# LTA-50-X

## DEVICE

## 50 GHz Lightwave Transmitter Module for RFoF

## OVERVIEW

The Optilab LTA-50-X is a high performance Lightwave Transmitter Module designed for analog photonics applications up to 50 GHz. This unit includes a50 GHz optical intensity modulator and an Automatic Bias Control (ABC) board with four different operating modes. The internal laser source of device, such as optional tunable laser, narrow linewidth laser, making it a versatile solution for RFoF system integration. The LTA-50-X requires a single ±5 Volt DC power supply for operation. Contract Optilab for more information.

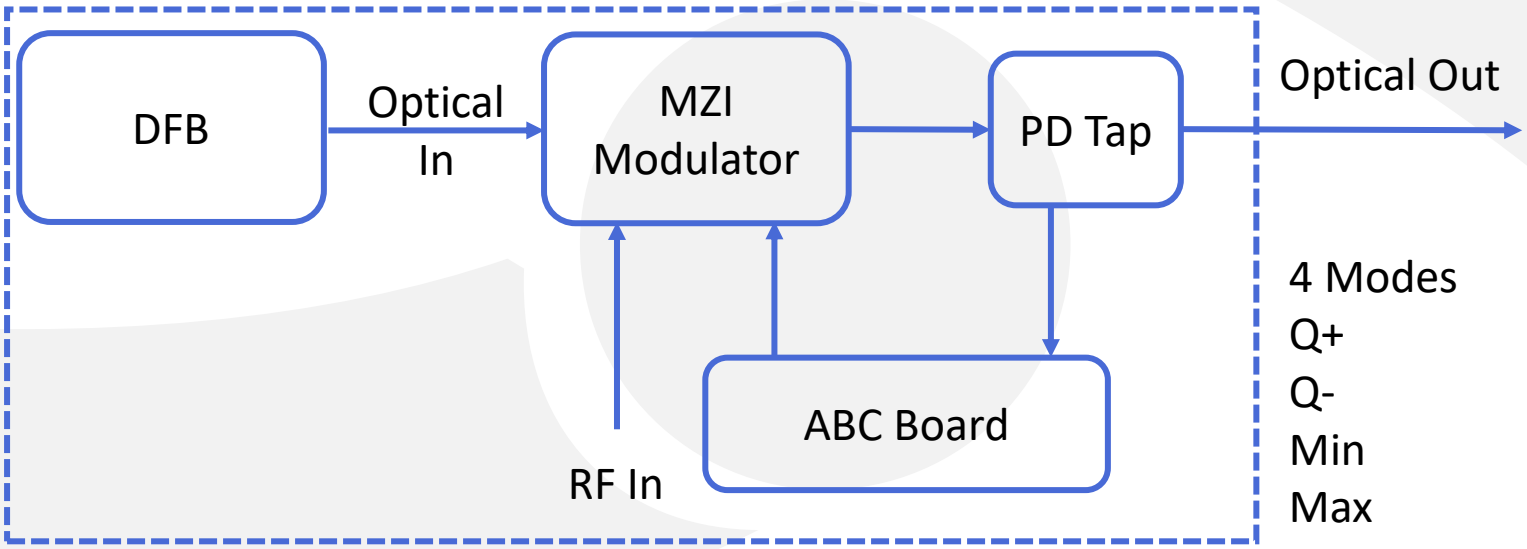
## FEATURES

- 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

- Analog photonics
- 43 GHz RFoF transmission
- RF/IF signal distribution
- Satellite communication
- Optical communications to 50 Gb/s
- Picosecond pulse generation

## FUNCTIONAL DIAGRAM



# LTA-50-X

## SPECIFICATIONS

### GENERAL

| | |
|---|---|
| Operating Wavelength | 1520 nm to 1610 nm |
| Laser Source | Internal DFB laser, 1550nm+/-10nm |
| Laser Power Level | 20, 30, 40, 50 mW |
| RF Return Loss | ≤ -10 dB @ 20 GHz |
| Impedance | 50Ω |
| Operating Frequency Range | Up 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 $V_{PI}$ | 2.7 V typ. @ 10 GHz; 4.9 V typ. @ 50 GHz |

### 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, 1 A typ. |
| Optical Connectors | FC/APC |
| Fiber Type | SMF-28 output, PANDA output (PM version) |
| RF Input Connector | 2.4mm Connector |
| Power Connector | 4 Pin Molex |
| Remote Control | USB 2.0 software included |
| Alarm | LED bias mode status |
| Dimensions | 206mm x 102.4mm x 31.5mm |

### ANALOG LINK PERFORMANCE

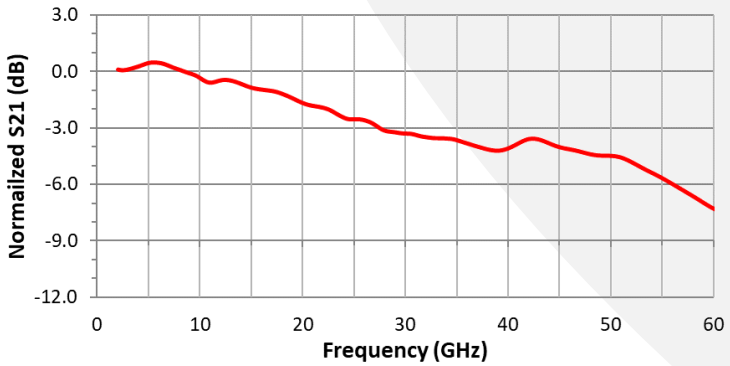
| | |
|---|---|
| IIP3 @ 7 GHz | 29 dBm typ.; 25 dBm typ. (LD version) |
| 1 dB Compression Point @ 10 GHz | 16 dBm typ.; 8 dBm typ. (LD version) |

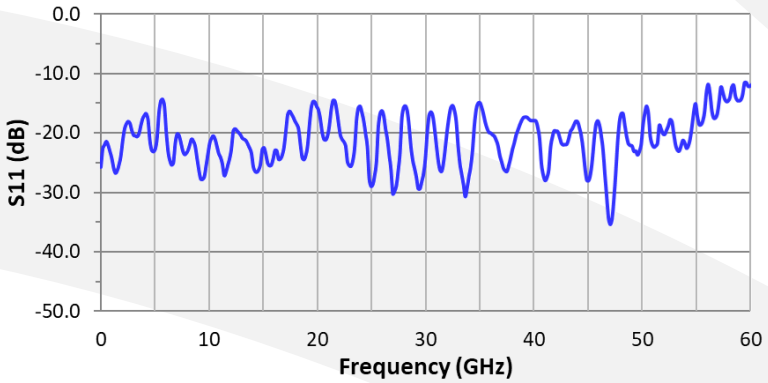
### BIAS CONTROL MODE

| | |
|---|---|
| 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 generation of digital modulation |
| Max | Set to max. point of operation for pulse generation of digital modulation |

# LTA-50-X

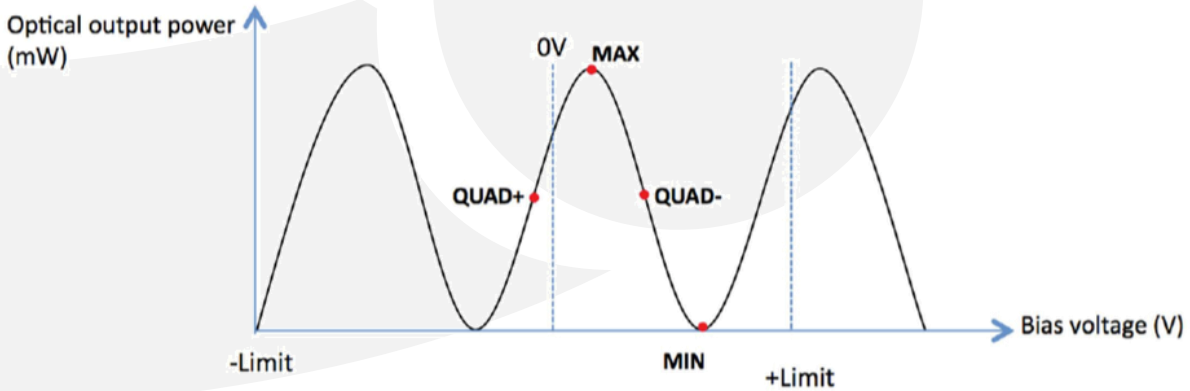
## TYPICAL S21 AND S11 BANDWIDTH




## BIAS SETTING MODES FOR LTA

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



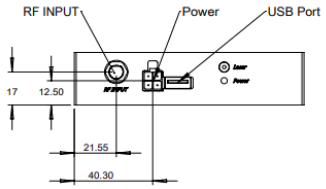
# LTA-50-X

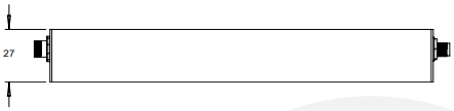
## DETAILED LAYOUT

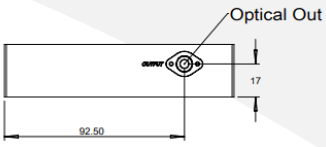


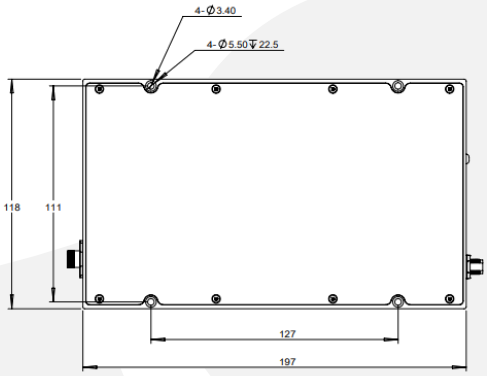
| No. | Feature |
|---|---|
| 1 | Optical Output Port |
| 2 | RF Input Port |
| 3 | LED Indicators |
| 4 | DC Connection Port |
| 5 | USB Control and Monitor Port |

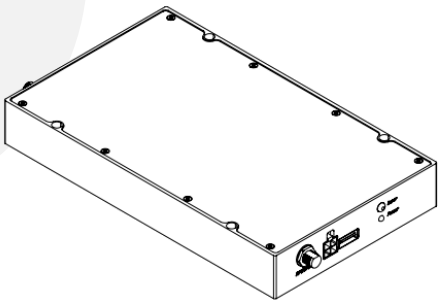
## MECHANICAL DRAWING



# LTA-50-X

PRECISION POWER SUPPLY FOR LTA (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 |