OEM Industrial-Grade 8-Port PoE+ Ethernet Switch Enclosure - Official Technical Overview & Hardware Datasheet

PRODUCT IDENTIFICATION

The OEM Industrial-Grade 8-Port PoE+ Ethernet Switch Enclosure is a compact, ruggedized networking solution engineered for extreme environmental conditions. Designed for seamless integration into factory automation, intelligent transportation systems (ITS), and military communication networks, this fully managed switch provides eight (8) 10/100/1000BASE-T Ethernet ports with IEEE 802.3at/af Power over Ethernet Plus (PoE+) capability. Its IP40-rated metal housing, wide operating temperature range (-40 ° C to 75 ° C), and redundant power input options ensure exceptional reliability for mission-critical edge deployments.



CORE INTERNAL TOPOLOGY

The switch is built around a purpose-built, store-and-forward switching engine with a non-blocking architecture. The internal backplane facilitates full wire-speed forwarding across all ports simultaneously, while a dedicated PoE power management controller dynamically allocates the total power budget of up to 120W (up to 30W per port) to connected Powered Devices (PDs) such as PTZ cameras, industrial wireless access points, and VoIP handsets. The device integrates hardware-based priority queuing and management traffic isolation, ensuring deterministic latency for time-sensitive control data.

SWITCHING SUBSYSTEM CAPABILITIES

- LAYER 2 FEATURES: Comprehensive VLAN support (IEEE 802.1Q) with up to 4094 VLAN groups, port-based and tag-based VLAN assignment. Rapid Spanning Tree Protocol (RSTP) ensures loop-free topologies with sub-second convergence times. Link Aggregation Control Protocol (LACP) allows for trunking up to four ports into an 8 Gbps aggregated link for high-bandwidth uplinks.
- LAYER 3 FEATURES: Static routing capability supports up to 32 IPv4/IPv6 routes, enabling the switch to function as a gateway for access segments. This reduces routing overhead on the core network and improves application

response times in segmented industrial zones.

- QUALITY OF SERVICE (QoS): Traffic prioritization based on 802.1p CoS, IPv4/v6 DSCP, and TOS. The switch supports four strict priority or weighted fair queuing (WFQ) egress queues, guaranteeing bandwidth for high-priority industrial control protocols.

- SECURITY: Robust ACLs (Access Control Lists) for IPv4/IPv6 traffic filtering based on MAC, IP, and port numbers. DHCP Snooping and Dynamic ARP Inspection (DAI) protect against common Layer 2 network attacks.

OPERATIONAL ADVANTAGES

- RUGGEDIZED DESIGN: Fanless, conduction-cooled enclosure supports operating temperatures from -40°C to 75°C, making it ideal for outdoor cabinet installations, oil and gas platforms, and railway rolling stock.

- POWER VERSATILITY: Accepts dual redundant 48~56VDC power inputs (redundant dual-feed terminals) to prevent single point of failure in power distribution systems. Built-in overcurrent and reverse polarity protection.

- INSTALLATION FLEXIBILITY: Supports standard DIN-rail mounting for control cabinets and wall-mounting options, with all ports and LEDs located on the front panel for easy visual diagnostics during maintenance.

SPECIFICATION MATRIX

Parameter	Specification
Ports	8 x 10/100/1000BASE-T (RJ45) PoE+ (IEEE 802.3at/af)
PoE Budget	120W total; Up to 30W per port
Switching Capacity	16 Gbps (Non-blocking)
Forwarding Rate	11.9 Mpps (64-byte packets)
MAC Address Table	8K entries
Jumbo Frame Support	9.6 KB
Input Voltage	48 to 56 VDC (Redundant Dual Inputs)
Power Consumption	≤ 10W (without PoE) / ≤ 150W (with full PoE load)
Operating Temperature	-40°C to 75°C (-40°F to 167°F)
Storage Temperature	-40°C to 85°C
Relative Humidity	5% to 95% (non-condensing)
Enclosure Dimensions	160 mm x 110 mm x 60 mm (W x D x H)
Weight	Approx. 1.2 kg
Mounting	DIN-Rail (standard) / Wall-mount (optional bracket)
MTBF	> 500,000 hours (MIL-HDBK-217F)
Warranty	5 Years

REGULATORY COMPLIANCE

- ELECTRICAL SAFETY: Compliant with EN 60950-1, IEC 60950-1, and UL 508 (Industrial Control Equipment). CE marked for the European market.

- ENVIRONMENTAL: RoHS, REACH, and WEEE compliant. Meets EN 50155 (Railway Applications) and EN 61000-6-2 (Industrial Immunity) standards, with ESD, EFT, and Surge immunity rated to ±6kV / ±4kV levels.

- EMI/EMS: FCC Part 15 Class A, EN 55022 Class A, and CISPR 22.



ORDERING SKU INFORMATION

- ENC-0800G-POE-I: Industrial 8-Port Gigabit PoE+ Switch, -40°C to 75°C,

DIN-Rail, DC Terminal.

- OPTIONAL ACCESSORIES:

  - ENC-PWR-DC-48V: Industrial DIN-Rail 48V/5A AC/DC Power Supply.

  - ENC-CAP-FC-01: Dust-proof and anti-corrosion conformal coating for PCB protection (factory option).

LIFECYCLE ASSURANCE (MTBF)

The enclosure is designed with an MTBF exceeding 500,000 hours at 50°C (calculated per MIL-HDBK-217F), supported by our vendor's global 5-year hardware warranty and advanced RMA (Return Merchandise Authorization) service, ensuring minimal total cost of ownership over its lifecycle.