

Upgraded Program Temperature Controller with Various Functions & Easy-to-Use



Patterns & Steps

Patterns x Steps = 64 max.

- | | |
|-----------------------|-------------------------------|
| 1 pattern x 64 steps | 7 patterns x 9 steps |
| 2 patterns x 32 steps | 8 patterns x 8 steps |
| 3 patterns x 21 steps | 9 patterns x 7 steps |
| 4 patterns x 16 steps | 10 patterns x 6 steps |
| 5 patterns x 12 steps | 11, 12 patterns x 5 steps |
| 6 patterns x 10 steps | 13, 14, 15 patterns x 4 steps |



Universal Input

Thermocouple or R.T.D. is selectable by parameter setting.

Thermocouples (K,J,R,T,N,S,B)

R.T.D (PT100)



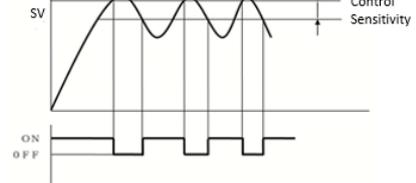
Control Type

PID or ON/OFF is selectable by parameter setting.

PID control

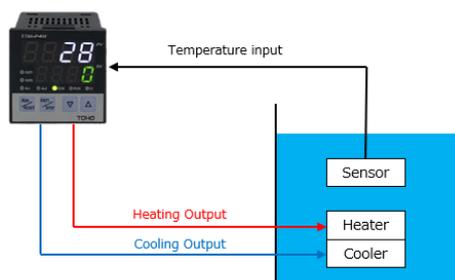


ON/OFF control



Heat / Cooling Control

Equipped with heating / cooling control function in one unit



Transmission Output

Can transfer PV (measurement value), SV (set value) or MV (manipulated variable) to recorder etc..



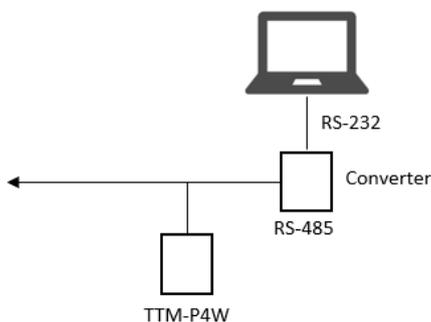
4 to 20mA
(PV, SV, MV)



Recorder

RS-485 Communication (Option)

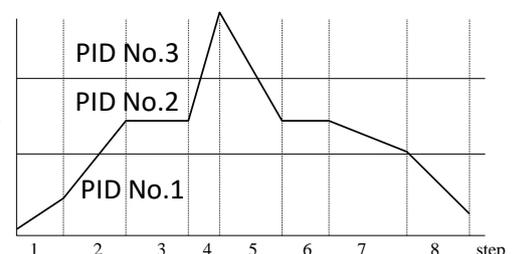
Up to 31 units can be connected simultaneously. With one host computer, a centralized monitoring such as "collection of all data", "changes of various setting value" is possible from a distant location.



3 Zone PID

It is a function that divides a temperature zone into three temperature zones and switches the PID setting depending on which temperature zone the control SV is at.

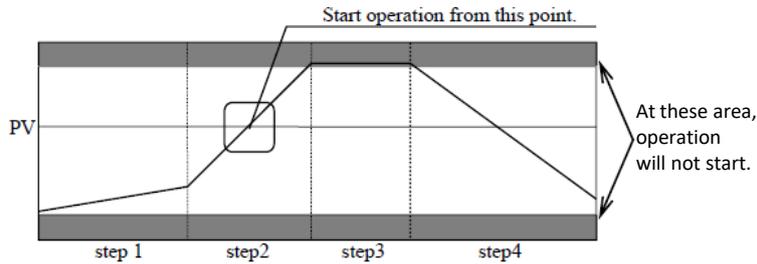
High Temperature control Zone
_ P N 2 →
Middle Temperature control Zone
_ P N 1 →
Low Temperature control Zone



PV and SV Start

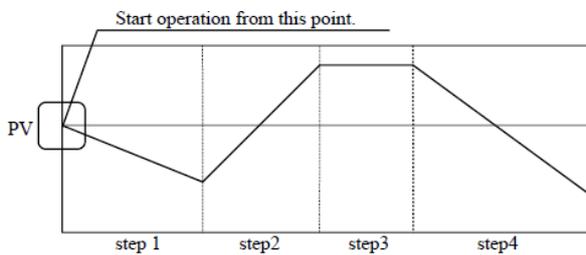
*PV start1

Operation will start from the Ramp step including the PV at the starting time of Program operation.
In case more than one step is applied, it starts the one with smaller step number.



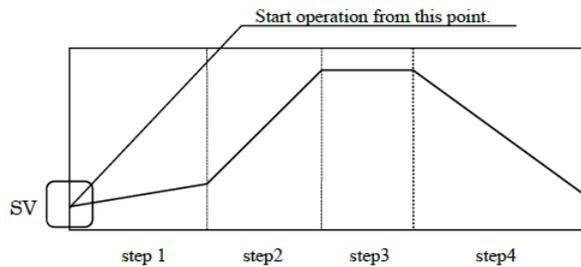
*PV start2

The operation is started with the PV (Process Value) at the start of operation as the start temperature.



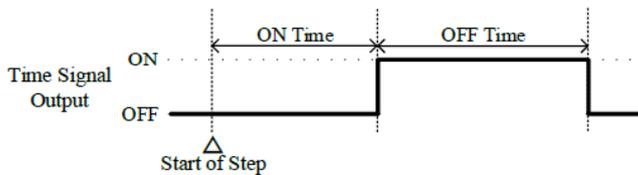
*SV start

Program operation starts from the SV start temperature setting "SUSU".



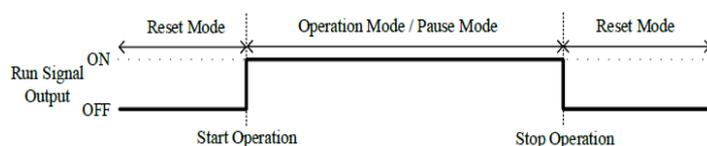
Time Signal Output

It is a function to output at any time at the start of operation or at the transition to the next step.



Run Signal Output

It is a function to turn on the output during the operation mode or pause mode. In reset mode, the output is turned off.

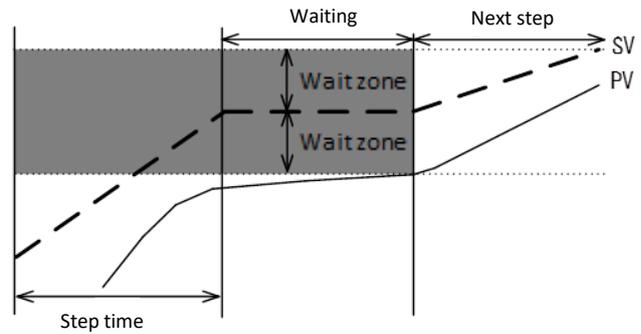


Wait Function

It is a function to wait at the current step without shifting to the next step if the conditions are not met when the step time elapses during operation.

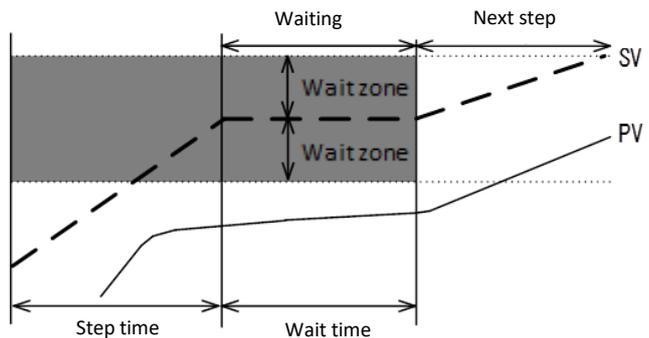
*Wait Zone

- If the PV (measured value) is out of the wait zone after the step time has elapsed, it will be in a wait state without shifting to the next step.
- If the PV (measured value) is within the wait zone, shift to the next step.



*Wait Time

- Even if the PV (measured value) is out of the wait zone during the wait state, if the "wait time setting" has passed, the next step will start.



Timer operation function

It is a function to count the time without controlling in step 1.

External Operation Function

It is a function to switch between reset mode and operation mode by external input (DI).

Fahrenheit Indication Available

Switching between Celsius and Fahrenheit is possible .

■ Standard Specifications

Input Type	Thermocouple	K, J, R, T, N, S, B		
	RTD	Pt100 [external resistance below 10Ω (per wire. All three wires must have the same resistance)]		
Sampling Cycle	250ms			
Settings and Indication Accuracy (Ambient Temperature 23°C±10°C)	Thermocouple	K, J, R, T, N, S, B	±(0.3% + 1 digit) of the instruction value or ±2°C, whichever is bigger (Ambient Temperature: 23°C±10°C). However, ±3°C between -99°C to 0°C, ±4°C between -210 to -100°C. No stipulation below 400°C in B-thermocouple.	
	RTD	Pt100	±(0.3% + 1 digit) of the instruction value or ±0.9°C, whichever is bigger (Ambient Temperature: 23°C±10°C)	
Control Type	PID, ON/OFF			
Control Output1 (Out1)	Relay Contact	250V AC 3A (Resistance load) 1a contact		
	SSR Driving Voltage	0 to 12V DC (Load resistance 600Ω or more)		
	Current	4 to 20mA DC (Load resistance 600Ω or less)		
Time Signal Output/Event Output1	Relay Contact	250V AC 2.4A (Resistance load) 1a contact		
Run Signal Output/Event Output2/ Control Output2 (OUT2)	Relay Contact	250V AC 2.4A (Resistance load) 1a contact		
	SSR Driving Voltage	0 to 12V DC (Load resistance 600Ω or more)		
DI Input	Function	This will be enabled only if external operation is selected. DI (External Input) Selection . . . External Operation: Run/Reset by the signal of DI (External input) Internal Operation: Run/Reset by the front key switch		
	Input Method	Non voltage contact point input		
	Minimum Input Time	500ms		
	Voltage during OFF	Max. 6V DC	Current during ON	Max. 6mA
	Allowable Resistance between Terminals	Maximum of 333Ω if ON/Minimum of 500KΩ if OFF		
Transmission Output *Available only when 4 to 20mA is selected for control output 1	Function	PV (Measured Value) transmission output, SV (Set Value) transmission output, MV (Manipulated Variable) transmission output		
Power Supply	100 to 240V AC(50/60Hz)			

■ Option Specifications

Communication	Communication Standard	RS-485 (1:31)		
	Protocol	TOHO /MODBUS(RTU, ASCII)		
	Communication speed	1200 / 2400 / 4800 / 9600 / 19200 BPS		

■ List of Models for Selection

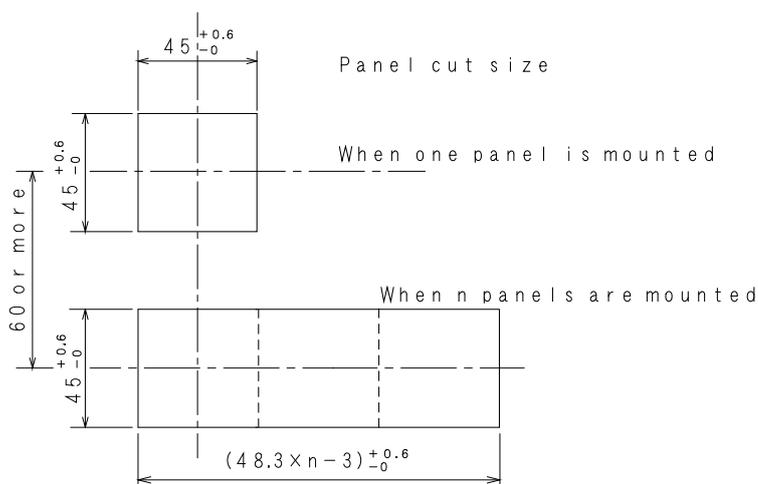
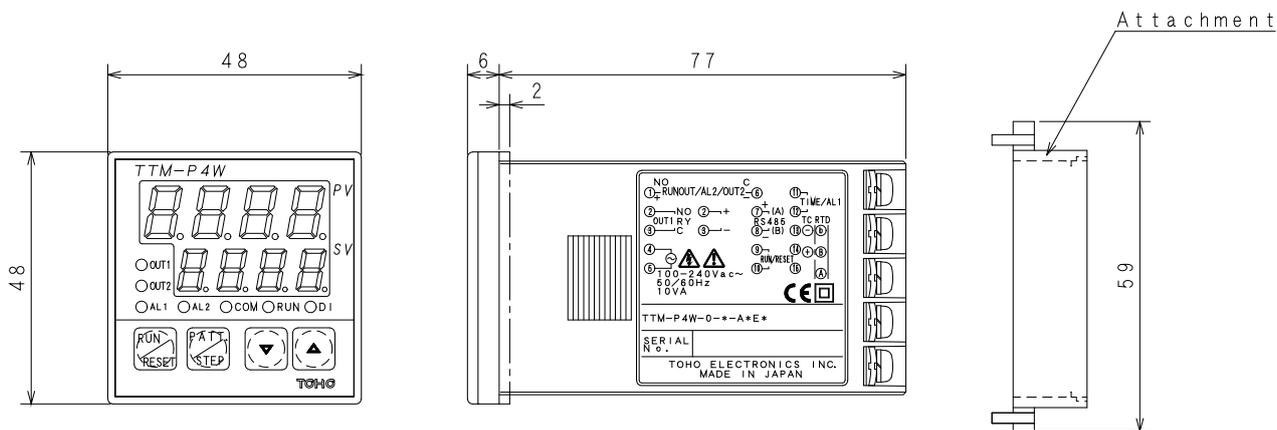
T T M - P 4 W - 0 - □ - A □ E □

① ② ③ ④⑤⑥⑦

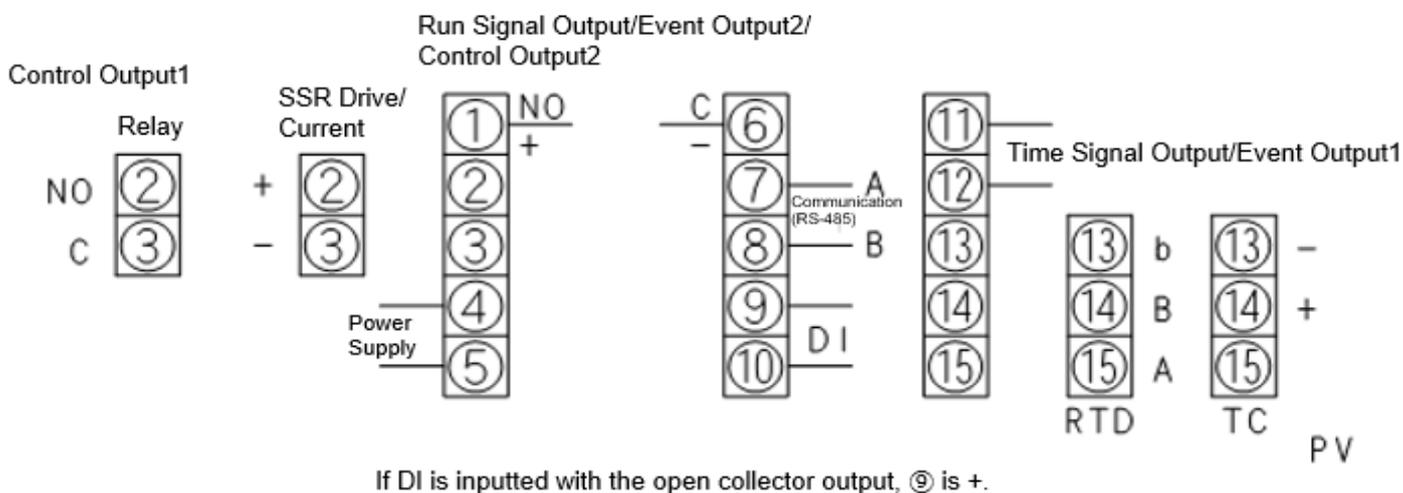
	Item	Description		
①	Model	P4W	48x48mm	
②	Input	0	Thermocouple(K, J, R, T, N, S, B) RTD(Pt100)	
③	Control Output 1	R	Relay Contact	Select One
		P	SSR Drive Voltage	
		I	Current 4-20mA DC	
④	Time Signal Output/Event Output 1	A	Relay Contact	
⑤	Run Signal Output/Event Output 2/ Control Output 2	B	Relay Contact	Select One
		P	SSR Drive Voltage	
⑥	External Input	E	DI (Non-voltage contact input)	
⑦	Communication (Option)	X	RS-485	

※"I" in Control Output1 can be switched to transmission output by parameter setting.

External dimensions and panel cut size



Wiring



Warning

● This product is designed to control temperature and other physical volumes of general-purpose industrial facilities.
(Do not use this product for control that may greatly affect human life.)



Caution

● Please read the operation manual carefully for proper and safe usage of the product.
● In case this product causes damage or loss to system or property, take necessary safety measures to prevent accidents before using it.

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● Specifications and rated values in this catalog are subject to change without notice.
Note: The color printed in this catalog may be different from the actual color.

Difference between TTM-P4/P9 and TTM-P4W

Model	TTM-P4, P9	TTM-P4W
Input	Thermocouple: K,J,R	Thermocouple(K,J,R,T,N,S,B), RTD(Pt100)
Sampling Cycle	500msec	250msec
Indication Color	PV : Green, SV : Red	PV : White, SV : Green
Size	48X48, 96X96	48X48
Panel Sheet Color		
Lamp	RUN/OUT/SET/AL	OUT1/OUT2/AL1/AL2/COM/RUN/DI
Control Output 1	Relay, SSR drive voltage	Relay, SSR drive voltage, 4 to 20mA
Control Type	PID	PID or ON/OFF
Control Output 2/ Event Output2	None	With
Heating/Cooling	Heating or Cooling	Heating or Cooling, Heating and Cooling
PV/SV Start	PV start1, SV start	PV start1, PV start2 , SV start
Transmission Output	None	With ※"4 to 20mA" in Control Output1 needs to be selected.
Temperature Unit	℃	℃°F
Communication	None	With (Option)
Standard	CE, UL, cUL	CE