

Model OTRT/OTRR Rugged L-Band Link (Not recommended for new designs)

Features and Benefits

Rugged and compact L-Band fiber optic transport link.

Standalone flange-mount units for outdoor mounting in a NEMA 3R enclosure.

Wide bandwidth; 500-3,000MHz handles all satellite signals.

Low gain and high gain receiver models available; 75 Ω output standard.

Wide receiver optical input range of -15 to +3 dBm.

Transmitters available with 1310nm FP or DFB, 1550nm DFB or CWDM wavelength.

1270-1610nm receiver operating wavelength range works with all L-Band transmitters.

LED indicators and alarms for easy setup and maintenance.

SC/APC optical connector standard. FC/APC optional.



The Olson Model OTRT/OTRR Rugged L-Band Link offers a high performance, versatile transport link in a very compact and rugged package. The Rugged L-Band Link has been engineered to meet today's high performance standards for L-Band transport with an extreme bandwidth range that will also allow the system to handle the next generation of satellite signals. The link is ideal for a wide variety of communications applications, including L-Band satellite antenna remoting, trunking radio, telemetry tracking, and time and frequency reference distribution. The standard frequency range is 500MHz to 3,000MHz.

The 3.0GHz bandwidth facilitates stacked LNB applications to accommodate additional transponders containing enhanced DBS programming services (e.g., HDTV, local channels, etc.) over single-mode fiber for DBS television distribution in campus, fiber-to-the-premise (FTTx), and multiple dwelling unit (MDU) environments.

The transmitter and receiver are enclosed in a flange-mount unit suitable for mounting in a NEMA 3R enclosure. All L-Band units offer a 75 Ω impedance standard. Optical connectors are SC/APC standard, with an option for FC/APC connectors. Power is via an Olson Model OT LB-PS-15DC power supply.

System Specifications

Optical Characteristics (with SM 9/125µm Fiber)

	Min	Typ	Max	Units
Tx Operating Wavelength		1310		nm
Optical Output Power (FP)	+2.0		+3.0	dBm
Optical Output Power (DFB)	+3.0		+5.0	dBm
Tx Operating Wavelength		1550		nm
Optical Output Power	+2.5		+4.0	dBm
CWDM Operating Wavelength	1470		1610	nm
Optical Output Power	+2.5		+4.0	dBm
Rx Operating Wavelength	1270		1610	nm
Rx Opt. Input Power	-15		+3.0	dBm
Tx/Rx Opt. Return Loss		>55		dB
Optical Loss Budget:				
+3dBm, FP Laser	0		18	dB
+3 to +5dBm, DFB Laser	0		20	dB
Optical Connector		SC/APC FC/APC		

Electrical and Environmental Characteristics

	Min	Typ	Max	Units
Power Supply Voltage	+8		+24	V _{dc}
	85		250	mA
Operating Temp. Range	-40		+60	°C
Storage Temp. Range	-45		+85	°C
Humidity	5		95	%

Max. Current Requirements (mA)

	8V _{dc}	12V _{dc}	15V _{dc}	18V _{dc}	24V _{dc}
Tx	250	170	135	115	85
Rx	200	150	120	100	70

DC Leads

Color	Tx	Rx	Descr.
Red	DC In	DC In	8-24V _{dc}
Brown/ White	N/A	Alarm	Low Opt. Input
Black	GND	GND	DC Rtm

Physical Characteristics

	Min	Typ	Max	Units
Weight		8		oz.
		225		g
Dimensions (W x L x H)		3.75 x 6.5 x 1.0		in.
		95 x 165 x 25		mm

Part Numbers

Model OTRT-D301x-X3-ZA	Transmitter, 500MHz-3GHz, +3dBm Optical Output, 75Ω (F Conn.)
Model OTRT-D301x-X4-ZA	Transmitter, 500MHz-3GHz, +4dBm Optical Output, 75Ω (F Conn.)
Model OTRT-D301x-X5-ZA	Transmitter, 500MHz-3GHz, +5dBm Optical Output, 75Ω (F Conn.)
Model OTRR-D3000-XX-ZA	Receiver, 500MHz-3GHz, RF, 1270-1610nm, 75Ω (F Conn.)
Model OTLB-PS-15DC	Power Supply, 110 V _{ac} Input and +15 V _{dc} Output

Ordering Information

NOTES:

- 1) The "Z" in all part numbers specifies the optical connector type: FA = FC/APC; SA = SC/APC.
- 2) The lowercase "x" or "xx" in the Tx part numbers specifies the wavelength: 13 = 1310nm; 15 = 1550nm, xx = CWDM (47 to 61).
- 3) The uppercase "X" in the Tx part numbers specifies the laser type: F = FP; I = Isolated FP; D = DFB; C = CWDM.
- 4) The uppercase "X" in the Rx part numbers specifies the gain: LG = low gain; HG = high gain.

RF and System Characteristics

	Min	Typ	Max	Units
Frequency Response (-3dB)	500		3,000	MHz
Amplitude Flatness	Any 500MHz / ±1.5			dB
	Any 40MHz / ±0.35			dB
Return Loss		10		dB
Output Impedance (F-Std.)		75		Ohms
Output Impedance (BNC-Option)		50		Ohms
Link Gain		-4 ± 5		dB
Tx Gain vs. Temp.		0.12		dB/°C
Rx Gain vs. Temp.		0.09		dB/°C
Noise Figure			45	dB
CNR (BW 27MHz):				
@ +12dBmV In	17.7	18.7		dB
@ +17 dBmV In	22.7	23.7		dB
@ +7 dBmV	12.7	13.7		dB
Tx Input IP3 (to 20°C)		-9.5		dBm
Tx Input IP3 (to 40°C)		-12.5		dBm
Tx Input 1dB Compr. (to 20°C)		>-17		dBm
Rx Input 1 dB Compr. (to 40°C)		>-20		dBm
Tx Input/Rx Output VSWR	2.0:1 to 1.8:1			
Tx Total RF Input Pwr.		-14		dBm
Tx RF Input per Transponder		-29		dBm

NOTES:

- 1) The link optical budget specification assumes most of the loss is via the optical coupler with <1km between the transmitter and receiver.
- 2) RF Specifications are cited at a 12dB optical loss and >55dB optical return loss. If the link optical loss differs from 12dB, the RF gain will change 2dB for each 1dB of optical loss. (i.e., a link with 6dB of optical loss will have a minimum RF gain of +3dB.) Also, when optimizing RF performance, the main concern involves setting the RF signal level. Typically, the optimal total RF power into the transmitter should be near -37dBm per transponder, assuming 32 transponders; this corresponds to a total RF input power level of -22dBm. Due to the wide dynamic range of this system, the RF input power can deviate from this optimal value and still provide good results.
- 3) The RF input power signal is a composite value = 34.75dBmV.
- 4) The RF input per transponder value = 19.75dBmV.