

和文の説明は裏面にあります。

TTM-002W USER'S MANUAL DIN.DIGITAL TEMPERATURE CONTROLLER

Thank you for purchasing model TTM-002W Digital Temperature Controller. Please go through this Instruction Manual carefully and use the unit in proper manner. If the unit is used in a manner not specified by the manufacturer, the protection provided the unit may be impaired

NOTICE/WARNING BEFORE OPERATION USE

- The meaning of the symbols indicated on the label found at the side of the unit is as follows.
 - ⚠ : Cautions,Danger,Refer to a manual
 - ⚡ : Cautions, Danger of Electric Shock
- When having the purchased controller at hand, please be sure that its unit is a correct model (See the following "Model Configuration").
- The following symbol marks ⚠ provide to prevent incident or damage. Kindly refer to the details of the WARNING/CAUTION when using for the first time.
- Another copy of the user's manual "Advanced Version" is provided at customer's request.

WARNING Due to mishandling, serious dangers may occur to the operator such as death, electrocution and a skin burn.

CAUTION Owing to mishandling, it may cause some damage to the unit or the operator getting slight injury.

CAUTION

- For prevention of its malfunction, do not push the front key with sharp points.
- Spare terminal must not be used for other purposes.

WARNING

- Make sure the correct wiring connection before turning on electricity. Mis-wiring may cause malfunction of the unit and fire.
- Never modify the unit to prevent damage or incident such as malfunction and fire etc.

- Please put this user's manual aside for your reference, when operating the unit.
- Copy or reprint of this manual, wholly or partially, is not allowed.
- The contents of this manual may change without notice in future.

INSTALLATION CONDITIONS

- Indoor use • Altitude up to 2000m • Pollution Degree 2
- Mains supply voltage fluctuations can't exceed -15/+10 percent of nominal voltage. However, 24V does not exceed +10 percent.
- TRANSIENT OVERVOLTAGES up to the levels of OVERVOLTAGE CATEGORY II.
- TEMPORARY OVERVOLTAGES occurring on the MAINS supply Short-term:1440V (may last up to 5S) Long-term:490V (may last longer than 5S)

ACCESSORY & CONFIGURATION

- 1) Please be sure that the unit enclosed in packing carton is a right model before using.
- 2) Kindly check the following accessory being contained in that carton box.
 - Installation Attachment (For installation, please see "INSTALLATION AND WIRING" on the back.)
 - This user's manual : 1 copy
- 3) Model Configuration

TTM-002W		Input	Output 1	Option
		☐	☐	A ☐ ☐
CODE	Input Type	Option		
	Thermocouple (K, J, R, T, N, S, B)	When DI is selected this option is not usable. When I output (4~20mA) is selected, this option is not provided.		
	R.T.D. (Pt100, JPt100)			
2	0~5V, 1~5V, 4~20mA			
CODE	Output 1			
R	Relay contact			
P	SSR drive voltage			
I	Current 4~20 mA DC			

SPECIFICATIONS

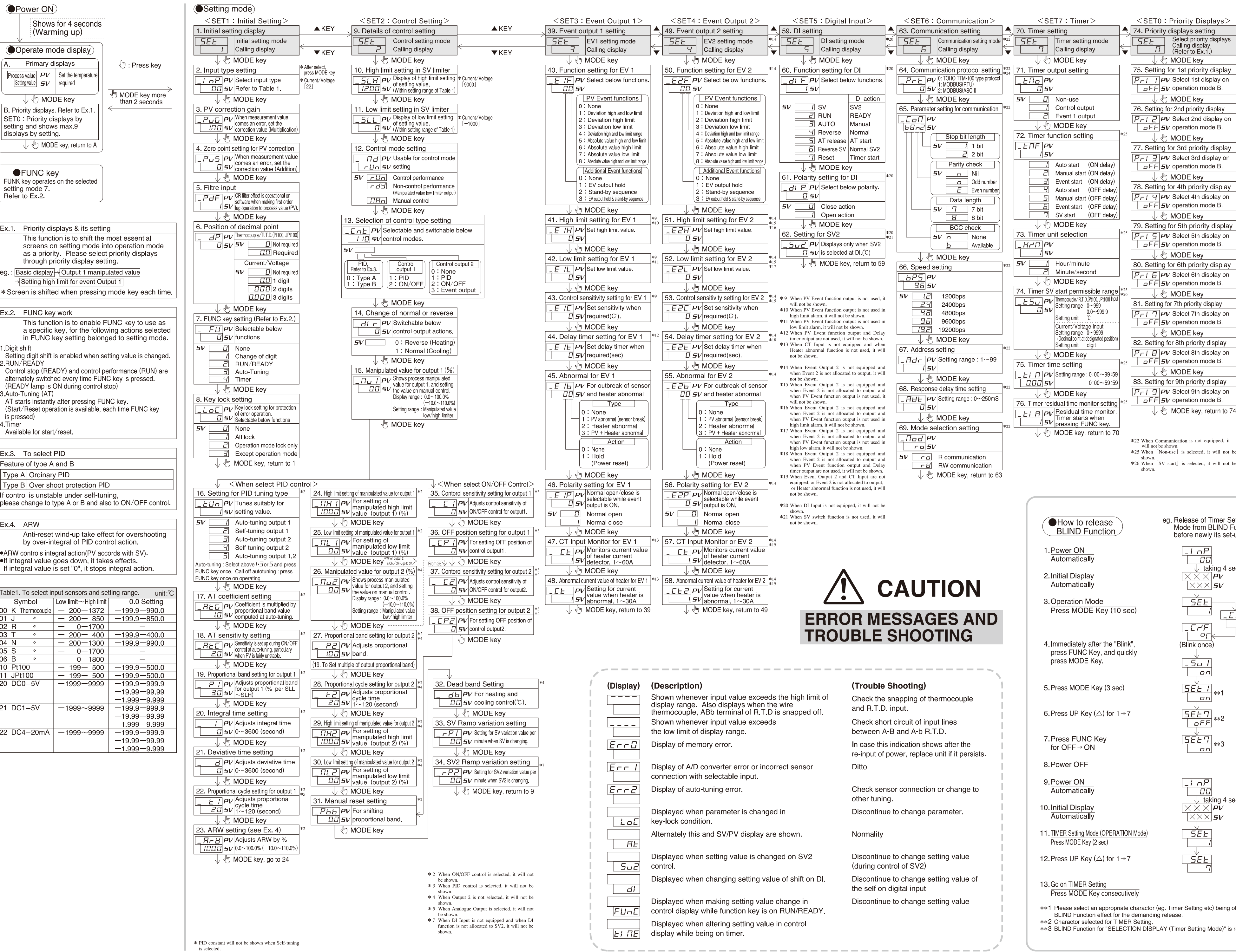
Power Supply Voltage	100 to 240V AC, 50/60Hz or 24VDC/AC 50/60Hz
Power Consumption	Below 10 VA or 6VA/4W(24V)
Memory Element	EEPROM
Input of Sensor	Thermocouple, R.T.D., 0~5V, 1~5V, 4~20mA (Changeable by front key)
Control Output	Relay contact, SSR drive voltage, Current
Control Method	Two kinds of PID, ON/OFF
Operation Environment	0 to 50°C, 20 to 90%RH (Avoid making dew)
Storage Environment	-25 to 70°C, 5 to 95%RH (Avoid making dew)

Weight	TTM-002W Less than 180g,
Location of the Unit Setting	Keep away from the followings. • Gas of corrosion, dust and oily smoke. • The electric noise of generator. • The influence of electromagnetic field. • Mechanical vibration and shock. • The direct sunlight.
Installation condition	Installation category II

CAUTION

OPERATION FLOW AND SETTING MENU

There are menus not displayed by the selected options and models.



CAUTION BEFORE CONTROL

- Setting program is stored after power OFF, as non-volatile memory is equipped with TTM-002W controllers for setting storage.
- Either thermocouple or R.T.D. (Pt 100/ JPt 100) is selectable input type, but Current/Voltage input needs to be selected individually. For suitable application, please select most appropriate input type and adjust input setup.
- PID or ON/OFF control is selective for the optimal performance and each detail of features is specified in the table on the right side.

	PID Control	ON/OFF Control
Merit	Better control result is achieved as opposed to that of ON/OFF control.	Life span of relay is generally longer, as it is ON when temperature is below SV and it is OFF when temperature is over SV (For heating control).
Demerit	Life span of relay is shorter, as output exists frequently with relay contact.	Control value is worse in comparison with that of PID control.

※ PID constants are automatically reckoned up to write in, when control begins or SV is altered on self-tuning.

CAUTION ERROR MESSAGES AND TROUBLE SHOOTING

(Display)	(Description)	(Trouble Shooting)
Err0	Shown whenever input value exceeds the high limit of display range. Also displays when the wire thermocouple, ABB terminal of R.T.D is snapped off.	Check the snapping of thermocouple and R.T.D. input.
Err1	Shown whenever input value exceeds the low limit of display range.	Check short circuit of input lines between A-B and A-b R.T.D. In case this indication shows after the re-input of power, replace unit if it persists.
Err2	Display of A/D converter error or incorrect sensor connection with selectable input.	Ditto
Loc	Displayed when parameter is changed in key-lock condition.	Check sensor connection or change to other tuning.
Rel	Alternately this and SV/PV display are shown.	Discontinue to change parameter.
SV2	Displayed when setting value is changed on SV2 control.	Discontinue to change setting value (during control of SV2)
DI	Displayed when changing setting value of shift on DI.	Discontinue to change setting value of the self on digital input
FUnC	Displayed when making setting value change in control display while function key is on RUN/READY.	Discontinue to change setting value
ti PE	Displayed when altering setting value in control display while being on timer.	

※See also "PARTS INDICATION" & "INSTALLATION AND WIRING" on the reverse.



TOHO ELECTRONICS INC.

Head office: 2-4-3, Nishihashimoto, Midori-Ku, Sagami-hara-Shi, Kanagawa 252-0131 Japan.
Phone: +81-42-700-2100 Fax: +81-42-700-2112
E-Mail: overseas@toho-inc.co.jp
Web site: http://www.toho-inc.com