EPS-8130 Managed 8-Port Gigabit Ethernet switch with embedded layer 2 software

Epsilon-8130 is a managed Layer 2+ Ethernet switch module offering eight 10/100/1000Mbps copper twisted pair ports in the compact PC/104 form factor. It is designed for rugged applications including industrial, on-vehicle and military. EPS-8130 is a direct replacement for the previous EPS-8100 and is fully backwards compatible with the previous product in all key respects.

Epsilon-8130 is a standalone switch that does not require any host computer interface. All switch functions are managed by a 416MHz MIPS processor embedded directly into the switch. The processor is accessed via an in-band web interface over one of the Ethernet ports or via an out-of-band command-line interface over an RS-232 serial port. The integrated web interface provides an intuitive GUI for use in configuring and managing all switch functionality. On-board memory holds dual application images, boot code, MAC addresses, and other parameters, and can also be used for program execution.

Epsilon-8130's advanced Ethernet switch chip includes two innovative features that enable automatic power savings. The switch can detect unused Ethernet ports on network devices and power them down or place them in stand-by mode. Additionally, the switch actively adjusts the power level needed based on cable length, saving energy on links shorter than the 100m maximum specified length.

Epsilon-8130 was designed for use in vehicle and harsh environment applications. All I/O connectors are latching, providing enhanced reliability over the RJ-45 connectors used in commercial Ethernet switches. The wide range 5-36V input power supply is compatible with all common vehicle and industrial power sources. The -40ºC to +85ºC operating range makes Epsilon-8130 suitable for use in outdoor and vehicle applications.

Epsilon-8130 comes loaded with all required firmware, enabling its immediate operation without any development effort. The included web interface provides an intuitive GUI for use in configuring and managing switch functionality.

◆ Thermal Solutions

EPS-8130 is available with two cooling options. Both options support the full -40 to +85C industrial temperature range. EPS-8130 uses a low profile heat sink that fits within the PC/104 11.2mm height limit above the PCB. It is positively fixed in place with two screws. EPS-8130-XT has a heat spreader that is the same size as the PCB. It has two mounting hole patterns to support both SAE (#6-32) and Metric (M3) fasteners.
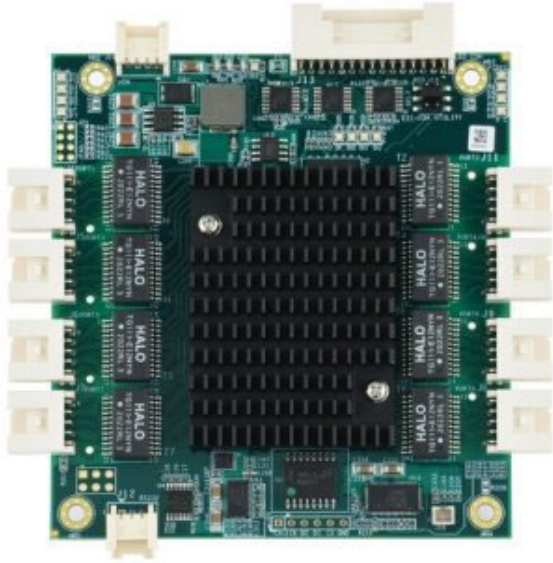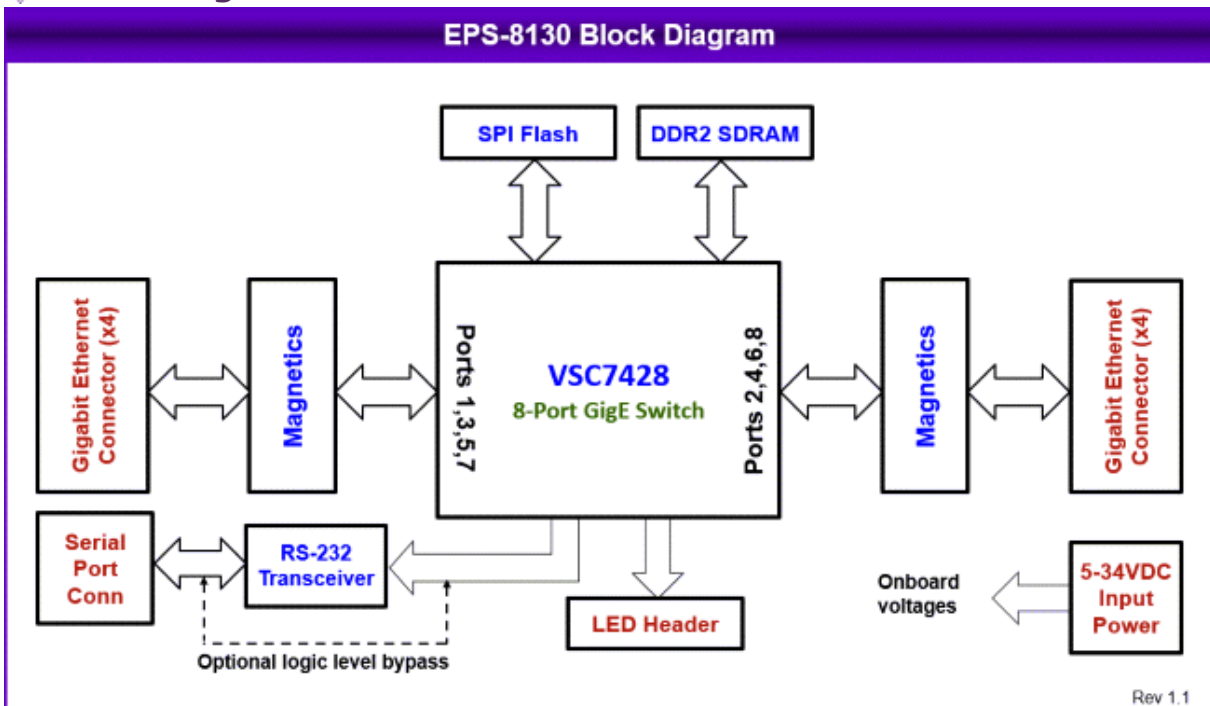
HEAT SINK
(EPS-8100-XT shown, EPS-8130-XT similar)

HEAT SPREADER
(EPS-8100-XT shown, EPS-8130-XT similar)

◆ Block Diagram

EPS-8130 Block Diagram

SPI Flash

DDR2 SDRAM

Gigabit Ethernet Connector (x4)

Magnetics

Ports 1,3,5,7

VSC7428
8-Port GigE Switch

Ports 2,4,6,8

Magnetics

Gigabit Ethernet Connector (x4)

Serial Port Conn

RS-232 Transceiver

LED Header

Onboard voltages

5-34VDC Input Power

Optional logic level bypass

Rev 1.1

◆ Cable Kit

cable kit C-EPS8000-KIT includes all cables needed for the EPS-81xx series of Ethernet switches.
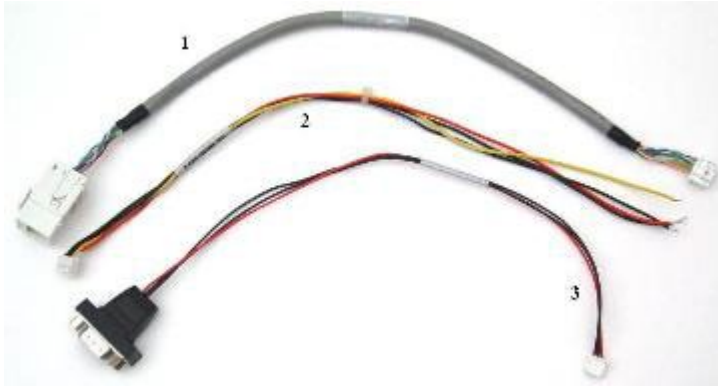
C-EPS8000-KIT includes the following cables:

No.	Qty	Cable	Description	Drawing
1	8	6981052	Ethernet cable	
2	1	6981051	Power cable	
3	1	6981050	Serial Cable, 1x3 2mm to DB9M	

Managed Ethernet Switch	
Switch Type	Managed Layer 2+ switch Built-in MIPS 416MHz 24KEC microcontroller for configuration and management
Number of Ports	8 10/100/1000Mbps Ethernet ports with non-blocking wire-speed performance
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 MSTP
MIBs	Support for both WebStax and CEServices MIBs
Power Management	ActiPHY and PerfectReach power management VeriPHY cable diagnostics

Serial Port	1 RS-232 port for host interface
Indicator LEDs	18 status LEDs, two per port 2 general purpose
Standalone Capable	Standalone network switch, or in combination with a host computer
General	
Power Input	+5 to +36V DC/DC power supply
Power Consumption	5.4W typical at +5VDC
Form Factor / Dimensions	PC/104 3.55" x 3.775" (90mm x 96mm)
Operating Temperature	-40°C to +85°C (-40°F to +185°F)
Weight	3.5oz (99g) with heatsink
MTBF	624,170 hours at 20°C
RoHS	Compliant