

# Alarm Output Type

## ALARM, SUB output type

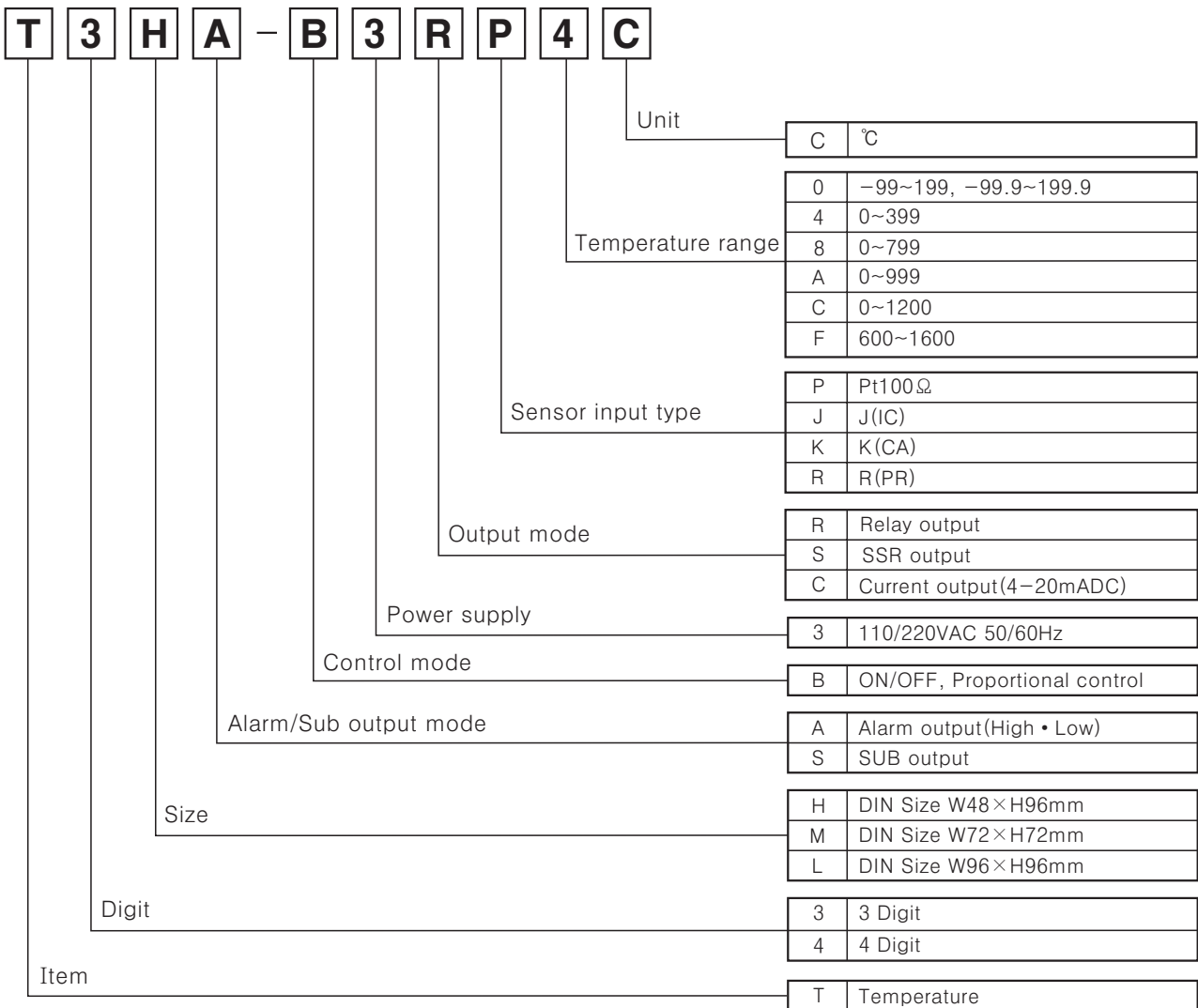
### ■ Features

- Alarm, SUB output type
- High accuracy measurement :  $\pm 0.5$
- Various size available



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

### ■ Ordering information



- (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

※ Please check the range of temperature when select model. (Please see C-27 page)

# T3HA/T3HS/T4MA/T4LA

## Temperature range for each sensor

Model	T3HA			T3HS			T4MA / T4LA			
	Thermocouples		RTD	Thermocouples		RTD	Thermocouples			RTD
	J(IC)	K(CA)	Pt100Ω	J(IC)	K(CA)	Pt100Ω	J(IC)	K(CA)	R(PR)	Pt100Ω
Standard scale range (°C)										
	<p>Standard scale range (°C):</p> <ul style="list-style-type: none"> <li>T3HA J(IC): 399°C</li> <li>T3HA K(CA): 399°C, 799°C, 999°C</li> <li>T3HA Pt100Ω: 199°C, 399°C</li> <li>T3HS J(IC): 399°C</li> <li>T3HS K(CA): 399°C</li> <li>T3HS Pt100Ω: 399°C</li> <li>T4MA/T4LA J(IC): 399°C</li> <li>T4MA/T4LA K(CA): 399°C, 799°C, 1200°C</li> <li>T4MA/T4LA R(PR): 600°C, 1600°C</li> <li>T4MA/T4LA Pt100Ω: 199.9°C, 399°C</li> </ul>									

## Specifications

Model	T3HA	T3HS	T4MA	T4LA
Power supply	110/220VAC 50/60Hz			
Allowable voltage range	90 ~ 110% of rated voltage			
Power consumption	3VA			
Display method	7Segment LED Display			
Character size	W6×H10mm		W7.2×H9.8mm	W9.5×H14.2mm
Display accuracy	F · S ± 0.5% rdg ± 1digit			
Setting type	Digital switch setting			
Setting accuracy	F · S ± 0.5%			
Sensor input	Thermocouples : K(CA), J(IC), R(PR) / RTD : Pt100Ω			
Input line resistance	Thermocouples : Max. 100Ω, RTD : Max. 5Ω per a wire			
Control	ON/OFF	Hysteresis : F · S 0.2 ~ ±3%		
	Proportional	Proportional band : F · S 1 ~ 10% Variable, Period : 20sec. fixed□		
Alarm output	SUB	SUB : 0 ~ -50°C		
	Alarm	<b>(Note)</b> ALARM : F · S 0 ~ 10%		
Reset VR range	F · S ± 3% (Only for control deviation)			
Control output	<ul style="list-style-type: none"> <li>●Relay contact output : 250VAC 3A 1c</li> <li>●SSR output : 24VDC ± 3V 20mA Max.</li> <li>●Current output : 4~20mADC Load 600Ω Max.</li> </ul>			
	ALARM OUT : 250VAC 1A 1a	SUB OUT : 250VAC 1A 1a	ALARM OUT : 250VAC 1A 1a	ALARM OUT : 250VAC 1A 1c
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)□			
Ambient humidity	35 ~ 85%RH			
Weight	Approx. 514g	Approx. 517g	Approx. 425g	Approx. 484g

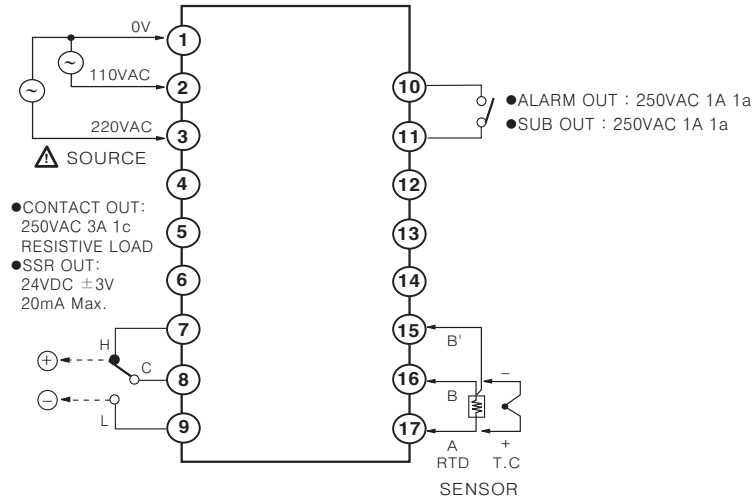
※ **(Note)** The range of Alarm full scale (F.S) is from 0° ~ maximum using temperature.  
 Ex) In case of using temperature is from -99 ~ 199°C, Full scale is 199°C.

# Alarm Output Type

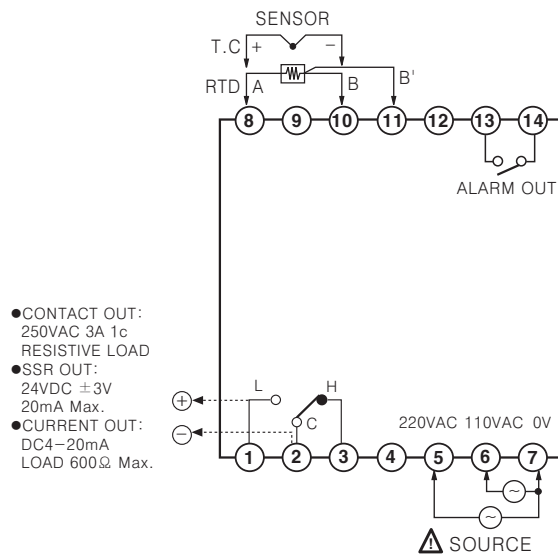
## Connections

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

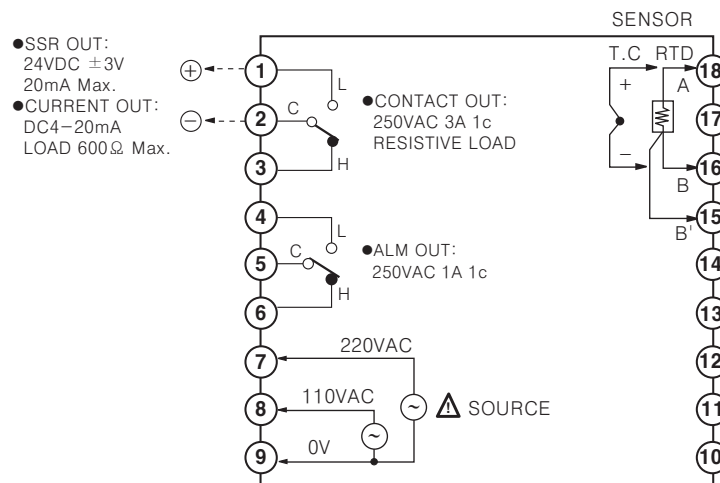
### ●T3HA, T3HS



### ●T4MA



### ●T4LA



(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

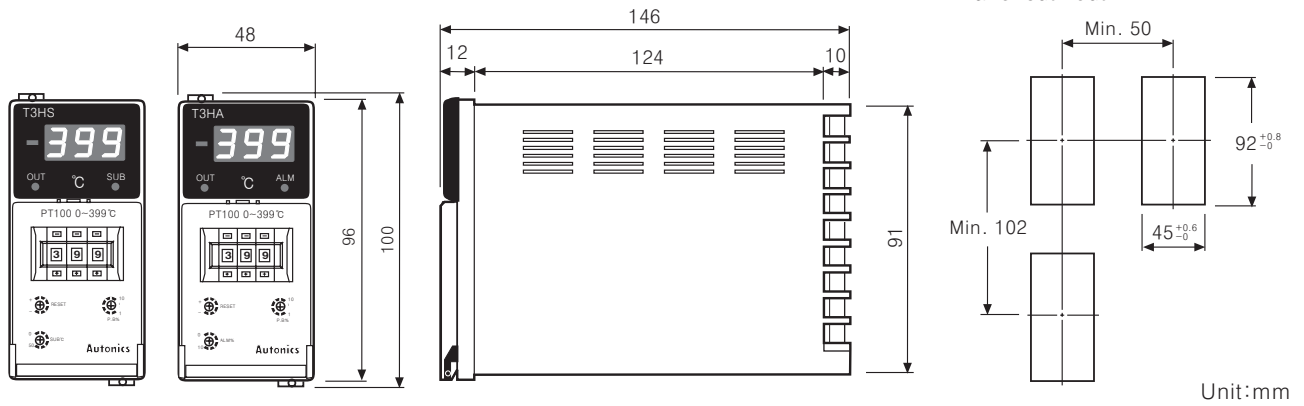
(L)  
Rotary  
encoder

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

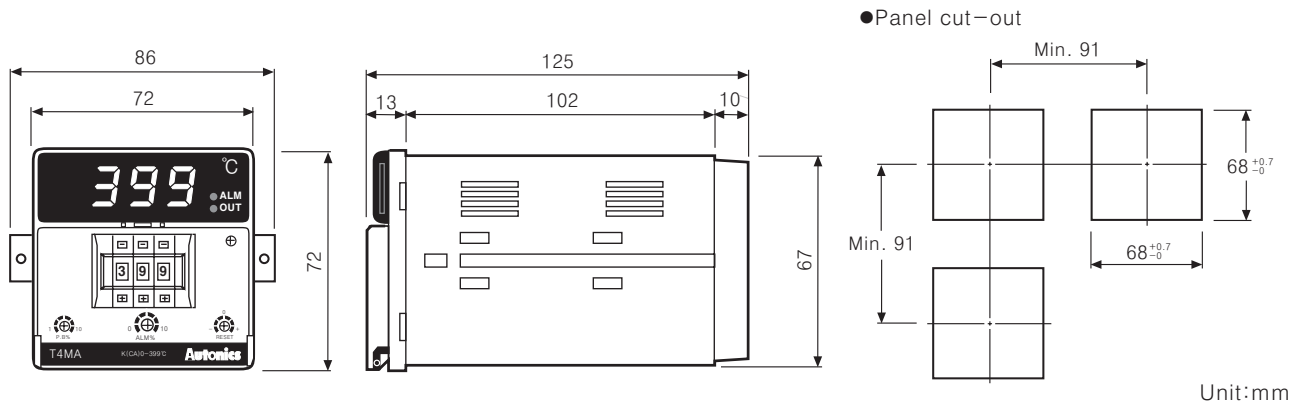
# T3HA/T3HS/T4MA/T4LA

## ■ Dimensions

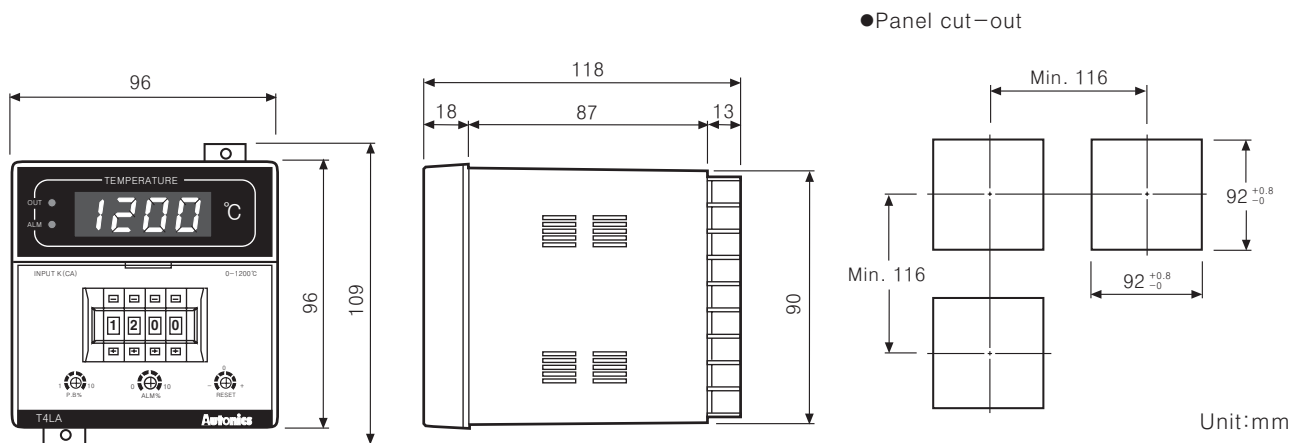
### ● T3HA, T3HS



### ● T4MA



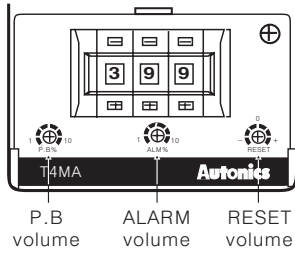
### ● T4LA



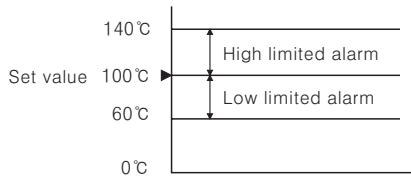
# Alarm Output Type

## ■ 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.
- **ALARM volume**  
:It adjusts alarm range(F.S 0~10%), and having 1:1 range for upper and lower limited range by set value.  
Ex)In case the full scale of temperature controller is 400°C, if setting alarm range is maximum, the value is  $400^{\circ}\text{C} \times 0.1 = 40^{\circ}\text{C}$ . And the alarm range is high-limit 40°C and lower-limit 40°C.



(Note) Full scale (F.S) of the alarm is from 0°C up to max. temperature.

Ex) In case of using temperature is from -99 ~ 199°C, Full scale is 199°C.

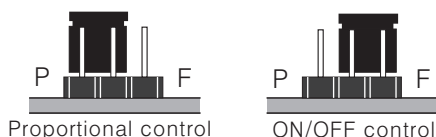
- **RESET volume**  
:Adjusting the offset generated by using proportional control. Adjusting range of reset volume is F.S  $\pm 3\%$ . Do not change the reset volume when using ON/OFF control.



- 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)

### ◎ 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.



### ◎ Normal/Reverse operation

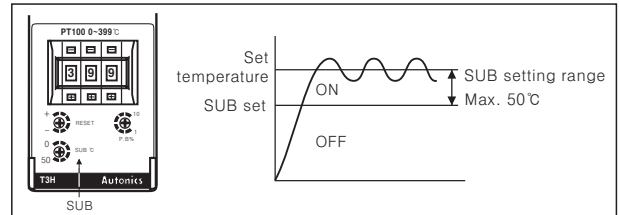
Reverse operation outputs ON when processing value is lower than setting value, and it is used with reverse operation when heated.

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

### ◎ SUB function (T3HS)

SUB output is for alarm used as injector, etc.

If the temperature of controlled material reaches to SUB setting value, the SUB output runs and keeps ON continuously.

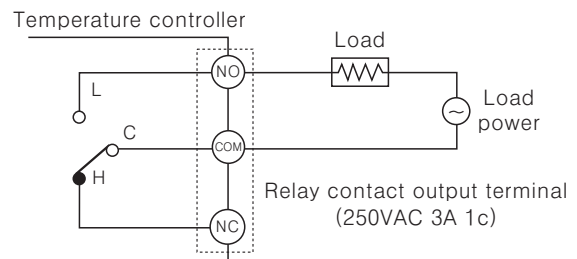


\*SUB function is included only in T3H series.

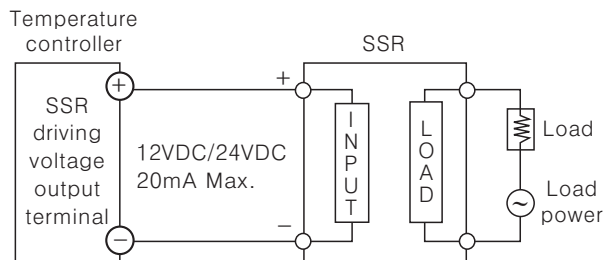
\*SUB range can be set up to 50°C lower than setting value.

### ◎ Application of temperature controller and load connection

#### ● Relay output

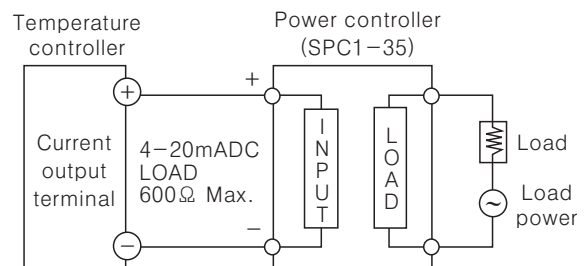


#### ● SSR output



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

#### ● Current output



(A) Counter

(B) Timer

(C) Temp. controller

(D) Power controller

(E) Panel meter

(F) Tacho/Speed/Pulse meter

(G) Display unit

(H) Sensor controller

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