

# AOLT-4200 Series

## 8-port GPON mini-OLT

### Feature Summary

- ◆ 19" standard rack mountable
- ◆ 8 GPON SFP Class B+/C+ ports, Two 10GE/1GE SFP+ ports and four 1GE SFP ports

### Field proven GPON Technology

- ◆ Complies with ITU-T G.984.1-5 and G.988
- ◆ 2.5Gbps downstream & 1.25Gbps upstream
- ◆ Upto 1:128 optical splitting ration per port
- ◆ DBA (Dynamic Bandwidth Allocation) and QoS based on 1,024 T-CONTs per Port
- ◆ 128 bit AES Encryption and FEC

### High performance Layer 2+ switching

- ◆ Complies with BBF TR-156 1:1, N:1,VBES (VLAN Business Ethernet Services) / TLS (Transparent LAN Services)
- ◆ Full throughput for all ports (non-blocking)
- ◆ High capacity packet switching (32K MAC table)
- ◆ IPv4 and IPv6 support
- ◆ Comprehensive VLAN and QoS support
- ◆ IGMP snooping/proxy for up to 1K multicast groups
- ◆ ARP & ARP Proxy

### Flexible SNI networking

- ◆ Upto 2 x 10GE/1GE (SFP+) 802.3ae/z ports
- ◆ 4 x 1GE (SFP)(10/100/1000Mbps) 802.3u/z ports
- ◆ IEEE 802.1ad Provider Bridging
- ◆ IEEE 802.3ad Static Link Aggregation
- ◆ G.8032/Y.1344 ERPS v1/v2 Ethernet Ring Protection Switching
- ◆ Flex Links

### Carrier class operation & management

- ◆ Auto-discoverable and manageable by Alphion's AEMS management system for remote configuration, provisioning, monitoring, fault sectionalization and localization, data storage etc.
- ◆ FTP/TFTP for remote Software Upgrade
- ◆ Supports SNMPv1/v2c/v3, Telnet/SSHv1/v2
- ◆ Manages ONTs via G.984.4,G.988 OMCI

### Security

- ◆ Layer 1 to 4 packet filtering (ACL)
- ◆ DHCP packet filtering and relaying
- ◆ Broadcast/multicast/DLF packet limit
- ◆ Port flooding guard for abnormal traffic
- ◆ Loop Detection on Uplinks

### Alarm and Auxiliary Contacts

- ◆ Remote alarm inputs

### Powering

- ◆ Single AC or Dual DC power inputs

AOLT4200 Dual DC input



AOLT4200 Single AC input



The AOLT-4200 series of GPON OLTs supports eight GPON OLT ports, two 10GE/1GE ports and four 1GE ports. They are 1RU high and mounted in standard 19" racks or wider racks using adapters. The compact design, low power consumption, 99.99 Percent High Availability, extended operating temperature range and alarm inputs facilitate remote deployment where rack space is limited and ambient environment is harsh.

### Applications

The AOLT-4200 serves many markets such as Telecom, cable TV, Large institution campus and apartment complex networks, providing premium triple-play broadband access data, voice and video services. The high port density and energy efficiency allow service providers to save on both the equipment cost and the operation cost. At up to 128 optical splits, each AOLT-4200 supports up to 1024 ONTs/ONUs. Multiple AOLT-4200 units can be networked together to serve much larger number of subscribers over shared uplinks.

### Standards

The AOLT-4200 design takes advantages of the latest switching technologies. The full compliance to BBF TR-156 facilitates the support of sophisticated network configurations. By complying with the FSAN/ITU-T GPON standards, the AOLT-4200 achieves interoperability with a wide range of GPON ONTs.

### Flexible Management

The AOLT-4200 is managed with either Alphion Element Management System (AEMS) that supports auto-discovery of OLTs and ONUs/ONTs and provides configuration, profile based provisioning, event and fault management and performance monitoring via its Multiple Privileged CLI or with a 3rd party NMS via its northbound interface

# SPECIFICATIONS

## GPON Interface

|               |   |
|---------------|---|
| Ports:        | 8 SFP ports, G.984.2 compliant  |
| Standard:     | Fully ITU-T G.984.1-5 and G.988 compliant   |
| Line rate:    | Downstream: 2.488 Gbps; Upstream: 1.244 Gbps  |
| Connector:    | SFP Plug-in module; SC/UPC on SFP   |
| Link Budget:  | 28 dB Class B+ or 32dB Class C+; ITU G.984.2 Amd1 depending on SFP installed; 1:128 split |
| Wavelength:   | Transmit: 1310+/-20nm; Receive: 1490+/-10nm   |
| Distance:     | up to 60 km (subject to optical budget)   |
| OLS/OTM:      | ITU-T G.984.2Amd2 incl. Rx and Tx power   |
| TC layer:     | AES (128-bit key) and FEC RS (255,239)  |
| DBA:          | DBRu mode 0 and mode 1 per G.983.4  |
| GEM port-IDs: | 4K per PON port, Multicast GEM  |
| T-CONT:       | 1-5, 1K per PON port, 8 queues per T-cont   |

## Ethernet Uplink Trunking Interfaces\*

|           |  |
|-----------|--|
| 10GE/1GE: | 2x SFP+ ports; 802.3ae / 802.3z        |
| 1GE:      | 4 x SFP ports; 802.3 / 802.3u / 802.3z |

## Management Interfaces

|              |  |
|--------------|--|
| Out-of-band: | 1xRJ45 / SFP* MGT-A to DCN             |
| In-Band:     | 1xRJ45 FE 802.3u MGT-B to LCT          |
| Telnet/SSH:  | 1xUSB 2.0 for CLI via HyperTerminal    |
| UPS:         | 1xUSB 2.0 for UPS monitoring & control |

## Switching

|                |  |
|----------------|--|
| VLAN support:  | BBF TR.156 compliant; 1:1, N:1, VBES/TLS;  |
| VLAN Models:   | VLAN per customer Model and VLAN per Service Model with VLAN Translation as required                                   |
| Capacity:      | 88 Gbps Ethernet switching   |
| Performance:   | Full throughput non-blocking for all ports; 32K MACs; 4K VLANs; 1K multicast groups, Packet Forwarding Rate of 65Mpps. |
| Spanning Tree: | STP (802.1d), RSTP (802.1w)  |
| VLAN Mapping:  | untagged, priority tagged, port based, 802.1q single tagged, 802.1ad (Q-in-Q) double tagged                            |
| Multicast:     | IGMPv2 (RFC2236), IGMPv3 (RFC3376) & MLDv2 (RFC3810) snooping & proxy; RFC2933 IGMP MIB                                |
| Forwarding:    | IPv4, IPv6, MAC-forced forwarding (RFC4562)  |
| Mirroring:     | SN1 and PON port mirroring   |
| OAM:           | Port Stats, PMs for Access & Network Ports, BER of 10 e -9   |

## Security

|               |  |
|---------------|--|
| DHCPv4/6:     | DHCP (RFC2131/3315) snooping, filtering, relay   |
| DHCP Options: | Option 82 (RFC3046)  |
| PPPoE:        | PPPoE intermediate agent   |
| Binding:      | Port, MAC  |
| Protection:   | Broadcast / Multicast / DLF packet limit, IP anti-spoofing, MAC spoofing prevention, IP Source guard, Uplink Loop Detection                  |
| PON:          | AES, Rogue ONU/ONT detection, isolation and mitigation, SN, Password, SN+Password Authentication, ONU Auto Registration & ONU Auto Discovery |
| ACLs:         | Layer 1-4 Packet Filtering (ACL), QoS Policing (IPv4 & IPv6). CLI Access Control   |

## Protection

|       |   |
|-------|---|
| SN1:  | 802.3ad Static Link Aggregation, G.8032 ERPSv1/v2, Flex Links |
| GPON: | G.984.1 Type B and C supported                                |

## Quality of Service

|                 |  |
|-----------------|--|
| Classification: | 8 priority queues per GEM port, 802.1p TCI, 802.1q CoS, per port IP ToS/DSCP to 802.1p mapping/re-marking, Upstream Policing |
| Congestion:     | Back pressure (802.3x Flow Control)  |
| Scheduling:     | SP, WRR, SrTcm and TrTcm, 64kbps granularity, Egress Traffic Shaping   |

## Management

|                 |  |
|-----------------|--|
| Local:          | CLI via USB with multiple Privileges, LCT via MGT-B  |
| Remote:         | AEMS, SNMP v1/v2c/3, Telnet, SSH   |
| ONT/ONUs:       | Managed over OMCI, VEIP and TR-069   |
| Authentication: | Radius, TACACS+ management access authentication   |
| Monitoring:     | RMON, Temperature, Humidity, Fan speed, CPU  |
| Alarms:         | Critical/ Major/Minor Severity; Alarm & Event logging, Local Alarm Storage, Syslog Logging |
| Time Sync:      | NTPv4 (RFC5905)  |

## Timing and Synchronization

|                   |  |
|-------------------|--|
| SyncE EEC:        | G.8261,G8262/Y.1362 EEC option 1, 2) **                                  |
| PTP:              | IEEE1588v2 per G.984.3Amd2 (2008) with support for 10MHz, 1pps and ToD** |
| Intl. Oscillator: | Stratum 3/3E TCXO/OCXO**   |

## Power

|            |                                  |
|------------|----------------------------------|
| AC option: | Single, 94VAC to 250VAC, 50/60Hz |
| DC option: | Dual, -36VDC to -72VDC           |
| Power:     | 70 to 80 Watts Nominal           |

## Physical

|                  |   |
|------------------|---|
| Operating Temp:  | 0°C to 65 °C  |
| Storage Temp:    | -40 °C to 70 °C   |
| Humidity (N.C.): | 5% to 95% RH  |
| Access:          | Front-access, no connectors on rear of unit                     |
| Rack:            | 19 inch ANSI/ETSI standard rack                                 |
| Dimensions:      | 430mm (W) x 300mm (D) x 44 mm (H)                               |
| Weight:          | <6kg fully equipped   |
| LED Indicators:  | Refer to User's guide   |
| Alarm Contacts:  | Isolated dry contacts   |
| Reset Button:    | Recessed push button on front                                   |
| Cooling:         | Forced Air Fan Cooling, Plug-in Module with washable air filter |
| Atmosphere:      | ASTM D4332-01 (2006) (Preferred)                                |
| Acoustic noise:  | ≤58.5dBA  |

## Regulatory Compliance

|                     |   |
|---------------------|---|
| Certification:      | CE (Conformité Européenne) compliant  |
| EMC Emissions:      | EN55022, CISPR-22 Class B   |
| EMC Immunity:       | Radiated RF: EN/IEC61000-4-3(2002) level 2<br>Conducted RF: EN/IEC61000-4-6(2001) level 2<br>EN61000-4-8 (2010)                     |
| MF Immunity:        | EN/IEC60950-1/UL60950, UL2043-ready   |
| Safety:             | CE, EN/IEC60950-1/UL60950, UL2043-ready   |
| Laser safety:       | IEC60825-1 Class 1 laser safety per G.664   |
| ESD:                | EN/IEC61000-4-2(2001) contact level 2, air discharge level 3  |
| Transient:          | EN/IEC61000-4-4(2001) level 2   |
| Surge:              | EN/IEC61000-4-5(2001) 0.5 KV (line), 1.5 KV (earth)   |
| Voltage Dips:       | EN61000-4-11(2004)  |
| Environment:        | EN300019-1-3, QM-333 B2 Category (-5 °C to 50 °C; 50% RH) and QM-333 D Category (-10 °C to 60°C; 50% RH) when in an Outdoor Cabinet |
| Altitude, Pressure: | GR-63-CORE, IEC 60068-2-13  |
| Drop Test:          | GR-63-CORE, IEC 60068-2-31, IEC 60068-2-32  |
| Mechanical:         | EN300119-4  |
| Energy:             | Broadband Equipment Code of Conduct (2008)  |
| Hazardous           | RoHS6, WEEE   |

\*\* Contact Alphion Sales

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