

# 5400 SERIES

## TECSOURCE TEMPERATURE CONTROLLER



The 5400 Series TECSOURCE provides high precision temperature control with up to 960 Watts of TEC power, supporting multiple simultaneous sensors, digital I/O, analog output monitor, and an integrated fan power supply. This temperature controller powers both TEC and resistive heater modules and is flexible to meet the most demanding temperature control applications.



### EXCELLENT STABILITY

The 5400 offers  $\pm 0.004^{\circ}\text{C}$  temperature stability over 1 hour, and only  $\pm 0.01^{\circ}\text{C}$  fluctuation over 24 hours.



### AUTO-TUNE AUTOMATIC PID CALCULATION

The 5400 automatically calculates PID parameters for your mount.



### FULLY ADJUSTABLE PID VALUES

Every TECSOURCE has eight factory-set gain settings, along with the option to choose your own.



### INTEGRATED FAN POWER SUPPLY

Provides 4 – 12 Volts DC to power a laser mount cooling fan.



### SIMPLE USER INTERFACE

Easy to Read, High Contrast VFD Display with all messages and settings in plain English.

View All 4 At Once: ● Temperature Set Point ● Current  
● Actual Temperature ● Voltage

## AT-A-GLANCE

### Power Ranges

- ▶ 420 Watt / 15 Amp / 28 Volt
- ▶ 840 Watt / 30 Amp / 28 Volt
- ▶ 960 Watt / 20 Amp / 56 Volt

### Inputs / Outputs

- ▶ 7 Sensor Inputs
- ▶ Two Digital Inputs and Outputs
- ▶ One Form-C Relay Contact
- ▶ One Analog Output
- ▶ Interlocks

### Sensors

- ▶ Thermistor
- ▶ RTD (2 or 4-wire)
- ▶ LM-335
- ▶ AD590

### Heat & Cool

- ▶ TEC Modules & Resistive Heaters

### Remote Operation via PC

- ▶ Use your existing control code.  
Our command set is compatible with other manufacturers.
- ▶ USB / RS-232 Connections



## FOUR-WIRE RTD SENSING

The cable and connectors in common 2-wire RTD configurations can contribute significant measurement error. For the most accurate temperature control, choose a temperature controller that supports four-wire sensing.

*The 5400 TECSOURCE brings precision control to your laser application.*

# 5400 SPECIFICATIONS

	5400-15-28	5400-30-28	5400-20-56	
<b>Drive Channel</b>	<b>Current</b>			
	Range (A)	±15	±30	±20
	Compliance Voltage (V)	±28	±28	±56
	Max Power (W)	420	840	960
	Resolution (A)	0.01	0.01	0.01
	Accuracy (± [% set point + A])	0.5 + 0.01	0.5 + 0.01	0.5 + 0.01
	Noise/Ripple (mA, rms)	<20	<30	<25
	<b>Temperature Control</b>			
	Range (°C) <sup>1</sup>	-99 to 250		
	Resolution (°C)	0.001 <sup>2</sup>		
	Thermistor Accuracy (± °C) <sup>3</sup>	0.05 <sup>4</sup>		
	AD590 Accuracy (± °C) <sup>3</sup>	0.05		
	LM335 Accuracy (± °C) <sup>3</sup>	0.05		
	RTD Accuracy (± °C) <sup>3</sup>	0.05		
	Short Term Stability (1hr) (± °C) <sup>5</sup>	0.004		
Short Term Stability (24hr) (± °C) <sup>5</sup>	0.01			

<b>Measurement Channels</b>	<b>Current</b>			
	Resolution (mA)	10		
	Accuracy (± [% reading + mA])	0 + 30	0 + 60	0 + 30
	<b>Voltage</b>			
	Resolution (mV)	10		
	Accuracy (± [% reading + V])	0 + 0.05		
	<b>Sensor</b> <sup>6</sup>			
	<b>10µA Thermistor</b>			
	Range (kΩ)	0.1 – 450		
	Resolution (kΩ)	0.01		
	Sensor 1 Accuracy (± [% reading + kΩ])	0.05 + 0.05		
	Sensor 2 Accuracy (± [% reading + kΩ])	0.20 + 0.05		
	<b>100µA Thermistor</b>			
	Range (kΩ)	0.05 – 45		
	Resolution (kΩ)	0.001		
	Sensor 1 Accuracy (± [% reading + kΩ])	0.05 + 0.005		
	Sensor 2 Accuracy (± [% reading + kΩ])	0.20 + 0.005		
	<b>LM335</b>			
	Bias (mA)	1		
	Range (mV)	1730 – 4250		
	Resolution (mV)	0.1		
	Accuracy (± [% reading + mV])	0.3 + 1		
	<b>AD590</b>			
	Bias (V)	4.5		
	Range (µA)	173 – 473		
Resolution (µA)	0.01			
Accuracy (± [% reading + µA])	0.03 + 0.1			
<b>RTD</b>				
Range (Ω)	20 – 192			
Resolution (Ω)	0.01			
Accuracy (± [% reading + Ω])	0.03 + 0.1			
<b>Current Limit</b>				
Resolution (A)	0.1			
Accuracy (± A)	0.2			

1. Software limits. Actual range dependent on sensor type and system dynamics.
2. RTD and auxiliary sensor resolution 0.01°C
3. Accuracy figures are the additional error the 5400 adds to the measurement, and does not include the sensor uncertainties.
4. 25°C, 100 µA thermistor.
5. Stability measurements done at 25°C using a 10 kΩ thermistor on the 100 µA setting. The number is ½ the peak-to-peak deviation from the average over the measurement period.
6. Specifications apply to both primary and auxiliary sensor unless otherwise indicated

<b>General</b>	Display Type	4x20 VFD		
	TEC Connector	17W2, female		
	Auxiliary Interface Connector	DB-25, female		
	Fan Supply	4 – 12V, 350 mA max		
	Relay Limits	30VDC, 1A max		
	Computer Interface	USB 2.0 Full Speed (Type B), RS-232 (DB-9, male)		
	Power	Universal 90 - 240 VAC, 50/60 Hz		
		600W	1100W	1100W
	Size (H x W x D) [inch(mm)]	3.5 (89) x 12 (305) x 14 (356)		
	Weight [lbs (kg)]	11.6 (5.3)		
	Operating Temperature	+10 °C to +40 °C		
	Storage Temperature	-20 °C to +60 °C		

Ordering Information:

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