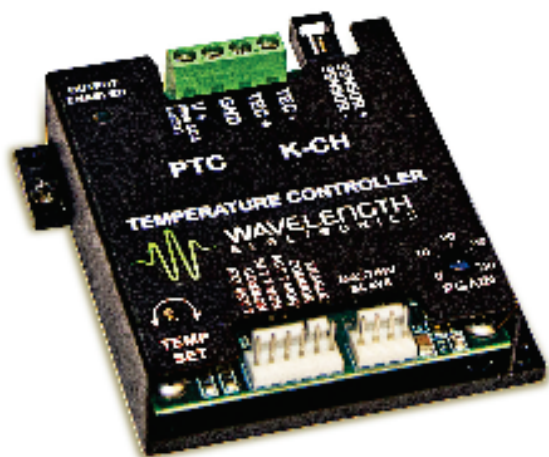


DATASHEET AND OPERATING GUIDE

PTCxK-CH Series

Chassis Mount Temperature Controllers



FEATURES AND BENEFITS

- Drive up to ± 2.5 , ± 5.0 , or ± 10.0 A of linear bipolar TEC or heater current
- Add a booster unit to drive up to ± 20.0 A
- Single supply operation: 5 to 30 VDC
- Small package: 3.0" x 3.2" x 1.1"
- Use a wide variety of temperature sensors
- Remote Output and Setpoint controls
- Short term stability: 0.0012°C
- Long term stability: 0.002°C
- Selectable sensor bias current
- Adjustable current limit
- Failsafe Setpoint default in case of remote temperature setpoint signal error

TIME-TESTED RELIABILITY

The PTCxK-CH Series Chassis Mount Temperature Controllers deliver the precision performance and long-term reliability you expect from a Wavelength Electronics temperature controller.

APPLICATIONS

PTCxK-CH Series controllers are found in such diverse applications as particle and droplet measurement, manufacturing machine vision systems, biomolecular interaction analysis, and more.

VERSATILE AND EASY TO USE

The PTCxK-CH controllers operate from a single power supply between 5 V and 30 V. The linear bipolar controller drives a Peltier thermoelectric cooler or a resistive heater, and integrates easily into OEM applications.

PTCxK-CH controllers interface with a variety of temperature sensors, and the bias current is adjustable in order to maximize controller sensitivity and stability.

The compact chassis mount design simplifies heatsinking and requires minimal space. PTCxK-CH controllers are quick to configure for your prototype project, and there are no surprises when it's time to integrate the controller into the final design.

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ORDERING INFORMATION

PART NO	DESCRIPTION
PTC2.5K-CH	± 2.5 A Temperature Controller
PTC5K-CH	± 5.0 A Temperature Controller
PTC10K-CH	± 10.0 A Temperature Controller
PTC10K-SL	± 10.0 A Booster Unit
WCB105	Sensor Cable (included)
WCB106	Input / Output Cable (included)
WCB107	Power / TEC Cable
WCB501	Master / Booster Cable
USBKIT	USB Interface kit, with software



406-587-4910

www.teamWavelength.com

Applies to Product Revisions A – E
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ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	PTC2.5K	PTC5K	PTC10K	UNIT	NOTE
ABSOLUTE MAXIMUM RATINGS						
Supply Voltage	V+	4.5 to 30			VDC	Consult Safe Operating Area calculator.
Internal Power Dissipation ¹	P _{MAX}	60			W	derating begins at 55°C
Case Operating Temperature		-40 to 85			°C	
Case Storage Temperature		-65 to 125			°C	
Weight		4.3			oz	120.4 g
Size		3.0 x 3.2 x 1.1			inches	76.2 x 81.3 x 28.0 mm

PARAMETER	SYMBOL	PTC2.5K	PTC5K	PTC10K	UNIT	NOTE
OUTPUT CURRENT						
Max Output Current	I _{MAX}	±2.5	±5	±10	A	V+ = 5 VDC
Minimum Compliance Voltage	V _{COMP}	V+ – 1.5	V+ – 2.2	V+ – 4.5	V	V+ > 5.3 VDC
Short Term Stability, 1 hr, Off ambient ^{1,2,3}		< 0.0012			°C	10 kΩ thermistor at 100 μA bias current
Short Term Stability, 1 hr, On ambient ^{1,2,3}		< 0.0014			°C	
Long Term Stability, 24 hr, Off ambient ^{1,2,3}		< 0.002			°C	
Temperature Coefficient		< 100			ppm / °C	

POWER SUPPLY

Power Supply Voltage	V+	5 to 30			VDC	
PTC Quiescent Current		50			mA	
Minimum Current Rating		1.1 * (I _{TEC} + Quiescent Current)			A	

TEMPERATURE SENSORS

Sensor Compatibility		Thermistor, RTD, Linear Sensors				
Sensor Input Voltage Range		0 to (V+ – 1.5) 0 to 5.5			V	V+ < 7 VDC V+ ≥ 7 VDC
Sensor Input Damage Threshold		5.5			V	

BIAS CURRENT

Bias Current Selection		10 μA, 100μA, 1 mA, 10 mA				
Bias Current Accuracy		±0.5%				over full temperature range
Bias Current Temperature Coefficient		25 10			ppm / °C	V+ < 7 VDC V+ ≥ 7 VDC

EXTERNAL SETPOINT AND MONITORS

External Setpoint Voltage Range		0 to V+ 0 to 6.2			V	V+ < 7 VDC V+ ≥ 7 VDC
External Setpoint Damage Threshold		< -0.5, or > 7.2			V	
SET T MON Output Voltage Range		0 to 6.2			V	
ACT T MON Output Voltage Range		0 to 6			V	
Sensor Voltage to ACT T MON Accuracy		1			mV	
SET T MON to ACT T MON Accuracy		1			mV	

FEEDBACK LOOP

Proportional Gain Range		5 to 40			A / V	
Integrator Time Constant		1.7	1.5	1.8	A / V-s	can be changed at factory

¹⁾ Assumes steady-state operation with a tuned system, using a 10 kΩ thermistor, and P_{GAIN} tuned to critical damping point.

²⁾ Use the lowest-noise power supplies available for your application. Contact the factory for recommendations.

³⁾ When using resistive heaters, stability can only be consistently achieved when specified temperatures are 10°C or more above ambient.