Dial Setting /Deviation Setting Type

Analog and Non-indicating type, Set temperature by dial

▣Features

● Non-indicating type
● Setting temperature by Dial
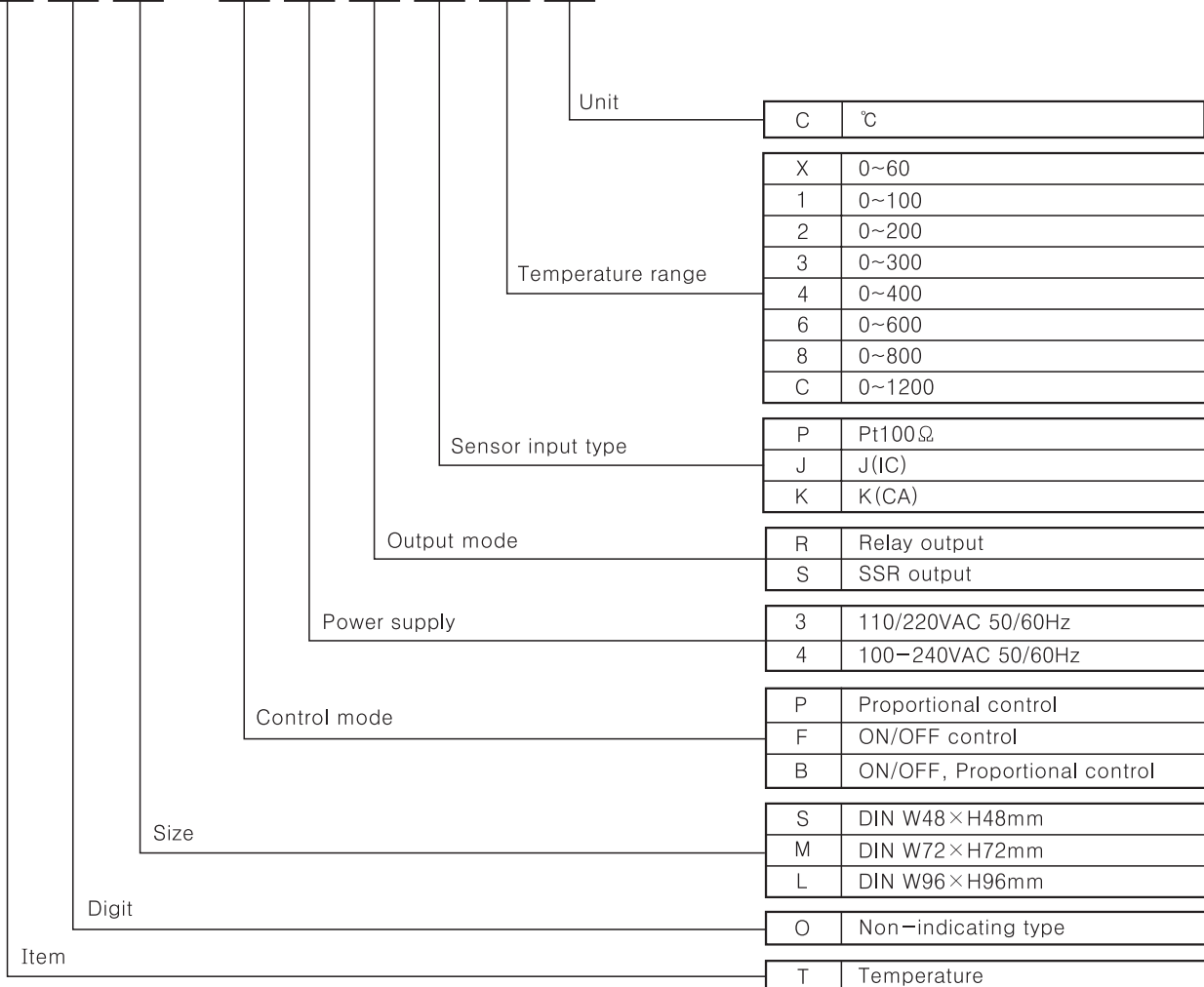● Includes burn out function
● Universal power : TOS

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

c**UL**us
(TOS Series only)

▣Ordering information

| T | O | S | – | B | 4 | R | P | 4 | C |

Unit

C	℃

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-indicating type

Item

T	Temperature

※Please check the range of temperature when selecting model. (Refer to C-43)

Autonics

TOS/TOM/TOL

▣ Temperature range for each sensor

Model	TOS / TOM / TOL		
Sensor input type	Thermocouples		RTD
	J(IC)	K(CA)	Pt100Ω

※In case, the sensor is R(PR) type, it is not available to indicate the temperature and control correctly.

▣ Specifications

Model	TOS	TOM	TOL
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	
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□		
Control — Proportional	Proportional band : F・S 3% fixed, Period : 20sec. fixed□		
Control output	• Relay output : 250VAC 2A 1c • SSR Output : 12VDC ±3V Load 20mA Max.	• Relay contact output : 250VAC 3A 1c • SSR Output : 12VDC ±3V 20mA max.	
Self−diagnosis	Includes 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		
Vibration — Malfunction	0.5mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 10 minutes		
Shock — Mechanical	300m/s² (Approx. 30G) 3 times at X, Y, Z direction		
Shock — Malfunction	100m/s² (Approx. 10G) 3 times at X, Y, Z direction		
Relay life cycle — Mechanical	Min. 10,000,000 times		
Relay life cycle — Electrical	Min. 100,000 times (250VAC 3A at resistive load)		
Ambient temperature	−10 ~ +50℃ (at non−freezing status)		
Storage temperature	−20 ~ +60℃ (at non−freezing status)□		
Ambient humidity	35 ~ 85%RH		
Aproval	c ᴿᵁ us	———	———
Unit weight	Approx. 104g	Approx. 419g	Approx. 426g

※F.S is same with sensor measuring temperature range.
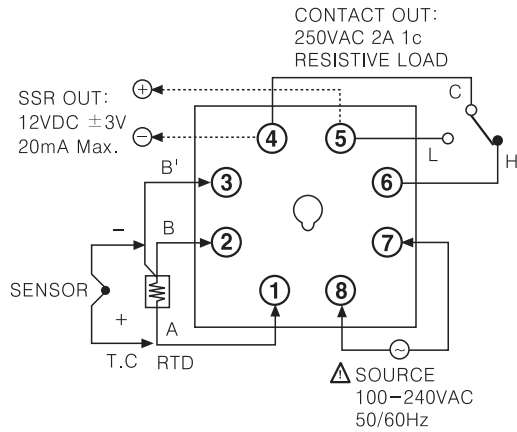　Ex) In case of using temperature is from 0~800℃, Full scale is "800".
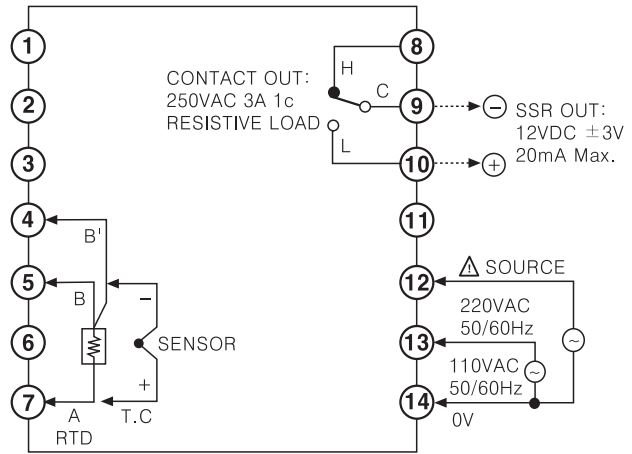
Dial Setting /Deviation Setting Type

■ Connections

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

● TOS

CONTACT OUT:
250VAC 2A 1c
RESISTIVE LOAD

SSR OUT:
12VDC ±3V
20mA Max.

SENSOR

T.C　RTD

⚠ SOURCE
100–240VAC
50/60Hz

● TOM

CONTACT OUT:
250VAC 3A 1c
RESISTIVE LOAD

SSR OUT:
12VDC ±3V
20mA Max.

SENSOR

RTD　T.C

⚠ SOURCE
220VAC
50/60Hz
110VAC
50/60Hz
0V

● TOL

CONTACT OUT:
250VAC 3A 1c
RESISTIVE LOAD

SSR OUT:
12VDC ±3V
20mA Max.

220VAC
50/60Hz
110VAC
50/60Hz
⚠ SOURCE
0V

RTD　T.C

SENSOR

■ Dimensions

● TOS

48

48　60

92

13　64　15

45

● Panel cut-out

Min. 53

45 $^{+0.6}_{-0}$

Min. 62

45 $^{+0.6}_{-0}$

(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) Switching power supply

(J) Proximity sensor

(K) Photo electric sensor

(L) Pressure sensor

(M) Rotary encoder

(N) Stepping motor & Driver & Controller

(O) Graphic panel

(P) Production stoppage models & replacement
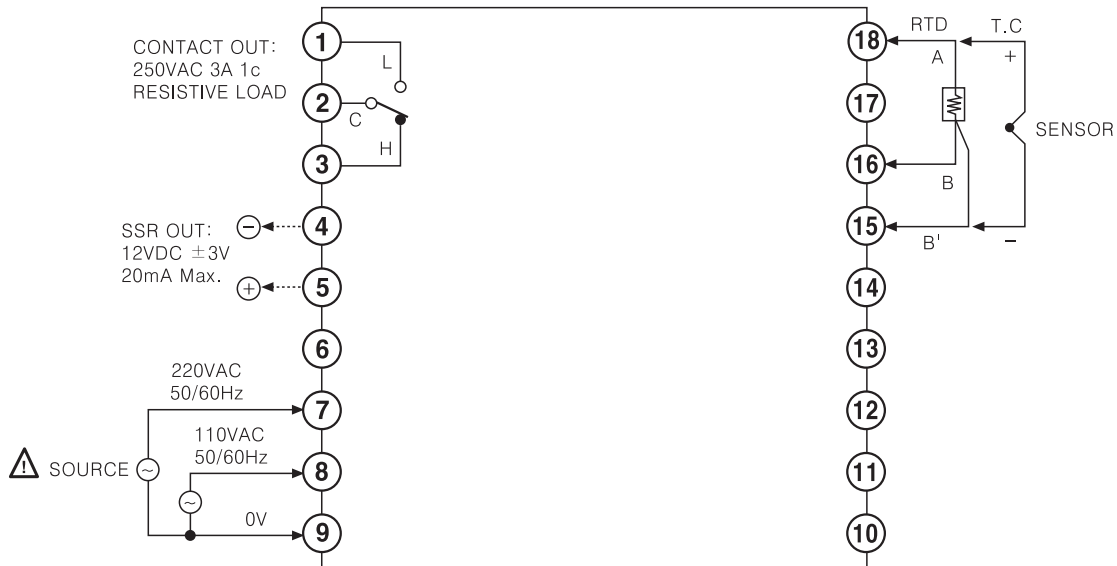
TOS/TOM/TOL

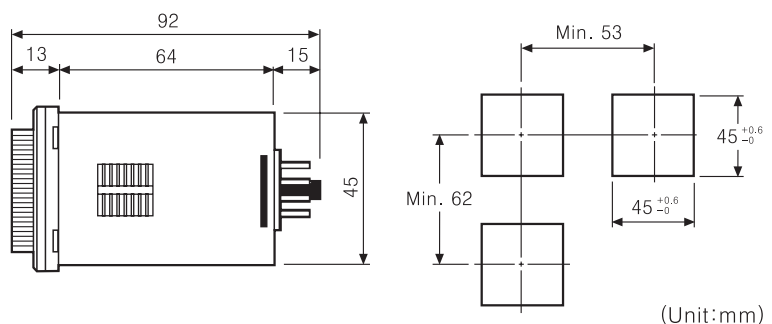## ▣Dimensions

●TOM

72

72   89

132
20   102   10

67

●Panel cut-out

Min. 91

$68^{+0.7}_{-0}$

Min. 91 $68^{+0.7}_{-0}$

(Unit:mm)

●TOL, TDL

96

96   108

121
21   87   13

90

●Panel cut-out

Min. 116

$92^{+0.8}_{-0}$

Min. 116 $92^{+0.8}_{-0}$
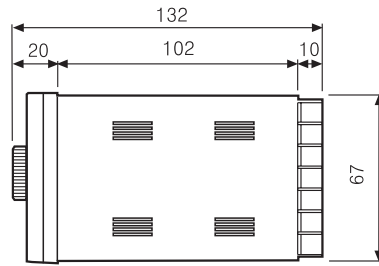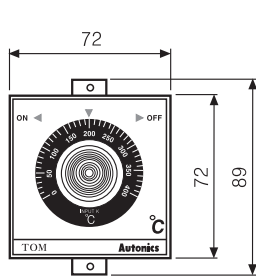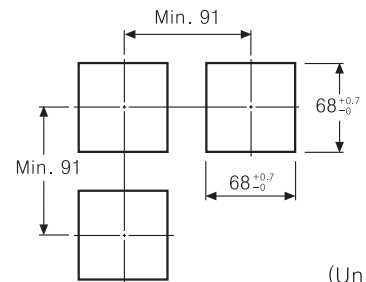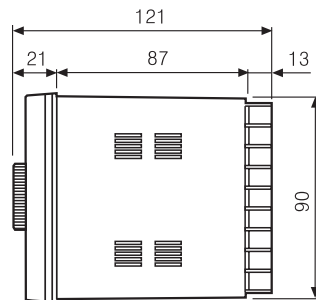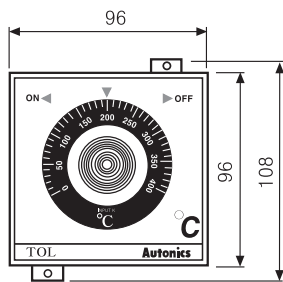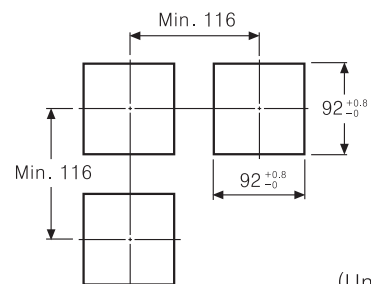
(Unit:mm)

▣Proper usage

◎Application of temperature controller and load connection

●SSR output

Temperature controller

SSR

Output terminal of voltage (for driving SSR)

12VDC 20mA Max.

INPUT   LOAD

Load

Load power

●Relay output

Temperature controller

Load

Load power

Relay contact output terminal
(250VAC 2A 1c
250VAC 3A 1c)
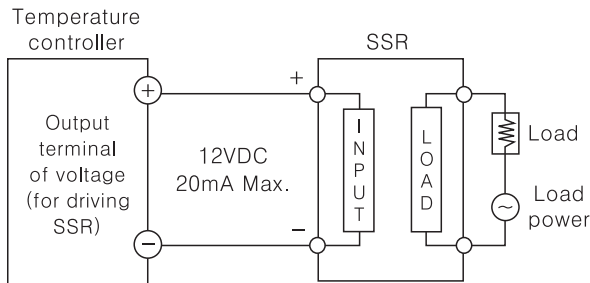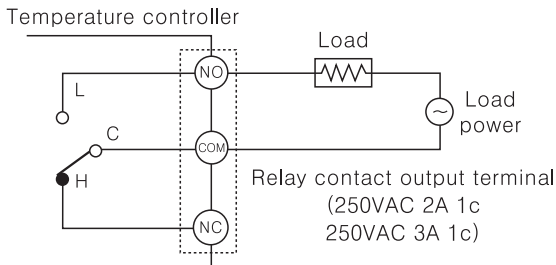
◎Normal/Reverse operation

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.)

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

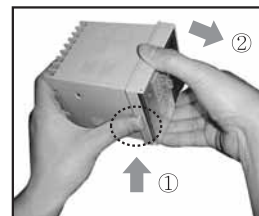Factory specification is proportional control.

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

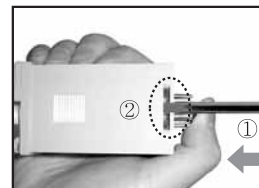Note) Several models require to change control mode by jump line or solder.

P   F   P   F

Proportional control   ON/OFF control
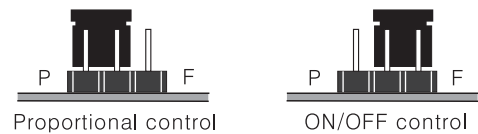
◎Case detachment

●TOM, TOL

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

●TOS

Pressing Pin plug ①, raise it up with a driver as ② and it is detached.