Alphion

Product Brief

# ASEE-1447

## Subscriber End Equipment (4GE+2POTS*+USB+802.11b/g/n/ac Wi-Fi)

### Feature Summary

- ITU-T G.984 and G.988 compliant, BBF.247 ready
- BBF TR.156 VLAN Model compliant
- Easy Indoor wall or table mount
- Four 10/100/1000Base-T Ethernet RJ-45 ports
- Two FXS POTS ATA RJ-11 ports*
- USB 2.0 Host port
- Wi-Fi Access Point (AP) 802.11b/g/n/ac 2Tx2R MIMO with FEM, 2.4GHz/5GHz Wi-Fi interfaces, supporting manual and automatic channel selection
- Configurable for either Ethernet Bridged mode or Gateway Routed mode operation
- Built-in L2 wire-speed switch with dynamic bridging, 4k VLANs (Untagged, Priority tagged, Port based, 802.1q single tagged, 802.1ad (Q-in-Q) double tagged)
- ToS/DSCP to 802.1p mapping
- Flexible traffic mapping, policing & shaping
- VoIP features*: SIP, multiple voice codecs, T.30 and T.38 Fax, various CLASS services
- Supports feature rich VoIP application profiles for Caller ID, Call progress, Call Waiting, Call Direct, and Call presentation
- Integrated router with features such as IPv4, IPv6, IPoE, PPPoE, NAT, DHCP, DNS, IP Filtering, IP forwarding, Static IP routing, IP QoS and Firewall
- Supports dual software image - working image & alternative image for image rollback
- Serial number or ID and password based activation and authentication
- IGMPv2/v3 (IPv4) and MLDv2 (IPv6) snooping, proxy and filtering, 256 multicast groups
- Web based GUI for local provisioning and software upgrade
- Dual managed by ITU-T G.988 OMCI and/or remote management functions as TR-069 and Telnet for provisioning, diagnostics, monitoring, and software upgrade
- ON/OFF and factory default RESET pushbuttons

### Applications

The Alphion Subscriber End Equipment Model ASEE-1447 has been optimized to provide triple play service to the Subscriber.

### Advanced High Bandwidth technology

The ASEE-1447 is fully FSAN (ITU-T G.984) and IEEE 802.3ah compliant 2.488 Gbps downstream and 1.244 Gbps upstream GPON systems.

### Quality of Service

The ASEE-1447 supports extensive QoS features, including 802.3x - flow control, DSCP to 802.1p mapping, upstream congestion control, and downstream traffic scheduling for premium or time sensitive content. Intelligent and robust buffer and queue management for Ethernet traffic, with individual prioritized queues, ensures that tiered service offerings based on different bit-rates and QoS can be readily supported.

### Gateway

The ASEE-1447 contains both wire-speed L2 switch and L3 routing gateway with port forwarding, NAT and NAPT address translation, built-in PPPoE support for HSI, and an integrated stateful packet inspection (SPI) firewall with a configurable access control list (ACL) and application-level gateway (ALG). Support for VPN pass through is also provided. Included as part of the gateway function are DHCP client, DHCP server and DNS server for IPv4 and IPv6.

### Security

The ASEE-1447 comes with the latest security features, including MAC address spoofing protection, MAC/IP address port binding, per-port access control list (ACL) based on port, MAC address and Ether-type, DoS prevention and wireless encryption protocols such as WEP and the more secure WPA/WPA2.

### Flexible Management

The ASEE-1447 is managed from the AOLT GPON / EPON OLT family via OMCI channel and if required via TR-069. The AOLT in turn is managed with either Alphion's AEMS (Element Management System) that provides configuration, profile based provisioning, event and fault management and performance monitoring for the device, or with a 3rd party NMS via North Bound Interface. ASEE-1447 can also be managed locally via WebUI, including software upgrades.

# SPECIFICATIONS

## GPON/EPON Uplink interface

| | |
|---|---|
| Standard: | Fully ITU-T G.984 and G.988 compliant |
| Line rate: | Downstream: 2.488 Gbps; Upstream: 1.244 Gbps |
| Connector: | SC/APC, single-mode-fiber; |
| Link Budget: | 28 dB (Class B+) ITU G.984.2 Amd1 |
| Wavelength: | Transmit: 1310+/-20nm; Receive: 1490+/-10nm |
| Tx Output power: | +0.5 to +5.0 dBm mean launch power |
| Rx Sensitivity: | -28 dBm (at 10 dB extinction ratio w/FEC off) |
| Rx Overload: | -8 dBm |
| Distance: | up to 60 km (depending on split ratio & fiber loss) |
| OLS/OTM: | G.984.2Amd2 incl. RX & TX power, dying gasp |
| TC layer: | Data Encryption using AES (128-bit key), US and DS FEC RS(255,239), Downstream group broadcast |
| DBA : | DBRu mode 0 and mode 1SR |
| GEM port-IDs: | up to 256, Flexible mapping between T-CONT & GEM port, Multicast GEM |
| T-CONT: | Type 1-5, up to 32, 8 queues per T-CONT |

## Ethernet interfaces

| | |
|---|---|
| Type: | Four GE ports; RJ-45 connectors |
| Standard: | IEEE 802.3, 802.3u, 802.3ab, IEEE 802.3az, 802.3x |
| Link | 10/100/1000Base-T with rate and full/half-duplex auto-negotiation and MDI/MDIX auto-sensing |
| MTU size: | 2,000 Byte maximum per IEEE802.3as |

## Voice/Fax interfaces*

| | |
|---|---|
| Type: | Two POTS FXS ports |
| Connector: | RJ-11 connectors; Labeled 'FXS1' and 'FXS2' |
| FXS: | 5 REN per port, loop start, balanced and unbalanced ringing, configurable tones, country specific impedance, DTMF dialing, CLIP, Hook flash detection, Metallic Loop Testing (MLT), etc. |

## Wi-Fi WLAN interface

| | |
|---|---|
| Standard: | 802.11b/g/n/ac, dual band, 2.4/5 GHz |
| Transceiver: | 2Tx2R (4 Integrated external antennas) MIMO (with external FEM device)*, supporting two spatial streams multiplexing upto 866 Mbps physical Data rates on 5Ghz |
| SSID: | Up to 5 on each Band, broadcast or hidden, SSID user isolation |
| Security: | 64/128-bit WEP, WPA, WPA-PSK, WPA2, WPA3, WPS Pushbutton, Radius (802.1x) user authentication |
| Filtering: | MAC address per SSID |
| WPS: | Wi-Fi Protected Setup button on rear |

## USB Interface

| | |
|---|---|
| Type: | USB 2.0 host port |
| Connector: | Type A receptacle; Labeled 'USB' |

## Power

| | |
|---|---|
| AC Adapter: | Input: 100-240VAC, 50/60Hz Output: 12VDC, 1.5A (BIS Certified) |
| DC Connector: | 2-pin Barrel connector |
| Consumption: | ~13.5 watts (Max.), 11.6W (typical) |

## Physical

| | |
|---|---|
| Temperature: | Operating: 0 °C to 50 °C, |
| Humidity (RH): | 5% to 95% non-condensing |
| Mounting | Desktop mounting & wall mounting |
| LED Indicators: | POWER, PON, LOS, WAN, LAN1, LAN2, LAN3, LAN4, FXS1*, FXS2*, USB, 5G, 2.4G, WPS |
| Dimensions: | 190mm x 175mm x 36.5mm (HxWxD) |
| Switches: | ON/OFF Pushbutton, Recessed RESET Pushbutton |

## L2 Ethernet features

| | |
|---|---|
| Bridging: | Transparent bridging, MAC aging timer, UNI port MAC limit, MAC Filters |
| US Rate Limiting: | Broadcast/multicast, unknown multicast and DLF |
| VLAN model: | TR-156 1:1 & N:1, Transparent LAN Service (TLS) |
| VLANs: | 4,095 VLANs (2-4094), Untagged, Priority tagged, Port based, 802.1q single tagged, 802.1ad (Q-in-Q) double tagged, VLAN ID translation |
| VLANs per port: | up to 32 configurable VLAN IDs per SEE/port, VLAN Separation for traffic |
| Multicast: | IGMPv2/v3 & MLDv2 snooping, 256 multicast groups, 8 clients, 32 simultaneous flows/client |
| QoS Classification: | US: 802.1p TCI, 802.1q CoS, per port IP ToS/DSCP to 802.1p mapping/re-marking; DS: per GEM port |
| QoS Scheduling: | SP, WRR, SP+WRR, 8 queues per T-CONT |
| Rate Limiting | UNI and Service level rate-limiting |
| Congestion: | PAUSE frame, tail-drop, rate-limiting per port |
| OAM: | ONU loopback, Stats, PMs |

## Gateway features for IPv4 and IPv6

| | |
|---|---|
| WAN side: | PPPoE client, IPoE with DHCP client or static IP, NAT/NAPT, port forwarding, port triggering |
| LAN side: | DHCP server and relay agent, DNS relay |
| Routing: | RIP v1/v2 and static IP routing |
| IPv6 Mode: | Dual stack |

## Firewall

| | |
|---|---|
| Type: | Stateful packet inspection (SPI) pass/block |
| Filtering: | DoS attack prevention, IP source/destination, TCP/UDP port source/destination, MAC source |
| ALGs: | FTP, SIP, H.323, RSTP |
| VPN: | pass-through |
| Access control: | Parental Controls |

## VoIP*

| | |
|---|---|
| Protocols*: | SIP (RFC3261), SDP (RFC2327), RTP/RTCP (RFC3550, RFC3605), RFC3611*, RFC2198*, DTMF & Tones (RFC2833) |
| CLASS features*: | Caller ID, call transfer, call forwarding, call hold, call park and pickup, call waiting, MWI, 3-way conference, etc. |
| Codec*: | ITU-T G.711 (μ & a-law), G.722, G.723.1, G.729a/b, echo cancellation, jitter buffer, voice activity detection (VAD), silence suppression, comfort noise generation (CNG), voice modem bypass |
| Fax*: | ITU-T T.30, T.38 FoIP, Fax Relay, Fax by-pass |
| IP address*: | DHCP client or static IP configuration |
| Interop (IOP)*: | Proven with major soft switch, gateways, IP-PBXs |

## Secure Management

| | |
|---|---|
| Local: | Web based GUI (HTTPS) |
| Remote: | G.984.4/988 OMCI, G.984 PLOAM, Telnet, TR-069 (ACS), software upgrade |
| Authorization: | Secure registration - serial number, PLOAM password |

## Regulatory Compliances

| | |
|---|---|
| Certification | CE (Conformité Européenne) compliant, FCC/UL compliant, TEC (MTCTE) Certified |

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**Optional feature Contact Sales for availability*

196 Princeton Hightstown Road,
Building 1A, Princeton Junction,
New Jersey 08550 USA

P: +1.609.936.9001
sales@alphion.com
www.alphion.com