The PL-2000M is an advanced 200G Single Wavelength Muxponder/Transponder compact 1RU platform targeted for next generation DCI and Metro Applications

FEATURE OVERVIEW

• User configurable for both Muxponder and Transponder operation modes
• Supported clients:
  10G/40G/100G LAN, 8G/10G/16G/32G Fibre Channel, OC192/STM64 SONET/SDH, OTU2/OTU2e/OTU3/OTU4 OTN
• 200G Uplink aggregation examples:
  • Up to 20x 10G (multirate)
  • 2x 100G clients
  • 1x 100G + 10x 10G clients
  • 4x 40G + 4x 10G clients
• Standards based ITU-T G.709 (FEC) GFEC for short haul applications, or UFEC and SD-FEC for metro and long haul applications
• 200G pluggable CFP2 Coherent (ACO) tunable DWDM line interface
• Layer-1 GCM-AES-256 encryption, complies with FIPS 140-2 Level 2
• Diffie-Hellman (DH) Key Exchange
• Comprehensive Line and Service performance monitoring
• Optional integrated EDFA & Mux/DeMux
• Protection modes
  • Facility protection using integrated Optical Switch
  • Equipment protection
• 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
• Operates with both dual or single fiber

200G MULTIPROTOCOL MULTIRATE MUXPONDER / TRANSPONDER FOR DCI AND METRO OPTICAL TRANSPORT SOLUTIONS

PL-2000M is the PacketLight’s 200G multi-protocol multi-rate solution for building high capacity optical transport networks. Its flexible architecture enables the same device to be used in multiple applications and adapt to network growth and changes.

The PL-2000M product provides high transport capacity of 200G over a single wavelength in a modular and cost-effective way for rolling out services or uplifting existing network capacity. It fully meets the market demands for low power consumption, rack space savings and reduction in the overall solution CAPEX and OPEX by increasing the capacity of enterprise DCI (Data Center Interconnect) and metro networks.

The PL-2000M supports flexible mix of 10G/40G/100G client interfaces protocols and aggregating them into a 200G OTUC2’V2 uplink. The platform supports various operation modes of Muxponder and Transponder and mixing different protocols and rates over single uplink.

The PL-2000M 1U device supports up to two integrated optical amplifiers. It is the smallest, most integrated transport solution of its kind reaching up to 200Km/42dB without intermediate sites and 1,000Km with Inline sites.

The PL-2000M seamlessly integrates with PacketLight’s products to deliver-carrier, grade high-end 200G solutions capable of serving multiple applications and protocols for Enterprise/Data Center networks such as Data, Storage, Video, TDM, ATM.

The PL-2000M is ideal for Metro and DCI applications ranging up to 1,000km such as:

• High capacity enterprise and campus networks
• High bandwidth connectivity for Data Center Interconnect and cloud computing
• Last mile access/aggregation CPE for 10G/40G/100G managed services
• Providing 200G links over existing OTN/DWDM infrastructure
• Secured and encrypted communication for all protocols
TECHNICAL SPECIFICATIONS

Product Configurations

<table>
<thead>
<tr>
<th>Single 20x10G Muxponder</th>
<th>Up to 20 multi-service 10G clients aggregated to 1x 200G uplink</th>
</tr>
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<tbody>
<tr>
<td>40G and 16x10G Muxponder</td>
<td>40G LAN and up to 16 multi-service 10G clients aggregated to 1x 200G uplink</td>
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<tr>
<td>Dual 40G and 12x10G Muxponder</td>
<td>2x 40G LAN and up to 12 multi-service 10G clients aggregated to 1x 200G uplink</td>
</tr>
<tr>
<td>Dual 100G Transponder</td>
<td>2x 100GbE LAN mapped to 1x 200G uplink</td>
</tr>
<tr>
<td>100G Transponder and 10X10 Muxponder</td>
<td>100GbE LAN + 10x10G mapped to 1x 200G uplink</td>
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</table>

Optical Amplifiers
- Optional up to two EDFA modules

Optical Switch
- 1+1 Facility Protection

Uplink Characteristics

<table>
<thead>
<tr>
<th>Bit Rate</th>
<th>200G OTU2/C2 - 2x132.2680Gbps</th>
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<tbody>
<tr>
<td></td>
<td>100G OTU4V2 - 131.1026 Gbps</td>
</tr>
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</table>

Optical Interface
- CFP2 Coherent (ACO)
- DWDM ITU-T G.694.1 GRID Channels 13-60.5, with 50GHz spacing
- Standard ITU-T G.709 GFEC, Enhanced HD-FEC, or SD-FEC

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

Optical Reach & Sensitivity
- 200G: -21dBm Up to 100km 21dB OSNR
- 200G: -21dBm Up to 600km 18.5dB OSNR
- 100G: -21dBm Up to 4,000km 11dB OSNR

Optical Monitoring
- Tx and Rx Power, Dispersion, OSNR

Client Interfaces Characteristics

<table>
<thead>
<tr>
<th>Service type</th>
<th>10GbE LAN/WAN, 40GbE LAN, 100GbE, 8G/10G/16G/32G FC, STM-64/OC-192 OTU2, OTU2e, OTU3, OTU4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical Interface</td>
<td>SFP+: LR(1310nm), SR (850nm), ER (1550nm), ZR (1550nm) and C/DWDM QuP2: LR-4 (1310nm), SR-4 (850nm), QuP28: LR-4 (1310nm), SR-10 (850nm)</td>
</tr>
</tbody>
</table>

Amplifier

<table>
<thead>
<tr>
<th>Applications</th>
<th>Booster, Pre-Amp</th>
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</thead>
<tbody>
<tr>
<td>Output Power</td>
<td>Booster: +4 to +14 dBm Preamp: +5 dBm</td>
</tr>
<tr>
<td>Input Power</td>
<td>Booster: 0 to +10 dBm Preamp: -25 to -9 dBm</td>
</tr>
<tr>
<td>Gain</td>
<td>Booster: +4 to +14 dB Preamp: +18 dB</td>
</tr>
<tr>
<td>Operating Modes</td>
<td>AGC (Automatic Gain Control), APC (Automatic Power Control)</td>
</tr>
</tbody>
</table>

Network Management

<table>
<thead>
<tr>
<th>Management Ports</th>
<th>2x RJ-45 LAN port 10/100Mbbase-T 2x SFP MNG ports 100/1000Mbbase-X RJ-45 Serial port RJ-45 External Alarm port OTN GCC Inband channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocols</td>
<td>SNMP, HTTP, HTTPS, Telnet, SSH, Syslog, RADIUS, SNTP, TFTP and FTP</td>
</tr>
<tr>
<td>Management</td>
<td>Web browser over HTTP/HTTPS, LightWatch PacketLight NMS/EMS, or 3rd party NMS over SNMP, CLI over RS-232 or CLI over Telnet/SSH</td>
</tr>
<tr>
<td>OAM</td>
<td>Facility Loopback (Client and Line Interfaces), PRBS, Event Log, Alarms Automatic Laser Shut-Down (ALS)</td>
</tr>
<tr>
<td>Performance</td>
<td>Layer 1 PM for all Services Layer 2 PM for Ethernet OTN PM for Uplinks Optical Power RX levels for all optical ports</td>
</tr>
<tr>
<td>Monitoring</td>
<td>LED status indicators for: client and line ports, Management and LAN ports, amplifier/s, System Critical/Major/Minor and Power Supply</td>
</tr>
</tbody>
</table>

Software Upgrade
- Traffic Hitless – dual image

Power Supply
- AC/DC ~100 to ~240 VAC, -36 to -72 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
- Size 1.77” (1 RU) (H) x 17.32” (W) x 11.22” (D) 45 mm (H) x 440mm (W) x 285 mm (D)
- Weight 8.5Kg / 18.75 lb (Max)
- Mounting 19”, ETSI and 23”

Encryption
- Functionality Full speed transparent Layer 1 encryption for selected clients or for the OTU4 uplinks
- Compliancy FIPS 140-2 Level 2 NSA Suite B

Authentication
- Role based User/Password authentication

Approvals & Standards
- CE, FCC, RoHS, REACH ISO 9000, NEBS Compliant