



## 5609XS-R

### XGS-PON/10G Active Ethernet FiberLAN Rackmount ONT

Next generation FiberLAN MDU ONT optimized for rackmount and wall-mount installations using Zhone leading-edge XGS-PON/10G Active Ethernet technology.

#### Features & Benefits

- + Supports 10Gbps/10Gbps (Downstream/Upstream) with pluggable SFP+ for XGS-PON or 10G Active Ethernet WAN interface
- + Eight gigabit multi-rate 10/100/1000M Ethernet interfaces
- + 802.3af, at, and bt PoE++ compliant
- + Up to 240W of PoE power per ONT
- + Enterprise LAN features (802.1x, LLDP)

The Zhone 5609XS-R series XGS-PON/10G AE ONTs is the next generation of ONTs designed for Enterprise and Hospitality deployments requiring hardened rackmount or wall-mount installations. The ONT provides customers with 8 x 1GigE LAN ports, all with PoE++ capability, allowing for convenient connections to IP phones, PTZ cameras, wireless access points, and remote switches. Configurable per-port PoE limits help direct power where it is needed. The 5609XS-R LAN ports can be separated into different services allowing the configuration of dedicated ports for IP video and data for one or more business work groups or departments. Unique VLANs may be configured per user to ensure full isolation of each department's data traffic.



The Zhone 5609XS-R includes one SFP+ cage supporting XGS-PON or 10G Active Ethernet, eight 10/100/1000Base-T ports, all with PoE++ capability allowing for powered connections to IP devices. Configurable per-port PoE limits up to 60W on any port and 240W per system. The 5609XS-R is powered by a nominal 48-56VDC source from a centralized power distribution system that may also provide battery backup. Rack-mount flanges allow ONTs to be installed in different configurations including optional 19" rack-mount units.

## Service Scenario

The FiberLAN XGS-PON network consists of an Optical Line Termination (OLT) located in a central location, and a set of Enterprise grade Optical Network Terminals (ONTs). All Ethernet LAN ports can be separated into different services allowing the configuration of dedicated ports for IP video and data for one or more business work groups or departments. Unique VLANs may be configured per user to ensure full isolation of each department's data traffic.

With LLDP-MED support for voice VLAN advertisement, 802.1x authentication, and Zhone's Dynamic VLAN Mapping capability for handling complex sets of packet classification rules, operators can expertly manage traffic on each ONT LAN port to provide optimum customer experiences.

## Key Service Attributes

- + MSA-compliant SFP+ cage for PON or 10G AE modules
- + Variable rackmount and wall-mount installations
- + Eight 1GBase-T Ethernet ports, RJ45 supporting
- + 1Gbps symmetrical services
- + All ports 802.3af, at, and bt PoE++ compliant
- + Support of Radius 802.1x, LLDP
- + IPTV multicast, IGMPv2 and IGMPv3 services
- + Any-port, Any-service data model
- + Traffic management including Q-in-Q tagging, 802.1Q VLANs, multiple subscriber VLANs, per-port rate limiting
- + 802.1p priority bits, DiffServ and priority queues based on service types.
- + OMCI and TR-069/TR-98 management
- + Zhone Universal Service Provisioning (USP), ONT SNMP Client
- + Local Web UI, Zhone CPE Manager feature set
- + +48 VDC power source, option for remote powering and battery backup

## 5609XS-R FiberLAN Rackmount XGS-PON ONT Product Specifications

### Hardware

- Dimensions
  - Width: 10.0" (254mm)
  - Depth: 4.53" (115mm)
  - Height: 1.22" (31mm)
- Weight: 2.43 LB (1.1 kg)
- 256MB Flash Memory
- 512MB SDRAM (DDR3)
- XGS-PON/10G Active Ethernet WAN Interface
- Capacity: 10Gbps Down/10Gbps Up

### Interfaces

- WAN: 1x SFP+ cage, XGS-PON/10G Active Ethernet
- LAN: 8x ports 10/100/1000MBase-T Ethernet (RJ45)
- Power: 7-pin Molex connector
- LED Indicators
- Recessed RESET button

### XGS-PON/10GS

- 1 x10 MSA-compliant SFP+ cage for PON or AE modules (optical transceiver not included)
- XGSPON requires: ITU-T G.9807.1 compliant module. 10Gbps 1270nm burst-mode transmitter and 1577nm continues-mode receiver.
- 10G AE requires: IEEE 802.3ae 10GBaseLR/LW compliant module. 10Gbps 1310 DBF laser transmitter and PIN/TIA receiver.

### Ethernet LAN ports

- Auto-MDI-X crossover control
- Auto-Speed or manual selection
- IEEE 802.3af, at, and bt PoE support on all ports
- Max 61.6W PoE load on any port up to 123.2W total
- IEEE 802.3ab 1000Base-T
- IEEE 802.3u 100Base-T
- IEEE 802.3az EEE
- IEEE 802.1x Authentication

### Quality of Service

- HW-based internal IEEE 802.1p (CoS)
- Strict Priority (SP)
- 802.1Q(VLAN tag) QoS mapping ToS/CoS
- 8 queues per port
- Classified traffic can be tagged with VLAN ID and Ethernet Priority bit, and assigned to priority queues
- Classify packets into different IEEE 802.1p priority queues according to DSCP values (RFC 2475)
- The range of traffic shaping or ratelimit shall be between 64 kbps to the maximum port rate with 64kbps granularity. The accuracy error shall be less than  $\pm 10\%$ .
- DSCP IP CoS (RFC 2475)

# 5609XS-R FiberLAN Rackmount XGS-PON ONT

## Product Specifications

### Software Features

- IEEE802.1D and IEEE802.1Q
- Address learning with auto aging- L2/BPDU Filter
- Support 2048 MAC learning addresses
- Multiple T-CONTs/GEM ports per device
- Flexible mapping between GEM port and T-CONT
- Priority queues and scheduling on upstream
- Activation with automatic discovered serial Number and password

### IP Routing and Firewall

- DHCP, Static-IP and PPPoE
- NAT/NAPT
- DNS Proxy
- DHCP Server
- UPnP, Plug and Play

### IPv6

- IPv4 and IPv6 Dual-Stack-Lite
- Bridged Mode (transparent pass thru of IPv6 frames)
- IPv6 support of BRouted and PPPoE Bridged VLANs
- DHCPv6 client and server
- Router Advertisement on LAN-side interfaces
- SLAAC for automatic acquisition of WAN-side IPv6 addresses and GW
- CLI, HTTP and TR-069 management via IPv6

### Environmental

- Operating Temperature: 5~140°F (-15 ~ +60°C)
- Storage temperature: -40~121°F (-40 ~ +85°C)
- Operating humidity: 5% to 95% (non-condensing)
- Altitude: -200 to 10,000 feet (-61 to 3,048 m)

### Powering

- DC power: 44-56VDC
- Input power: 250W max (6W ONT typ, 244W PoE)

### Management

- ITU-T 984.1/G988 compliant OMCI interface
- CPE Manager Web UI
- CLI over telnet
- SNMP Client
- TR-069, TR-104, TR-98
- Zhone Universal Service Provisioning
- LED indications for status

### Compliance

- FCC Part 15 Class B
- ICES-003 Class B
- EN55022, EN55024
- IEC 62368-1
- FDA IEC 60825-1
- RoHS 2015/863/EU

## Ordering Information

Model	Description
<b>5609XS-R</b>	1x SFP+ cage, XGS-PON/10G Active Ethernet 8x 1G RJ45 ports, 802.3af, at, and bt PoE++ compliant 1x 7-pin Molex, 48VDC power input OT: -15°C to +60°C
<b>HX-5609XS-R-00</b>	No power supply
<b>HX-26XX_56XX-19-MOUNT</b>	19" Rack-Mount Kit for 26xx-R and 56xx-R FiberLAN ONTs



## Interface Unit and Connector Specifications

The following different optical modules are available and can be inserted into the dedicated modules:

Active Ethernet/1.25 Gbps Down/1.25 Gbps Up	
Vendor	Part Number/Description
Axcen Photonics	AXGD-1354-0W33 (Tx1310/Rx1310 - 10 km)
Axcen Photonics	AXGD-1254-0583 (Tx1310/Rx1490 - 20 km)
Axcen Photonics	AXGD-3454-0583 (Tx1490/Rx1310 - 20 km)
Axcen Photonics	AXGD-1654-0533 (Tx1310/Rx1550 - 10 km)
Axcen Photonics	AXGD-1654-0583 (Tx1310/Rx1550 - 20 km)
Axcen Photonics	AXGD-3654-0593 (Tx1310/Rx1550 - 40 km)
Axcen Photonics	AXGD-3754-0533 (Tx1550/Rx1310 - 10 km)
Axcen Photonics	AXGD-3754-0583 (Tx1550/Rx1310 - 20 km)
Axcen Photonics	AXGD-3754-0593 (Tx1550/Rx1310 - 40 km)
ECM	BPL-G3523-ID (Tx1310/Rx1550 - 20 km)
ECM	BPL-G3543-ID (Tx1310/Rx1550 - 40 km)
ECM	BPL-G5323-ID (Tx1550/Rx1310 - 20 km)
ECM	BPL-G5343-ID (Tx1550/Rx1310 - 40 km)
ECM	BPL-G5363-ID (Tx1550/Rx1310 - 60 km)
FORMERICA OE	BIDI13492160006 (Tx1310/Rx1490 - 10 km)
FORMERICA OE	TBC-S2CA1-F11 (Tx1310/Rx1490 - 10 km)
FORMERICA OE	BIDI49132160006 (Tx1490/Rx1310 - 10 km)
FORMERICA OE	TBC-S2CD1-F11 (Tx1490/Rx1310 - 10 km)
FORMERICA OE	TBD-S2CB1-K11 (Tx1310/Rx1550 - 40 km)
FORMERICA OE	BIDI15132193006 (Tx1550/Rx1310 - 40 km)
FORMERICA OE	TBD-S2CK1-K11 (Tx1550/Rx1310 - 40 km)
Hisense or Ligent	LTD1302-BH (Tx1310/Rx1310 - 10 km)
OptoMedia	PB4-S4-4603L-I (Tx1550/Rx1310 - 60 km)
PROLABS	SFPGEBX401490 (Tx1490/Rx1550 - 40 km)
PROLABS	SFP-GEBX40-55 (Tx1550/Rx1490 - 40 km)
Titan or TIOPTICS	LS38-C3S-TI-N-D9 (Tx1310/Rx1490 - 10 km)
Titan or TIOPTICS	APSB34123IDL20 (Tx1310/Rx1490 - 20 km)
Titan or TIOPTICS	LS48-C3L-TI-N-B4 (Tx1490/Rx1310 - 10 km)
Titan or TIOPTICS	LS48-C3S-TI-N-D4 (Tx1490/Rx1310 - 10 km)
Titan or TIOPTICS	APSB43123IDL20 (Tx1490/Rx1310 - 20 km)
Titan or TIOPTICS	LS38-C3S-TI-N-D3 (Tx1310/Rx1550 - 10 km)

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## Active Ethernet/1.25 Gbps Down/1.25 Gbps Up

Vendor	Part Number/Description
Titan or TIOPTICS	APSB35123IDL20 (Tx1310/Rx1550 - 20 km)
Titan or TIOPTICS	LS38-C3L-TI-N-D3 (Tx1310/Rx1550 - 40 km)
Titan or TIOPTICS	LS38-C3U-TI-N-D3 (Tx1310/Rx1550 - 60 km)
Titan or TIOPTICS	LS48-C3S-TI-N-D5 (Tx1550/Rx1310 - 10 km)
Titan or TIOPTICS	LS48-C3M-TI-N-D5 (Tx1550/Rx1310 - 20 km)
Titan or TIOPTICS	LS48-C3U-TI-N-D5 (Tx1550/Rx1310 - 60 km)

## Active Ethernet/10 Gbps Down/10 Gbps Up

Hisense	LTF2302-BC+ (Tx1270/Rx1330 - 20 km)
Hisense	LTF3202-BC+ (Tx1330/Rx1270 - 20 km)
Hisense	LTF2302-BH+ (Tx1270/Rx1330 - 20 km)
Hisense	LTF3202-BH+ (Tx1330/Rx1270 - 20 km)
Ligent Photonics	LTF2304-BH (Tx1270/Rx1330 - 40 km)
Ligent Photonics	LTF3204-BH (Tx1330/Rx1270 - 40 km)
Ligent Photonics	LTF8502-BH (Tx850/Rx850 - 300 M)

## XG-PON1/10 Gbps Down/2.5 Gbps Up

Hisense	LTF7221-BH+ (Tx1270/Rx1577 - 20 km)
SUNSTAR	D2276R-STHA (Tx1270/Rx1577 - 20 km)
T&W	TW91A6H-CGAL-G95 (Tx1270/Rx1577 - 20 km)
WTD	RTXM166-602 (Tx1270/Rx1577 - 20 km)

## XGS-PON/10 Gbps Down/10 Gbps Up

EZconn Corp.	ETP69966-7SB4-DZ (Tx1270/Rx1577 - 20 km)
EZconn Corp.	ETP69966-7TB4-DZ (Tx1270/Rx1577 - 20 km)
Hisense	LTF7225-BC+ (Tx1270/Rx1577 - 20 km)
Hisense	LTF7225-BH+ (Tx1270/Rx1577 - 20 km)
Hisense	LTF7225-BCA+ (Tx1270/Rx1577 - 20 km)
Hisense	LTF7225-BHA+ (Tx1270/Rx1577 - 20 km)
SUNSTAR	D22799-STHC (Tx1270/Rx1577 - 20 km)
T&W	TW91A9H-HCAL-UPC (Tx1270/Rx1577 - 20 km)
WTD	RTXM166-702 (Tx1270/Rx1577 - 20 km)



Zhone Technologies, Inc