

DIN Rail Mounting PID Temperature/ Process Controller DTP40 with Comms Option

IMO

DIN rail mounting dual display 4 digit PID process/
temperature controller with auto-tuning.

- Multi-input selectable
- One alarm standard
- PID controller or transmitter modes
- PID with Auto-tune, PD or on/off modes
- RS485 Communication option with IMO/Modbus
- Heater Burnout alarm option
- Compact size - 22.5mm wide
- Conforms to UL/CSA & CE



Options and ordering codes

Options and ordering codes

	DTP40A	-	R	/	M		C5		240AC					
	DIN rail mounting controller with one alarm				Multi-sensor Input				<table><tr><td>240AC</td><td>100-240VAC supply</td></tr><tr><td>24VAC</td><td>24VAC/DC supply</td></tr></table>	240AC	100-240VAC supply	24VAC	24VAC/DC supply	
240AC	100-240VAC supply													
24VAC	24VAC/DC supply													
Relay output			R				W(5A)	Heater burnout Alarm 5A rated						
Signal Voltage for SSR			S				W(10A)	Heater burnout alarm 10A rated						
Analogue Current 4-20mA			A				C5	RS485 serial communications						
Analogue Voltage 0 – 10V			V											

Note: For DC current output type [Option: W] cannot be added

Input ranges

Input type		Scale	
Thermocouple	K	0 to 1370°C	0 to 2500°F
		0 to 400°C	0 to 750°F
	J	0 to 1000°C	0 to 1800°F
	R	0 to 1760°C	0 to 3200°F
	S	0 to 1760°C	0 to 3200°F
	B	0 to 1820°C	0 to 3300°F
	E	0 to 800°C	0 to 1500°F
	T	-199.9 to 400.0°C	-199.9 to 750.0°F
	N	0 to 1300°C	0 to 2300°F
	PL-II	0 to 1390°C	0 to 2500°F
	C (W/Re5-26)	0 to 2315°C	0 to 4200°F
RTD	Pt100	-200 to 850°C	-300 to 1500°F
		-199.9 to 850.0°C	-199.9 to 999.9°F
	JPt100	-200 to 500°C	-300 to 900°F
		-199.9 to 500.0°C	-199.9 to 900.0°F
DC	4 to 20mA DC	-1999 to 9999□-199.9 to 999.9 -19.99 to 99.99□-1.999 to 9.999	
	0 to 20mA DC		
DC	0 to 1V DC		
	0 to 10V DC		
	1 to 5V DC		

- As for DC input, scaling and decimal point place change are possible.
- As for DC current input, shunt resistor 50Ω is needed as an external device.

Specification

Display

PV [Red 4 digits, Character size: 7.5 x 4.1mm (H x W)],
SV [Green 4 digits, Character size: 7.5 x 4.1mm (H x W)]

Input: Thermocouple

External resistance: 100Ω or less (However, for B input: 40Ω or less)

Input: RTD

3-wire system (Allowable input wire resistance per wire: 10Ω or less)

Input: DC Current

Input impedance: 50Ω (Connect shunt resistor 50Ω between input terminals.)
Allowable input current: 50mA or less (When shunt resistor 50Ω is used)

Input: DC Voltage (0-1V)

Input impedance: 1MΩ or greater
Allowable input voltage: 5V or less
Allowable signal source resistance: 2kΩ or less

Input: DC Voltage (0-5V, 1-5V, 0-10V)

Input impedance: 100kΩ or greater
Allowable input voltage: 15V or less
Allowable signal source resistance: 100Ω or less

Accuracy: Thermocouple (Setting • Indicating)

Within $\pm 0.2\%$ of each input span ± 1 digit or $\pm 2^\circ\text{C}$ (4°F) whichever is greater
However, R or S input 0 to 200°C (0 to 400°F): Within $\pm 6^\circ\text{C}$ (12°F), B input 0 to 300°C (0 to 600°F): Accuracy is not guaranteed. K, J, E, and N input less than 0°C (32°F): Within $\pm 0.4\%$ of each input span ± 1 digit

Accuracy: RTD (Setting • Indicating)

Within $\pm 0.1\%$ of each input span ± 1 digit or $\pm 1^\circ\text{C}$ (2°F) whichever is greater

Accuracy: DC Current & V (Setting • Indicating)

Within $\pm 0.2\%$ of each input span ± 1 digit

Input sampling period 0.25 seconds

Output: Relay types

SPNO/NC: 3A 250V AC Resistive load, 1A Inductive load $\cos\phi=0.4$

Output: signal voltage types

12VDC +2VDC/-0VDC, Max. 40mA (Short-circuit protected)

Output: analogue current 4 to 20mA DC Load resistance: Max. 550Ω

Output: analogue voltage 0-10VDC – Output impedance 500Ω

Control action

User selectable: PID (with auto-tuning function), PI, PD (with manual reset function), P (with manual reset function), ON/OFF

Proportional band (P) 0.0 to 110.0%

Integral time (I) 0 to 1000 seconds

Derivative time (D) 0 to 300 seconds

Proportional cycle 1 to 120 seconds (Not available for DC current output type)

ARW 0 to 100%

Hysteresis

Thermocouple and RTD: 0.1 to 100.0°C ($^\circ\text{F}$)
DC current and DC voltage: 1 to 1000

Alarm (A1)

Open collector, Control capacity: 24Vdc 0.1A Max.

Alarms action

ON/OFF action, Hysteresis 0.1 to 100.0°C ($^\circ\text{F}$) (1 to 1000 analogues)

Alarm Functions Alarm Function and NO/NC can be selected by key operation.

• No alarm

• **High limit alarm** (Deviation setting)
Setting range: -(Input span) to Input span

• **Low limit alarm** (Deviation setting)
Setting range: -(Input span) to Input span

• **High/Low limits alarm** (Deviation setting)
Setting range: 0 to Input span

• **High/Low limit range alarm** (Deviation setting)
Setting range: 0 to Input span

• **Process high alarm**
Setting range: Input range low limit value to Input range high limit value

• **Process low alarm**
Setting range: Input range low limit value to Input range high limit value

• **High limit alarm w/standby** (Deviation setting)
Setting range: -(Input span) to Input span

• **Low limit alarm w/standby** (Deviation setting)
Setting range: -(Input span) to Input span

• **High/Low limits alarm w/standby** (Deviation setting)
Setting range: 0 to Input span

The negative low limit value is -199.9 or -1999 and the positive high limit value is 999.9 or 9999

Supply voltage

85 to 264VAC 50/60Hz (100 to 240VAC +10% -15%), 20 to 28VDC/AC 50/60Hz

Power consumption Approx. 6VA

Insulation resistance >10MΩ at 500VDC

Dielectric strength

1.5kV AC for 1min between input terminal and ground terminal, between input terminal and power terminal, between power terminal and ground terminal, between output terminal and ground terminal, between output terminal and power terminal

Ambient temperature 0 to 50°C

Ambient humidity 35 to 85%RH (No condensation)

Mounting DIN rail mounting

External dimension 22.5(W) x 75(H) x 100(D)mm

Weight Approx. 150g

Case material Light grey flame resisting resin

Standard functions

Sensor correction, Setting value LOCK, Power failure countermeasure, Self diagnosis, Automatic cold junction temperature compensation (Only thermocouple), Sensor burnout alarm, Input burnout.

Optional features

Heater burnout alarm [W]

This function watches the heater current with a CT (current transformer), and detects the burnout.

Heater rated current must be selected from 5A, 10A, 20A and 50A.

The heater burnout alarm will use the alarm 1 output

Serial communication [C5]

Various setting status changing, reading and setting of the TP Series can be performed from external computer, HMI or PLC.

Communication interface Based on EIA, RS-485

Communication method Half-duplex communication start-stop synchronous

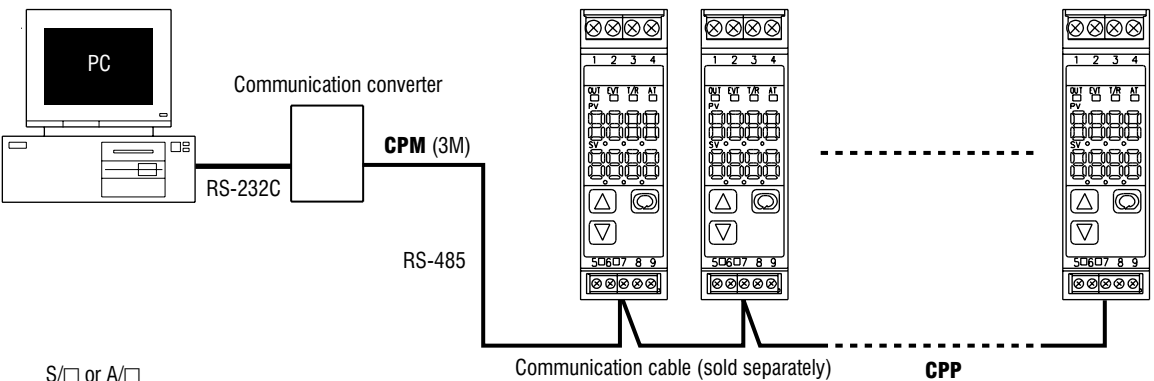
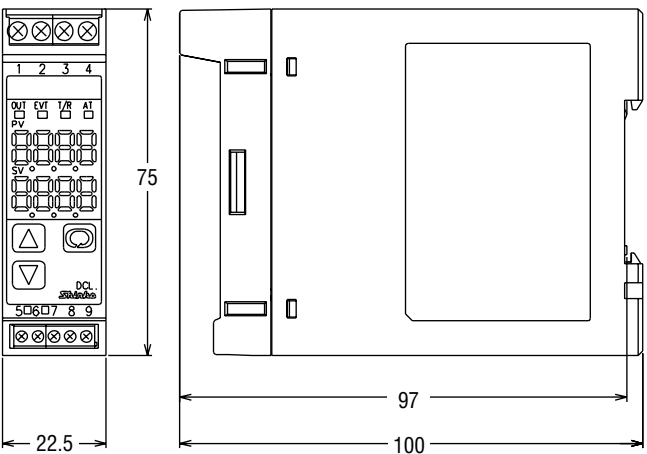
Data transfer rate (2400/4800/9600/19200bps) Select by key operation

Communication protocol Based on IMO standard protocol or Modbus (Selectable by key operation) When Modbus is selected, RTU mode or ASCII mode can be selected by key operation.

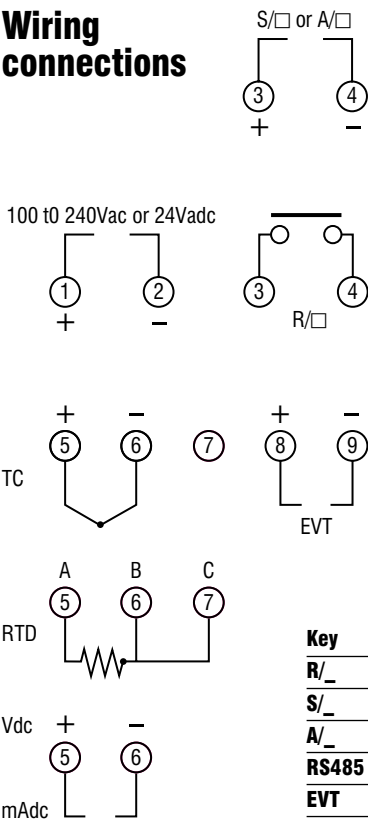
Number of connectable units A maximum of 31 units per communication port

Communication error detection Parity check and Checksum

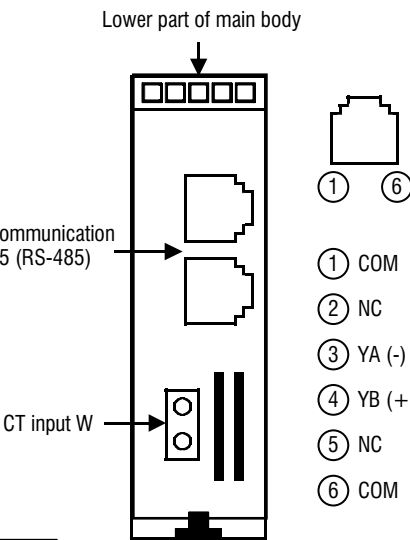
Dimensions mm



Wiring connections



Key	
R/_	Relay contact output
S/_	Non-contact voltage out
A/_	DC Current output
RS485	Serial communications
EVT	Alarm output



- 1 COM
- 2 NC
- 3 YA (-)
- 4 YB (+)
- 5 NC
- 6 COM