

TTM-04SP Series Operation Manual

Plug-in Digital Temperature Controller Initial Version: May 2008

*Thank you for purchasing our TTM-04SP Series. Please thoroughly read this manual.

*For detailed specifications and usage, consult your dealer or our sales.

Cautions

For safety purpose, following symbols are used in this manual.

Warning The case that a user may receive fatal damage, electric shock, or severe burn injury when the product is incorrectly used.

Caution The case that a user may receive minor damage or the equipment may get damage.

Caution

Wiring: Do not use empty terminals for irrelevant purposes.

Operation: Do not use a sharp-pointed tool for operating keys.

Warning

※Verify correct wiring before turning on electricity since incorrect wiring may cause an equipment failure or a fire.

※Modification of this equipment may cause malfunctioning or a fire.

Do not add modification on this equipment.

• Hand over this operation manual to a person who actually operates the product.

• Do not reprint or duplicate this manual without permission.

• Content of this manual may be subject to modification without prior notice.

Verification of the product

1) Verification of the model

Refer the model name printed in the packing box to the order sheet.

2) Verification of accessories:

Mounting devices (See the section, How to Mount the Panel.)

Operation manual (this document) -- 1 copy

3) Model table:

TTM-04SP-□-AB

Symbol	Output 1	Symbol	Standard specifications
R	Relay contact	A	Event output 1 relay contact output
P	Voltage to drive SSR	B	Event output 2 relay contact output *

Model
Thermocouple (K, J, R, T, N, S, B)
Input Resistance temperature detector (Pt10/Pt100)
Dimension 48×48mm

*Event output2 can be used as control output.
When control output1 is the heating control, control output2 is fixed as the cooling control, and When control output1 is the cooling control, control output2 is fixed as the heating control.

Specifications

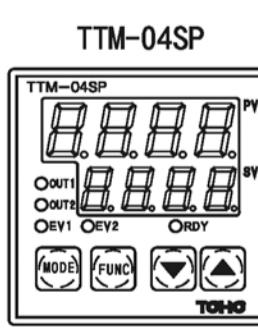
Power supply voltage	100 to 240VAC, 50/60Hz
Power consumption	10 VA or less
Memory content	EEPROM
Input	Thermocouple/resistance-temperature detector(swutable in the parameter setting from front key)
Control output	Relay contact/voltage to drive SSR
Control method	Two types of PID, ON/OFF
Range of temperature and humidity	0 to 50 °C, 20 to 90%RH (dew condensation not allowed)
Range of storage temperature and humidity	-25 to 70 °C, 5 to 95%RH (freezing and dew condensation not allowed)
Weight	200g or less
Installation environment	• Absence of corrosive gas, dust, oil, etc. • As far away as possible from electric noises and little effect from magnetic field • As little influence as possible from mechanical vibrations or impacts • No reception of direct sunlight
Installation	Installation category II

Before Performing Control

- This product employs nonvolatile memory; Setting is saved even after power-off.
 - This product allows switchover of input types.
 - For use, match the input type selection with the product input setting.
 - This product allows PID control (time proportional control) and ON/OFF control.
 - Characteristics of each control are as follows.
- Make selection based on understanding of such characteristics.
- ※In self-tuning, PID constant is automatically determined and written in when control starts or SV changes.

PID control	ON/OFF control
Better result is obtained than those from ON/OFF control.	Larger life of relay contact is typically expected due to turn-on at lower temperature than setting and turn-off at higher (case of heating control).
Drawback: Shorter life of relay contact is resulted due to frequent turn-on and off of output.	Quality of control value is lower than that of PID control.

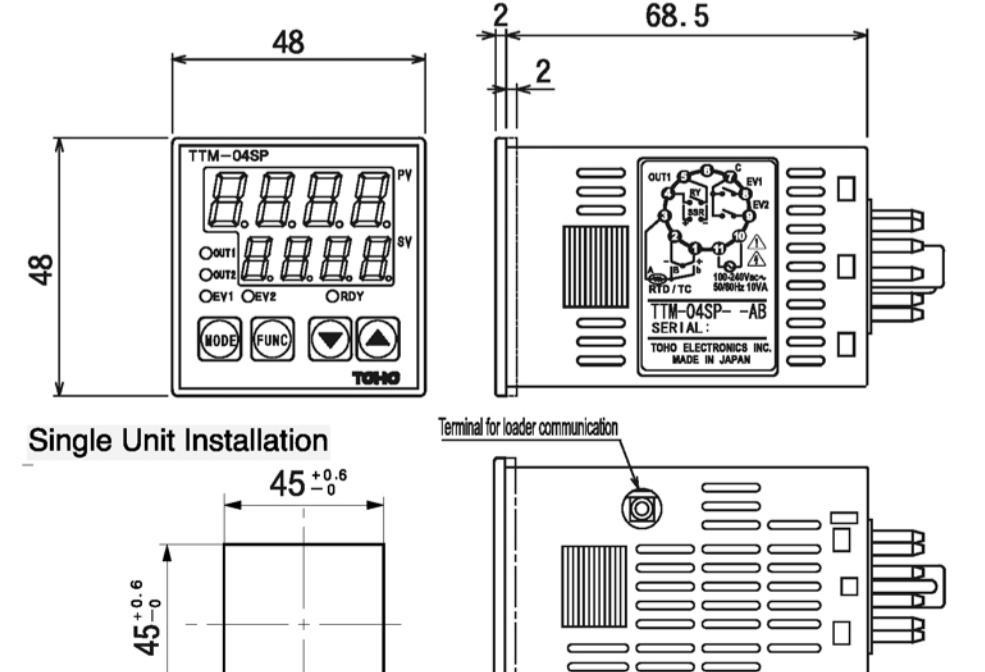
PARTS INDICATION



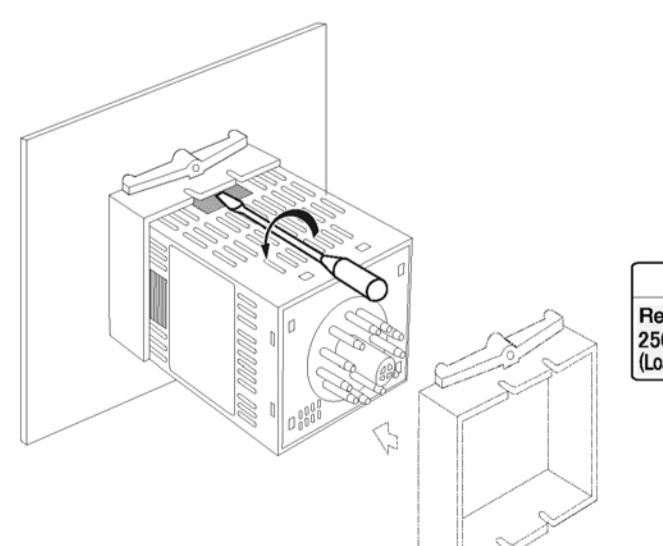
PV	Process value, character for setting mode display.
SV	Setting value, input value for setting mode display.
OUT1	Lights ON when output 1 turn ON
OUT2	Lights ON when output 2 turn ON
EV1	Lights ON when Event output 1 turn ON
EV2	Lights ON when Event output 2 turn ON
RDY	Lights ON under Ready
MODE KEY	For change of display
FUNC KEY	For action of function setting
▲KEY	Up down key for change of setting value. Holding the up down keys are the value at a rapid rate.

INSTALLATION AND WIRING

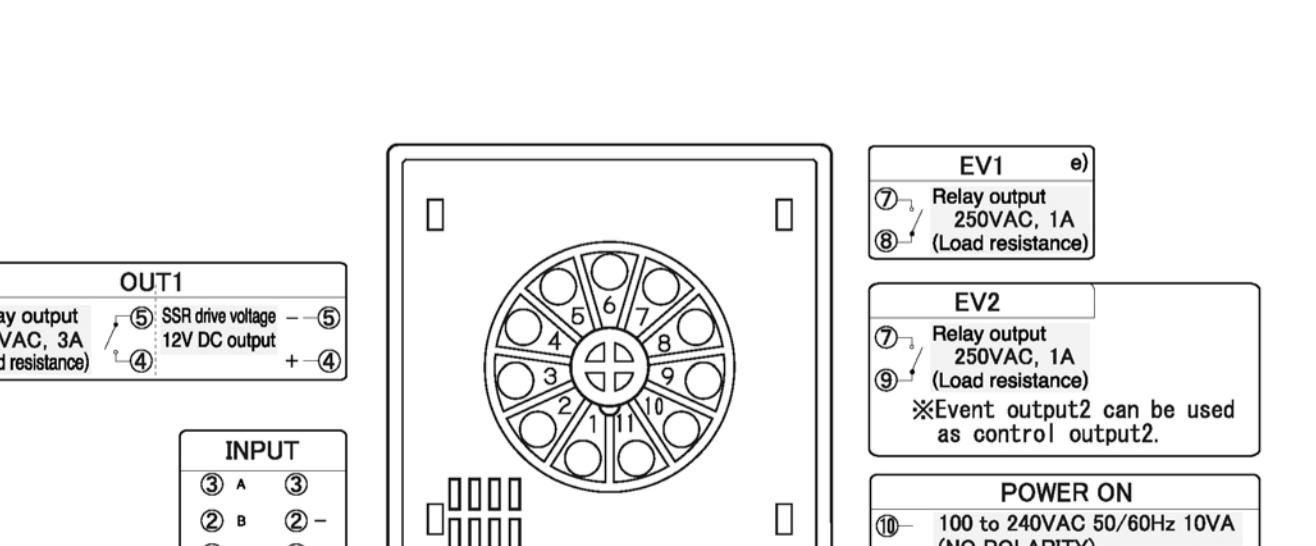
Outer Dimensions and Panel Cutout



Mounting



Wiring



EV1
e)
Relay output
250VAC, 1A
(Load resistance)

EV2
e)
Relay output
250VAC, 1A
(Load resistance)

*Event output2 can be used as control output2.

POWER ON
100 to 240VAC 50/60Hz 10VA
(NO POLARITY)
AC100~240V 50/60Hz 10VA

INPUT
(3) A (3)
(2) b (2)
(1) b (1)
RTD

OUT1
(5) SSR drive voltage
12V DC output
+ (4)
(6) (7) (8) (9) (10)

RTD
(11) (12) (13) (14)

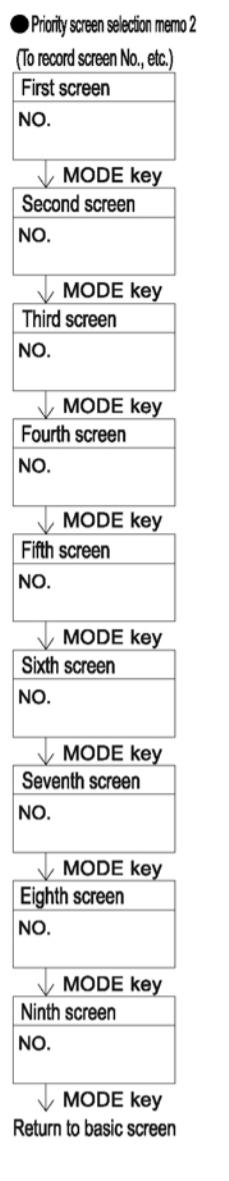
RTD
(15) (16) (17) (18)

POWER ON
100 to 240VAC 50/60Hz 10VA
(NO POLARITY)
AC100~240V 50/60Hz 10VA

RTD
(19) (20) (21) (22)

RTD
(23) (24) (25) (26)

RTD
(27) (28) (29) (30)



Displayed when input exceeds the display range upper limit.
Displayed when thermocouple is disconnected.

Displayed when either A, B or terminal of resistance-temperature detector is disconnected.

Displayed when input exceeds the display range lower limit.

Displayed at memory error.

Displayed when thermocouple is set, or when A/D conversion error is present.

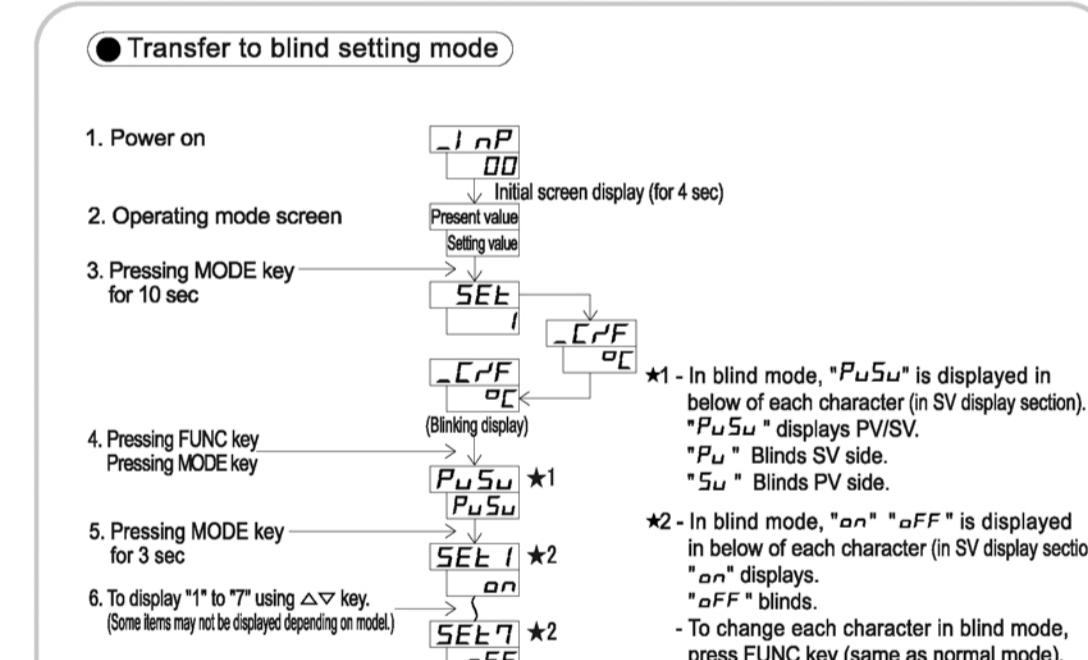
Displayed at auto-tuning error.

Displayed when attempting to change a parameter during key lock.

Alternately displayed between SV and PV screens during auto-tuning.

Displayed when attempting to change a setting value on control mode screen provided that FUNC key is assigned RUN/READY.

Displayed when attempting to change a setting value on control mode screen during timer in use.



Other displays

