

和文の説明は裏面にあります。

# TTM-00BW "BOARD TYPE" USER'S MANUAL DIGITAL TEMPERATURE CONTROLLER

Thank you for purchasing model TTM-00BW "BOARD TYPE" Digital Temperature Controller. Please go through carefully this Instruction Manual and use the unit in proper manner.

## 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
  - ⌚: Alternating current
- 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.

<b>WARNING</b>	Due to mishandling, serious dangers may occur to the operator such as death, electrocution and a skin burn.
<b>CAUTION</b>	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
- Main supply voltage fluctuations can't exceed -15/+10 percent of nominal voltage.
- 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

- Please be sure that the unit enclosed in packing carton is a right model before using.
- Kindly check the following accessory being contained in that carton box.
  - This user's manual : 1 copy
  - Control board : 1 pce
  - Display board : 1 pce
  - Connection cable (30 mm length) : 1 pce
- Model Configuration

TTM-00BW-□-A□□□

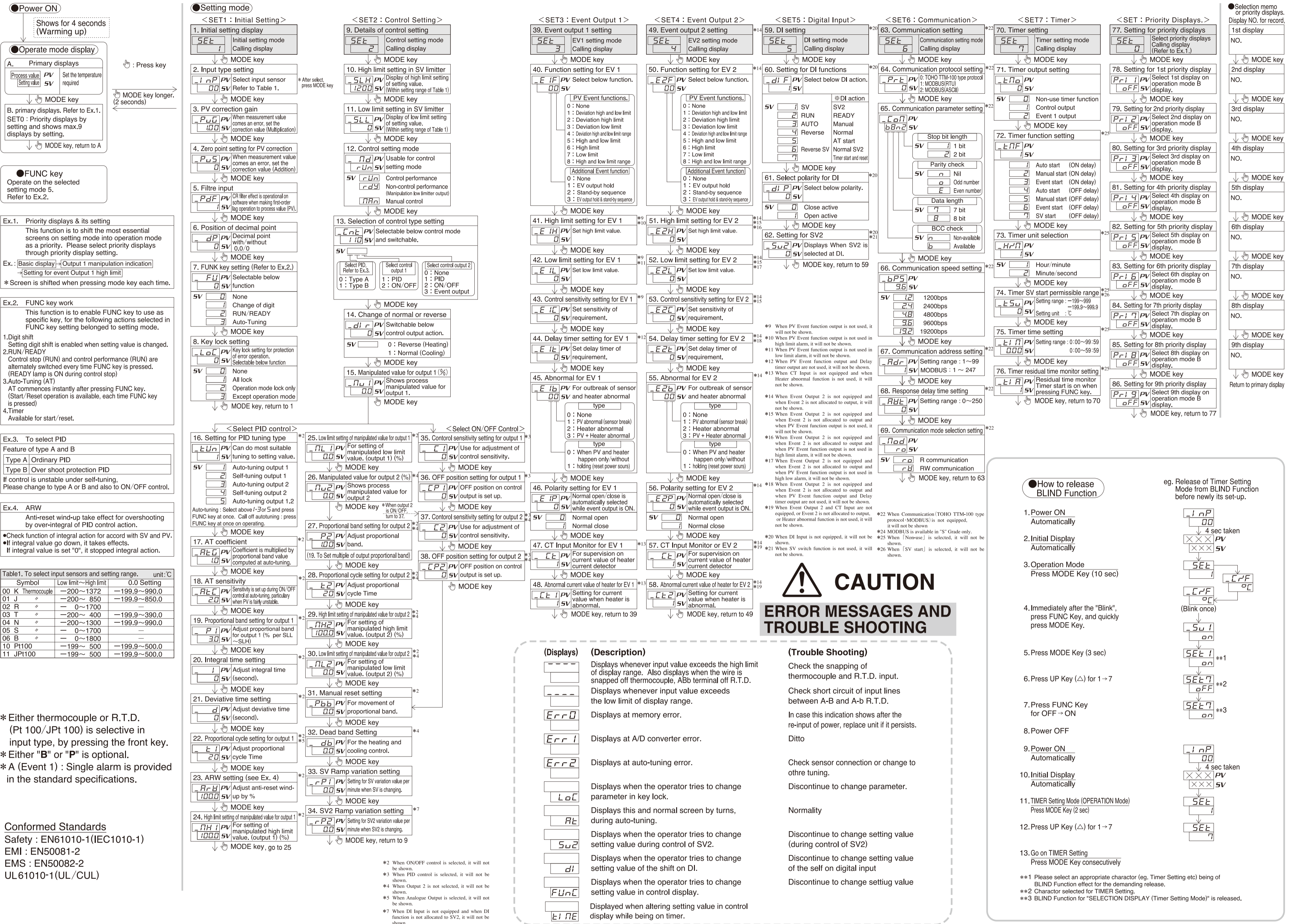
OUTPUT 1	CODE	OPTION	CODE
Relay contact	R	Event2 (Relay contact output2)	B
SSR drive voltage	P	Output 2 (SSR drive voltage)	P
Current 4~20 mA	I	CT input	D
		DI (Digital input)	E
		Communication RS-485	X

## SPECIFICATIONS

Power Supply Voltage	100 to 240V AC, 50/60Hz
Power Consumption	Below 10 VA
Memory Element	EEPROM
Input of Sensor	Thermocouple/R.T.D. (Change by front key)
Control Output	Relay contact, SSR drive voltage
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	Less than 90g
Location of the Unit Setting	Away from the followings. <ul style="list-style-type: none"> <li>Gas of corrosion, dust and oily smoke.</li> <li>The generator of electric noise.</li> <li>The influence of electromagnetic field.</li> <li>Mechanical vibration and shock.</li> <li>The direct sunshine.</li> </ul>
Installation condition	Installation category II

## CAUTION

## OPERATION FLOW AND SETTING MENU



## CAUTION BEFORE CONTROL

- Setting program is stored after power OFF, as non-volatile memory is equipped with TTM-00BW controllers for setting storage.
- Input is the universal type, either thermocouple or R.T.D. (Pt 100/JPt 100) by pressing the front key. For suitable application, please select the most appropriate sensor and adjust sensor setting.
- 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.

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

**TOHO**  
**TOHO ELECTRONICS INC.**

Head office: 2-4-3 Nishihashimoto, Midori-Ku, Sagami-hara-Shi, Kanagawa 252-0131 Japan  
TEL: +81-42-700-2100, FAX: +81-42-700-2112

E-Mail: info@toho-inc.co.jp  
Web site: http://www.toho-inc.com