

# LMC-40



## DEVICE

# 40 GHz Lightwave Modulator with Bias Control

## OVERVIEW

The Optilab LMC-40 is a high-performance Lightwave Modulator Board designed for analog photonics applications from DC 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 a tunable laser or narrow linewidth laser, making it a versatile solution for OEM-based system integration. Contact Optilab for more information.

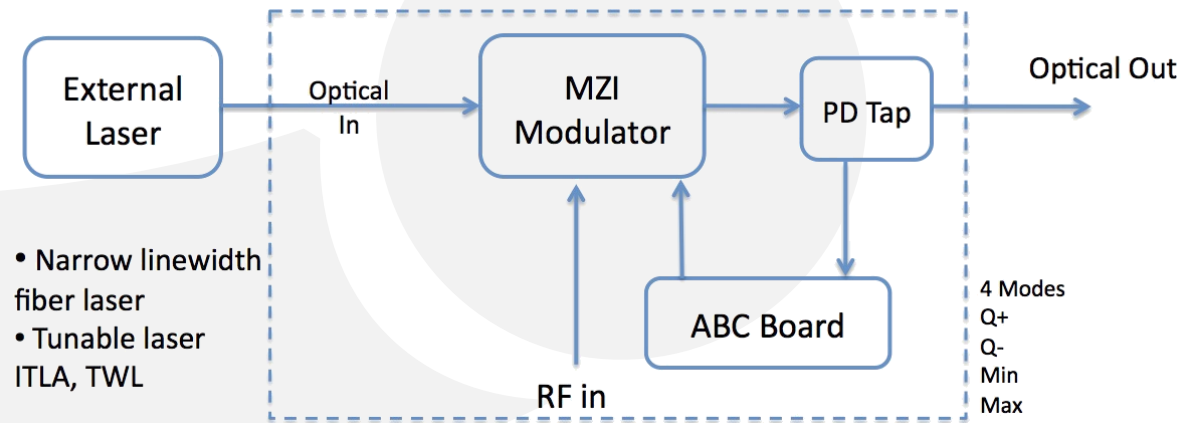
## FEATURES

- 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)

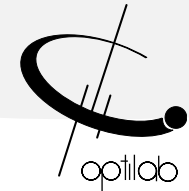
## USE IN

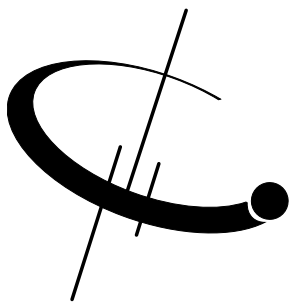
- Picosecond pulse generation
- Optical communications to 43 Gb/s
- Active mode lock (PM version)
- Analog photonics
- 40 GHz RFoF transmission
- RF/IF signal distribution
- Satellite communication

## FUNCTIONAL DIAGRAM



- Narrow linewidth fiber laser
- Tunable laser
- ITLA, TWL





# LMC-40

## SPECIFICATIONS

|                           |  |
|---------------------------|--|
| 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 | DC 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         | 2.5 V typ. @ 10 GHz, 4.3 V typ. @ 30 GHz               |

## GENERAL

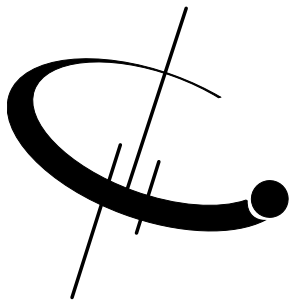
|                                    |   |
|------------------------------------|---|
| Operating Temperature (standard)   | -30 °C to +60 °C  |
| Operating Temperature (TQ version) | -55 °C to +75 °C  |
| Storage Temperature                | -60 °C to +90 °C  |
| Power Supply Requirements          | ± 5 V DC, 1 A max.  |
| Optical Connector                  | FC/APC  |
| Fiber Type                         | PANDA input, SMF-28 output; PANDA input/output (PM version) |
| RF Input Connector                 | 2.92mm Female   |
| Power Connector                    | 4 Pin Molex   |
| Remote Control                     | USB 2.0 software included                                   |
| Alarm                              | LED bias mode status  |
| Dimensions                         | 241 mm x 152 mm x 41 mm                                     |

## MECHANICAL

| 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 |

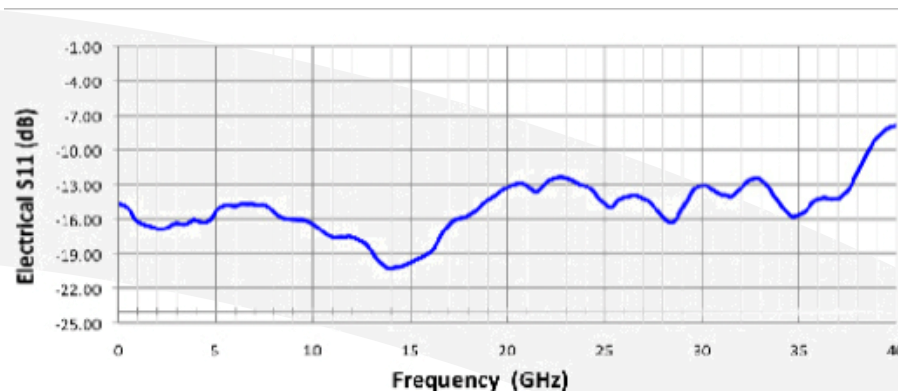
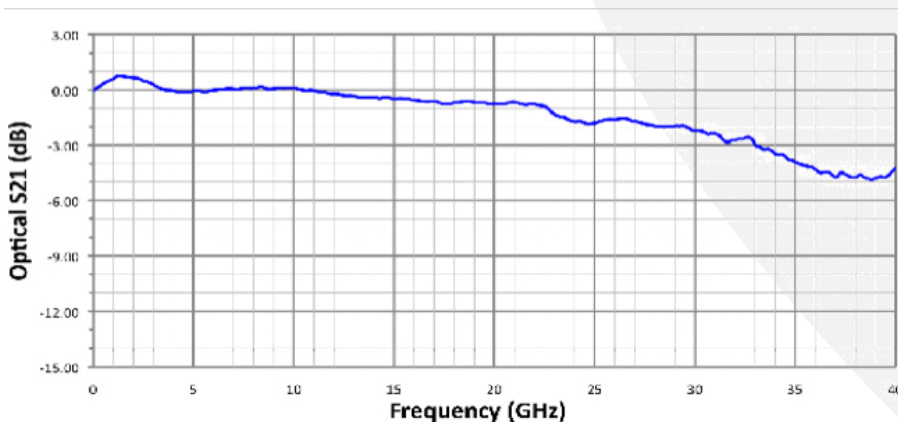
## BIAS CONTROL MODE





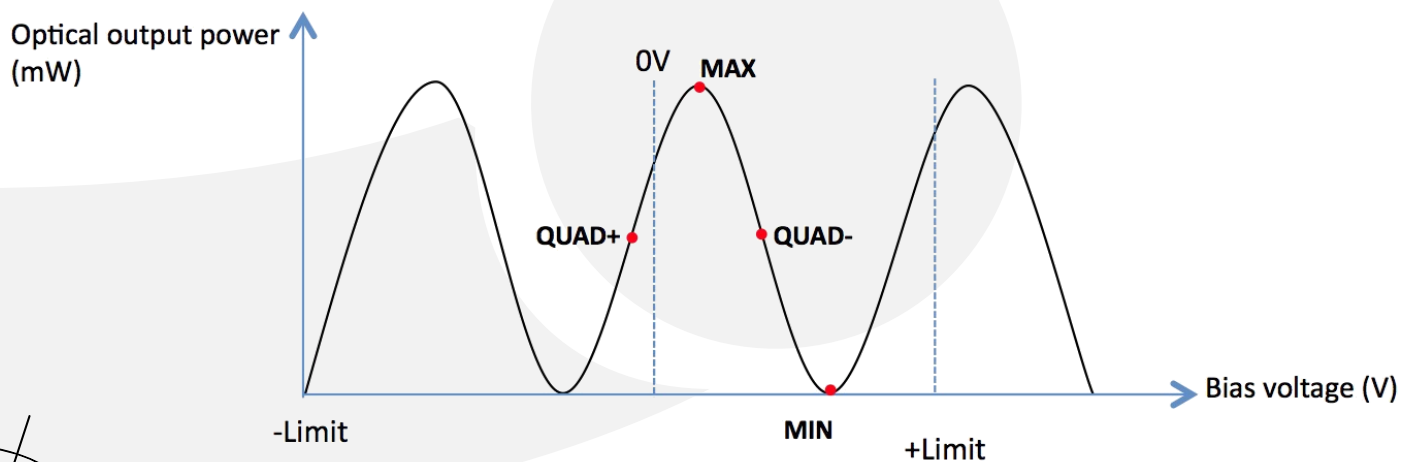
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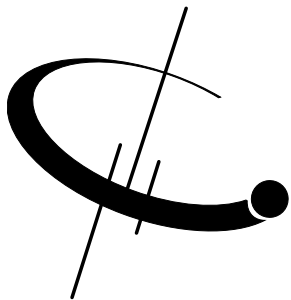
TYPICAL S21 AND S11 BANDWIDTH



## BIAS SETTING MODES FOR LMB

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





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## ORDERING OPTIONS

### LMC-40-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

