PL-2000T 4x200G Transponder

Transport platform for high capacity applications

Features Overview

- Pay-as-you-grow architecture based on pluggable 200G digital coherent optical modules
- Operation modes: QPSK 100G long haul and 8/16 QAM 200G metro
- Supported clients: 100Gb Ethernet, OTU4
- **Supported FEC modes:**
  - Line: SD-FEC for metro and long haul applications, or oFEC
  - OTU4 service: ITU G.709 GFEC, or Zero FEC
  - 100GbE service: IEEE Clause BJ-FEC
- **Standard MSA pluggable:**
  - CFP2 DCO tunable DWDM for 100G/200G line interface
  - QSFP28 SR4/LR4/ER4/CWDM4 for 100G client interface
- Layer-1 GCM-AES-256 encryption
- Elliptic Curve Diffie-Hellman key exchange
- Comprehensive line and service performance monitoring
- Integrated EDFA, mux/demux and optical switch (optional)
- Facility protection using an integrated optical switch (optional)
- Remote management with in-band GCC, or out-of-band OSC
- Remote management and fiber monitoring with OSC OTDR SFP
- **Easy maintenance with field-replaceable parts:**
  - Dual hot pluggable power supply units AC/DC
  - Fan unit

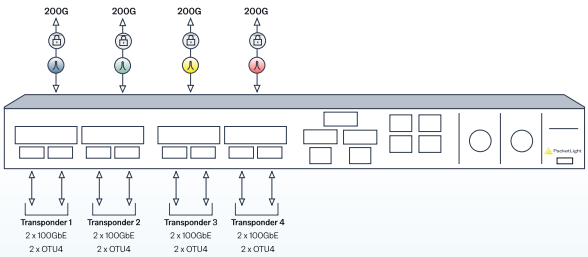
200G Metro and 100G Long Haul Applications

The PL-2000T is a modular and cost-effective solution for rolling out 100G services or increasing existing network capacity. The device has four 200G pluggable optical modules, delivering up to 800G, and enabling pay-as-you-grow architecture.

Main Benefits

- Integrated EDFA, mux/demux and optical switch
- High transport capacity of 800G with configurable modulation scheme
- Embedded Layer-1 optical encryption
- Managed service platform
- Modular and cost-effective for future growth and maintenance

PL-2000T Transponder Diagram



Flexible Pay-as-you-grow Architecture, with Redundancy

The solution provides full demarcation point between the service and the uplink DWDM side and is interoperable with any third party switch or router. This provides full visibility and performance monitoring of both line optical transport layer (OTN) and 100G LAN/OTU4 service interfaces.

Recommended applications

- Metro network applications ranging up to 1,000km
- High capacity DCI networks
- 200G links to bolster existing OTN/DWDM infrastructure
- Secured and encrypted communication for 100G protocols

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Technical Specifications

Product Configurations

Transponder: 4x200G metro or 4x100G long haul

Optical Amplifiers: Optional up to two EDFA modules

Mux/Demux: Optional 4ch mux/demux module

Optical Switch: Optional 1+1 facility protection

Uplink Characteristics

Optical Interface:
CFP2 coherent (DCO)

Tunability range:

- DWDM ITU-T G.694.1 grid
- C-band, with flex-grid support
- C-band, with 100GHz/50GHz spacing

FEC Support:

- Standard ITU-T G.709 GFEC
- SD-FEC
- oFEC

Tx Power:

- **200G 8/16QAM:** -0.5 to -10dBm, or -8dBm, ±2dB
- **100G DP-QPSK:** -0.5 to -5dBm, or 4dBm, ±2dB

Rx Sensitivity at High OSNR (>35dB):

- **200G 16QAM:** -22dBm or -23dBm
- **200G 8QAM:** -24dBm or -28dBm
- **100G DP-QPSK:** -29dBm or -31dBm

OSNR Sensitivity:

- **200G 16QAM:** 19.8dB @-18dBm or 20dB @-15dBm
- **200G 8QAM:** 18.1dB @-18dBm or 17.5dB @-16dBm
- **100G DP-QPSK:** 11.4dB @-18dBm or 12.9 @-20dBm

Chromatic Dispersion

- **200G 16QAM:** 16,000ps/nm or 25,000ps/nm
- **200G 8QAM:** 20,000ps/nm or 48,000ps/nm
- **100G DP-QPSK:** 40,000ps/nm or 77,000ps/nm

Client Characteristics

Service types:

- 100G LAN
- OTU4

Optical Interface:

- SM QSFP28 - LR4/ER4 (1310nm)
- MM QSFP28 - SR4 (850nm)

FEC Support:

- OTU4: Standard ITU-T G.709 GFEC or Zero FEC
- 100G LAN: BJ-FEC or no-FEC

Amplifier

Applications: Booster, pre-amp

Output Power:

- Booster: up to +20dBm
- Pre-amp: +5dBm

Input Power:

- Booster: -24 to +10dBm
- Pre-amp: -36 to -9dBm

Gain:

- Booster: 5 to 22dB
- Pre-amp: 13 to 22dB

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

Management Protocols:

SNMPv1/v2/v3, HTTP/HTTPS, CLI over RS-232 or CLI over Telnet/SSH, Syslog, RADIUS, TACACS+, SNTP, TFTP & FTP/SFTP, REST, NETCONF

NMS:

PacketLight LightWatchTM NMS/EMS, or third party NMS over SNMP

OAM:
Facility loopback (client and line interfaces), PRBS, event log, alarms

Performance Monitoring:

- Layer-1/2 PM for 100G LAN services
- OTN PM for uplink and OTU4 services
- Optical PM for optical ports

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

Software Upgrade:
Dual image, hitless swap

Power Supply

AC/DC: 100 to 240 VAC or -36 to -60 VDC, 50/60 Hz, 250W max

PSU Redundancy: Single/dual feeding, hot swappable

Cooling Unit: Hot swappable fan unit

Environmental

Operating Temperature:
-5ºC to 50ºC (+23ºF to +122ºF)

Humidity: 5% to 85% RH

Physical Dimensions

Size:

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

Weight: 8.5kg / 18.74lb (max)

Mounting: 19", ETSI, 21" and 23"

Encryption

Functionality:

- Full speed transparent Layer-1 encryption for OTU4 uplinks
- Supports QKD/PQC

Algorithms:

- Encryption/decryption: GCM-AES-256
- Key exchange: ECC CDH, Curve P-384
- Message digest: SHA-384

Authentication:
Role-based user/password authentication

Compliance:
CNSA Top Secret Suite B 2015

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

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