

Single Function Relays

TCR9C

Temperature Controller



Description

The solid-state TCR9C series relays are designed for dedicated temperature control of resistive loads. These relays feature a single setpoint controller with high-current, solid-state output. The TCR9C relay is a low-cost, modular approach to accurate temperature control and supports loads up to 20 A. The efficient mounting surface allows for utilization of equipment as the heat sink.

Operation

Setpoint Control: TCR9C is a single setpoint temperature controller. When the thermistor resistance is high (above the setpoint), the solid-state output is ON. When the thermistor resistance decreases (temperature increases) to the setpoint or below, the output turns OFF. It should be noted that temperature differential (under and overshoot) is largely due to the system as a whole. The mass of the system, size of the heaters, and sensor all play an important part. Single setpoint control is best when there is little or no lag time between the heater and sensor, and when the heater is not oversized.

Features & Benefits

FEATURES	BENEFITS
Low-cost setpoint control	NTC thermistor sensing
Control resistive heaters	Solid-state output
Accuracy	External setpoint adjustment
Facilitates heat transfer	Metalized mounting surface
Protects against shock, vibration, and humidity	Encapsulated

Applications

- Temperature control of resistive loads

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Specifications

Control

Type

Single setpoint, negative temperature coefficient resistance sensing

Sensor Type

Thermistor, negative temperature coefficient (customer supplied)
Electrically insulated for 1500 V RMS min.

Adjustment

Temperature setpoint selected by means of an external resistance

Accuracy

±5% of the setpoint resistance Add the tolerance of the NTC thermistor and the drift of the adj. pot over temp. range

Setpoint vs. Ambient Temperature and Operating Voltage

±5% of setpoint resistance

Reset Time

≤ 150 ms

Input

Voltage

120–240 V ac

Tolerance

±15%

AC Line Frequency

50/60 Hz

Output

Type

Solid state

Form

Non-isolated, single pole, zero voltage switching

Rating

Model	Steady State	Inrush**
C	20 A	200 A**

Minimum Load Current

100 mA

Voltage Drop

≈ 2 V at rated current

Off State Leakage Current

≈ 5 mA @ 230 V ac

Protection

Dielectric Breakdown

≥2000 volts terminals to mounting surface

Isolation Voltage

≥100mΩ

Circuitry

Encapsulated

Mechanical

Mounting

Surface mount with one #10 (M5 x 0.8) screw

Dimensions

H 50.8 mm (2.0"); **W** 50.8 mm (2.0"); **D** 38.4 mm (1.51")

Termination

0.25 in. (6.35mm) male quick connect terminals

Environmental

Operating/Storage Temperature

-40 °C to 60 °C / -40 °C to 85 °C

Humidity

95% relative, non-condensing

Weight

≈ 2.7 oz (77 g)

** 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.

Certification & Compliance

UL Recognized

File E111456 UL873

Accessories

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

These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.

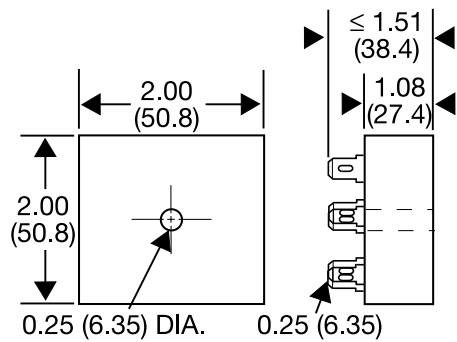
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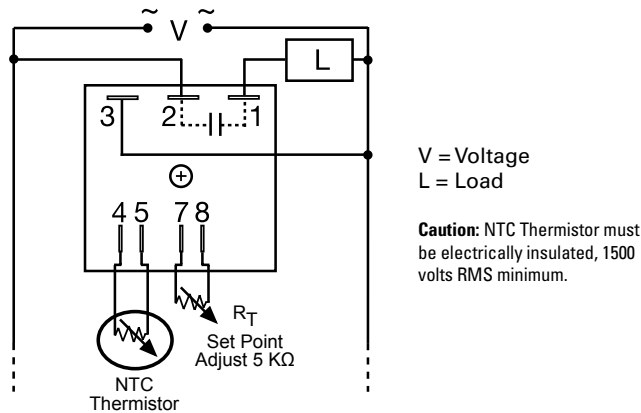
Ordering Information

MODEL	LINE VOLTAGE	OUTPUT AMPERAGE	DESCRIPTION
TCR9C	120 – 240 V ac	20 A	Low cost solid state temperature controller for use with negative coefficient thermistors

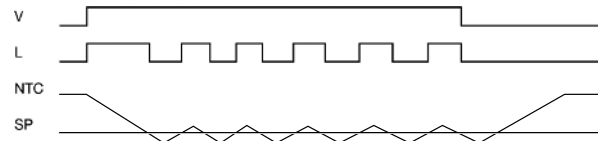
Dimensions Inches (mm)



Wiring Diagram



Function Diagram



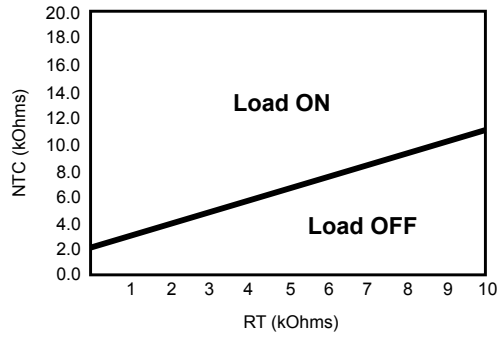
V = Voltage
L = Load
SP = Setpoint

NTC = Negative Temperature
Coefficient Thermistor

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Adjustment vs. Thermistor Resistance



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

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