arroyo instruments

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 ± 0.004°C temperature stability over 1 hour, and only ± 0.01°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**
- **Actual Temperature**
- **Current**
- **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
Drive Channel	**Current**			
	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
	Temperature Control			
	Range (°C)[1]	-99 to 250		
	Resolution (°C)	0.001[2]		
	Thermistor Accuracy (± °C)[3]	0.05[4]		
	AD560 Accuracy (± °C)[3]	0.05		
	LM335 Accuracy (± °C)[3]	0.05		
	RTD Accuracy (± °C)[3]	0.05		
	Short Term Stability (1hr) (± °C)[5]	0.004		
	Short Term Stability (24hr) (± °C)[5]	0.01		
Measurement Channels	**Current**			
	Resolution (mA)	10		
	Accuracy (± [% reading + mA])	0 + 30	0 + 60	0 + 30
	Voltage			
	Resolution (mV)	10		
	Accuracy (± [% reading + V])	0 + 0.05		
	Sensor[6]			
	10µA Thermistor			
	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		
	100µA Thermistor			
	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		
	LM335			
	Bias (mA)	1		
	Range (mV)	1730 – 4250		
	Resolution (mV)	0.1		
	Accuracy (± [% reading + mV])	0.3 + 1		
	AD590			
	Bias (V)	4.5		
	Range (µA)	173 – 473		
	Resolution (µA)	0.01		
	Accuracy (± [% reading + µA])	0.03 + 0.1		
	RTD			
	Range (Ω)	20 – 192		
	Resolution (Ω)	0.01		
	Accuracy (± [% reading + Ω])	0.03 + 0.1		
	Current Limit			
	Resolution (A)	0.1		
	Accuracy (± A)	0.2		
General	Display Type	4x20 VFD		
	TEC Connector	17W2, female		
	Auxillary 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		

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 auxilary sensor unless otherwise indicated

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