Optilab
photonics for the future

# LT-12-E-M


## 12 GHz Low Drive Voltage Lightwave Transmitter

The Optilab LT-12-E-M Lightwave Transmitters (LT) utilize a linear, Electo Absorption Modulator (EAM) designed for RF over Fiber, antenna remoting and broadband RF transmission over optical fiber. This easy to drive module incorporates a low noise, 1550 nm distributed feedback (DFB) laser diode as a Continuous Wave (CW) light source. The input RF signal is applied to EAM directly for E/O conversion. The compact, cost-effective transmitter design provides a high spurious-free dynamic range and high modulation bandwidth. LT-12-E-M can be paired with PR-12-M or PD-30 for 12 GHz RFoF link applications. Contact Optilab for more information.

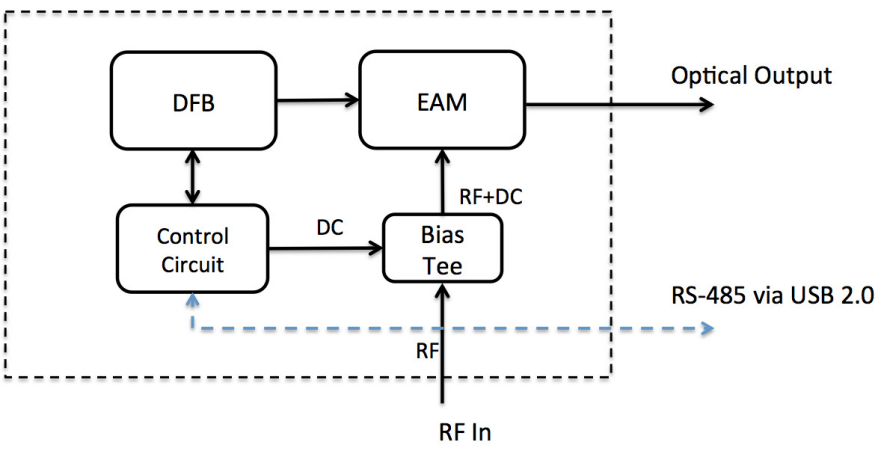
## Features

- 12 GHz operation bandwidth
- Low RF drive voltage
- High dynamic range
- Built in 10 GHz Bias tee
- USB 2.0 /RS-485 monitor interface
- Labview driver included

## Applications

- 12 GHz RF over Fiber
- RF/IF signal distribution
- Satellite antenna signal distribution
- Broadband delay-line and signal processing
- Radar system link
- Phased and interferometric array antenna

## Functional Diagram



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## OPTIONS

**LT-12-E-M-x-yy**

x — Optical Output Power: +3 dBm

| General Specifications | |
|---|---|
| DFB Laser Wavelength | 1550 nm ± 10 nm |
| S21 3 dB Bandwidth | 10 GHz typ. (includes bias-T) |
| Optical Output Level | +3 dBm min. |
| Optical Return Loss | 30 dB typ. |
| DFB Linewidth (FWHM) | 3 MHz max. |
| DFB Side Mode Suppression Ratio | 40 dB typ. |
| Relative Intensity Noise (RIN) | -135 dB/Hz max. |
| Input Impedance | 50 Ω |
| Frequency Response Flatness | <±0.5 dB in any 1 GHz bandwidth |
| VSWR | 2.0 : 1 max. |

| Analog Specifications | |
|---|---|
| Operational RF Bandwidth | 12 GHz typ. |
| Max. RF Input | + 13 dBm |
| 1 dB Compression Point | +8 dBm |
| Harmonic Distortion | -40 dBc typ. @ 0 dBm RF input |
| Input IP3 | 12 dBm typ. |
| **Digital Applications** | |
| Data Rate | 12.5 Gb/s typ. |
| Drive Voltage | 3 Vp-p typ. |
| Pulse Response | 10%, rise time 40 ps typ. |
| Extinction Ratio | 10 dB typ. |

## Optilab Advantage

- Innovation
- Performance
- Quality
- Customization
- Warranty

| Mechanical Specifications | |
|---|---|
| Operating Temperature | -20° C to +70° C |
| Storage Temperature | -55° C to +85° C |
| Operating Humidity | 85% |
| Power Supply Requirements | +/-5 V DC, 2 A max. |
| Optical Connector | FC/APC, other optional |
| RF Input Connector | SMA, Female |
| Electrical Power Connector | 4-pin Molex |
| Remote Interface | RS-485 via USB |
| Dimensions | 115 mm x 106 mm x 24.5 mm |
| Accessories Included | PS-5-M power supply |

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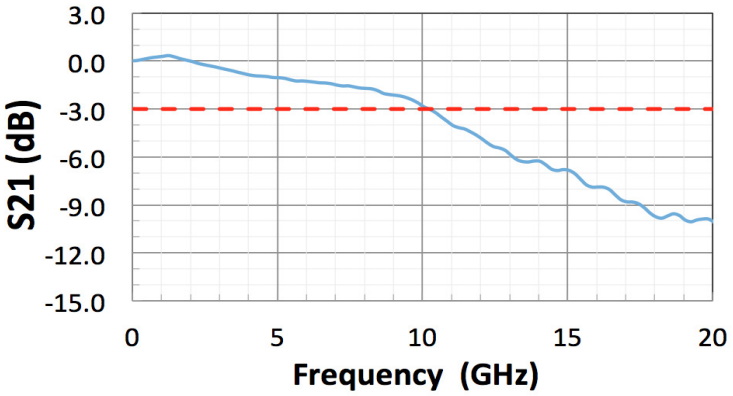
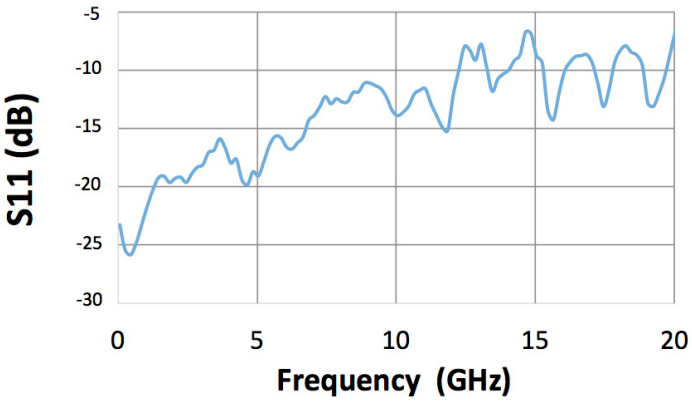
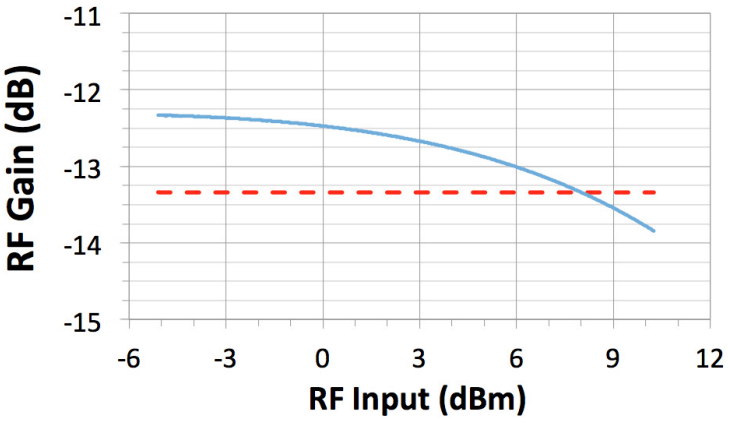
## Typical S21 Response



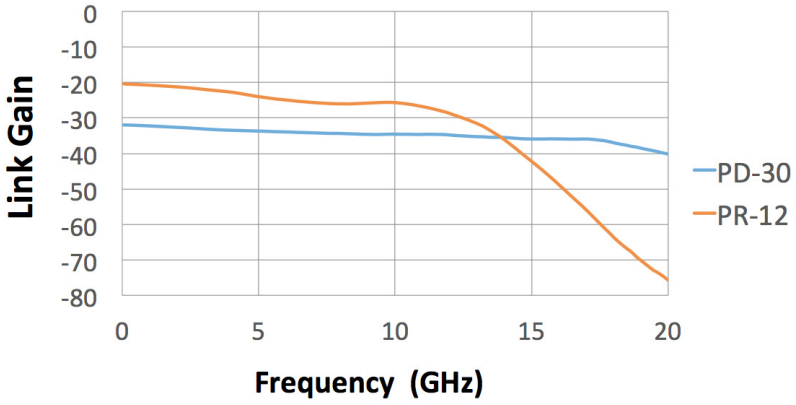

## Typical S11 Response




## 1 dB Compression

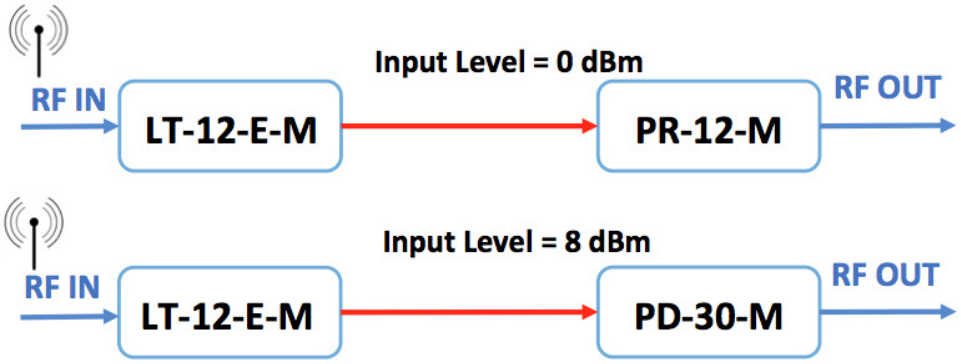



## Link Gain Comparison




## Test Conditions & Link Gain Measurements

LT-12-E-M Output = 3.5 dBm
Link Gain w/PR-12 = -20 dB @ 1 GHz
Link Gain w/PD-30 = -32 dB @1 GHz



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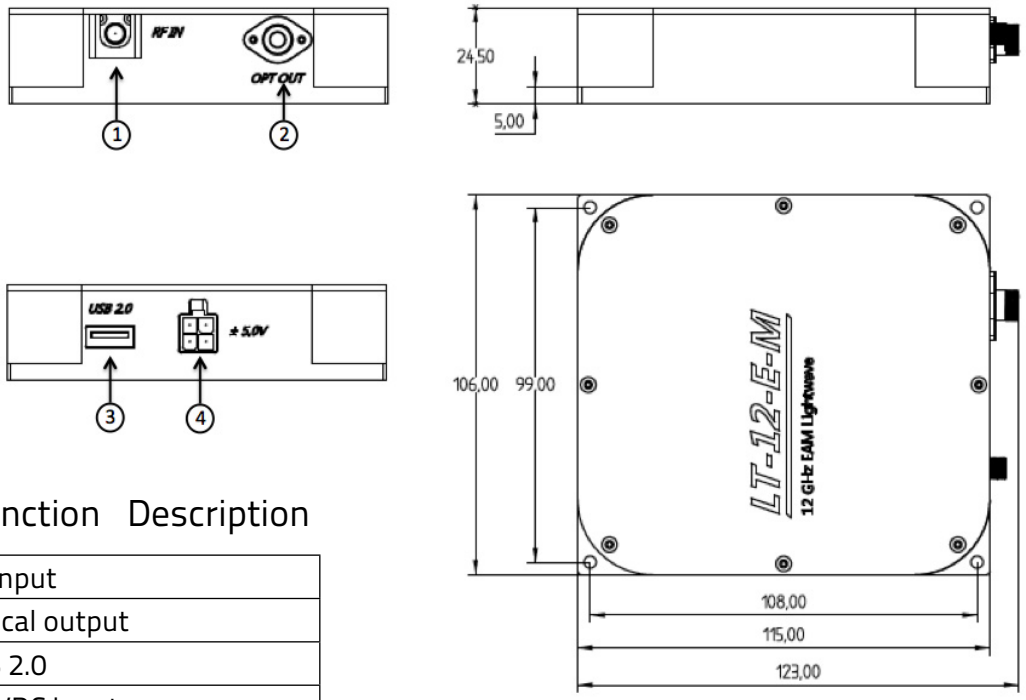
## Mechanical Drawing




Unit: mm

### Port Function Description

| | |
|---|---|
| 1 | RF input |
| 2 | Optical output |
| 3 | USB 2.0 |
| 4 | ± 5 VDC input |

## Remote Labview Interface

Optilab offers remote interface via Labview software, for parameter adjustment and status monitoring, contact Optilab for more details.