

# DIGITAL TEMPERATURE CONTROLLER

## TOHO TTM 300 SERIES

### Features

- Built in fuzzy logic function
- Blind Function
- Communication function of DIN 1/16 size
- Diversified contact outputs
- Easy to read 4 - digit display



### Standard Specifications

Input	Thermocouple	K,J,T,R,N,B Input resistance : 1M $\Omega$ or more, influence of external resistance : approx. 0.2 $\mu$ v/ $\Omega$	
Indication	R.T.D.	Pt100, JPt100 (Load resistance : 5 $\Omega$ or less)	
	PV ( Process value)	4 digits, 7 segments, LED, green 10mm high, 15mm high (TTM-309)	
	SV (Setting value)	4 digits, 7 segments, LED, green 8mm high	
	Functions	LED : Red (RUN - OUPUT), LED : Green (UP - DOWN)	
Control Method	PID	Proportional band (P)	0.1 to 200.0%
	PID Fuzzy (Auto Tuning )	Reset time (integral) (I)	0 to 3600 sec (O:OFF)
		Rate time (Deviation) (D)	0 to 3600 sec (O:OFF)
		Cycle time (T)	1 to 120 sec
	ON / OFF	Control Sensitivity (C )	0 to 999.9 or 0 to 999
	Relay contact	250VAC, 3A (Load resistance) 1 c contact	
	SSR drive voltage	0 to 12VDC (Load resistance: 500 $\Omega$ or less)	
	Voltage	1 to 5V, 0 to 10 VDC (Load resistance:1K $\Omega$ or more)	
Current	4 to 20mA/DC (Load resistance: 600 $\Omega$ or less)		



**DIGITAL PROMOTERS**  
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Sampling Time		0.5 sec (Output change period is the same.)
Setting and Indication Accuracy	Thermocouple	$\pm$ (0.3% + 1 digit) of setting value or $\pm 3^{\circ}\text{C}$ ( $6^{\circ}\text{F}$ ), whichever is the greater. (B thermocouple: $309^{\circ}\text{C}$ ( $750^{\circ}\text{F}$ ) or more.)
	R.T.D.	$\pm$ (0.3% + 1 digit) of setting value or $\pm 0.9^{\circ}\text{C}$ ( $1.8^{\circ}\text{F}$ ), whichever is the greater.
Memory Element		FARM
Source Voltage		85 to 264 VAC (Free power source), 24V $\pm$ 10% AC/DC (Made to order)
Weight		TTM-304 Less than 170g, TTM-305 Less than 230g, TTM-309 Less than 300g.
Power Consumption		TTM-304 Less than 11VA(264 VAC) / Less than 7VA(24V AC)/ Less than 5W (24 VDC)
		TTM-305 Less than 12VA(264 VAC) / Less than 8VA(24 VAC)/ Less than 5W (24 VDC)
		TTM-309 Less than 12VA(264 VAC) / Less than 8VA(24 VAC)/ Less than 5W (24 VDC)
Accessories		Instruction manual, attachment for installation and unit seal. (Fittings for installation, expect TTM-304).
Operating Condition		0 to $55^{\circ}\text{C}$ , 35 to 85% RH (No condensation)
Storage Condition		-20 to $85^{\circ}\text{C}$ , 35 to 85% RH (No condensation)
Functions	Manipulated variable limiter (MLL/ MLH)	-10.0 to 110% (Relay, SSR drive voltage output: 0.0 to 100.0%)
	Switching of control mode (CNT)	PID fuzzy $\leftrightarrow$ PID $\leftrightarrow$ ON/OFF. Normal $\leftrightarrow$ Reverse (In case of heat / cool, it is fixed.)
	PV correction (PVS)	-1999.9 to 999.9 or -199 to 999 ( $^{\circ}\text{C}$ or $^{\circ}\text{F}$ )
	Blind function	It is possible not to display any screen as desired by operation of key.
	PV/ SV Start	Be able to change in PV/SV start and setting time of PV/SV start.
	Shift of decimal point (DP)	Be able change to display of under decimal position without thermocouple input.
	Input switch able	Be able to change in thermocouple and in R.T.D. not to change to R.T.D. from T/C and it reserve.
	Key lock (LOC)	4 modes (No lock; all parameters, temperature and time parameter, setting modes of pattern No. and parameter each pattern.)
	Watch dog function	Data checked by FRAM (Err0, A/D converter check (Err1), and auto tuning Check (Err2). Built -in-watch dog timer.
	Programmed operation	Number of steps X Number if patterns =64 max. (Can be programmed up to number of steps and patterns.)
Setting of step time	0 to 99 hrs 59 mins (Step time can be set in increment of 1 min.)	



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