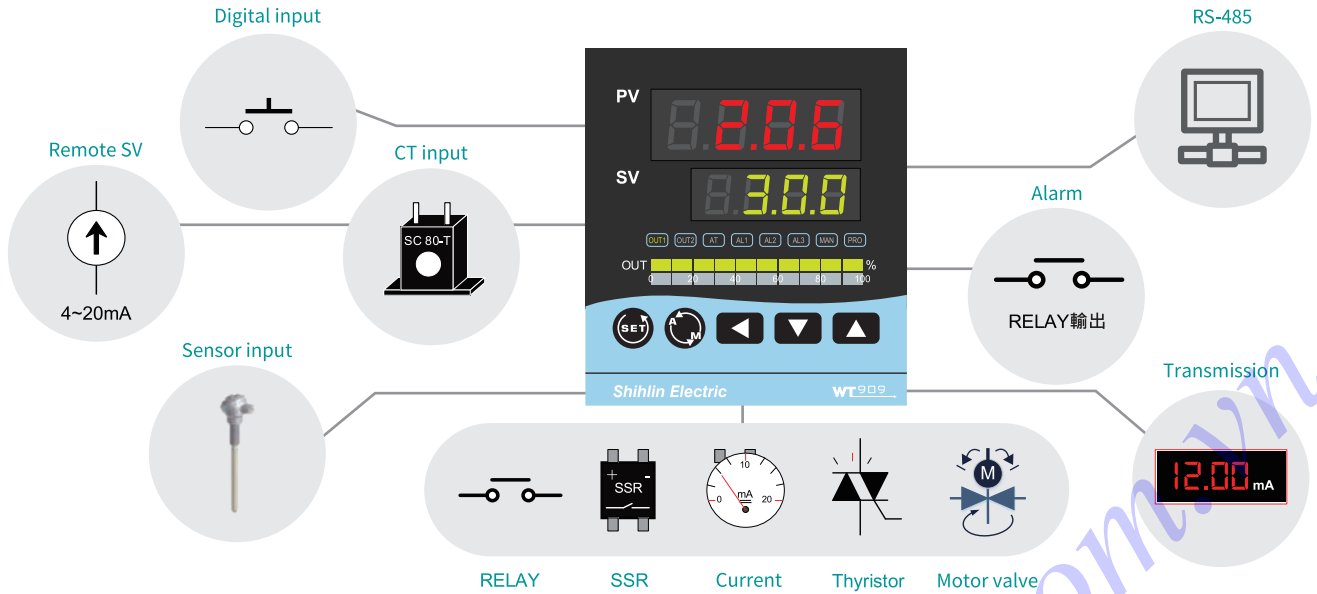
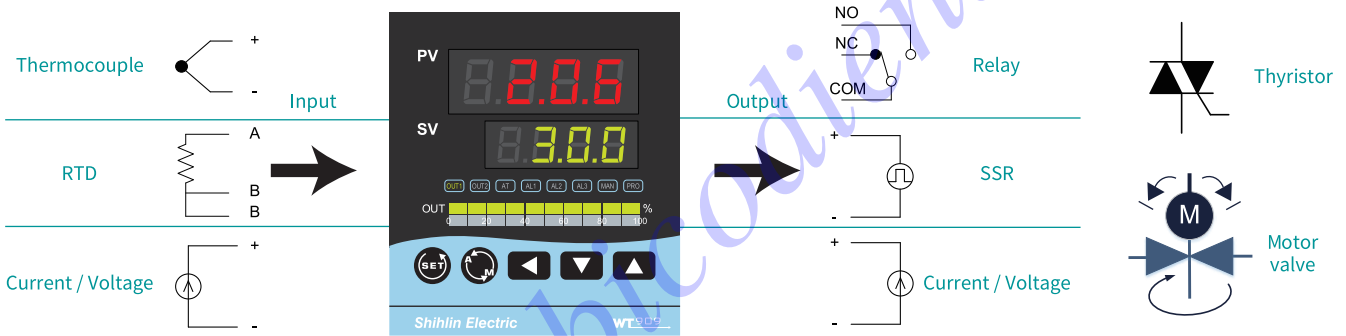


# Function block diagram

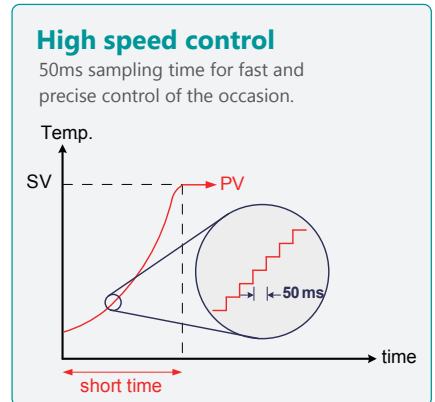
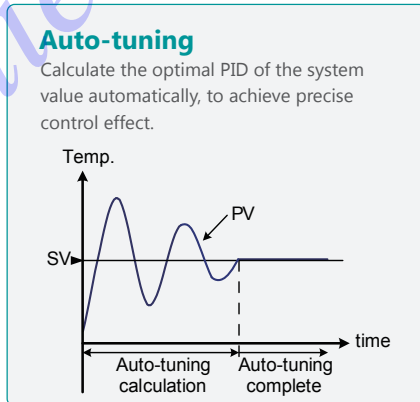
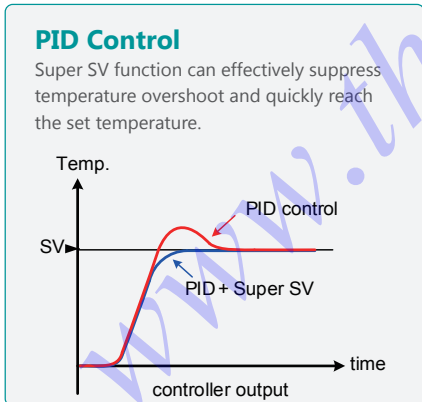


## Features

### Various I/O Types

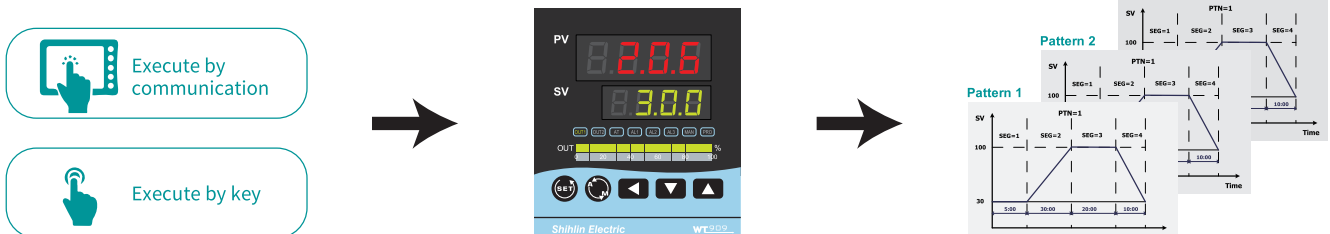


### Excellent Control Performance



### Powerful Program Control

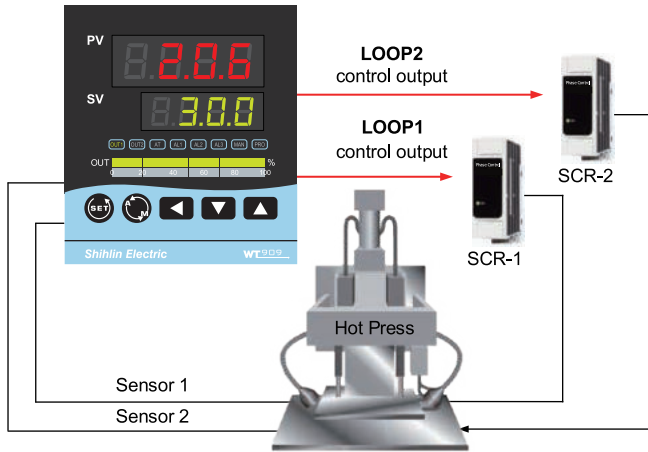
Provides 15 patterns of 10 segments of program control, each segment can be arbitrarily set to ramp, soak, step or cool down temperature, the user can be arbitrary according to the demand, the maximum can support to 150 segments program control.



# Features

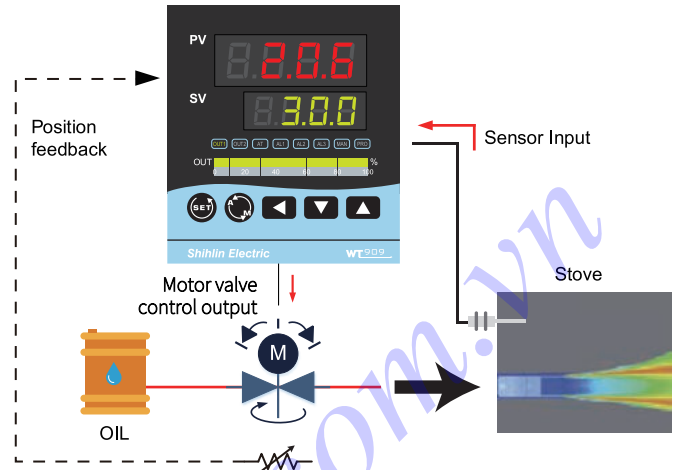
## Double Loop Control

Double Loop design, accept two sensor inputs at the same time, independently control two systems, effectively reduce system costs.



## Motor Valve Control

Can use position feedback control of valve opening input or servo control without valve opening input.

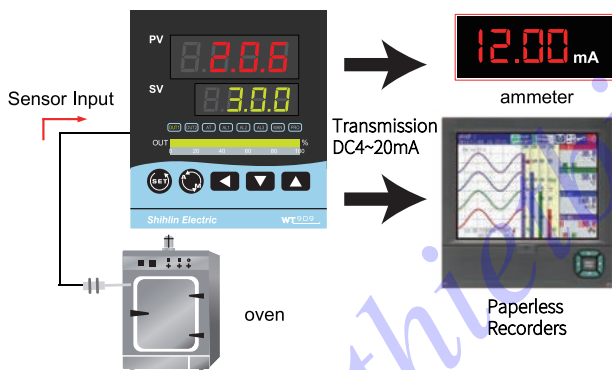


## Transmission

Transfer parameter digital values as analog signals to external devices.

signals : 0~20mA , 4~20mA , 0~5V , 1~5V , 0~10V ...

parameters : SV1, PV1, MV1...

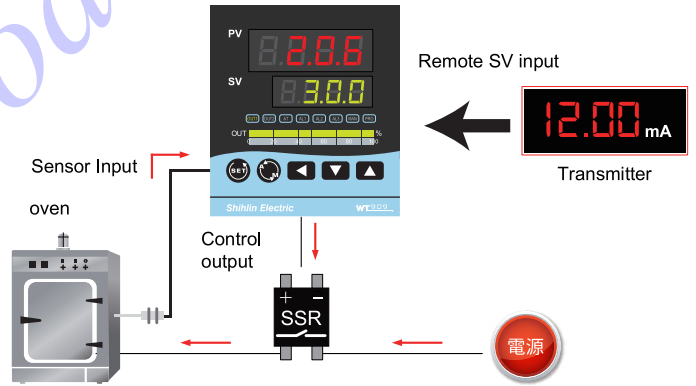


## Remote SV

SV value is controlled by an analog signal from an external device.

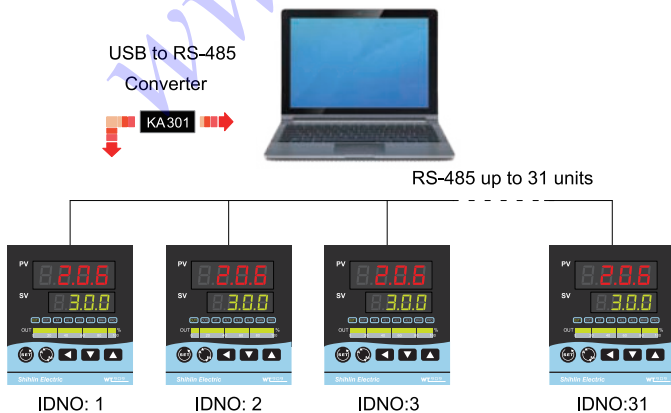
signals : 0~20mA , 4~20mA , 0~5V , 1~5V , 0~10V ...

parameters : SV



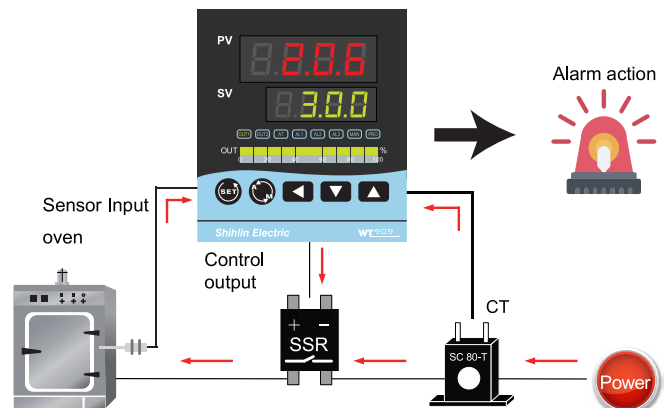
## Communication

Compatible with Modbus RTU communication protocol to quickly establish links with HMI, PLC or SCADA software.



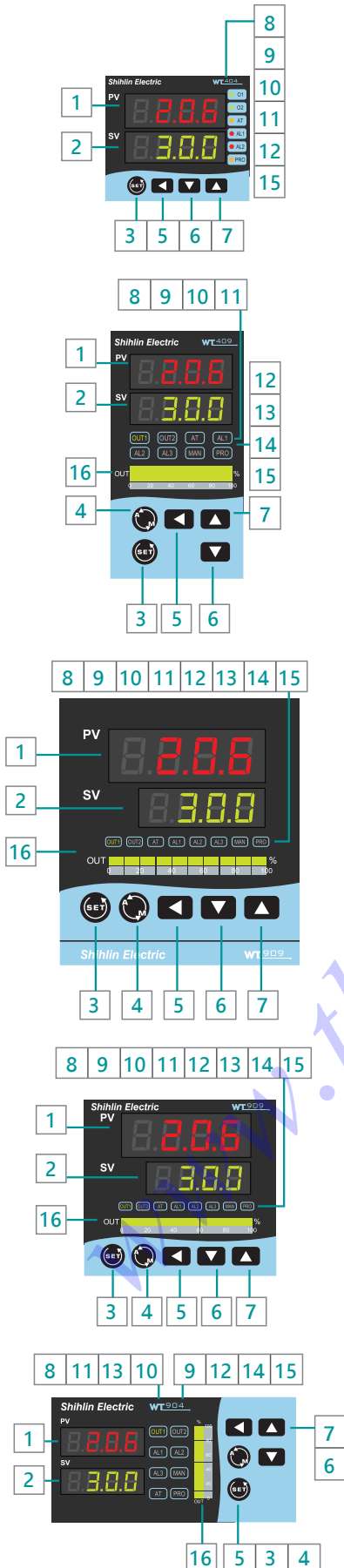
## Heater Break Alarm(HBA)

With a CT (current transformer) to monitor the heater current in real time, when the current value is abnormally reduced an alarm signal can be output to notify the user.



# Appearance

## Parts Description



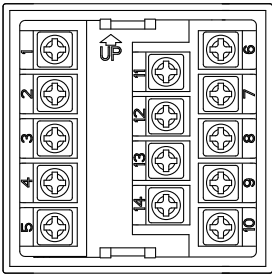
NO.	NAME	Function
1	PV	Indicates PV (measured value) and character information such as parameter codes and error codes (Red)
2	SV	Indicates SV (target set value) and parameter Values (Green)
3	SET	Used for parameter calling up and set value registration
4	A/M	Auto/manual switch or others function start
5	<	Shift digits when settings are changed
6	∨	Decrease Key (-1000,-100,-10,-1)
7	∧	Increase Key (+1000,+100,+10,+1)
8	OUT1	Lamp lit when OUT1 is activated (Green)
9	OUT2	Lamp lit when OUT2 is activated (Green)
10	AT	Lamp lit when Auto-tuning is activated (Orange)
11	AL1	Lamp lit when Alarm 1 is activated (Red)
12	AL2	Lamp lit when Alarm 2 is activated (Red)
13	AL3	Lamp lit when Alarm 3 is activated (Red)
14	MAN	Lamp lit when controller in manual mode or get error condition (Orange)
15	PRO	Lights when program running (Orange)
16	OUT1%	Output percentage (Green)

# External and Panel Cutout Dimensions

<p><b>WT404</b></p>		<p>Mounting fixture t (panel thickness) 1~t-6</p>	
<p><b>WT409</b></p>		<p>Mounting fixture t (panel thickness) 1~t-6</p>	
<p><b>WT707</b></p>		<p>Mounting fixture t (panel thickness) 1~t-6</p>	
<p><b>WT904</b></p>		<p>Mounting fixture t (panel thickness) 1~t-6</p>	
<p><b>WT909</b></p>		<p>Mounting fixture t (panel thickness) 1~t-6</p>	

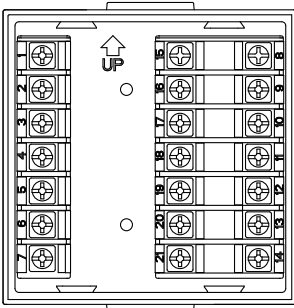
# Terminal Arrangement

## WT404



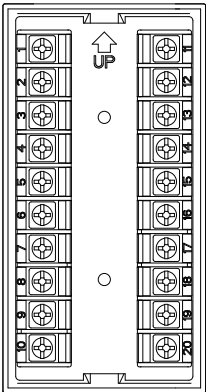
<b>Power</b>		<b>Communication</b>		<b>Motor valve</b>	
<b>Output-1</b>		<b>1 Φ Zero cross</b>		<b>Remote/CT Input</b>	
<b>Output-2</b>				<b>TRS</b>	
<b>Alarm-1 Alarm-2</b>		<b>DI Input</b>		<b>Input</b>	

## WT707



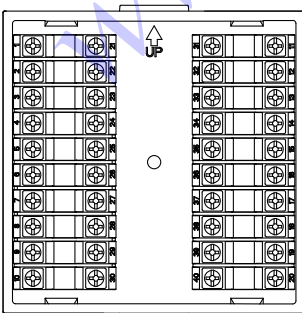
<b>Power</b>		<b>Alarm-1 Alarm-2 Alarm-3</b>		<b>1 Φ Zero cross Phase angle</b>	
<b>Output-1</b>		<b>Communication</b>			<b>DI Input</b>
<b>Output-2</b>		<b>TRS</b>		<b>Input</b>	
<b>Motor valve</b>		<b>Remote CT Input</b>			

## WT409/904



<b>Power</b>		<b>Alarm-1 Alarm-2 Alarm-3</b>		<b>DI Input</b>	
<b>Output-1</b>		<b>Communication</b>		<b>Input-1</b>	
<b>Output-2</b>				<b>Input-2</b>	
<b>Motor valve</b>		<b>TRS</b>		<b>Remote/CT Input</b>	

## WT909



<b>Power</b>		<b>Alarm-1 Alarm-2 Alarm-3</b>		<b>1 Φ / 3 Φ Zero cross</b>	
<b>Output-1</b>		<b>Communication</b>			<b>1 Φ Phase angle</b>
<b>Output-2</b>		<b>TRS</b>		<b>Input-1</b>	
<b>DI Input</b>		<b>Remote/CT Input</b>			<b>Input-2</b>
<b>Motor valve</b>		<b>Input-1</b>			

# Specifications

Standard Spec.	
<b>Supply voltage</b>	AC 85 ~ 265V DC 24V ±10%
<b>Power Consumption</b>	AC approx. 6VA DC approx. 4W
<b>Memory</b>	Non-volatile memory Maximum writes : 1000,000 times Data retention : 10 years
<b>Operating temperature</b>	0~50°C (32~122°F)
<b>Humidity range</b>	20% ~ 90% RH
<b>Weight</b>	WT404 approx. 120g WT409 approx. 170g WT707 approx. 150g WT904 approx. 170g WT909 approx. 230g
<b>Dimension (mm)</b>	WT404 48W X 48H X 95.5L (1/16 DIN) WT409 48W X 96H X 95.5L (1/8 DIN) WT707 72W X 72H X 95.5L (3/16 DIN) WT904 96W X 48H X 95.5L (1/8 DIN) WT909 96W X 96H X 95.5L (1/4 DIN)
<b>Operating environment</b>	Non-corrosive, flammable gas, slight dust ring environment, no high frequency, no direct shock, places the sun is not directly exposed.
Input	
<b>Set</b>	Maximum 2 sets
<b>Accuracy</b>	Cold junction compensation diode external ±(0.1% of reading + 1 digit) Cold junction compensation diode inside ±(0.3% of reading + 1 digit)
<b>Sampling time</b>	50ms
<b>TC</b>	K · J · R · S · B · E · N · T · W · PLII · L
<b>RTD</b>	PT100
<b>mA dc</b>	0~5V · 0~10V · 0~2V · 1~5V 2~10V · 0~25mV · 0~50mV · 0~20mA · 4~20mA · 0~1V · 10~50mV · 0~70mV
<b>Input filter</b>	First-order low-pass filter Time constant : 0.1 to 10.0 sec.(When set to 0, the filter is off)
<b>PV compensation</b>	Both zero and high points can be compensated
Output	
<b>Set</b>	Maximum 2 sets
<b>Control</b>	1.PID, P, PI, and PD control (including AT function) 2.ON/OFF control 3.Heat and Cooling PID control (including AT function)
<b>Relay</b>	1.SPST-NO, 250VAC, 5A Electrical life : 100,000 times 2.SPDT-NO, 250VAC, 5A Electrical life : 50,000 times 3.SPDT-NC, 250VAC, 2A Electrical life : 20,000 times
<b>SSR</b>	ON : 24 V OFF: 0V Maximum load current : 20mA With short circuit protection circuit
<b>mA</b>	Resolution: 10 bits Signal type: 4~20mA, 0~20mA, 0~5V, 0~10V, 1~5V, 2~10V
Heater Break Alarm (HBA)	
<b>CT model</b>	SC-80T, SC-100T
<b>Maximum current</b>	SC-80T : 80A, SC-100T : 100A
<b>Accuracy</b>	SC-80T : ±3%, SC-100T : ±5%
<b>Aperture</b>	SC-80T : 5.9mm, SC-100T : 12.6mm
<b>Output</b>	Free load alarm 1~3

Alarm	
<b>Set</b>	Maximum 3 sets
<b>Mode</b>	Program end, System error, HBA, Soak timer, Deviation high, Deviation low, Band, Process high, Process low, Program run, System normal, Ramp Soak Timer, Timer, Counter, 24H Timer
<b>Relay specifications (resistive load)</b>	1.SPST-NO, 250VAC, 5A Electrical life: 100,000 times 2.SPDT-NO, 250VAC, 5A Electrical life: 50,000 times 3.SPDT-NC, 250VAC, 2A Electrical life: 20,000 times
Timer	
<b>set</b>	1 set
<b>Time Format</b>	Hour : Minute. or Minute : second
<b>Maximum Time</b>	99hr.59min · 99min.59sec
<b>output</b>	Free load alarm 1~3
Transmission	
<b>set</b>	1 set
<b>Resolution</b>	14 bits
<b>Accuracy</b>	0.1%
<b>Parameters</b>	SV1, PV1, MV1, SV1R, PV1R, MV1R, SV2, PV2, MV2, SV2R, PV2R, MV2R
<b>Signal Type</b>	4~20mA, 0~20mA, 0~5V, 0~10V, 1~5V, 2~10V
Remote	
<b>set</b>	1 set
<b>Resolution</b>	18 bits
<b>Parameters</b>	Local SV
<b>Signal Type</b>	4~20mA, 0~20mA, 0~5V, 0~10V, 1~5V, 2~10V
Motor Valve	
<b>set</b>	1 set
<b>Resolution</b>	18 bits
<b>Parameters</b>	PV2
<b>Signal Type</b>	1KΩ or 560Ω
Digital Input	
<b>set</b>	2 sets
<b>External contact specifications</b>	Dry contact without electricity Open circuit : over 500KΩ Short circuit : less 10Ω
<b>Function</b>	1.SV switching 2.RUN/STOP switching 3.Manual switching 4.AT RUN/STOP 5.Remote SV RUN/STOP 6.Retransmission RUN/STOP 7.Timer RUN/STOP 8.Counter 9.Program RUN/STOP
Communication	
<b>Communication</b>	RS-485
<b>Protocol</b>	Modbus RTU, TAIE
<b>Baud rate</b>	2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
<b>Communication format configuration</b>	1. Starting bit : 1 2. Information bits : 8 3. Bit check : None, Odd, Even 4. Stop bits : 1 or 2
<b>Reponses time</b>	0~250ms
<b>Maximum connections</b>	31pcs

# Order Information

Model	Output 1	Output 2	Alarm	TRS	Remote	COMM	Input type	Power	Accessories
WT404 48x48 mm	1	0	1	0	0	0	0 1	A	A
WT409 48x96 mm	0	0	0	0	0	0	See input type table code	A AC 85~265V	A Normal
WT707 72x72 mm	1	1	1	1	1	3		D DC 24V	B Program
WT904 96x48 mm	2	2	2	2	2	B			
WT909 96x96 mm	3	3	3	3	3	C			
	4	4	A	A	A				
	0~20mA	0~20mA	B	B	B				
	A 0~5V	A 0~5V	C	C	C				
	B 0~10V	B 0~10V	A HBA	D	D				
	C 1~5V	C 1~5V	B HBA+AL2		E				
	D 2~10V	D 2~10V	C HBA+AL2+AL3		F				
	5 1φSCR zero cross control				M				
	6 3φSCR zero cross control				J				
	7 Motor valve control				K				
	8 1φSCR phase angle control				L				

※1 Block means optional functions with additional charge  
 ※2 HBA :Heater Break Alarm (HBA must use AL 1 as alarm relay)  
 ※3 The Second Input WT904/409/909

## Combination of options and models

○:Available X:Available \* Remote SV function is not available ,if HBA function has been spcified

Model	OUT1				OUT2	Alarm2	Alarm3	HBA	Trans- mission	Remote SV	Second input	Communi- cation	Power DC24V	Program
	1ØSCR zero cross control	3ØSCR zero cross control	Motor valve control	1ØSCR phase angle control										
WT404	○	X	○	X	○	○	X	○	○	○	X	○	○	○
WT707	○	X	○	○	○	○	○	○	○	○	X	○	○	○
WT409	X	X	○	X	○	○	○	○	○	○	○	○	○	○
WT904	X	X	○	X	○	○	○	○	○	○	○	○	○	○
WT909	○	○	○	○	○	○	○	○	○	○	○	○	○	○

## Input Type Table

TYPE	Thermocouple														RTD		
	K		J		R	S	B	E	N	T	W	PLII	L	PT100			
	K1	K2	J1	J2	R	S	B	E	N	T1	T2	W	PLII	L	DP1	DP2	DP3
Code	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
Range °C	600.0	1200	400.0	1200	1760	1760	1820	900	1300	400.0	400	2320	1200	800	850.0	850	850
	-50.0	-50	-50.0	-50	-50	-50	-50	-50	-50	-199.9	-199	-50	-50	-50	-199.9	-199	0

TYPE	LINEAR											
	AN1	AN2						AN3	AN4			
	Code	18	19	20	21	22	23	24	25	26	27	28
Range	0~25mV	0~50mV	0~20mA	0~1V	0~2V	0~5V	0~10V	0~70mV	4~20mA	10~50mV	1~5V	2~10V
	4 kinds of choices : -1999~9999 -199.9~999.9 -19.99~99.99 -1.999~9.999											