

## Model OLRT/OLRR Rugged L-Band Link

### Features and Benefits

#### Rugged and compact L-Band fiber optic transport link.

Receiver now available with APD Detector that typically improves optical sensitivity by 7dB or more and boosts SNR and gain at low input light levels by 20dB or more.

Wide bandwidth; 500-3,000MHz or enhanced 10-3,600MHz range handles all satellite signals.

Low gain and high gain receiver models available; 75 $\Omega$  output standard, 50 Ohm N, SMA or BNC optional.

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

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

Wide receiver optical input range of -15 to +3 dBm for PIN Detector version. The optional APD Detector extends the optical range from -22dBm to -3dBm.

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

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



The Olson Model OLRT/OLRR 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 extended frequency range option of 10MHz to 3.6GHz allows this system to accommodate additional transponders coinciding with common European satellite communication applications.

The enhanced bandwidth to 3.6GHz is also unique in that it 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.

Transmitters are available in 1310nm, 1550nm and CWDM wavelengths. Receivers are available with PIN Detectors or optional APD Detectors that greatly enhance performance at low optical input levels.

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 $\Omega$  F-type connector standard with 50 $\Omega$  N, SMA & BNC types optional. Optical connectors are SC/APC standard, with an option for FC/APC connectors.

## System Specifications

### Optical Characteristics (with SM 9/125µm Fiber)

	Min	Typ	Max	Units
Tx Operating Wavelength		1310		nm
Optical Output Power (DFB)	+3		+5	dBm
Tx Operating Wavelength		1550		nm
Optical Output Power	+2.5		+4	dBm
Tx CWDM Operating Wavelength	1470		1610	nm
Optical Output Power	+2.5		+4	dBm
Rx Operating Wavelength	1270		1610	nm
Rx Opt. Input Power (PIN)	-15		+3	dBm
Rx Opt. Input Power (APD)	-22		-3	dBm
Tx/Rx Opt. Return Loss		>55		dB
Optical Loss Budget:				
PIN Rx, +4dBm DFB Laser	1		19	dB
APD Rx, +4dBm DFB Laser	6		26	dB
Optical Connector		SC/APC FC/APC		

### RF and System Characteristics

	Min	Typ	Max	Units
Frequency (X36xx)	10		3,600	MHz
Frequency (D301x)	500		3,000	MHz
Amplitude Flatness (>50MHz)	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 (With High-Gain Rx) <sub>2</sub>		-4 ± 5		dB
Link Gain (With Low-Gain Rx) <sub>2</sub>		-19 ± 5		dB
Noise Figure (See Table 1)	13		45	dB
Tx Input IP3		-9.5		dBm
Tx Input 1dB Compression		>-17		dBm
Rx Input 1 dB Compression <sub>2</sub>		>-20		dBm
Tx Total RF Input Power		-22		dBm
Tx RF Input per Transponder		-37		dBm

### Electrical and Environmental Characteristics

	Min	Typ	Max	Units
Power Supply Voltage	+8		+24	V <sub>DC</sub>
	85		250	mA
Operating Temp. Range	-40		+60	°C
Storage Temp. Range	-45		+85	°C
Humidity	5		95	%

### Max. Current Requirements (mA)

	8V <sub>DC</sub>	12V <sub>DC</sub>	15V <sub>DC</sub>	18V <sub>DC</sub>	24V <sub>DC</sub>
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 <sub>DC</sub>
Brown/ White	N/A	Alarm	Low Opt. Input
Black	GND	GND	DC Rtn

### 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 OLRT-xxx13-D5-zz	L-Band Transmitter, DFB Laser, 1310nm, +5dBm, 75Ω
Model OLRT-xxx15-D4-zx	L-Band Transmitter, DFB Laser, 1550nm, +4dBm, 75Ω
Model OLRT-xxxww-C4-zz	L-Band Transmitter, CWDM Laser, +4dBm, 75Ω

Model OLRR-xxx00-yy-zz	L-Band Receiver, RF, 1270-1610nm, PIN, 75Ω
Model OLRR-xxx00S-yy-zz	L-Band Receiver, RF, 1270-1610nm, APD, 75Ω

Model OTPS-12A	Power Supply, Univ. AC Input, +12 V <sub>DC</sub> , 1.5A DC Output
Model OTPS-18A	Power Supply, Univ. AC Input, +18 V <sub>DC</sub> , 1.0A DC Output

### Ordering Information

#### NOTES:

- The "xxx" in the Tx and Rx part numbers specifies the frequency range. "D30" = 500-3,000MHz. "X36" = 10-3,600MHz.
- The "ww" in the Tx part number is the CWDM wavelength, e.g. "47" = 1470nm, "61" = 1610nm.
- The "yy" in the Rx part numbers specifies the gain: "LG" = low gain; "HG" = high gain. The APD Rx is only available in HG.
- The "zz" in all part numbers specifies the optical connector type: "FA" = FC/APC; "SA" = SC/APC.
- Contact Olson Technology for part numbers for the 50 • (N, SMA & BNC connector) option.

#### NOTES:

- RF Specifications are cited at a 10dB optical loss, 2GHz and >55dB optical return loss. If the optical loss differs from 10dB, the RF gain changes 2dB for each 1dB of optical loss. (i.e., a link with 6dB of optical loss will have a minimum RF gain of +3dB.) When optimizing RF performance, the main concern is setting the RF signal level. Typically, the optimal total RF power into the transmitter should be near -37dBm (+11dBmV) 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 considerably from this optimal value and still provide good results.
- The characteristics of receivers with APD Detectors are described fully in the Operating Manual.

Table 1 - Typical Noise Figure vs. Rx Optical Power (PIN)

Typical NF vs. Rx Power	
Rx Optical In (dBm)	Typical NF (dB)
3	13
0	16
-3	20
-6	25
-9	30
-12	35
-15	40
-18	45