



DEVICE 12 GHz Low Drive Voltage Lightwave Transmitter

The Optilab LT-12-E-M Lightwave Transmitters (LT) utilize a linear, Electro 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. The LT-12-E-M requires a single ±5 Volt DC power supply for operation. Contact Optilab for more information.

- 12 GHz operation bandwidth
 - USB 2.0/RS-485 monitor interface
 - Built in 10 GHz Bias tee

USE IN

- Low RF drive voltage
- High dynamic range
- Labview driver included
- Phased and interferometric array antenna
 - Broadband delay-line and signal processing
- 12 GHz RF over Fiber
- RF/IF signal distribution
- Radar system link
- Satellite antenna signal distribution



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• LT-12-E-M

OPE Easer Wavelength Ibit bit typ. (includes bias-1) Optical Output Level *0 dBm min B DV bias Optical Output Level *0 dBm min B DV bias Optical Return Loss 30 dB bp. DFB Linewidth (FWHM) 8 Mtz max. DFB Side Mode Suppression Ratio 40 dB bp. Relative Intensity Noise (RIN) -435 dB/Hz max. Input Impedance 50 Q Input Impedance 50 Q Frequency Response Flatness <* ± 0.5 dB in any 1BHz bandwidth VSWR 10:1 max	SPECIFICATIONS		
ANALOG Derational RF Bandwidth Deration Point Derational RF Bandwidth Derat		DFB Laser Wavelength	
Optical Output Level + U diammini @ UV bias Optical Return Loss 30 d8 bp. DFB Linewidth (FWHM) 3 Miz max. DFB Linewidth (FWHM) 3 Miz max. Input Impedance 5 d0 C Frequency Response Flatness <± 0.5 d8/hz max.		S213 dB Bandwidth	IU bHz typ. (includes bias-1)
GENERAL Optical Return Loss 31 dd typ. DFB Linewidth (FWHM) 3 Mitz max. DFB Side Mode Suppression Ratio 40 dB typ. Relative Intensity Noise (RN) -155 dB /Hz max. Input Impedance 500 Frequency Response Flatness <± 0.5 dB in any 1 Bhz bandwidth		Optical Output Level	+ U dBm min @ UV bias
GENERAL DFB Linewidth (PWHM) 3 Mitz max. PFB Side Mode Suppression Ratio 40 dB typ. Relative Intensity Noise (RIN) -135 dB/hz max. Input Impedance 500 Frequency Response Flatness <= 0.5 dB in any 16 Hz bandwidth		Optical Return Loss	3U dB typ.
GENERAL DFB Side Mode Suppression Ratio 40 dB typ. Relative Intensity Noise (RIN) -135 dB/Hz max. Input Impedance 500 Frequency Response Flatness <* 0.5 dB in any 1 GHz bandwidth		DFB Linewidth (FWHM)	3 MHz max.
ANALOG Relative Intensity Noise (RIN) -155 dB/At max. Input Impedance 50Q Frequency Response Flatness <± 0.5 dB in any I BHz bandwidth	GENERAL	DFB Side Mode Suppression Ratio	40 dB typ.
Input Impedance 500 Frequency Response Flatness <± 0.5 dB in any I GHz bandwidth	GENERAL	Relative Intensity Noise (RIN)	-135 dB/Hz max.
Frequency Response Flatness <± 0.5 dB in any 1 BHz bandwidth		Input Impedance	50Ω
VSWR 10:1 max ANALOG Operational RF Bandwidth 12 GHz typ. Max. RF Input + 13 dBm Harmonic Distortion + 13 dBm Harmonic Distortion - 40 dBc typ. Did BT RF input - 12 dBm RF input Input IP3 12 dBm RF input DigiTAL Data Rate 12.5 Bb/s typ. Dive Voltage 3 Vp-p typ. Pulse Response 10% rise time 40 ps typ. Extinction Response 10 dB typ. Vertice -20 °C ta +70 °C Storage Temperature -50 °C to +85 °C Operating Humidity 85% Power Supply Requirements ± 5 V 0C. 2 A max. Optical Connector Fl/APC, other optional RF Input Connector 4pin Malex Remote Interface RS-485 via USB Dimensions 115 mm x106 mm x 24.5 mm Accessories Included Matching power supply		Frequency Response Flatness	< ± 0.5 dB in any 1 GHz bandwidth
ANALOG Operational RF Bandwidth 12 BHz 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 Data Rate 12.5 Bb/s typ. Dirve Voltage 3 Vp-p typ. Pulse Response 10% rise time 40 ps typ. Extinction Response 10 dB typ. MECHANICAL Operating Temperature -20 °C to +70 °C Storage Temperature -55 °C to +85 °C Operating Humidity B5% Power Supply Requirements ± 5 V DE, 2 A max. Optical Connector Fl/APC, other optinal RF Input Connector SM Female Electrical Power Connector 4-pin Molex Remote Interface RS-485 via USB Dimensions 105 mm x106 mm x 24.5mm Accessories Included Matching power supply		VSWR	1.0 : 1 max.
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ANALOG 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 Data Rate 12.5 Gb/s typ. DIGITAL Data Rate 12.5 Gb/s typ. Duse Response 10% rise time 40 ps typ. Extinction Response 10 dB typ. Operating Temperature -20 °C ts +70 °C Storage Temperature -55 °C ts +85 °C Operating Humidity 85% Power Supply Requirements ± 5 V 0C, 2 A max. Optical Connector FL/APC. other optional RF Input Connector SMA Female Electrical Power Connector 42 dBm typ. Electrical Power Connector 43 max. Dimensions IIS mm x IDB mm x 24.5 mm Accessories Included Matching power supply		Operational RF Bandwidth	12 GHz typ.
ANALOG 1 dB Compression Point + 8 dBm Harmonic Distortion -40 dBc typ. @ 0 dBm RF input Input IP3 12 dBm typ. DIGITAL Data Rate 12.5 Bb/s typ. Drive Voltage 3 Vp-p typ. Pulse Response 10% rise time 40 ps typ. Extinction Response 10 dB typ. Operating Temperature -20 °C tn +70 °C Storage Temperature -55 °C to 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 Matching power supply		Max. RF Input	+ 13 dBm
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DIGITAL Data Rate [2.5 Gb/s typ. Drive Voltage 3 Vp-p typ. Pulse Response 10% rise time 40 ps typ. Extinction Response 10 dB typ. 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 IIS mm x 106 mm x 24.5 mm Accessories Included Matching power supply		Input IP3	12 dBm typ.
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MECHANICALOperating Humidity85%Power Supply Requirements± 5 V DC, 2 A max.Optical ConnectorFC/APC, other optionalRF Input ConnectorSMA, FemaleElectrical Power Connector4-pin MolexRemote InterfaceRS-485 via USBDimensionsII5 mm x 106 mm x 24.5 mmAccessories IncludedMatching power supply		Storage Temperature	-55 °C to +85 °C
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Accessories Included Matching power supply		Remote Interface	
Accessories Included Matching power supply			
		Accessories included	matching power supply





Input Level = 8 dBm

RF IN

LT-12-E-M

-32 dB @ 1 GHz

optilob

RF OUT

PD-30-M



MECHANICAL DRAWING







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

TRANSFER FUNCTION



Note: Max bias rating of LT-12-E is -5 \sim 1 V. Exceeding this range may damage the device.





REMOTE LABVIEW INTERFACE

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

IT-12-E-M (V.2.0.1) v2.vi File Edit View Project Operate Tools Window Help	and the second s	
LT-12-E-M Select Port COM13 C Display POWER 4.00 dBm DC Bias -1.00 V DFB Current 65 mA Select ID Number 0 C Update 0 MA (range 0-80) 0 Set DFB Current 0 K (range -3-3)	Real-Time Power History Power 20.66 = 15.00 - 10.00 -	© Optilab
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