

# T3S/T3H/T4M/T4L

## Digital switch setting type, temperature controller

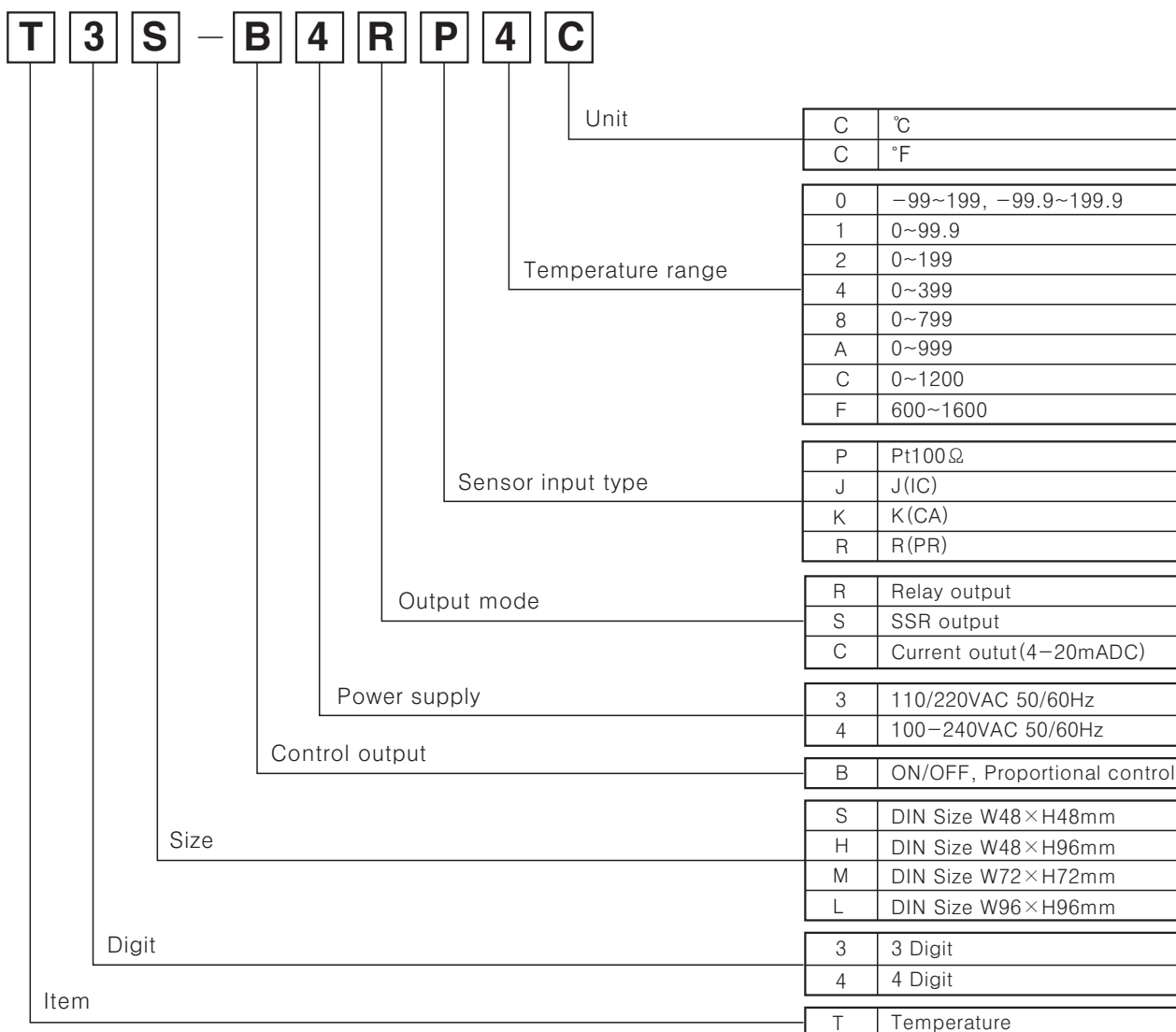
### Features

- Out dimensions by DIN specification
- Accuracy : F · S  $\pm 0.5\%$
- Free power : T3S Series



**⚠ Please read "Caution for your safety" in operation manual before using.**

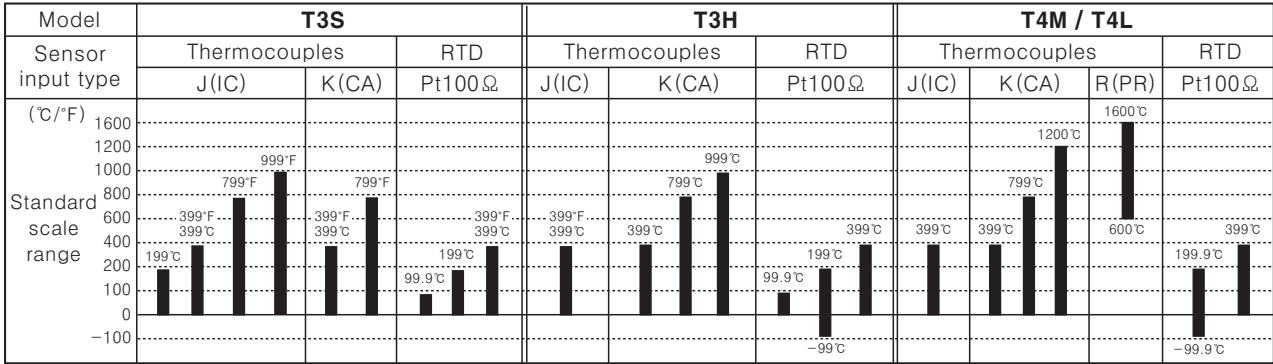
### Ordering information



※Please check the range of temperature when select model. (Please see C-22)

# Digital Switch Setting Type

## Temperature range for each sensor



\* Only T3S series is available °F degree for above Temp. range.

## Specifications

Model	T3S	T3H	T4M	T4L
Power supply	100–240VAC 50/60Hz	110/220VAC 50/60Hz		
Allowable voltage range	90~110% of rated voltage			
Power consumption	5VA	3VA		
Display method	7Segment LED Display			
Character size	W4×H8mm	W6×H10mm	W7.2×H9.8mm	W9.5×H14.2mm
Display accuracy	F · S ± 1% rdg ± 1digit	F · S ± 0.5% rdg ± 1digit		
Setting type	Digital switch setting			
Setting accuracy	F · S ± 1%	F · S ± 0.5%		
Sensor input	●Thermocouples : K(CA), J(IC), R(PR) / RTD : Pt100Ω There is no R(PR) in T3S, T3H series			
Input line resistance	●Thermocouples : Max. 100Ω ●RTD : Max. 5Ω per a wire			
Control	ON/OFF	Hysteresis : F · S 0.5% ± 0.2% Fixed <input type="checkbox"/>	Hysteresis : F · S 0.2~3%	
	Proportional	Proportional band : F · S ± 3% fixed, Period : 20sec. fixed <input type="checkbox"/>	Proportional band : F · S 1~10% variable, Period : 20sec. fixed <input type="checkbox"/>	
Reset VR range	F · S ± 3% variable			
Control output	●Relay output : 250VAC 2A 1c ●SSR output : 12VDC ± 3V 20mA max. ●Current output : 4~20mADC Load 600Ω max.	●Relay output : 250VAC 3A 1c ●SSR output : 12VDC ± 3V 20mA max. ●Current output : 4~20mADC Load 600Ω max.		
Self-diagnosis	Built-in burn out function			
Insulation resistance	Min. 100MΩ (at 500VDC)			
Dielectric strength	2000VAC 50/60Hz for 1 minute			
Noise strength	± 1kV the square wave noise (pulse width: 1μs) by the noise simulator			
Vibration	Mechanical	0.75mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 1 hour		
	Malfunction	0.5mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 10 minutes		
Shock	Mechanical	300m/s <sup>2</sup> (Approx. 30G) 3 times at X, Y, Z direction		
	Malfunction	100m/s <sup>2</sup> (Approx. 10G) 3 times at X, Y, Z direction		
Relay life cycle	Mechanical	Min. 10,000,000 times		
	Electrical	Min. 100,000 times (250VAC 3A at resistive load)		
Ambient temperature	-10 ~ +50°C (at non-freezing status)			
Storage temperature	-25 ~ +65°C (at non-freezing status) <input type="checkbox"/>			
Ambient humidity	35~85%RH			
Weight	Approx. 196g	Approx. 496g	Approx. 399g	Approx. 468g

(A) Counter

(B) Timer

(C) Temp. controller

(D) Power controller

(E) Panel meter

(F) Tacho/Speed/Pulse meter

(G) Display unit

(H) Sensor controller

(I) Proximity sensor

(J) Photo electric sensor

(K) Pressure sensor

(L) Rotary encoder

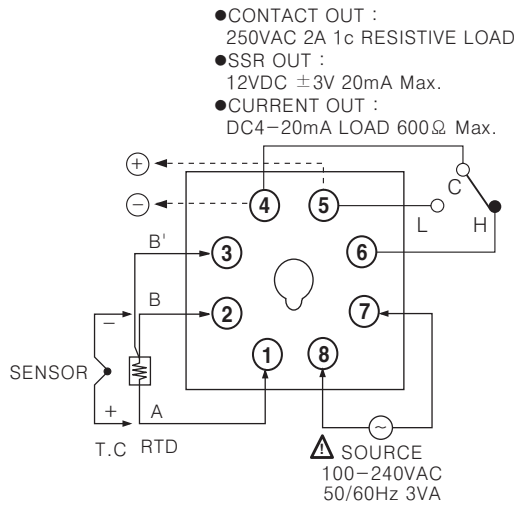
(M) 5-Phase stepping motor & Driver & Controller

# T3S/T3H/T4M/T4L

## Connections

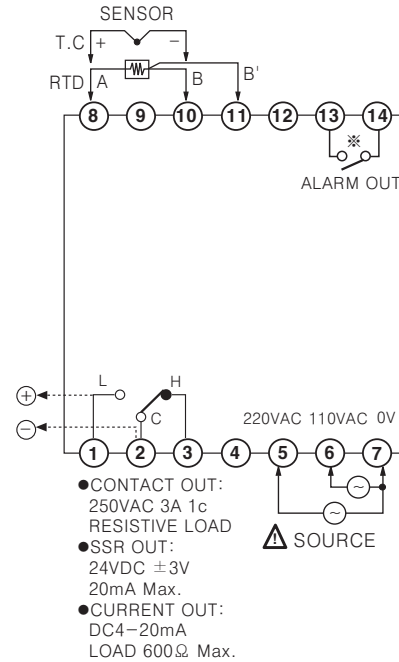
※RTD(Resistance temperature detector) : Pt 100Ω(3-wire type) ※Thermocouple : K, J, R

### ●T3S

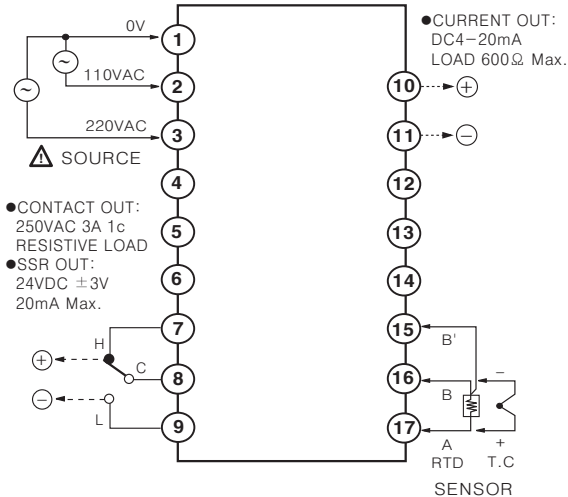


### ●T4M

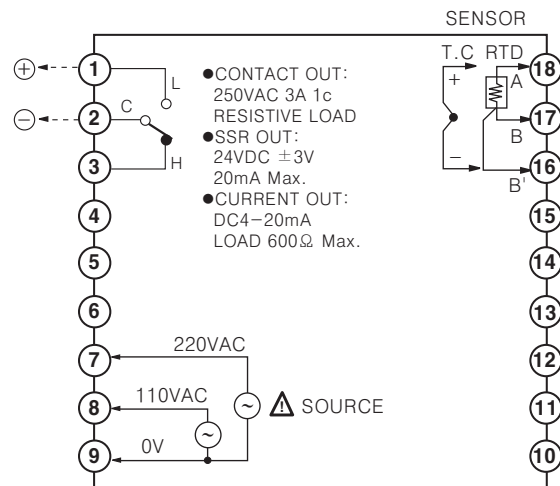
※Although T4M has an alarm terminal, it does not work since it uses the same case with T4MA.



### ●T3H



### ●T4L

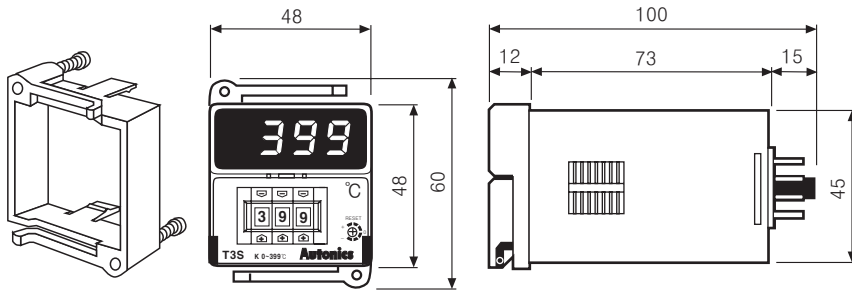


# Digital Switch Setting Type

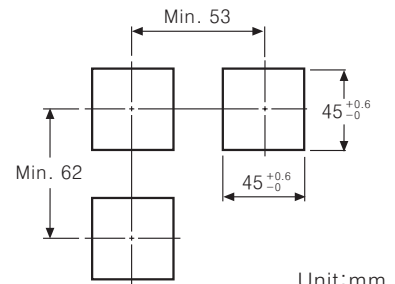
## Dimensions

### ●T3S

#### ●Bracket



#### ●Panel cut-out



Unit:mm

(A)  
Counter

(B)  
Timer

(C)  
Temp.  
controller

(D)  
Power  
controller

(E)  
Panel  
meter

(F)  
Tacho/  
Speed/  
Pulse  
meter

(G)  
Display  
unit

(H)  
Sensor  
controller

(I)  
Proximity  
sensor

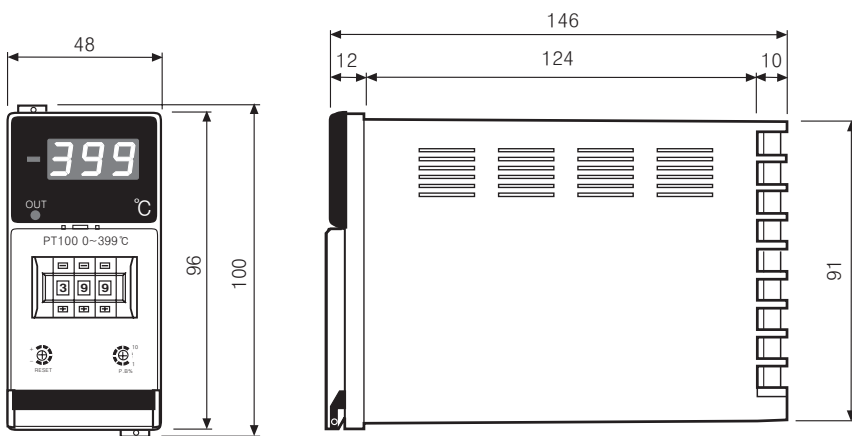
(J)  
Photo  
electric  
sensor

(K)  
Pressure  
sensor

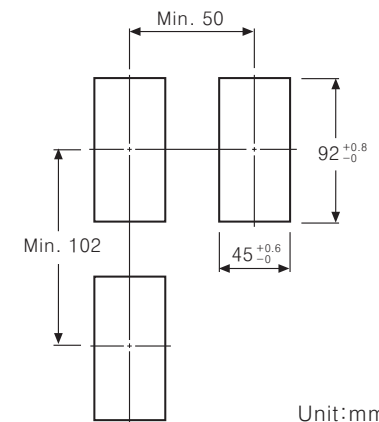
(L)  
Rotary  
encoder

(M)  
5-Phase  
stepping  
motor &  
Driver &  
Controller

### ●T3H

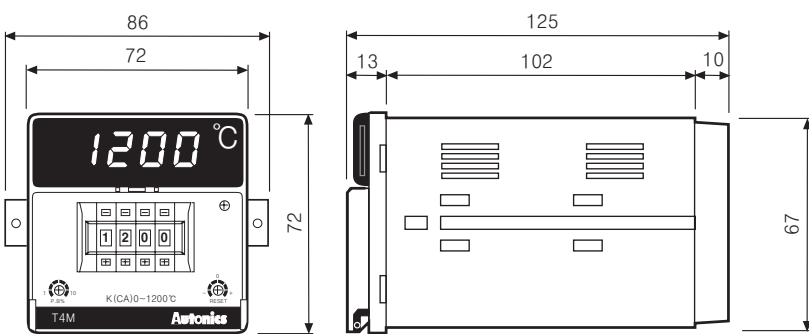


#### ●Panel cut-out

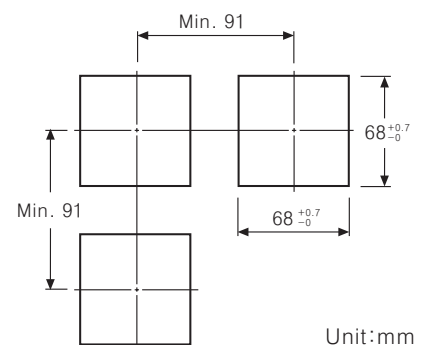


Unit:mm

### ●T4M

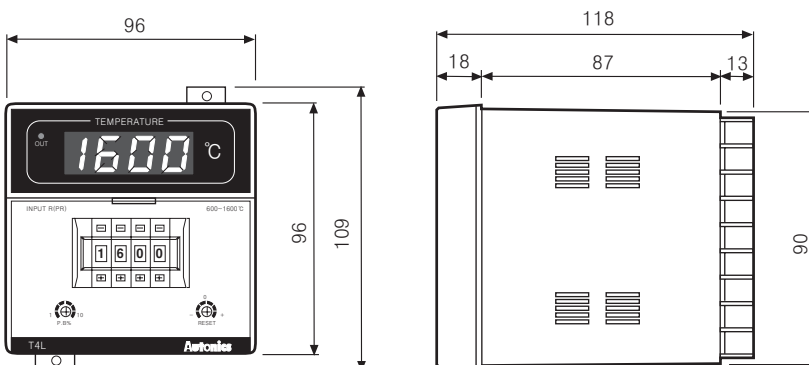


#### ●Panel cut-out

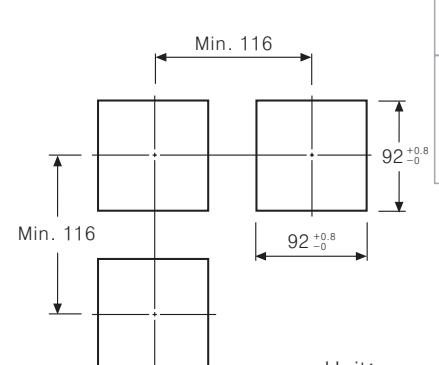


Unit:mm

### ●T4L



#### ●Panel cut-out

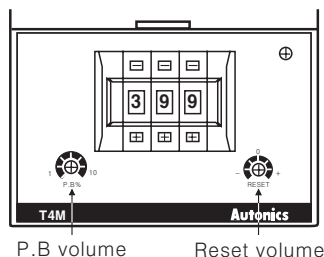


Unit:mm

# T3S/T3H/T4M/T4L

## ■ Proper usage

### ◎ Using front volume



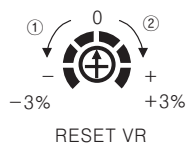
#### ● P.B volume

:In case of ON/OFF control, set variable F.S 0.2~3% of hysteresis, and in case of proportional control, set variable F.S 1~10% of hysteresis.

However, hysteresis(F.S 0.5%) and proportional band(F.S 3%) are fixed in T3S.

#### ● Reset volume

:Adjusting the offset generated by using proportional control. Adjusting range of reset volume is F.S  $\pm 3\%$ . Do not change the reset volume when using ON/OFF control.



① Turn left when offset value is higher than set value. (Direction ①)

② Turn right when offset value is lower than set value. (Direction ②)

### ◎ Normal • Reverse operation

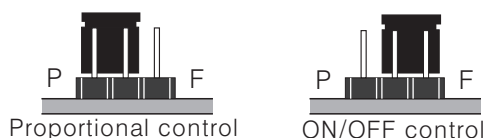
Reverse operation outputs ON when processing value is lower than setting value, and it is used with reverse operation when heated.

On the contrary, normal operation runs conversely and used for cooling. (This item runs as a reverse operation)

### ◎ How to select ON/OFF or proportional by plug pin

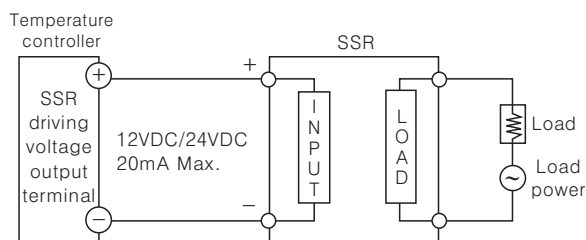
How to select ON/OFF or proportional by plug pin  
Factory specification is proportional control.

When using ON/OFF control, transfer the switch of control mode from P to F after detaching the case from its body.



### ◎ Application of temperature controller and load connection

#### ● SSR output connection

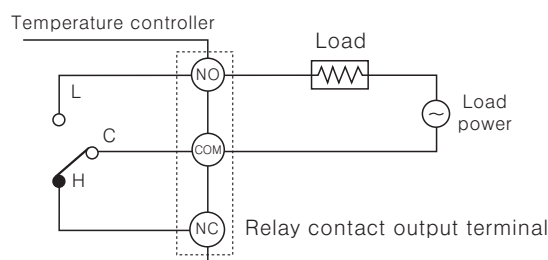


※ When using SSR driving voltage in the other purposes, do not over the range of rated current.

※ Please aware that each series has different SSR voltage for driving.

Model	SSR output voltage	Load current
T3S	12VDC	Max. 20mA
T3H/T4M/T4L	24VDC	

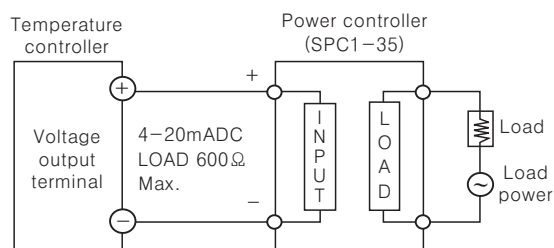
#### ● Relay output connection



※ Be aware that each model has different contact capacity of RY. When load capacity is high, please use sub relay, which has high contact capacity.

Model	Relay contact capacity
T3S	250VAC 2A
T3H	250VAC 3A
T4M	
T4L	

#### ● Current output connection



※ The current value of 4~20mADC is available at lower than 600Ω of resistive load.