Gigabit Ethernet Switch 8 Port - Official Technical Overview & Hardware Datasheet

PRODUCT IDENTIFICATION

Product Designation: Gigabit Ethernet Switch 8 Port (Model Series: GES-8000 Series). This document serves as the definitive technical reference for the GES-8000 Series, a next-generation compact switching solution engineered for high-performance edge connectivity. The platform integrates non-blocking Layer 2 switching with robust Layer 3 static routing capabilities, designed for enterprise access, carrier CPE, and industrial IoT aggregation. The GES-8000 Series represents a paradigm shift in small-form-factor switching, delivering enterprise-grade resilience and security without compromising port density or energy efficiency.

SYSTEM HARDWARE TOPOLOGY

The GES-8000 Series architecture is predicated on a distributed forwarding engine model, featuring a high-bandwidth internal fabric. The core logic comprises a single, highly integrated System-on-Chip (SoC) that consolidates the CPU, switching matrix, and PHY transceivers, minimizing latency and power consumption. This centralized architecture is augmented by a dedicated 10Gbps SerDes backplane interface, facilitating a true non-blocking switching capacity of 16 Gbps full-duplex for all eight ports concurrently. The hardware topology includes a modular power supply bay supporting both internal AC and external DC power bricks, providing deployment flexibility in diverse environments. The chassis design eliminates the need for active cooling fans in most configurations, achieving a silent, passively-cooled state that is ideal for office or residential installations, while an optional fan-equipped variant is available for extended operating temperatures.

DATA & CONTROL PLANE CAPABILITIES

The Data Plane delivers wire-speed forwarding for all packet sizes, leveraging a cut-through switching mechanism to minimize latency. Key capabilities include 802.1Q VLAN tagging, port-based VLAN isolation, and 802.1p Class of Service (CoS) prioritization. The Control Plane is managed by a 500MHz ARM

Cortex-A9 processor, running a hardened, carrier-grade operating system, supporting comprehensive management protocols including SNMP v1/v2c/v3, RMON, and a Web-based GUI. Advanced features such as IGMP snooping v1/v2/v3 for multicast optimization and Link Aggregation Control Protocol (LACP) are supported for bandwidth aggregation across multiple ports, effectively operating as a single logical link for increased throughput.

COMPONENT BREAKDOWN

Physical Components: The unit integrates eight (8) 10/100/1000BASE-T Auto-MDI/MDIX ports with RJ-45 connectors. LED indicators provide a real-time visual assessment of link/activity and speed status for each port. A single console port (RJ-45) is provided for out-of-band management and initial configuration.

Internal Components: The mainboard houses the switching SoC with integrated packet buffer memory (2MB). The power subsystem utilizes high-efficiency DC-DC converters with overvoltage and overcurrent protection. The chassis is constructed of cold-rolled steel (CRS) with a durable powder-coated finish, ensuring electromagnetic interference (EMI) shielding and physical resilience.

OPERATIONAL SPECS MATRIX

The operational parameters define the comprehensive environmental and input power requirements.

Parameter	Specification
Form Factor	Desktop / Wall-Mountable (1.5RU height)
Switching Capacity	16 Gbps (Non-blocking)
Forwarding Rate	11.9 Mpps (64-byte packets)
Power Supply	External 5V / 2A DC Power Adapter (optional internal AC PSU)
Power Consumption	≤ 6W (Idle) / ≤ 12W (Full Load)
Operating Temperature	0°C to 50°C (Standard) / -10°C to 60°C (Extended, fan-equipped model)
Storage Temperature	-20°C to 70°C
Humidity	10% to 90% (Non-condensing)
MTBF	> 500,000 Hours (Telcordia SR-332)
Packet Buffer Memory	2 MB

REGULATORY COMPLIANCE

The GES-8000 Series is manufactured in accordance with stringent global regulatory standards. Compliance includes FCC Part 15 Class A, CE Marking (EN 55022, EN 55024), and VCCI Class A for electromagnetic emissions. Safety certifications are verified through UL/cUL (UL 60950-1) and CB Scheme (IEC 60950-1). The platform adheres to the Restriction of Hazardous Substances (RoHS) directive, ensuring environmentally responsible manufacturing. Additionally, the switch meets the Energy Efficient Ethernet (IEEE 802.3az) standard, significantly reducing power draw during periods of low network activity, supporting global green IT initiatives.