(A) Photo electric sensor

(F) Rotary encoder

(G) Connector/ Socket

(H) Temp. controll

## ALARM, Sub-output type

#### Features

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





## Ordering information

		5													controller		
<b>T</b>	3	•	<b>A</b> –	В		3	R	F	<b>)</b>	4	C				(I) SSR/ Power controller		
											Unit	-c	⊃°		(J) Counter		
												0	-99 to 199, -99.9 to 199.9	=	(K) Timer		
				0 to 399		Timer											
										Tem	perature range	8	0 to 799		(L)		
												A	0 to 999		(L) Panel meter		
												С	0 to 1200		(M)		
												F	600 to 1600		(M) Tacho/ Speed/ Pulse meter		
												Ρ	DPt100Ω		(N) Display unit		
									Sens	or inpu	ut type	J	J(IC)				
												к	K(CA)				
									R R(PR)				R(PR)		(O) Sensor		
												R	Relay output		controller		
								Conti	Control output				SSR drive voltage output		(P) Switching		
												С	Current output(DC4-20mA)		mode power supply		
						L	ower s		ly			3	110/220VAC 50/60Hz		(Q) Stepper motor&		
					Cont	trol n	nethoo	b				в	ON/OFF, P control		Driver&Controll		
			Alarm/	Sub o	outpu	ıt mo	de					A	Alarm output(High·Low)		(R) Graphic/ Logic		
			L									S	SUB output		panel		
		Size										н	DIN W48×H96mm		(S) Field network		
		SIZE	28		M DIN W72×H72mm									device			
												L	DIN W96×H96mm		(T) Software		
	Digit											3	999(3digit)				
	L											4	9999(4digit)		(U) Other		
Item												Т	Temperature Controller				

**%**Refer to the H-94 about sensor temperature range for selection.

## Temperature range for each sensor

Seri	es		тз	HA				T3HS				T4MA /	T4LA		
Sen	sor	The	ermocouple	5	RTD	Th	iermo	couples	RTD		Thermo	couples		R	TD
input typ		J(IC)	K(CA)		DPt100Ω	2 J(I	C)	K(CA)	DPt100Ω	J(IC)	K(0	CA)	R(PR)	DPt	100Ω
ard scale range $\hat{\mathbb{O}}$	1600 1200 1000 800 600 400 200 100	399°C	399°C	999°C	399" 199°C	C 399	PC	399°C	399°C	399°C	71 399°C	1200°C	1600°C	199.9°C	399°C
Standard	-100				-99°C									-99.9°C	

XIn case input sensor is R(PR) type, it is not available to perform correct control under 600°C.

## Specifications

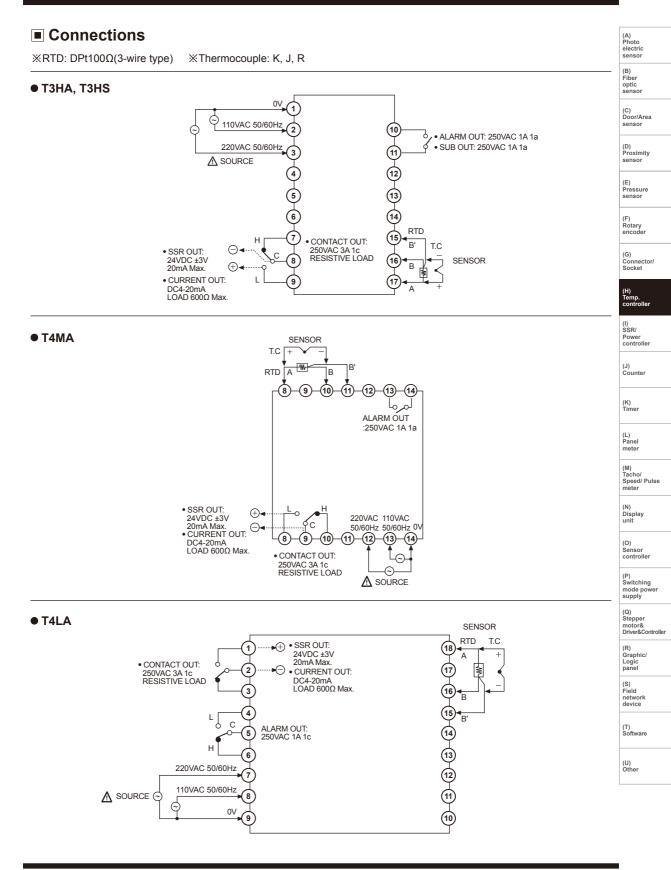
Series		ТЗНА	T3HS		T4MA	T4LA						
Power supply		110/220VAC 50/60Hz										
Allowable	voltage range	90 to 110% of rated voltage										
Power cor	nsumption	Max. 3VA										
Display m	nethod	7 Segment(red) LED method										
Character	r size(W×H)	6.0×10.0mm			7.2×9.8mm	9.5×14.2mm						
Display ad	ccuracy	F.S. ±0.5% rdg ±1digit										
Setting typ	ре	Digital setting										
Setting ac	ccuracy	F.S. ±0.5%										
Sensor in	put	Thermocouples: K(CA), J(IC), R(PR) / RTD: DPt100Ω ※There is no R(PR) in T3HA, T3HS Series.										
nput line	resistance	Thermocouples: Max. 100 $\Omega$ , RTD: Allowable line resistance max. 5 $\Omega$ per a wire										
Control	ON/OFF control	Hysteresis: F.S. 0.2 to 3% variable										
Control	P control	Proportional band: F.S. 1 to 10% variable, Period: 20sec. fixed										
Alarm	SUB	SUB: 0 to -50°C variable										
output Alarm		ALARM width F.S. 0 to 10% variable										
RESET ad	djuster range	F.S. ±3% variable (revision of control deviation / only for P control)										
Control output		Relay contact output: 250VAC 3A 1c SSR drive voltage output: 24VDC ±3V 20mA Max. Current output: DC4-20mA (load 600Ω Max.) ALARM OUT: SUB OUT: ALARM OUT: ALARM OUT:										
		250VAC 1A 1a	250VAC 1/	A 1a	250VAC 1A 1a	250VAC 1A 1c						
Self-diagr	nosis	Built-in burn out function (cut off output when sensor is disconnected)										
Insulation	resistance	Min. 100MΩ (at 500VDC megger)										
Dielectric	strength	2,000VAC 50/60Hz for 1 min.										
Noise resi	istance	±1kV the square wave noise(pulse width: 1µs) by the noise simulator										
Mechanical		0.75mm amplitude at frequency of 10 to 55Hz (for 1 min.) in each of X, Y, Z directions for 1 hour										
Vibration	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz (for 1 min.) in each of X, Y, Z directions for 10 min.										
Shock	Mechanical	300m/s²(approx. 30G) in each of X, Y, Z directions for 3 times										
SHUCK	Malfunction	100m/s <sup>2</sup> (approx. 10G) in each of X, Y, Z directions for 3 times										
Relay	Mechanical	Min. 10,000,000 operations										
life cycle	Electrical	Min. 100,000 operations(250VAC 3A at resistive load)										
Environ-	Ambient temperature	-10 to 50°C, storage	: -25 to 65°C									
ment	Ambient humidity	35 to 85%RH, stora	ge: 35 to 85%RH									
Unit weigt	ht	Approx. 514g	Approx. 51	7a	Approx. 425g	Approx. 484g						

 $\ensuremath{\mathbb{X}}\xspace{F.S.}$  is same with sensor measuring temperature range.

Ex) In case of using temperature is from -99.9 to 199.9°C, Full scale is 299.8.

 $\ensuremath{\mathbbmm{K}}\xspace$  Environment resistance is rated at no freezing or condensation.

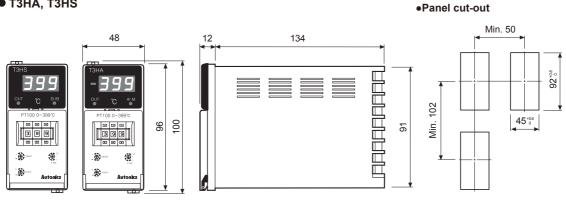
# Alarm Output type



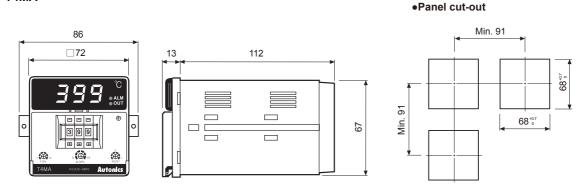
### Dimensions

• T3HA, T3HS

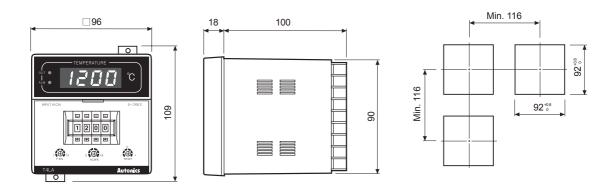
(unit: mm)



• T4MA



• T4LA



Panel cut-out

(A) Photo electric

senso

(B) Fiber optic sensor

(C) Door/Area

(D) Proximity

(E) Pressure

(F) Rotary encoder

Connector/ Socket

(H) Temp.

(I) SSR/

> Power controlle

(J) Counter

(K) Timer

(L) Panel

mete

meter

(N) Display unit

(O) Sensor controller

(P) Switching

mode powe supply

(Q) Stepper motor& Driver&Co

(R) Graphic/ Logic panel

(S) Field network device

(T) Software

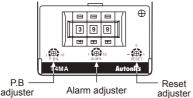
(U) Other

(M) Tacho/ Speed/ Pulse

(G)

## Proper usage

#### ◎ Using front adjuster



#### • P.B adjuster

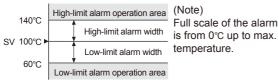
In case of ON/OFF control, set variable F.S. 0.2 to 3% of hysteresis, and in case of P control, set variable F.S. 1 to 10% of hysteresis.

#### Alarm adjuster

It adjusts alarm range(F.S. 0 to 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  $400^{\circ}$ C × 0.1 =  $40^{\circ}$ C. And the alarm range is high-limit  $40^{\circ}$ C and lower-limit  $40^{\circ}$ C.



#### Reset adjuster

It corrects offset can be occurred by P control and has F.S.  $\pm 3\%$  of adjustable range. Do not operate the adjuster when it is used as ON/OFF control.



 ①Turn left when offset value is higher than set value. (Direction ①)
②Turn right when offset value is lower than set value. (Direction ②)

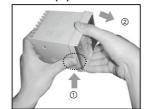
#### © Case detachment





Pressing the front guide of Lock toward ① and squeeze and pull toward ②, it is detached.

## • T3HA(S)/T4LA



Open the front guide, turn it toward ① and pull toward ②, it is detached.

#### $\odot$ How to select control mode

Factory specification is P control. When using ON/OFF control, transfer the switch of control method from P to F after detaching the case from its body. When control output is current output, P control is fixed, there is no switch Pin of control method.

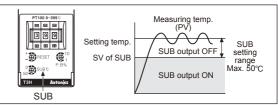


#### **O Normal/Reverse operation**

Reverse operation executes to output ON when processing value is lower than setting value, and it is used for heating. Normal operation is executed conversely and used for cooling. (This item runs as a reverse operation)

#### © SUB function (T3HS Series)

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.

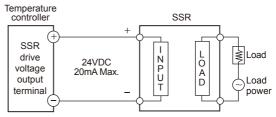


\*SUB function is included only in T3H Series.

XSUB range can be set up to 50°C lower than setting value.

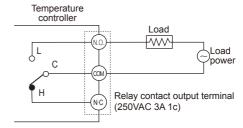
## O Application of temperature controller and load connection

#### SSR drive voltage output connection

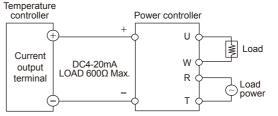


When using voltage(for driving SSR) in the other purposes, do not over the range of the rated current.

#### Relay output connection



#### • Current output connection



- % The current value of DC4-20mA is available at lower than  $600\Omega$  of resistive load.
- ※Refer to the H-141 page for caution for using and simple error diagnosis.

**Autonics**