XPONSHOP OEM 4-Port POTS Voice Gateway ONU - Official Technical Overview & Hardware Datasheet

PRODUCT IDENTIFICATION

The XPONSHOP OEM 4-Port POTS Voice Gateway ONU is a sophisticated, carrier-grade Optical Network Unit meticulously engineered for the seamless convergence of high-speed data and legacy voice services over a passive optical network (PON) infrastructure. Designed for Original Equipment Manufacturers (OEMs) and service providers, this compact yet powerful unit serves as the definitive customer-premises equipment (CPE) for delivering next-generation triple-play services (Voice, Data, and Video) while ensuring a smooth migration path for traditional telephony networks. The device embodies a robust hardware architecture, prioritizing low latency, jitter-free voice transmission, and unparalleled reliability for the modern digital home and enterprise small-office environment.



CORE INTERNAL TOPOLOGY

At the heart of the XPONSHOP OEM Voice Gateway ONU lies a highly integrated, energy-efficient system-on-chip (SoC) architecture. This advanced silicon combines a high-performance network processor, a dedicated voice digital signal processor (DSP), and a Gigabit-capable PON (GPON/XG-PON) media access control (MAC) interface. The internal topology is structured to prioritize traffic flow, creating distinct data paths for high-speed broadband data and delay-sensitive voice traffic.

The PON interface, compliant with international telecommunications union (ITU-T) G.984 standards, establishes a robust physical connection to the Optical Line Terminal (OLT) at the central office. It supports advanced forward error correction (FEC) and dynamic bandwidth allocation (DBA) to optimize upstream

and downstream throughput. The SoC then intelligently classifies incoming Ethernet frames and voice packets (Time-Division Multiplexing over IP, or TDMoIP), routing data to the four RJ45 Gigabit Ethernet ports and directing voice traffic to the onboard subscriber line interface circuit (SLIC) for the four FXS (Foreign Exchange Station) POTS ports.

SWITCHING SUBSYSTEM CAPABILITIES

The integrated Ethernet switching subsystem operates at full wire-speed, facilitating a non-blocking switching fabric for all data ports. This ensures that high-bandwidth applications, such as 4K video streaming and large file downloads, operate concurrently without degrading voice quality. Key capabilities include:

- 802.1p/Q VLAN Tagging: Supports robust virtual LAN segmentation for service differentiation.
- Quality of Service (QoS): Advanced hardware-based QoS ensures that voice packets are placed in the highest priority egress queue, minimizing jitter and latency.
- Integrated Layer 2/Layer 3 Forwarding: Efficiently handles both intra-subnet and inter-subnet traffic, optimizing the data path for the residential gateway function.

OPERATIONAL ADVANTAGES

The XPONSHOP OEM Voice Gateway ONU provides distinct operational benefits that make it an ideal choice for OEM integration:

- Simplified Deployment: Featuring a plug-and-play design with automatic configuration via the OLT, the ONU significantly reduces installation time and complexity for field technicians. It supports Zero-Touch Provisioning (ZTP) for large-scale rollouts.
- Legacy Integration: The four FXS ports allow providers to retain existing analog telephones, fax machines, and other legacy CPE, thereby extending the lifecycle of valuable customer assets while migrating to fiber-optic infrastructure.
- Advanced Power Management: The device incorporates intelligent power-saving modes compliant with Energy-Efficient Ethernet (EEE) standards. It dynamically adjusts power consumption based on link status and traffic load, reducing operational expenses and supporting green initiatives.
- Robust Security: Hardware-accelerated AES encryption is supported for the PON link, ensuring the confidentiality of customer data and voice communications. Layer 2 and Layer 3 packet filtering provides an additional security barrier against unauthorized network access.

SPECIFICATION MATRIX

Parameter	Specification
Form Factor	Desktop / Wall-Mountable Plastic Chassis
PON Interface	1 x SC/APC Connector; ITU-T G.984 GPON (Class B+) / Optional XG-PON
Downstream Rate	2.488 Gbps (GPON) / 9.953 Gbps (XG-PON)
Upstream Rate	1.244 Gbps (GPON) / 2.488 Gbps (XG-PON)
Ethernet Ports	4 x 10/100/1000BASE-T (RJ45) Auto-Negotiation, MDI/MDIX
Voice Ports	4 x FXS (RJ11) POTS Interfaces, with Support for DTMF, Pulse Dialing
Power Supply	External 12V DC / 1.5A Adapter
Power Consumption	< 10W (Idle), < 15W (Full Load)
Operating Temperature	0°C to 45°C
Storage Temperature	-40°C to 85°C
Operating Humidity	5% to 95% (Non-Condensing)
Dimensions (W x D x H)	160mm x 120mm x 35mm

Weight	Approx. 320g (Device Only)
Indicators	PWR, PON, LOS, LAN1-4, Phone1-4, Internet

REGULATORY COMPLIANCE

The XPONSHOP OEM 4-Port POTS Voice Gateway ONU has been meticulously designed and rigorously tested to comply with a comprehensive suite of international standards and regulatory requirements.

- Network Standards: ITU-T G.984.1/2/3/4 (GPON), ITU-T G.987 (XG-PON optional), IEEE 802.3, IEEE 802.1D, IEEE 802.1Q.
- Voice Standards: ITU-T G.711, G.722, G.723, G.726, G.729; T.38 Fax Relay.
- Safety Compliance: UL/cUL (IEC 60950-1 / IEC 62368-1), CB, CCC.
- EMC Compliance: FCC Part 15 Class B, EN 55032 Class B, EN 55024, CISPR 22, CISPR 24, VCCI.
- RoHS Compliance: Fully compliant with the Restriction of Hazardous Substances (RoHS) directive, ensuring environmentally conscious manufacturing and disposal.

