



# LTB-50-X



## DEVICE

## 50 GHz Lightwave Transmitter Board for OEM

## OVERVIEW

The Optilab LTB-50-X is a high performance Lightwave Transmitter Board designed for analog photonics applications from DC to 50 GHz. This unit includes a 50 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, narrow linewidth laser, making it a versatile solution for OEM-based system integration. Contact Optilab for more information.

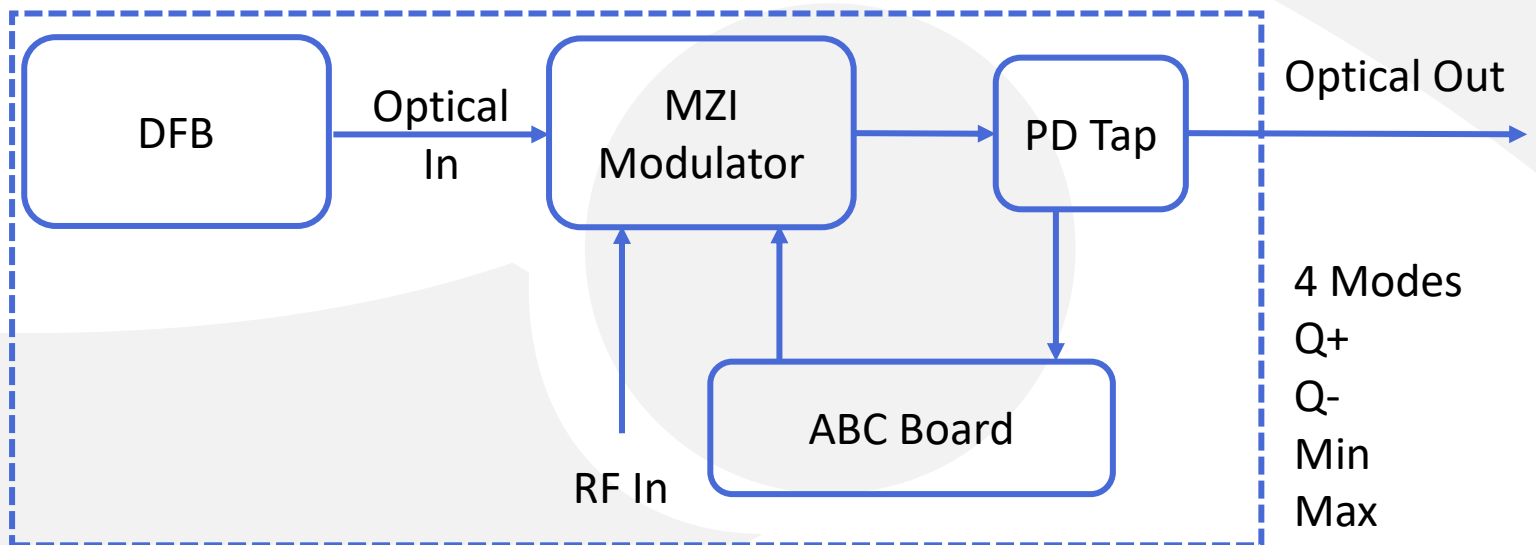
## FEATURES

- 43 GHz S21 bandwidth modulator
- 1520 nm to 1610 nm wavelength range
- Automatic Bias Control w/ 4 mode operation
- Internal DFB Laser up to 50 mW
- Customizable Options:
  - Low Drive Voltage
  - PM Output
  - High Extinction Ratio (>30 dB)
  - Temperature Qualified (-55°C to +75°C)

## USE IN

- Satellite communication
- Optical Communications to 43 Gb/s
- Sub-nanosecond pulse generation
- Analog photonics
- 43 GHz RFoF transmission
- RF/IF signal distribution

## FUNCTIONAL DIAGRAM





# LTB-50-X

## SPECIFICATIONS

Operating Wavelength	1520 nm to 1610 nm
Laser Source	Internal DFB laser, 1550 ± 10 nm; other wavelength and narrow linewidth < 1 MHz are available
Laser Power Level	20 mW, 30 mW, 40 mW, 50 mW
RF Return Loss	≤ -10 dB @ 20 GHz
Impedance	50 Ω
Operating Frequency Range	DC to 50 GHz
Input RF Voltage	27 dBm max.
Optical Output Level	6.5 dBm typ. With 20 mW DFB
S21 Bandwidth	≥ 30 GHz @ -3 dB; ≥ 50 GHz @ -6 dB
Modulator Bias Mode	4 Automatic bias control modes, selectable by software
Extinction Ratio	≥ 25 dB
Modulator Voltage V <sub>PI</sub>	2.7 V typ. @ 10 GHz; 4.9 V typ. @ 50 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, 1 A typ.
Optical Connectors	FC/APC
Fiber Type	SMF-28 output, PANDA output (PM version)
RF Input Connector	GPPO Connector
Power Connector	4 Pin Molex
Remote Control	USB 2.0 software included

## MECHANICAL

## BIAS CONTROL MODE

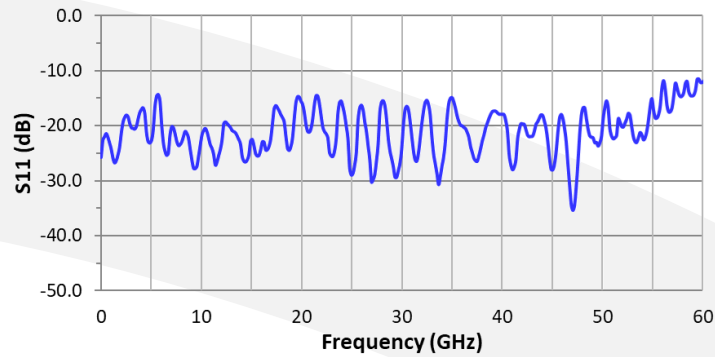
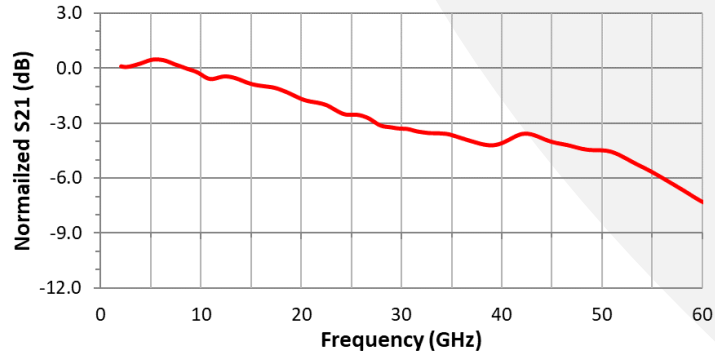
Q+	Set to quadrature point of positive slope for linear analog modulation
Q-	Set to quadrature point of negative slope for linear analog modulation
Min	Set to min. point of operation for pulse generator or digital modulation
Max	Set to max. point of operation for pulse generator or digital modulation





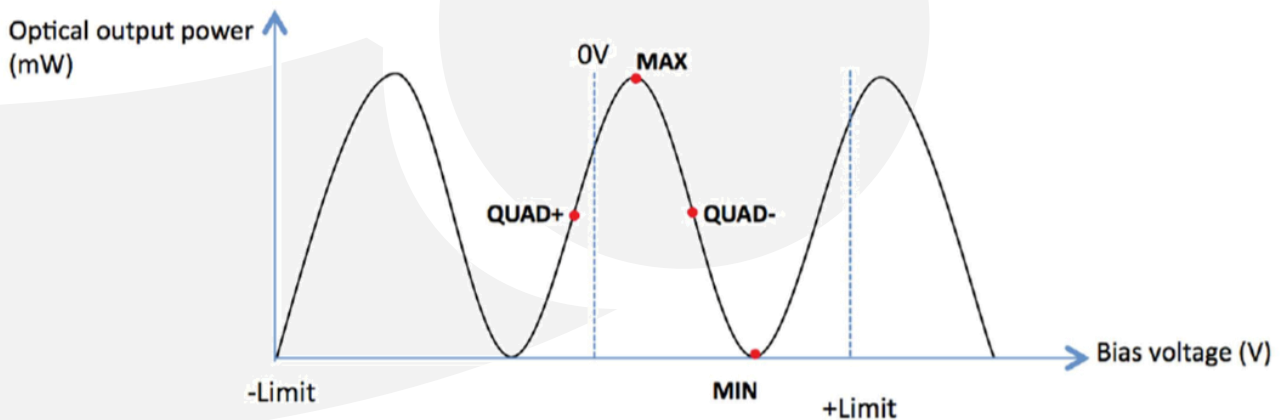
# LTB-50-X

## TYPICAL S21 AND S22 BANDWIDTH



## BIAS SETTING MODES FOR LTB

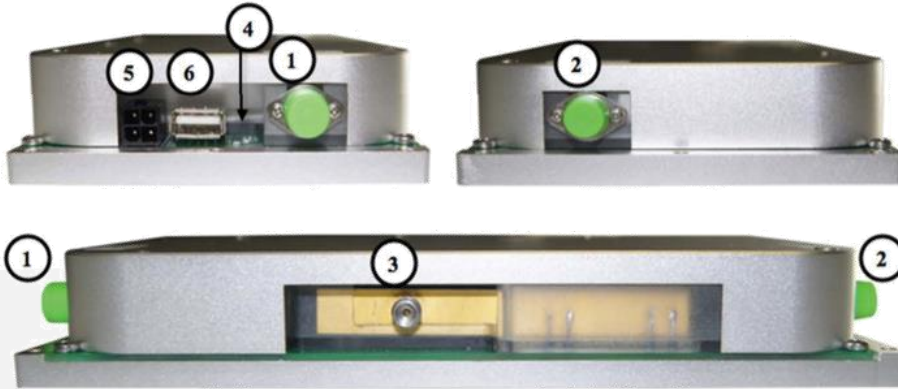
Based on sophisticated phase measurement of this small dither signal, LTB-50-X provides four selectable operating modes: quadrature (Quad +), inverted quadrature (Quad-), minimum (Min), or maximum (Max) points.





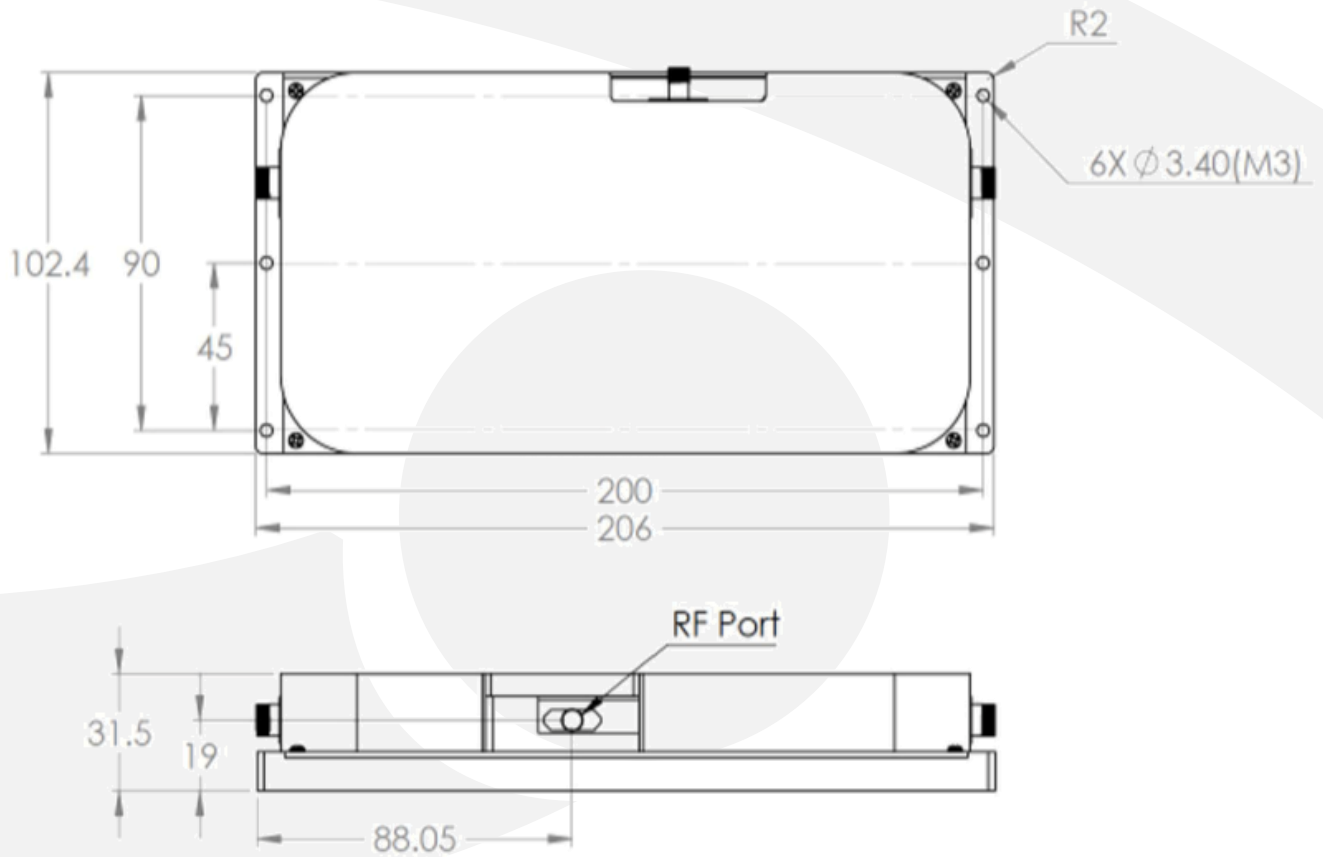
# LTB-50-X

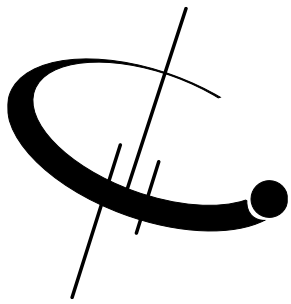
## DETAILED LAYOUT



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

## MECHANICAL DRAWING





# LTB-50-X

PRECISION POWER SUPPLY FOR LTB (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

