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TEC2000 TEC Temperature Controller



The TEC2000 thermoelectric controller has been designed for wavelength stabilization of laser diodes, and for reduced noise levels of detectors. The compact slimline chassis incorporates an adjustable PID controller with a low noise bipolar current source to drive a thermoelectric cooler element. A bi-direction output allows a single TEC element to both cool and heat. A 4 ½ - digit backlit LCD display shows the set point temperature, actual temperature, the TEC current, and the current limit.

The TEC2000 allows the user to independently set the proportional gain (P), the integral gain (I), and the derivative gain (D) of the control loop to accommodate most thermal loads. The TEC current limit can be set between 0 and 2A to prevent overdriving the TEC. A push button ENABLE switch turns the TEC current on or off. An LED indicates when the TEC output is ON.

Almost all commercially available temperature sensors (thermistors, AD590/592, LM335) can be connected to the TEC2000. When using a thermistor the temperature is displayed in kilohms with a range of 10K? to 200k? and resolution of 1? . If a semiconductor temperature sensor is used, the temperature is directly displayed in degrees Celsius with a resolution of 0.01?C. The temperature sensor options can be selected by a switch mounted on the rear panel.

The TEC2000 is equipped with a cooling fan and an over temperature protection circuit. If an incorrect sensor or no temperature sensor is connected, or the connection to the TE cooler is interrupted, the LED OPEN indicator illuminates. Two BNCs are provided on the rear panel for external control and monitoring of the device temperature. The TUNE IN allows the temperature to set with an external voltage. The CTL OUT provides a voltage proportional to the measured temperature. These are useful for tuning laser wavelengths by temperature.

Specifications:

TEC Output

TEC Current Range	-2A to +2A
Compliance Voltage	>6V
Max Output Power	12W
TEC Current Resolution	1mA
Noise and Ripple	<1mA

Thermistor Sensors

Control Range	10 to 20k (100 -200k)
Resolution	1(10)
Setting Accuracy	± 0.2%
Temp Stability	≤ 2° (20°)

IC Sensors AD590, LM335

Control Range	-40°C to +150°C
Resolution	0.01°C
Setting Accuracy	±0.1°C
Temp Stability	≤ 1mK

TEC Current Limit

Setting Range	0 to 2A
Resolution	1mA
Setting Accuracy	±0.02 A

Temperature control inputs

Input Resistance	10k
Control Voltage	0 to 10V
Input Coeff. (AD590/92,LM335	20 C/V
Input Coeff. 20k (200k)	2k/V (20k/V)

Control output

Load Resistance	1k
Output Coeff. (AD590/92,LM335)	50mV/C
Output Coeff. 20k? (200k?)	0.5V/k (50mV/k)

Connectors

Sensor, TEC, TEC ON Signal	DB9 Male
Control Input	BNC
Control Output	BNC
Chassis Ground	4mm banana

General Data

Power Voltage (10%)	100/115/230VAC
Power Freq.	50 to 60 Hz
Operating Temp.	0° to 40°C
Storage Temp.	-40° to 70°C
Warm-up time for Rated Accuracy	10 min.
Weight	6.6 lb.
Dimensions (W x H x D)	5.8 x 2.8 x 12.5”

Note: The TEC2000 has two thermistor ranges. Data is presented for the 10? to 20k? range first and the 100? -200k? data is in parenthesis.

Related Thorlabs Products

LDC500 Laser Controller, TCLDM9 & TCLDM3 TEC laser mounts, WS02 & TM2448 anti-static products

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