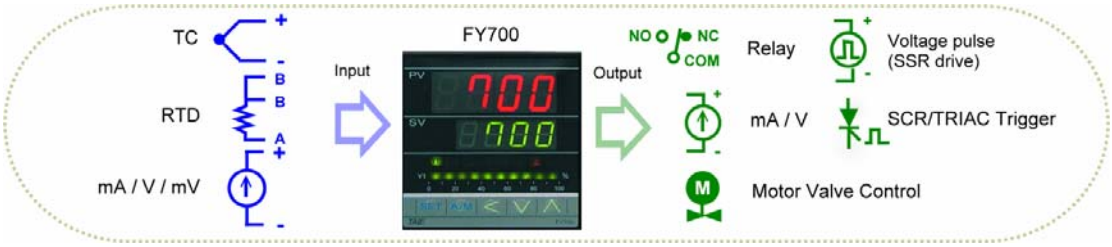
TAIE **FY Series Digital PID Controller** ***FY700 (72mm x 72mm)***

Application:Control temperature,humidity,

FY series controllers are microprocessor based controllers.
Which have been
Designed with high accuracy input,
various ouput selection,usefuloptions
and good reliability at a competitive price.

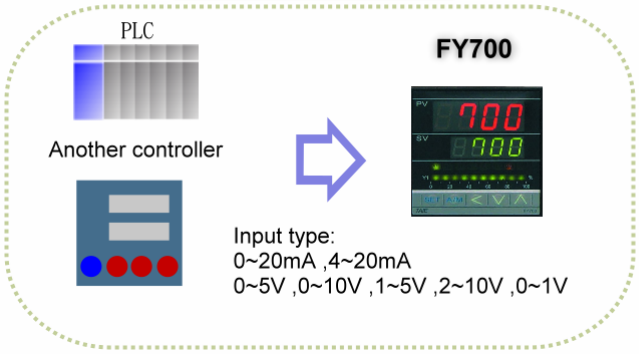
Features

Various I/O Types

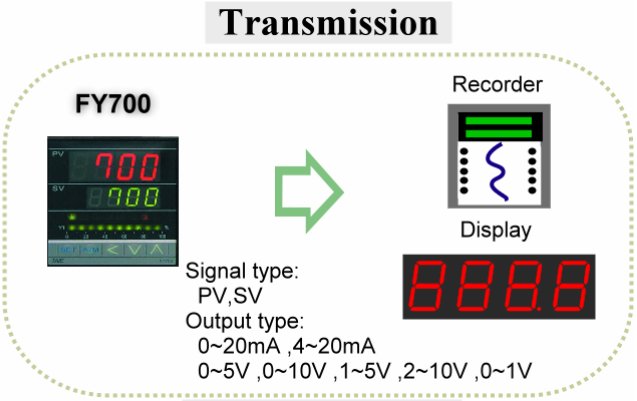


Peripheral Option

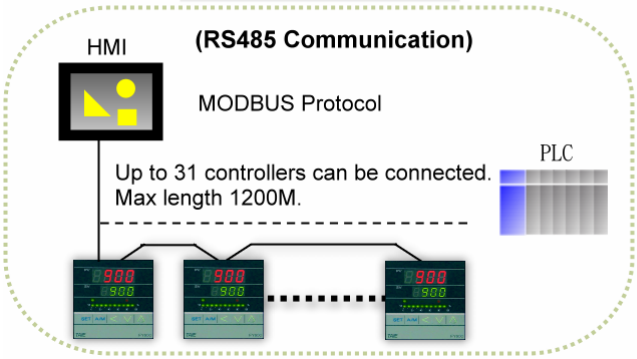
Remote SV



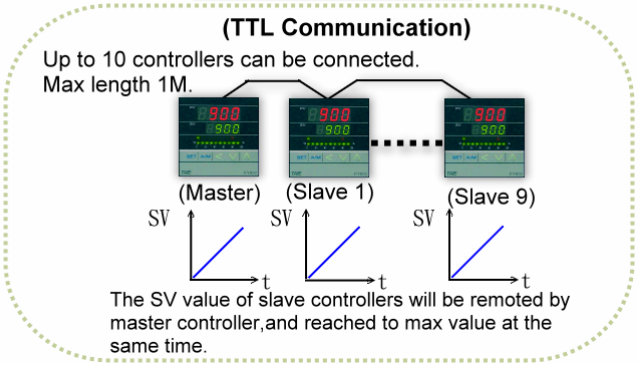
Transmission



Communication



Communication



Specifications

- **Standard spec.**

Model		**FY700**
Dimension		72X72mm
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		225g
Display Height		PV:14mm SV:10mm

● Optional Spec.

Model	FY700
Output 2	For heating and cooling control use. Relay , SSR , 4~20mA , 0~20mA , 0~5V , 0~10V , 1~5V , 2~10V
Alarm 2	SPST type
	3A , 220V , electrical life:100,000 times or more (under rated load)
Alarm 3	SPST type 3A , 220V , electrical life:100,000 times or more (under rated load)
Heater Break Alarm (HBA)	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
Transmission	Available for PV or SV transmission
	4~20mA , 0~20mA , 0~1V , 0~5V , 0~10V , 1~5V , 2~10V
Remote SV	4~20mA , 0~20mA , 0~1V , 0~5V , 0~10V , 1~5V , 2~10V
Communication	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.
Water/Dust proof	IP65

● Special control output (OUT1)

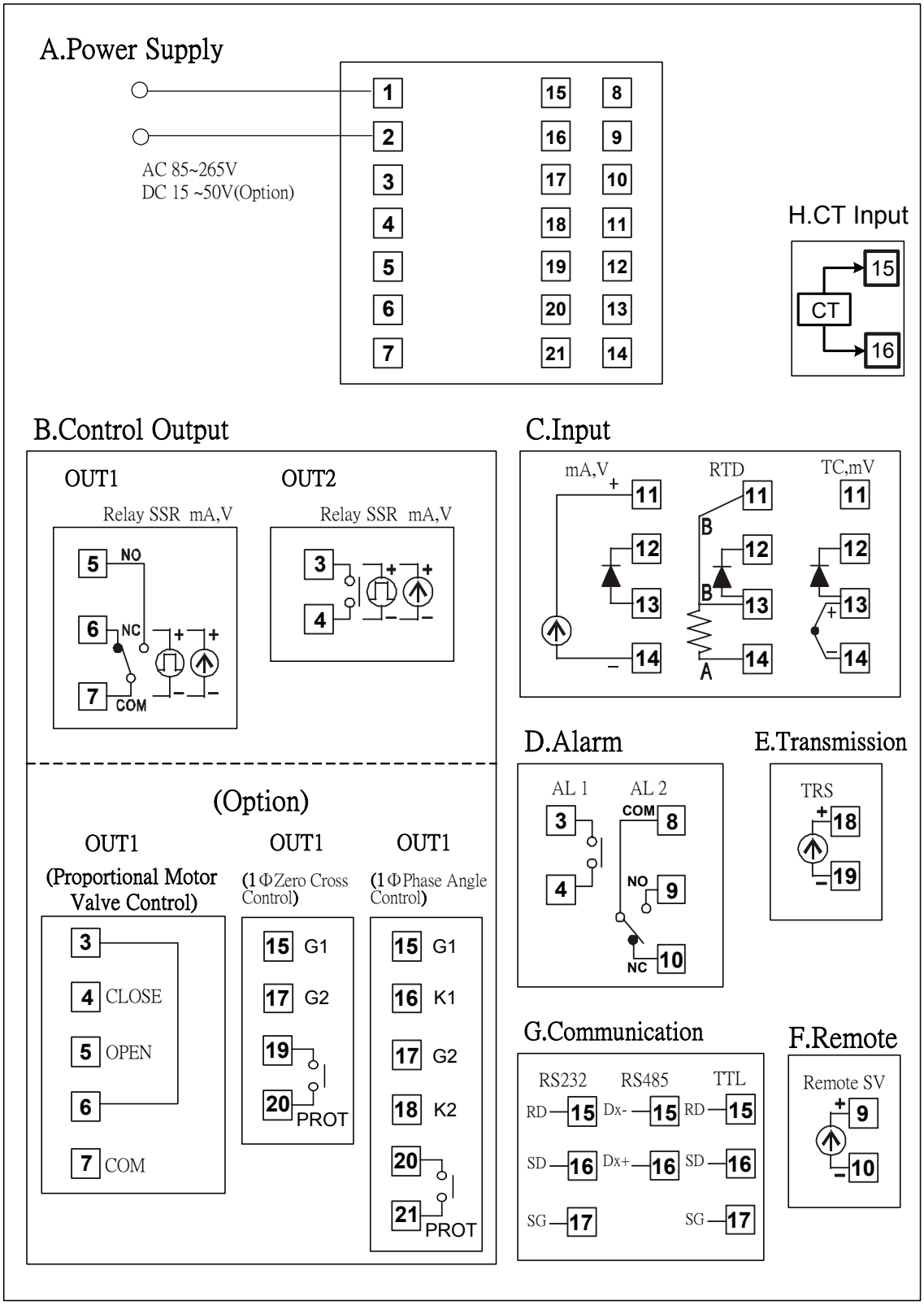
Model	FY700
1φ zero crossing control(1φSSR)	Available
1φ phase angle control(1φSCR)	Available

● Programmable RAMP/SOAK

Model	PFY700
Programmable RAMP/SOAK	2 patterns with 8 segments each. The 2 patterns can be linked together as 16 segments use.

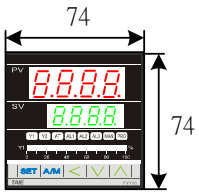
Terminal arrangement

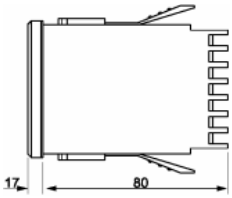
FY700 Terminals (72mm x 72mm)

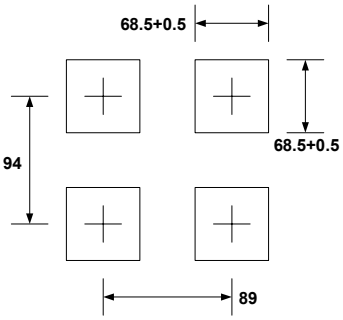


External dimension and panel cutout〈Unit：mm〉

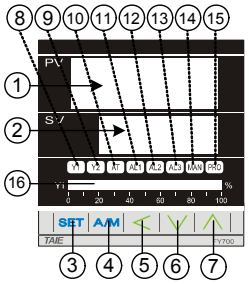
FY700







Parts description

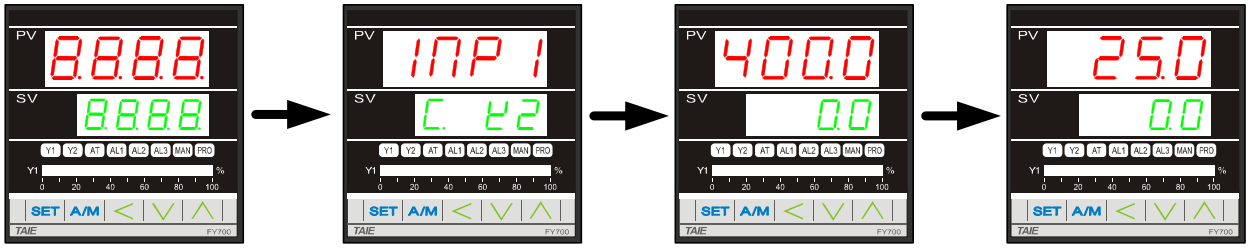


SYMBOL	NAME		FUNCTION
PV	①	**Measured value (PV) display**	**Displays PV or various parameter symbols (Red)**
SV	②	**Set value (SV) display**	**Displays SV or various parameter set values (Green)**
SET	③	**Set key**	**Used for parameter calling up and set value registration**
A/M	④	**Auto/Manual key**	**Switches between Auto(PID) output mode and Manual output mode.**
<	⑤	**Shift key**	**Shift digits when settings are changed**
V	⑥	**Down key** ***Program hold**	**Decrease numbers (-1000,-100,-10,-1)** **** Program hold*** ***〈Programmable controller〉***
∧	⑦	**Up key** ***Program run**	**Decrease numbers (+1000,+100,+10,+1)** **** Program run〈Programmable controller〉***
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 〈Programmable controller〉。**
OUT1%	⑯	**OUT% bar-graph display**	**Output% is displayed on 10-dot LED.**

Operations

Power On

Controller will display as below



All LED and 7 segment displays will be lighted

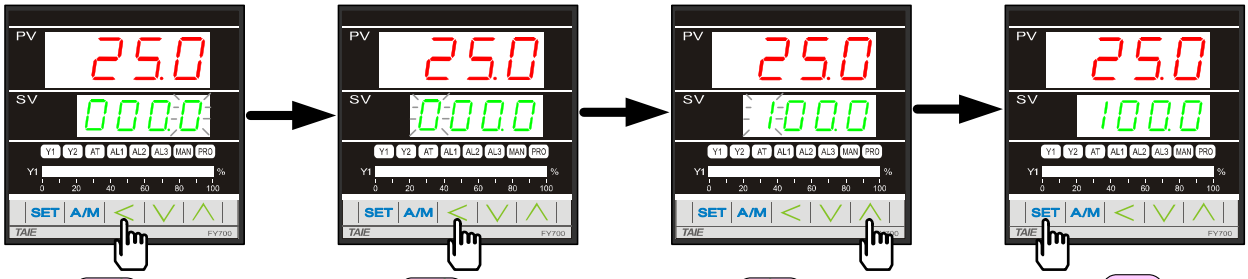
Display input type (K2)

Display range (0.0~400.0)

Ready for use

Change the Set Value (SV)

Change SV from 0.0 to 100.0



Press < key. The SV number started to flash. The flashing digit indicates which digit can be set.

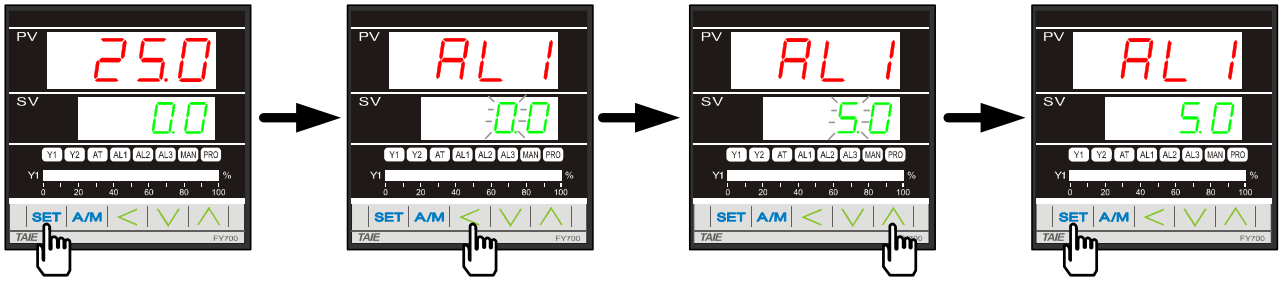
Press < key to select the hundreds digit.

Press ∧ key to change the number to 1

Press SET key to store the new set value.

Change the Alarm Value

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



Press SET key to display parameter AL1

Press < key to change AL1 value

Press ∧ key increase AL1 value

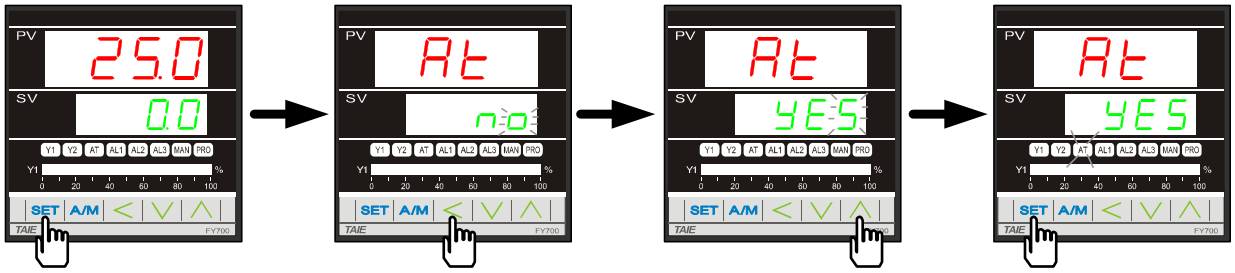
Press SET key store the new value of AL1

* The are total 16 alarm mode types, please referred with “alarm mode” in page 30

* To change alarm mode, press SET + < 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.



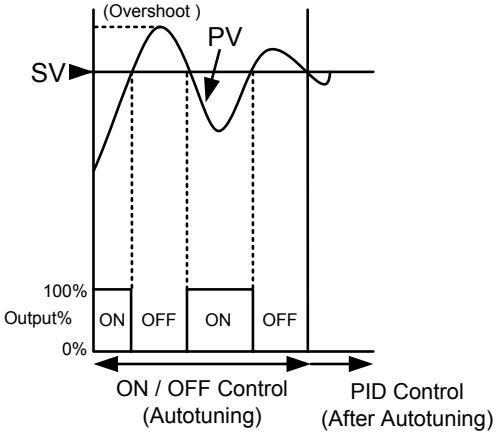
Press SET key to display parameter AT.

Press < key to change AT setting

Press ∧ key change AT to "YES"

Press SET key Start auto tuning (AT lamp will be lighted on)

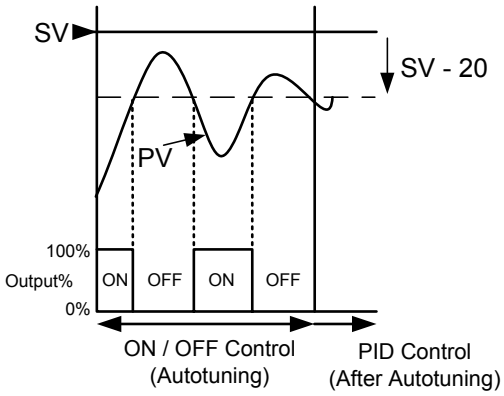
Autotuning
ATVL=0



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

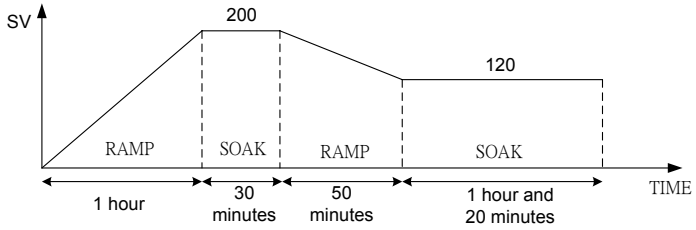
Possible cause 1： ATVL is too big. (If not sure，set ATVL=0)

Possible cause 2：Calculation time is too long.
(Set PID parameter manually)

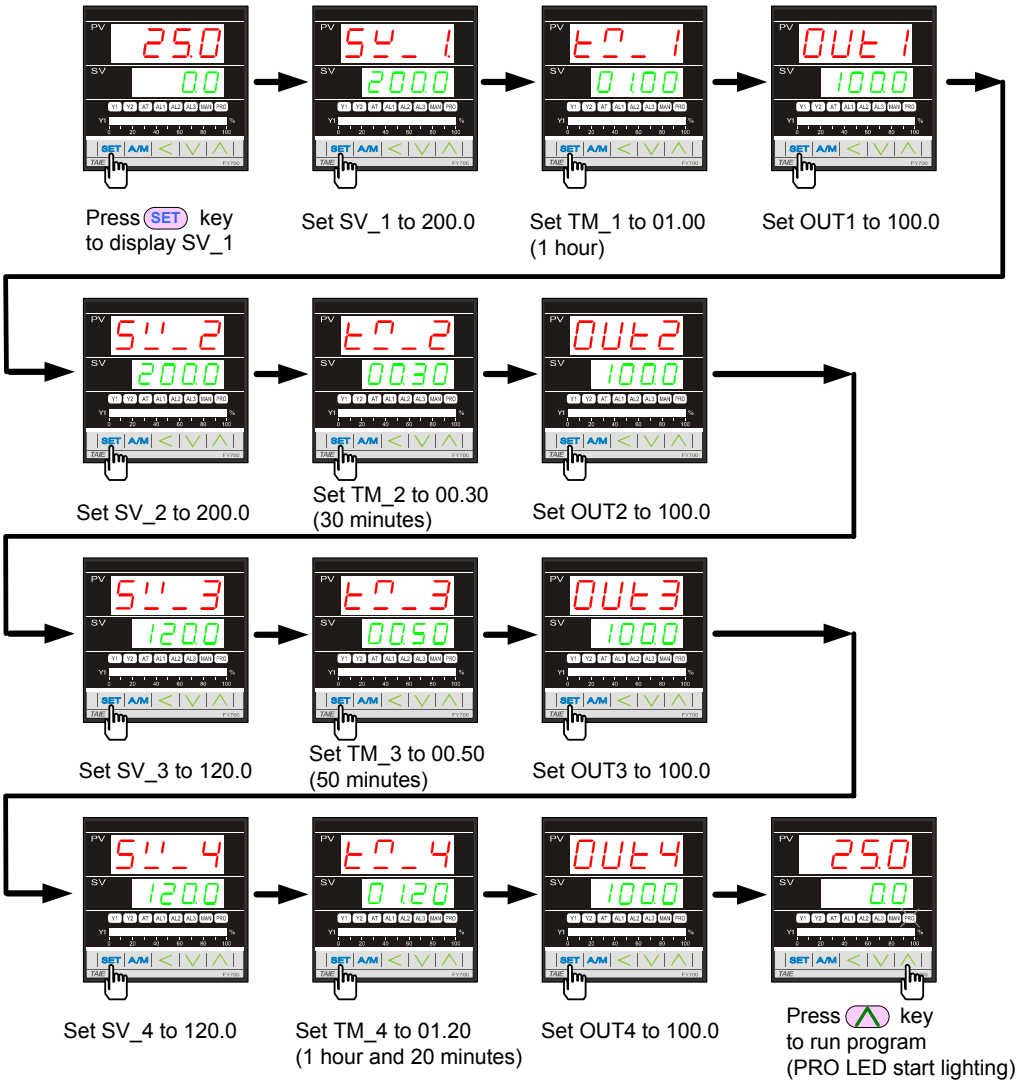
Programmable RAMP / SOAK (Only available for PFY model)

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

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



Please operate conroller as following steps:



Operation levels

Levels diagram