

## LaserPlus: Triple Return Path Receiver (LP-OR-300)

### 1 GHz HIGH DENSITY COMPACT CATV OPTICAL TRANSMISSION SYSTEM

#### Features / Benefits



- Three independent optical receiver inputs per module for use in the LaserPlus 3RU chassis
- Available in Triple, Dual, Single, w/ABS and Dual w/WDM R-Rx configurations
- **High Module Density:** up to 45 upstream receivers in a only 5.25" rack space
- Suitable for high performance/high capacity return path digital and video requirements
- 5-300MHz upstream transmission bandwidth for the most demanding applications
- 1290nm to 1600nm wavelength accepts 1310nm, 1550nm, CWDM and DWDM
- High RF output @ wide optical input range: +35dBmV @ +3 to -14dBm
- Front Panel Optical Input test points via high-impedance voltmeter
- Front Panel status LEDs: Optical Input power summary alarm for each receiver
- Front Panel RF test point (-20dB) monitors RF output of each receiver
- Simple Plug-and-Play initial set-up: adjust receiver for RF output gain level and GO!
- Energy-efficient internal circuit design for low power consumption & long-term reliability
- Single-slot width, plug-in, front-access module with hot-swap capability, slides into one of the fifteen (15) available applications slots in the LaserPlus LP-CH-16 Chassis
- Chassis-based plenum with four large fans creates more airflow & better reliability than module-based fans; if fan-failure occurs, transmitters remain in operation

The **Olson Technology, Inc. Model LP-OR-300 1310/1550nm Return Path Optical Receiver Module** is a triple optical receiver module containing up to three (3) independent upstream receivers for the **LaserPlus** optical transmission platform. It was engineered to meet the requirements for a high-density solution for advanced services return path video and data traffic. As such, the **LaserPlus** chassis can group up to 45 upstream signals in just 3RU (5.25") of rack space, or up to 585 receivers in a standard 70" rack. It is available in a variety of configurations, including: triple, dual, single, dual with A/B switch and dual with integrated WDM.

The rugged, low-profile, high-efficiency receiver design utilizes a new, high efficiency 1310/1550nm photodetector and advanced RF circuitry. The unit's wide optical input range accepts optical input levels from -17dBm to +3dBm without the need for attenuating the optical input or using different modules with varying input ranges. Performance-wise, each receiver delivers wide 5-300 MHz bandwidth and superior performance (NPR of >41dB with Dynamic Range of >15dB).

Three (3) high isolation, independent receivers are packaged into a convenient, hot-swappable plug-in module, which features front panel RF (-20dB) and optical input test points, and front panel LEDs which provide immediate visual status of the unit. Individual receivers in the module can be disabled if three independent inputs are not available. Enhanced local and remote monitoring of the receivers is also provided via summary alarms to LEDs on the **Model LP-PS-x** power supplies, via contact closures on the **Model LP-CH-16** chassis, and additionally via the optional **Model LP-CH-SNMP-1** element manager agent which is also compatible with third-party solutions.

The **LaserPlus Model LP-OR-300** is the perfect companion to optical receiver/node products in the Olson Technology, Inc. **MetroNode Model OTMN-x** and **PremiseNode Model OTPN-x** product families, but is also designed to operate seamlessly with optical transmitters, receivers and nodes from most leading manufacturers.

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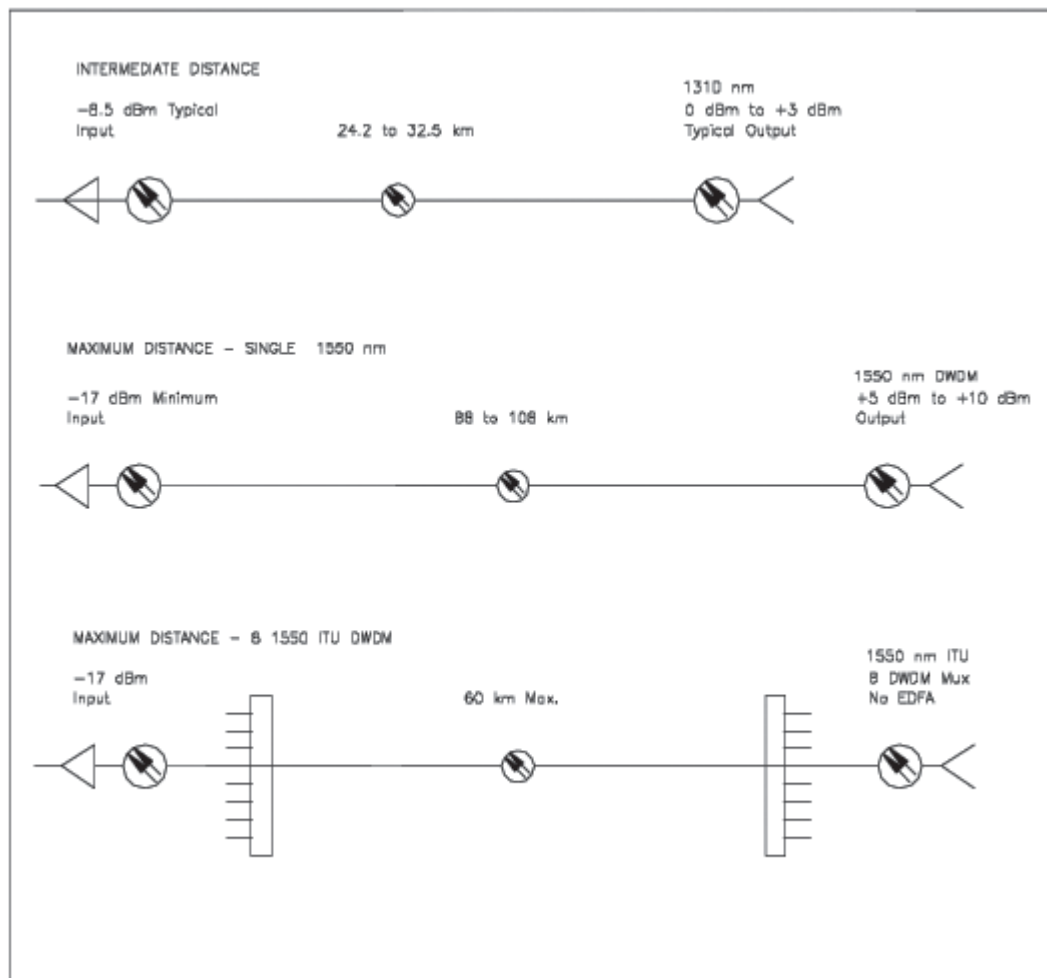
1GHz HIGH DENSITY, COMPACT CATV OPTICAL TRANSMISSION PLATFORM

Quality / Engineering / Innovation

The **LaserPlus Model OT-OR-300 Triple Return Path Receiver**, combined with a suitable 1310nm return transmitter, provides a complete link over 50km with a full 5-300 MHz bandwidth and performance specification suitable for use with upstream video and data signals. This facilitates a return link which is fully compatible with link optical budgets used in 1550nm forward transmission systems.

Since the receiver uses a dual optical window photodetector, the unit can also be deployed as the receiving end of a 1550nm standard, 1550nm CWDM or 1550nm ITU-DWDM return path system. Link budgets available with these types of architectures can accommodate to over 120km.

## Typical Applications of the LaserPlus Model LP-OR-300 Triple Return Path Receiver



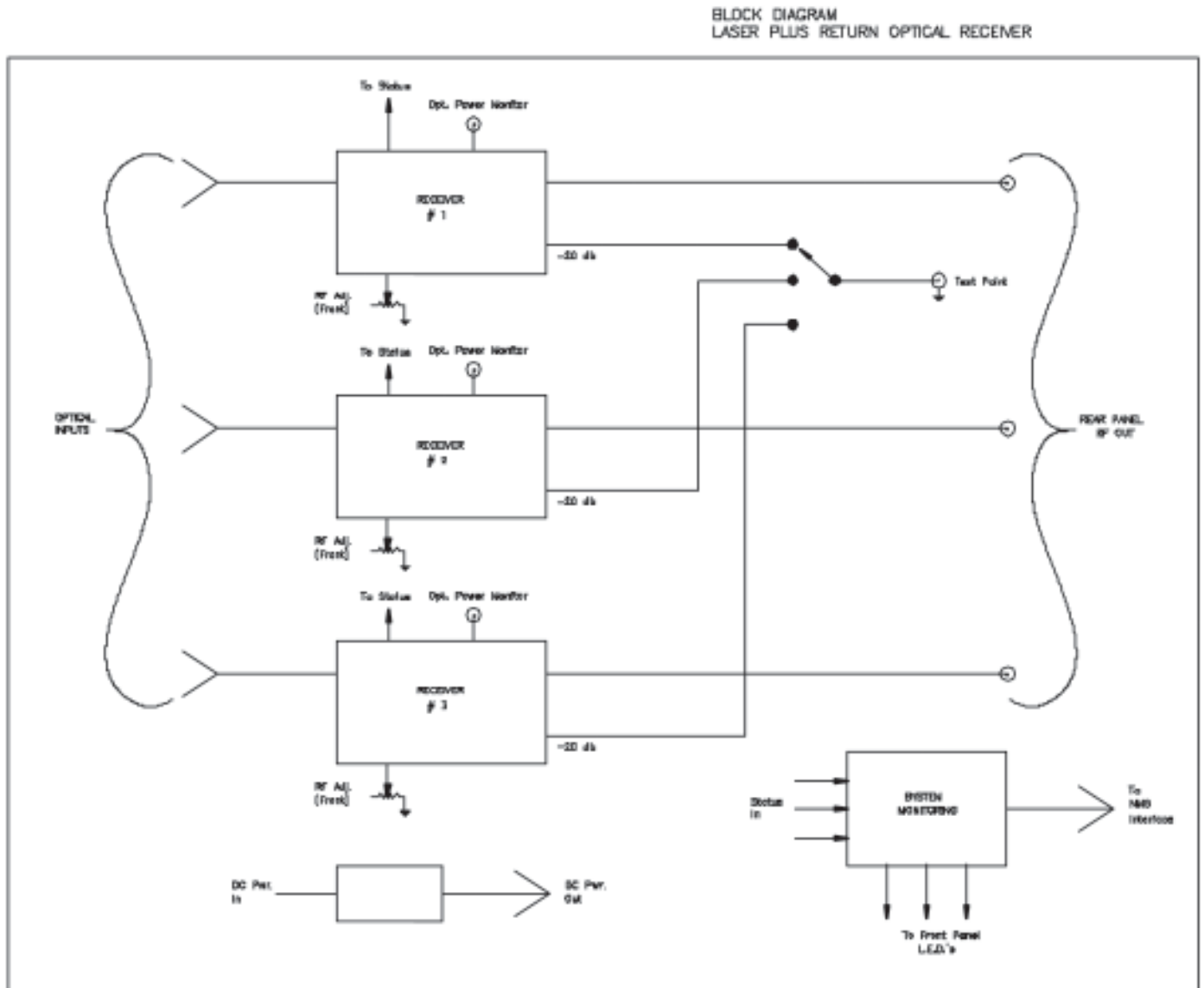
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Block Diagram of the LaserPlus LP-OR-300 Triple Return Path Receiver



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## Specifications



### RF OUTPUT & PERFORMANCE PARAMETERS:

Frequency Range	5MHz to 300 MHz
Frequency Response, peak-to-valley	$\pm 0.75$ dB
Frequency Response Slope	$\pm 1.0$ dB
Output Impedance	75 Ohms
Output Return Loss	> 15 dB
RF Output Level	+35 dBmV @ -14 dBm optical or greater @ 10% modulation index
Performance	Noise Power Ratio (NPR): > 41 dB *
	NPR Dynamic Range: > 15 dB *
	Isolation between Receivers: > 65 dB *

\* Measured with Olson 3mW DFB return optical transmitter & 10dB fiber

### OPTICAL PARAMETERS:

Wavelength	1290nm to 1600nm
Input Receive Power	-17 dBm to +3 dBm
Equivalent Noise Current	< 7 pA/Hz

### ELECTRICAL, ENVIRONMENTAL & MECHANICAL PARAMETERS:

Dimensions	4.5" H x 1.125" W x 8.75" D (11.4 cm x 2.9 cm x 22.2 cm)
Weight	1 lb (0.454 kg)
Operating Temperature Range	0°C to +50°C (+32°F to +122°F) (Air temperature measured at air inlet of <b>Model LP-CH</b> chassis)
Humidity Range	to 95% non-condensing (Recommended for use only in non-condensing environments)
Mounting	In applications slot in <b>Model LP-CH-16 LaserPlus Chassis</b>
Module Slots	One slot width: Slot# 1-15 (inclusive)
Powering	5.25V <sub>DC</sub> per module
Protection	3A SB fuse [Littelfuse PN# <b>0454033</b> ; Olson PN# <b>286-000009</b> ]

### RECEIVER INTERFACES:

RF Output Connector	F-Type (rear of module)
RF Output Test Point	F-Type (front of module) -20 dB $\pm 1.0$ dB
RF Output Level Adjust	Variable control to set constant output level for Optical Input from -14 dBm to 0 dBm (front of module)
Optical Input Connector	SC/APC standard; FC/APC optional (front of module)
LED Indicators (Green/Red)	Optical Power Alarm; Laser Current Alarm; Cooler Alarm
Laser Enable/Disable	Recessed push-button switch (front of module)

All specifications are subject to change without notice

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