LMB-20

DEVICE

20 GHz Lightwave Modulator with Bias Control

OVERVIEW

The Optilab LMB-20 is a high performance Lightwave Modulator Board designed for analog photonics applications from 10 MHz to 20 GHz. This unit includes a 18 GHz optical intensity modulator and an Automatic Bias Control (ABC) board with four different operating modes. The external laser source can be any polarization maintaining device, such as tunable laser, narrow linewidth laser, making it a versatile solution for OEM-based system integration. The LMB-20 requires a single ±5 Volt DC power supply for operation. Contact Optilab for more information.

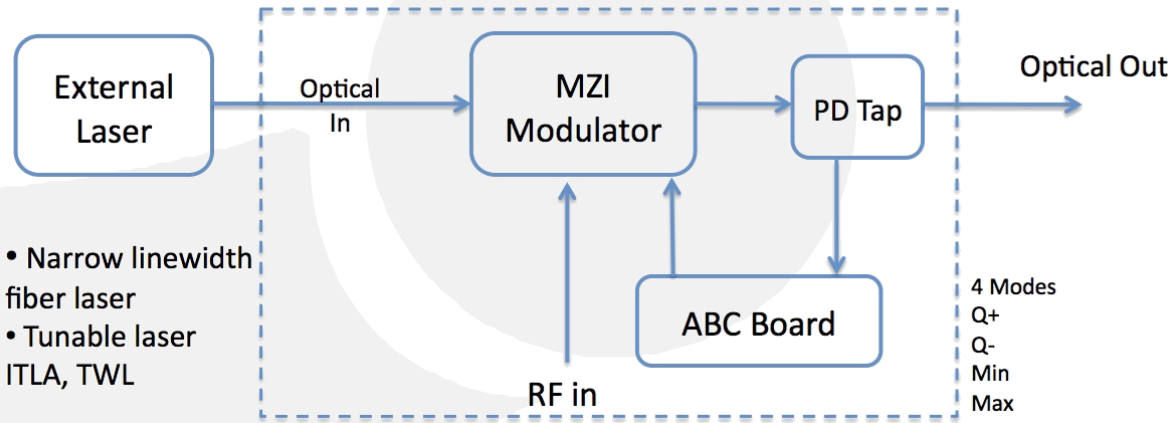
FEATURES

- 14 GHz S21 bandwidth modulator
- 1520 nm to 1610 nm wavelength range
- Automatic Bias Control w/ 4 mode operation
- Accepts external laser source via input
- Customizable Options:
  - Low Drive Voltage
  - PM output
  - High Extinction Ratio (> 30 dB)
  - Temp. Qualified (-55°C to +75°C)

USE IN

- Sub-nanosecond pulse generation
- Optical communications to 25 Gb/s
- Active mode lock (PM version)
- Analog photonics
- 20 GHz RFoF transmission
- RF/IF signal distribution
- Satellite communication

FUNCTIONAL DIAGRAM



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SPECIFICATIONS

GENERAL

Operating Wavelength	1520 nm to 1610 nm
Laser Source	User's external input
Optical Input Level	+20 dBm max.
RF Return Loss	> 15 dB @ 10 GHz; > 10 dB @ 20 GHz
Impedance	50Ω
Operating Frequency Range	10 MHz to 20 GHz
Input RF Voltage	27 dBm max.
Optical Output Level	7 dBm @ +14 dBm input typ.
S21 Bandwidth	3 dB, 14 GHz typ.
Modulator Bias Mode	4 Automatic bias control modes, selectable by software
Extinction Ratio	25 dB typ.; > 30 dB (HE versions)
Modulator Voltage V_{PI}	7 V typ. @ 10 GHz; 5.5 V typ. @ 10 GHz (LD version); 3.3 V typ @ 10 GHz (ULD version)

ANALOG

IIP3 @ 7 GHz	32 dBm typ.; 25 dBm typ. (LD version)
1 dB Compression Point @ 10 GHz	16 dBm typ.; 8 dBm typ. (LD version)

MECHANICAL

Operating Temperature (standard)	-30 oC to +60 oC
Operating Temperature (TQ version)	-55 oC to +75 oC
Storage Temperature	-60 oC to +90 oC
Power Supply Requirements	± 5 V DC, 1 A max.
Optical Connector	FC/APC
Fiber Type	PANDA input, SMF-28 output; PANDA input/output (PM version)
RF Input Connector	K connector; GPO (LD version); GPPO (ULD version)
Power Connector	4 Pin Molex
Remote Control	USB 2.0 software included
Alarm	LED bias mode status
Dimensions	206 mm x 102.4 mm x 31.5 mm

BIAS CONTROL MODE

Mode	Operation Conditions
Q+	Set to quadrature point of positive slope for linear analog modulation
Q-	Set to quadrature point of negative slope for linear analog modulation
Min.	Set to min. point of operation for pulse generation or digital modulation
Max.	Set to max. point of operation for pulse generation or digital modulation

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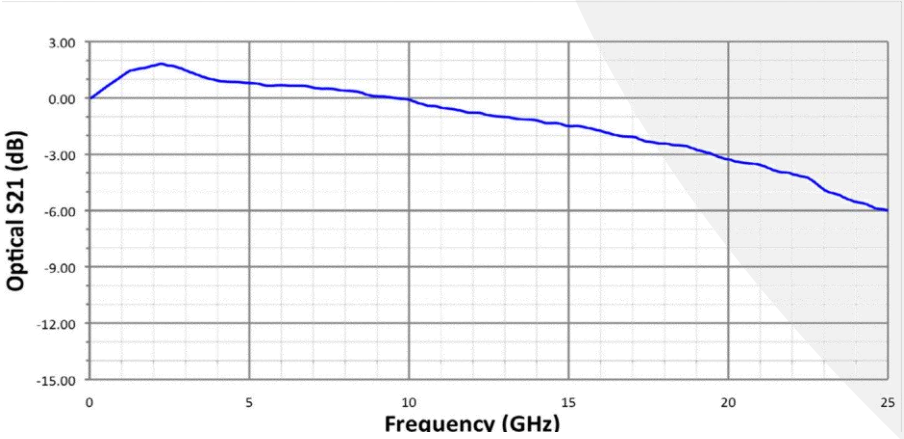
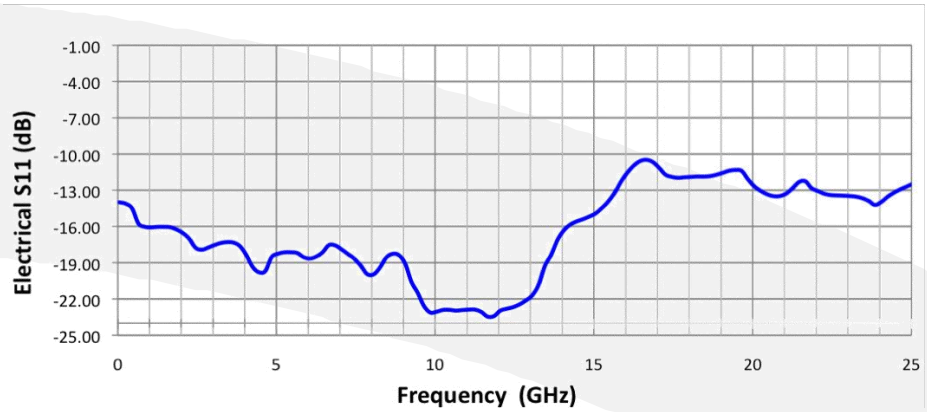
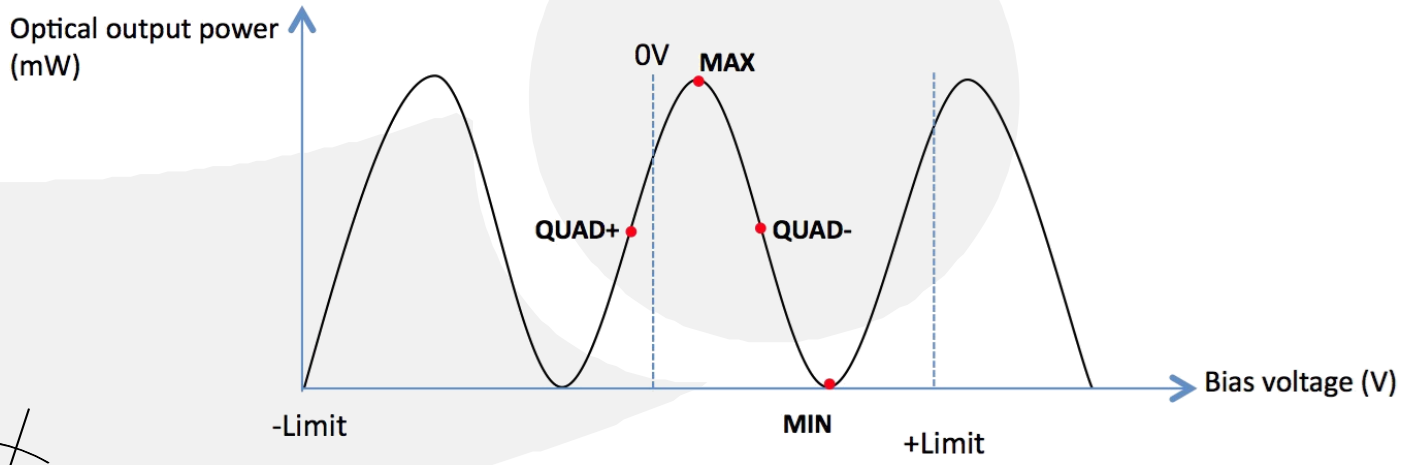
TYPICAL S21 AND S11 BANDWIDTH





BIAS SETTING MODES FOR LMB

Based on sophisticated phase measurement of this small dither signal, LMB-20 can provides four selectable operating modes: quadrature (Quad +), inverted quadrature (Quad -), minimum (Min), or maximum (Max) points.



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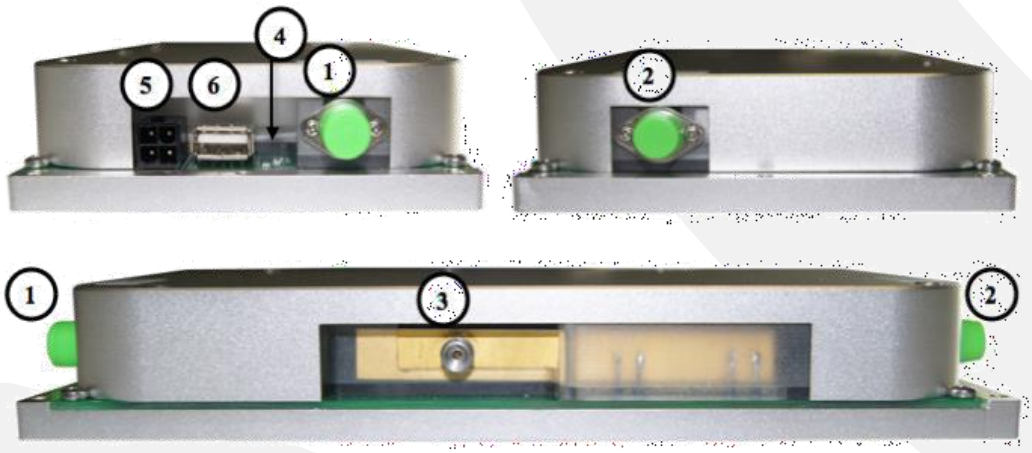
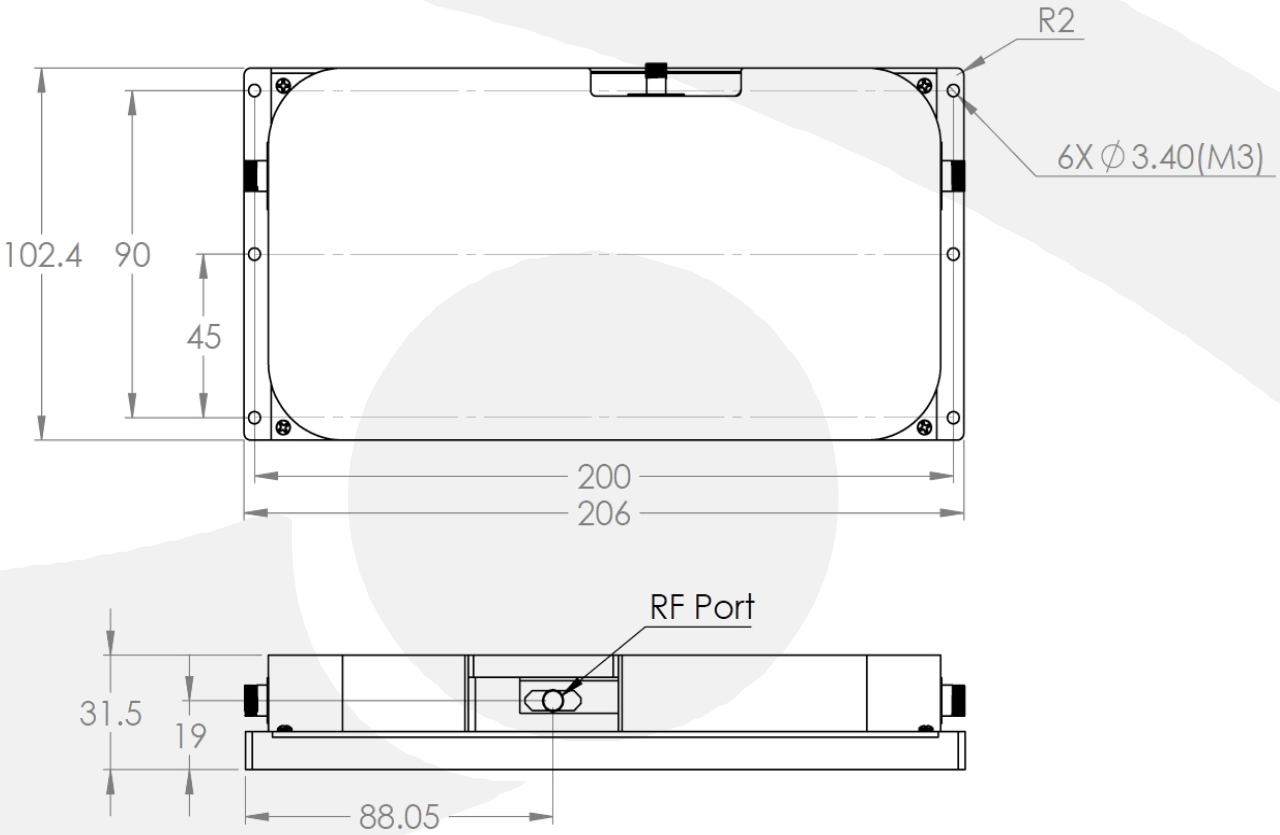
DETAILED LAYOUT

No.	Feature
1	Optical Input Port
2	Optical Output Port
3	RF Input Port
4	LED Indicators
5	DC Connection Port
6	USB Control and Monitor Port



MECHANICAL DRAWING



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PRECISION POWER SUPPLY FOR LMB (OPTIONAL)

FRONT

BACK

General Specifications	
Parameters	Specifications
Input AC Voltage (VAC)	85-240
Input AC Current (A)	≤0.5
Input AC Frequency (HZ)	50-60
Transfer Efficiency	≤85%
DC Output Current (A)	4 A max.
DC Output Voltage (V)	±5 V
DC Voltage Ripple	≤2%
DC Connectors	Molex 4 Pin
Communication Connectors	DB-9 and USB 2.0
Dimensions (mm)	153x115x33

ORDERING OPTIONS

LMB-20-XX-YY

XX
LD: Low Drive Voltage
PM: Polarization Maintaining
HE: High Extinction Ratio