# PL-2000AD 200G ADM/Muxponder/Transponder

## 200G multi-protocol multi-rate optical transport solution for metro and long haul networks

### Features Overview

- Multiple user-configurable operation modes: muxponder, transponder and ADM
- Supported clients:
  - 10Gb/40Gb/100Gb Ethernet
  - 8G/16G/32G Fibre Channel
  - STM-64/OC-192 SDH/SONET
  - OTU2/OTU2e/OTU3/OTU4 OTN
- Forward error correction (FEC):
  - ITU-T G.709 GFEC or UFEC for metro applications
  - Soft decision (SD) FEC for long haul applications
- Dual pluggable CFP2 coherent tunable DWDM line interfaces
- Layer-1 GCM-AES-256 based encryption
- Comprehensive line and service performance monitoring
- Integrated EDFAs, mux/demux, and optical switch
- Remote management with in-band or out-of-band optical supervisory channel (OSC)
- Supports standard MSA pluggable
  - SFP+ (8G/32G FC client)
  - SFP28 (32G FC client)
  - QSFP+ (40GbE client)
  - QSFP28 (100GbE client)
  - CFP2 (uplink)
- Dual AC or DC pluggable power supply and pluggable fan unit

### For Metro and Long Haul 200G Applications

The PL-2000AD is the smallest and most integrated transport solution of its kind, reaching up to 200km/42dB without intermediate sites and 2500km with inline sites. A powerful 200G multi-protocol multi-rate muxponder/transponder/ADM solution for building high capacity optical transport networks.

### Main Benefits

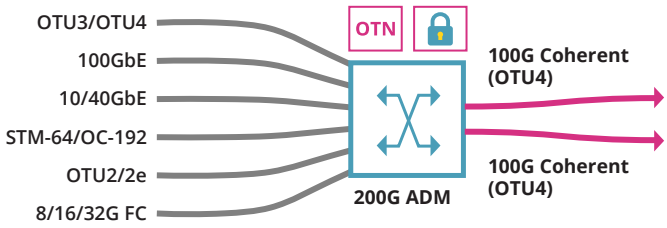
- **Flexible OTN cross connect**
- **Dynamic mix of services**
- **Embedded encryption for all protocols**
- **Highly integrated 1U solution**

### Secured and Encrypted Communication for all Services

The flexible architecture of the PL-2000AD enables the same device to be used in multiple applications and adapt to network growth and changes.

It supports and aggregates a flexible mix of 10GbE, 40GbE, 100GbE client interface protocols into 2x100G OTU4 uplinks.

The platform supports various client services, allowing easy migration from current to future services without replacing the unit. The product supports standards-based Layer-1 encryption, configurable per service or per uplink.




*Multiple Client Services Aggregated into Dual 100G OTU4 Uplinks*

**Recommended applications:**

- **400G metro / long haul applications up to 1,200km**
- **200G long hall applications up to 2,500km**
- **High capacity DCI for enterprise, campus and cloud computing networks**
- **400G links to bolster existing OTN/DWDM infrastructure**
- **Last mile access/aggregation CPE for 100GbE managed services**
- **Secured and encrypted communication for 10/25/100GbE, and OTU2/2e/4 services**

Layer-1 encryption | Low power consumption | 1U rack mount | Multi operation modes

# Technical Specifications

## Product Configurations

**Muxponder:** Aggregation of up to 20 multi-service, multi-rate, multi-protocol client interfaces: Ethernet, Fibre Channel, SONET/SDH, and OTN into 2xOTU4 uplinks.

**Dual 100G Transponder:** 2x100GbE mapped into 2xOTU4 uplinks

**100G Transponder and 10x10G Muxponder:** 100GbE mapped into one OTU4 uplink, and up to 10 multi-service 10GbE clients aggregated into a second OTU4 uplink

**Optical Amplifiers:** Optional up to two EDFA modules

**Mux/Demux:** Optional 2ch mux/demux module

**Optical Switch:** 1+1 facility protection

## Uplink Characteristics

**Bit Rate:** 127.157GHz (OTU4v with 20% SD-FEC)

**Optical Interface:** CFP2 coherent (ACO)

**Tunability Range:** DWDM ITU-T G.694.1 GRID channels 17-60.5, with 50GHz spacing

**FEC Support:** Standard ITU-T G.709 GFEC, enhanced HD-FEC, or SD-FEC

**Optical Reach:** Up to 2,500km with standard inline EDFAs

**Optical Output Power:** 2dBm to -2dBm

**OSNR:**

- Long haul: 14dB, 2,500km
- Metro: 17dB, 1,200km

**Sensitivity:** -25dBm

**Optical Monitoring:** Tx and Rx power, dispersion, OSNR

## Client Interfaces

**Service type:** 10GbE, 40GbE, 100GbE, 8G/16G/32G FC, STM-64/OC-192, OTU2, OTU2e, OTU3, OTU4

**Optical Interface:**

- SFP+: LR (1310nm), SR (850nm), ER (1550nm), ZR (1550nm), C/DWDM
- SFP28: LR (1310nm), SR (850nm)
- QSFP+: LR4 (1310nm), ER4 (1310nm), SR4 (850nm), LR PSM
- QSFP28: LR4 (1310nm), ER4 (1310nm), SR4 (850nm), CWDM4 (CWDM)

## Amplifier

**Applications:** Booster, pre-amp

**Output Power:**

- Booster: +4 to +14dBm
- Pre-amp: +5dBm

**Input Power:**

- Booster: 0 to +10dBm
- Pre-amp: -25 to -9dBm

**Gain:**

- Booster: +4 to +14dB
- Pre-amp: +18dB

**Operating Modes:**

- Automatic gain control (AGC)
- Automatic power control (APC)

## Network Management

**Management Ports:**

- 2xRJ-45 LAN port 10/100MBase-T
- 2xSFP MNG ports 100/1000MBase-X
- RJ-45 serial port
- RJ-45 external alarm port
- OTN in-band GCC channel

**Protocols:** SNMP, HTTP, HTTPS, Telnet, SSH, Syslog, RADIUS, TACACS+, SNTP, TFTP & FTP

**Management:**

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

**OAM:**

- Automatic laser shut-down (ALS)
- Facility loopback (client and line interfaces), PRBS, event log alarms

**Performance Monitoring:**

- Layer-1 PM for all services
- Layer-2 PM for Ethernet
- OTN PM for uplinks
- Optical power Rx levels for all optical ports

**Visual Indicators:** LED status indicators for: client and line ports, Management and LAN ports, amplifier/s, system Critical/Major/Minor and Power Supply

**Software Upgrade:** Hitless traffic – dual image

## Power Supply

**AC/DC:** 100 to 240 VAC, 50/60 Hz, -36 to -60 VDC, 350W max

**PSU Redundancy:** Single/dual feeding, hot swappable

**Cooling Unit:** Hot swappable fan unit

## Environmental

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

**Humidity:** 5% to 85% RH

## Physical Dimensions

**1U:**

- 1.77" (H) x 17.32" (W) x 11.22" (D)
- 45mm (H) x 440mm (W) x 285mm (D)

**Weight:** 8.5kg / 18.75lb (max)

**Mounting:** 19", ETSI, 23"

## Encryption

**Functionality:** Full speed, transparent Layer-1 encryption for selected clients or for the OTU4 uplinks

**Compliance:**

- FIPS 140-2 Level 2 compliant
- Common Criteria EAL2 certified
- CNSA Top Secret Suite B 2015 compliant

**Note:** For specific countries, models that include Layer-1 GCM-AES-256 based encryption will be marked with the suffix C.

## Approvals & Standards

- CE, FCC, RoHS, REACH
- NEBS ready

**For more information please contact us at www.packetlight.com**



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