



FY Series Digital PID Controller

FY600 (96mm x 48mm)

Application:Control temperature, humidity,

FY series controllers are microprocessor based controllers.

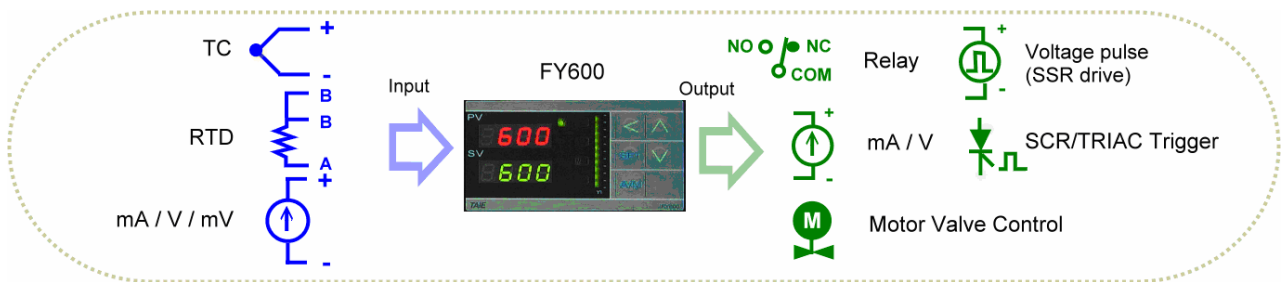
Which have been

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



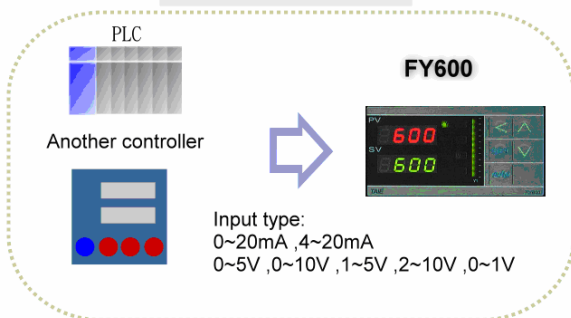
## Features

Various I/O Types

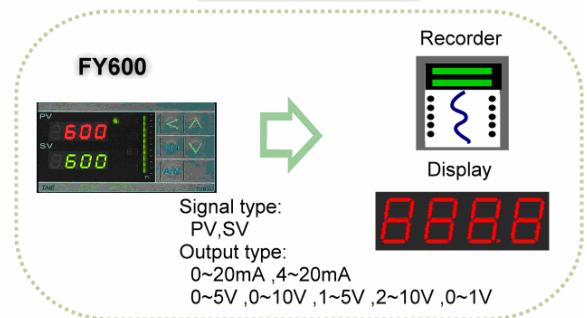


Peripheral Option

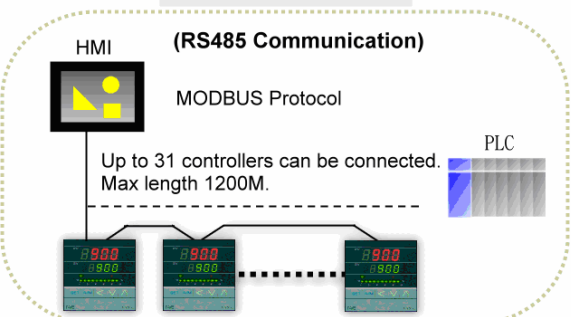
### Remote SV



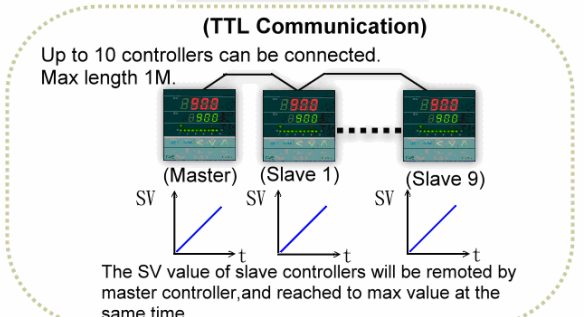
### Transmission



### Communication



### Communication



## Specifications

- Standard spec.

<b>Model</b>	<b>FY600</b>	
<b>Dimension</b>	96X48mm	
<b>Supply voltage</b>	AC 85~265V · DC 15~50V (Option)	
<b>Frequency</b>	50 / 60 HZ	
<b>Power consumption</b>	approx 4VA	
<b>Input</b>	<b>Accuracy</b>	0.2 % FS ± 1digit
	<b>Sample time</b>	250ms
	<b>TC</b>	K , J , R , S , B , E , N , T , W5Re/W26Re , PLII , U , L
	<b>RTD</b>	PT100,JPT100,JPT50
	<b>mA dc</b>	4~20mA ,0~20mA
	<b>mV / V dc</b>	0~1V,0~5V,0~10V,1~5V,2~10V -10~10mV,0~10mV,0~20mV,0~50mV,10~50mV
	<b>Decimal point position</b>	0000 , 000.0 , 00.00 , 0.000 Available for linear input (mA / mV / V)
<b>Output 1</b>	<b>Relay</b>	SPDT type 3A , 220V , electrical life:100,000 times or more (under rated load)
	<b>Voltage pulse</b>	For SSR drive. ON : 24V , OFF : 0V , max load current : 20mA
	<b>mA dc</b>	4~20mA, 0~20mA. Maximum load resistance:560 Ω
	<b>Voltage dc</b>	0~5V , 0~10V , 1~5V , 2~10V . Max load current:20mA
<b>Alarm 1</b>	3A , 220V , electrical life:100,000 times or more (under rated load)	
<b>Control algorithm</b>	PID , PI , PD , P , ON / OFF(P=0) , FUZZY ◦	
<b>PID range</b>	P: 0.0 ~ 200.0 % , I: 0~3600s , D: 0~900s	
<b>Isolation</b>	Output terminals(control output , alarm , transmission) and input terminals are isolated separately	
<b>Isolated resistance</b>	10MΩ or more between input and case (ground) at DC 500 V 10MΩ or more between output and case (ground) at DC 500 V	
<b>Dielectric strength</b>	1000V AC for 1 minute between input terminal and case (ground) 1500V AC for 1 minute between output terminal and case (ground)	
<b>Operating temperature</b>	0~50℃	
<b>Humidity range</b>	20~90%RH	
<b>Weight</b>	225g	
<b>Display Height</b>	PV:7mm SV:7mm	

- **Optional Spec.**

Model	FY600
<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>	SPST type 3A , 220V , electrical life:100,000 times or more (under rated load)
<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

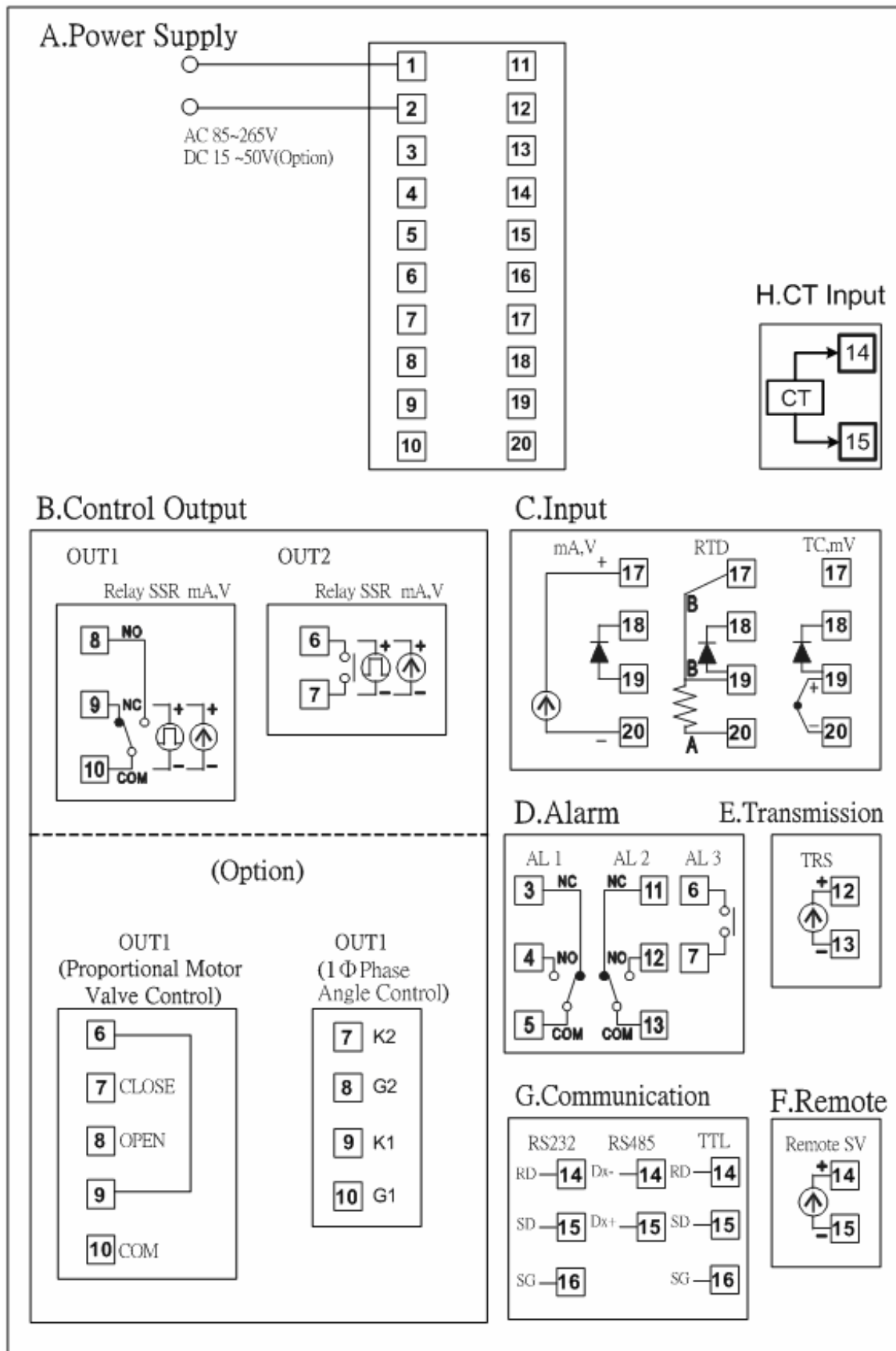
- **Special control output (OUT1)**

Model	FY600
<b>3φ zero crossing control(3φSSR)</b>	Available
<b>Motor valve control</b>	Available

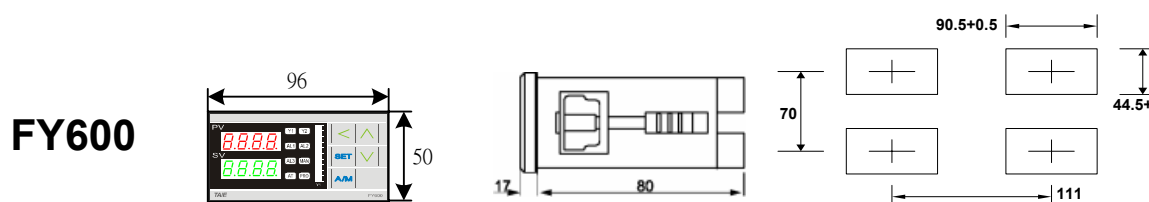
- **Programmable RAMP/SOAK**

Model	PFY600
<b>Programmable RAMP/SOAK</b>	2 patterns with 8 segments each. The 2 patterns can be linked together as 16 segments use.

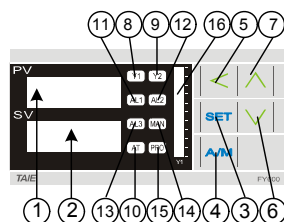
# FY600 Terminals ( 96mm x 48mm , DIN 1/8 )



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



## Parts description

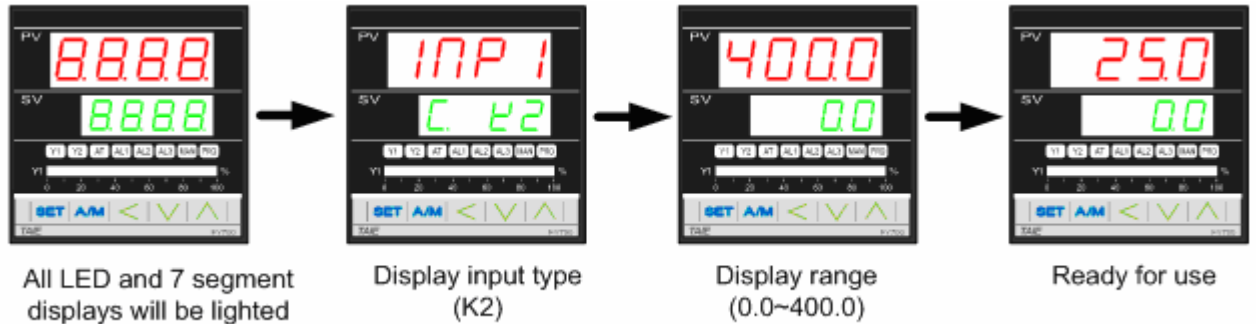


SYMBOL	NAME	FUNCTION
PV	① Measured value (PV) display	Displays PV or various parameter symbols (Red)
SV	② Set value (SV) display	Displays SV or various parameter set values (Green)
SET	③ Set key	Used for parameter calling up and set value registration
A/M	④ Auto/Manual key	Switches between Auto(PID) output mode and Manual output mode.
<	⑤ Shift key	Shift digits when settings are changed
∨	⑥ Down key *Program hold	Decrease numbers (-1000,-100,-10,-1) * Program hold $\langle$ Programmable controller $\rangle$
∧	⑦ Up key *Program run	Decrease numbers (+1000,+100,+10,+1) * Program run $\langle$ Programmable controller $\rangle$
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)
MAN	⑭ Manual output lamp	Lights when manual output is activated (Orange)
PRO	⑮ *Program running lamp	*Flashes when program is running $\langle$ Programmable controller $\rangle$ ◦
OUT1%	⑯ OUT% bar-graph display	Output% is displayed on 10-dot LED.

## Operations

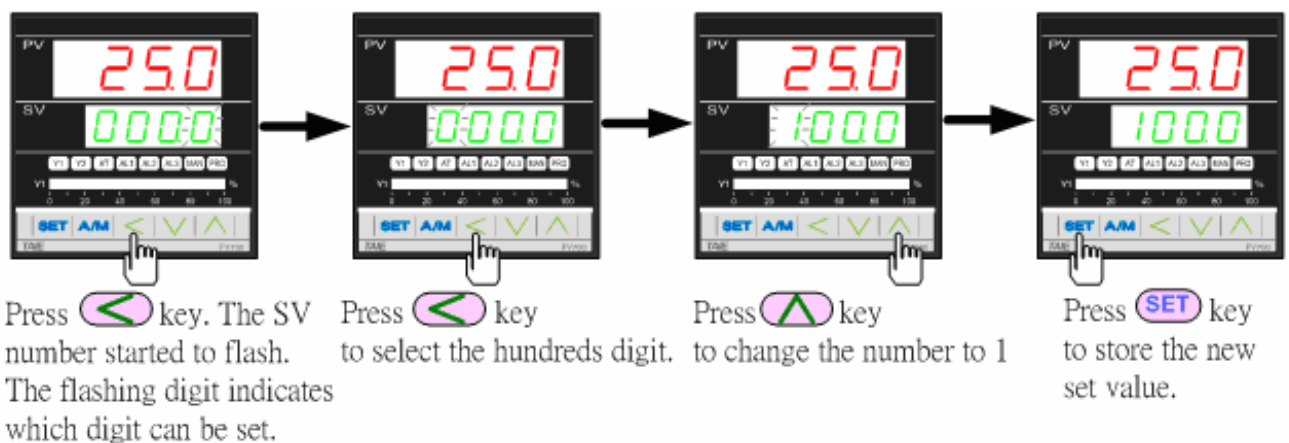
### Power On

Controller will display as below



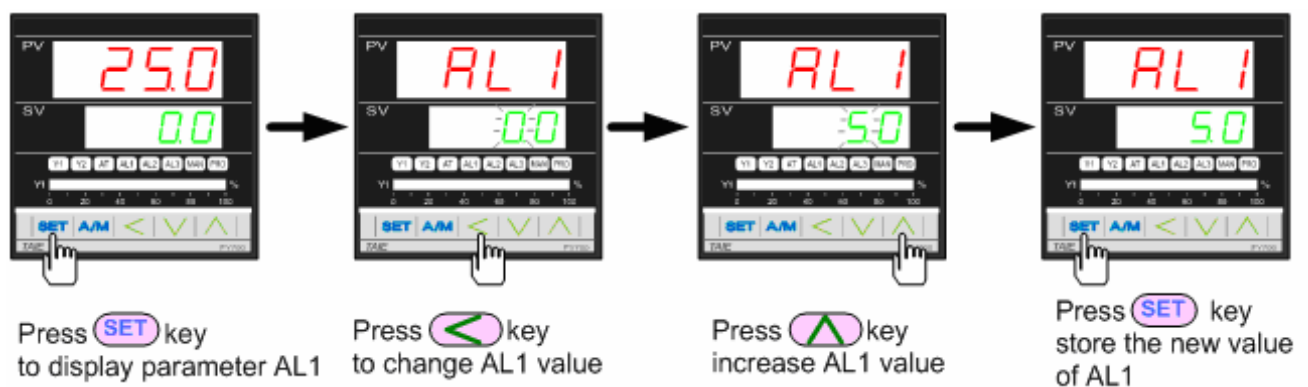
### Change the Set Value (SV)

Change SV from 0.0 to 100.0



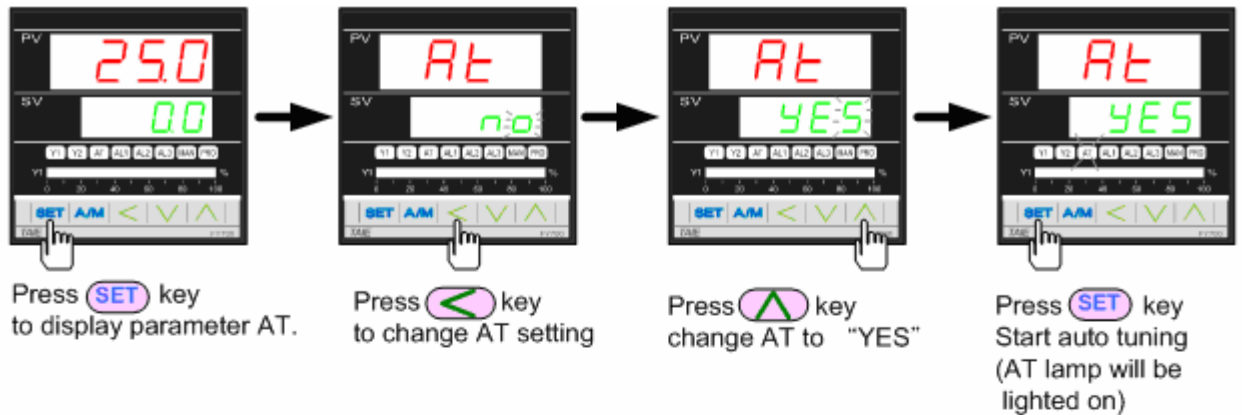
### Change the Alarm Value

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

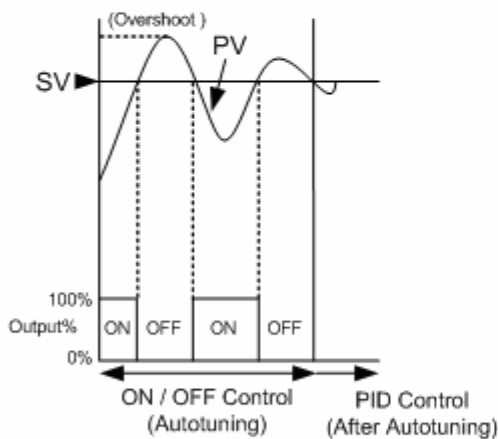


## Autotuning (AT)

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



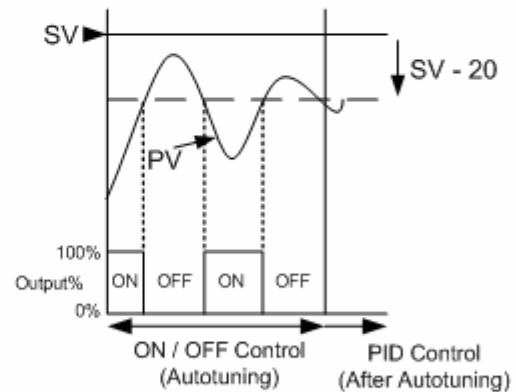
Autotuning  
**ATVL=0**



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.



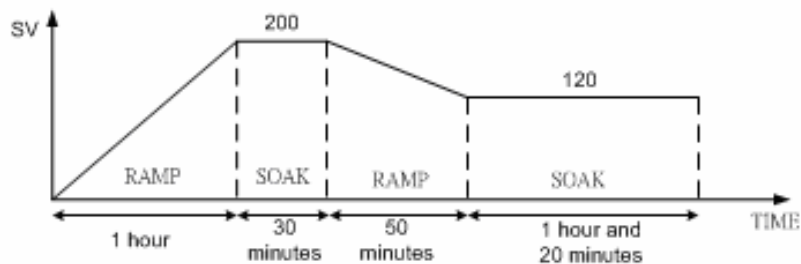
### Autotuning failure

- 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)

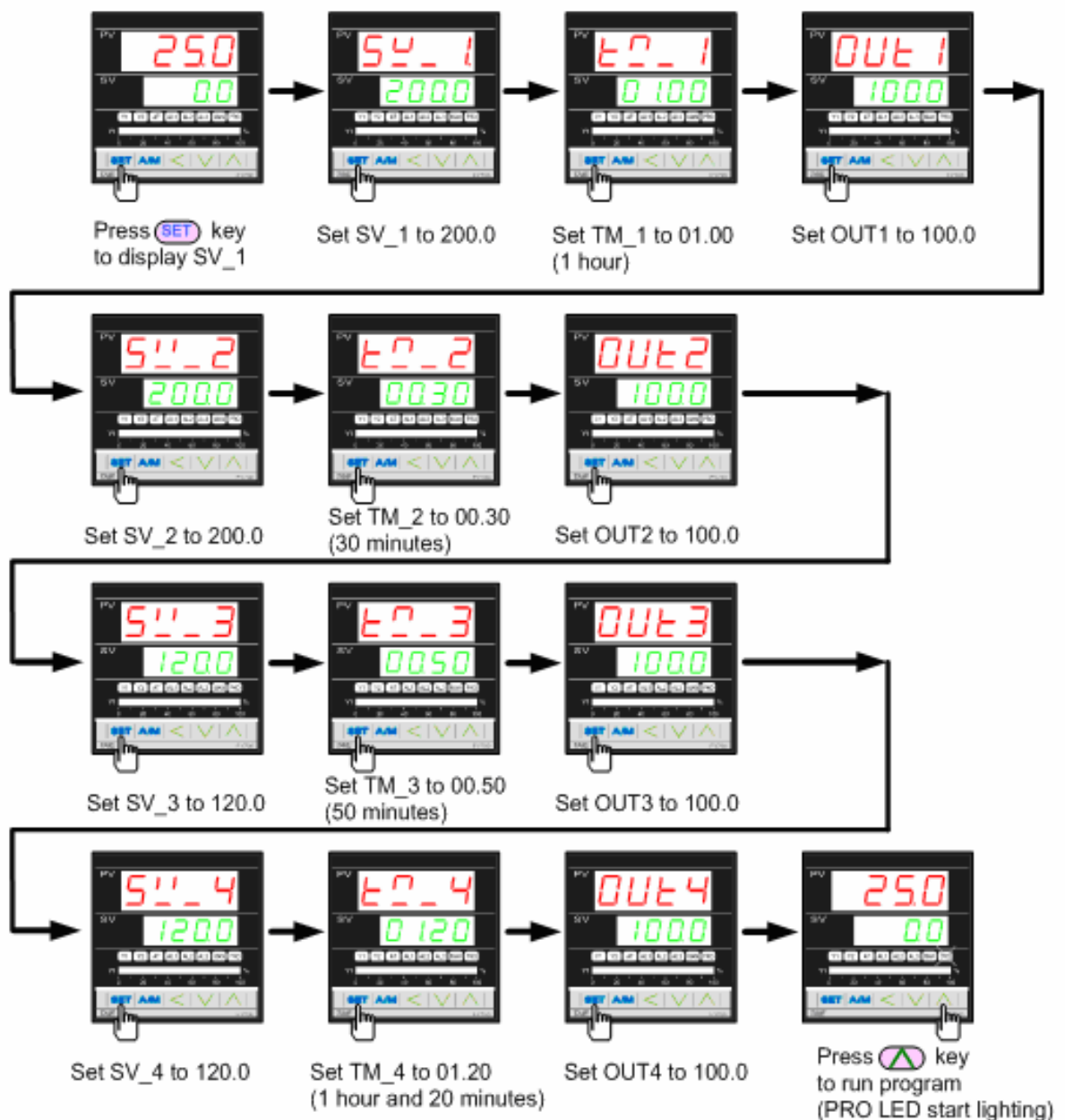
## Programmable RAMP / SOAK (Only available for PFY model)

\*For detail of the programmable instruction, please refer with page 21.

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



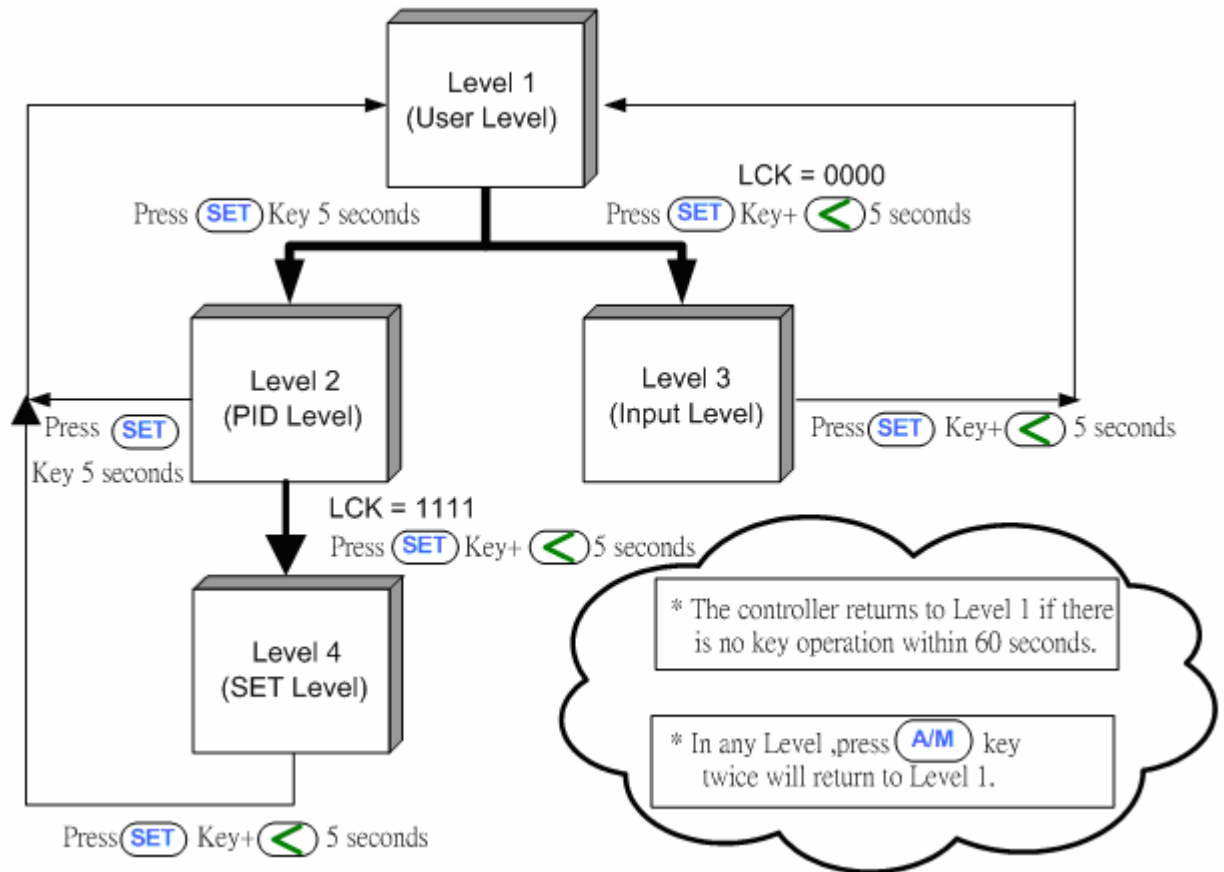
Please operate controller as following steps:





# Operation levels

## Levels diagram



## Lock function

To use lock function, please set parameter "LCK" in level 2.

LCK	Levels entering available				Parameters which can be changed
	Level 1 (User)	Level 2 (PID)	Level 3 (Input)	Level 4 (SET)	
0000	⊙	⊙	⊙	-----	All parameters (Factory set value)
1111	⊙	⊙	-----	⊙	All parameters
0100	⊙	⊙	-----	-----	All parameters except level 3
0110	⊙	⊙	-----	-----	Parameters in level 1
0001	⊙	⊙	-----	-----	"SV" and "LCK"
0101	⊙	⊙	-----	-----	Only "LCK"