

# PL-2000M

## 200G Coherent Optical Transport



**High transport capacity 200G muxponder/transponder over a single wavelength**

### Features Overview

- User-configurable muxponder and transponder operation modes
- Supported clients: 10G/40G/100G LAN, 8G/16G/32G Fibre Channel, STM-64/OC-192, SONET/SDH, OTU2/OTU2e/OTU3/OTU4 OTN
- 200G uplink aggregation, using any mix, for example: up to 20x10G (multi-rate) clients, 2x100G clients, 1x100G + 10x10G clients, 4x40G + 4x10G clients
- Forward error correction (FEC)
- 200G pluggable CFP2 coherent (ACO) tunable DWDM line interface
- Operation modes:
  - 16QAM 200G metro ~650km
  - DP-QPSK 100G long haul ~4000km
- Layer-1 GCM-AES-256 encryption
- Diffie-Hellman key exchange
- Line and service performance monitoring
- Optional integrated EDFA, mux/demux and optical switch
- Facility protection using an optional integrated optical switch
- Remote management with in-band GCC or out-of-band OSC
- Dual AC or DC pluggable power supply and pluggable fan unit
- Supports standard MSA pluggable SFP+, QSFP+, QSFP28 and CFP2
- 1U footprint with low power consumption

### Data Center Interconnect and Metro Applications

The PL-2000M is an advanced 200G multi-protocol multi-rate solution for building high capacity optical transport networks. This 1U platform with flexible architecture enables the same device to be used in multiple applications and to adapt to network growth and changes.

### Main Benefits

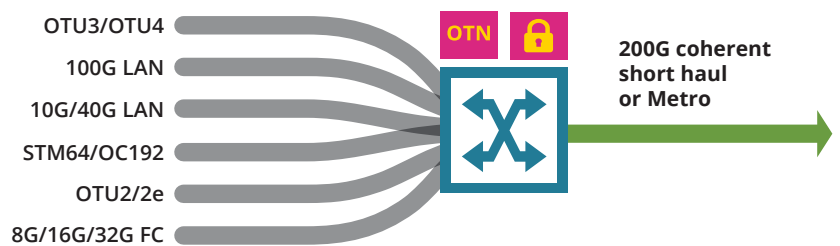
- **Cost-effective 200G capacity over single wavelength**
- **Highly integrated 1U muxponder and transponder**
- **Supports flexible mix of client interface protocols**
- **Embedded GCM-AES-256 encryption for all protocols**
- **User-configurable 100G/200G operation mode**

### Modular and Cost-effective 200G Transport Solution

The PL-2000M provides a modular and cost-effective way of rolling out services or uplifting existing network capacity. It is low power consumption, saves rack space and reduces the overall solution CAPEX and OPEX by increasing the capacity of enterprise DCI and metro networks.

The PL-2000M can multiplex 2x100G clients into a single coherent CFP2 uplink, providing low cost high spectral efficiency.

The device seamlessly integrates with PacketLight's products to deliver carrier grade, high-end 200G solutions.



200G Muxponder/Transponder

### Recommended for the following applications:

- High conformance 100G for alien wavelength applications
- Metro network applications ranging up to 1,000km
- High capacity DCI for enterprise, campus and cloud computing networks
- 200G links to bolster existing OTN/DWDM infrastructure
- Last mile access/aggregation CPE for 10G/40G/100G managed services
- Secured and encrypted communication for all protocols



Layer-1 encryption



Low power consumption



1U rack mount



Multi operation modes

## Technical Specifications

### Product Configurations

**Single 20x10G Muxponder:** Up to 20 multi-service 10G clients aggregated to 1x200G uplink

**40G and 16x10G Muxponder:** 40G LAN + up to 16 multi-service 10G clients aggregated to 1x200G uplink

**Dual 40G and 12x10G Muxponder:** 2x40G LAN + up to 12 multi-service, 10G clients aggregated to 1x200G uplink

**Dual 100G Transponder:** 2x100GbE LAN mapped to 1x200G uplink

**100G Transponder and 10x10G Muxponder:** 100GbE LAN + 10x10G mapped to 1x200G 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:

- 200G OTUC2V2 - 2x132.2680Gbps
- 100G OTU4V2 - 131.1026Gbps

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

#### Tune-ability range:

- DWDM ITU-T G.694.1 GRID
- Channels 13-60.5, with 50GHz spacing

#### FEC Support:

- Standard ITU-T G.709 GFEC
- Enhanced HD-FEC, or SD-FEC

#### Optical Output Power:

- 100G: -2dBm to +3dBm
- 200G: -5dBm to 0dBm

#### OSNR:

- 100G: 12dB at 0.1nm
- 200G: 23dB at 0.1nm

#### Sensitivity:

- 100G: -21dBm
- 200G: -18dBm

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

### Client Interfaces Characteristics

#### Service type:

- 10GbE LAN, 40GbE LAN, 100GbE, 8G/16G/32G FC, STM-64/OC-192
- OTU2, OTU2e, OTU4

#### Optical Interface:

- SFP+: LR (1310nm), SR (850nm), ER (1550nm), ZR (1550nm), C/DWDM
- 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, 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:

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

### Performance Monitoring:

- Layer-1 PM for all services (except for 32G FC)
- 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, 250W 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 and 23"

### Encryption

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

**Compliance:** FIPS 140-2 Level 2, CNSA Top Secret Suite 2015

### Algorithms:

- Encryption/decryption: GCM-AES-256
- Key exchange: ECC Cofactor Diffie-Hellman with P-384 curve
- Message digest: SHA-384

### Authentication:

- Role-based user/password authentication

### Approvals & Standards

- CE, FCC, RoHS, REACH
- NEBS ready