

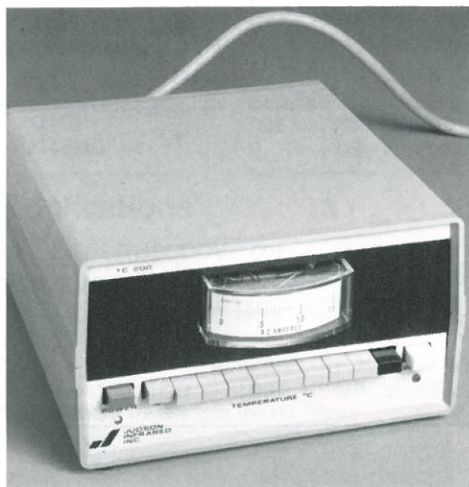
TC Series

Temperature Controllers for TE Cooled Detectors

● TC2 or TC4

Benchtop Temperature Controller with Built-in Power Supply

The Model TC2 and TC4 Temperature Controllers allow safe, convenient operation of the thermoelectrically cooled detectors described in this catalog.



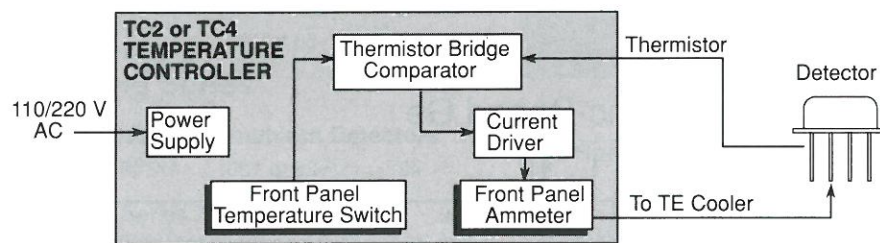
TC2 and TC4 Controllers are easy to use. The built-in power supply accepts AC line voltage. Detector temperature is set using switches on the controller front panel, and an ammeter indicates current drawn by the cooler. The current-overload feature protects the cooler from damage due to overheating; cooler power is cut off if the cooler attempts to draw excess current (e.g. due to improper heat sink, improper cooler input polarity, or defective thermistor.)

The controller's five-pin connector for thermistor input and cooler output mates to the HSA2 Heat Sink Assembly (Fig. 33-1).

TC2/TC4 Features

- Temperature Select Switches for easy operation
- Easy Connections to HSA2 Heat Sink / Cable Assembly
- Built-in Power Supply
- Built-in Protection against TE cooler damage

Figure 32-1
TC2 or TC4 Temperature Controller Schematic



● TC101 New

Miniature Temperature Controller

The Model TC101 Temperature Controller is a compact, low-voltage controller module for use with the thermoelectric coolers described in this catalog.

A minimum of external components are required to operate the TC101 (Fig. 32-3). The control current to the TE cooler will stabilize when the detector thermistor value reaches the user-selected value R.

The TC101-A version includes a pin V_{si} , which signals when the cooler temperature has stabilized. This stabilization indicator can be used to light an LED as shown, or to drive a control relay to the user's system. (The TC101-B does not provide a stabilization indicator.)

Other pins on the controller module allow the user to adjust the control loop response time as well as the allowable swing in the "stabilized" temperature range. Adjustments are made by adding external resistors and capacitors.

TC101 Features

- Miniature DIP Package
- Single +5V Supply
- Minimum External Components required for operation

Figure 32-2
TC101 Miniature Temperature Controller Outline

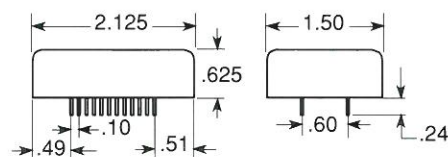
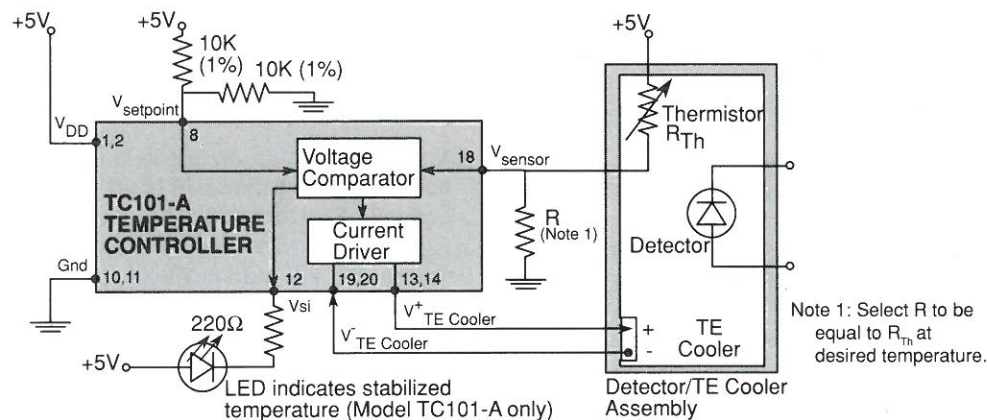


Figure 32-3
TC101 Temperature Controller Schematic



Typical Specifications TC Series Temperature Controllers

Model	TC2	TC4	TC101-A	TC101-B
Supply Voltage	120V AC Line Voltage (220V optional)		+5.0 ± 0.25 V DC, @1.7A	
Maximum Current to TE Cooler	1.5A @3V	1.3A @ 5V	1.6 A Continuous (up to 2.5A intermittent with external resistors)	
Detector Temperature	+10 to -40°C	250 to 190°K	Ambient to -40°C	
Temperature Stability	±0.5°C		± 1°C Typical	
Ambient Temperature	+10 to +40°C		-40 to +80°C	
Temp Sensor Voltage Range	N/A		0 to (V _{DD} - 1.5V)	
Temp Setpoint Voltage Range	N/A		0 to (V _{DD} - 1.5V)	
Error Voltage	N/A		± 4mV DC (typical) to ±10mV DC (max)	
Lead Temperature (Soldering, 10 sec)	N/A		300°C	
Stabilized Temperature Indication	Front Panel Ammeter		External LED	Not available
Recommended for Detectors:	J16TE2 J12TE2 J15TE2	J16TE3 J15TE3 J12TE3 J15TE4	J16TE1 J12TE2 J16TE2 J15TE2	

New

HSA2

Heat Sink and Cable Assembly for Two-Stage TE Cooled Detectors

● HSA2

Two-Stage Thermoelectric Cooler and Heat Sink Assembly

The HSA2 Two-Stage Thermoelectric Cooler and Heat Sink Assembly is available for J16TE2 Series Ge, J12TE2 Series InAs, and J15TE2 Series HgCdTe detectors. The assembly consists of the specified detector, a thermistor, and a two-stage thermoelectric cooler mounted in a dry nitrogen hermetic package with heat sink and detachable cables. The threaded bushing on the heat sink accepts Photodyne® adaptors for mating to standard fiber optic connectors. The Model TC2 Temperature Controller and Power Supply is specifically designed for use with the HSA2.

Figure 33-1 HSA2 Heat Sink/Cable Assembly

