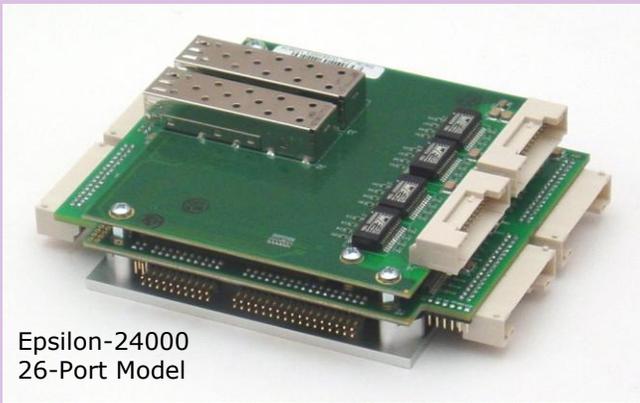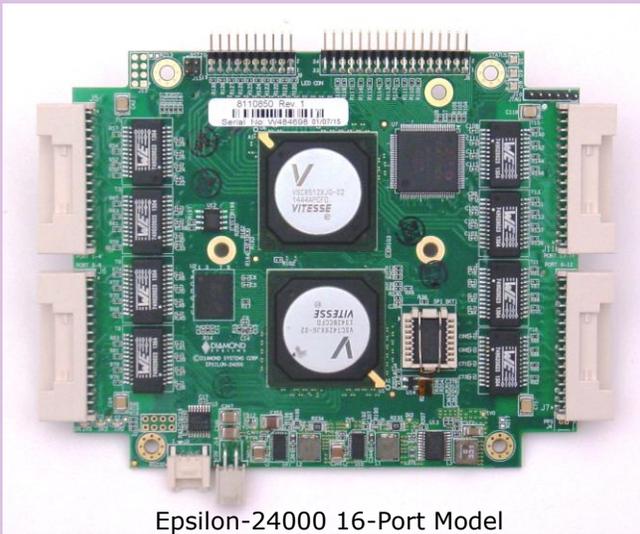# EPSILON-24000

Managed 26-Port Gigabit Ethernet Switch

Standalone switch with wide voltage input and serial management port

Epsilon-24000
26-Port Model

Epsilon-24000 16-Port Model

◆ 16 or 24 10/100/1000Mbps copper Ethernet ports with nonblocking wire-speed performance

◆ 1 1G and 1 2.5G SFP socket

◆ Dual leaky bucket policers with remarking and statistics

◆ Jumbo frame support at all speeds

◆ 8K MAC addresses and 4K VLANs (IEEE 802.1Q), as well as 8K IPv4 and IPv6 multicast group support

◆ Flexible link aggregation support based on Layer-2 through Layer-4 information (IEEE 802.3ad)

◆ Multicast and broadcast storm control, as well as flooding control

◆ Rapid Spanning Tree protocol (RSTP) and MSTP

◆ 8 priorities and 8 QoS queues per port with scheduling

◆ Shaping/policing per queue and per port

◆ Multiple protocol support: IEEE 802.1d, IEEE 802.1w, IEEE 802.1s, and IEEE 802.1X

◆ Built-in 416MHz MIPS 24KEC microcontroller for configuration and management

◆ RS-232 serial port provides out-of-band management interface

◆ Can operate autonomously or in conjunction with a host SBC

◆ Wide input voltage range: +5 to +34VDC input

◆ PC/104 form factor (3.775" x 4.55")

◆ -40°C to +85°C (-40°F to +185°F) operating temperature
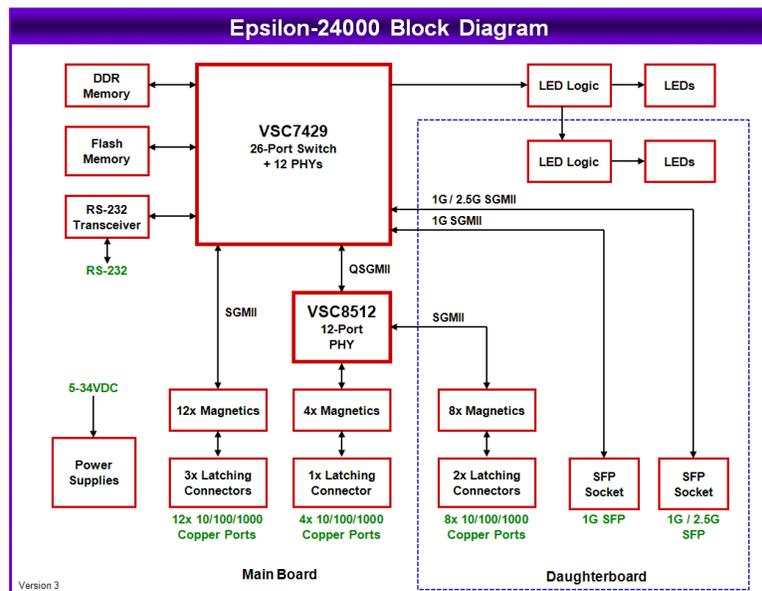
Advanced Gigabit Ethernet Switch

Epsilon-24000 is a standalone 26-port Gigabit Ethernet managed switch. It delivers a comprehensive, end-to-end carrier Ethernet solution supporting MEF service delivery and timing over packet solutions for IEEE 1588 and synchronous Ethernet. Epsilon-24000 includes a dual SFP socket for interfacing to 1G fiber Ethernet networks. One port can operate at enhanced 2.5G speed.

Layer 2+ Managed Switch

The advanced Ethernet switch chip includes a built-in microcontroller for configuration and management. It can be accessed either out-of-band, through the on-board RS-232 port, or via one of the Ethernet ports.

Rugged Design

Extended temperature operation of -40°C to +85°C is tested and guaranteed. Epsilon-24000 was designed with harsh applications in mind including latching connectors to further improve reliability.

Epsilon-24000 Block Diagram

Epsilon-24000: 26-Port Gigabit Ethernet Switch

Specifications

Ethernet switch	26-port Layer 2+ switch Built-in microcontroller for configuration and management
Number of ports	16 or 24 10/100/1000Mbps Ethernet ports with non-blocking wire-speed performance 1 1G SFP socket 1 2.5G SFP socket
On-board memory	4Mb packet memory Shared memory buffer with per-port & CoS memory management
MEF	Hierarchical MEF compliant policing & scheduling MEF E-Lane, E-Line, and E-Tree services
Frame buffer	Jumbo frame support at all speeds
VLAN	IEEE 802.1Q VLAN switch with 8K MACs and 4K VLANs Push/pop up to two VLAN tags Independent & shared VLAN learning (IVL, SVL)
Multicast	IPv4 and IPv6 multicast group support
Remarking	Dual leaky bucket policers with remarking and statistics
Classifier	8 priorities and 8 CoS queues per port with strict or deficit-weighted round robin scheduling Shaping/policing per queue and per port
Storm control	Policing with storm control and MC/BC protection
Link aggregation	IEEE 802.3ad
Security	Advanced security and prioritization available though multistage TCAM engine
RSTP	Rapid spanning tree protocol (IEEE 802.1W) and MTSP
MIBs	Support for WebStax and CEServices
Power management	ActiPHY and PerfectReach power management; VeriPHY cable diagnostics
Serial port	1 RS-232 for host interface
Indicator LEDs	50 status LEDs: 2 per copper port, 1 per SFP port
Standalone Capable	Can operate as a standalone network switch or in combination with a host SBC
Power Input	+5V to +34V DC
Power consumption	16 ports active: 10.4W maximum at 12VDC 26 ports active: 15.7W maximum at 12VDC
Form factor	PC/104 3.775" x 4.55" (96mm x 115.5mm)
Operating temp	-40°C to +85°C (-40°F to +185°F)
Weight	4.9oz (139g) with heatsink (16-port model)
MTBF	461,094 hours at 20°C main board 1,661,388 hours at 20°C daughter board
RoHS	Compliant

Innovative Power Management

Epsilon-24000's advanced Ethernet switch chip includes two innovative features enable automatic power savings:

- It detects unused Ethernet ports on network devices and powers them down or places them in stand-by mode.
- It actively adjusts the power level needed based on cable length, saving energy on links shorter than the 100m maximum specified length.

Software Support

Epsilon-24000 is supplied with all required firmware and drivers, enabling its immediate operation without any development effort. The included web interface provides an intuitive GUI for use in configuring and managing switch functionality.

Key Features

Epsilon-24000 is a managed Layer 2+ managed Ethernet switch module offering 16 or 24 10/100/1000Mbps copper twisted pair ports and two SFP optical sockets in a PC/104 form factor board. The 16-port model is implemented on a single PC/104 sized module. An additional 8 ports and the two SFP ports are available via a daughter board that connects below the main board.

Epsilon-24000 can be used standalone, without any connection to a single board computer, or in conjunction with a host SBC. The module's built-in microcontroller handles configuration and management. On-board memory holds dual application images, boot code, MAC addresses, and other parameters, and can also be used for program execution. An RS-232 serial port enables communication between the module's on-board management microcontroller and a host processor. Epsilon-24000's built-in microcontroller is also accessible via a web management interface over one of the Ethernet ports.

Input power is provided through the built-in, wide-range +5 to +34VDC power supply, enabling operation using industrial power sources.

To address the temperature extremes of fixed and mobile applications in both indoor and outdoor environments, the module supports fanless operation over -40°C to +85°C.

Ordering Information

EPS-24016-104	16-Port Gigabit Ethernet Switch, PC/104 form factor, -40°C to +85°C operating temperature
EPS-24026-104	26-Port Gigabit Ethernet Switch including 2 SFP ports, PC/104 form factor, -40°C to +85°C operating temperature
DK-EPS24016	EPS-24016-104 Development Kit: EPS-24016-104 switch, CK-EPS-24016, ACC-LED-EPS24000
DK-EPS24026	EPS-24026-104 Development Kit: EPS-24026-104 switch, CK-EPS-24026, ACC-LED-EPS24000
CK-EPS24016	Cable Kit for EPS-24016-104 with 4 quad port Ethernet cables, 1 serial cable, 1 power cable
CK-EPS24026	Cable Kit for EPS-24026-104 with 6 quad port Ethernet cables, 1 serial cable, 1 power cable
ACC-EPS24000-DB	EPS-24000 Daughterboard, 8-Port Gigabit Ethernet, 2 SFP ports, PC/104 form factor
ACC-EPS24K-LED-S	LED Accessory Board with sockets
ACC-EPS24K-LED-C	LED Accessory Board, pin headers/cables
ACC-HS104-10	Heat Sink Accessory