

# TTM-200 brief operation manual

Thank you for purchasing our TTM-200. Please thoroughly read this manual. This manual is a brief version of the operation manual. Please refer to the full version of the operation manual (User's Manual) for details. (It can be downloaded from our homepage) Please purchase the loader cable additionally, when the loader communication is used. (Model: TTM-LOADER)

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

	<b>Warning</b> The case that a user may receive fatal damage, electric shock, or severe burn injury when the product is incorrectly used
	<b>Cautions</b> The case that a user may receive minor injury or the equipment may get damage

	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. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
	Wiring: Do not use empty terminals for irrelevant purposes. Operation: Do not use a sharp-pointed tool for operating keys.

- Hand over this operation manual to a person who actually operates the product.
- Content of this manual may be subject to modification without prior notice.
- Do not reprint or duplicate this manual without permission.
- Keep a password in a note if it is set.

## 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 attachment and this manual
- 3) Model table: TTM-20□-□ - □□ - □□ - □

Model	Casing color
4 48x48	Q Black
5 96x48	X Gray
7 72x72	
9 96x96	

\*Not selectable for TTM-204  
"X" is selectable with TTM-204 only.

Output 1/2	
N	None
R	Relay contact (250 VAC, 3A)
P	SSR drive (0-12 VDC)
A	Open collector (24 VDC, 100 mA)
K	Voltage: 0-1 VDC
J	Voltage: 0-5 VDC
F	Voltage: 1-5 VDC
G	Voltage: 0-10 VDC
I	Current: 4-20 mA
H	Voltage: 0-10 mVDC

# In case of the analog output only, the CT option can not select.

Option		Power supply voltage	
S CT1 input #		100-240VAC50/60Hz	
T CT2 input #		TTM-204 is 10VA Others are 11VA	
U Event 1 input			
V Event 2 input			
W Event 3,4 input		24VAC/DC 50/60Hz TTM-204 is 4W Others are 6W	
		M Communication (RS-485)	

Option combination (Following limitation)

\*204:ST,SV,UV

\*207:ST,SV,UV,STW,SVW,UVW

Selectable either W (Event3 only available) or output7 for TTM-207.

\*205/209:ST,SV,UV,SVW,UVW,STUV,STUVW

AI input

Y Remote SV input (Voltage / current only)

\*Not selectable for TTM-204

Output 3·4·5·6·7

A Open collector (24 VDC, 100 mA)

R Relay contact (250 VAC, 1A)

\*From output 5 to 7 are not selectable for TTM-204.

\*Output 6 is not selectable for TTM-207.

Output 7 is not selectable when W (Event3) is selected.

## Environmental condition

- (1) Service temperature/humidity range: 0-50 °C, 20-90 % RH (no dew condensation)
- (2) Storage temperature/humidity range: -20-70 °C (no freezing or dew condensation), 5-95 % RH (no dew condensation)
- (3) Equipment environment: 1) No corrosive gases, dust, and oil  
2) As far away as possible from an electric noise source, and little effect from electromagnetic field  
3) As few as possible with mechanical vibrations or impacts  
4) No direct sunlight  
5) Installation (overvoltage) category II /Pollution Degree 2  
6) Indoor use / Altitude up to 2000m  
7) Mains supply voltage fluctuations not to exceed ± 10 percent of the nominal voltage

## Prior to control operation

- Non-volatile memory is used for storing settings, which stays in the storage even when the power is cut.
- Input form can be switched (Thermocouple, temperature measuring resistor, voltage, and current).

Match the selected input form with input setting on the product.

- PID control and ON/OFF control are possible. Advantage/disadvantage of them are as follows.

Select the control in consideration of the advantage / disadvantage.

- \* A self-tuning function is equipped on this product so that constants for PID are automatically calculated and reflected to the control at start of control operation or change of SV.

	PID control	ON/OFF control
Advantage	Better control result than ON/OFF control	Longer service life than that of PID control
Disadvantage	Short service life of the relays due to frequent on/off of output	Larger temperature fluctuation than that of PID control



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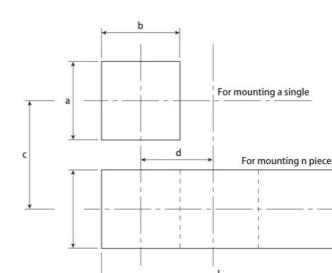
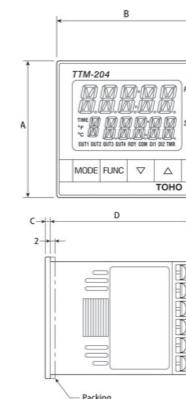
Drawing No. 20-0812

## Front panel - names and tasks



\*Depending on size, some functions may not be available.  
Refer to model table for details concerning individual functions.

## Dimensions and panel cut



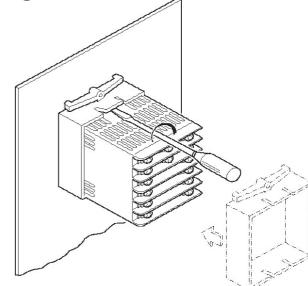
**Caution** \* When mounting in series, pay much attention to interference with terminals on the adjacent equipment.

Model	a	b	c	d	A	B	C	D	L	
TTM-204	45	+0.6 -0	45	+0.6 -0	60 (☆1)	48	48	2	55	(Bxn-3) +0.6 -0
TTM-205	92	+0.6 -0	45	+0.6 -0	120	48	96	48	2	65 (Bxn-3) +1 -0
TTM-207	68	+0.6 -0	68	+0.6 -0	90	72	72	2	65	(Bxn-3) +1 -0
TTM-209	92	+0.6 -0	92	+0.6 -0	120	96	96	2	65	(Bxn-3) +1 -0

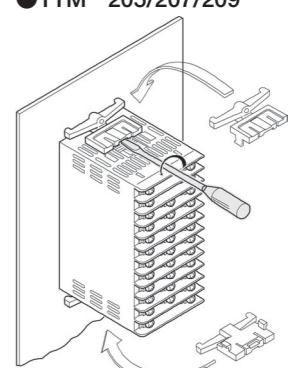
☆1:When using TTM-204, take careful note of dimensions in column c when using loader cable.

## Mounting

### ●TTM-204



### ●TTM-205/207/209



### \* Attachment removal technique

For removal, insert a flathead screwdriver between body and attachment pawl, and rotate the screwdriver to float the pawl.

\*Do not use paint thinner or similar chemical to clean with. Use standard grade alcohol.



\* Use specified size (M3 width 6mm or less) crimped terminals (UL Listed) for wiring and crimping machines & tools (UL Listed).

\* A conformity wire: copper/AWG18-24/Temperature rating 80°C.

\* Tightening torque: 0.5 Nm (5 kgfm, 4.43lb.fin).

\* Wire with care for polarity (+ and -), if applicable.

\* For relay contact output: "C": common" and "NO: normal open."

\* For output for SSR drive, match the polarity with input of SSR side and connect.

\* For CT input, use specified current transformer (CTL-6-P-H).

\* Relay Electric life : More than 80 thousand counts.

\* Overcurrent protection devices need to be installed in the building installation.

\* Unit is not provided with a disconnect. Use of an external disconnect is required. It should be in close proximity to the unit and be labelled as the disconnect for the unit.

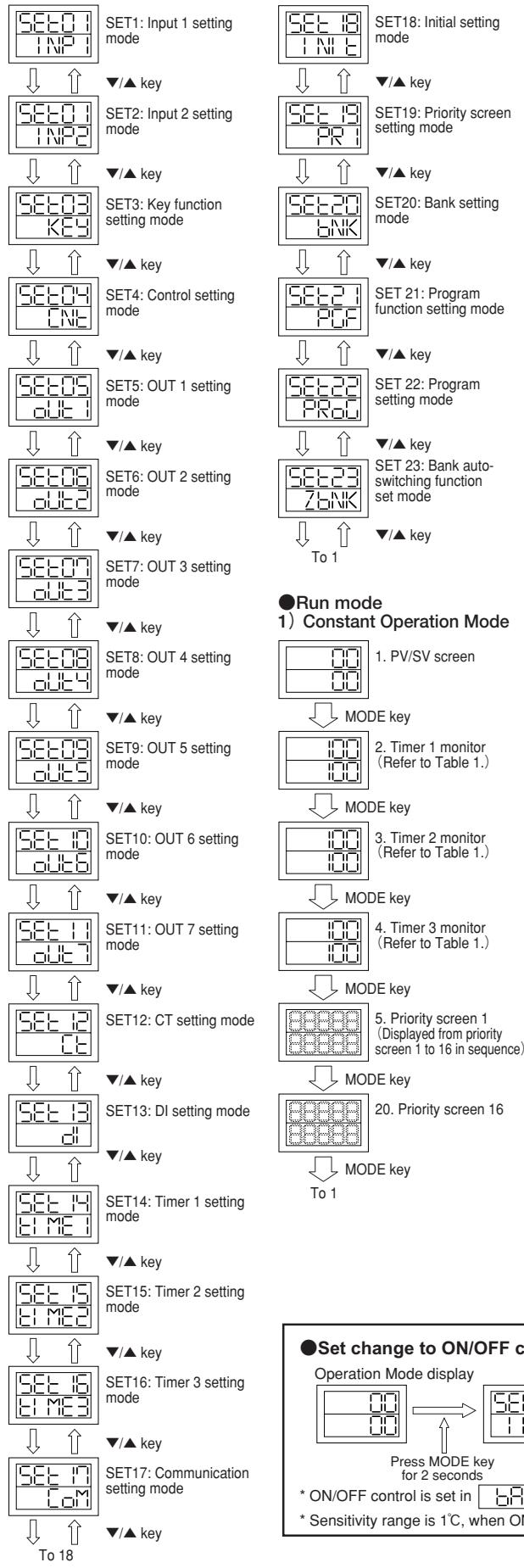
\* Do not touch terminals while supplying electricity to the product in order to prevent electric shock.

\* When the power supply voltage is DC24V connected plus (+) wire to ①terminal. and minus (-) wire to ②terminal



## Operation flow diagram

●Setting item selection screen (No display for unselected functions)



## 2) Program Operation Mode

