MPT Series Temperature Controllers
Rev E Pgain vs. Trip Pot Resistance

WAVELENGTH ELECTRONICS

WHAT HAS CHANGED BETWEEN REV D AND REV E?

Efficiency: The internal voltage drop across the output stage has decreased in Rev E from Rev D. The compliance limit voltage has increased. Less power is dissipated in the MPT and the same package can deliver more power. You can expect:

Model	Rev D Internal Voltage Drop	Rev E Internal Voltage Drop
MPT2500	3 to 6 V	0.6 to 2 V
MPT5000	3 to 6 V	0.6 to 3 V
MPT10000	3 to 6 V	0.6 to 5 V

***CAUTION**: Increased efficiency means Rev E can deliver more power faster than Rev D. This can mean faster settling times. It can also lead to overheating your thermoelectric device if the increased rate of delivery exceeds the capacity of your load heatsink. If you were compliance voltage limited with Rev D, you may not be with Rev E. Please monitor your load for signs of overheating when you change to operate with Rev E.*

Adjustable Limit Current Setting: The 20% increment jumpers have been replaced with a single turn trimpot. If your system is subject to vibration, hot glue along an edge can be used to fix the trimpot in position. The "10" indicator on the trimpot equates to full-scale current.

Reduced offset between Actual Temperature Monitor and Setpoint: Actual and Setpoint now track within 0.5% of full scale.

Proportional Gain Resolution: The Proportional Gain trimpot now adjusts from 1 to 50 *linearly* rather than logarithmically. Test points on the board allow the Proportional Gain value to be set precisely. The default setting on Rev D was ¼ turn CCW from the end or fully clockwise position for a gain of 26. The same gain of 26 will be the default on Rev E. The trimpot setting, however, changes. The following equation and chart detail the new settings:

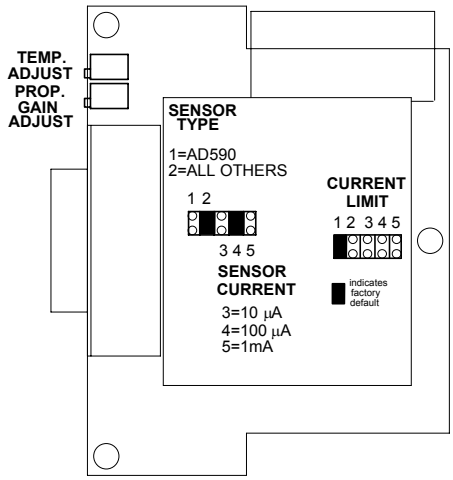
$$Gain = \frac{R_{PROP}}{3.92k\Omega} \times Output\ Stage\ Gain$$ where R_{PROP} is the resistance of the trimpot in kΩ.

Model	Desired Proportional Gain	Resistance and Proportional Gain Trimpot			Number of Turns (12 total, 200kΩ trimpot)	Output Stage Gain
MPT2500	26	102kΩ	⇒	26.0	6	1
MPT2500	50	196kΩ	⇒	50.0	12	1
MPT5000	26	51kΩ	⇒	13.0	3	2
MPT5000	50	98kΩ	⇒	25.0	6	2
MPT10000	26	25.5kΩ	⇒	6.5	1.5	4
MPT1000	50	49kΩ	⇒	12.5	3	4

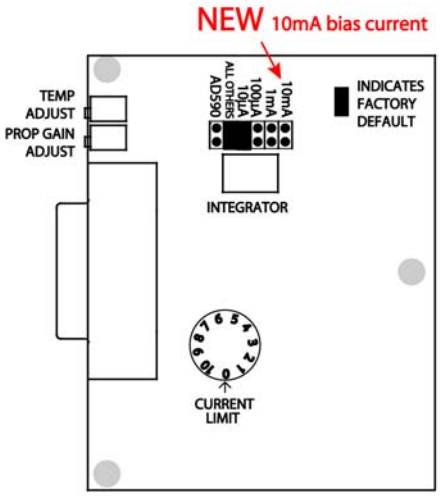
10mA Bias Current: For 100Ω RTDs, the higher bias current means better stability.

Here are the new locations of jumpers and trimpots:

Rev D



Rev E



CURRENT LIMIT TRIMPOT POSITION

	MPT2500	MPT5000	MPT10000
0	0 A	0 A	0 A
1	250mA	500mA	1 A
2	500mA	1 A	2 A
3	750mA	1.5 A	3 A
4	1 A	2 A	4 A
5	1.25A	2.5 A	5 A
6	1.5A	3 A	6 A
7	1.75A	3.5 A	7 A
8	2 A	4 A	8 A
9	2.25A	4.5 A	9 A
10	2.5 A	5 A	10 A