

T3S/T3H/T4M/T4L

Digital switch setting type, temperature controller

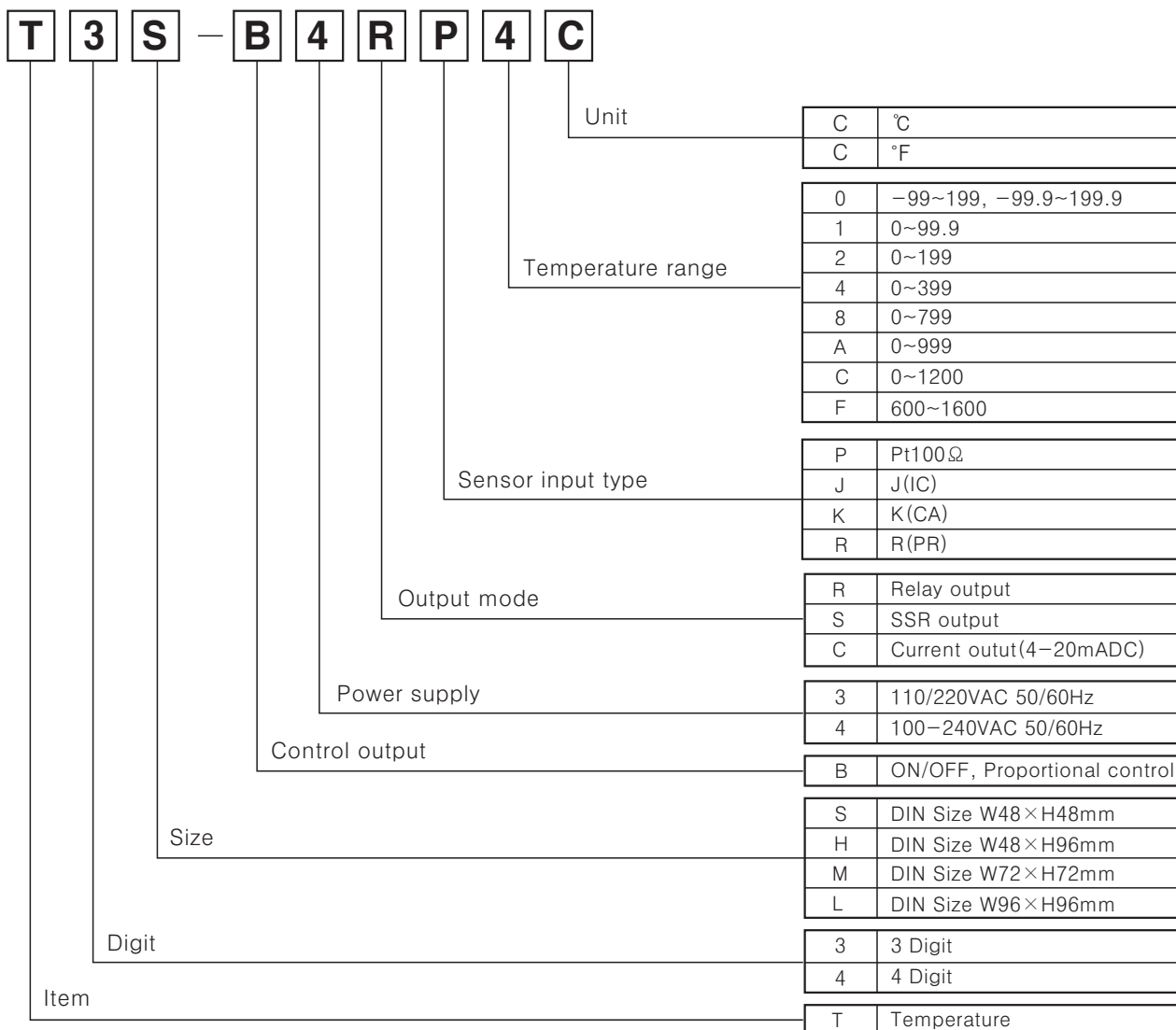
■ Features

- 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.

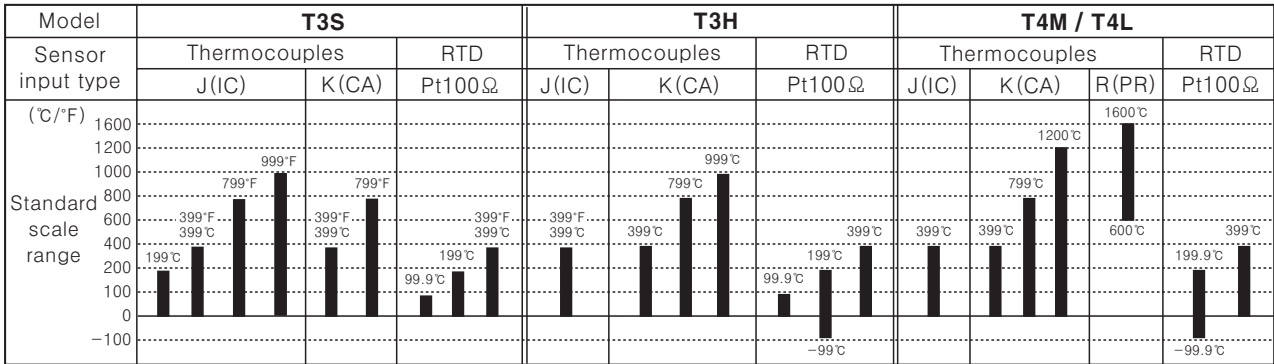
■ Ordering information



※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"/>		
	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 ² (Approx. 30G) 3 times at X, Y, Z direction		
	Malfunction	100m/s ² (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

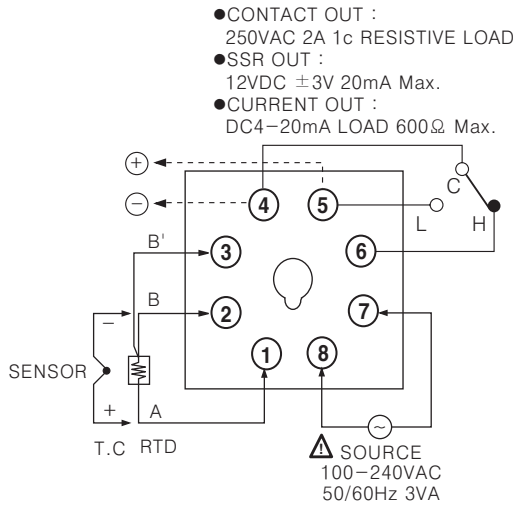
(M) 5-Phase stepping motor & Driver & Controller

T3S/T3H/T4M/T4L

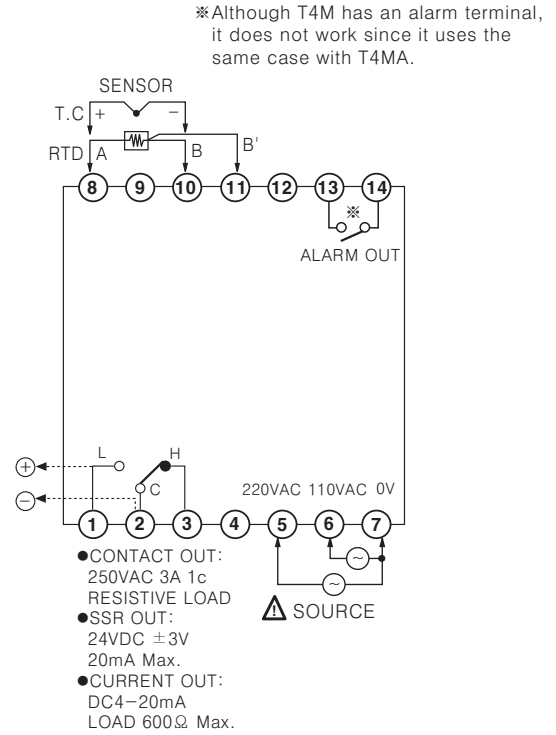
Connections

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

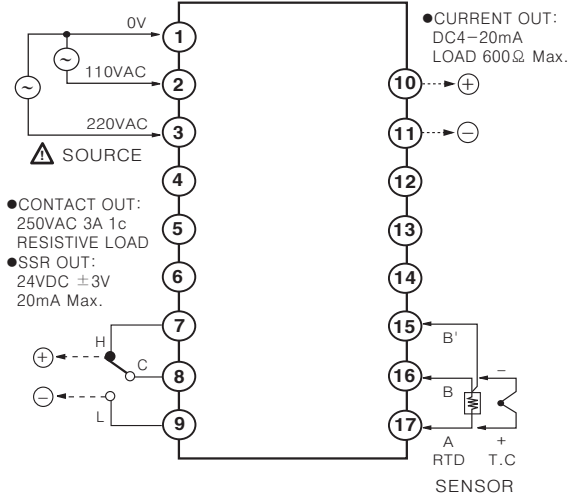
●T3S



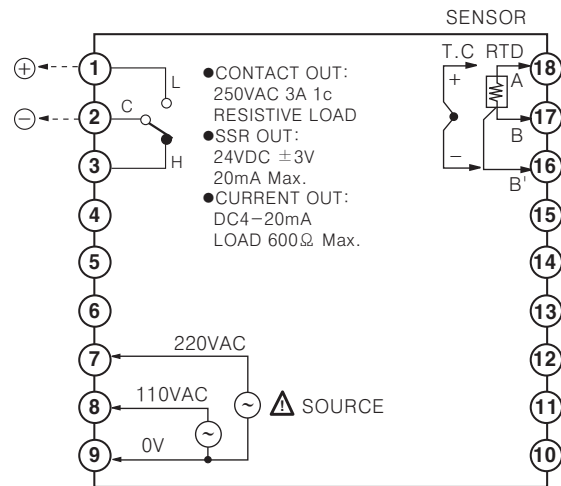
●T4M



●T3H



●T4L

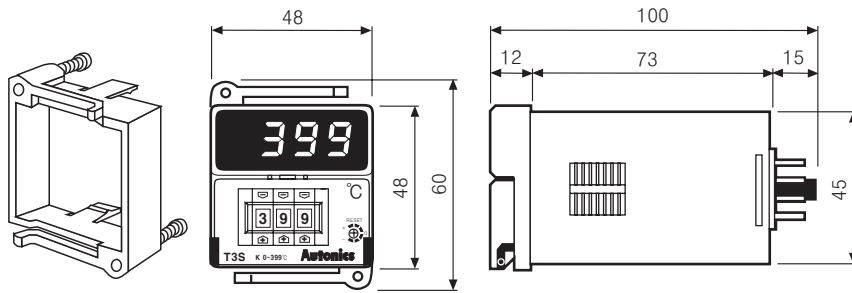


Digital Switch Setting Type

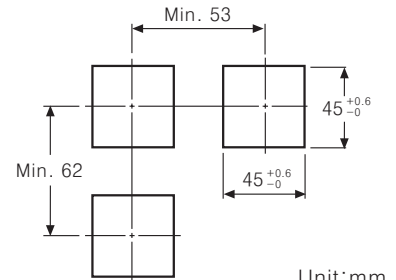
Dimensions

●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

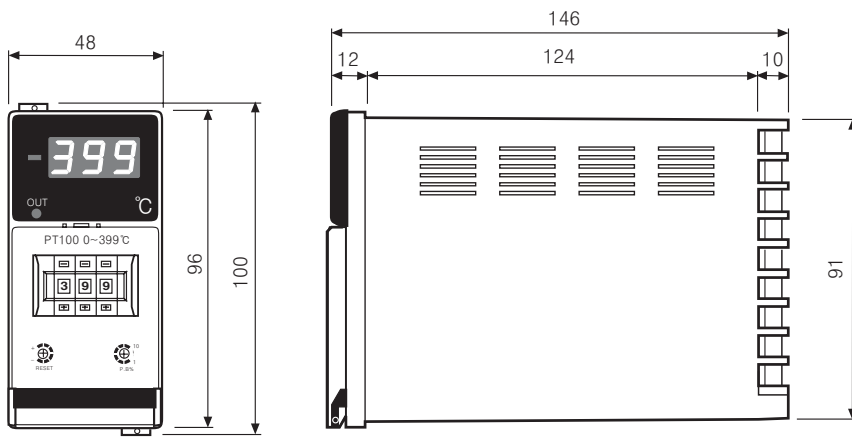
(J)
Photo
electric
sensor

(K)
Pressure
sensor

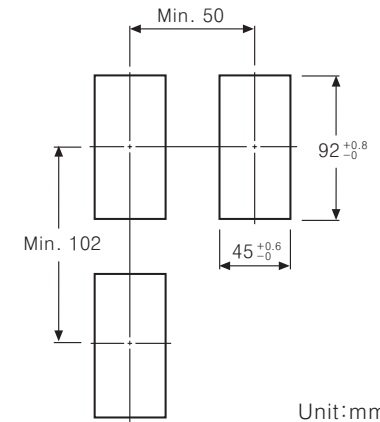
(L)
Rotary
encoder

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

●T3H

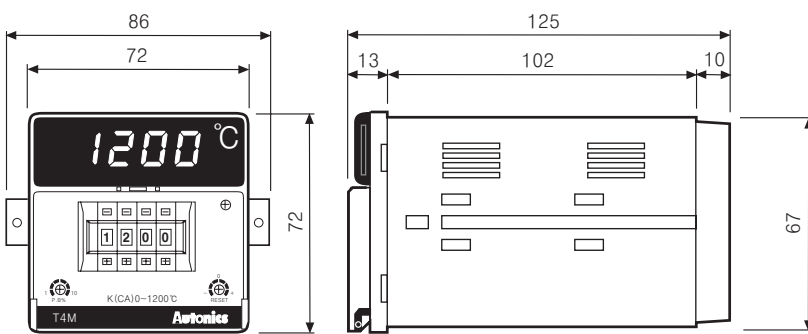


●Panel cut-out

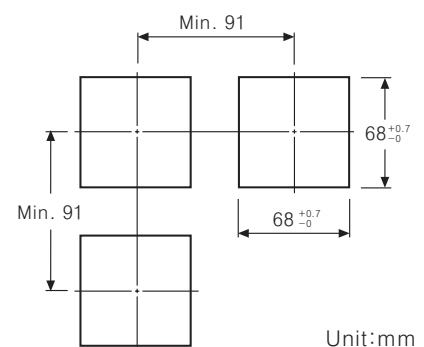


Unit:mm

●T4M

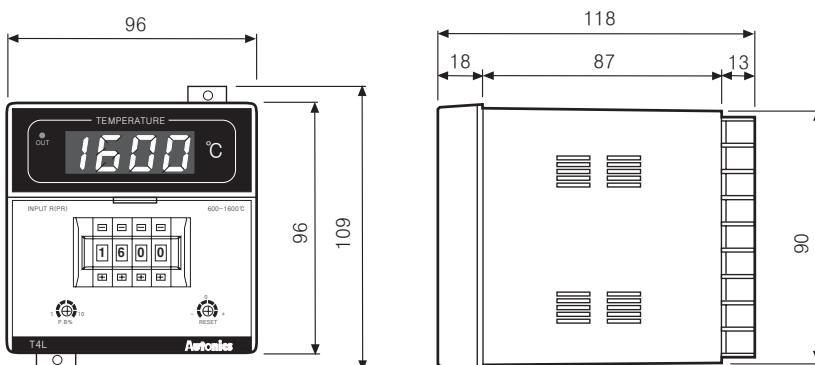


●Panel cut-out

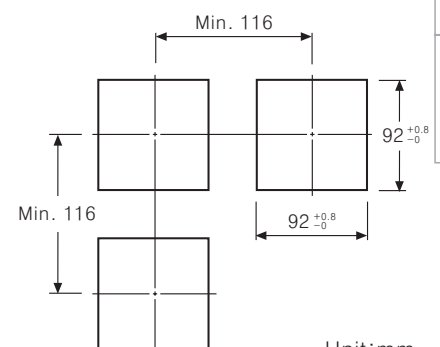


Unit:mm

●T4L



●Panel cut-out

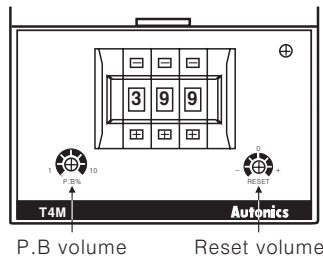


Unit:mm

T3S/T3H/T4M/T4L

■ Proper usage

◎ Using front volume



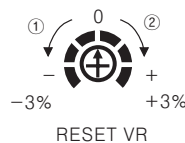
● P.B volume

: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

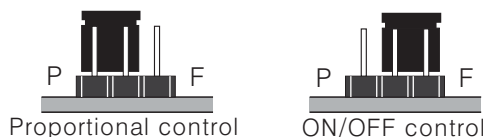
Reverse operation outputs ON when processing value is lower than setting value, and it is used with reverse operation when heated.

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

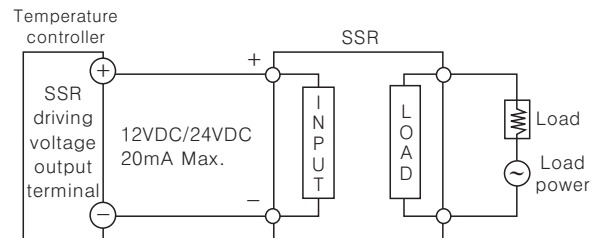
How to select ON/OFF or proportional by plug pin
Factory specification is proportional control.

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

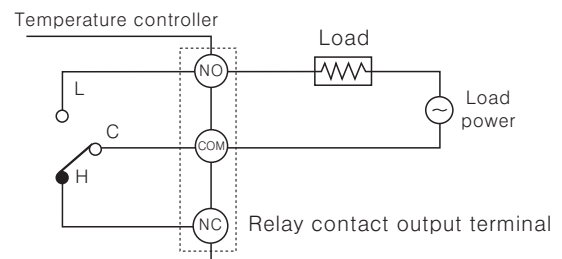


※ When using SSR driving voltage in the other purposes, do not over the range of rated current.

※ 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	

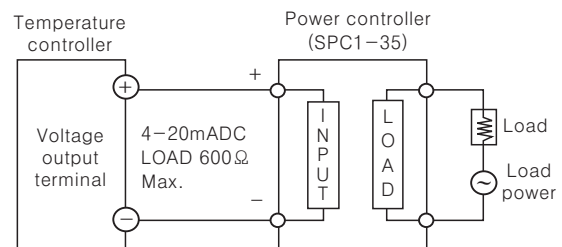
● Relay output connection



※ 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 600 Ω of resistive load.

Alarm Output Type

ALARM, SUB output type

■ Features

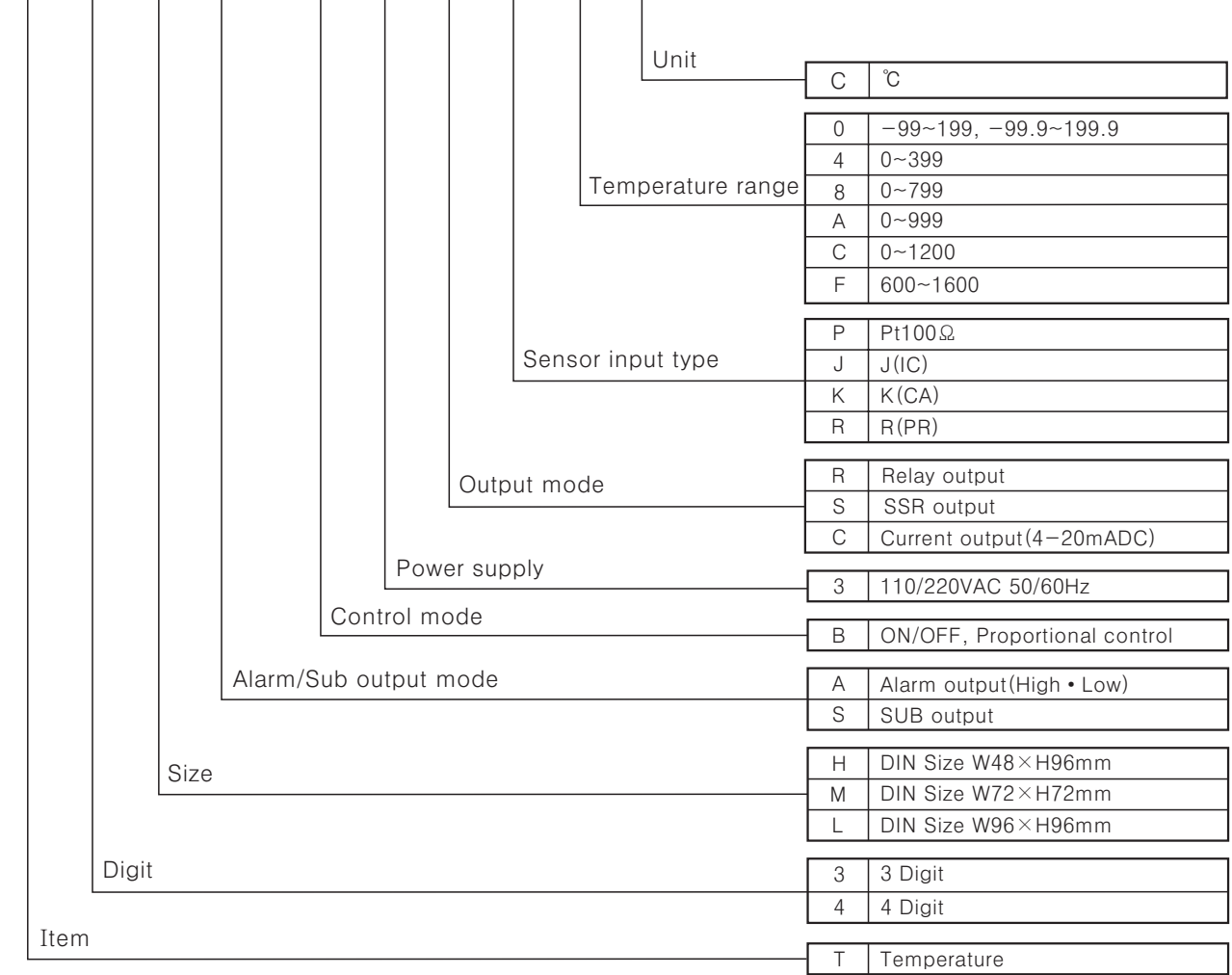
- Alarm, SUB output type
- High accuracy measurement : ± 0.5
- Various size available



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

■ Ordering information

T 3 H A - B 3 R P 4 C

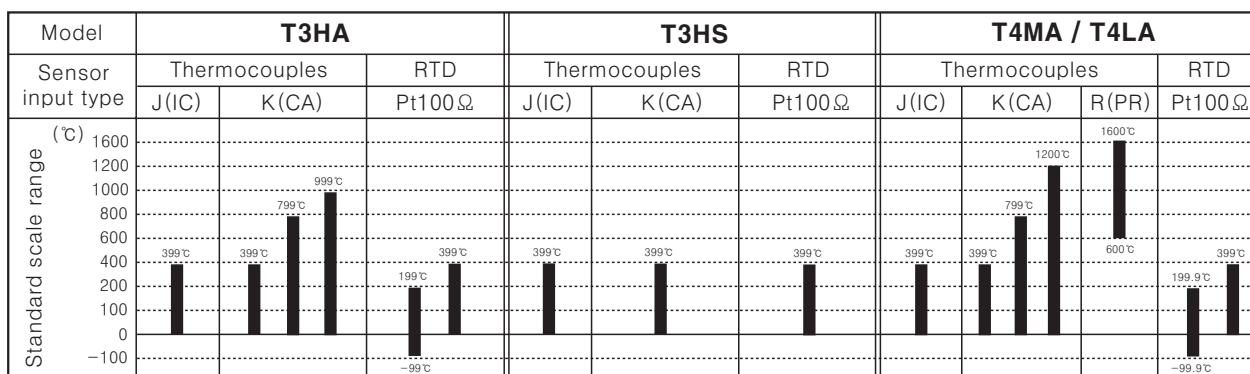


- (A) Counter
- (B) Timer
- (C) Temp. controller
- (D) Power controller
- (E) Panel meter
- (F) Tacho/Speed/Pulse meter
- (G) Display unit
- (H) Sensor controller
- (I) Proximity sensor
- (J) Photo electric sensor
- (K) Pressure sensor
- (L) Rotary encoder
- (M) 5-Phase stepping motor & Driver & Controller

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

T3HA/T3HS/T4MA/T4LA

Temperature range for each sensor



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	(Note) ALARM : F · S 0 ~ 10%		
Reset VR range	F · S ±3% (Only for control deviation)			
Control output	<ul style="list-style-type: none"> ●Relay contact output : 250VAC 3A 1c ●SSR output : 24VDC ±3V 20mA Max. ●Current output : 4~20mADC Load 600Ω Max. 			
	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		
	Malfuction	0.5mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 10 minutes		
Shock	Mechanical	300m/s ² (Approx. 30G) 3 times at X, Y, Z direction		
	Malfuction	100m/s ² (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

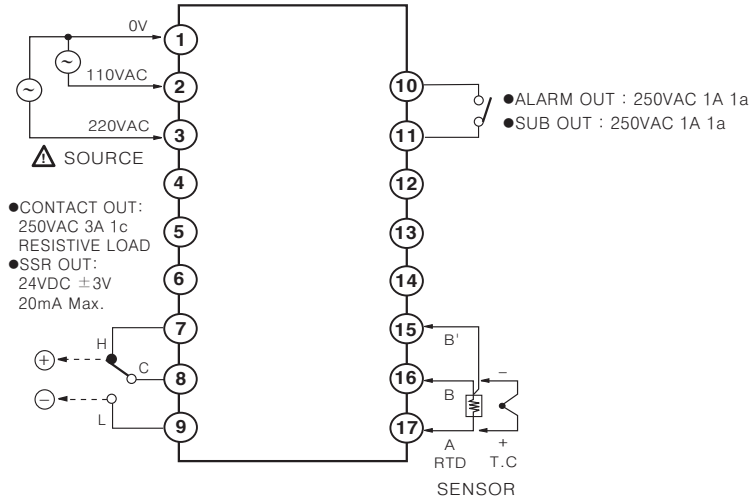
※ **(Note)** The range of Alarm full scale (F.S) is from 0° ~ maximum using temperature.
 Ex) In case of using temperature is from -99 ~ 199°C, Full scale is 199°C.

Alarm Output Type

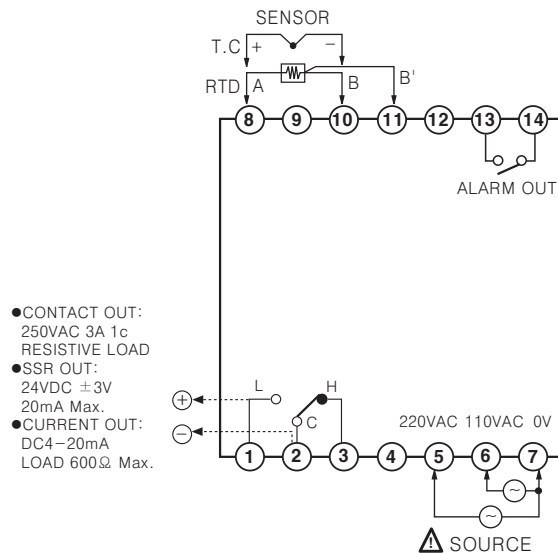
Connections

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

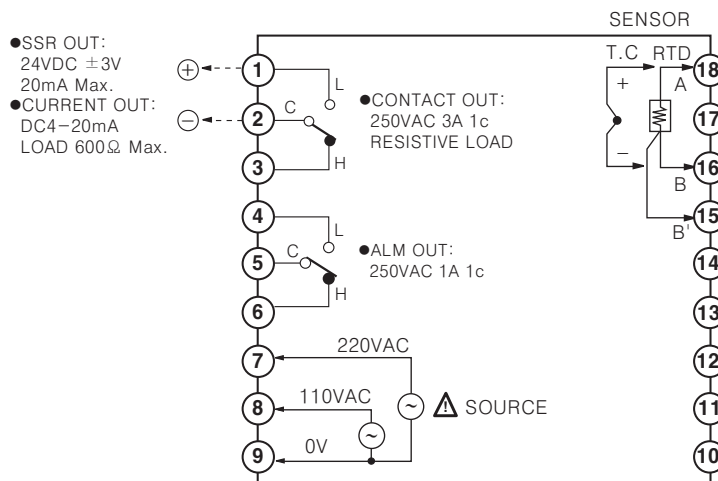
●T3HA, T3HS



●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

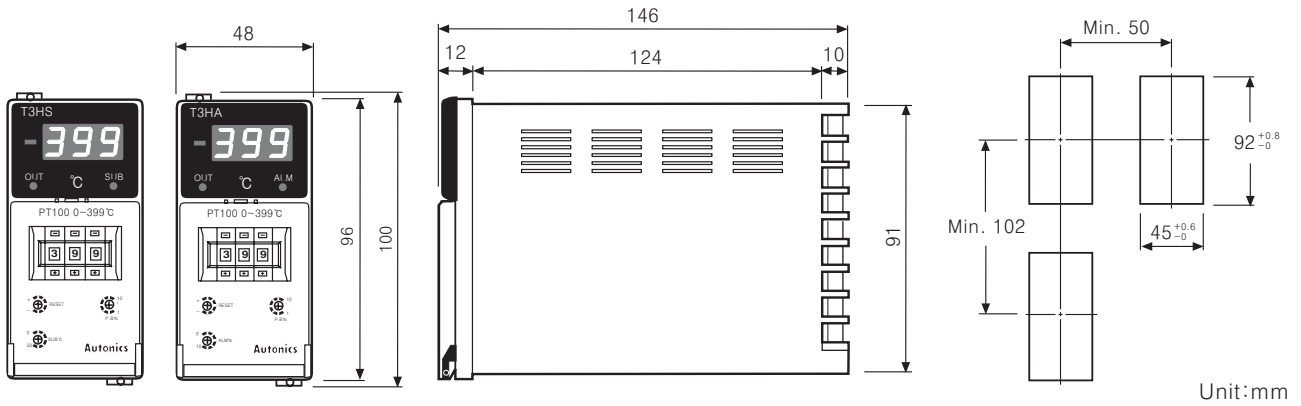
(L)
Rotary
encoder

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

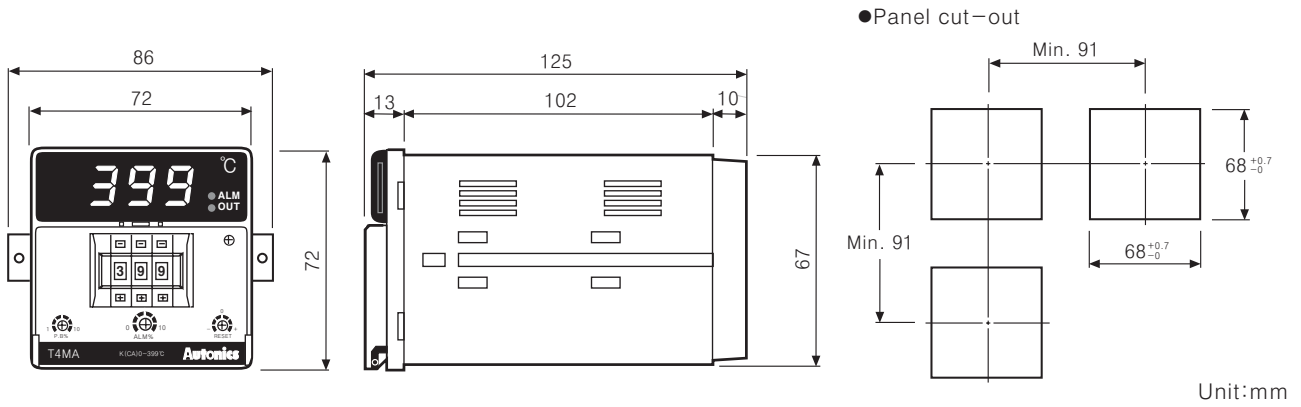
T3HA/T3HS/T4MA/T4LA

■ Dimensions

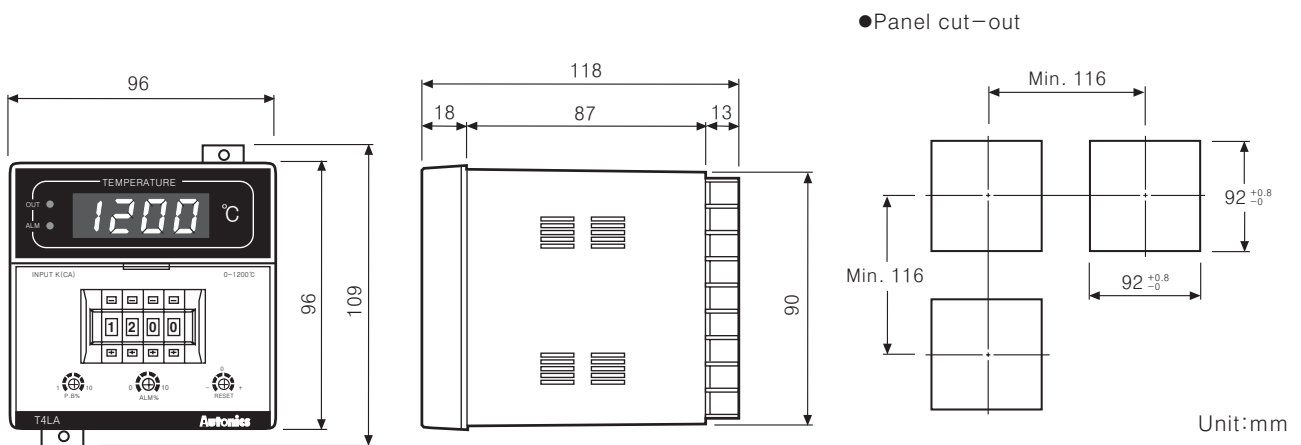
● T3HA, T3HS



● T4MA



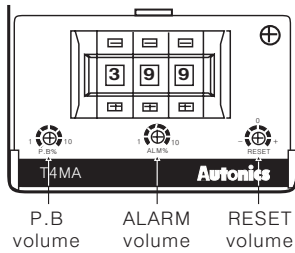
● T4LA



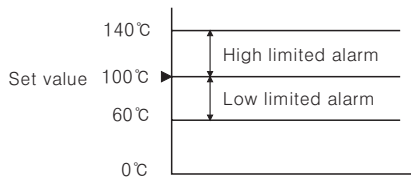
Alarm Output Type

■ 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.

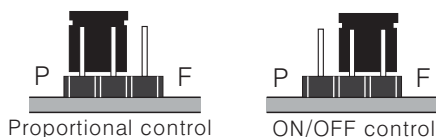
- **RESET volume**
:Adjusting the offset generated by using proportional control. Adjusting range of reset volume is F.S $\pm 3\%$. Do not change the reset volume when using ON/OFF control.



- 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

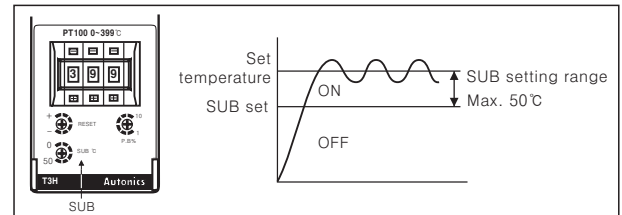
Reverse operation outputs ON when processing value is lower than setting value, and it is used with reverse operation when heated.

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.

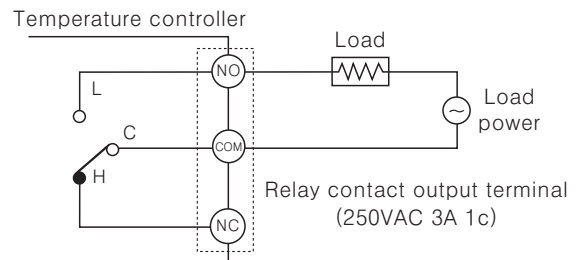
If the temperature of controlled material reaches to SUB setting value, the SUB output runs and keeps ON continuously.



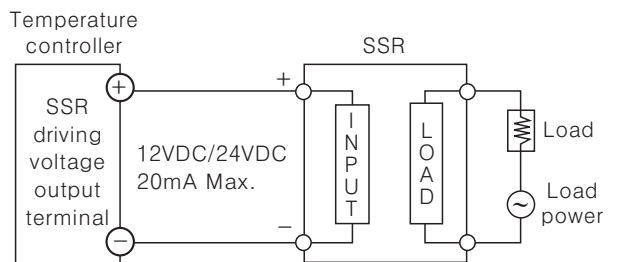
- * SUB function is included only in T3H series.
- * SUB range can be set up to 50°C lower than setting value.

◎ Application of temperature controller and load connection

● Relay output

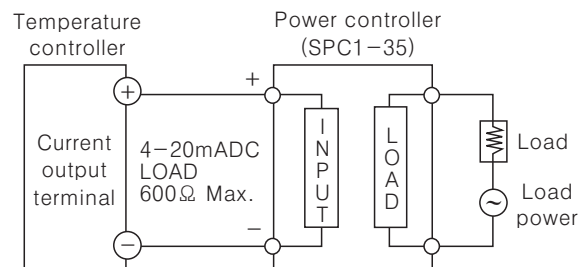


● SSR output



* 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

(I) Proximity sensor

(J) Photo electric sensor

(K) Pressure sensor

(L) Rotary encoder

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

Dual setting type, High accuracy temperature controller

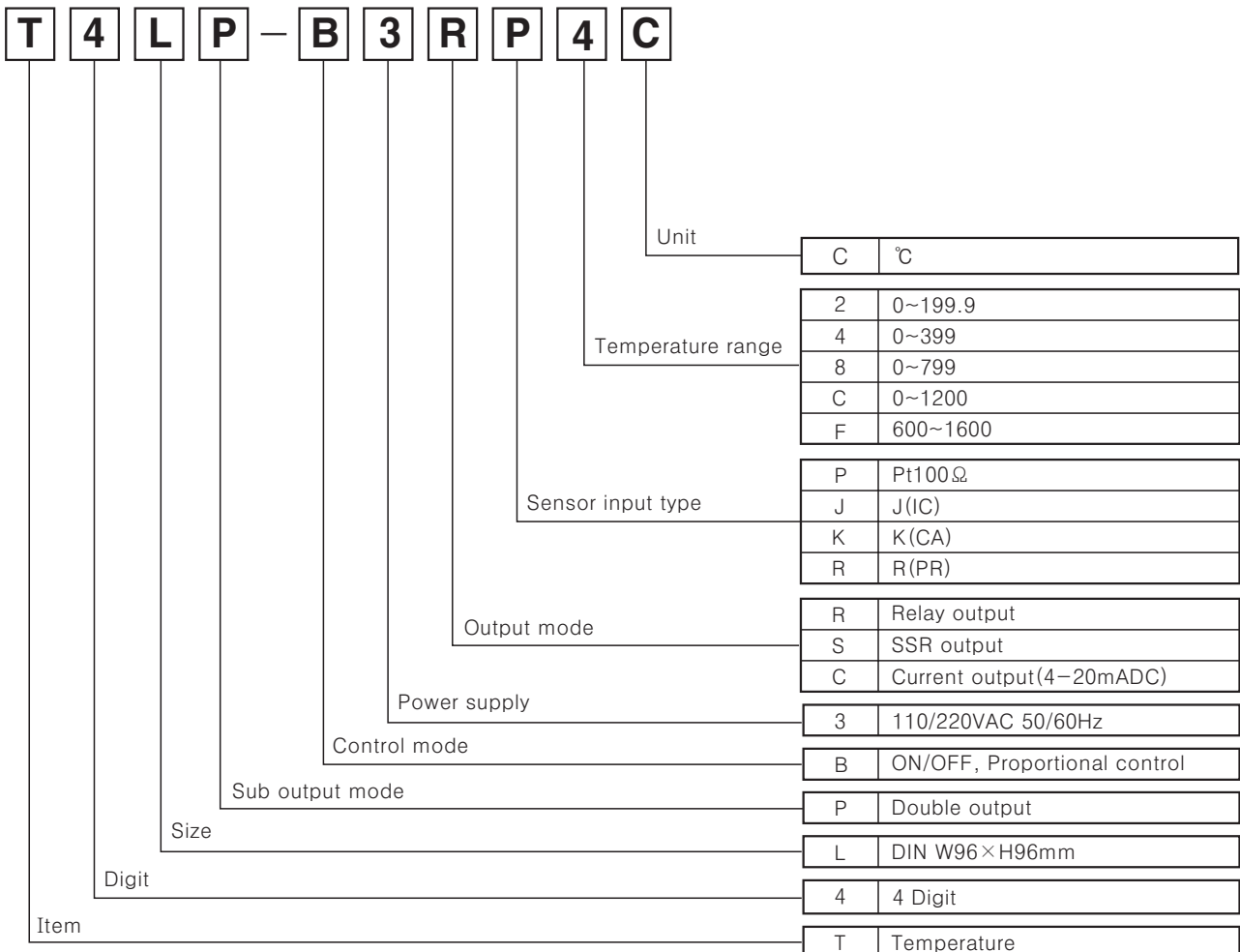
■ Features

- Dual setting type
- High accuracy measuring function : $\pm 0.5\%$
- Control heater and cooler at once
- It is able to control a heater and a cooler with 1 piece of dual setting temperature controller.
The 1st(Low set) output is for a heater control and 2nd(High set) output is for a cooler control.



⚠ 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-32 page)

Dual Setting Type

Temperature range for each sensor

Model	T4LP			
	Thermocouples			RTD
Sensor input type	J(IC)	K(CA)	R(PR)	Pt100Ω
Standard scale range °C	399	399, 799, 1200	600, 1600	199.9, 399

Specifications

Model	T4LP	
Power supply	110/220VAC 50/60Hz	
Allowable voltage range	90 ~ 110% of rated voltage	
Power consumption	3VA	
Display method	7Segment LED Display	
Character size	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%, Period : 20sec. fixed□
Reset VR range	F · S ± 3% (Only for control deviation)	
Control output	<ul style="list-style-type: none"> ●Relay output : 1st out : 250VAC 3A 1c 2nd out : 250VAC 2A 1c ●SSR output : 24VDC ±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	±2kV 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 ² (Approx. 30G) 3 times at X, Y, Z direction
	Malfunction	100m/s ² (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 ~ 85RH	
Weight	Approx. 487g	

(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

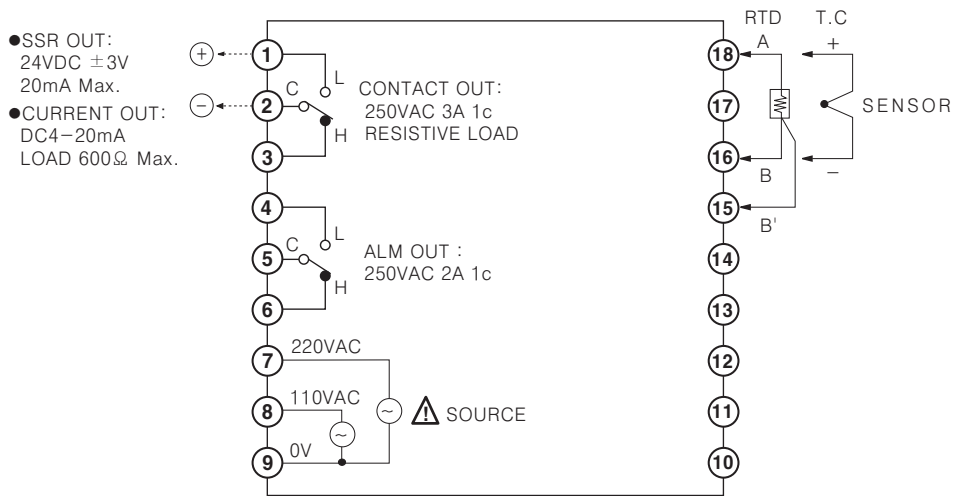
(M)
5-Phase
stepping
motor &
Driver &
Controller

T4LP

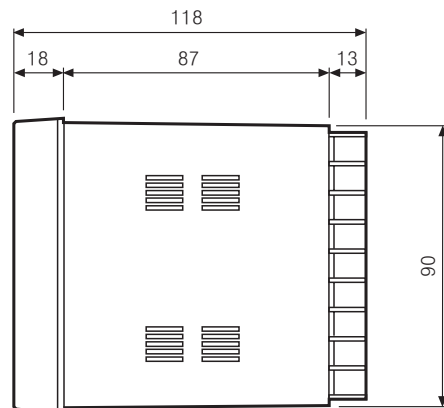
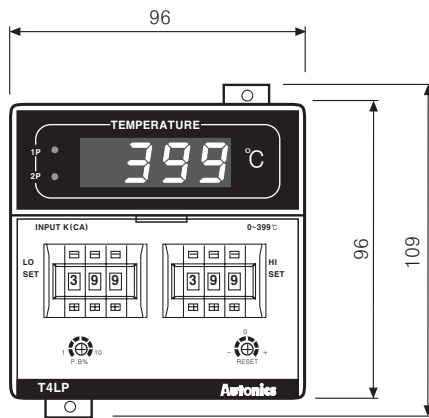
Connections

※RTD(Resistance Temperature Detector) : Pt 100Ω (3-wire type)

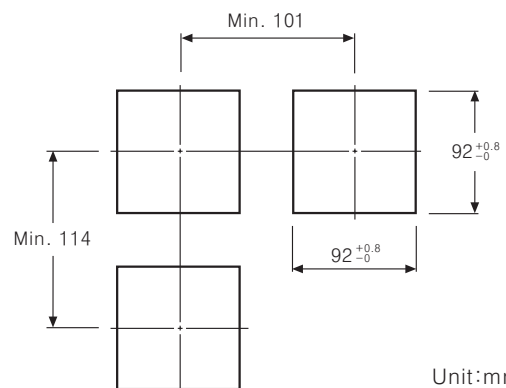
※Thermocouple : K, J, R



Dimensions



●Panel cut-out

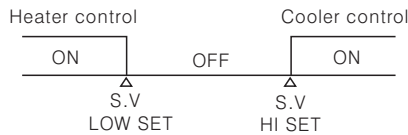


Dual Setting Type

■ Proper usage

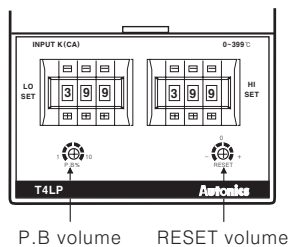
◎ Operation

This controller has two outputs operating separately. In other words, setting the values separately is available. Front Low set runs with reverse operation as other common controllers and High set runs by normal operation. Using these control types makes that controlling heater and cooler is available.



※ Terminal block ①, ②, ③ are for Low set output, and terminal block ④, ⑤, ⑥ are for High set output.

◎ 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.

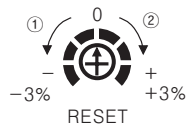
However, hysteresis (F.S 0.5%) and proportional band (F.S 3%) are fixed in T3S.

● 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)

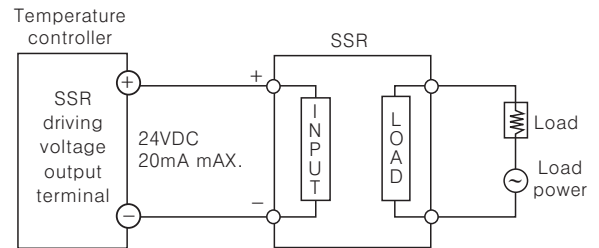
◎ Normal • Reverse operation

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)

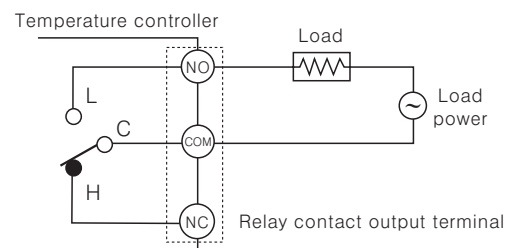
◎ Application of temperature controller and load connection

● SSR output



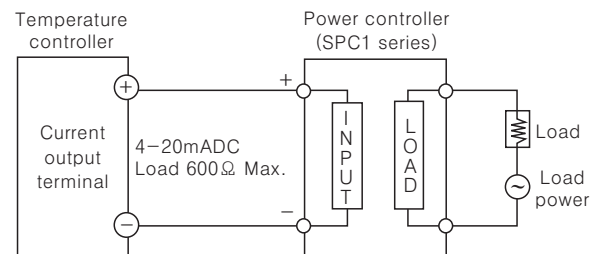
※ When using SSR driving voltage in the other purposes, do not over the range of rated current.

● Relay output



Output	Relay contact capacity
1st OUT	250VAC 2A
2nd OUT	250VAC 3A

● Current output

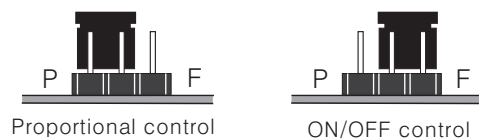


※ The current value of 4~20mADC is available at lower than 600Ω of resistive load.

◎ 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.



(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

T3NI/T4YI/T4WI/T3SI/T3HI/T4MI/T4LI

Indication type only, Various sizes

■ Features

- Various size
: W48×H24, W72×H36, W48×H48, W48×H96,
W72×H72, W96×H96mm
- No output function, Indication only
- High accuracy measuring function
: F · S±0.3% or ±0.5%



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

■ Ordering information

T 3 S I - N 4 N P 4 C

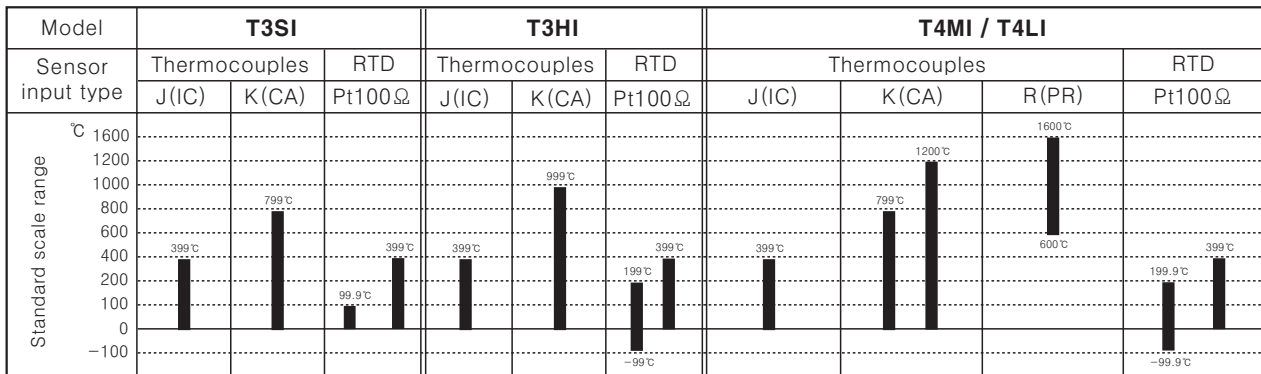
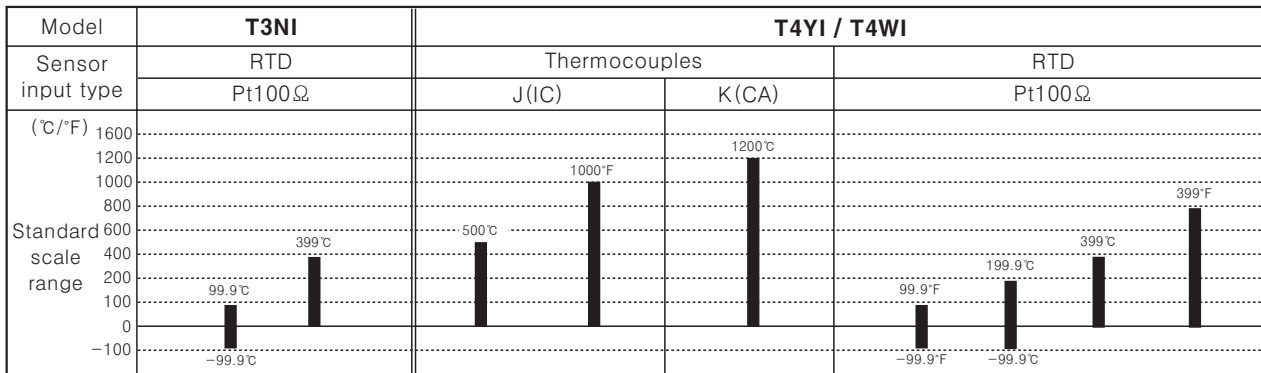
Item	Digit	Size	Indicator	Control mode	Power supply	Output mode	Sensor input type	Temperature range	Unit	C	°C
									F	°F	
									0	-99~199, -99.9~199.9, -99.9~99.9	
									1	0~99.9	
									2	0~199	
									4	0~399	
									5	0~500	
									8	0~799	
									A	0~999	
									C	0~1200	
									F	600~1600	
									P	Pt100Ω	
									J	J(IC)	
									K	K(CA)	
									R	R(PR)	
									N	No output	
									X	12~24VDC	
									3	110/220VAC 50/60Hz	
									4	100~240VAC 50/60Hz	
N	No control function										
I	Indicator										
N	DIN W48×H24mm										
Y	DIN W72×H36mm										
W	DIN W96×H48mm										
S	DIN W48×H48mm										
H	DIN W48×H96mm										
M	DIN W72×H72mm										
L	DIN W96×H96mm										
3	3 Digit										
4	4 Digit										
T	Temperature										

※ Please check the range of temperature when select model. (Please see C-36page)

※ Only T4WI Series is available °F degree.

Indicator Type

Temperature range for each sensor



*Only T4WI series is available °F degree for above Temp. range.

Specifications

Model	T3NI	T4YI	T4WI	T3SI	T3HI	T4MI	T4LI	
Power supply	12-24VDC	100-240VAC 50/60Hz	110/220VAC 50/60Hz	100-240VAC 50/60Hz	110/220VAC 50/60Hz			
Allowable voltage range	90 ~ 110% of rated voltage							
Power consumption	2W	3VA						
Display method	7Segment LED Display							
Character size	W5×H8mm	W9.8×H14.2mm		W4×H8mm	W6×H10mm	W7.2×H9.8mm	W9.5×H14.2mm	
Display accuracy	F · S ± 0.3% rdg ± 1digit	F · S ± 0.5% rdg ± 1digit						
Sensor input	Pt100Ω	● Thermocouples (T.C): K (CA), J (IC), R (PR)					● RTD : Pt100Ω	
Input line resistance	Max. 5Ω per a wire	● Thermocouples : Max. 100Ω					● RTD : Max. 5Ω per a wire	
Insulation resistance	Min. 100MΩ (at 500VDC)							
Dielectric strength	2000VAC 50/60Hz for 1 minute							
Noise strength	±500V	± 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 ² (Approx. 30G) 3 times at X, Y, Z direction						
	Malfunction	100m/s ² (Approx. 10G) 3 times at X, Y, Z direction						
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. 34g	Approx. 170g	Approx. 322g	Approx. 107g	Approx. 368g	Approx. 356g	Approx. 433g	

(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

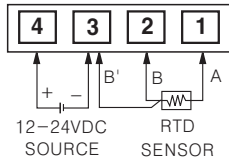
T3NI/T4YI/T4WI/T3SI/T3HI/T4MI/T4LI

■ Connections

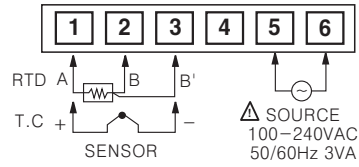
※RTD(Resistance Temperature Detector) : Pt 100Ω (3-wire type)

※Thermocouple : K, J, R

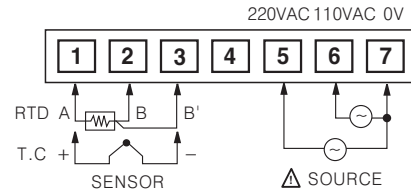
●T3NI



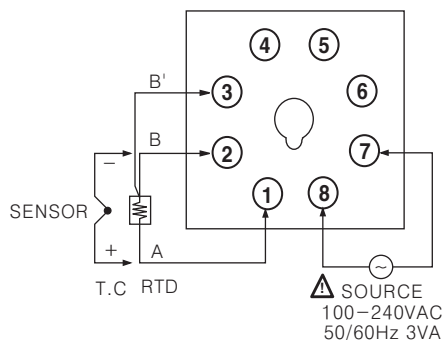
●T4YI



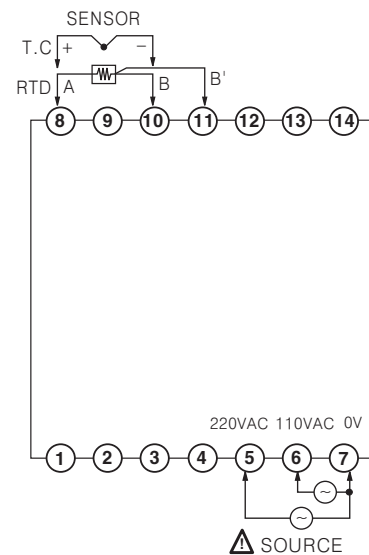
●T4WI



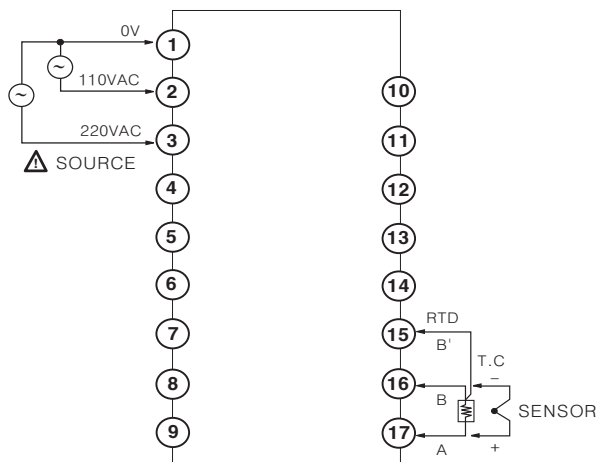
●T3SI



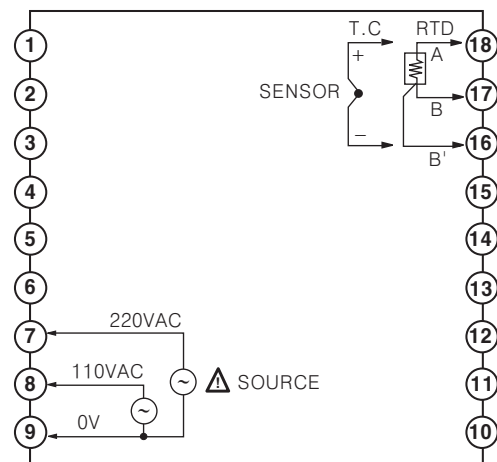
●T4MI



●T3HI



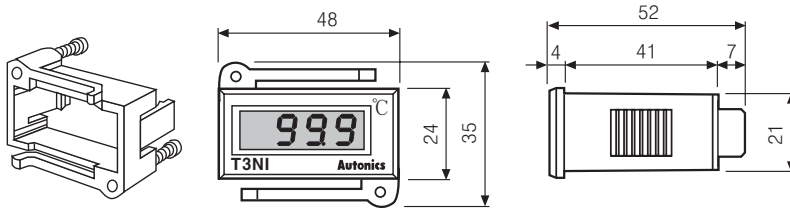
●T4LI



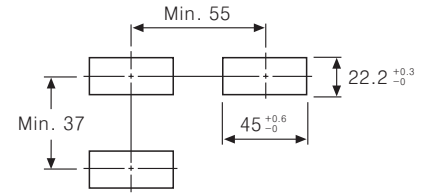
Indicator Type

Dimensions

●T3NI



●Panel cut-out



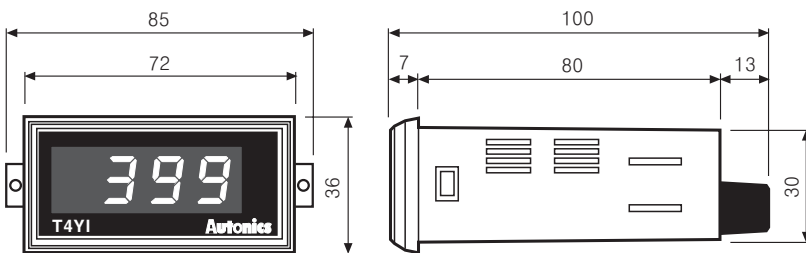
Unit:mm

(A)
Counter

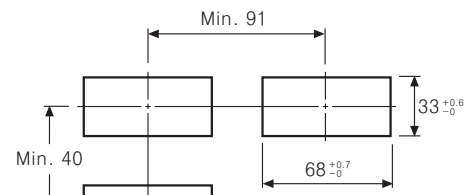
(B)
Timer

(C)
Temp.
controller

●T4YI



●Panel cut-out



Unit:mm

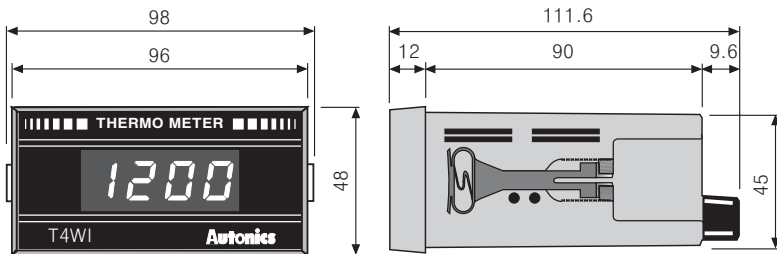
(D)
Power
controller

(E)
Panel
meter

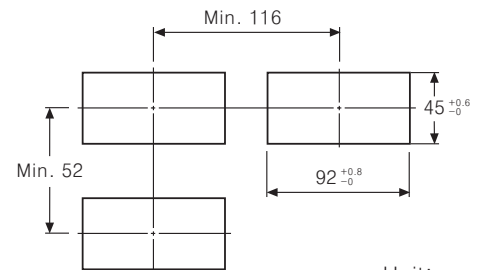
(F)
Tacho/
Speed/
Pulse
meter

(G)
Display
unit

●T4WI



●Panel cut-out



Unit:mm

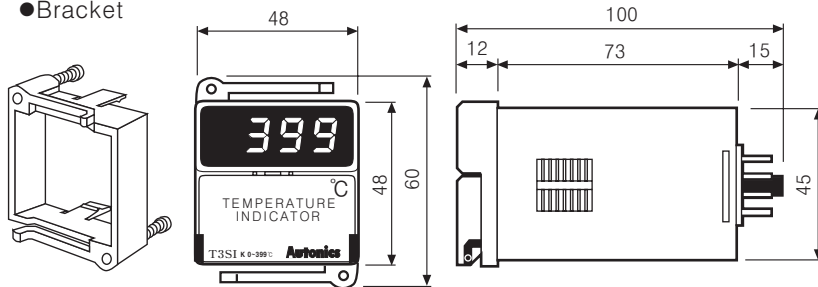
(H)
Sensor
controller

(I)
Proximity
sensor

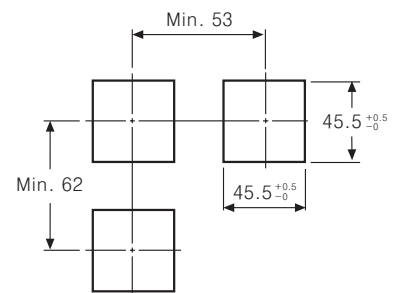
(J)
Photo
electric
sensor

●T3SI

●Bracket



●Panel cut-out



Unit:mm

(K)
Pressure
sensor

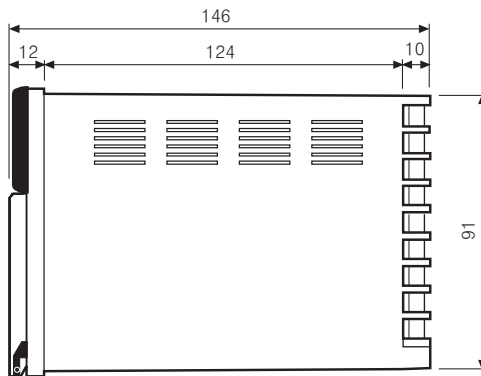
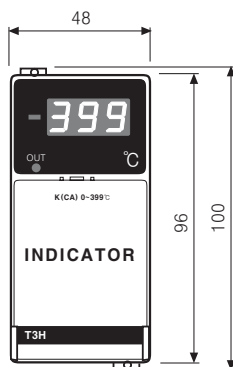
(L)
Rotary
encoder

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

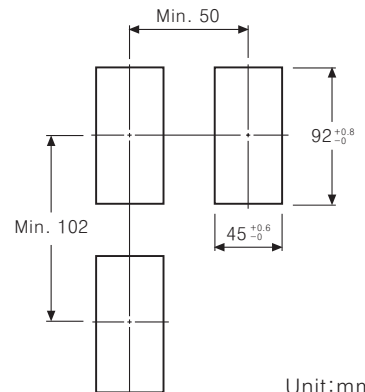
T3NI/T4YI/T4WI/T3SI/T3HI/T4MI/T4LI

▣ Dimensions

● T3HI

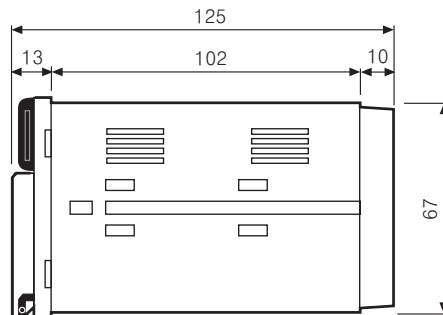
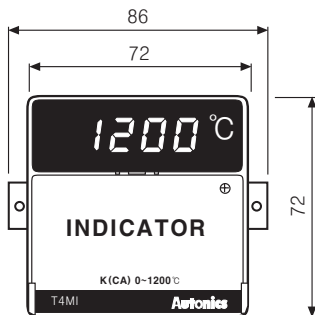


● Panel cut-out

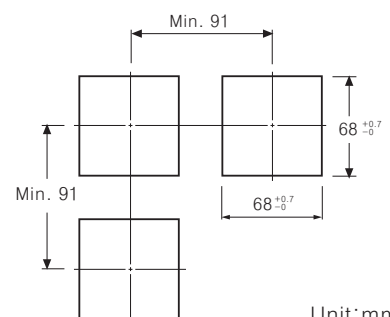


Unit:mm

● T4MI

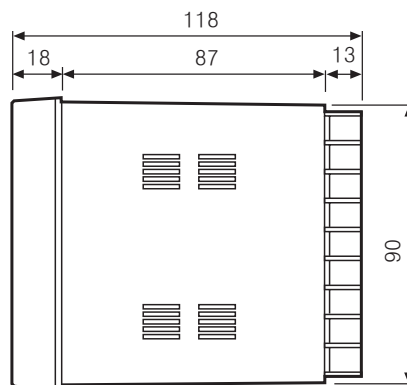
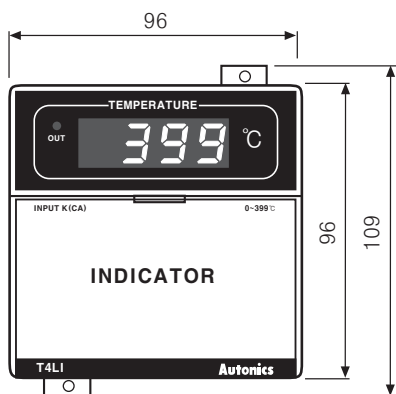


● Panel cut-out

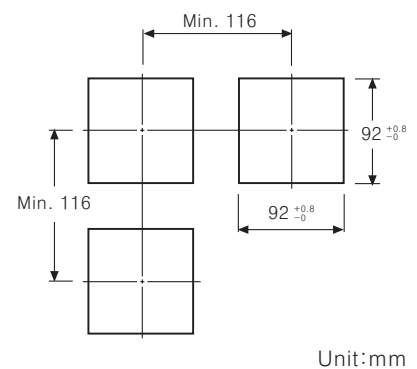


Unit:mm

● T4LI



● Panel cut-out



Unit:mm

▣ Proper usage

○ T3NI

- T3NI is an exclusive measurement for the internal and actual temperature of panel.
- Since the RTD type of T3NI is not produced, please check items before selecting the product.
- The power supply voltage of T3NI is 12–24VDC, and AC power is not produced.
- RTD requires using Pt100Ω 3 wires type, and same length and thickness of lead wire.

○ The other items

- Please check a model name when you choose the item since the thermocouple is marked the same sign with Pt100Ω. Ex) T4WI–N3NPO
- RTD requires using Pt100Ω 3 wire type, and same length and thickness of lead wire.
- The extension wire of thermocouple must be used with ruled compensating wire or thermocouple strand.

Dial Setting /Deviation Setting Type

Analog and Non indication type ,Set temperature by dial

■ Features

- Non indicating type
- Temperature deviation indication type by LED : TDM, TDL
- Setting temperature by Dial : TOS



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

■ Ordering information

T O S - F 4 R P 4 C

Item	T	O	S	-	F	4	R	P	4	C
Digit										
Size										
Control mode										
Power supply										
Output mode										
Sensor input type										
Temperature range										
Unit										

Unit	C	°C
	F	°F
Temperature range	X	0~60
	1	0~100
	2	0~200
	3	0~300
	4	0~400
	6	0~600
	8	0~800
	C	0~1200
Sensor input type	P	Pt100Ω
	J	J(IC)
	K	K(CA)
Output mode	R	Relay output
	S	SSR output
Power supply	3	110/220VAC 50/60Hz
	4	100~240VAC 50/60Hz
Control mode	P	Proportional control
	F	ON/OFF control
	B	ON/OFF, Proportional control
Size	S	DIN W48×H48mm
	M	DIN W72×H72mm
	L	DIN W96×H96mm
Digit	O	Non-indication type
	D	LED deviation indication type
Item	T	Temperature

※Please check the range of temperature when select model. (Please see page C-41)

(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

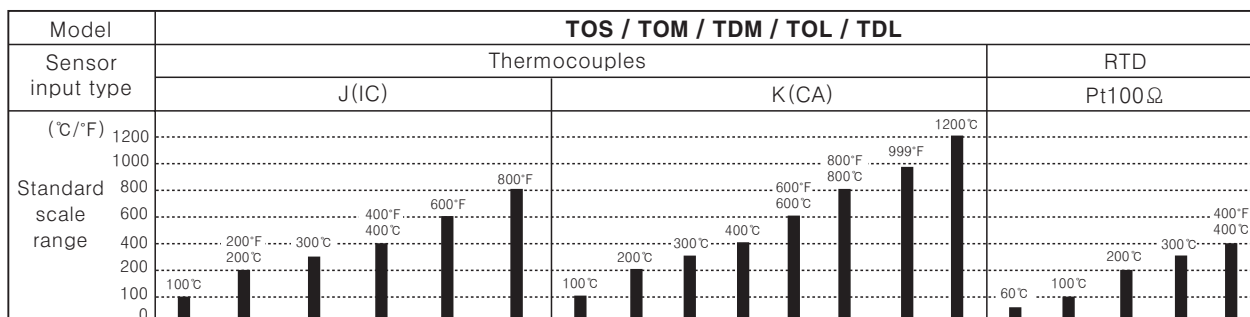
(K) Pressure sensor

(L) Rotary encoder

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

TOS/TOM/TDM/TOL/TDL

Temperature range for each sensor



※Only TOS series is available °F degree for above Temp. range.

Specifications

Model	TOS	TOM	TDM	TOL	TDL
Power supply	100–240VAC 50/60Hz	110/220VAC 50/60Hz			
Allowable voltage range	90 ~ 110% of rated voltage				
Power consumption	2VA	3VA			
Display method	LED ON indicator	LED ON/OFF indicator	LED deviation indicator	LED ON/OFF indicator	LED deviation indicator
Display accuracy	—				
Setting type	Dial setting				
Setting accuracy	F · S ± 2%				
Sensor input	Thermocouples : K(CA), J(IC) / RTD : Pt100Ω				
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"/>			
	Proportional	Proportional band : F · S 3% fixed, Period : 20sec. fixed <input type="checkbox"/>			
Control output	<ul style="list-style-type: none"> ●Relay output : 250VAC 2A 1c ●SSR Output : 12VDC ±3V Load 20mA Max. 	<ul style="list-style-type: none"> ●Relay contact output : 250VAC 3A 1c ●SSR Output : 12VDC ±3V 20mA max. 			
Self-diagnosis	Built-in burn out function				
Insulation resistance	Min. 100MΩ (at 500VDC)				
Dielectric strength	2000VAC 50/60Hz for 1 minute				
Noise strength	±2kV 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 ² (Approx. 30G) 3 times at X, Y, Z direction			
	Malfunction	100m/s ² (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. 104g	Approx. 419g	Approx. 461g	Approx. 426g	Approx. 471g

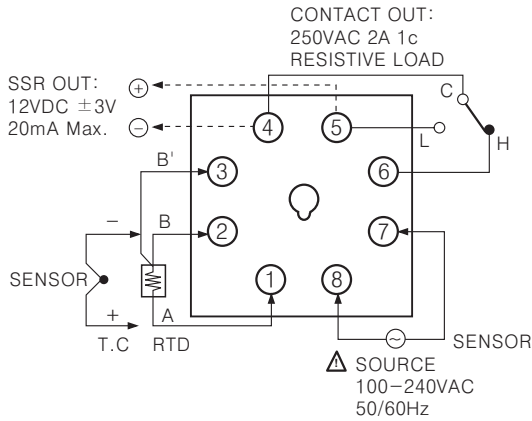
Dial Setting /Deviation Setting Type

Connections

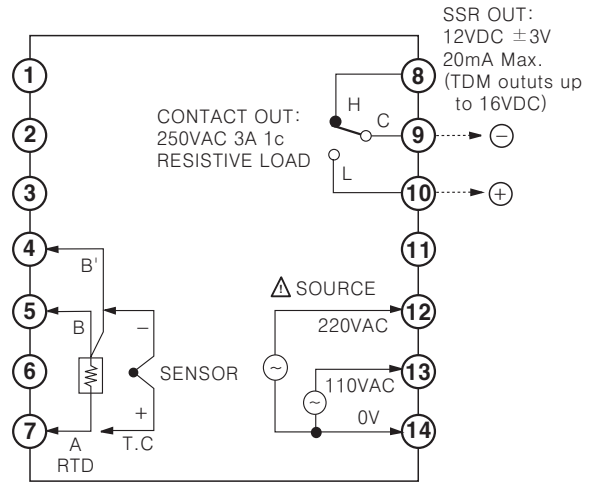
※RTD(Resistance Temperature Detector) : Pt 100Ω(3-wire type) ※Thermocouple : K, J, R

- (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

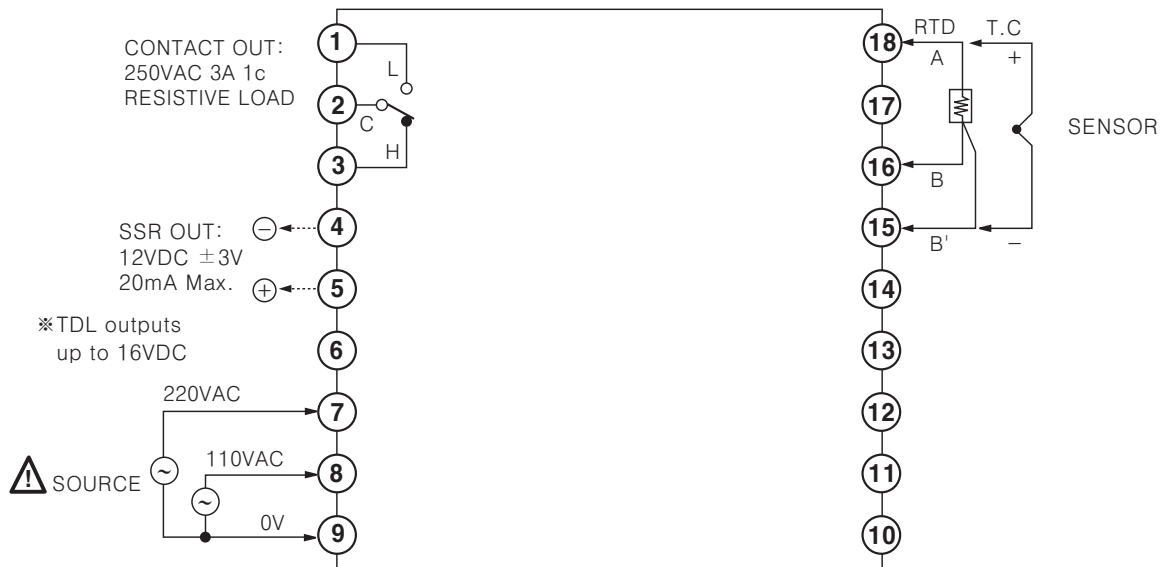
●TOS



●TOM, TDM

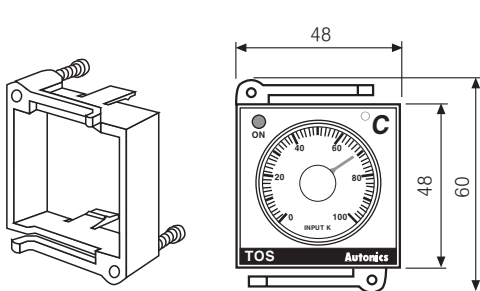


●TOL, TDL

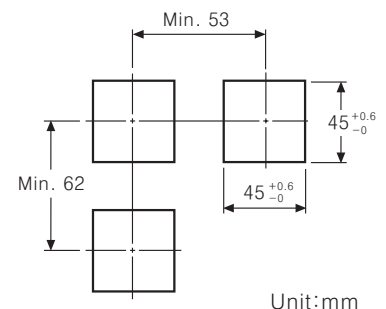


Dimensions

●TOS



●Panel cut-out

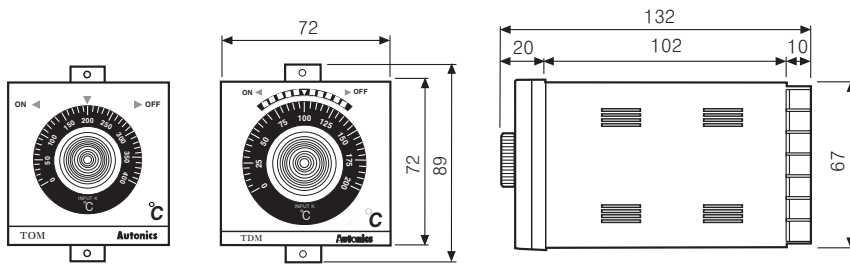


Unit:mm

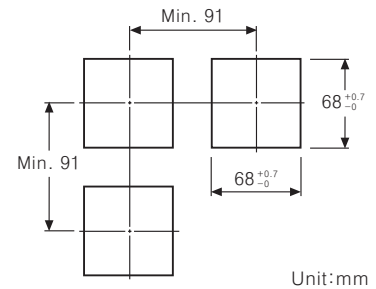
TOS/TOM/TDM/TOL/TDL

■ Dimensions

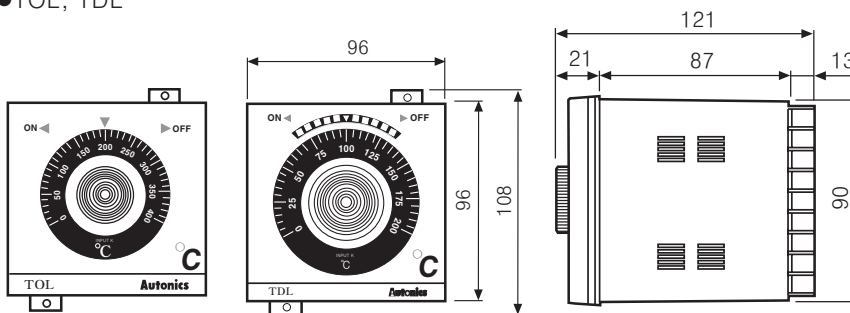
● TOM, TDM



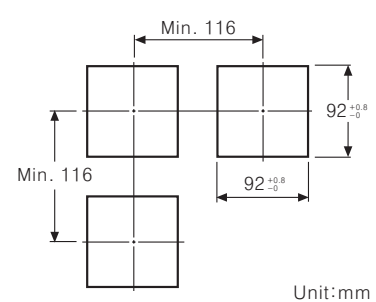
● Panel cut-out



● TOL, TDL



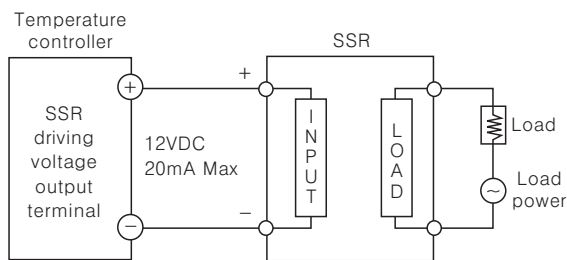
● Panel cut-out



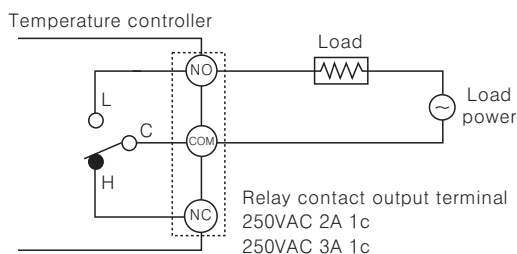
■ Proper usage

◎ Application of temperature controller and load connection

● SSR output



● Relay output



◎ Normal • Reverse operation

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

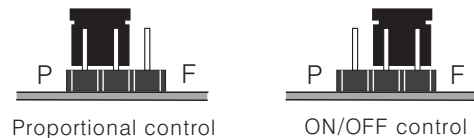
On the contrary, normal operation runs conversely and used for cooling. (This item runs as a reverse operation)

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

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.

Note) Several models require changing control mode by jump line or solder.



◎ Indicating LED deviation

The price of digital indicating type is high and non-indicating type has a problem with catching actual temperature.

In this case indicating deviation type is useful.

LED deviation indicator is a temperature controller having the function of lighting or putting out light.

※ The shipping specification is 10°C per one LED.

Extending temperature deviation is available with additional order

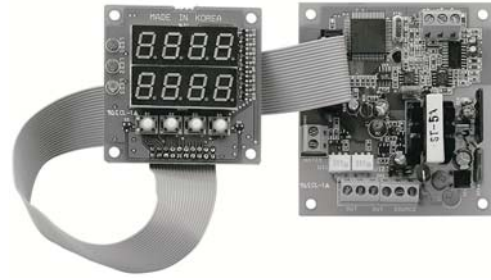
Board Type PID Controller

Board type Temperature controller

■ Features

- High quality and cost saving type
- Convenient panel for any places and purposes
- Able to change the dimension of display board

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



■ Ordering information

TB 4 2 - 1 4 R

Item	4	2	-	1	4	R	
Digit	4 Digit						
Display	2 Display type						
Sub output (Option)	1 EVENT1 output type						
Power supply	4 100-240VAC 50/60Hz						
Output mode	R	Relay output					
	S	SSR output					
	C	Current output(4-20mADC)					
	N	PV Transmission output(4-20mADC)					
	TB	Temperature Board					

※ Transmission output type does not have EVENT1 output.

■ Specifications

Model		TB42
Power supply		100-240VAC 50/60Hz(90 ~ 110% of rated voltage)
Power consumption		Approx. max. 5VA
Display method		7 Segment LED Display [Processing value (PV):Green, Setting value (SV):Red]
Character size		W8×H10mm
Input	Thermocouple	K(CA), J(IC) [Tolerance outer resistive is max. 100Ω]
	RTD	Pt100Ω, JIS Pt100Ω [Allowable line resistance is max. 5Ω per a wire]
Control output	Relay	250VAC 3A 1a
	SSR	12VDC ±3V 30mA Max.
	Current	4-20mADC (Load max. 600Ω)
Control method		ON/OFF control, P, PI, PD, PIDF, PIDS
Transmission output		4-20mADC, load Max. 600Ω for PV
Sub output		●Event1 output : Relay output(250VAC 0.5A 1a) ●Event2 output : OK monitoring display by LED
Setting type		Front push buttons
Display accuracy		F.S ±0.5% rdg ±1 Digit based on SV or 3℃ Max.
Hysteresis		Adjustable 1 ~ 100℃(0.1 ~ 100.0℃) at ON / OFF control
Proportional band(P)		0.0 ~ 100.0%
Integral time(I)		0 ~ 3600sec
Derivative time(D)		0 ~ 3600sec
Control cycle(T)		1 ~ 120sec
Sampling time		0.5sec fixed
Dielectric strength		2000VAC 50/60Hz for 1 minute
Vibration		0.75mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 2 hours
Relay life cycle	Main output	Mechanical : Min. 10,000,000, Electrical : Min. 100,000(250VAC 3A resistive load)
	Sub output	Mechanical : Min. 20,000,000, Electrical : Min. 200,000(250VAC 0.5A resistive load)
Insulation resistance		Min. 100MΩ (500VDC)
Noise strength		±2kV the square wave noise(pulse width:1μs) by the noise simulator
Memory retention		10 years(When using non-volatile semiconductor memory type)
Ambient temperature		-10 ~ 50℃
Storage temperature		-20 ~ 60℃
Ambient humidity		35 ~ 85% RH
Weight		Approx. 113.5g

(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

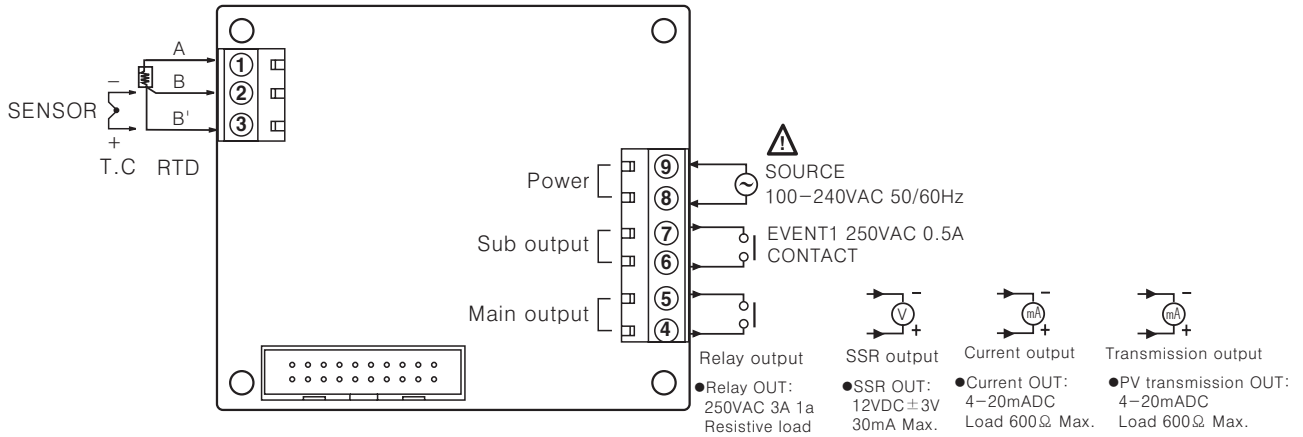
(L) Rotary encoder

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

TB42

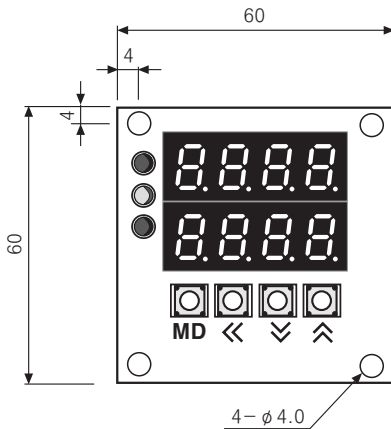
■ Connections

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

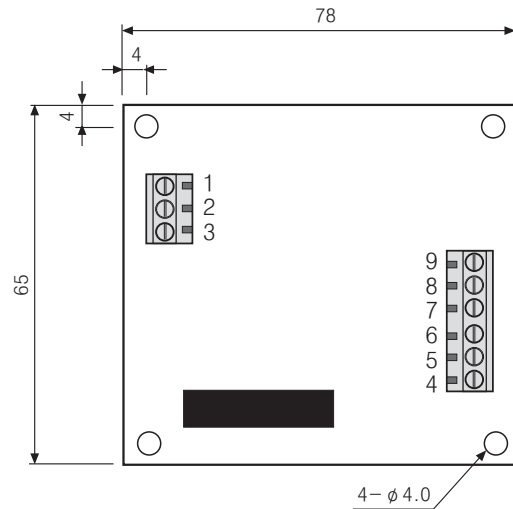


■ Dimensions

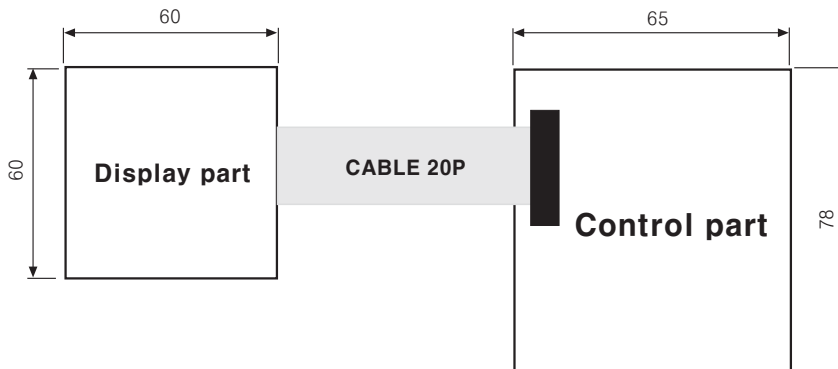
●Display part



●Control part



●Layout



※Cable length is 300mm.

※The size of board is based on user's application. (Optional)

Unit : mm

Multi Scanning Type

Automatic indication of 5 temperature inputs

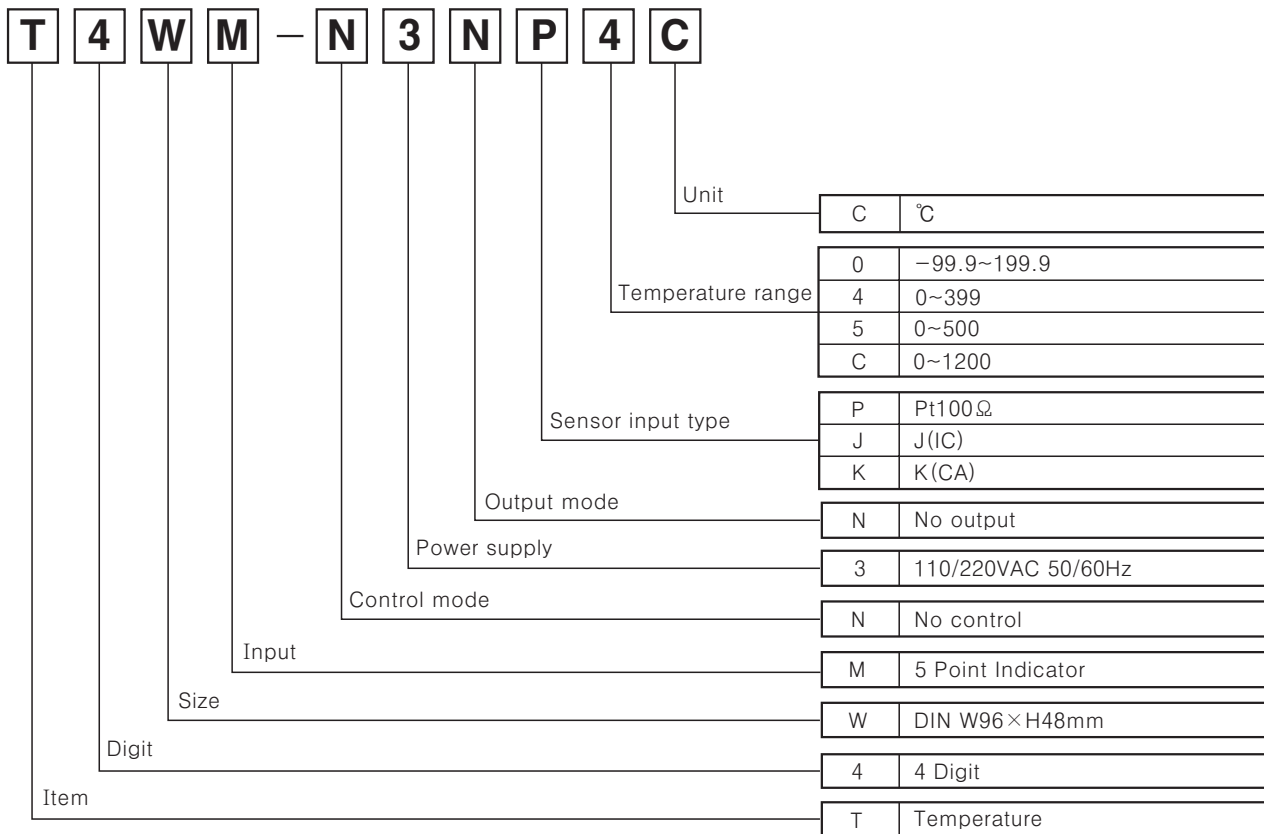
■ Features

- Indication type only
- High accuracy measurement : F · S ±0.5%
- 5 Point temperature measurement
- Automatic or manual display of temperature in each point



⚠ 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-47 page)

(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

T4WM

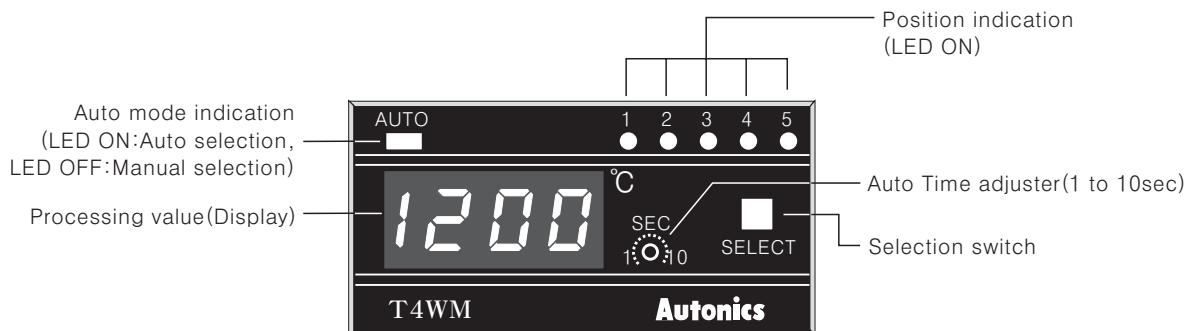
Temperature range for each sensor

Model	T4WM		
Sensor input type	Thermocouples		RTD
	J(IC)	K(CA)	Pt100Ω
(°C/°F)			
Standard scale range	500°C	1200°C	199.9°C, 399°C, -99.9°C

Specifications

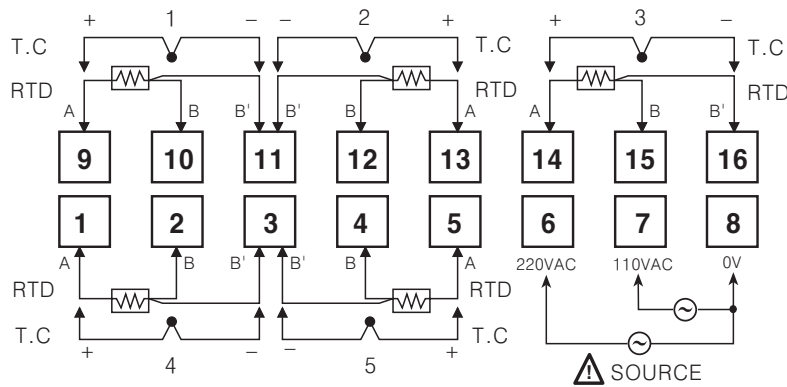
Model	T4WM	
Power supply	110/220VAC 50/60Hz	
Allowable voltage range	90 ~ 110% of rated voltage	
Power consumption	3VA	
Display method	7Segment LED Display	
Character size	W9.8×H14.2mm	
Display accuracy	F · S ± 0.5% rdg ± 1digit	
Input sensor	• Thermocouples : K(CA), J(IC) • RTD : Pt100Ω	
Input line resistance	• Thermocouples : Max. 100Ω • RTD : Max. 5Ω per a wire	
Available sensor quantity	• Thermocouple : Max. 5pcs • RTD : Max. 5pcs	
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 ² (Approx. 30G) 3 times at X, Y, Z direction
	Malfunction	100m/s ² (Approx. 10G) 3 times at X, Y, Z direction
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. 322g	

Front panel identification



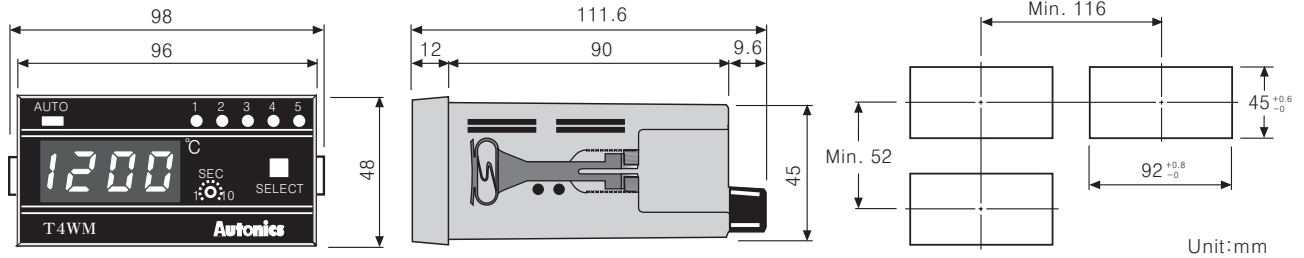
Multi Scanning Type

Connections



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

Dimensions



Unit:mm

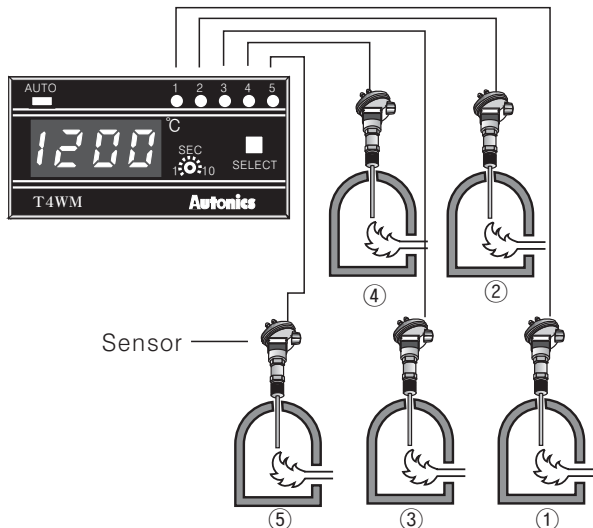
Mode selection

Manual selection and Automatic selection

Manual	Select switch	Auto
Sensor number is flickering by one touch (Auto LED : OFF)		Auto lamp will be ON by pressing for 3sec. then run

Manual function

- Each time the select switch is pressed, the LED of selected sensor number is flickering and display shows the temperature of that sensor.



Auto function

- Each temperature of sensor will be displayed automatically for setting time of Auto time.
- Auto time can be adjustable from 0 to 10sec.
- When it is operating as Automatic function, Auto LED will be ON .

Selection of input sensor number by internal DIP switch

- Max. 5 different sensors can be connected but do not use thermocouple and PT100Ω together.

Sensor	2	3	4	5
DIP S/W	ON 3 2 1 OFF	ON 3 2 1 OFF	ON 3 2 1 OFF	ON 3 2 1 OFF

Memory retention

- When the power fails, the data value will be preserved for 3 months.
(But the battery must be charged full)

(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

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