



# LMB-40



## DEVICE

# 40 GHz Lightwave Modulator with Bias Control

## OVERVIEW

The Optilab LMB-40 is a high performance Lightwave Modulator Board designed for analog photonics applications from 10 MHz to 40 GHz. This unit includes a 30 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-40 requires a single  $\pm 5$  Volt DC power supply for operation. Contact Optilab for more information.

## FEATURES

- Automatic Bias Control w/ 4 mode operation
- Accepts external laser source via input

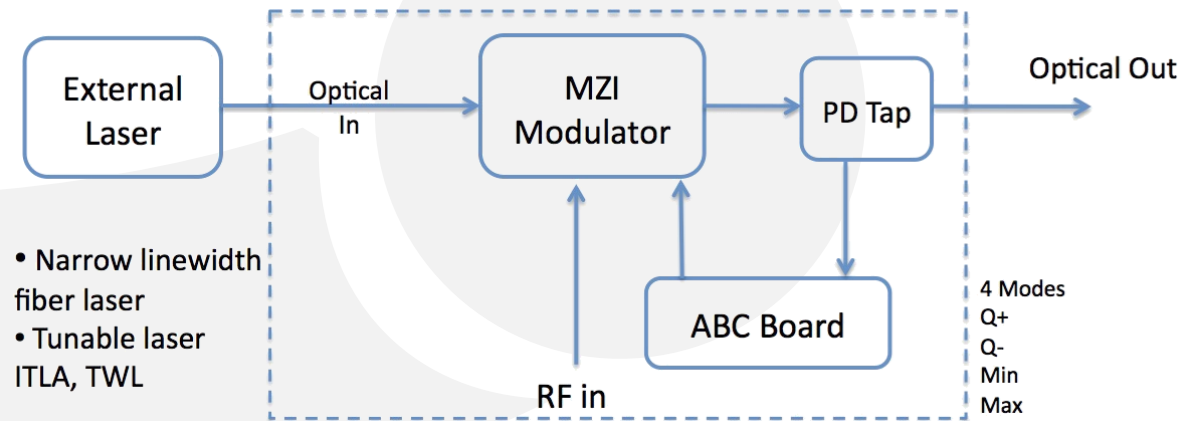
### Customizable Options:

- Low Drive Voltage
- PM output
- High Extinction Ratio (> 30 dB)
- Temp. Qualified (-55°C to +75°C)

## USE IN

- Picosecond pulse generation
- Optical communications to 43 Gb/s
- Active mode lock (PM version)
- Analog photonics
- 40 GHz RFoF transmission
- RF/IF signal distribution
- Satellite communication

## FUNCTIONAL DIAGRAM





# LMB-40

## 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 @ 30 GHz
Operating Frequency Range	10 MHz to 40 GHz
Input RF Voltage	27 dBm max.
Optical Output Level	6.5 dBm typ. w/ 20 mW DFB
S21 Bandwidth	3 dB, 28 GHz typ.
Modulator Bias Mode	4 Automatic bias control modes, selectable by software
Extinction Ratio	25 dB typ., >30 dB (HE version)
Modulator Voltage	6.4 V typ. @ 10 GHz; 8.3 V typ. @ 30 kHz; 2.5 V typ. @ 10 GHz, 4.3 V typ. @ 30 GHz (LD version)

### MECHANICAL

Operating Temperature (standard)	-30 °C to +60 °C
Operating Temperature (TQ version)	-55 °C to +75 °C
Storage Temperature	-60 °C to +90 °C
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	V connector; V connector or GPPD (LD version)
Power Connector	4 Pin Molex
Remote Control	USB 2.0 software included
Dimensions	206mm x 102.4mm x 31.5mm

### BIAS CONTROL MODE

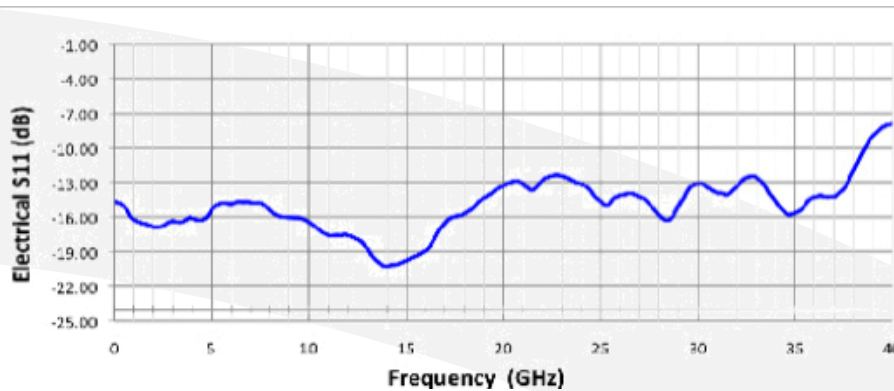
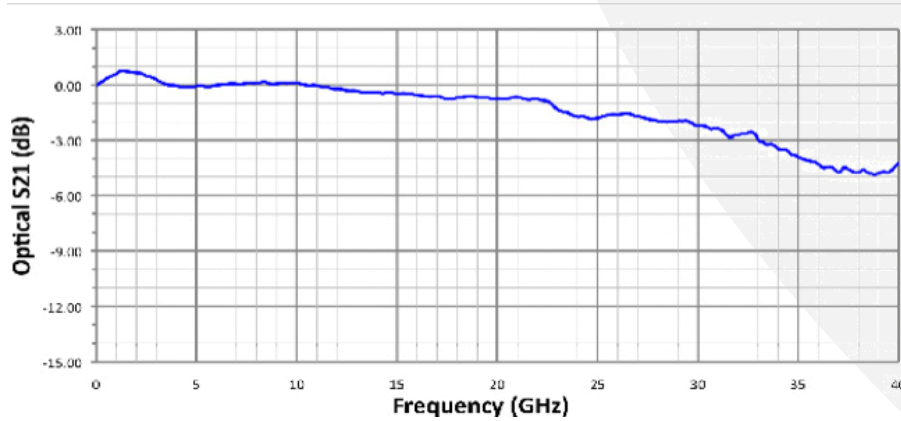
Mode	Operation Conditions
Q+	Set to quadrature point of positive slope for linear analog modulation
Q-	Set to quadrature point of negative slope for linear analog modulation
Min.	Set to min. point of operation for pulse generation or digital modulation
Max.	Set to max. point of operation for pulse generation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





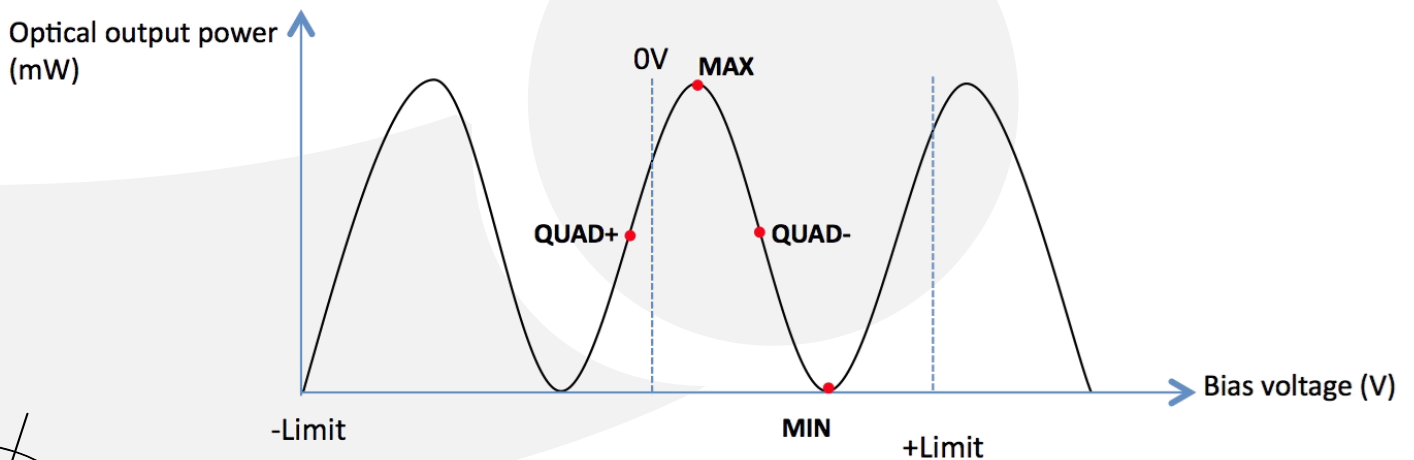
# LMB-40

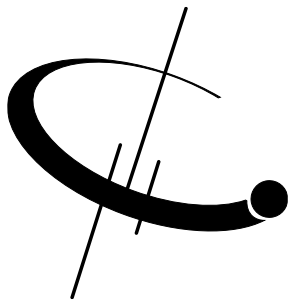
TYPICAL S21 AND S11 BANDWIDTH



## BIAS SETTING MODES FOR LMB

Based on sophisticated phase measurement of this small dither signal, LMB-40 provides four selectable operating modes: quadrature (Quad +), inverted quadrature (Quad -), minimum (Min), or maximum (Max) points.

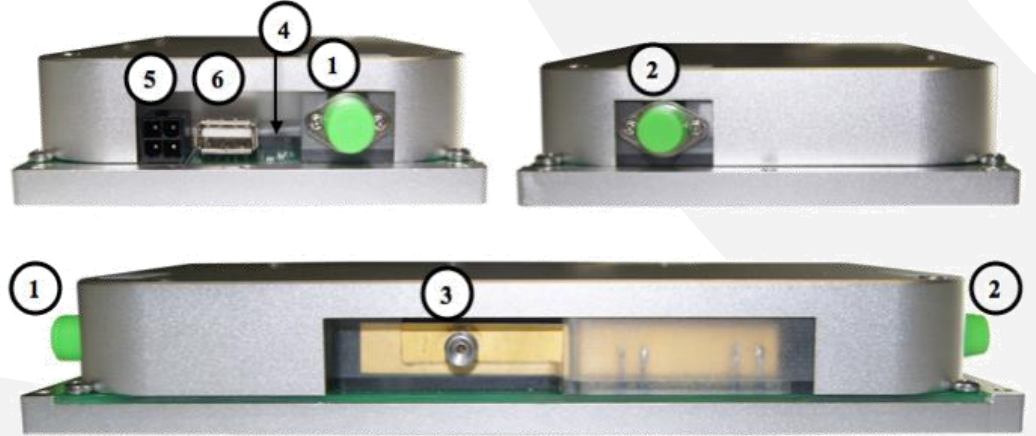




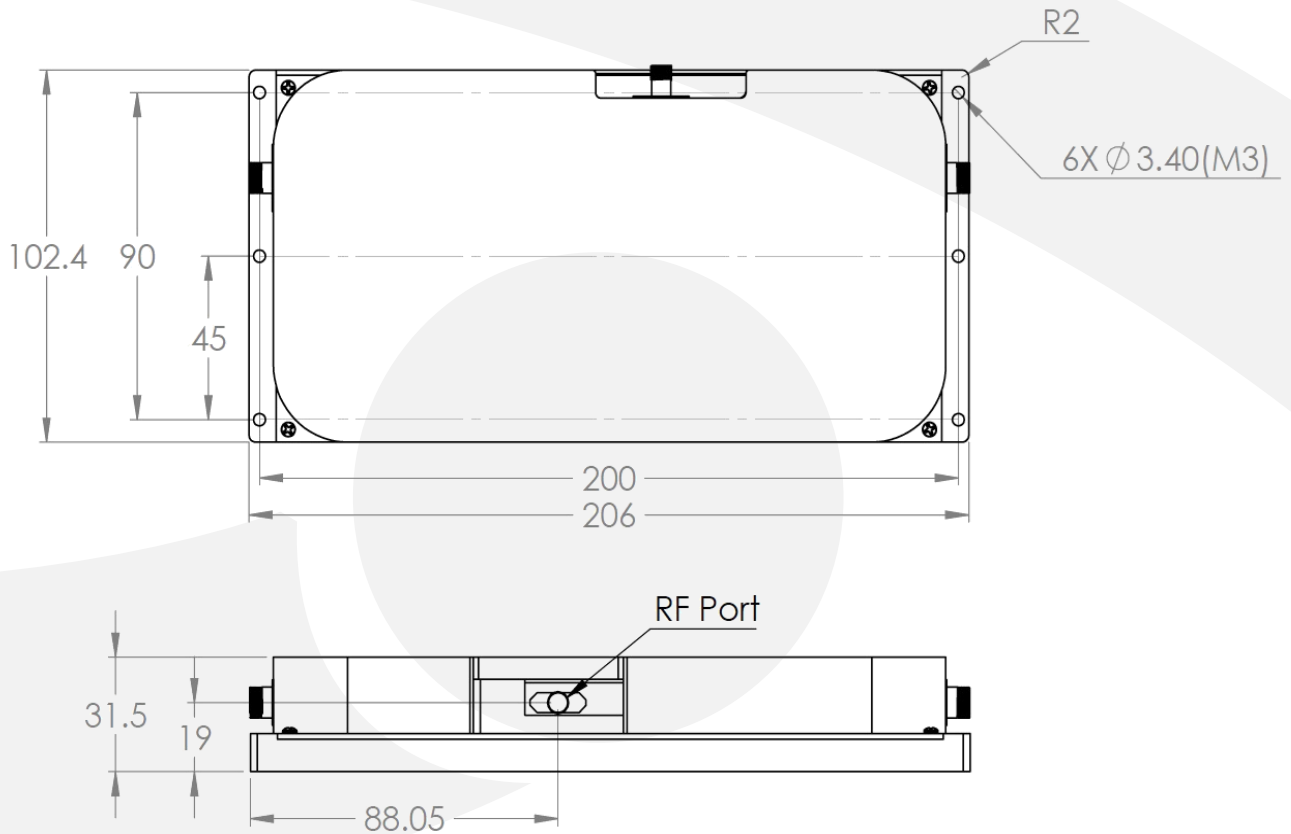
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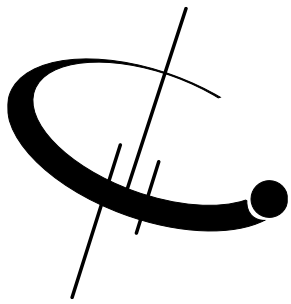
## DETAILED LAYOUT

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





# LMB-40

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-40-XX-YY

- LD: Low Drive Voltage
- XX PM: Polarization Maintaining
- HE: High Extinction Ratio
- YY TQ: Temperature Qualified

