

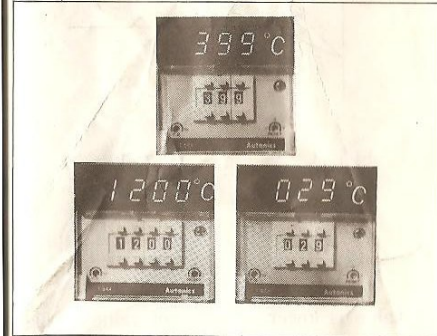
Autonics

T 4 M

SERIES DIN SIZE : 72X72mm

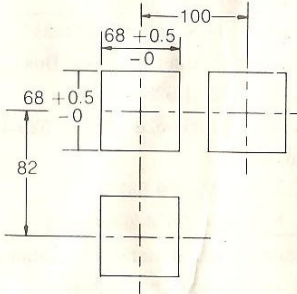
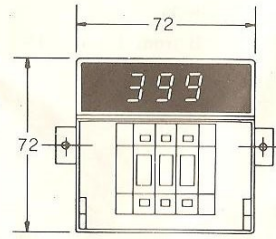
TEMPERATURE CONTROLLER

TEMPERATURE CONTROLLER

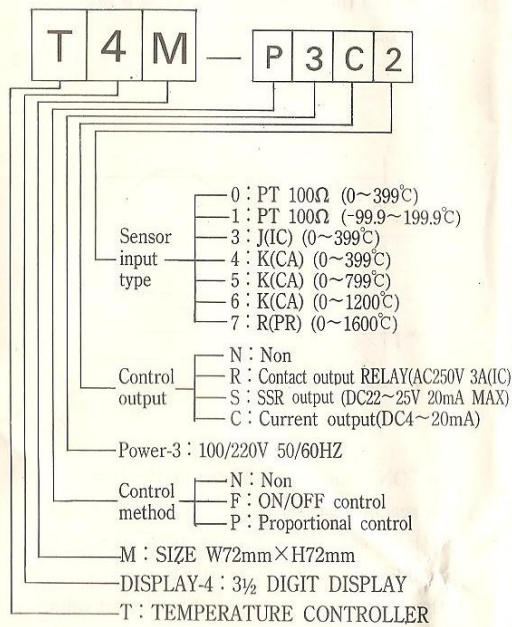


Thank you very much for selecting the Autonics temperature controller. Please read this manual carefully before you use this instrument.

DIMENSIONS AND MOUNTING



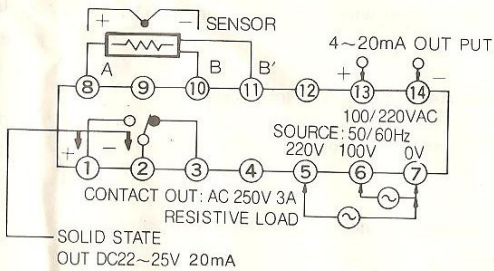
ORDERING INFORMATION



SPECIFICATIONS

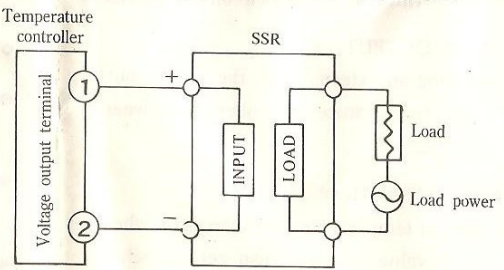
Display method	7 segment LED with red color
Setting method	Thumb switches
Indication accuracy	± 0.5 % of full scale
Setting accuracy	
Sensor input type	Thermocouple : K(CA), J(IC), R(PR) Thermoresistance : PT100 Ω with 3wires
External permissible wire resistance	Thermocouple input : <100 Ω Thermoresistance input : <10 Ω
Control operation	ON/OFF hysteresis 0.2~ 1% of full scale fixed. Proportional band : 3 % of full scale. fixed. Proportional period : 20sec. Fixed.
Reset range adjustment	± 3 % of full scale
Control output	Contact output : AC250V 3A (IC) Solid state output : Voltage output 8 to 12 VDC
Protection	Output "OFF" on sensor failure
Operating temperature	- 10°C ~ 50°C
Operating humidity	35~85 % RH non - condensing
Supply voltage	AC 100V or 220V ± 10 % (50/60HZ)

EXPANDING FUNCTIONS

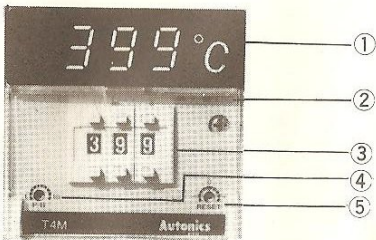
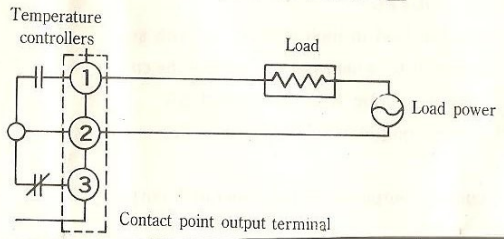


TEMPERATURE CONTROLLER & LOAD CONNECTIONS FOR REVERSING OPERATION

• In case of solid state output : T4 M-□□□□



• In case of contact output T4 M-□□□□



- ① PV(Display value)
- ② Control output indicator
- ③ SV(Thumb switch for setting value)
- ④ Proportional Band Volum
- ⑤ Reset adjustment setting

ON/OFF CONTROL

FIG. 1. Shows the output is "ON" when the temperature is below the set value. the output turns "OFF" when temperature is equal or greater than set value.

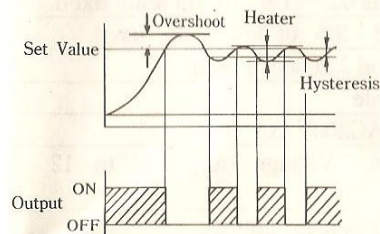


FIG.1

FUNCTION INFORMATIONS

BURN OUT FUNCTION

The output of the temperature controller is off when the thermocouple short-circuits or breaks.

VOLTAGE OUTPUT

For operating an external SSR, the voltage output of the temperature controller is between 8 to 12 VDC.

REVERSE OPERATION

The output of temperature controller is on when the display value is lower than setting value.
T4M is outputted subject to reversing operation.

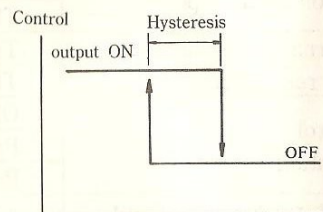
CURRENT OUTPUT

To control the load in high accuracy or with small heat capacity, It is necessary to control the continuous output volume from 4mA to 20mA
When current output is 4mA, operated current is 0%
When current output is 20mA, operated current is 20%

HYSTERESIS

Making ON/OFF on one point may be easily affected by chattering or noise. Hence as below chart there is hysteresis in ON/OFF.

In order to prevent chattering of the output in the ON/OFF mode, hysteresis is essential.



Example :

A temperature controller with a full scale of 400 deg. C 0.5% hysteresis and temperature setting of 300 deg. C operates as follows :

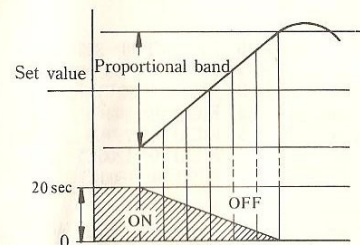
0.5% of 400 deg. C is 2 deg. C. The output will turn "OFF" at 301 deg. C and come back "ON" at 299 deg. C.

INSTALLATION PRECAUTIONS.

- Use compensated wire to connect thermo couples.
- Wires to rtd should have low resistance.
- Separate low voltage output wires from power wires.
- Avoid installation near high frequency generating devices.
- Do not install where vibration high temperature corrosive gasses, or moisture is present.

PROPORTIONAL CONTROL

FIG. 2. Shows the operation output of a proportional controller.



The "ON" time gets shorter as the temperature reaches the set point. when the temperature is at set point "ON" and "OFF" is usually divided(50% "ON" 50% "OFF").

If the temperature is higher than the set value "ON" time will be reduced.

APPLICATIONS

The temperature controller can be used in many applications, from injection molding machines, extruders packaging machines to heat-treat furnaces, just to name a few.

If you have a particular application, please do not hesitate to contact your autonics representative.

RESET VOLUME CONTROL

FIG. 3. Shows reset range adjustment.
offset is determined by the amount of adjustment.

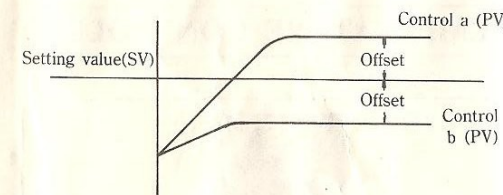


FIG. 3.

• $SV > PV$



Set value is lower than control value



Set value is higher than control value

In proportional control, If proportion BAND(PB) is lower, division is lower
But If P.B is lower too, It is happen to overshoot and hunting

Because Character of heat for Sensories and the control objects

You can control P.B from 1% to 10%

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Specifications and dimensions contained in this manual may change without notice.