



Application: Control temperature, humidity,

FY series controllers are microprocessor based controllers.

Which have been

Designed with high accuracy input, various output selection, useful options and good reliability at a competitive price.



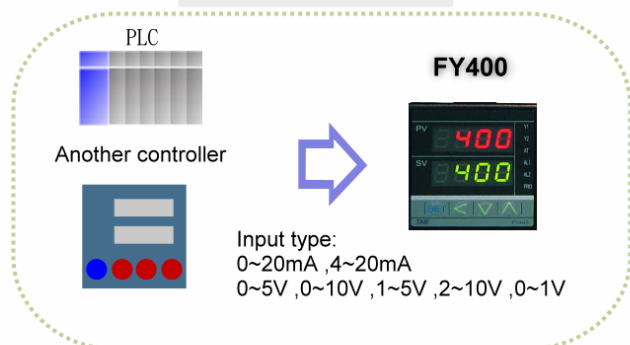
## Features

### Various I/O Types

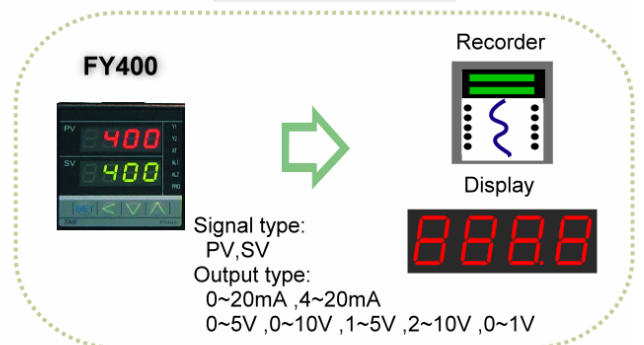


### Peripheral Option

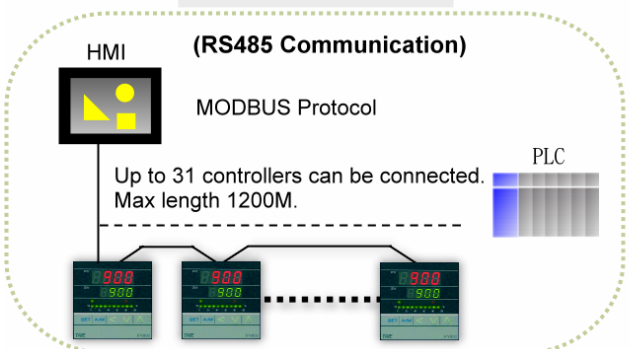
#### Remote SV



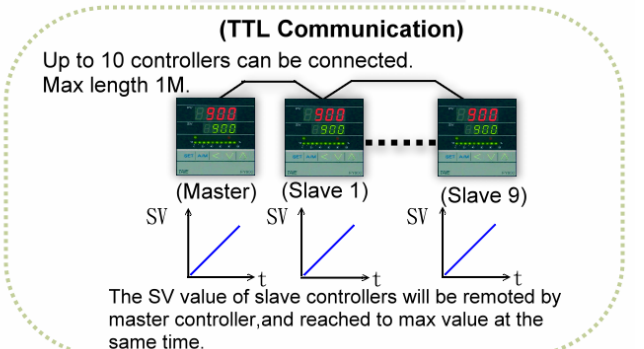
#### Transmission



#### Communication



#### Communication



**Specifications**  
**Standard spec.**

Model		FY400
Dimension		48X48mm
Supply voltage		AC 85~265V · DC 15~50V (Option)
Frequency		50 / 60 HZ
Power consumption		approx 3VA
Input	Accuracy	0.2 % FS ± 1digit
	Sample time	250ms
	TC	K , J , R , S , B , E , N , T , W5Re/W26Re , PLII , U , L
	RTD	PT100,JPT100,JPT50
	mA dc	4~20mA , 0~20mA
	mV / V dc	0~1V,0~5V,0~10V,1~5V,2~10V -10~10mV,0~10mV,0~20mV,0~50mV,10~50mV
	Decimal point position	0000 , 000.0 , 00.00 , 0.000 Available for linear input (mA / mV / V)
Output 1	Relay	SPST type 3A , 220V , electrical life:100,000 times or more (under rated load)
	Voltage pulse	For SSR drive. ON : 24V , OFF : 0V , max load current : 20mA
	mA dc	4~20mA, 0~20mA. Maximum load resistance:560 Ω
	Voltage dc	0~5V , 0~10V , 1~5V , 2~10V . Max load current:20mA
Alarm 1	3A , 220V , electrical life:100,000 times or more (under rated load)	
Control algorithm	PID , PI , PD , P , ON / OFF(P=0) , FUZZY ◦	
PID range	P: 0.0 ~ 200.0 % , I: 0~3600s , D: 0~900s	
Isolation	Output terminals(control output , alarm , transmission) and input terminals are isolated separately	
Isolated resistance	10MΩ or more between input and case (ground) at DC 500 V 10MΩ or more between output and case (ground) at DC 500 V	
Dielectric strength	1000V AC for 1 minute between input terminal and case (ground) 1500V AC for 1 minute between output terminal and case (ground)	
Operating temperature	0~50℃	
Humidity range	20~90%RH	
Weight	150g	
Display Height	PV:7mm SV:7mm	

- **Optional Spec.**

Model	FY400
<b>Output 2</b>	For heating and cooling control use. Relay , SSR , 4~20mA , 0~20mA , 0~5V , 0~10V , 1~5V , 2~10V
<b>Alarm 2</b>	SPST type 3A , 220V , electrical life:100,000 times or more (under rated load)
<b>Alarm 3</b>	Not available
<b>Heater Break Alarm (HBA)</b>	Display range of heater current : 0.0~99.9A , Accuracy : 1%FS Included CT : SC-80-T (5.8mm dia , 0.0~80.0A) or SC-100-T (12mm dia , 0.0~99.9A) Alarm relay : AL1
<b>Transmission</b>	Available for PV or SV transmission 4~20mA , 0~20mA , 0~1V , 0~5V , 0~10V , 1~5V , 2~10V
<b>Remote SV</b>	4~20mA , 0~20mA , 0~1V , 0~5V , 0~10V , 1~5V , 2~10V
<b>Communication</b>	Protocol : MODBUS RTU , MODBUS ASCII , TAIE RS232 , RS485 , TTL Baud rate: 2400 , 4800 , 9600 , 19200 , 38400 bps. Data bits : 8 , Stop bit : 1 or 2bit , Odd or Even parity.
<b>Water/Dust proof</b>	IP65

- **Special control output (OUT1)**

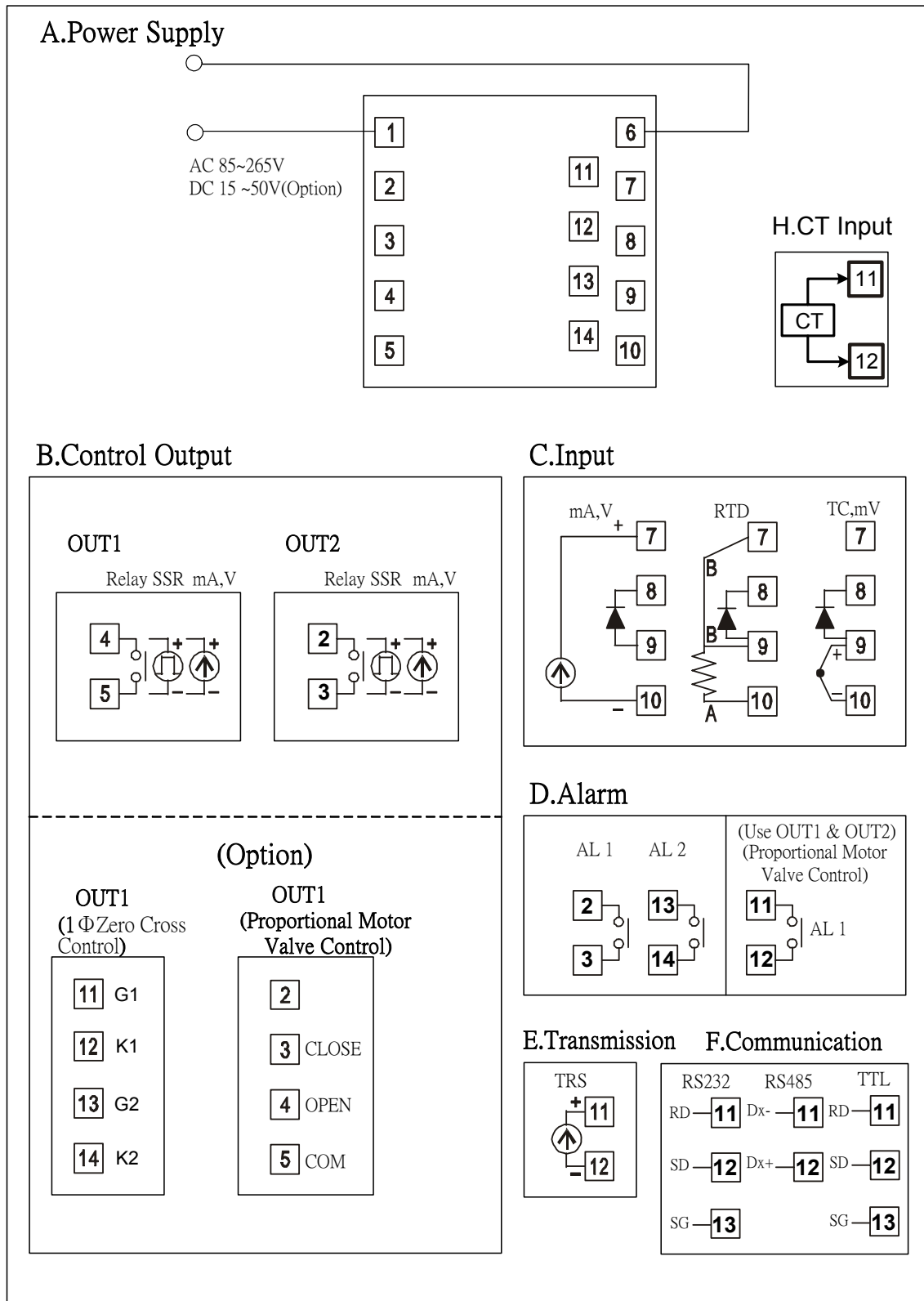
Model	FY400
<b>1φ zero crossing control(1φSSR)</b>	Available
<b>Motor valve control</b>	Available

- **Programmable RAMP/SOAK**

Model	PFY400
<b>Programmable RAMP/SOAK</b>	2 patterns with 8 segments each. The 2 patterns can be linked together as 16 segments use.

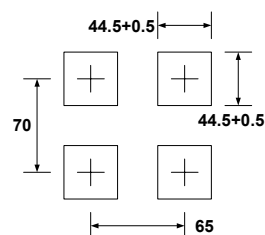
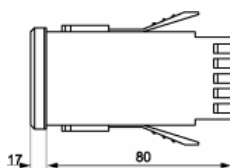
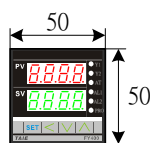
# Terminal arrangement

FY400 Terminals ( 48mm x 48mm , DIN 1/16 )

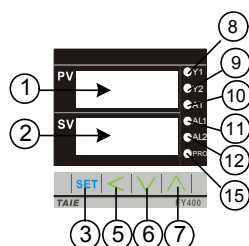


## External dimension and panel cutout $\langle$ Unit : mm $\rangle$

**FY400**



## Parts description

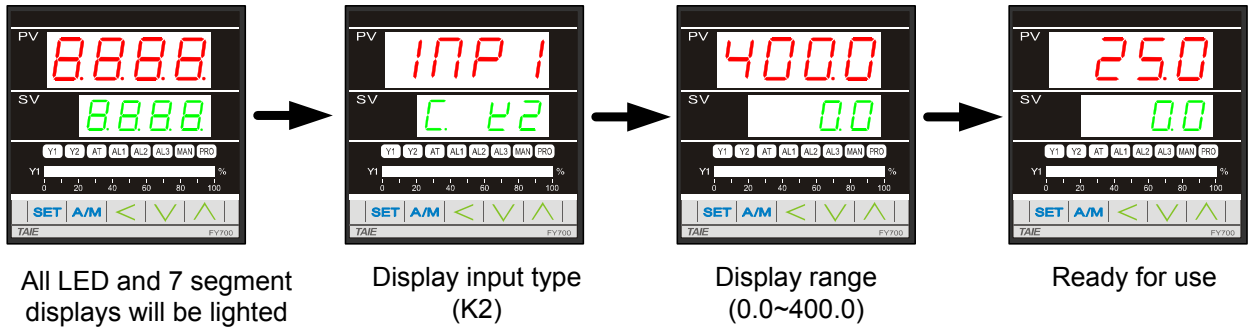


SYMBOL	NAME		FUNCTION
PV	①	Measured value (PV) display	Displays PV or various parameter symbols (Red)
SV	②	Set value (SV) display	Displays SV or various parameter set values (Green)
SET	③	Set key	Used for parameter calling up and set value registration
A/M	④	Auto/Manual key	Switches between Auto(PID) output mode and Manual output mode.
$\leftarrow$	⑤	Shift key	Shift digits when settings are changed
$\nabla$	⑥	Down key <i>*Program hold</i>	Decrease numbers (-1000,-100,-10,-1) <i>* Program hold <math>\langle</math>Programmable controller <math>\rangle</math></i>
$\wedge$	⑦	Up key <i>*Program run</i>	Decrease numbers (+1000,+100,+10,+1) <i>* Program run <math>\langle</math>Programmable controller <math>\rangle</math></i>
OUT1	⑧	OUT1 lamp	Lights when OUT1 is activated (Green)
OUT2	⑨	OUT2 lamp	Lights when OUT2 is activated (Green) °
AT	⑩	Auto tuning lamp	Lights when Auto tuning is activated (Orange)
AL1	⑪	Alarm 1 lamp	Lights when Alarm 1 is activated (Red)
AL2	⑫	Alarm 2 lamp	Lights when Alarm 2 is activated (Red)
AL3	⑬	Alarm 3 lamp	Lights when Alarm 3 is activated (Red)
PRO	⑮	<i>*Program running lamp</i>	<i>*Flashes when program is running <math>\langle</math>Programmable controller <math>\rangle</math> °</i>

## Operations

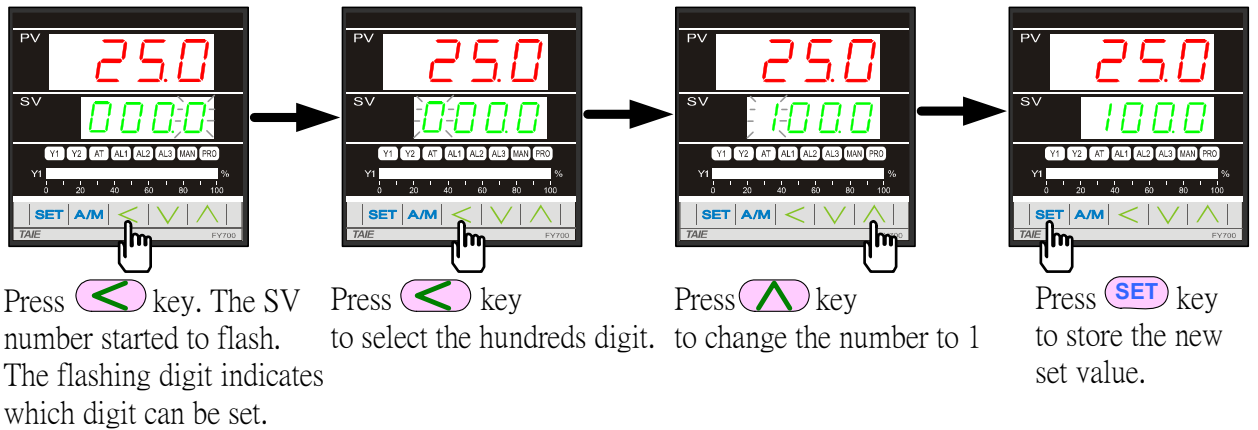
### Power On

Controller will display as below



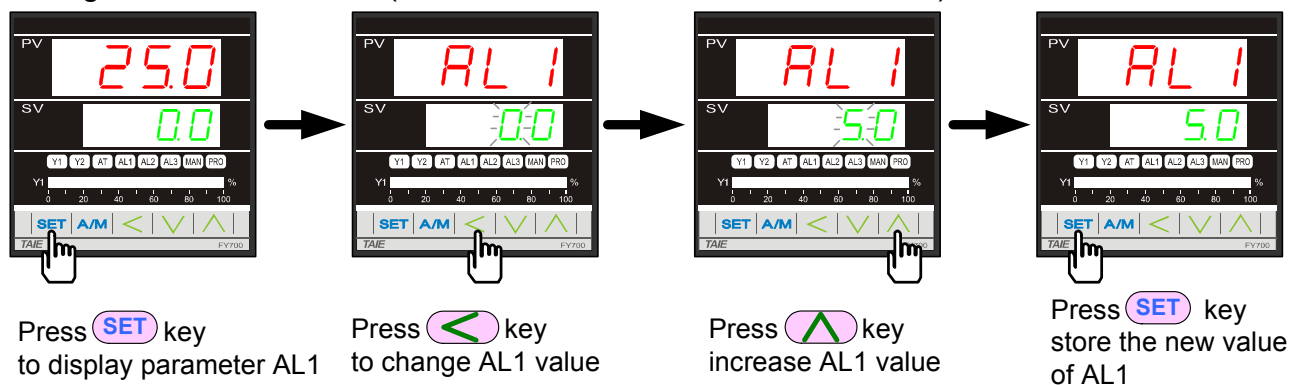
### Change the Set Value (SV)

Change SV from 0.0 to 100.0



### Change the Alarm Value

Change AL1 value to "5.0" (AL1 active, if PV exceeds SV over 5.0)

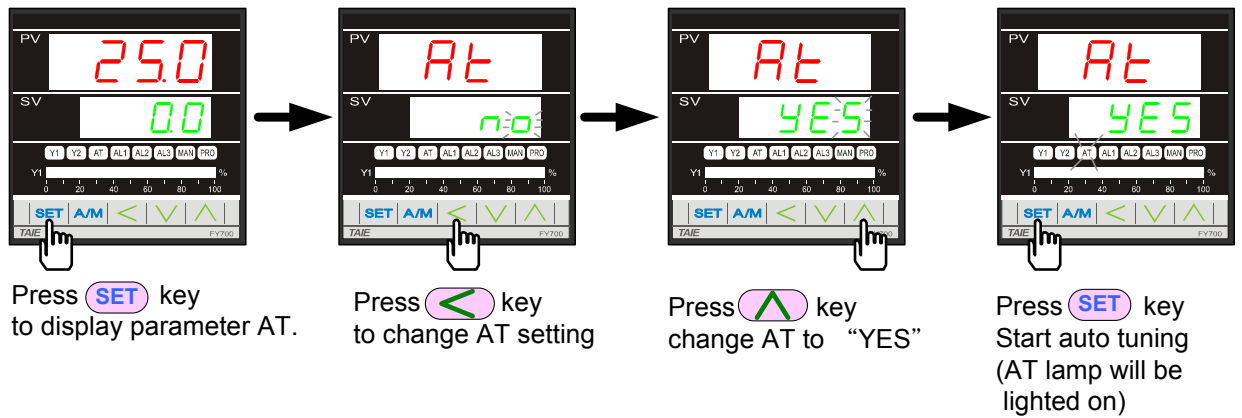


\* There are total 16 alarm mode types, please refer to "alarm mode" in page 30

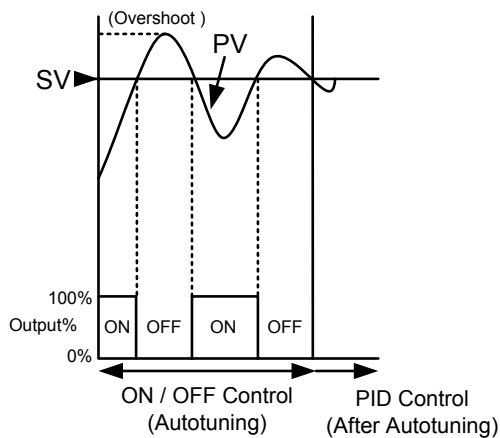
\* To change alarm mode, press + key 5 seconds to enter Level 3 (Input Level) and then change ALD1/ALD2/ALD3 value.

## Autotuning (AT)

Use AT function to automatically calculate and set the optimize PID value for your system.



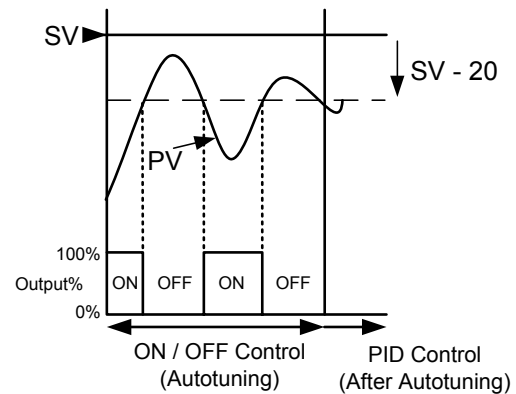
### Autotuning ATVL=0



### Autotuning ATVL=20

\*Set ATVL to prevent overshoot occurred during autotuning process.

To set ATVL, press **SET** key 5 seconds to enter Level 2 (PID Level) and then change the value.



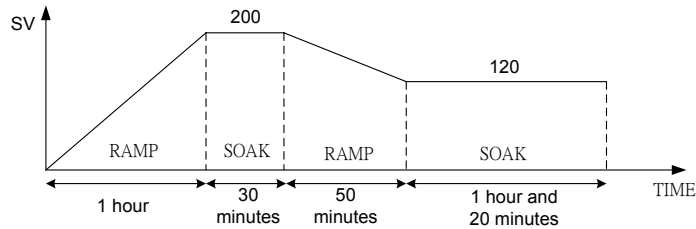
### Autotuning failure

- Possible cause 1 : ATVL is too big. (If not sure, set ATVL=0)
- Possible cause 2 : Calculation time is too long. (Set PID parameter manually)

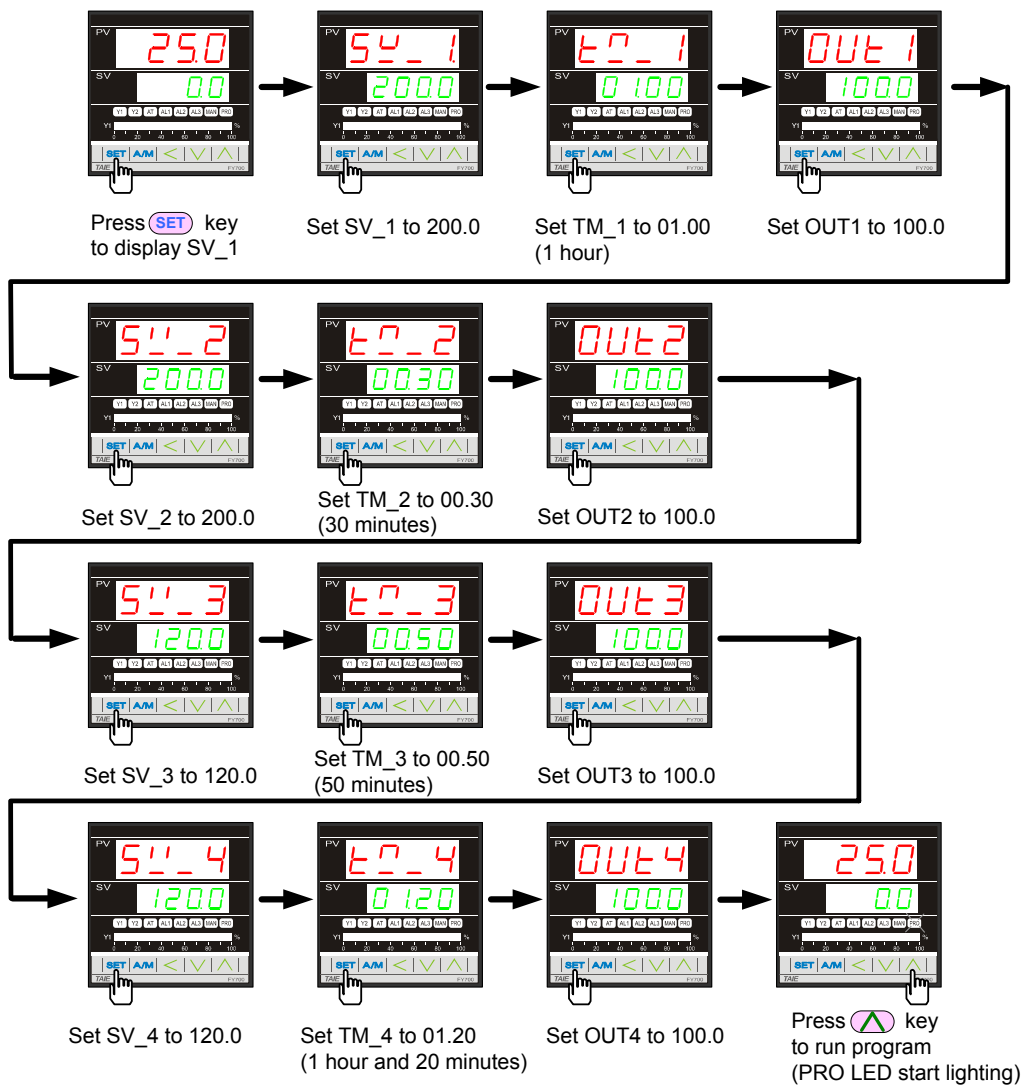
# Programmable RAMP / SOAK (Only available for PFY model)

\*For detail of the programmable instruction, please refer with page 25.

Assume the temperature profile is as below (use total 4 segments )



Please operate controller as following steps:





# Operation levels

## Levels diagram

