Alphion

Product Brief

AMUX-7116

16-port GPON OLT

Feature Summary

- 19" standard rack mountable
- 16 GPON SFP Class B+/C+/C++ ports, two 1GE SFP ports, two 1GE Electrical ports and four SFP+ 10GE 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 (64K MAC table)
- IPv4 and IPv6 support
- Comprehensive VLAN and QoS support
- IGMP snooping/proxy for up to 4K multicast groups

Flexible SNI networking

- 2 x 1GE (10/100/1000Mbps) and 2x1GE SFP 802.3u/z ports
- 4x10G SFP+ Ports
- IEEE 802.1ad Provider Bridging
- IEEE 802.3ad Static Link Aggregation
- G.8032 ERPS v1/v2
- Flex Links

Carrier class operation & management

- Auto-discoverable and manageable by Alphion's AEMS management system with FCAPS.
- 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
- DOS attacks prevention

Auxiliary Contacts

- USB - Configuration Backup and Log Retrieval

Powering

- Dual AC or Dual DC or AC+DC power inputs

The AMUX-7116 series of GPON OLTs support Sixteen GPON OLT ports, four 10GE Optical ports, two 1GE Optical ports and two 1GE electrical ports. They are 2RU high with complete Front Access and mounted in standard 19" racks or wider racks using adapters. These are with compact design, low power consumption and 99.99 Percent High Availability.

Applications

The AMUX-7116 serves many markets such as Telecom, cable TV, Large institution campus and apartment complex networks, smart cities 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 AMUX-7116 supports up to 2048 ONTs/ONUs. Multiple AMUX-7116 units can be networked together to serve much larger number of subscribers over shared uplinks.

Standards

The AMUX-7116 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 AMUX-7116 achieves interoperability with a wide range of GPON ONTs.

Flexible Management

The AMUX-7116 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 of TMF-814 CORBA & REST API. Supports local Management via a powerful WebGUI, remote monitoring (RMON MIB groups 1,2,3,9), real-time network utilization (transmit/receive statistics), Data Logging (RFC 3164 BSD syslog Protocol) and diagnostics support (ping, traceroute) for management interface.

THIS PRODUCT BRIEF IS SUBJECT TO CHANGE AND IS PROVIDED ON AN "AS-IS" BASIS.

SPECIFICATIONS

GPON Interface

Ports:	16 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+ or 33dB 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*

1GE:	2x SFP ports and 2 x Electrical ports; 802.3 / 802.3u / 802.3z
10GE:	4xSFP+ Ports (optional). Supports Bidirectional SFP+.

Management Interfaces

Out-of-band:	1xRJ45 MGMT
Telnet/SSH:	1xRJ45 Console
AUX:	USB - Configuration Backup and Log Retrieval

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:	200 Gbps Ethernet switching (Full-Duplex)
Performance:	Full throughput non-blocking for all ports;64K MACs; 4K VLANs; 4K multicast groups, Packet Forwarding Rate of 96Mpps.
Spanning Tree:	STP (802.1d), RSTP (802.1w)
VLAN Mapping:	untagged, priority tagged (802.1p), port based, 802.1q single tagged, 802.1ad (Q-in-Q) double tagged
Multicast:	IGMPv2 (RFC2236), IGMPv3 (RFC3376), (RFC3810) snooping &proxy; RFC2933 IGMP MIB
Forwarding:	IPv4, IPv6, MAC-forced forwarding (RFC4562)
Mirroring:	SNI 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:	ARP Broadcast / Multicast / DLF packet limit, IP/ARP anti-spoofing, MAC spoofing prevention, IP Source guard, Uplink Loop Detection, User -based MAC & ARP traffic examinations.
PON:	AES, Rogue ONT 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
Time range ACL;	Flow Classification and flow definition based enclosure/destination MAC address

Protection

SNI:	802.3ad Static Link Aggregation, G.8032 ERPSv1/v2, Flex Links
GPON:	G.984.1 Type B supported

Quality of Service

Classification:	8 priority queues per GEM port, 802.1p TCI, 802.1q CoS, per port IP ToS/DSCP (Diffserv based on source and destination) to 802.1p mapping/re-marking, Upstream Policing IP(IPV4/IPV6)address
Congestion:	Back pressure (802.3x Flow Control), Congestion avoidance mechanism, including Tail-drop and WRED
Scheduling:	SP, WRR, SrTcm and TrTcm, 64kbps granularity, Egress Traffic Shaping

Management

Local:	CLI via CONSOLE/RJ45 MGMT with multiple Privileges, HTTP (Web GUI)
Remote:	AEMS, SNMP v1/v2c/v3, Telnet, SSHv2
ONT/ONUs:	Managed over OMCI, VEIP
Authentication:	Radius, TACACS+ management access authentication, Hierarchical management and password protection of users
Monitoring:	RMON (3577), Temperature(FAN Mgmt), CPU
Alarms:	Critical/ Major/Minor Severity; Alarm &Event logging, Local Alarm Storage, Syslog Logging
Time Sync:	SNTPv4/v6 (RFC4330)

Power

AC option:	90VAC to 240VAC, 50/60Hz
DC option:	-36VDC to -72VDC
Power:	100 Watts Max

Physical

Operating Temp:	-10°C to 60 °C
Storage Temp:	-40 °C to 85 °C
Humidity (N.C.):	5% to 95% RH
Rack:	19 inch ANSI/ETSI standard rack
Dimensions:	440mm (W) x 220mm (D) x 88 mm (H)
Weight:	5kg approx. fully equipped
LED Indicators:	Refer to User's guide
Reset Button:	Recessed push button on front
Cooling:	Forced Air Fan Cooling,
Acoustic noise:	≤58.5dBA

Regulatory Compliance

Certification:	CE (Conformité Européenne) compliant, MTCTE Approved.
EMC Emissions:	CISPR-32:2015 Class B
EMC Immunity:	Radiated RF: EN/IEC61000-4-3: 2006 + A1: 2007 + A2: 2010 level 2
Conducted RF:	EN/IEC61000-4-6: 2013 level 2
Safety:	CE, EN/IEC60950-1/UL60950, UL2043-ready
Laser safety:	IEC60825-1 Class 1 laser safety per G.664
ESD:	EN/IEC61000-4-2: 2008 contact level 2, air discharge level 3
Transient:	EN/IEC61000-4-4: 2012 level 2
Surge:	EN/IEC61000-4-5:2014+A1: 2017 1 KV (line), 2 KV (Earth), 2 KV (Signal)
Voltage Dips:	AC - EN61000-4-11: 2004, DC - EN61000-4-29
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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