

NTC Thermistor Temperature Control

TCR Series

Set Point Control



100 Piece Minimum Order Requirement Applies



- NTC Thermistor Sensing for Low Cost Set Point Control
- Solid State Output to Control Resistive Heaters
- 6, 10, or 20 A Solid State Output
- External Adjustment of the Set Point
- Small Package, Encapsulated, Single Screw Mounting
- Metal Back Surface, Utilizes Equipment as Heat Sink

Approvals:

Description

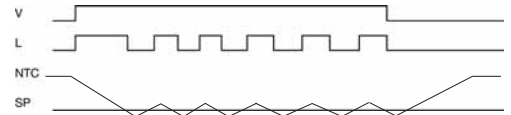
The TCR Series of solid state temperature control is a low cost modular approach to accurate control of temperature. The high power output is available in 6, 10, and 20 amperes and provides set point temperature control. The efficient metalized mounting surface allows for utilization of equipment as the heat sink. Heat Sink compound is provided with all units. Designed for use with resistive loads.

Operation

Set Point Control: TCR Series is a single set point temperature controller. When the thermistor resistance is high (above the set point), the solid state output is ON. When the thermistor resistance decreases (temperature increases) to set point or below, the output turns OFF.

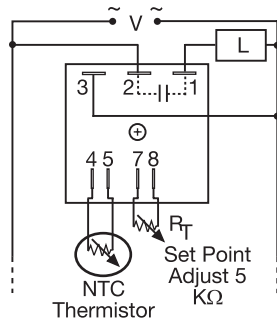
It must be recognized that temperature differential (under and over shoot) is largely due to the system as a whole. The mass of the system, size of the heaters, location of heaters and sensor all play an important part. Single set point control is best when there is little or no lag time between heater and sensor, and when the heater is not oversized.

Function



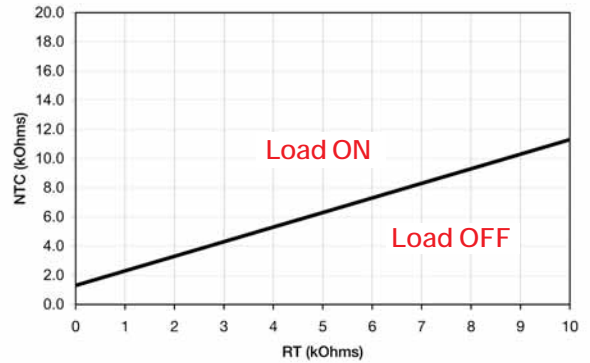
V = Voltage L = Load SP = Set Point
 NTC = Negative Temperature Coefficient Thermistor
 RT = External Set Point Adjustment

Connection



Caution: NTC Thermistor must be electrically insulated, 1500 volts RMS minimum. Dashed lines are internal connections.

Adjustment vs Thermistor Resistance



Note: If R_T value exceeds 13 k ohms, the output will not energize.

Accessories



Female Quick Connect
 P/Ns:
 P1015-13 (AWG 10/12)
 P1015-64 (AWG 14/16)
 P1015-14 (AWG 18/22)

See accessory pages for specifications.

Ordering Table

TCR Series	X Input Voltage	X Output Rating
	- 4 - 120 V AC	- A - 6 A
	- 6 - 230 V AC	- B - 10 A
	- 9 - 120 ... 240 V AC	- C - 20 A

Example P/N: **TCR4B = 120VAC; 10A**

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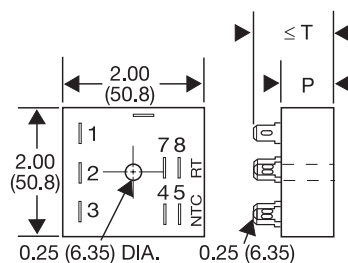
Set Point Control

Technical Data

Control														
Type	Single Set Point, negative temperature coefficient resistance sensing													
Sensor Type	Thermistor, negative temperature coefficient (customer supplied)													
Adjustment	Electrically insulated for 1500 volts RMS minimum													
Accuracy	Temperature set point selected by means of an external resistance (see graph)													
Accuracy	≤ +/- 5% of the set point resistance													
Set Point vs Ambient Temperature and Operating Voltage	Add the tolerance of the NTC thermistor and the drift of the adjustment pot over temperature range													
Reset Time	± 5% of set point resistance ≤ 150 ms													
Input														
Voltage	120 or 230 V AC or 120 to 240 V AC													
Tolerance	± 15%													
Frequency	50 ... 60 Hz													
Output														
Type	Solid State													
Form	Single pole, non-isolated, zero voltage switching													
Rating	<table border="1"> <thead> <tr> <th>Model</th> <th>Steady State</th> <th>Inrush**</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>6 A</td> <td>60 A**</td> </tr> <tr> <td>B</td> <td>10 A</td> <td>100 A**</td> </tr> <tr> <td>C</td> <td>20 A</td> <td>200 A**</td> </tr> </tbody> </table>	Model	Steady State	Inrush**	A	6 A	60 A**	B	10 A	100 A**	C	20 A	200 A**	**Must be bolted to a metal surface using the included heat sink compound. The maximum mounting surface temperature is 90°C. Inrush: Non-repetitive for 16 ms.
Model	Steady State	Inrush**												
A	6 A	60 A**												
B	10 A	100 A**												
C	20 A	200 A**												
Minimum Load Current	100mA													
Voltage Drop	≅ 2 Volts at rated current													
Off State Leakage Current	≅ 5 mA at 230 V AC													
Protection														
Dielectric Breakdown	≥ 2000 volts terminals to mounting surface													
Insulation Resistance	≥ 100 MΩ													
Circuitry	Encapsulated													
Mechanical														
Mounting	Surface mounts with one #10 (M5 x 0.8) screw													
Termination	0.25 in (6.35 mm) male quick connect terminals													
Environmental														
Operating Temperature	-40°C to +60°C													
Storage Temperature	-40°C to +85°C													
Humidity	95% relative, non-condensing													

CAUTION: SSAC Temperature Controls are not designed to serve as primary temperature safety devices. An independent high temperature limit switch should be incorporated into all designs to prevent property damage or personal injury due to potential system malfunctions.

Mechanical View



Inches (Millimeters)

Output	P	T
6 ... 20 A	1.08 (27.4)	1.51 (38.4)