XPONSHOP OEM 1-Port Bridged GPON ONU - Official Technical Overview & Hardware Datasheet

PRODUCT OVERVIEW

The XPONSHOP OEM 1-Port Bridged GPON ONU represents a paradigm shift in fiber access network design, delivering a purpose-built, carrier-grade bridging solution for next-generation Fiber-to-the-Home (FTTH) and Fiber-to-the-Business (FTTB) deployments. This compact, high-performance Optical Network Unit (ONU) is engineered specifically for service providers and system integrators requiring a robust, cost-effective, and low-latency bridge between the GPON fiber infrastructure and a single customer-premises Ethernet device. Unlike complex routing ONUs, this 1-port bridged variant acts as a transparent layer-2 bridge, ensuring seamless integration with existing networks, preserving public IP addressing schemes, and eliminating the complications of NAT and routing overhead.



HARDWARE ARCHITECTURE & SILICON

At the heart of the XPONSHOP OEM 1-Port Bridged GPON ONU lies a state-of-the-art, power-optimized GPON Media Access Control (MAC) chipset, purpose-built for bridging applications. The architecture comprises a highly integrated System-on-Chip (SoC) featuring an advanced Packet Processing Engine (PPE) capable of wire-speed forwarding. The device leverages a single-mode SC/APC optical transceiver for the upstream PON interface, providing a robust physical layer connection. The architecture utilizes a store-and-forward switching mechanism, ensuring deterministic latency and error-free packet propagation. The non-blocking internal fabric guarantees that the 1 Gbps PON uplink and the 10/100/1000Base-T Ethernet port can operate at full line-rate simultaneously, preventing any data bottleneck and ensuring peak performance for high-bandwidth applications.

KEY FEATURES & ROUTING LOGIC

- Feature 1: Layer-2 Transparent Bridging: Operates as an IEEE 802.1D compliant bridge, offering a transparent, high-speed data pipe. The device forwards all frames based on MAC address learning, with no IP routing functionality, preserving the end-user's public IP connectivity from the OLT directly to the CPE, eliminating double-NAT issues.
- Feature 2: 1-Port 10/100/1000Base-T Ethernet Interface: Provides a single, auto-negotiating Gigabit Ethernet port, designed for seamless connection to a single high-performance router, enterprise firewall, or a dedicated server. The interface supports MDI/MDIX auto-crossover, simplifying physical installation.
- Feature 3: ITU-T G.984 GPON Compliance: Fully compliant with the ITU-T G.984 series of GPON standards, ensuring flawless interoperability with major OLT vendors. This guarantees a stable, high-bandwidth upstream and downstream link with support for advanced forward error correction (FEC) and dynamic bandwidth allocation (DBA).
- Feature 4: Advanced QoS & Traffic Management: Offers hardware-based priority queuing for enhanced Quality of Service (QoS), adhering to IEEE 802.1p Class of Service (CoS) classification. This ensures latency-sensitive traffic like VoIP and video conferencing receive preferential treatment over best-effort data.

Parameter	Specification
Form Factor	Compact Desktop / Wall-Mountable (OEM Enclosure)
GPON Uplink Port	1 x SC/APC Single-Mode Fiber (ITU-T G.984 Compliant)
Client Port	1 x 10/100/1000Base-T (RJ45) with Auto-Negotiation & MDI/MDIX
Switching Capacity	2 Gbps (Non-Blocking, Full-Duplex)
Forwarding Rate	1.488 Mpps (Line-Rate at 64-Byte Packets)
Packet Buffer Memory	128 KB Integrated RAM
MAC Address Table	Up to 256 Entries
Power Supply	External DC 12V / 0.5A (AC Adapter Included)
Power Consumption	< 2.5 W (Typical)
Operating Temperature	0°C to 50°C (32°F to 122°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity (Operating)	10% to 90% (Non-Condensing)
Dimensions (W x D x H)	130 x 95 x 30 mm
Weight	~0.2 kg (Unit only)
Mean Time Between Failures	> 150,000 Hours (at 25°C)

COMPLIANCE & STANDARDS

The XPONSHOP OEM 1-Port Bridged GPON ONU is designed and validated to meet the most stringent international standards for telecommunications equipment, ensuring reliability and global market acceptance. It is a fully certified solution for integration into carrier-grade networks.

- Regulatory Compliance: Fully compliant with CE (European Conformity) and FCC (Federal Communications Commission) standards for electromagnetic compatibility (EMC) and safety.

- GPON Standards: Strict adherence to ITU-T G.984.1, G.984.2, G.984.3, and G.984.4. This includes support for G.984.4 OMCI (ONU Management and Control Interface) for remote management, configuration, and software download from the OLT.

- Ethernet Standards: IEEE 802.3-2005, IEEE 802.3u, and IEEE 802.3ab for full compliance with 10/100/1000Base-T Ethernet specifications.

- Management & Security: Supports AES-128 encryption for secure downstream traffic and advanced Layer-2 security features, including MAC address filtering to prevent unauthorized devices.

- Environmental Standard: RoHS (Restriction of Hazardous Substances) compliant, demonstrating our commitment to environmentally responsible

manufacturing.

TECHNICAL SPECIFICATIONS

The XPONSHOP OEM 1-Port Bridged GPON ONU is engineered to deliver superior performance in a compact and environmentally friendly form factor. The following table details the rigorous parameters and metrics that define its operational excellence.

[TABLE_1] - (see below for detailed specifications table)



ORDERING SKU INFORMATION

This device is available through our global partner network and direct OEM

channels. The ordering details are as follows:

- Product Code: XPS-ONU-1B-GPON
- Description: 1-Port Bridged Gigabit GPON ONU (OEM)
- Package Contents: 1 x XPONSHOP ONU, 1 x External Power Adapter, 1 x Quick Start Guide.

LIFECYCLE ASSURANCE & SUPPORT

XPONSHOP ensures a minimum product lifecycle of 5 years from the date of product introduction, providing our OEM partners with a stable and reliable product platform. We provide a comprehensive standard warranty, with optional extended support packages available for enterprise and carrier clients. Our technical support team is available 24/7 to assist with integration, troubleshooting, and any technical inquiries.