	P14
Thermocouple Input			
RTD Input			
4-20mA Input			
V Input			

P13
P14
P12
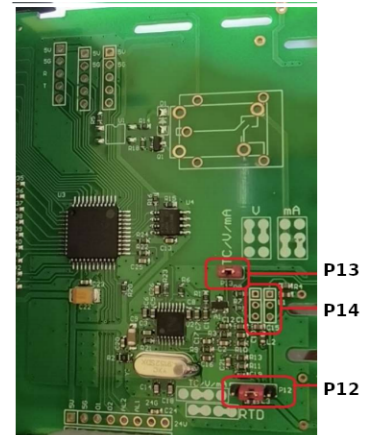
	Name	Function
PV	PV/Parameter indicator	Show input detecting value/ parameter model(Red led indicator)
SV	SV/Parameter indicator	Show Set Value or present set value (Green led indicator)
SET	SET Key	Set value,then press SET key to enter shift display parmeter,press shift key
A/M	Auto/Manual select Key	Switch automatic (PID tuning) output or manual output model
◄	Shift Key	Move sv digit (1digit,2digit,3digit,4digit for a circle)
▼	Down Key	Reduce SV
▲	Up Key	Add SV

	Name	Function
OUT1	Out1 operation indicator	When OUT1 runs, this light on (green)
OUT2	Out2 operation indicator	When OUT2 runs, this light on (green)
AT	Auto tuning operation indicator	When do automatic tuning, this light on(orange LED).
AL1	Alarm1 indicator	When Alarm1 output,the Ligit on (Red LED)
AL2	Alarm2 indicator	When Alarm2 output,the Ligit on (Red LED)
AL3	Alarm3 indicator	When Alarm3 output,the Ligit on (Red LED)
MAN	Manual operation indicator	Under manual output state, the Ligit on(orange LED).
PRO	Program runing indicator	When program runs, the light on (orange)
OUTPUT	Show OUT 1 output percentage	10 LED accordingly shows output percentage

4 Connecting
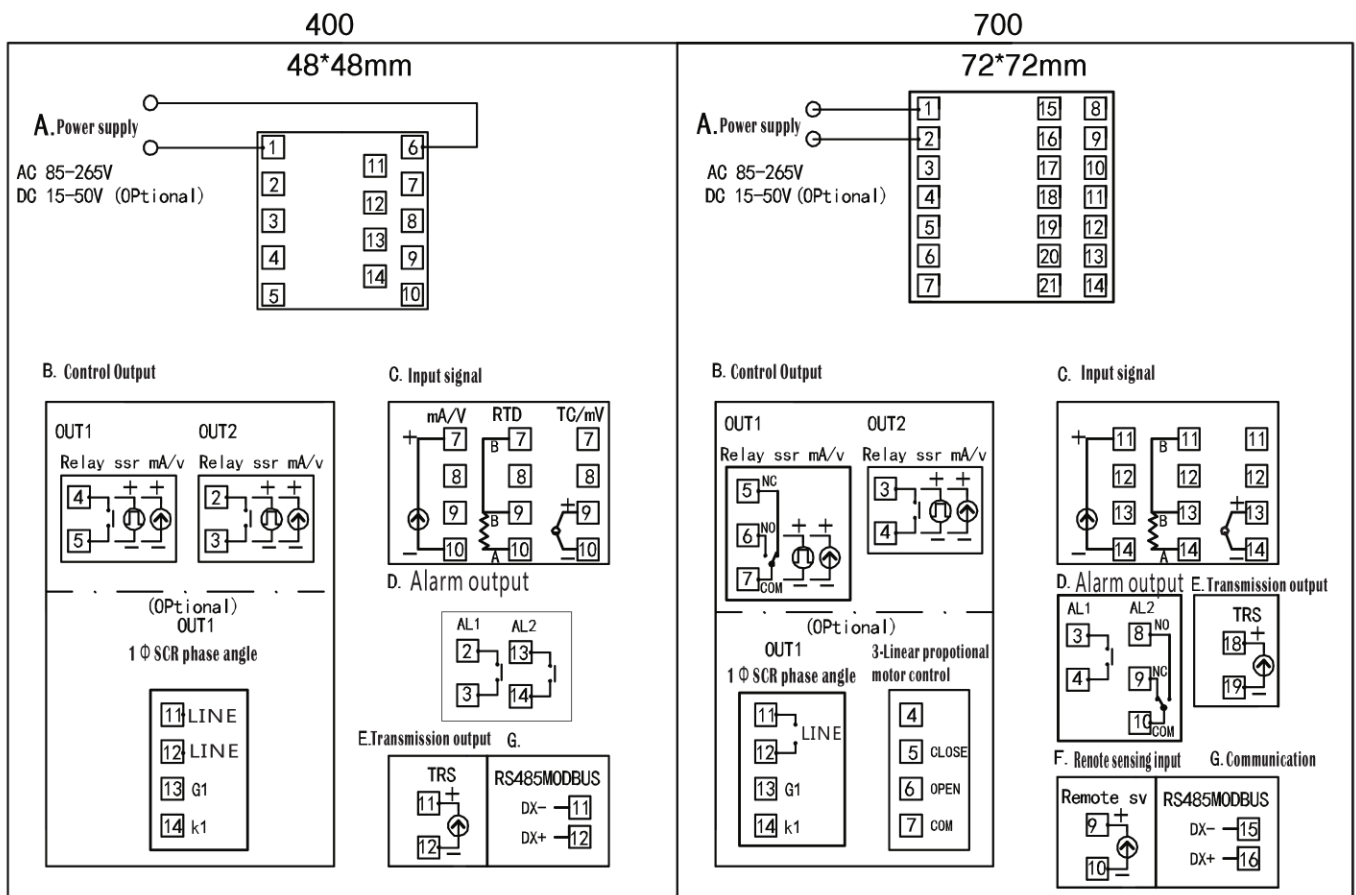
For Additional Support Please Visit
https://fastron.com.au/blogs/pid-temperature-controllers

Left Terminal Diagram

A. power supply

AC 85~265V
DC 15~50V(Option)

Terminals: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 / 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 / 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

F. add-ons power output

24G – 13
24V – 14

B. Control Output

OUT1 — Relay SSR mA.V
8 NC
9 NO
10 COM

OUT2 — Relay SSR mA.V
6
7

Single phase zero corssing control
7 K2
8 G2
9 K1
10 G1

3-Phase zero corssing control
21 RG1
22 RK1
23 RG2
24 RK2
25 TG1
26 TK1
27 TG2
28 TK2
29 / 30 Enable

3-Linear propotional motor control
6
7
8 CLS
9 OPN
10 COM

Single phase angle control
7 K2 LINE 11
8 G2 LINE 12
9 K1
10 G1

3-Phase angle control
21 G1
22 K1
23 G2
24 K2
25 G3
26 K3
27
28
29 / 30 Enable

C. Input signal

mA.V: + 17, 18, 19, – 20
RTD: B 17, 18, 19, A 20
TC.mV: 17, 18, 19, 20

D. Alarm output

AL1 NO 3
AL2 5
AI3
COM 4
6 8
NC 5

E. Communication

RS232
RD – 14
SD – 15
SG – 16

RS485
T – 11
R – 12

Right Terminal Diagram

A. power supply

AC 85~265V
DC 15~50V(Option)

Terminals: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 / 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

B. Control Output

OUT1 — Relay SSR mA.V
8 NC
9 NO
10 COM

OUT2 — Relay SSR mA.V
6
7

3-Linear propotional motor control
6
7
8 CLS
9 OPN
10 COM

Single phase angle control
7 K2 LINE 11
8 G2 LINE 12
9 K1
10 G1

Single phase zero crossing control
7 K2
8 G2
9 K1
10 G1

C. Input signal

mA.V: + 17, 18, 19, – 20
RTD: B 17, 18, 19, A 20
TC.mV: 17, 18, 19, 20

D. Alarm output

AL1 NO 3
AL2 5
AI3 7
COM 4
6 8
NC 5

E. Transmission output

TRS
11
12

F. add-ons power output

24G – 13
24V – 14

G. Communication

RS485
T – 11
R – 12

ACTUAL TERMINAL ARRANGEMENT MAY DIFFER. REFER TO PRODUCT SIDE LABEL

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5 | Operation instruction

1. Start up
After power supply, operate as following:
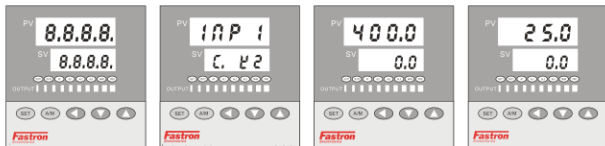
Display	Description
8.8.8.8. / 8.8.8.8.	Led and indicator will blink
INP 1 / C. K2	Indicate units(C) and input typs(K2)
400.0 / 0.0	Indicate upper and lower limitation scope(0.0-400.0)
25.0 / 0.0	Start to use

2. Set up SV
For instance : when SV=200, operate as following ;
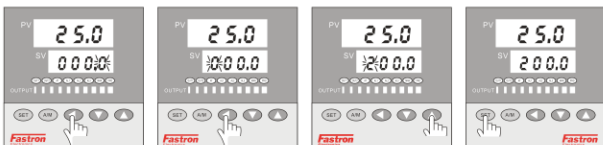
Display	Description
25.0 / 0 000X	Press shift key, 1st digit start blinking in SV
25.0 / 0X00.0	Then press shift key, shift to 4th digit
25.0 / 2X00.0	Press up key to increase set value
25.0 / 200.0	Press SET key to set SV

3. Auto Tuning
Please set PID in excellent manner to achieve the best controlling result, operate as following ;
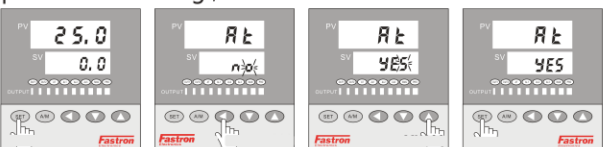
Display	Description
25.0 / 0.0	Press SET key to AT
At / nXo	Press shift key, digit start blinking in SV
At / YESX	Press UP key to set YES
At / YES	Press SET, activate Auto Tuning (At light on).

4. Set up Alarm
For instance: when set AL1=5(when PV>5, alarm1 acts)
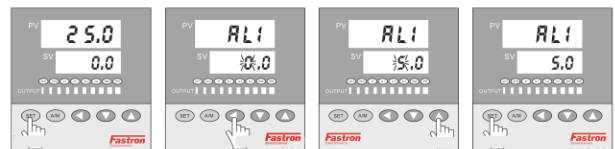
Display	Description
25.0 / 0.0	Press (SET) Key To AI1
AL1 / X0.0	Press (<) key to the 2th number
AL1 / X5.0	Press (∧) key increase AL1
AL1 / 5.0	Press (SET) key confirm the set value

*There are 17 kinds of alarm mode, please refer to alarm mode index
*Alter alarm mode: Press (SET) key 5 seconds, meantime press (<) key enter into level3 to set ALT1
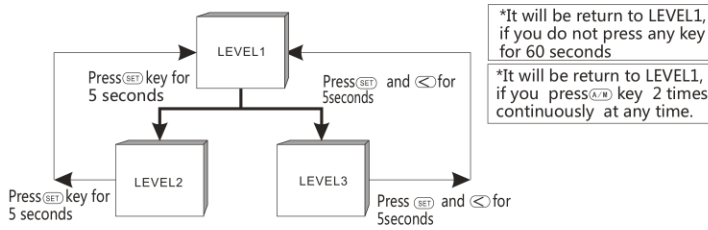
5. Alarm mode index ▲ : SV   △ : Alarm set value

No.	Description	No.	Description	No.	Description
01	Devlation high alarm inhibit (first time no alarm) — OFF / ON → PV, LOW ▲ HIGH	04 14	In-band alarm — OFF / ON / OFF → PV, LOW ▲ △ HIGH	07	It's only used for the section-end alarm of process-control meter (1)ALD1-3=07 (2)AL1-3 are section setpoints (3)ALT1-3 =0 FLIKER alarm =99.59 continue = other Ondelay time
11	Devlation high alarm no inhibit — OFF / ON → PV, LOW ▲ HIGH	05	Absolute value high alarm inhibit (first time no alarm) — OFF / ON → PV, LOW △ HIGH	17	It's only used for the section-end alarm of process-control meter. Alarm for actions being activated — ON / OFF → End, ON / OFF → AL
02	Devlation low alarminhibit (first time no alarm) — ON / OFF → PV, LOW ▲ HIGH	15	Absolute value high alarm no inhibit — ON / OFF → PV, LOW △ HIGH	08	System error alarm(ON) — Normal / Error, ON / OFF → AL
12	Devlation low alarm no inhibit — ON / OFF → PV, LOW ▲ HIGH	06	Absolute value low alarm inhibit (first time no alarm) — ON / OFF → PV, LOW △ HIGH	18	System error alarm(OFF) — Normal / Error, OFF / ON → AL
03	Devlation high&low alarm inhibit (first time no alarm) — ON / OFF / ON → PV, LOW ▲ HIGH	16	Absolute value low alarm no inhibit — ON / OFF → PV, LOW △ HIGH	09	Heater break alarm — Normal / Error, OFF / ON → AL
13	Devlation high&low alarm no inhibit — ON / OFF / ON → PV, LOW ▲ HIGH			19	Timer AL1-3 is Hour/Min The setting range is 00.00-99.59

To disable the alarm, select Alarm Mode = 0

6 Manipulation

PARAMETER SETUP for 3 LEVELS

*It will be return to LEVEL1, if you do not press any key for 60 seconds

*It will be return to LEVEL1, if you press A/M key 2 times continuously at any time.

Press SET key for 5 seconds
Press SET and ◁ for 5seconds
Press SET key for 5 seconds
Press SET and ◁ for 5seconds

LEVEL 1

PV	25.0	
SV	0.0	
	↓ Set	
Output Limit	OUtL / 100.0	
	↓ Set	
Auto Tuning	At / YES/no	
	↓ Set	
Alarm 1 set	AL 1 / 0.0	
	↓ Set	
Alarm 2 set	AL 2 / 0.0	
	↓ Set	
Alarm 3 set	AL 3 / 0.0	

When dual output,they display

LEVEL 2

P1 / 3.0	Proportion band of group 1(%)	range :0.0~200.0% p=0 is ON/OFF
↓ Set		
i1 / 240	Integral 1 time (s)	range: 0~3600s I=0 OFF
↓ Set		
d1 / 60	Differenticl coefficient 1 time (s)	range: 0~900s D=0 OFF
↓ Set		
db1 / 0	No use	
↓ Set		
AtVL / 0	Automatic tuning shifting volume	range: 0~USPL
↓ Set		
CYt1 / 10	Working cycle of group 1(S)	range: 0~150(S) SSR output=1, 4~20mA output=0 Relay output generally is set above 10
↓ Set		
HYS1 / 1	1st output hystersis adjustment	Range:0-1000(use for ON/OFF) PV>(SV+HYS1),OFF PV<=(SV+HYS1),ON
↓ Set		
P2 / 3.0	Proportion band of group 2(%)	The same as P1
↓ Set		
i2 / 240	Integral 2 time (s)	The same as I1
↓ Set		
d2 / 60	Differenticl coefficient 2 time (s)	The same as D1
↓ Set		
CYt2 / 10	Working cycle of group 2(S)	The same asCYT1
↓ Set		
HYS2 / 1	2nd output hystersis adjustment	The same as HYS1
↓ Set		
GAP1 / 0	1st output gap	1st output (heated side)set value =SV-GAP1(dual output require set)
↓ Set		
GAP2 / 0	2nd output gap	2nd output (coded side)set value= SV+GAP2(dual output require set)
↓ Set		
LCK / 0000	Date lock	

As P1=0.0, it indicates
As P2=0.0, it indicates

LEVEL 3

INP1 / R2	Input type set (refer to input index)	
↓ Set		
AnL1 / 0	Analog Input Low Limit Calibration	range :-1999~9999
↓ Set		
AnH1 / 5000	Analog Input High Limit Calibration	range :0~9999
↓ Set		
dP / 0000	Decimal point	Can select 0000,000.0,00.00, 0.000(use for INP1=AN1-AN5)
↓ Set		
L.SP.L / 0.0	Lower set-point limit	
↓ Set		
U.SP.L / 400.0	Upper set-point limit	
↓ Set		
AnL2 / 0	Remote Input Low Limit Calibration	range :-1999~9999
↓ Set		
AnH2 / 5000	Remote Input High Limit Calibration	range :0~9999
↓ Set		
ALd1 / 11	Alarm mode of AL1	range :00~19 (refer to alarm mode index)
↓ Set		
ALt1 / 99.59	Alarm 1 time set	Range:0-99minites:59 seconds others:alarm delay act time(ALD=07 is alarm act time) 0:alarm flickering ,99.59;alarm last on
↓ Set		
ALd2 / 0	Alarm mode of AL2	The same as ALD1
↓ Set		
ALt2 / 99.59	Alarm 2 time set	The same as ALT1
↓ Set		
ALd3 / 0	Alarm mode of AL3	The same as ALD1
↓ Set		
ALt3 / 99.59	Alarm 3 time set	The same as ALT1
↓ Set		
HYSA / 0.0	Hystersis of alarm	range :0~1000
↓ Set		
CLO1 / 230	Calibrate the low value of output 1	range :0~9999
↓ Set		
CHO1 / 3600	Calibrate the high value of output 1	range :0~9999
↓ Set		
CLO2 / 230	Calibrate the low value of output 2	The same as CLO1
↓ Set		
CHO2 / 3600	Calibrate the high value of output 2	The same as CHO1
↓ Set		
CLO3 / 0	Calibrate the low value of output 3	The same as CLO1
↓ Set		
CHO3 / 5000	Calibrate the high value of output 3	The same as CHO1
↓ Set		
rU.CY / 5	Motor valve action time set	range :5~200(S)
↓ Set		
JAI t / 0.0	Procedure activate waiting temperature (only for programing controller)	0=not wait others=wait
↓ Set		
SEtA / 0000	Alarm positive and adverse action set	
↓ Set		
Id.nO / 1	ID number	range :0~90
↓ Set		
bAUd / 2400	Baudrate	Can select 110,300,1200,2400, 4800,9600bps
↓ Set		
SVOS / 0.0	SV compensation	range :-1000~1000
↓ Set		
PVOS / 0.0	PV compensation	Range :-1000~1000
↓ Set		
Unit / C	PV/SV unit option	Choice:C (℃),F(°F), A(Analog)
↓ Set		
SOFt / 0.200	Soft Filter	**Adjust Sensitivity/response of the PV input**
↓ Set		
CASC / 0.0	No use	
↓ Set		
OUd / HEAt	Option of heating and coolingmodes	**Single Loop Controller HEAT=Heat Cool=Cool OUT1/OUT2 type 0 = Heat,Cool,1 = Cool/Heat, 2 = Cool/Cool,3 = Heat/Heat**
↓ Set		
OPRA / Pid	Control model	ChoicePID,Fuzzy
↓ Set		
H= / 50H=	Power frequency	Choice:50,60HZ
↓ Set		
Return to INP		

7 Error code index

iniE	INIE:Input 1 Error
	:check if input signal has error
CJCE	CJCE:Cold Junction Compensation Failed
	Handing measure:check if the cold junction diode has error
UUU1	UUU1 :Input signal of input1 higher USPL
	check if range is rational
nnn1	NNN1:Input signal of input1 lower LSPL
	Please check if the anode of input signal is reversely linked
AdCF	ADCF:A/D Convert Failed
rAMF	RAMF:RAM Failed

Technical Specification

Model						
Size	48X48mm	96X48mm	72X72mm	48X96mm	96X96mm	160X80mm
Power	AC85-265V, DC 24V(optional)					
Frequency	50/60Hz					
Power consumption	Approx 4VA	Approx 4VA	Approx 4VA	Approx 4VA	Approx 4VA	Approx 4VA
Memory	Power disconnection preserve memory E²PROM					

Input		Sensing signal input. Sampling time:250mS,display accuracy:0.2%of FS
	TC	K, J, R, S, B, E, N, T, W, PL2, U, L
	RTD	DPT100, JPT100, JPT50
	Linear current (mA)	4~20mA, 0~20mA Note: 4-20mA (default), Others must be ordered from the factory
	Linear voltage(mV,V)	0~1V, 0~5V, 0~10V, 1~5V, 2~10V, -10~10mV, 0~10mV, 0~20mV, 0~50mV, 10~50mV (Special Order)
	Location for decimal point	0000, 000.0, 00.00, 0.000 (Just used for input of linear current and voltage)

Output 1		Control Output (Heat model or cool model)
	Relay	3A, 220V, Electric life:100,000 times or more(under rated load)
	Pulse voltage	Use for SSR ON=24V,OFF=0V,largest loading current:20mA
	Linear current (mA)	4-20mA,0-20mA largest loading impedence:560Ω
	Linear voltage (V)	0~1V,0~5V,0~10V,1~5V 2~10V,-10~10mV,0~10mV,0~20mV,0~50mV,10~50mV

The first group alarm	3A, 220V, Electric life:100,000 times or more(under rated load)
Control mode	PID, P, PI, PD, ON/OFF(P=0), FUZZY
PID set range	P: 0~200%, I: 0~3600(S), D: 0~900(S)
Insulation	Control loop(control output,alarm,Transmission)and input loop insulate absolutely
Insulating resistance	Main loop~crust(ground)DC500V>10MΩ,control loop~crust(ground)DC500V>10MΩ
Voltage resistance	Main loop~crust(ground)1500V per minite,control loop~cruse(ground)1000V per minite
Operating Environment Temperature	0~50℃
Operating Environment Humidity	50~85%RH
Weight	My400 : Appox. 150g; MY600/700/800:Appox. 225g; MY900:Appox. 300g; MY100:Appox. 400g

Optional function specification

Model							
programming elevates temperature,hold warm	Total have 2 groups(per 8 segments)can set,or connect to 16 segments for use						

The 2nd output		Can use for heat up/cooling dual output control
	Relay	3A, 220V, Electric life:100,000 times or more(under rated load)
	Pulse voltage	Use for SSR ON=24V,OFF=0V,largest loading current:20mA
	Linear current(mA)	4-20mA,0-20mA largest loading impedence:560Ω
	Linear voltage (V)	0~5V, 0~10V, 1~5V, 2~10V。largest loading current:20mA (Special Order)

The 2nd alarm	3A, 220V, Electric life:100,000 times or more(under rated load)
The 3rd alarm	3A, 220V, Electric life:100,000 times or more(under rated load)

Transit output		Can Transmit:PV/SV
	Linear current(mA)	4~20mA, 0~20mA largest loading impedance:560Ω
	Linear voltage (V)	0~5V, 0~10V, 1~5V, 2~10V。largest loading current:20mA

communication	RS232, RS485
	Communicate rate:9600,4800,2400,1200,300,110bps
	Outset bit:1;stop bit:1;odd-parity

Waterproof,dustproof structure	Ip65 (as to NEMA4)

9 AP Program controller

Notice to order

Parmeter content	Order Choice	
Process segments	☐ 8 segments	☐ 16 segments
Second process runing mode after the process ends	☐ Automatically repeat last process	☐ Manually startup the last process
Start runing value of the process	☐ Begin from	☐ Begin from PV value
If case of PV is not the same as the set value wait or not	☐ Not waiting and continue the process	☐ Wait(indicating the waiting windage value) and continue the following process after PV follows
If you want to alarm after a segmet of the process ends	☐ No	☐ Yes(indicating the segment&alarm lasting time)
If output switch signal after the process ends	☐ No	☐ Yes
In case of restart after power-off,if continue to run the process	☐ No	☐ Yes

Panel operation

Running state	Operation
Process Startup	Press▲ KEY to startup the process,then PRO indicator will blink
Process pause	Press▼ KEY to wait,the process will pause, and the PRO indicator does not blink.Repress ▲ KEY to continue.
process skip runing	Press SET KEY and▲ KEY at the same time, the process will skip runing.
Process reset	Press SET KEY and▼ KEY at the same time to reset the process.

Process parameter set illustration

LEVEL 1

PV / SV	25.0 / 0.0	
↓ Set		
Output Limit	OUtL / 100.0	
↓ Set		
Auto Tuning	At / YES/no	
↓ Set		
Alarm 1 set	AL1 / 0.0	
↓ Set		
Alarm 2 set	AL2 / 0.0	
↓ Set		
Alarm 3 set	AL3 / 0.0	
↓ Set		
Process mode selection 0 : (16)series-wound sections, 8 segments,two pattens 1 : 8segment operation,patten 1 2 : 8segment operation,patten 2	PtN / 0	
↓ Set		
Display the current mode executed (example:patten a,segm ent 2)	SEG / 1.2	
↓ Set		
Display current activate segment countdown time range:99hours and59 minutes	t-r / 00.00	
↓ Set		
1st segment SV set range:gamut	SV_1 / 0.0	
↓ Set		
1st time set range:99hours and59 mins	tM_1 / 0.0	
↓ Set		
1st segmentoutput limit range:0~100%	OUt1 / 0.0	
↓ Set		
2nd segment SV set value	SV_2 / 0.0	
↓ Set		

2nd segment time set value range:99 hours and 59mins	tM_2 / 0.0	
↓ Set		
2nd segment output limit range:0~100%	OUt2 / 0.0	
↓ Set		
3rd segment SV set value range:gamut	SV_3 / 0.0	
↓ Set		
3rd segment time set value range:99 hours and 59 mins	tM_3 / 0.0	
↓ Set		
3rd segment output limit range:0~100%	OUt3 / 0.0	
↓ Set		
4th segment SV set value range:gamut	SV_4 / 0.0	
↓ Set		
4th time set value range:99hours and 59 mins	tM_4 / 0.0	
↓ Set		
4th output limit range:gamut	OUt4 / 0.0	
↓ Set		
5th segment time set value range:99hours and 59 mins	SV_5 / 0.0	
↓ Set		
5th segment output limit range:0~100%	tM_5 / 0.0	
↓ Set		
6th SV set value range:gamut	OUt5 / 0.0	
↓ Set		
6th segment SV set value range:gamut	SV_6 / 0.0	
↓ Set		
6th segment time set value range:99 hours and 59 mins	tM_6 / 0.0	
↓ Set		

6th output limit range:gamut	OUt6 / 0.0	
↓ Set		
7th segment SV set value range:gamut	SV_7 / 0.0	
↓ Set		
7rd segment time set value range:99 hours and 59 mins	tM_7 / 0.0	
↓ Set		
7th output limit range:gamut	OUt7 / 0.0	
↓ Set		
8th segment SV set value range:gamut	SV_8 / 0.0	
↓ Set		
8rd segment time set value range:99 hours and 59 mins	tM_8 / 0.0	
↓ Set		
8th output limit range:gamut	OUt8 / 0.0	
↓ Set		
Retrun to PV/SV display	25.0 / 0.0	

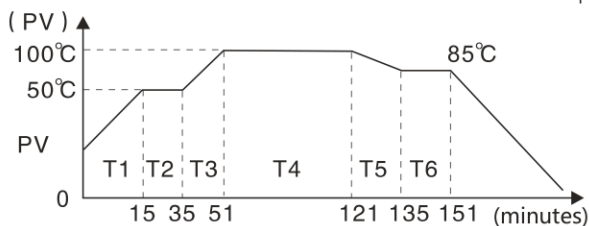### Notes:

A,Mode selection:PTN=0, 16 segments ,one patten;PTN=1, 8 segments inpatten1;PTN=2, 1segments in patten 2

B,In case that the process has less than 8 segments or 16 segmets, set the OUT parameter in the next process as 0 to end the process, then process will stop runing.if not setting,then the process will run to 8 segments or 16 segments before stop.

C,In case that the process does not overpass 8 segments,just run Patten 1or Patten 2 separately.In case that the process overruns 16 segments,just run the process with the two pattens in series . Note that first set PTN as 1 and conduct the setting of PTN=2. Then set the segments from 9-16,after setting,set PTN as 0.And the process will run PTN1 and the process will run PTN 1 and PTN 2 in series until segment t16.

Example Illustration

There is the following processing requirement temperature curve.It is required to full power when the temperature rises, and half-power when keeping warm.Then ,when starting the process,it will begin from the oven temperature at that time.

Specofic setup as[internal parameter PTN=1(all you do is indicate the startup of section8 in grou1 in the controller)]:
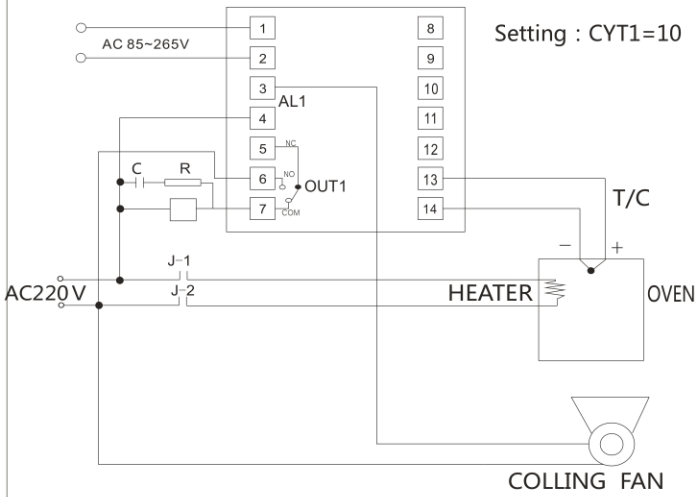

Set value temperature in section1 SV1=50 degrees	Set value in the first section of time TM1=0.15(indicating 15 minutes)	Heating power restriction in section 1 OUT1=100%(indicating no restricton so that 100% output is available)	T1 temperature rise process completed
Set value temperature in section2 SV2=50 degrees	Set value in the section 2 of time TM2=0.20(indicating 20 minutes)	Heating power restriction in section 2 OUT2=50%(indicating most restricton so that 50% output is available)	T2 temperature preserve process completed
Set value temperature in section3 SV3=100 degrees	Set value in the section 3 of time TM3=0.16(indicating 16 minutes)	Heating power restriction in section3 OUT3=100%(indicating no restricton so that 100% output is available)	T3 temperature rise process completed
Set value temperature in section4 SV4=100 degrees	Set value in the section 4 of time TM4=1.10(indicating 1hour 20 minutes)	Heating power restriction in section 4 OUT4=50%(indicating most restricton so that 50% output is available)	T4 temperature preserve process completed
Set value temperature in section5 SV5=85 degrees	Set value in the section 5 of time TM5=0.14(indicating 14 minutes)	Heating power restriction in section 4 OUT5=50%(indicating most restricton so that 50% output is available)	T5 temperature reduse process completed
Set value temperature in section6 SV6=85 degrees	Set value in the section 5 of time TM6=0.16(indicating 16 minutes)	Heating power restriction in section 4 OUT6=50%(indicating most restricton so that 50% output is available)	T6temperature preserve process completed
Set value temperature in section7,8 SV7,8=0 degrees	Set value in the section 7,8 of time TM7,8=0	Heating power restriction in section 7,8 OUT7,8=0	t indicates that you fail to start up section7and 8,and the program is over here

1、101 instrument is used for heating and cooling control

AC 85~265V

Setting : CYT1=10

AL1
NC
NO
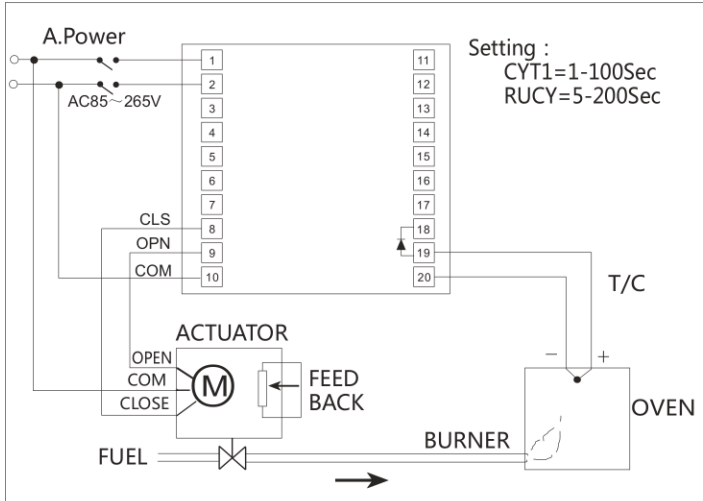OUT1
COM
C R
J-1
J-2
AC220V
HEATER
OVEN
T/C
COLLING FAN

2、201 instrument is used for heating control

If the power of the heating fuse is not big,just trigger SSR with the instrument directly. We can provide the SSR with AC380V and 450A max.
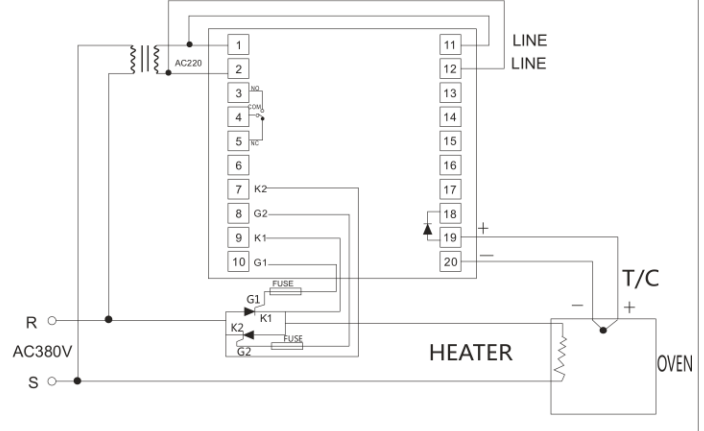
Setting : CYT1=1

AC85~265V

SSR
HEATER
RTD
OVEN
POWER SOURCE
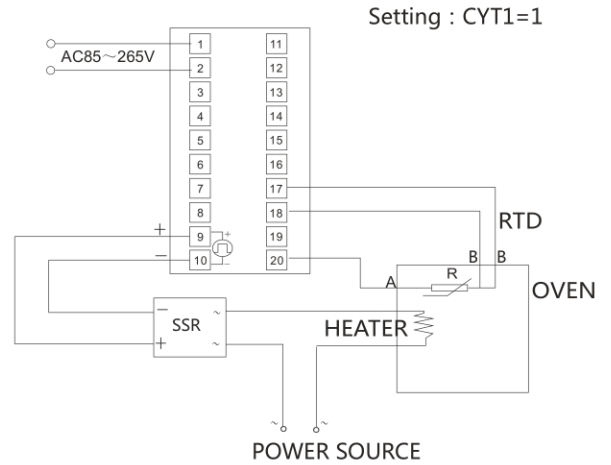
3、701 valve control instrument

A.Power

AC85~265V

Setting :
CYT1=1-100Sec
RUCY=5-200Sec

CLS
OPN
COM
T/C

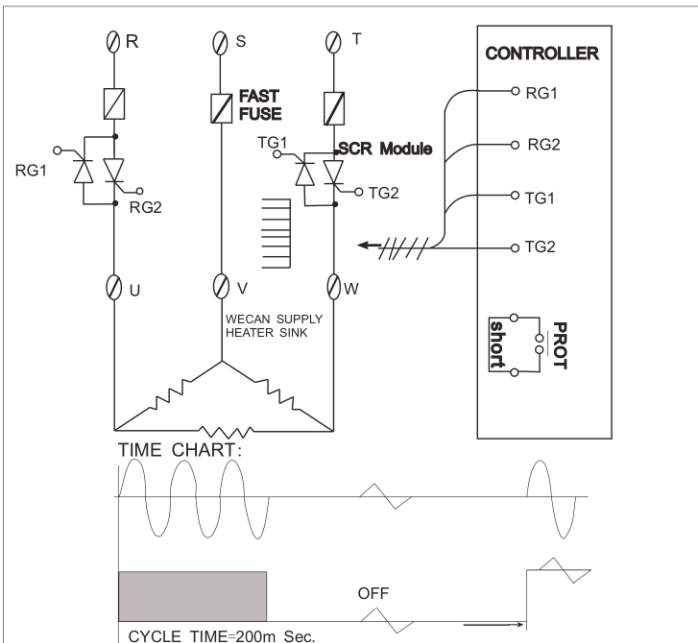ACTUATOR
OPEN
COM
CLOSE
FEED BACK
FUEL
BURNER
OVEN

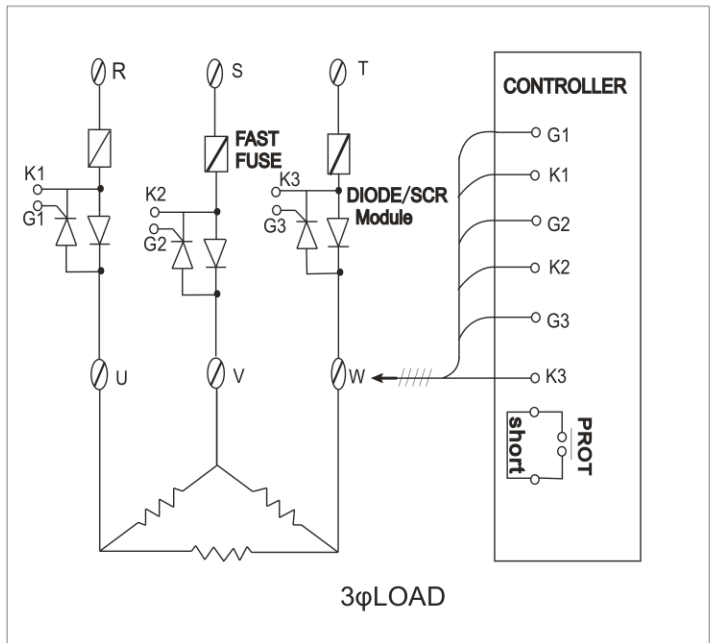## 4、801 instrument is used for electric heating control

(1)、indicate the heating voltange so as to provide the synchrono us singn input and LINE with the same voltage
(2)、AL1 indicate the upper limit alarm (11)

AC220

NO
COM
NC
K2
G2
K1
G1
LINE
LINE
FUSE
G1
K1
K2
G2
FUSE
R
AC380V
S
HEATER
T/C
OVEN

5、601 is used for electric heating control

R   S   T

CONTROLLER

FAST FUSE
RG1
TG1
SCR Module
RG2
TG2
U   V   W
WECAN SUPPLY HEATER SINK
RG1
RG2
TG1
TG2
PROT short

TIME CHART:

CYCLE TIME=200m Sec.

OFF

6、901 is used for electric heating control

R   S   T

CONTROLLER

FAST FUSE
K1
G1
K2
G2
K3
G3
DIODE/SCR Module
U   V   W
G1
K1
G2
K2
G3
K3
PROT short

3φLOAD

11 Appendix Forms

Size	Control Output	Power Supply	Alarms	Comunication	2nd Output	Special Option		Description
BTCS								48 x 48mm Panel Mount
BTCR								48 x 96mm Panel Mount
BTCD								96 x 96mm Panel Mount
	R							Relay Contact
	S							12VDC @30mA
	A							4-20mA @ 500 Ohm
		M						85-265VAC Supply
		M1						24VAC/DC Supply
			A2					2nd Relay Alarm
			A3					3rd Relay Alarm
				C5				RS485 Comms
				C232				RS232 Comms
					DR			Relay Cooling
					DS			SSR Cooling
					DA			4-20mA Cooling
					TA			4-20mA Transmission
					EA (4-20mA)			External Setting Input
						EI		Event Input
						PROG		16 Step Program Control
						P24		24VDC Loop Supply

BTCS/R-M1-C5-DR = 48x48mm Relay Output, 24VAC/DC, RS485 with Relay Cooling

Note: 48x48mm panel size is limited to 2 Relays maximum, otherwise choose 48x96mm BTCR series

PROG option includes 16 steps total for multiple programs. You need 1 location to create new program

Input type

	Symbol	Code	Range	Symbol	Code	Range	Symbol	Code	Range
TC	K	K1	01	0.0~200.0℃(392.0℉)	K2	02	0.0~400.0℃(752.0℉)	K3	03	0~600℃(1112℉)
	K	K4	04	0~800℃(1472℉)	K5	05	0~1000℃(1832℉)	K6	06	0~1200℃(2192℉)
	J	J1	07	0.0~200.0℃(392.0℉)	J2	08	0.0~400.0℃(752.0℉)	J3	09	0~600℃(1112℉)
	J	J4	10	0~800℃(1472℉)	J5	11	0~1000℃(1832℉)	J6	12	0~1200℃(2192℉)
	R	R1	13	0~1600℃(2912℉)	R2	14	0~1769℃(3216℉)			
	S	S1	15	0~1600℃(2912℉)	S2	16	0~1769℃(3216℉)			
	B	B1	17	0~1820℃(3308℉)						
	E	E1	18	0~800℃(1472℉)	E2	19	0~1000℃(1832℉)			
	N	N1	20	0~1200℃(2192℉)	N2	21	0~1300℃(2372℉)			
	T	T1	22	0.0~400.0℃(752.0℉)	T2	23	0.0~200.0℃(392.0℉)	T3	24	0.0~350.0℃(662.0℉)
	W	W1	25	0~2000℃(3632℉)	W2	26	0~2320℃(4208℉)			
	PL11	PL1	27	0~1300℃(2372℉)	PL2	28	0~1390℃(2534℉)			
	U	U1	29	-199.9~600.0℃(999.9℉)	U2	30	-199.9~200.0℃(392.0℉)	U3	31	0.0~400.0℃(752.0℉)
	L	L1	32	0~400℃(752℉)	L2	33	0~800℃(1472℉)			
RTD	JPT100	JP1	41	-199.9~600.0℃(999.9℉)	Jp2	42	-199.9~400.0℃(752.0℉)	JP3	43	-199.9~200.0℃(392.0℉)
	JPT100	JP4	44	0~200℃(392℉)	JP5	45	0~400℃(752.0℉)	JP6	46	0~600℃(1112℉)
	DPT100	DP1	47	-199.9~600.0℃(999.9℉)	DP2	48	-199.9~400.0℃(752.0℉)	DP3	49	-199.9~200.0℃(392.0℉)
	DPT100	DP4	50	0~200℃(392℉)	DP5	51	0~400℃(752.0℉)	DP6	52	0~600℃(1112℉)
	JPT50	JP.1	53	-199.9~600.0℃(999.9℉)	JP.2	54	-199.9~400.0℃(752.0℉)	JP.3	55	-199.9~200.0℃(392.0℉)
	JPT50	JP.4	56	0~200℃(392℉)	JP.5	57	0~400℃(752℉)	JP.6	58	0~600℃(1112℉)

	Symbol	Code	Range
Linear input	AN1	61	-10~10mV
		62	-2~2V
		63	-5~5V
		64	-10~10V
	AN5	71	0~10mV
	AN3	76	0~20mV
	AN4	81	0~50mV
		82	0~20mA
		83	0~1V
		84	0~5V
		85	0~10V
		86	0~5KR
		87	0~2V
	AN2	91	10~50mV
		92	4~20mA
		93	1~5V
		94	2~10mV

Range (AN4 group): -1999~9999 or -199.9~999.9 or -19.99~99.99 or -1.999~9.999

Note: Other linear voltages and currents other than 4-20mA needs to ordered from the factory. 4-20mA/RTD/Thermocouple can be set via menu and Jumper on PCB