

PL-1000R

DWDM Raman Amplification Solutions



Counter-propagating Raman amplifier and hybrid Raman-EDFA in 1U platform

Features Overview

- Counter-propagating Raman amplifier with optionally embedded booster and preamp EDFAs in 1RU
- Detection of open connectors and/or broken fiber up to few tens of kilometers from the pump module
- High power connector safety switch cover
- Supports the following Raman configurations:
 - Counter-propagating Raman
 - Hybrid Raman-EDFA
- Up to 12dB average gain for G.652 fiber (2-pump)
- Gain flattening optimization based on fiber type and pump power
- Effective noise figure (NF) of -1dB
- 1U footprint with low power consumption
- Dual AC or DC pluggable power supply and pluggable fan unit
- Web-based GUI and SNMP EMS management

Distributed Raman Amplification

The PL-1000R is designed for distributed Raman amplification applications, cost-effectively extending the optical link power budget and significantly improving OSNR for building long distance DWDM solutions. It provides amplification for a range of optical solutions and incorporates several configurations of Raman amplifier, including counter-propagating and hybrid Raman-EDFA.

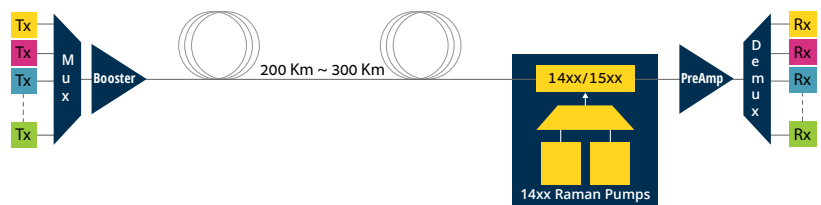
Main Benefits

- Acts as terminal Raman amplifier and as inline hybrid Raman-EDFA
- Full remote monitoring
- Eye safety feature - automatically shuts down the Raman in case of fiber interruption
- Detects fiber disruption or cut tens of kilometers from the pump
- Integrates with PacketLight management platforms and transponder/muxponder products

Laser Safety

The PL-1000R is fully managed, configured and monitored remotely as part of the network, via optical supervisory channel (OSC) or Inband (GCC). The Raman is controlled, adjusted and monitored by the user.

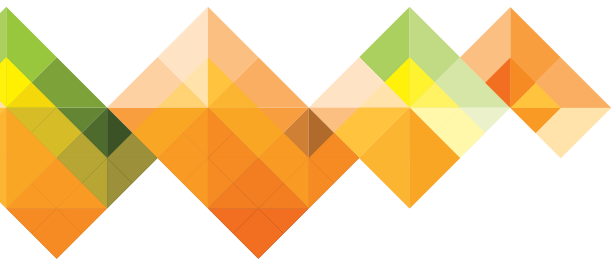
The Raman includes three eye safety mechanisms that shut down the unit in case of fiber link disruption, such as open connectors or broken fiber, even at a distance of a few tens of kilometers from the unit.



Raman Amplification Solution

Recommended for the following applications:

- Long repeaterless links
- Low latency links (less FEC and O-E-O conversion)
- Storage area networks (SANs), remote locations, disaster recovery
- Security-sensitive applications
- Improving OSNR in long-haul and ultra-long haul links
- 400G, 200G and 100G transmission and/or increasing channel count to 96 WDM channels



Low power consumption



1U rack mount



Multi operation modes

Technical Specifications

Optical Specifications - Raman

Wavelength Range: 1529-1565nm

Wavelength Range, OSC: 1500-1520nm

Input Power Range: -47dBm to -5dBm

Gain: 12dB

Maximum Pump Power: 550mW
(2 pumps)

Average Gain (G.652 fiber): 12dB
(typical for 2 pumps)

Operating Mode: Automatic power control (APC)

Gain Flatness:

- +/-0.6dB

Signal Insertion Loss: 2.9dB

Noise Figure: -1dB

PDG: 0.3dB

PMD: 0.6psec

Eye Safety: Automatic laser power reduction upon fibre cut or disconnection

Monitored Parameters

- Pump power
- Signal power
- Back-reflected power
- Operating temperature

Optical Specifications - Booster EDFA

Output Power: Up to 23dBm

Input Power: -24dBm up to 14.5dBm

Gain: 8dB to 22dB

Optical Specifications - PreAmp EDFA

Output Power: Up to 20dBm

Input Power: -36dBm up to -7dBm

Gain: 20dB

Network Management

Management Ports:

- RJ45 10/100Base-T
- 2xSFP 100Base-X
- RS-232 serial port
- DB9 alarm port
- 8xSFP 100Base-X MC ports

Protocols: SNMP, HTTP, HTTPS, Telnet, SSH, Syslog, RADIUS, Sntp

Management: Web browser over HTTP/HTTPS, PacketLight LightWatch™ EMS or third party EMS over SNMP, CLI over RS-232 or CLI over Telnet/SSH

OAM: Input/output power monitoring event logger and alarms

Management Channel: Optical supervisory channel (OSC)

Visual Indicators: LED status indicators for ports, eye safety, power and system

Software Upgrade: Dual image, hitless swap

Power Supply

AC/DC: 90 to 246 VAC, 50/60 Hz, -36 to -60 VDC, 60W max

PSU Redundancy: Single/dual feeding, hot swappable

Cooling Unit: Hot swappable fan unit

Physical Dimensions

1U:

- 1.77" (H) x 17.32" (W) x 9.05" (D)
- 45mm (H) x 440mm (W) x 230mm (D)

Weight: 5.5kg / 12.1lb (max)

Mounting: 19", ETSI and 23"

Environmental

Operating Temperature: -5°C to 50°C (+23°F to +122°F) operational

Humidity: 5% to 85% RH

Approvals & Standards

- CE, FCC, RoHS, REACH
- NEBS ready