

# LMC-20



## 20 GHz Lightwave Modulator with Bias Control

### OVERVIEW

The Optilab LMC-20 is a high-performance Lightwave Modulator Board designed for analog photonics applications from 10 MHz to 20 GHz. This unit includes an 20 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 a tunable laser or narrow linewidth laser, making it a versatile solution for OEM-based system integration. Contact Optilab for more information.

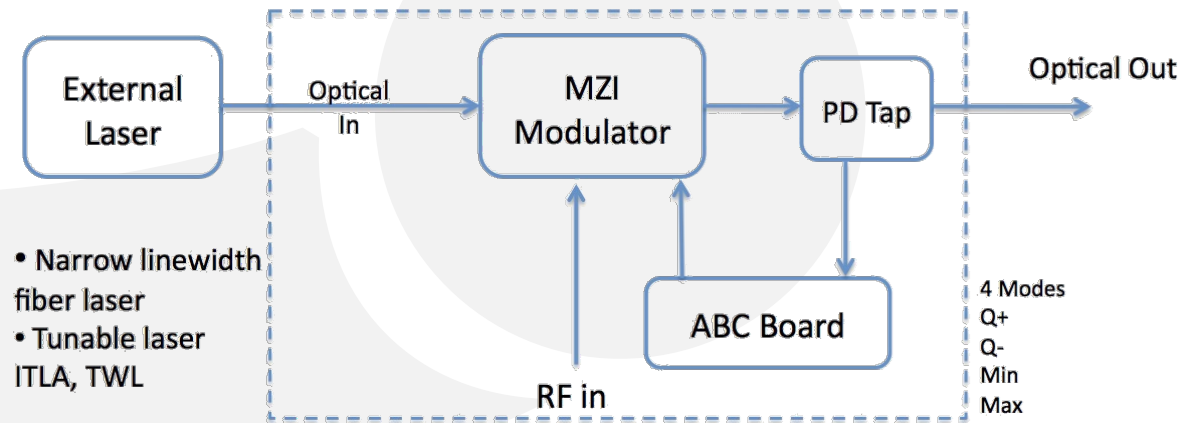
### FEATURES

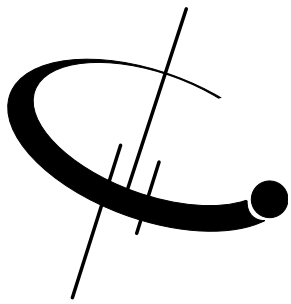
- 20 GHz modulator
- 1520 nm to 1610 nm wavelength range
- Automatic Bias Control w/ 4 mode operation
- Customizable Options:
  - Low Drive Voltage
  - PM output
  - High Extinction Ratio (> 30 dB)
  - Temp. Qualified (-55°C to +75°C)

### USE IN

- Sub-nanosecond pulse generation
- Optical communications to 23 Gb/s
- 20 GHz RFoF transmission
- Analog photonics
- RF/IF signal distribution
- Satellite communication

### FUNCTIONAL DIAGRAM





# LMC-20

## SPECIFICATIONS

Operating Wavelength	1520 nm to 1610 nm
Laser Source	User's external input
Optical Input Level	50mW max.
RF Return Loss	> 10 dB up to 10GHz
Impedance	50Ω
Operating Frequency Range	10 MHz to 25 GHz
Input RF Power	25 dBm max.
Optical Output Level	>= 6.5dBm @ Q
S21 Bandwidth 3dB	15 GHz typ.
Modulator Bias Mode	4 Automatic bias control modes, selectable by software
Extinction Ratio	>= 20 dB, 25 dB typ.; > 30 dB (HE version)
Modulator Voltage $V_{PI}$	7 V typ. @ 10 GHz

## GENERAL

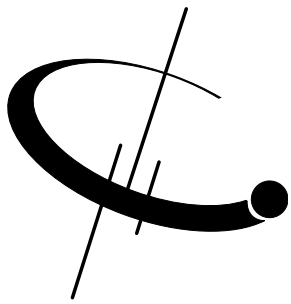
Operating Temperature (standard)	-30 °C to +60 °C
Operating Temperature (TQ version)	-55 °C to +75 °C
Storage Temperature	-60 °C to +90 °C
Power Supply Requirements	± 5 V DC max. 2A or 100~240V AC.
Optical Connector	FC/APC
Fiber Type	PANDA input, SMF-28 output; PANDA input/output (PM version)
RF Input Connector	K Female
Remote Control	USB 2.0
Alarm	LED bias mode status
Dimensions	241 mm x 152 mm x 41 mm

## MECHANICAL

## BIAS CONTROL MODE

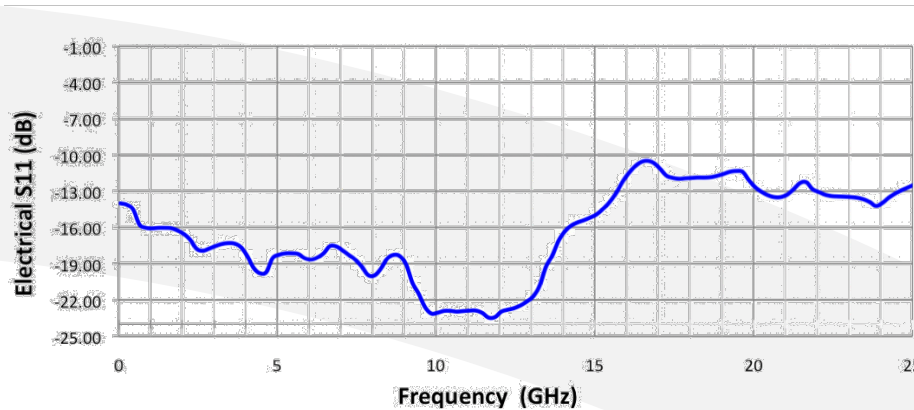
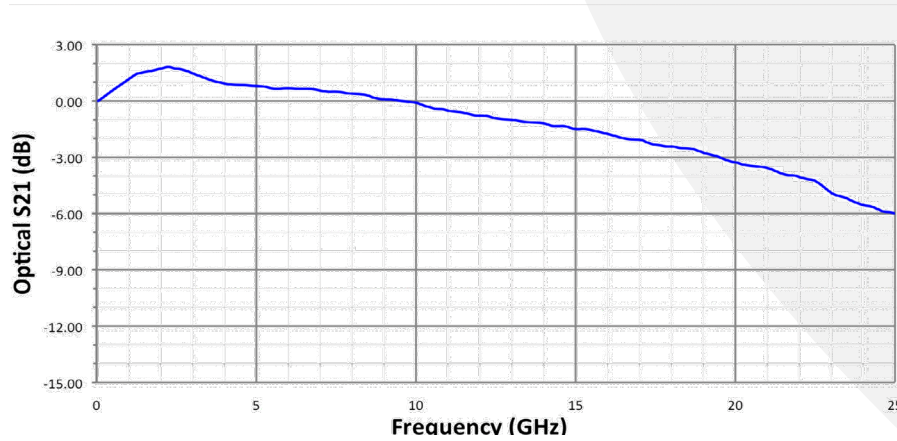
Mode	Operation Conditions
Q+	Set to quadrature point of positive slope for linear analog modulation
Q-	Set to quadrature point of negative slope for linear analog modulation
Min.	Set to min. point of operation for pulse generation or digital modulation
Max.	Set to max. point of operation for pulse generation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





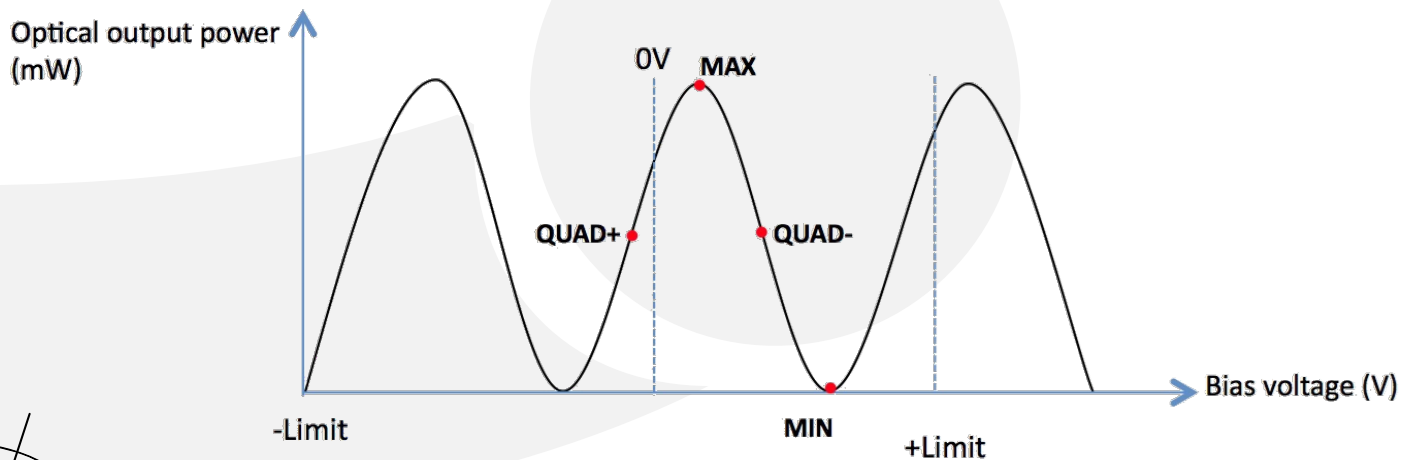
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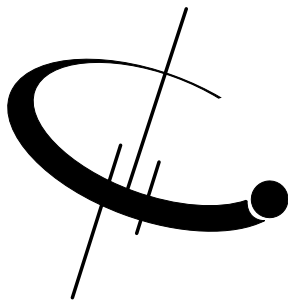
TYPICAL S21 AND S11 BANDWIDTH



## BIAS SETTING MODES FOR LMC

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





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## ORDERING OPTIONS

### LMC-20-XX-YY

**XX** PM: Polarization Maintaining  
HE: High Extinction Ratio

**YY** DC: DC +/- 5V Power Supply (Option 1)  
AC: AC 100/240 VAC (Option 2)

Option 1 : DC +/- 5V



Option 2 : 100/240 VAC

