

Reference Manual

DOC. REV. 5/14/2013

VL-MPEe-E3

MiniPCle Ethernet Module



VERSALOGIC
CORPORATION



WWW.VERSALOGIC.COM

12100 SW Tualatin Road
Tualatin, OR 97062-7341
(503) 747-2261
Fax (971) 224-4708

Copyright © 2013 VersaLogic Corp. All rights reserved.

Notice:

Although every effort has been made to ensure this document is error-free, VersaLogic makes no representations or warranties with respect to this product and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose.

VersaLogic reserves the right to revise this product and associated documentation at any time without obligation to notify anyone of such changes.

Product Revision Notes

Revision 1.00 – Commercial release.

Support

The VL-MPEe-E3 support page, at <http://www.versalogic.com/private/mpeee3support.asp>, contains additional information and resources for this product including:

- Reference Manual (PDF format)
- Device drivers
- Data sheets and manufacturers' links for chips used in this product
- Photograph of the circuit board

This is a private page for VL-MPEe-E3 users that can be accessed only by entering this address directly. It cannot be reached from the VersaLogic homepage.

The VersaTech KnowledgeBase is an invaluable resource for resolving technical issues with your VersaLogic product.

[VersaTech KnowledgeBase](#)

Contents

Introduction	5
Description.....	5
Features and Construction	5
Technical Specifications.....	5
Block Diagram.....	6
RoHS Compliance	6
About RoHS.....	6
Warnings.....	6
Electrostatic Discharge	6
Handling Care	7
Technical Support.....	7
Repair Service.....	7
Physical Details	9
Board Layout and Mounting.....	9
VL-MPEe-E3 Mounting	9
VL-MPEe-E3 Dimensions and Connectors.....	9
Interfaces and Connectors	11
Ethernet.....	11
Ethernet Connector	11
Ethernet LEDs	11

Description

FEATURES AND CONSTRUCTION

The VL-MPEe-E3 is an extremely small and rugged Ethernet module based on the industry-standard Mini PCIe module format. It provides a full speed Gigabit Ethernet port based on the Intel® 82574IT controller. The board's features include:

- One Gigabit Ethernet port
- Rugged, right-angle latching connector
- Industrial temperature operation
- RoHS-compliant
- Customization available

The VL-MPEe-E3 features high reliability design and construction, including voltage sensing reset circuits and self-resetting fuses on the power supplies to the user I/O connectors.

VL-MPEe-E3 boards are subjected to 100% functional testing and are backed by a limited two-year warranty. Careful parts sourcing and US-based technical support ensure the highest possible quality, reliability, service, and product longevity for this exceptional board.

Technical Specifications

Specifications are subject to change without notification.

Board Size:

30.00 mm x 50.95 mm (Mini PCIe standard)

Storage Temperature:

-40° to +85°C

Operating Temperature:

-40° to +85°C

Power Requirements: *at +25°C running Windows 7*

3.3V @ 1.27W

(supplied from the Mini PCIe socket)

Ethernet:

One Intel 82574IT 10BaseT / 100BaseTX / 1000BaseT Ethernet Controller

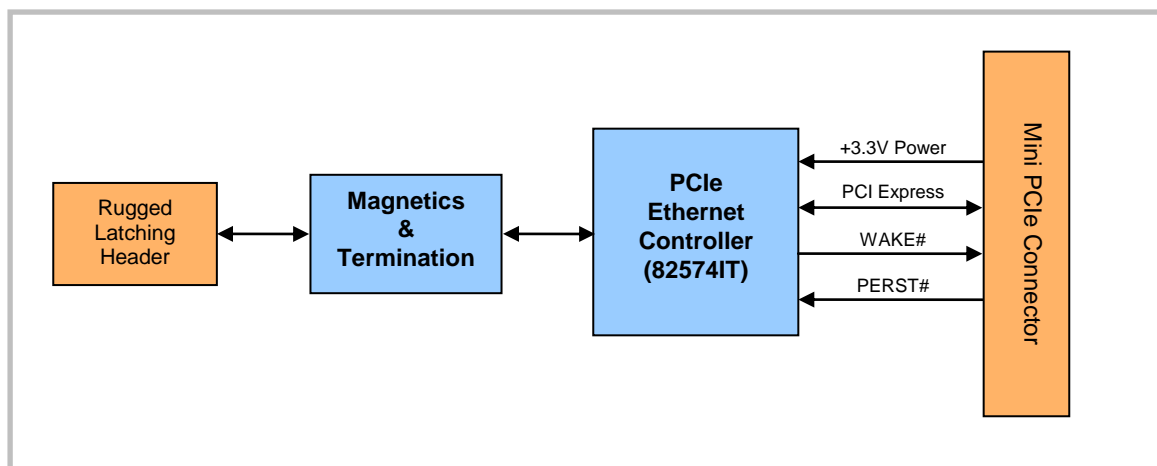
Mini PCIe Signal Type:

PCIe 1.1 signals from PCIe MiniCard bus (USB and SMBus not used)

Weight:

0.012 lbs (0.007 kg)

Block Diagram



RoHS Compliance

The VL-MPEe-E3 is RoHS-compliant.

ABOUT ROHS

In 2003, the European Union issued Directive 2002/95/EC regarding the Restriction of the use of certain Hazardous Substances (RoHS) in electrical and electronic equipment.

The RoHS directive requires producers of electrical and electronic equipment to reduce to acceptable levels the presence of six environmentally sensitive substances: lead, mercury, cadmium, hexavalent chromium, and the presence of polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE) flame retardants, in certain electrical and electronic products sold in the European Union (EU) beginning July 1, 2006.

VersaLogic Corp. is committed to supporting customers with high-quality products and services meeting the European Union's RoHS directive.

Warnings

ELECTROSTATIC DISCHARGE

Warning! Electrostatic discharge (ESD) can damage circuit boards, disk drives, and other components. The circuit board must only be handled at an ESD workstation. If an approved station is not available, some measure of protection can be provided by wearing a grounded antistatic wrist strap. Keep all plastic away from the board, and do not slide the board over any surface.

After removing the board from its protective wrapper, place the board on a grounded, static-free surface, component side up. Use an antistatic foam pad if available.

The board should also be protected inside a closed metallic antistatic envelope during shipment or storage.

Note: The exterior coating on some metallic antistatic bags is sufficiently conductive to cause excessive battery drain if the bag comes in contact with the bottom side of the board.

HANDLING CARE

Warning! Care must be taken when handling the board not to touch the exposed circuitry with your fingers.

Technical Support

If you are unable to solve a problem after reading this manual, please visit the VL-MPEe-E3 product support page below. This page provides links to component datasheets and device drivers.

[VL-MPEe-E3 Support Page](http://www.versalogic.com/private/mpeee3support.asp)
<http://www.versalogic.com/private/mpeee3support.asp>

The VersaTech KnowledgeBase contains a wealth of technical information about VersaLogic products, along with product advisories. Click the link below to see all KnowledgeBase articles related to the VL-MPEe-E3.

[VersaTech KnowledgeBase](#)

If you have further questions, contact VersaLogic Technical Support at (503) 747-2261. VersaLogic support engineers are also available via e-mail at Support@VersaLogic.com.

REPAIR SERVICE

If your product requires service, you must obtain a Returned Material Authorization (RMA) number by calling (503) 747-2261. Please provide the following information:

- Your name, the name of your company, your phone number, and your e-mail address
- The name of a technician or engineer that can be contacted if any questions arise
- Quantity of items being returned
- The model and serial number (barcode) of each item

- A detailed description of the problem
- Steps you have taken to resolve or recreate the problem
- The return shipping address

Warranty Repair All parts and labor charges are covered, including return shipping charges for UPS Ground delivery to United States addresses.

Non-warranty Repair All approved non-warranty repairs are subject to diagnosis and labor charges, parts charges, and return shipping fees. Please specify the shipping method you prefer and provide a purchase order number for invoicing the repair.

Note: Please mark the RMA number clearly on the outside of the box before returning.

Board Layout and Mounting

VL-MPEE-E3 MOUNTING

The VL-MPEE-E3 is a full size Mini PCIe card and needs to be mounted into a full size Mini PCIe site. On VersaLogic CPU boards, the module is secured using two nylon screws. VersaLogic supplies 2 mm nylon screws (VL-HDW-110) and 2.5 mm nylon screws (VL-HDW-108). On non-VersaLogic CPU boards, mounting might be accomplished using a latching system.

Note: Be careful not to over tighten the nylon mounting screws. Optimum tightness is 1 bf-in (0.1 N-m).

VL-MPEE-E3 DIMENSIONS AND CONNECTORS

The VL-MPEE-E3 complies with MiniPCIe Mini Card (full size) dimensional standards. Dimensions are given below to help with pre-production planning and layout.

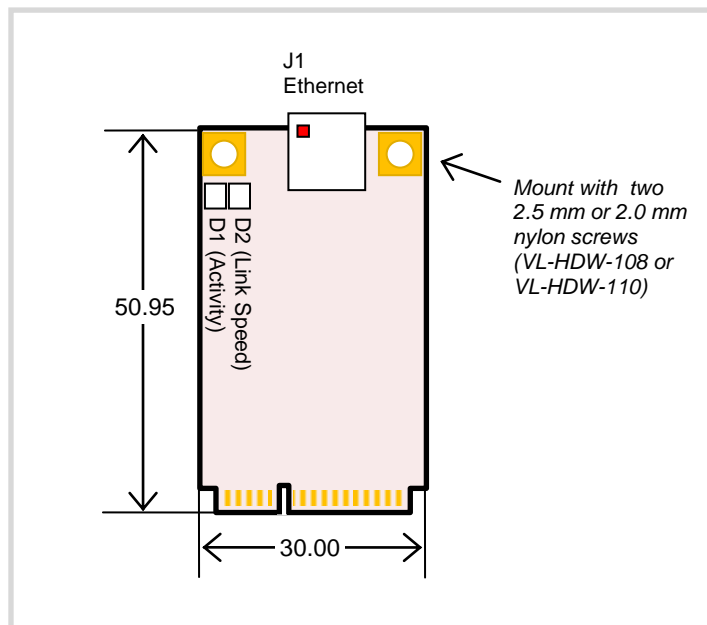


Figure 1. VL-MPEE-E3 Dimensions and Connectors

(Not to scale. All dimensions in millimeters.)

Table 1 provides information about the function, mating connectors, and transition cables for VL-MPEE-E3 connectors. Page numbers indicate where a detailed pinout or further information is available.

Table 1: Connector Functions and Interface Cables

Connector	Function	Mating Connector	Transition Cable	Cable Description	Page
J1	Gigabit Ethernet	FCI 10073599-008LF (housing), 2mm Minitek, AWG 22-24 x8 (crimp terminal)	VL-CBR-0804	Latching Ethernet cable	11

Ethernet

The VL-MPEe-E3 features an on-board Intel® 82574IT Ethernet controller. The controller provides a standard IEEE 802.3 Ethernet interface for 1000Base-T, 100Base-TX, and 10Base-T applications.

ETHERNET CONNECTOR

One rugged, 8-pin, right-angle, latching Ethernet connector (J1) is provided to enable connection with a Category 5 or 6 Ethernet cable. The Ethernet controller auto-negotiates connection speed.

The table below shows the function of each pin.

Table 2: J1 Ethernet Connector Pinout

J1 Pin	Signal Name	Function
1	MDI3_N	Bi-directional pair D-
2	MDI3_P	Bi-directional pair D+
3	MDI1_N	Bi-directional pair B-
4	MDI1_P	Bi-directional pair B+
5	MDI2_N	Bi-directional pair C-
6	MDI2_P	Bi-directional pair C+
7	MDI0_N	Bi-directional pair A-
8	MDI0_P	Bi-directional pair A+

ETHERNET LEDs

Two dual green/yellow LEDs indicate Ethernet and power status. LED D1 indicates power status and Ethernet activity, and LED D2 indicates Link speed.

Table 3: On-board Ethernet Activity/Power LED (D1)

LED	State	Description
Green/Yellow (Activity)	Yellow	Cable connected, blinks with activity
	Green	3.3V power on

Table 4: On-board Ethernet Link Speed LED (D2)

LED	State	Description
Green/Yellow (Link Speed)	Yellow	1 Gbps speed
	Green	100 Mbps speed
	Off	10 Mbps speed or cable not connected