

Features

- » Wide operating temperature range of -40 to +85 °C
- » Compact size
- » Highly accurate laser diode and optical modulator bias control
- » QUAD+ or QUAD- bias point settings
- » Simple System Integration
- » Designed and Tested for Harsh

Applications

- » Harsh Environment RF and Microwave Photonic Transmitters
- » Optical Modulator Communications Systems
- » Fiber Optic Delay Lines

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Description

The PSI-2450 Integrated Controller has been designed and tested for small space, wide temperature range applications. The PSI-2450 Integrated Controller assembly consists of a PSI-2400-10 Laser Diode Controller (LDC) motherboard and a PSI-1204-10 Modulator Bias Controller (MBC) daughterboard mounted on an aluminum mounting plate. The Integrated Controller provides the electronic circuitry needed to control a semiconductor CW laser diode and an optical modulator used to construct an externally modulated photonic transmitter. The laser diode, optical modulator, and photodiode (tap monitor) components required to build the photonic transmitter can be provided by the user or PSI upon request.

The diagram in Figure 1 illustrates a typical application of the PSI-2450 Integrated Controller assembly. PSI can modify the PSI-2450 to meet various system requirements. **Please contact PSI with you application needs.**

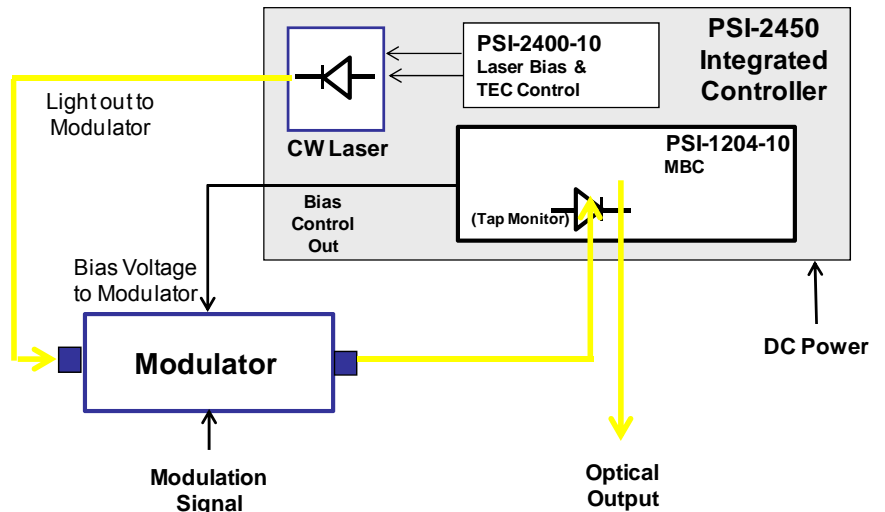


Figure 1: Typical System Configuration

Ordering Information

PSI Part Number	Description
PSI-2450	<p>Integrated Controller assembly</p> <p>Consists of:</p> <ul style="list-style-type: none"> • PSI-2400-10 Lased Diode Controller • PSI-1204-10 Modulator Bias Controller • Aluminum mounting/cooling plate <p>Please contact PSI to add:</p> <ul style="list-style-type: none"> • Laser diode • Integrated tap monitor photodiode • Optical modulator

Laser Controller Characteristics

Parameter	Condition	Min	Typ	Max	Units
Laser Diode Forward Voltage				2.5	V
Laser Diode Operating Forward Current				750	mA
Back-facet Laser Monitor Dark Current				200	nA
Back-facet Laser Monitor Current		0.1		2.5	mA
TEC Operating Current		-1.0		1.7	A
TEC Operating Voltage		-3.0		4.5	V
TEC Thermistor Resistance @ 25°C		8		12	kΩ
TEC Temperature Lock		-0.1		0.1	Ω
Laser Optical Power Set Point Locked		-1.0		+1.0	%

Environmental Characteristics

Parameter	Condition	Min	Typ	Max	Units
Operating Temperature		-40		85	°C
Storage Temperature		-40		85	°C

Power Supply

Parameter	Description
DC Supply Voltages	+/- 6V @ 1600mA Max
	+/- 12V @ 20mA Max

Laser Diode Pin-out Connections

PIN #	Connection	PIN #	Connection
1	Thermistor	8	Case Ground
2	Thermistor	9	Case Ground
3	Laser Cathode (-)	10	NC
4	Monitor Diode Anode (-)	11	Laser Anode (+) GND
5	Monitor Diode Cathode (+)	12	Laser RF (NC on board)
6	TEC (+)	13	Laser Anode (+ GND)
7	TEC (-)	14	NC

I/O Micro-D Pin-out Connections

PIN #	Connection	PIN #	Connection
1	+ 12Volts (20mA max)	9	+/-12 Volts GND
2	-12 Volts (20mA max)	10	+/-6 Volts GND
3	-6 Volts (1600mA max)	11	-6 Volts (1600mA max)
4	+6 Volts (1600mA max)	12	+6 Volts (1600mA max)
5	Laser Enabled (Disabled = GND)	13	+/-6 Volts GND
6	MBC Reset (Reset = GND)	14	GND
7	Bias Locked (GND = Locked OC))	15	Dither Out GND to Modulator
8	Dither Out to Modulator		

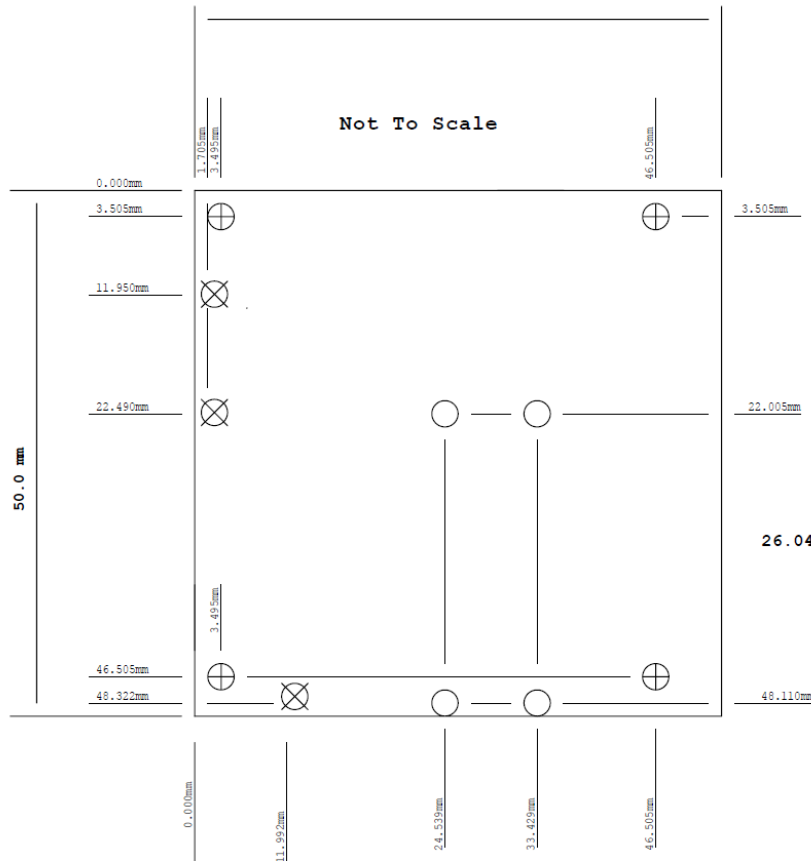
Modulator Bias Controller Characteristics

Parameter	Value	Units
Modulating Signal	Analog small signal	
Modulators Supported	Mach-Zehnder	
Bias Point Setting	+Quad or -Quad, user selects	
Modulator/Bias-T Load Capacitance	<0.1	μF
Output DC Bias Port Impedance	100	Ω
Output DC Bias Voltage	0.3 less than supply voltages	V
Dither Frequency	1	kHz
Dither Amplitude - set by resistor values to accommodate different Vpi of modulator	20 to 200; user defined	mVpp
Photodiode monitor current at Quad +/-	150	μA
Bias Point Error@Quad+ or Quad - point, 5 to 150ua photodetector current	±3 @ 1% dither of Vpi	degrees
Dynamic Range of Controller Input Signal (maximum) - includes photodiode selection and optical power total range	15	dB
Reset	Automatic and Manual	

Modulator Bias Controller Pin-out Connections

Connector	Pin #	Function	Description
J1	1	Photodiode	Cathode
	2	Photodiode	Anode
J2	1	+12 V	+12 Volts DC
	2	GND	+/- 12 Volts Ground
	3	-12 V	-12 Volts DC
	4	Reset	GND = Reset
J3	1	+ Modulator	Photodiode anode (analog ground)
	2	GND Modulator	Provides internally generated bias voltage for photodetector cathode
J4	1	Locked	GND = Controller Locked (open collector)
	2	QUAD +/-	Open = Q+, GND = Q- (24K pull-up to +5V on LDC board)

Mounting Plate Mechanical Dimensions



Note: All holes tapped 2.5mm x .40mm