TEMPERATURE CONTROLLER

OPERATION MANUAL

TB100 TB600 TB700 TB400 TB900

Before using please check whether range , input and output match your requirement.

1. Front panel instruction

1.1 DISPLAY

PV：Process value，4 digit display (red color)

SV：Setting value，4 digit display (green color)

1.2 LED

OUT1	：Output 1，green color
OUT2	：Output 2，green color
AT	：Auto Tuning，yellow color
PRO	：Program，yellow color
AL1	：Alarm 1，red color
AL2	：Alarm 2，red color
MAN	：Manual，yellow color

1.3 KEY

SET	：MODE ＆ SET key
◁	：SHIFT key
▽	：DOWN key
△	：UP key
A/M	：Auto/Manual key

2 Auto tuning

2.2 Once AT set YES，auto tuning is to be performed.

2.3 After auto tuning finished，PID parameter is to be set automatically.

2.4 ATVL=auto tuning offset，and it will be deduced from SV (it can prevent over shoot during auto tuning)

SV-ATVL=Auto-tuning value，ATVL=auto tuning offset

Ex.SV=200℃，ATVL=5，Auto tuning point is at 195℃

＊ ATVL means Auto-tuning point in program type

2.5 Auto tuning failure

Possible 1： ATVL is too big. (If not sure，set ATVL=0)

Possible 2： System time is too long.(Set PID parameter individually)

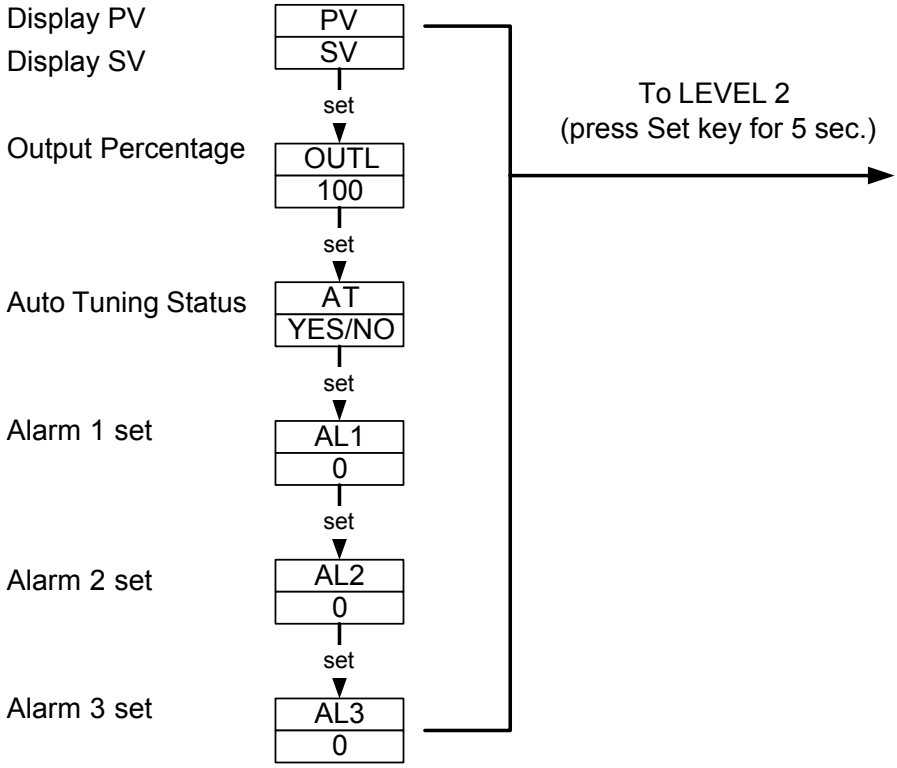
3. Error information

DISPLAY	DESCRIPTION
IN1E	Open circuit of main control sensor.
∗ **ADCF**	A/D converter failed.
∗ **CJCE**	Cold junction compensation failed.
IN2E	Open circuit of sub control sensor.
UUU1	PV exceeds USPL.
NNN1	PV under LSPL.
UUU2	Input signal of sub control exceeds the upper limit.
NNN2	Input signal of sub control under the lower limit.
∗ **RAMF**	RAM failed.
INTF	Interface failed.
AUTF	Auto tuning failed.

NOTE：If the "∗" marked error comes up，the Controller needs repair.
Please send it to the nearest sales office or retail dealer.

4. Operating flow

4.1 LEVEL 1 (User Level)



4.1.1 Press the **SHIFT KEY** (◁) to change the parameters. If the **SHIFT KEY** is pressed，the first digit begins blinking. Press the **UP KEY**(△) or **DOWN KEY**(▽) to increase or decrease the value of the digit，then press the **SHIFT KEY**(◁) again to go to the next digit. As all the digit are written，press **SET KEY** to enter the value.

4.1.2 **SET KEY** also has the function of changing MODEs，if the **SET KEY** is pressed，the display shows the next MODE.

4.1.3 Press **SET KEY** for 5 sec. the display goes to LEVEL 2，and do the same thing to return LEVEL 1.

4.1.4 If any key were not pressed for 1 minute，the display would go to LEVEL 1.

4.1.5 Press **A/M KEY** the display to go to LEVEL 1，no matter where it is.

4.1.6 If **OUTL** set "0"，it means the controller has no output,

4.2 LEVEL 2 (PID Level)

press SET key for 5 seconds to enter Level 2

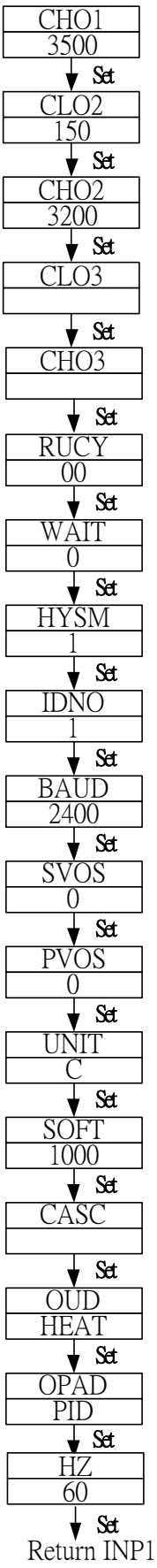
P1 3	Main Control Proportional Band	Range：0-200% ON/OFF at P=0
Set		
I1 240	Main Control Integral Time	Range：0~3600 Sec Integral OFF at I=0
Set		
D1 60	Main Control Derivative Time	Range：0~900 Sec Derivative OFF at D=0
Set		
db 1 0	Main Control Dead-band Time	Dead time compensation Range：0~1000 Sec
Set		
ATVL 0	Main Control Auto tuning off-set	Range：0~USPL
Set		
CYT1 10	Main Control Proportional Cycle	Output (SSR=1，4 ~ 20mA=0，Relay=over 10) Range：0~150 Sec
Set		
HYS1 1	Main Control Hysteresis	For ON/OFF control only Range：0~1000
Set		
P2 3	Sub Control Proportional Band	Sames as P1
Set		
I2 240	Sub Control Integral Time	Sames as I1
Set		
D2 240	Sub Control Derivative Time	Sames as D1
Set		
CYT2 10	Sub Control Proportional Cycle	Sames as CYT1
Set		
HYS2 1	Sub Control Hysteresis	Sames as HYS1
Set		
GAP1 0	Main Control Gap (Output 1)	For 2 output use only，set the volume turning. "OFF" early to SV
Set		
GAP2 0	Sub Control Gap (Output 2)	For 2 output use only，set the volume turning. "ON" early to SV
Set		
LCK 0000	Function Lock	
Set		
Return P1		

LCK=**0000**，To enter any Level (not include SET Level) and change their parameters
LCK=**1111**，To enter any Level (include SET Level) and change their parameters
LCK=**0100**，To enter Level 1 & 2 and to change their parameters.
LCK=**0110**，To enter Level 1 & 2 and to change Level 1parameters only.
LCK=**0001**，To enter Level 1 only and to change SV only.
LCK=**0101**，it can't change any parameter except LCK.

4.3 LEVEL 3 (INPUT Level)

When LCK=0000，press SET key and SHIFT KEY ◁ for 5 seconds to enter LEVEL 3

INP1 K2	Main Control input selection	select the input range，refer to input selection (P.12 ~ 13)
↓ Set		
ANL1 0	Main Control Analog Zero set	It is used as input code are AN1 to AN5 Range：LSPL~USPL
↓ Set		
ANH1 5000	Main Control Analog Span set	Same as ANL1
↓ Set		
DP 0000	Decimal point	To set the position of decimal point
↓ Set		
LSPL 0.0	Lower set-point limit	To set the lowest point within INP1
↓ Set		
USPL 400.0	Upper set-point limit	To set the highest point within INP1
↓ Set		
ANL2 0	Sub Control Analog Zero set	It is used as input code are AN1 to AN5 Range：LSPL~USPL
↓ Set		
ANH2 5000	Sub Control Analog Span set	Sames as ANL2
↓ Set		
ALD1 01	Alarm mode of AL1	Range:00~19 (see P.14~15)
↓ Set		
ALT1 10	Time set of Alarm 1	It is used in program function Range：0~99.59 min. 0=flicker alarm， 99.59=continued，and other=on delay time
↓ Set		
ALD2 01	Alarm mode of AL2	Range:00~19 (see P.14~15)
↓ Set		
ALT2 0	Time set of Alarm 2	Sames as ALT1
↓ Set		
ALD3 01	Alarm mode of AL3	Range:00~19 (see P.14~15)
↓ Set		
ALT3 0	Alarm 3 time set	Sames as ALT1
↓ Set		
HYSA 0	Hysteresis of alarm	Range：0~1000
↓ Set		
CLO1 150	Main Control calibration	Calibrate the low value of output Range：LSPL~USPL(current output only)
↓ Set		

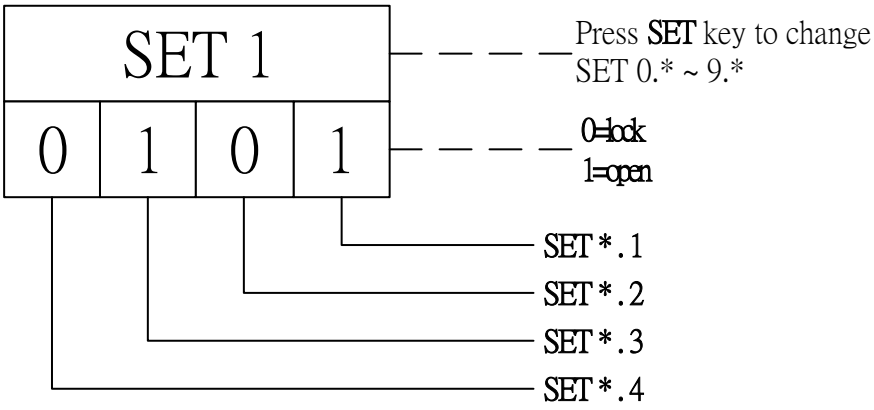


Main Control Calibration high	To calibrate the high value of output Range:0~9999(current output only)
Sub control Calibration low	Same as CLO1
Sub control Calibration high	Same as CHO1
Transmitter control Calibration low	Same as CLO1
Transmitter control Calibration high	Same as CHO1
Timer of motor	Full run time of proportional motor (without potentiometer) Range：0~150 sec.
Use in program for waiting continued operation	0=No Wait Other=Wait volume
Hysteresis for motor control	Range：0~1000
ID number (don't care)	Communication ID number
Baud rate (don't care)	UART baud rate selection Range：110~9600 BIT/sec
Compensate SV	Range：-1000~1000
Compensate PV	Range：LSPL~USPL
Unit of PV & SV	Range：C，F，A(analog)
Soft filter (don't care)	Adjust the response time of PV (the bigger， the faster) Range：0.05~1.00
don't care	
Action mode	Range：heat，cool
Control action	Range：PID，Fuzzy
Frequency	Range：50，60HZ

4.4 LEVEL 4 (SET Level)

When LCK=1111，press SET key and SHIFT KEY ◁ for 5 seconds to enter Level 4. There are SET 0.1 to SET 9.4 for use.

4.4.1 Display：



4.4.2 Function of SETs

SET	Function	SET	Function
1.1	OUTL	5.1	CLO2，CHO2
1.2	AT	5.2	CLO3，CHO3
1.3	AL1	5.3	RUCY，WAIT，HYSM
1.4	AL2	5.4	IDNO，BAUD
2.1	AL3	6.1	SVOS
2.2	ANL1，ANH1，DP	6.2	PVOS
2.3	LSPL，USPL	6.3	UNIT
2.4	ANL2，ANH2	6.4	SOFT
3.1	ALD1	7.1	CASC
3.2	ALT1	7.2	OUD
3.3	ALD2	7.3	OPAD
3.4	ALT2	7.4	HZ
4.1	ALD3		
4.2	ALT3		
4.3	HYSA		
4.4	CLO1，CHO1		

SET	Function	Remarks
8.1	0=No repeat	Program Use
	1=Program repeat	
8.2	0=No power failure	
	1=With power failure	
8.3	0=Start from 0	
	1=Start from PV	
		Auxiliary Output Use
9.3	TRS SV	
9.4	TRS PV	
0.3	0=No Remote SV	
	1=Remote SV	

- **NOTE**：Please don't operate **SET 8.4**，otherwise the controller's process will be in confusion.

4.4.3 FUNCTION OF LCK

LCK=**0000**，It can enter Level 3 (press SET + ◁ for 5 sec.)

LCK=**1111**，It can enter Level 4 (press SET + ◁ for 5 sec.)

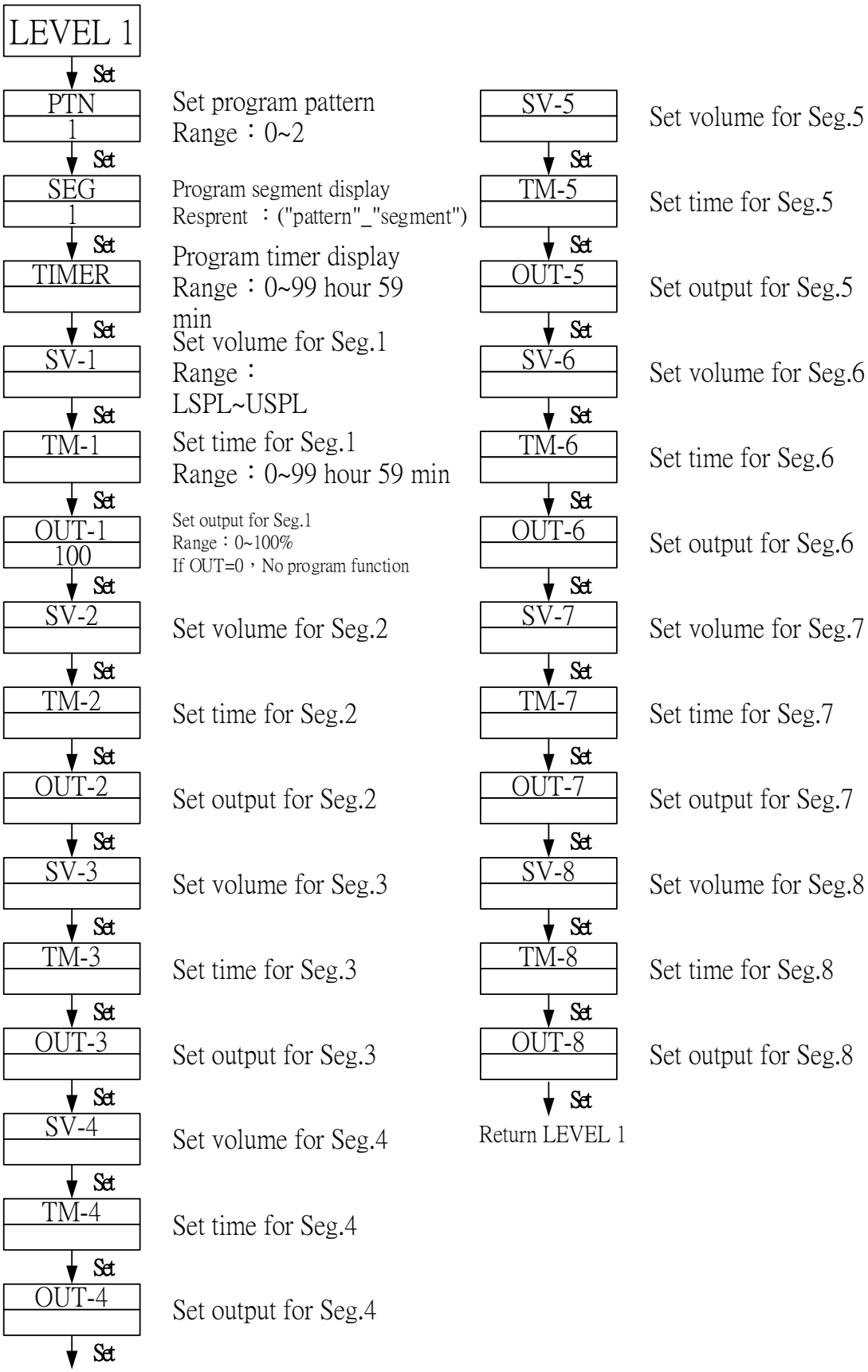
LCK=**0100**，It can enter Level 1 & 2 and change their parameters.

LCK=**0110**，It can enter Level 1 & 2 but change Level 1 parameters only.

LCK=**0001**，It can enter Level 1 only and change SV only.

LCK=**0101**，It can't change any parameters except LCK.

4.5 PROGRAM LEVEL (to be ordered)



4.5.1 This program has 2 patterns，each pattern contains 8 segments. The segment can be arranged a period of Ramp status or Soak status.

4.5.2 Terminologies

pattern ：A program consists of some steps.

Step ：A Ramp status + a Soak status.

Ramp status：The status with changing SV.

Ramp status：The status with fixed SV.

4.5.3 Operating

1. **"KEY" function(no changing parameter)**

   △ (START) ：To start program procedure，**PRO** in panel flicker.

   ▽ (WAIT) ：To suspend program procedure，**PRO** in panel will stop flicker but light.

   △ **+ SET**(JUMP)：To to jump segment.

   ▽ **+ SET** (RESET)：To reset program procedure，PRO in panel will be "off".

2. **Alarm Function：**

   If **ALD1** to be set “07”(＊refer to the selection，p.14~15)，

   AL1 to be set “2”(AL1=2，it means alarm in segment 2 end)，

   ALT1 to be set “00.10”(alarm time 10 sec.).

   ＊In this case，when program proceeds to segment 2 end，ALM1 relay will be on 10 sec.

3. **END function：**

   If **ALD** to be set “17”(refer to the selection，p.14~15)，This program will be end in segment 8 or 16.

   ＊ In this case，**PV** and **END** will flicker in display window and the alarm relay acts.

   This controller doesn’t have END order if program procedure are less than 8 segments. In this case，please set segment’s out = 0. then this program will be end in last set segment. Otherwise，it will proceed 8 or 16 segments.

4. **Linking Function：**

   PTN=1 proceed pattern 1，contains 8 segments.

   PTN=2 proceed pattern 2，contains 8 segments.

   PTN=0 linking proceed pattern 1 and 2 totally 16 segments.(set PTN1 and PTN2 at first，then set PTN=0)

5. **Other function(＊refer to LEVEL 4)**

   SET 8.1=1 program repeat.

   SET 8.2=0 No power fail function.

SET 8.2=1 with power fail function (if power suspend，the controller will keep memory)

SET 8.3=0 program start from 0.

SET 8.3=1 program start from PV.

5. INPUT

5.1 Input selection (INP1)

TYPE	*CODE*	*RANGE*
K	**K1**	0.0 ~ 200.0℃ / 0.0 ~392.0℉
	K2	0.0 ~ 400.0℃ / 0.0 ~752.0℉
	K3	0 ~ 600℃ / 0 ~1112℉
	K4	0 ~ 800℃ / 0 ~1472℉
	K5	0 ~ 1000℃ / 0 ~1832℉
	K6	0 ~ 1200℃ / 0 ~2192℉
J	**J1**	0.0 ~ 200.0℃ / 0.0 ~392.0℉
	J2	0.0 ~ 400.0℃ / 0.0 ~752.0℉
	J3	0 ~ 600℃ / 0 ~1112℉
	J4	0 ~ 800℃ / 0 ~1472℉
	J5	0 ~ 1000℃ / 0 ~1832℉
	J6	0 ~ 1200℃ / 0 ~2192℉
R	**R1**	0 ~ 1600℃ / 0 ~2912℉
	R2	0 ~ 1796℃ / 0 ~3216℉
S	**S1**	0 ~ 1600℃ / 0 ~2912℉
	S2	0 ~ 1796℃ / 0 ~3216℉
B	**B1**	0 ~ 1820℃ / 0 ~3308℉
E	**E1**	0 ~ 800℃ / 0 ~1472℉
	E2	0 ~ 1000℃ / 0 ~1832℉
N	**N1**	0 ~ 1200℃ / 0 ~2192℉
	N2	0 ~ 1300℃ / 0 ~2372℉
T	**T1**	-199.9 ~ 400.0℃ / -199.9 ~752.0℉
	T2	-199.9 ~ 200.0℃ / -199.9 ~392.0℉
	T3	0.0 ~ 350.0℃ / 0.0 ~662.0℉
W	**W1**	0 ~ 2000℃ / 0 ~3632℉
	W2	0 ~ 2320℃ / 0 ~2372℉
PLⅡ	**PL 1**	0 ~ 1300℃ / 0 ~2372℉
	PL 2	0 ~ 1390℃ / 0 ~2534℉
U	**U1**	-199.9 ~ 600.0℃ / -199.9 ~999.9℉
	U2	-199.9 ~ 200.0℃ / -199.9 ~392.0℉
	U3	0.0 ~ 400.0℃ / 0.0 ~752.0℉

TYPE	*CODE*	*RANGE*
L	**L1**	0 ~ 400℃ / 0 ~752℉
	L2	0 ~ 800℃ / 0 ~1472℉
JIS PT100	**JP 1**	-199.9 ~ 600.0℃ / -199.9 ~999.9℉
	JP 2	-199.9 ~ 400.0℃ / -199.9 ~752.0℉
	JP 3	-199.9 ~ 200.0℃ / -199.9 ~392.0℉
	JP 4	0 ~ 200℃ / 0 ~392℉
	JP 5	0 ~ 400℃ / 0 ~752℉
	JP 6	0 ~ 600℃ / 0 ~1112℉
DIN PT100	**DP 1**	-199.9 ~ 600.0℃ / -199.9 ~999.9℉
	DP 2	-199.9 ~ 400.0℃ / -199.9 ~752.0℉
	DP 3	-199.9 ~ 200.0℃ / -199.9 ~392.0℉
	DP 4	0 ~ 200℃ / 0 ~392℉
	DP 5	0 ~ 400℃ / 0 ~752℉
	DP 6	0 ~ 600℃ / 0 ~1112℉
JIS PT50	**JP.1**	-199.9 ~ 600.0℃ / -199.9 ~999.9℉
	JP.2	-199.9 ~ 400.0℃ / -199.9 ~752.0℉
	JP.3	-199.9 ~ 200.0℃ / -199.9 ~392.0℉
	JP.4	0 ~ 200℃ / 0 ~392℉
	JP.5	0 ~ 400℃ / 0 ~752℉
	JP.6	0 ~ 600℃ / 0 ~1112℉
AN1	**AN1**	-10 ~ 10mV / -1999~9999
AN2	**AN2**	0 ~ 10mV / -1999~9999
AN3	**AN3**	0 ~ 20mV / -1999~9999
AN4	**AN4**	0 ~ 50mV / -1999~9999
AN5	**AN5**	10 ~ 50mV / 1999~9999

＊The initial set in factory is “K2” without any certain requirement

6. ALARM

6.1 Alarm function selection

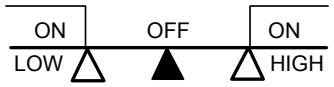
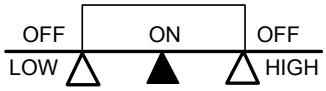
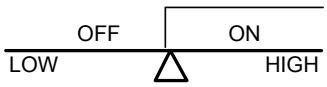
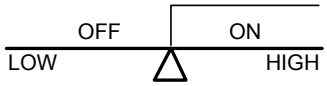
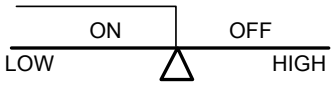
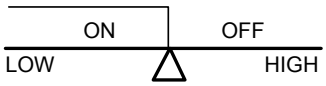
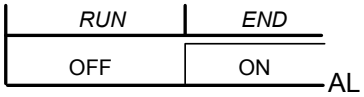
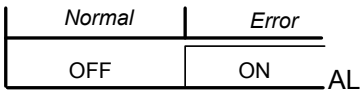
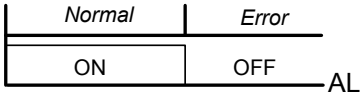
CODE	*DESCRIPTION*	*INHIBIT*
00 / 10	**None**	
01	**Deviation high limit alarm**	**YES**
11	**Deviation high limit alarm**	**NO**
02	**Deviation low limit alarm**	**YES**
12	**Deviation low limit alarm**	**NO**
03	**Deviation high / low limit alarm**	**YES**
13	**Deviation high / low limit alarm**	**NO**
04 / 14	**Deviation high / low limit range alarm**	**NO**
05	**Absolute value high limit alarm**	**YES**
15	**Absolute value high limit alarm**	**NO**
06	**Absolute value low limit alarm**	**YES**
16	**Absolute value low limit alarm**	**NO**
07	**Segment end alarm (use for program only)**	**-**
17	**Program end alarm (use for program only)**	**-**
08	**System error alarm-on**	**-**
18	**System error alarm-off**	**-**
09	**Heater break alarm-on (single phase)**	**-**
19	**On delay timer alarm**	**-**

Note：the word "**INHIBIT**" means that alarm does not work at the first time.

6.2 Alarm action description

▲ : **SV**

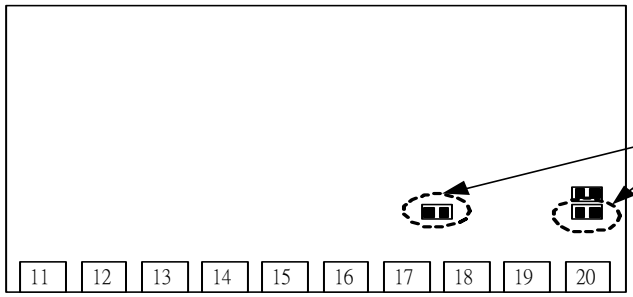
△ : **Alarm set value**
(**inhibit** means alarm doesn't work at the first time)

00 10	**Non**
01	**Deviation high alarm inhibit** 
11	**Deviation high alarm no inhibit** 
02	**Deviation low alarm inhibit** 
12	**Deviation low alarm no inhibit** 
03	**High low alarm inhibit** 
13	**High low alarm no inhibit** 
04 14	**Band alarm** 
05	**Absolute high alarm inhibit** 
15	**Absolute high alarm no inhibit** 
06	**Absolute low alarm inhibit** 
16	**Absolute low alarm no inhibit** 
07	**Segment end alarm (use for program only)** (1) ALD1~3，set **07** (2) AL1~3=alarm segment No.set (3) ALT1~3 if set **0**=flicker alarm ALT1~3 if set **99.59**=continued alarm ALT1~3 if set **others**=ON delay time
17	**Program end alarm (use for program only)** 
08	**System error alarm - ON** 
18	**System error alarm - OFF** 
09	
19	**On delay timer** When PV=alarm SV，it keeps a certain period(set time)before alarm action. Range:00H.00M~99H.59M

7. Modification of input “TC” ⇄ “RTD”(on PC board)

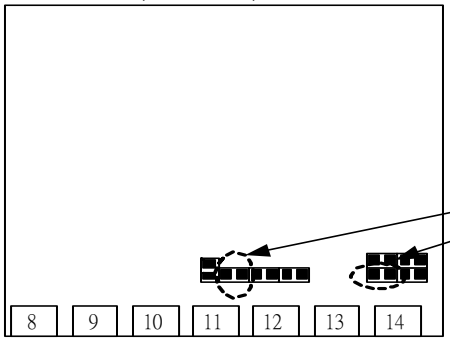
If the controller needs modification from **TC** or **mV** to **RTD** type，please make PAD short on PC board back as following diagram and changing input selection. On the contrary，modify from **RTD** to **TC** or **mV**，make PAD open.

96×96，48×96，96×48
(PC Board)



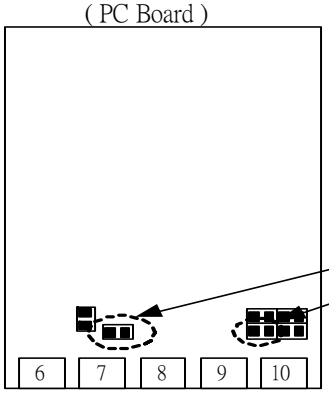
RTD ： PAD SHORT
TC or mV ： PAD OPEN

72×72
(PC Board)



RTD ： PAD SHORT
TC or mV ： PAD OPEN

48×48
(PC Board)



RTD ： PAD SHORT
TC or mV ： PAD OPEN

8.Modification of output “Relay” ⟶⇄ “SSR” ⟶⇄ “4~20mA”

It just needs to change a module at the same position，and modify parameter **CYT1** in LEVEL 2 .

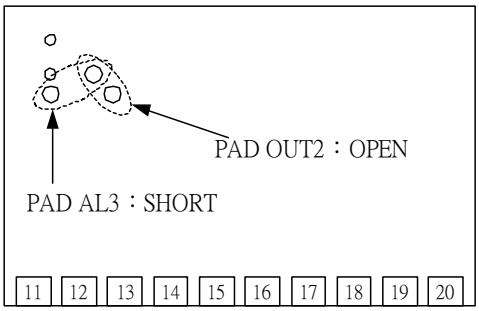
9. Modification of output

“HEAT/ALARM”⟶“HEAT/COOL” (on PC board)

HEAT / ALARM

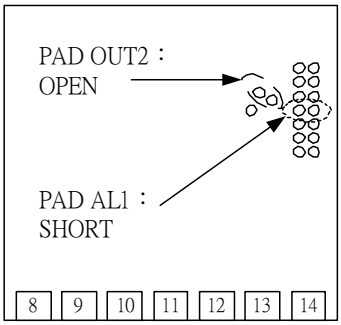
96×96，48×96，96×48

(PC Board)



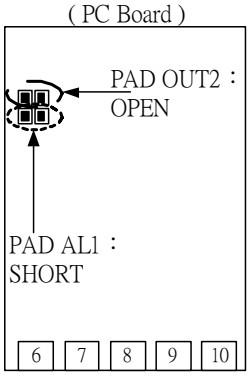
72×72

(PC Board)



48×48

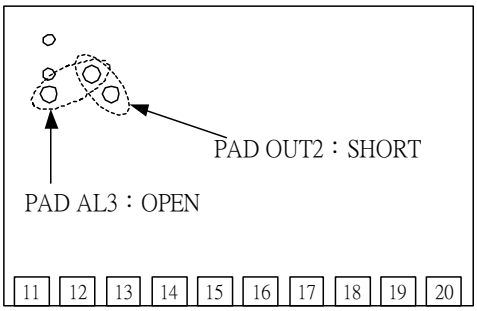
(PC Board)



HEAT / COOL

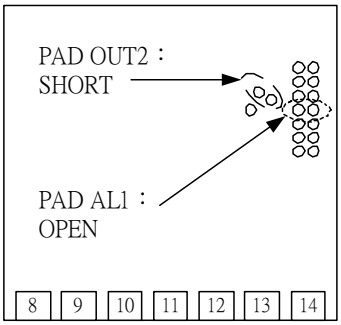
96×96，48×96，96×48

(PC Board)



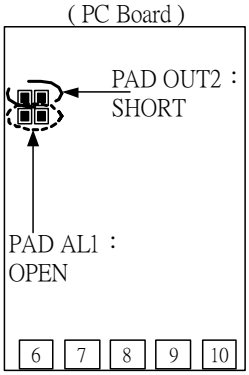
72×72

(PC Board)



48×48

(PC Board)



10. Modification of INPUT：0~1V，0~5V，0~10V，mA

10.1 Hardware part：

	96×96，48×96，96×48	72×72	48×48
INPUT(+)	PIN 17	PIN 11	PIN 7
INPUT (-)	PIN 20	PIN 14	PIN 10

1V，5V，10V： (R4 use 100Ω)

mA： (R3 use 100Ω，R5 use 2.4Ω， S3＆S5 SHORT)

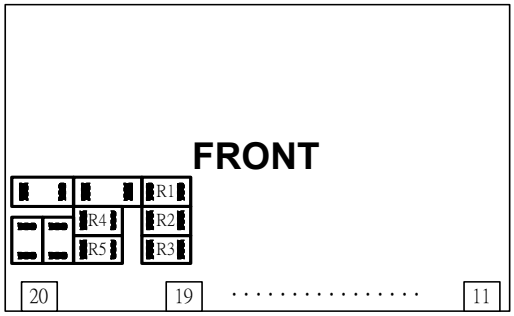
0 ~ 1V： (R1 use 2KΩ，S1＆S4 SHORT)

0 ~ 5V： (R2 use 10KΩ，S2＆S4 SHORT)

0 ~ 10V： (R3 use 22KΩ，S3＆S4 SHORT)

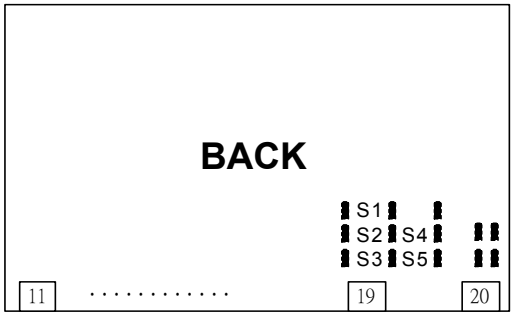
96×96，48×96，96×48

(PC Board)



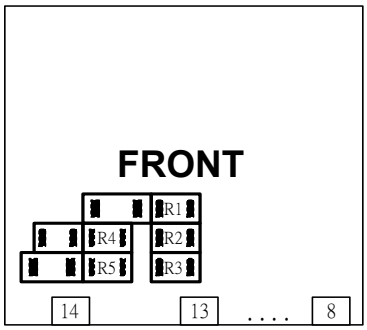
96×96，48×96，96×48

(PC Board)



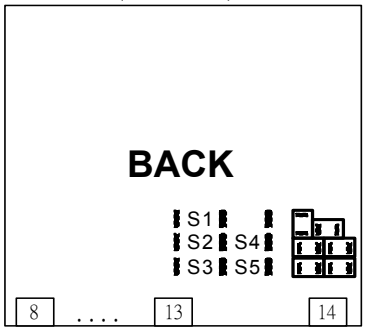
72×72

(PC Board)



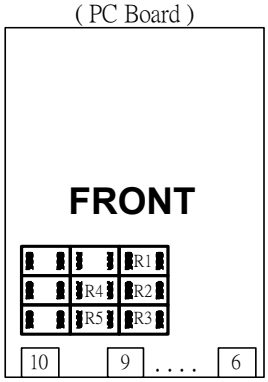
72×72

(PC Board)



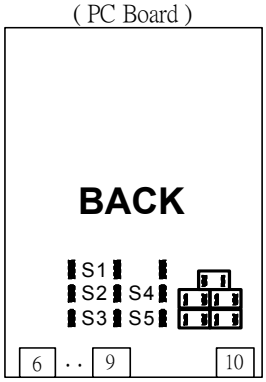
48×48

(PC Board)

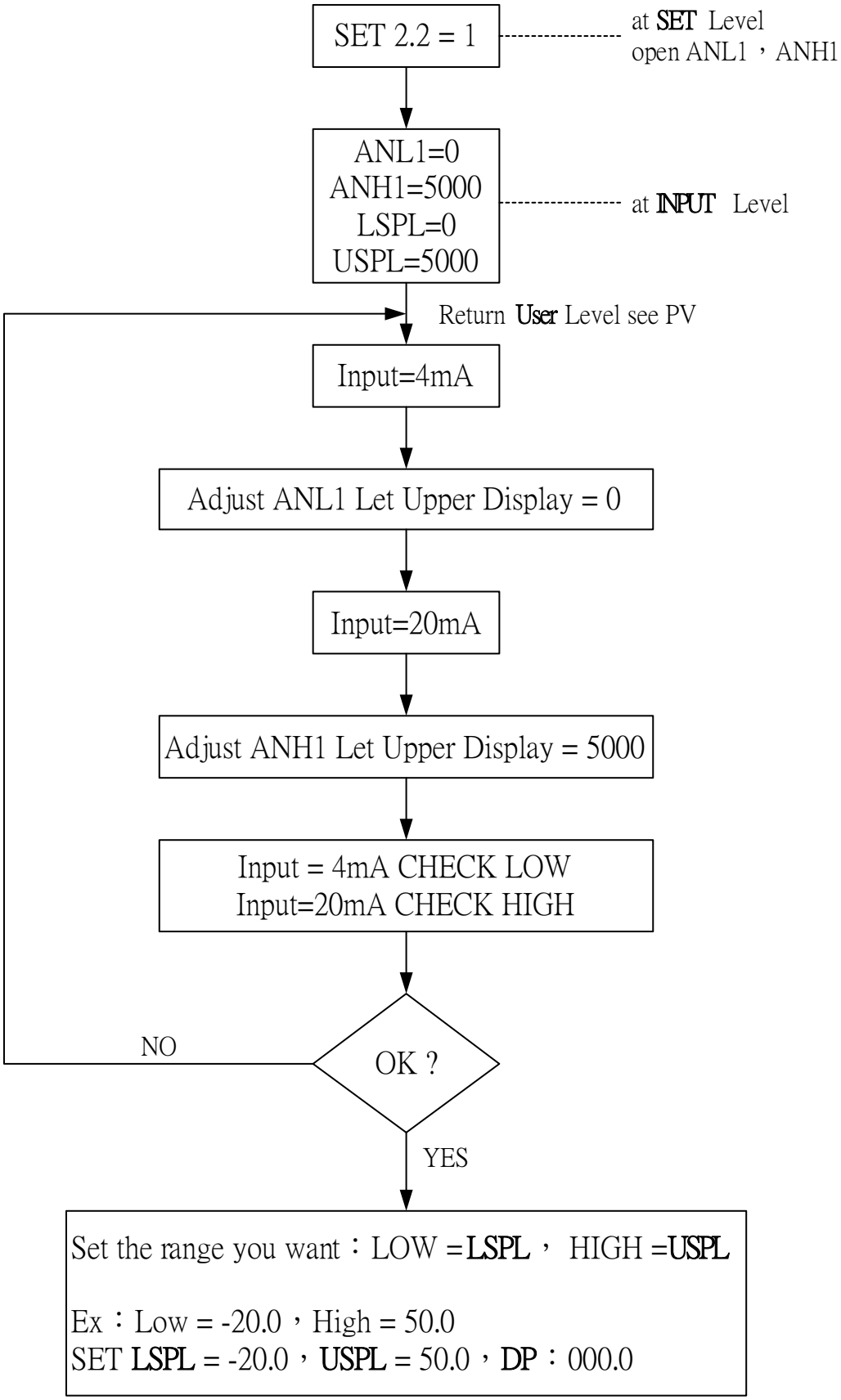


48×48

(PC Board)

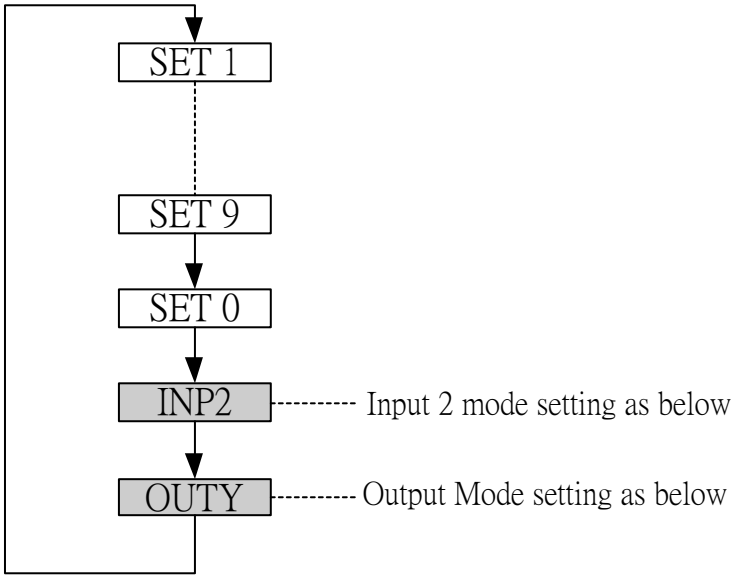


10.2 Software part(Calibrate input)



11. Special Function Description：

11.1 LEVEL 4 (Set Level)



11.1.1 Second input mode

INP2=0 Non (TB MODEL ONLY)
INP2=1 10~50mV / 4~20mA / 2~10V
INP2=2 0~50mV / 0~20mA / 0~10V

11.1.2 Output mode

OUTY=0 Single Output
OUTY=1 Double Output
OUTY=2 None
OUTY=3 Motor Valve
OUTY=4 1 φ SCR (Single Phase Control)
OUTY=5 3 φ SCR (Three Phase Control)

11.2 RAMP & SOAK (TB MODEL ONLY)

11.2.1 RAMP：

I. Please set “SET2.1=1”(Display AL3)，”SET4.1=1” (Display ALD3)

II. ALD3=9 at INPUT Level

III. RAMP menu will be displayed (replace AL3)

RAMP
0 0 0 0

Range：00.00 ~ 99.99
Unit：℃ / min
(If RAMP not used，set ALD3=0)

11.2.2 SOAK：

I. ALD1 / ALD2=19

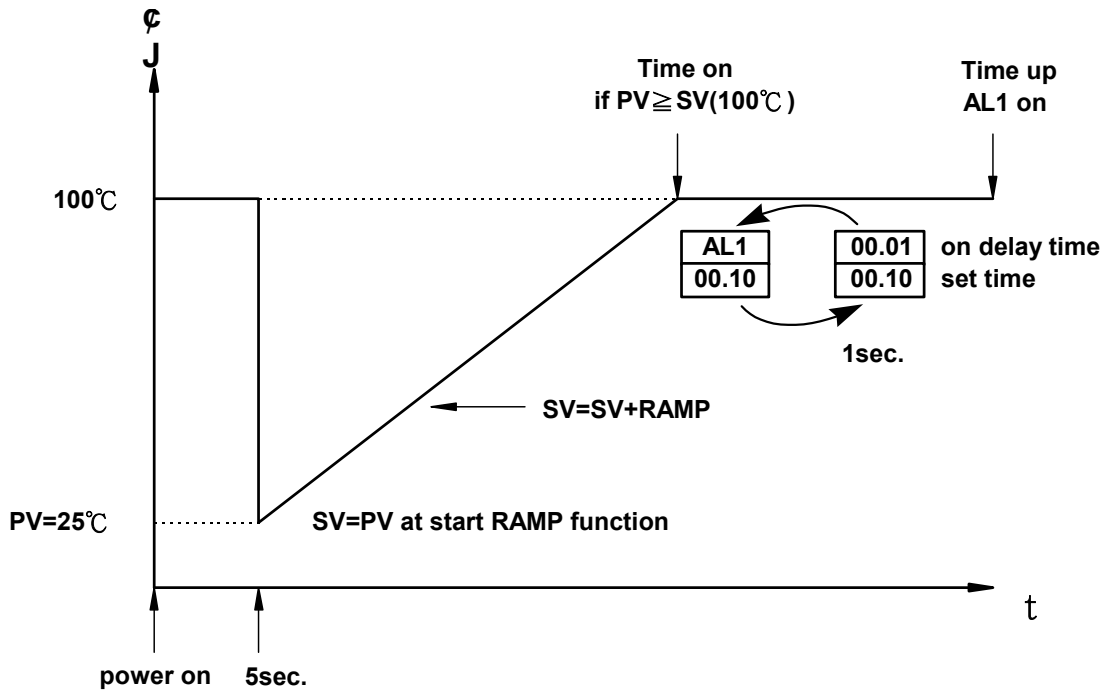
II. AL1 / AL2 will be display

AL1
0 0 . 0 0

Range：00.00 ~ 99.59(Hour.Minute)

11.2.3 Example：

SV=100℃，RAMP=10.00 (℃/min)，AL1=00.10 min，PV=25℃



11.3 REMOTE SV (TB MODEL ONLY)

11.3.1 Hardware must be mounted

11.3.2 Set INP2 to1 or 2 (calibration use ANL2，ANH2)

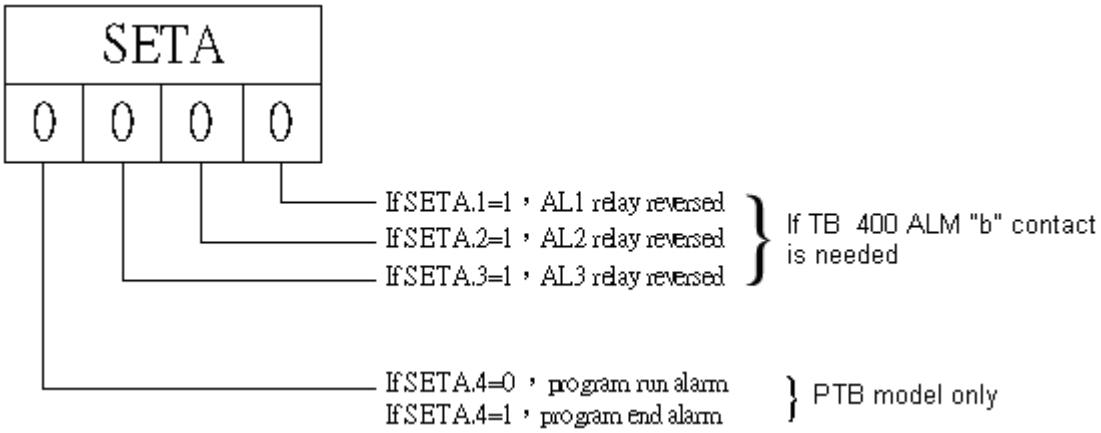
11.3.3 SET 0.3=0 means local SV

11.3.4 SET 0.3=1 means remote SV from Input 2 channel

11.4 Alarm Time ALT1/ALT2/ALT3 description (TB MODEL ONLY)

1. ALT1=0 means flicker if AL1 is on
2. ALT1=99.59 means alarm if AL1 is on
3. ALT1=00.01 ~ 99.58 means AL1 is on delay timer(＊ use for large EMI affect controller)

11.5 Renew function “HYSM” ⟶ “SETA”



11.6 Function SET8

11.6.1 SET8.1=0 Non

SET8.1=1 program repeat (PTB model)

11.6.2 SET8.2=0 Non (PTB only)

SET8.2=1 Power failure access

11.6.3 SET8.3=0 Zero start (PTB only)

SET8.3=1 PV start

11.6.4 SET8.4=0 Non

SET8.4=1 display will be transferred to single display (Don’t set this Bit) ＊SET8=0000 can return double display

11.7 Function SET9

11.7.1 SET9.1=0 Non

SET9.1=1 PV / SV switching (use for single display so please don't set this Bit.)

11.7.2 SET9.2=0 Non

SET9.2=1 PTB models ：Timer change from H.M to M.S

11.7.3 SET9.3=0 Non

SET9.3=1 Transmission SV

11.7.4 SET9.4=0 Non

SET9.4=1 Transmission PV

11.8 SET0

11.8.1 SET0.1=0 Non

SET0.1=1 TTL communication SV output

11.8.2 SET0.2=0 Non

SET0.2=1 Rate for AL3 (ALD3=0) (see Application 1，P.23)

11.8.3 SET0.3=0 Non

SET0.3=1 Remote SV

11.8.4 SET0.4=0 Motor Valve close ＝ "b" out

SET0.4=1 Motor Valve close ＝ "a" out

11.9 WAIT at INPUT Level

WAIT=0 means "no wait"

WAIT≠0 means "wait"

Application

App1. TTL communication：SV output & RATE function

- **Open RATE function (use for slave)**

11.10 Open Rate：SET0.2=1

11.11 Open AL3：SET2.1=1

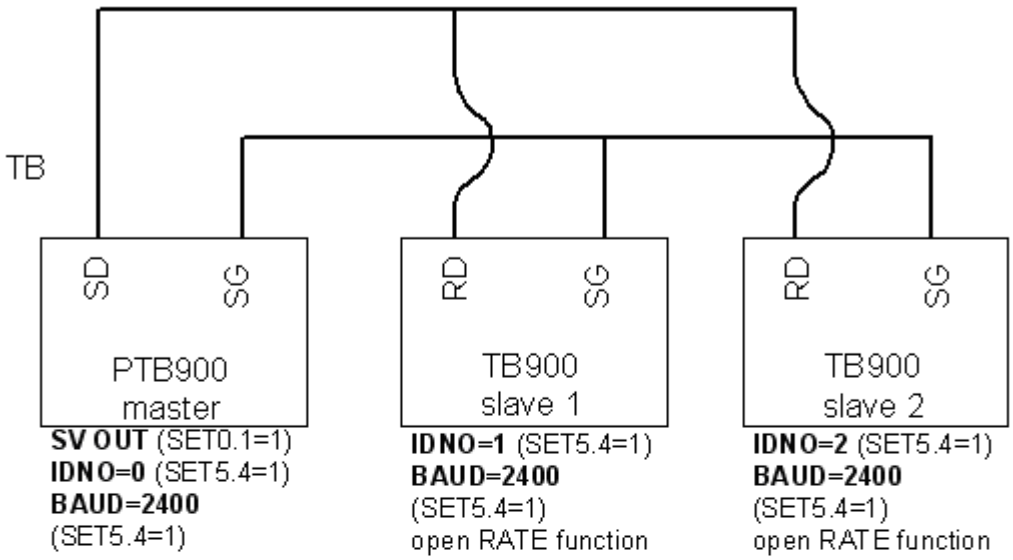
11.12 Open ALD3：SET4.1=1

11.13 ALD3=0 at INPUT Level

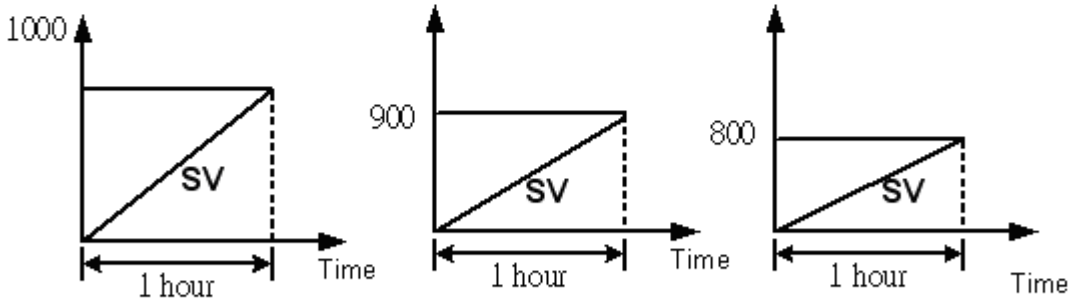
11.14 Slave SV = (**RATE**÷9999)×master SV

- **Example：**

Connect Diagram



Time Chart



SV_1=1000
TM_1=01.00 hour
OUT_1=100%
OUT_2=0%

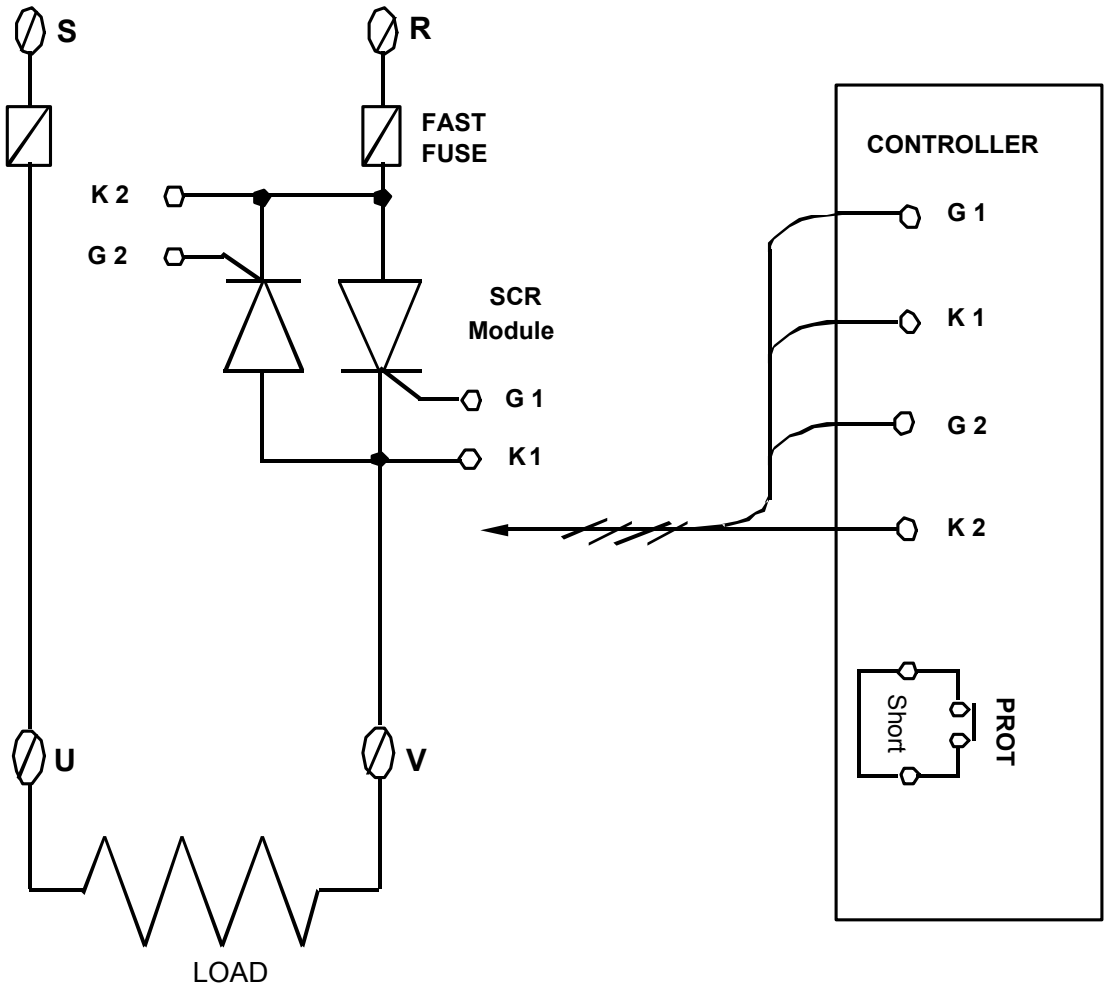
SV=0
slave 1 SV=900
RATE SET 9000

SV=0
slave 2 SV=800
RATE SET 8000

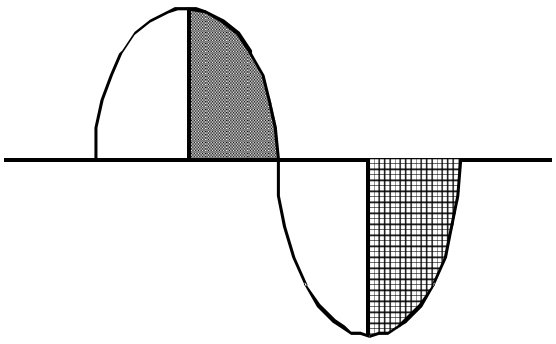
(All reach to the max value at the same time)

App2. Single Phase Control (for SCR module)

- **Available Models： TB900 / PTB900，TB700 / PTB700**
- **Data Change： OUTY=4**
  CLO1=0，CHO1=5000 if use for resistance load
  CLO1=0，CHO1=4000 if use for inductor load

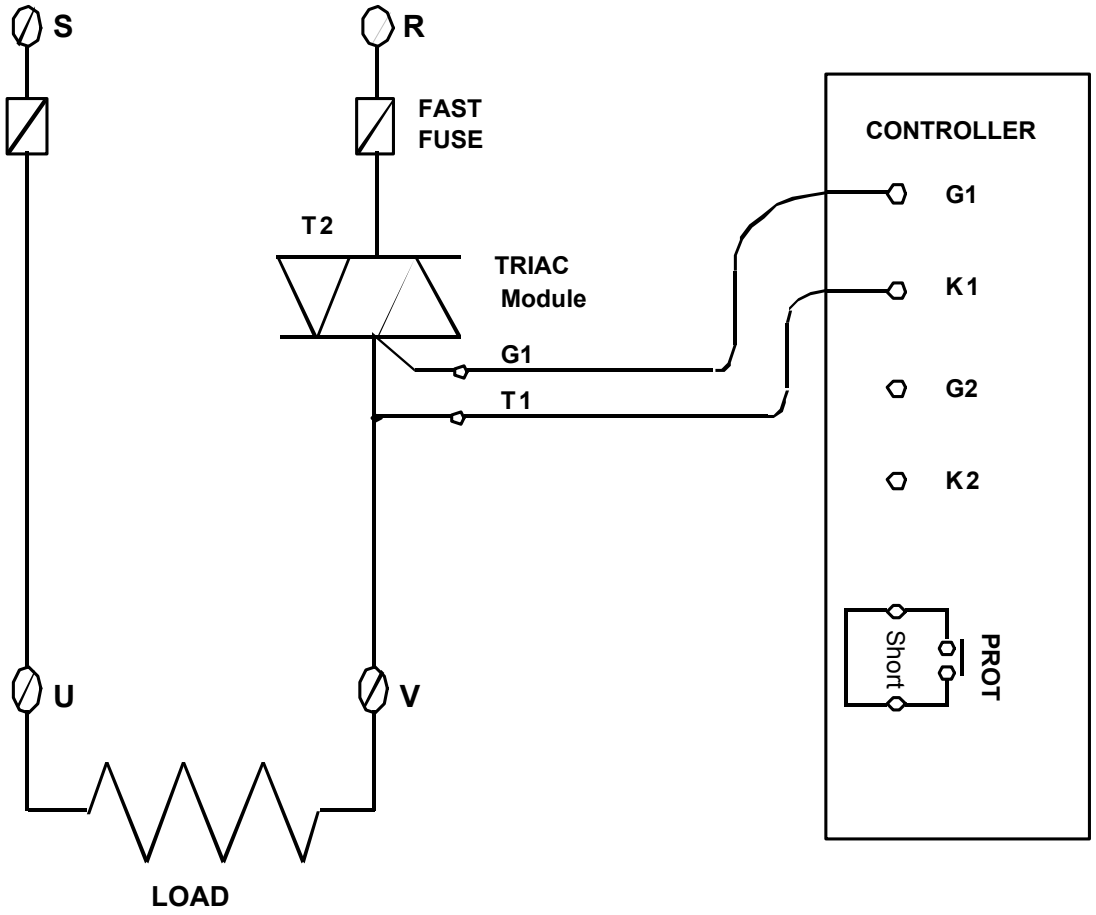


** Controller source phase must be same as load source phase

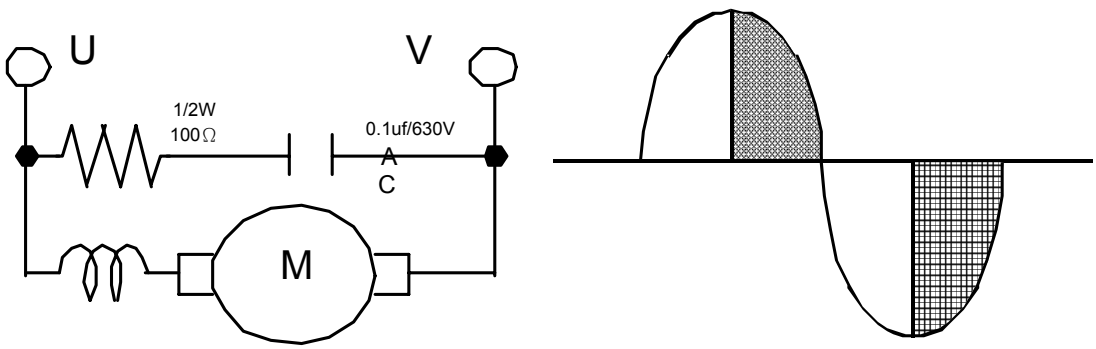


App3. Single Phase Control (for TRIAC module)

- **Available Models： TB900 / PTB900，TB700 / PTB700**
- **Data Change： OUTY=4**
  CLO1=0，CHO1=5000 if use for resistance load
  CLO1=0，CHO1=4000 if use for inductor load

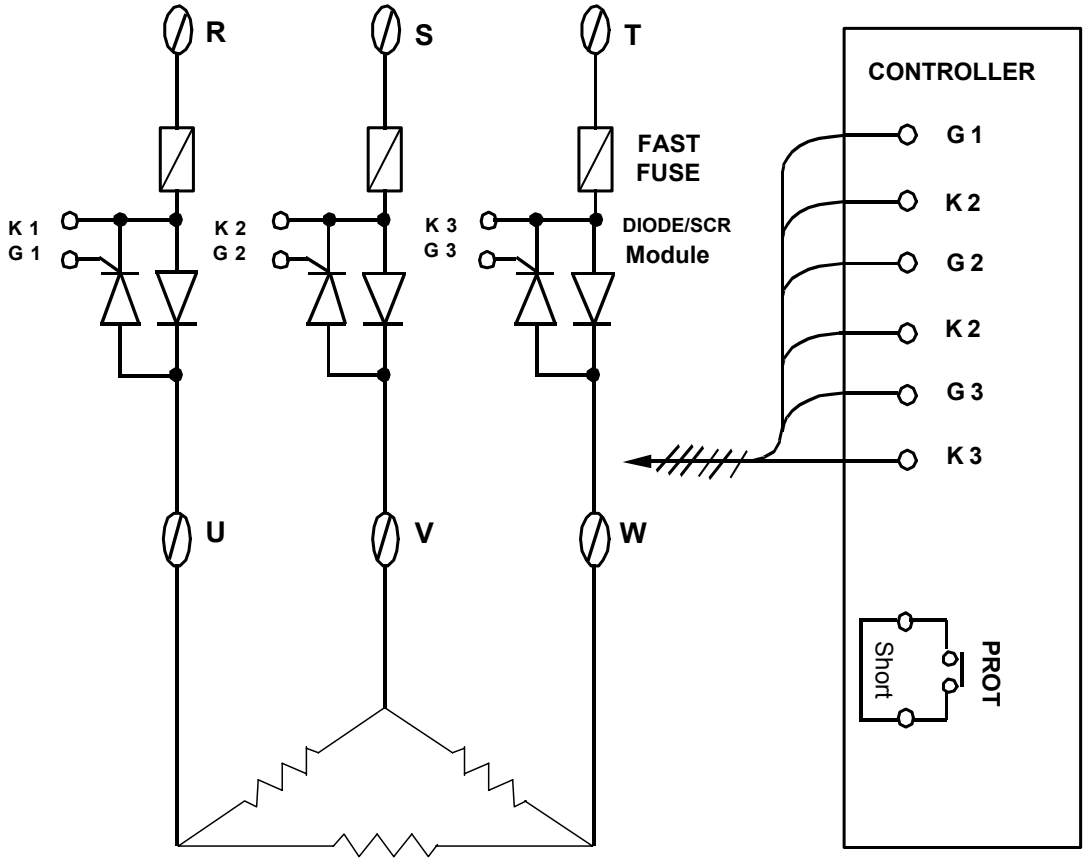


** Controller source phase must be same as load source phase



App4. Three Phase Control

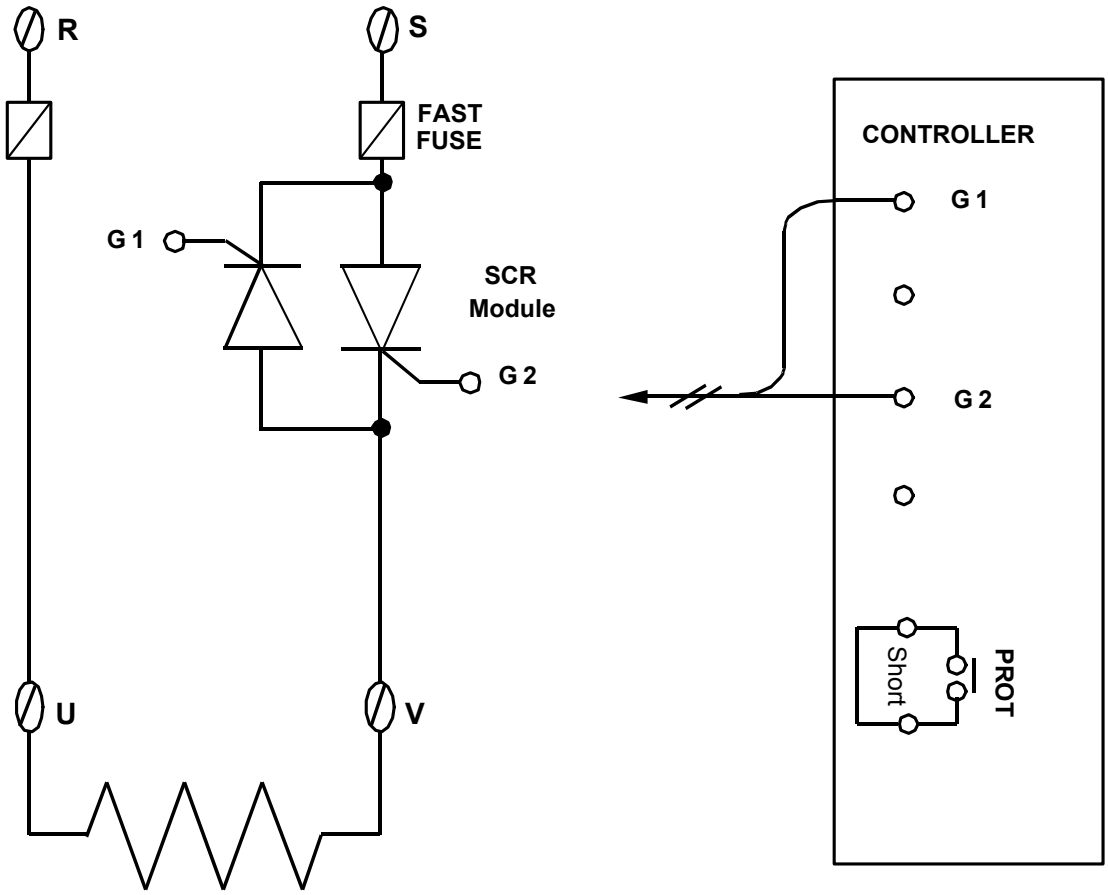
- **Available Models： TB900 / PTB900**
- **Data Change： OUTY=5**
  CLO1=0，CHO1=5000 only if use for resistance load



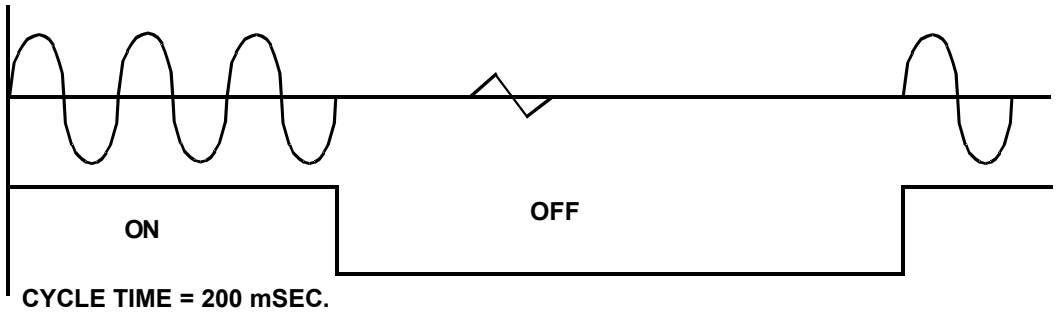
3φ LOAD

App5. Single Phase Zero Control

- **Available Models：　TB900 / PTB900，TB700 / PTB700**
  TB400 / PTB400
- **Data Change：　OUTY=0**
  CYT1=1

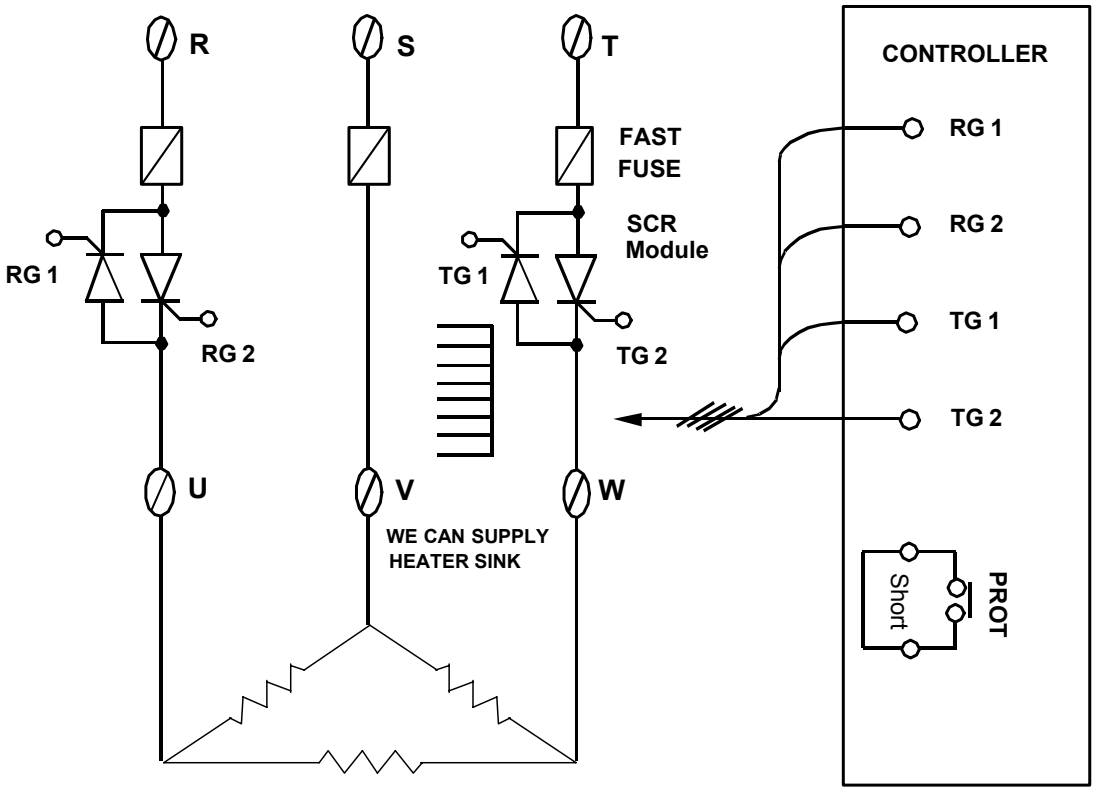


TIME CHART:

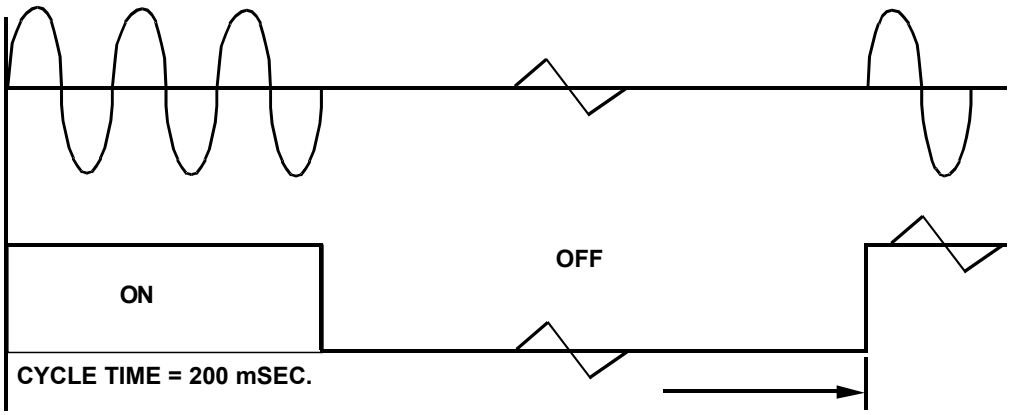


App6. Three Phase Zero Control

- **Available Models： TB900 / PTB900**
- **Data Change： OUTY=0**
  CYT1=1



TIME CHART:



App7. Motor Valve Control

- **Available Models：　TB900 / PTB 900，TB800 / PTB800**
  TB700 / PTB700，TB600 / PTB600
- **Data Change：　OUTY=3**
  CYT1=1 ~ 100sec.(Normally set 5 sec.)
  RUCY=5 ~ 200 sec.

1. **CYT1 is the cycle time of Open / Close**
2. **RUCY is the running time of motor valve 0 ~ 100%**

MOTOR VALVE