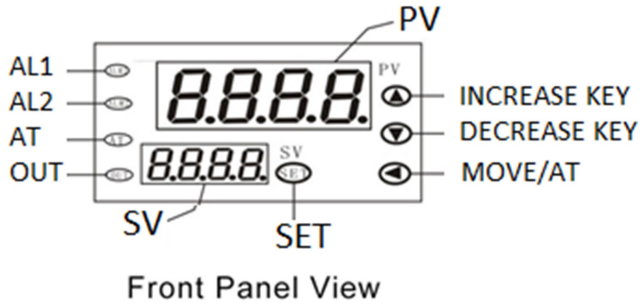
DTM-T-16 PID Temperature Controller

- Resistance temperature Detector: Pt100, Cu50
- Thermocouple: T , R , J , B , K , E , Wre3-Wre25
- Auto-tune function can find the best PID parameter automatically
- Unit of ℃ or ℉ are selectable by parameter
- 5 kinds of Control modes

1 Technology parameters

- Power supply voltage rating: 85-264VAC/50-60Hz.
- Relay output (NO+NC): 250VAC/3A
- Relay switch life : 1×10^5 cycles
- SSR Voltage : 8V outline，Short line current : 30MA
- Measurement accuracy : 0.2%FS
- There are 4 LED indicator lamp on the front panel
- Out range shown: “EEEE”
- Ambient : Temperature of 0～50℃, humidity of 0～85RH%
- Front panel: out Dimension 48×48×81mm , cut dimension 45×45mm

2 Front Panel And Operation



Front Panel View

3 Manual setting the PID parameters

3.1 Setting initial function value（password 0089）

3.1.1 Table of initial function

symbol	Code	Description	Parameters	Initial
InTy	Inty	Input type	See table 3.1.3	P10.0
dSHy	hy	Control Hysteresis	0~9999	0.3
PSb	Psb	Input Shift Adjustment	-1000～1000	0.0
FILt	rd	Heat cold	0 heat；1 cold	0
End	End	The End		

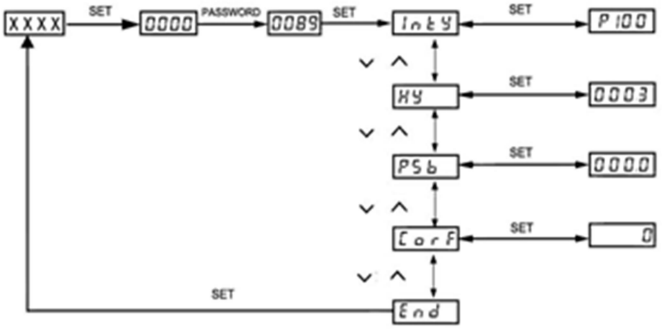
3.1.2 OUTY : out control mode

It has only SSR output

3.1.3 Description of initial function value (TC: Thermocouple)

symbol	name	Input spec.	Setting Range	
t	t	T type TC	-200～400	Resistor input 100K
r	r	R type TC	-50～1600	
J	J	J type TC	-200～1200	
Wre	W	WRE	0～2300	
b	b	B type TC	350～1800	
S	S	S type TC	-50～1600	
K	K	K type TC	-200～1300	
E	E	E type TC	-200～900	Current output 0.2mA
P100	Pt100	P100	-199～600	
P10.0	Pt10.0	P100	-199.～600.0	
Cu50	Cu50	Cu50	-50.0～150.0	

3.1.4 Method of setting parameters



3.2 Setting PID Parameter （Password 0036）

3.2.1 Table of PID parameter

symbol	Name	Description	parameters	Initial
P	P	Proportional band	0.1~99.9%	5.0
I	I	Time of Integral	2~1999（s）	100
d	D	Time of Derivative	0~399（s）	20
CorF	C or F	Unit select	0 ℃；1 F	0
tmr	Timer	Countdown timer	0-9999	0
End	End	The End		

3.2.2 PID PARAMETER

P: Proportional band Smaller P values will make the both integral and derivative action stronger， Larger the P number means the weaker the action

I: Integral time Decrease integral time, if the controller is taking too long to eliminate the temperature offset. When I=0, the system becomes a PD controller.
D:“d”. Derivative time Derivative action contributes the output power based on the rate of temperature change
Souf: Overshoot depressant
The value of souf is larger; the Overshoot depressant will be smaller. When the value of souf is too large, the Overshoot depressant will be not enough. When the value of souf is smaller , the Overshoot depressant will be stronger.

Timer: Countdown timer (tmr)
If this parameter is set at 0 the timer feature is off. In order to use the timer, this parameter should be set between 1-9999. It acts as a countdown timer and when it reaches to 0, the output of controller will turn off.

Flit: PV input filter. 0 No filter,1 little, 2 middle, 3 strong. The value of Flit will determine the ability of filtering noise.
When a large value is set, the measurement input is stabilized but the response speed is slow.

Auto tuning; If the result of temperature control is not satisfy , you can start Auto tuning. Press > for more than 3 seconds to active the auto-tuning process. After 2 cycles of on-off action, the instrument will obtain the values of PID control parameters. During auto tuning, “At” will flash at lower display window and the instrument executes on-off control. If you want to escape from auto tuning status, press > and hold for about 3 seconds until the "At" parameter appears again.

Note 1: If the setpoint is different, the parameters obtained from auto-tuning are possibly different. So you’d better set setpoint to an often-used value or middle value first, and then start auto-tuning. For the ovens with good heat preservation, the setpoint can be set to the highest applicable temperature. It is forbidden to change SV during auto tuning. Depending on the system, the auto-tuning time can be from several seconds to several hours.

Note 2: Parameter HY (on-off differential, control hysteresis) has influence on the accuracy of auto-tuning. Generally, the smaller the value of HY, the higher the precision of auto tuning. But the value of HY parameter should be large enough to prevent the instrument from error action around setpoint due to the oscillation of input. HY is recommended to be 2.0.

Note 3: In a heating/refrigerating dual output system, auto tuning should be executed at the main output (OUTP).

3.3 Setting SV parameters（Password 0001）

3.3.1 Table of Control parameter

symbol	Code	Description	Setting range	Initial
SU	Sv	Setting value	In testing Range	80.0
End	End	The End		

3.3.2 Description of alarm and control parameter

SV；Set value of temperature

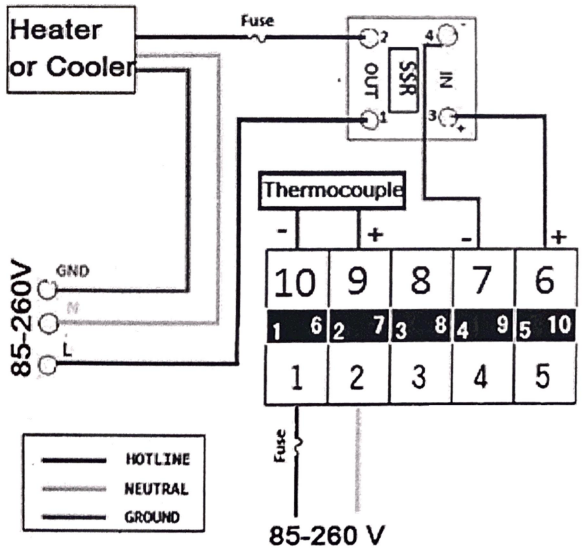
SV can be set either in here, or by only pressing “∧∨” to change

4. Wiring Diagram

The controller can be 85-260VAC or 12/24 VDC (9-30VDC) depends on your order.

The controller compatible for relay output and SSR output

Terminal Arrangement



DTM-T-16 Resistance and Temperature Reference Table

For current product information, availability, and compatible options, use the verified ThermoMart links below. The preceding pages remain the original reference table content.

Looking for product information? Browse the manual library to find current ThermoMart models and guides.

All ThermoMart manuals and guides