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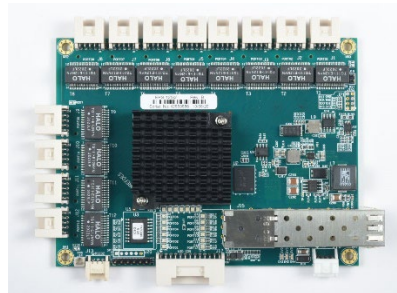


# Datasheet

## Diamond Systems

### Epsilon-12G2

**Rugged Standalone COM Express module with wide voltage input and serial management port  
Acquisition Extension Card**



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# EPSILON-12G2



## Managed 14-Port Gigabit Ethernet Switch

**Standalone COM Express module with wide voltage input and serial management port**



### Advanced Gigabit Ethernet Switch

Epsilon-12G2 is a standalone 14-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-12G2 includes a dual SFP socket for interfacing to 1G fiber Ethernet networks. One port can operate at enhanced 2.5G speed to support efficient stacking of two switches together for a combined total of 26 ports.

### 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.

### Wide Input Power Supply

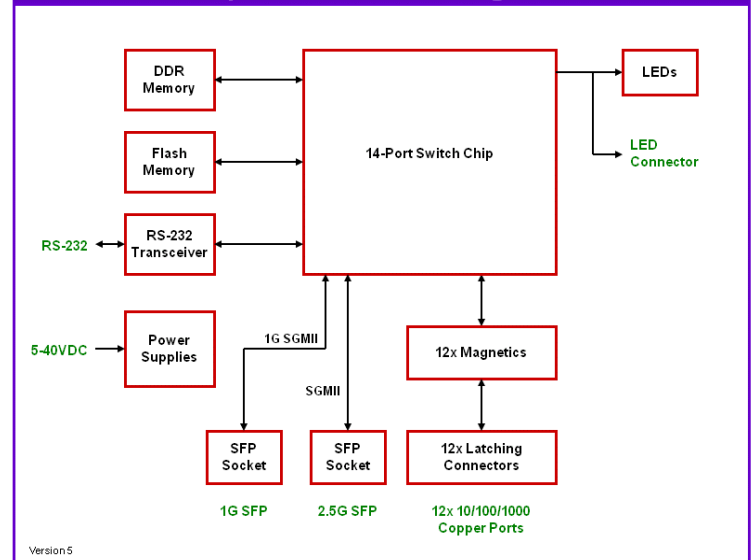
Input power is provided through the built-in, wide-range +5-40VDC power supply, enabling operation using industrial power sources.

### Rugged Design

Extended temperature operation of -40°C to +85°C is tested and guaranteed. Epsilon-12G2 was designed with harsh applications in mind including latching connectors to further improve reliability.

- ◆ 12 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 +40VDC input
- ◆ COM Express form factor (95 x 125mm)
- ◆ -40°C to +85°C (-40°F to +185°F) operating temperature

**Epsilon-12G2 Block Diagram**



# Epsilon-12G2: 14-Port Gigabit Ethernet Switch



## Specifications

<b>Ethernet switch</b>	14-port Layer 2+ switch Built-in 416MHz MIPS 24KEC microcontroller for configuration and management
<b>Number of ports</b>	12 10/100/1000Mbps Ethernet ports with non-blocking wire-speed performance 1 1G SFP socket 1 2.5G SFP socket
<b>On-board memory</b>	4Mb packet memory Shared memory buffer with per-port & CoS memory management
<b>MEF</b>	Hierarchical MEF compliant policing & scheduling MEF E-Lane, E-Line, and E-Tree services
<b>Frame buffer</b>	Jumbo frame support at all speeds IEEE 802.1Q VLAN switch with 8K MACs and 4K VLANs
<b>VLAN</b>	Push/pop up to two VLAN tags Independent & shared VLAN learning (IVL, SVL)
<b>Multicast</b>	IPv4 and IPv6 multicast group support
<b>Remarking</b>	Dual leaky bucket policers with remarking and statistics
<b>Classifier</b>	8 priorities and 8 CoS queues per port with strict or deficit-weighted round robin scheduling Shaping/policing per queue and per port
<b>Storm control</b>	Policing with storm control and MC/BC protection
<b>Link aggregation</b>	IEEE 802.3ad
<b>Security</b>	Advanced security and prioritization available through multistage TCAM engine
<b>RSTP</b>	Rapid spanning tree protocol (IEEE 802.1W) and MSTP
<b>MIBs</b>	Support for WebStax and CEServices
<b>Power management</b>	ActiPHY and PerfectReach power management; VeriPHY cable diagnostics
<b>Serial port</b>	1 RS-232 for host interface
<b>Indicator LEDs</b>	28 status LEDs, 2 per port 2 general purpose
<b>Standalone Capable</b>	Can operate as a standalone network switch or in combination with a host SBC
<b>Power Input</b>	+5V to +40V DC
<b>Power consumption</b>	9.2W maximum with all ports active
<b>Form factor</b>	COM Express (95mm x 125mm)
<b>Operating temp</b>	-40°C to +85°C (-40°F to +185°F)
<b>Weight</b>	4.9oz (138.9g) with heatsink
<b>RoHS</b>	Compliant

## Software Support

Epsilon-12G2 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-12G2 is a managed Layer 2+ managed Ethernet switch module offering twelve 10/100/1000Mbps copper twisted pair ports and two SFP optical sockets in a COM Express form-factor board.

Epsilon-12G2 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-12G2'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 +40VDC 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.

## Innovative Power Management

Epsilon-12G2'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.

## Ordering Information

<b>EPS-12G2</b>	14-Port Gigabit Ethernet Switch, COM Express form factor, -40°C to +85°C operating temp
<b>CK-EPS12G2</b>	Cable Kit for Epsilon-12G2
<b>6981050</b>	Serial interface cable
<b>6981052</b>	Ethernet cable (1 per port)
<b>6981053</b>	Power input cable

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