

# Optiva OTS-1L2 3 GHz Dual Wideband Fiber Optic Links

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DATASHEET | MARCH 2018

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Optiva Dual Wideband Fiber Optic Links are optimized to perform in the 50 MHz to 3 GHz frequency range providing transparent signal transportation for satellite antenna applications. The OTS-1L2 is a dual RF fiber optic link that accepts two RF inputs and provides two RF outputs with a single plug-in pair. This dual-density card increases the chassis capacity by a factor of two.

## EMCORE Advantage

EMCORE's vertically integrated, ISO-9001, RoHS compliant facility and its world-class GaAs InP wafer fab (Ortel heritage) has been successfully designing and manufacturing highly linear, wide dynamic-range laser/photodiode die, modules, PCBAs, cards, and integrated systems for the CATV, satcom, and telecommunication RF fiber signal transport applications.

## Applications

- Satellite Antenna Signal Transport
- DBS Antenna Signal Distribution
- Inter-Facility Signal Transport

## Features

- 50 MHz to 3 GHz
- 30 dB Adjustable Gain Range
- 50 Ohm SMA
- Tx & Rx RF Power Monitors Via LED & Remote
- LNB Power
- SNMP Monitoring and Control
- High-Dynamic-Range DFB Laser
- Fits in Optiva Enclosures
- CE & CSA Certified, RoHS

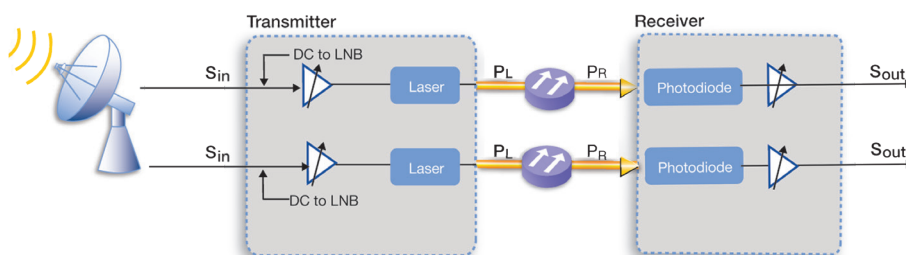
## System Design

The Optiva platform includes a wide range fiber optic transport products for satellite and microwave communications from 1 MHz to 40 GHz. These units can be used to construct transparent inter- and intra-facility links from 1 meter to >100 km for RF and microwave signal transport, antenna remoting, video transport, electronic warfare systems and other high-dynamic-range applications.

optiva | PLATFORM

Optiva is a completely modular, hot-swappable platform. Both 19" rack-mount and compact tabletop, or wall-mountable enclosures are available. The 3 RU 19" rack-mount, fan-cooled enclosures (Model OT-CC-16 and OT-CC-16F) can support up to 16 insert cards and utilize two dual-redundant, hot-swappable, 100 or 200 watt power supplies. The 1 RU 19" rack-mount, fan-cooled enclosure (Model: OT-CC-6-1U) can accommodate 6 insert cards and utilizes two hot-swappable 60 watt power supplies. Compact one-slot (OT-DTCR-1), or two-slot (OT-DTCR-2) enclosures are also available that use an external wall-mount power supply.

## Block Diagram



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## Performance Highlights

	Parameter	Min	Typical	Max	Units
Link	Frequency Range	50	-	3000	MHz
	Frequency Response				dB
	50 - 3000 MHz	-	+/- 2	-	
	Any 36 MHz	-	+/- 0.2	-	
	Noise Figure (Max RF Gain, 1 GHz)	-	12	-	dB
	Inut Third-Order Intercept (Max RF Gain, 1 GHz)	-	1	-	dB
	Spurs Free Dynamic Range <sup>1</sup>	-	108	-	dB/Hz <sup>2p</sup>
Tx	RF Link Gain (at Max RF Gain) <sup>2</sup>	-	25	-	dB
	RF Input (Composite)	-50 (max RF gain)	-	10 (min RF gain)	dBm
	Tx Gain (TG), Max, 1 GHz <sup>2</sup>	-2	5	-	dB (W/A)
	RF Gain Adjustment (Manual, 1 dB Step)	0	-	30	dB
	Automatic Gain Control (Hold Range)	-36 (max RF gain)	-	-6 (min RF gain)	dB
	Optical Output	3	6	-	dBmo
	Wavelength	1270	-	1610	nm
	Input Impedance	-	50	-	Ohm
	Input Return Loss				dB
	950 - 2150 MHz	13	18	-	
	50 - 3000 MHz	8	13	-	
	LNB Voltage	16	17	19	V
	Current	-	-	350	mA
	DC Power (LNB Off)	-	12	-	V
		-	-	450	mA
Rx	Optical Input	-20 <sup>3</sup>	-	8	dBm
	Rx Gain (RG), Max, 1 GHz <sup>2</sup>	20	22	-	dB (A/W)
	RF Adjustment Range (Manual, 1 dB Step)	0	-	30	dB
	RF Output (Composite) <sup>4</sup>	-40	-	6	dBm
	Output Impedance	-	50	-	Ohm
	Output Return Loss				dB
	950 - 2150 MHz	13	15	-	
	50 - 3000 MHz	8	10	-	
	DC Power	-	12	-	V
		-	-	320	mA

1. SFDR = 2/3 \* (IIP3 + 174 - NF), measured at 1 GHz

2. Link RF Gain = TG + RG - 2\*FiberLoss, (assumes Rin = Rout), measured with 1 m fiber

3. Minimum optical input to maintain 35 dB C/N on 36 MHz RF carrier, over 1m fiber link

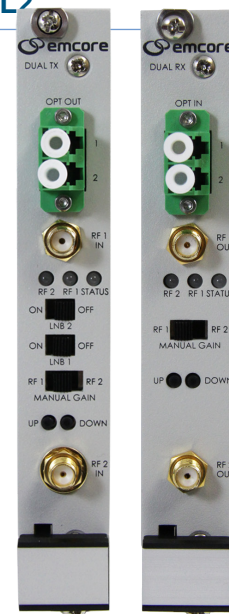
4. Depending on RF input level, RF gain setting, and optical loss

## Absolute Maximum Rating\*

Parameter	Min	Max	Unit
Operating Temperature	-20	60	° C
DC Input Voltage	-	+16	V
Maximum Tx RF Input (Min RF Gain)	-	+15	dBm
Maximum Rx Optical Input	-	+10	dBmo

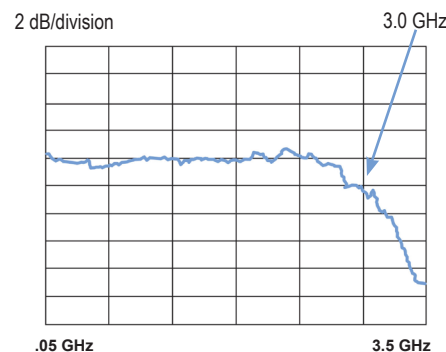
\* Damage may occur beyond these limits

## OTS-1L2

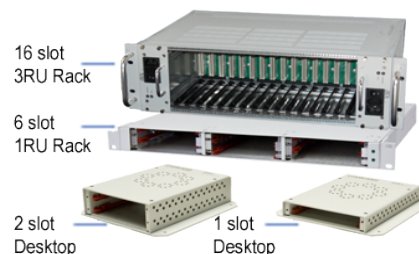


OTS-1L2 (Tx) OTS-1L2 (Rx)

## Typical Frequency Response



## Enclosure Options



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## Ordering Information

Product Code	Specifications
OTS-1LC2T/S5-xx/yy-LA-IC	2Tx, 50-3000 MHz, CWDM CH xx/yy, Dual 6 dBm, Dual 50 Ohm SMA, Dual LC-APC
OTS-1L2T1/S5-13-LA-IC	2Tx, 50-3000 MHz, 1310 nm, Dual 6 dBm, Dual 50 Ohm SMA, Dual LC-APC
OTS-1LS2R/S5-LA-IC	2Rx, Dual 50 Ohm SMA, Dual LC-APC
OPV-CTLR-IC	NMS SNMP Controller Card & MIB for Optiva Family
OTP-1ETR-A2/A2	Optical Transceiver, 1CH, 10/100 Ethernet, SM, Dual LC -- See OTP-1E datasheet for exact models
OT-CC-16-XX	Chassis, Rack-Mount, 16-Slot, 3 RU -- See OT-CC-16F datasheet for exact models
PS-200-(xx)	Power Supply, 12 VDC 100 to 240 VAC, 50/60 Hz, (Specify power cord (NA, EU, UK))
OT-CC-6-XX	Chassis, Rack-Mount, 6-Slot, 1 RU with Power Supply - See OT-CC-6-XX datasheet for exact models
OT-DTCR-1 / OT-DTCR-2	Chassis, Flange-Mount, with Power Supply, 1 slot / 2 slot - See OT-DTCR datasheet for exact models

## Laser Safety

This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR). FDA/CDRH Class 1M laser product. This device has been classified with the FDA/CDRH under accession number 0220191. All versions of this laser are Class 1M laser product, tested according to IEC 60825-1:2007 / EN 60825-1:2007. An additional warning for Class 1M laser products. For diverging beams, this warning shall state that viewing the laser output with certain optical instruments (for example: eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. For collimated beams, this warning shall state that viewing the laser output with certain instruments designed for use at a distance (for example: telescopes and binoculars) may pose an eye hazard.

Wavelength = 1.3/1.5  $\mu$ m.

Maximum power = 30 mW.



\*Caution - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

\*IEC is a registered trademark of the International Electrotechnical Commission.

