



ANALOG MODULES, INC.

Specialists in Analog and Laser Electronics

760-57 OPERATING NOTES

Scale adjustment pot

Monitor voltage at scale voltage test point and ground test point. Adjustment range is 0 to 1.25V typical. For 1 volt input on the current control each 0.1 volt on the test point will give 0.25 Amps. For example, if the scaling voltage is set to 0.3 volts, 1 volt in on the current control will yield 0.75 Amps -or- ($I = \text{Current Control} \times \text{Scale Voltage} \times 2.5$)

Offset adjust

Short or disconnect the current control input at J3.

Monitor voltage at current test point to ground test point. Scale is 0.125mV/mA. Multiply voltage by 8A/V for desired current. A voltmeter with at least 4 ½ digits of resolution is recommended. Clockwise rotation raises current.

Monitor threshold

Set monitor threshold pot fully clockwise. This is minimum sensitivity. Input lowest level laser current modulation CW or pulsed for which a monitor response is desired. Rotate the monitor threshold pot counter clockwise until the laser fire line goes high (CW) or begins to generate pulses.

Laser operating temperature

The laser operating temperature is best set by measuring the output wavelength and adjusting for the appropriate value. This method eliminates the tolerance of the bridge elements and the effect of the measuring instruments on the bridge. If it is desired to set the operating temperature without benefit of wavelength of the output, set the temperature as follows: Look up the desired operating temperature in the table below. Measure the voltage from the ground test point to the wiper of the adjustment pot (closest pad to edge of board). Adjust voltage to the table specified value. Clockwise rotation increases the temperature setting. This adjustment will be accurate to $\pm 2^\circ\text{C}$.

0°C	1.141V	25°C	0.745V	50°C	0.394V
5°C	1.069V	30°C	0.665V	55°C	0.343V
10°C	0.992V	35°C	0.589V	60°C	0.297V
15°C	0.911V	40°C	0.518V	65°C	0.257V
20°C	0.828V	45°C	0.453V	70°C	0.222V

Table assumes Betatherm 10K3CG2 thermistor or equivalent.

Current limit adjustment

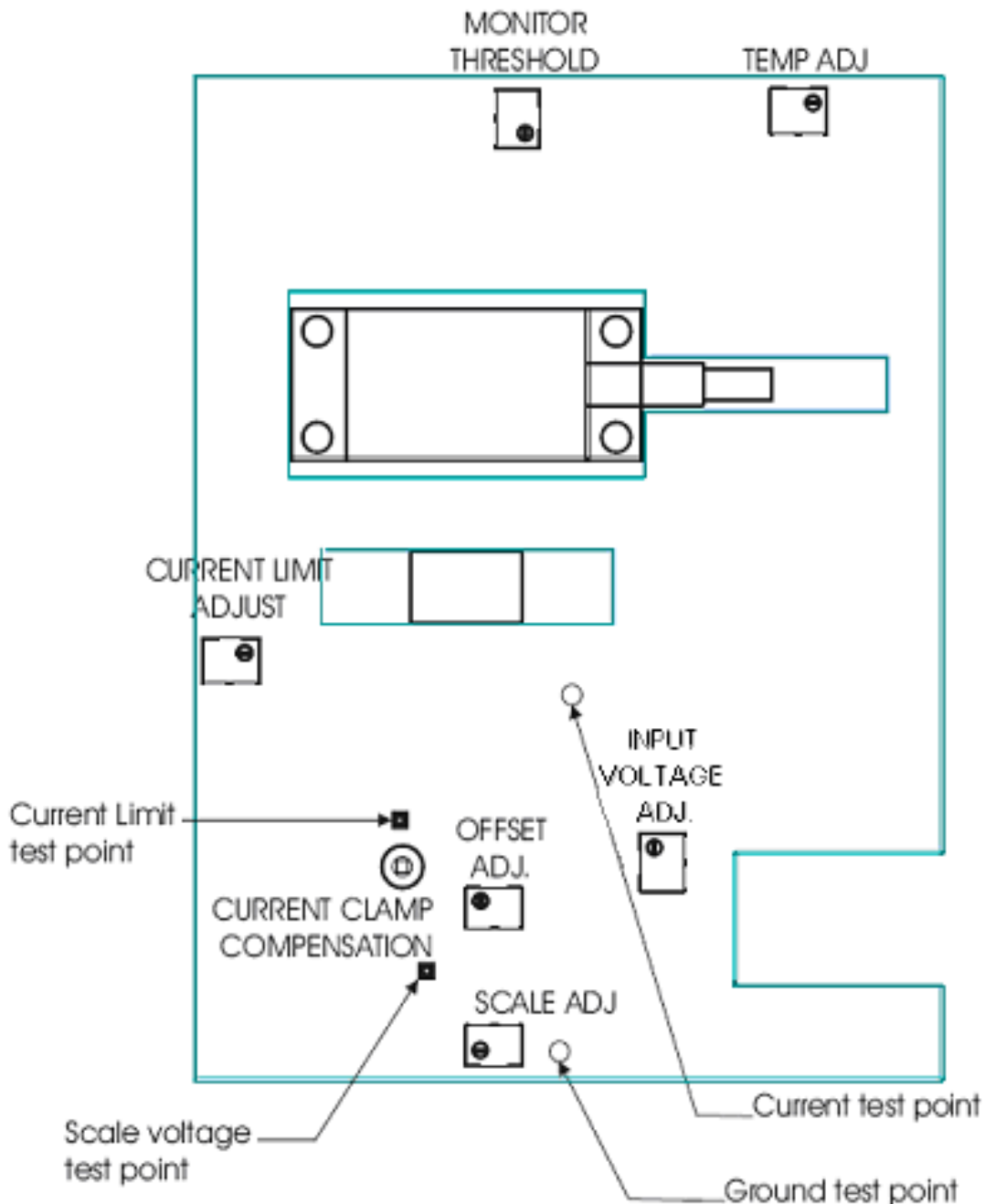
The following procedure will permit accurate setting of the current limit without subjecting the laser to excessive currents during the adjustment. Disconnect the current control source. Enable the laser. Measure the voltage from the ground test point to the current test point. Measure the voltage from the ground test point to the current limit test point. Subtract the first measurement from the second. To this value add the desired limit current in Amps times 0.125. This is the target adjustment voltage. Disable the laser. Connect a DC source to the current control input. Set the current limit pot fully clockwise. Monitor the voltage at the current limit test point. Increase the current control voltage until the measured voltage is at least 0.1 Volt above the target voltage. Current control voltages up to 1.25 volts may be used. If this is not sufficient, the scale factor may need to be increased. Adjust the measured voltage back to the target value with the current limit adjustment pot.

Current clamp compensation

This adjustment must be made with a non-metallic tool. The recommended tool is a Johansen variable capacitor adjustment tool. This tool has a yellow plastic body with a square ceramic tip. Make certain the current limit is set as desired. Monitor optical output. Drive the input with a fast rise pulse and set multiplier value to drive the output well beyond the current limit. Adjust the capacitor for the best pulse shape at the leading edge. That is the fastest rise with minimum overshoot. Reduce the drive to slightly below the current limit and verify that the rising edge is not excessively rounded over. The best adjustment is a compromise between overshoot while clamping and rise time as the limit is approached.

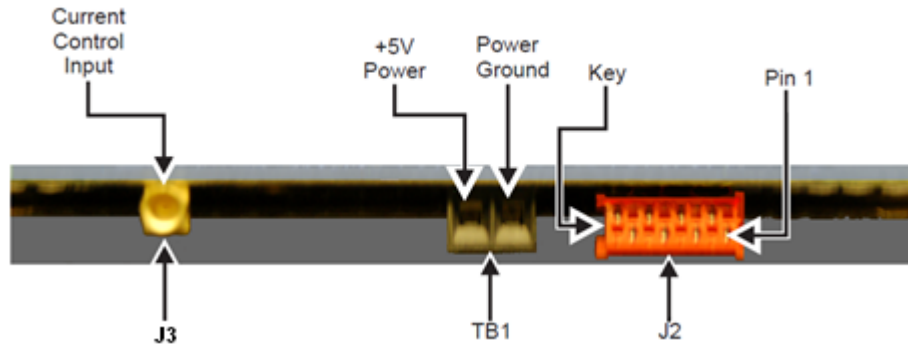
Power input voltage adjustment

Adjust laser power supply from 4.5 – 7V. Reducing output will increase efficiency to >60% but result in increased risetimes.



Laser Driver Power-Up Procedure:

- 1) Connect +5V power.
- 2) Input desired signal at "Current Control Input" (1.25V maximum).
Laser current in Amps = (Current Control Input x Scale Adjust x 2.5)
- 3) Using an oscilloscope monitor "Current Limit test point".
 - To derive Laser's current (in Amps) multiply voltage read (in Volts) by 8
 - Use "Scale Adjust Pot" to increase or decrease amplitude of signal at "Current Limit test point"
 - Use "Current Limit Pot" to limit maximum current through laser
 - Use "Offset Adjust Pot" to adjust DC level
- 5) Enable laser by shorting enable pin 1 to ground using supplied cable
- 6) Confirm Current through Laser by monitoring "Current Test Point", multiply reading by 8 to derive Current.
 - Use "Offset Adjust Pot" to adjust for desired bias.



Electrical Signal Connections

8-pin Connector (J3)

**14-Pin Butterfly Package Interface
(Customer Supplied)**

Pin	Signal
1	ENABLE
2	GND
3	TEMP FAULT
4	GND
5	OVER CURRENT FAULT
6	GND
7	LASER FIRE
8	GND

Pin	Connection
1	TEC Cooler (+)
2	Thermistor
3	Back facet monitor anode (+)
4	Back facet monitor cathode (-)
5	Thermistor
6	N/C
7	N/C
8	N/C
9	N/C
10	Laser diode anode (+)
11	Laser diode cathode (-)
12	N/C
13	Case ground
14	TEC cooler (-)