

LASER DIODE DRIVERS | TEMPERATURE CONTROLLERS
Simply Advanced Control for Your Cutting Edge Design



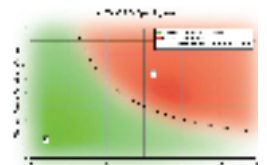
WAVELENGTH
ELECTRONICS

MPT SERIES

DATA SHEET

**Caution: To operate this controller safely,
use the Safe Operating Area Design Tool
online at**

www.teamwavelength.com/support/calculator/soa/soatc.php



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TABLE OF CONTENTS

Features.....	2
Customer Service / Warranty.....	2
Optimize Your MPT.....	3
Quick Start.....	3
Pin Descriptions.....	5
Operating Instructions.....	7
Mechanical Dimensions.....	10
MPT Input / Output Cable Diagram.....	10

FEATURES

The MPT temperature controller offers many unique features. These include:

- Excellent Temperature Stability
- Single supply operation: +5V to +15V
(Contact factory for higher voltage operation)
- 2.5 Amp, 5.0 Amp, 7.5 Amp and 10 Amp models
- Linear Bipolar Output
- Operates with Thermistors, IC sensors or RTDs
- Temperature Setpoint, Proportional Gain, and TE Limit Current are user adjustable
- PID control loop
- Analog input for remote control
- Operates Thermoelectric Modules
(Contact Factory for Resistive Heater Operation)

The **MPT** series of linear, bipolar temperature controllers operates from +5V to +15V, (contact factory for operation up to +30V) making them ideal for applications that require high compliance voltages. For maximum flexibility, the controllers interface to thermistors, IC sensors, or RTD's. Twelve-turn trimpots control temperature setpoint and the Proportional Gain term. The TE Current Limit is also user adjustable.

NOTE: Master / Slave mode for higher current operation has been phased out after Revision D (9/2003).

CUSTOMER SERVICE / WARRANTY

If you have any questions or comments, please call our technical staff at (406) 587-4910. Our hours are 8:00a.m. to 5:00p.m. MT.

Wavelength warrants this product for 90 days against defects in materials and workmanship when used within published specifications. This warranty extends only to purchaser and not to users of purchaser's products. If Wavelength receives written notice of such defects during the warranty period, we will either repair or replace products which prove to be defective. It is purchaser's responsibility to determine the suitability of the products ordered for it's own use. Wavelength makes no warranty concerning the fitness or suitability of its products for a particular use or purpose; therefore, purchaser should thoroughly test any product and independently conclude its satisfactory performance in purchaser's application. No other warranty exists either expressed or implied, and consequential damages are specifically excluded.

All products returned must be accompanied by a Return Material Authorization (RMA) number obtained from the Customer Service Department. Returned product will not be accepted for credit or replacement without our permission. Transportation charges or postage must be prepaid. All returned products must show invoice number and date and reason for return.

MPT TEMPERATURE CONTROLLER ELECTRICAL SPECIFICATIONS

Model Number	MPT-2500*	MPT-5000*	MPT-10000*
Temperature Control			
Temp. Control Range, ①	-99 to +150°C	-99 to +150°C	-99 to +150°C
Short Term Stability, 1 hr. ②	< 0.002°C	< 0.003°C	< 0.005°C
Long Term Stability, 24 hr. ②	< 0.005°C	< 0.005°C	< 0.008°C
TEC Output			
Bipolar Output Current	± 2.5 A	± 5 A	±10 A
Compliance Voltage ③	See Note ③	See Note ③	See Note ③
Maximum Output Power	60W	120W	240W
Maximum Internal Power Dissipation	15W	30W	60W
Current Limit Range (Internal Trimpot Selectable)	0 - 2500 mA	0 - 5000 mA	0 - 10000 mA
Control Loop	PID	PID	PID
Temperature Sensors			
Thermistor Types (2 wire)	NTC	NTC	NTC
Thermistor Sensing Current	10 µA & 100 µA	10 µA & 100 µA	10 µA & 100 µA
Thermistor Range	1 kΩ - 500 kΩ	1 kΩ - 500 kΩ	1 kΩ - 500 kΩ
IC Sensor Types ④	AD590, LM335	AD590, LM335	AD590, LM335
IC Sensor Bias (LM335)	1 mA	1 mA	1 mA
RTD Types (2 wire)	100, 500 or 1kΩ	100, 500 or 1kΩ	100, 500 or 1kΩ
RTD Sensor Current	1 mA, 10 mA	1 mA, 10 mA	1 mA, 10 mA
Temp Setpoint Monitor vs. Temp Monitor Accuracy	< 2 %	< 2 %	< 2 %

MPT GENERAL SPECIFICATIONS

Power Requirements ① ⑤ ⑤ +5 to +15 VDC (Contact factory for higher voltage operation.)	Weight < 0.7 lbs	Connectors 15 pin D-sub plug (cable needs female receptacles)
Supply Current MPT's Maximum TE Output Current plus 200 mA @ V+	Operating Temperature 0 to +50°C	Warm-up 1 hour to rated accuracy
Size (H x W x D) 1.0" x 3.55" x 3.5" (MPT-2500 and MPT-5000) 1.0" x 3.55" x 5.5" (MPT-10000)	Storage Temperature -40 to +50°C	Power Indicator Green LED

① Temperature Range depends on the physical load, sensor type, supply voltage, and TE module or resistive heater used. Operating with +5V input will limit the setpoint voltage to 2.5V to 3.5V, thus limiting the temperature range.

② Stability quoted for a typical 10 kΩ thermistor at 100 µA sensing current.

③ Compliance Voltage will vary depending on input voltages (V_s) and drive current. Use the following table to determine compliance voltage:

Current Range	Compliance Voltage
200 mA	V _s - 0.6 V
2.5 A	V _s - 2.0 V
5.0 A	V _s - 3.0 V
10.0 A	V _s - 5.0 V

④ AD590 requires an external bias voltage.

⑤ If thermistor and laser diode are case common, the laser diode driver and TE controller power supplies must be isolated from each other.

* These specifications are for Revision E & F (introduced 9/2003, 3/2005 respectively). Revision D specs were:

Short Term Stability, 1 hr. ②	< 0.005°C	< 0.005°C	< 0.005°C
Long Term Stability, 24 hr. ②	< 0.008°C	< 0.008°C	< 0.008°C
Compliance Voltage ⑥	>± 24 V	>± 24 V	>± 24 V
Current Limit Range (Internal Jumper Selectable, +/- 2% FS accuracy, 20% FS increments)			
Temp Setpoint Monitor vs. Temp Monitor Accuracy	< 5 %	< 5 %	< 5 %

⑥ Compliance Voltage will vary depending on input voltages. A maximum compliance voltage of ± 24 volts will be obtained with +30 volt input. A minimum compliance voltage of ± 2.0 volts will be obtained with +5 volt input (Rev D).