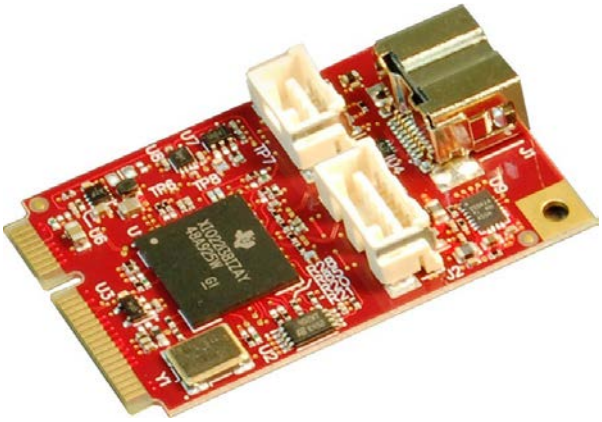
Reference Manual

DOC. REV. 09/23/2015



VL-MPEe-FW1E

MiniPCIe IEEE-1394 FireWire Module

VERSALOGIC CORPORATION

WWW.VERSALOGIC.COM

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

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.

† Other names and brands may be claimed as the property of others.

Product Revision Notes

Revision 1.00 – Commercial release.

Support

The VL-MPEe-FW1E support page 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

This is a private page for VL-MPEe-FW1E users that can be accessed only by entering this address directly. It cannot be reached from the VersaLogic homepage.

Contents

Figures

Tables

Introduction 1

Description

Features and Construction

The VL-MPEe-FW1E is an extremely small and rugged two-port FireWire module based on the industry-standard Mini PCIe module format. The board's features include:

- One 9-pin FireWire-800 (IEEE-1394b) port
- One 6-pin FireWire-400 (IEEE-1394a) port
- Extended temperature operation
- RoHS-compliance

VL-MPEe-FW1E boards are 100% functionally tested and backed by a limited five-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 °C to +85 °C
Operating Temperature:	-40 °C to +85 °C
Power Requirements: (*at +25 °C running Windows 7 running two 1394 disk drives)*	3.3 V @ 0.84 W (supplied from the Mini PCIe socket)
Weight:	0.3 ounces (8.5 grams)
Bridge Device:	Texas Instruments XIO2213A PCI Express-to-1394b OHCI with PHY
Mini PCIe Signal Type:	PCIe Express Base Specification, Rev 1.1 (USB and SMBus not used)

Block Diagram

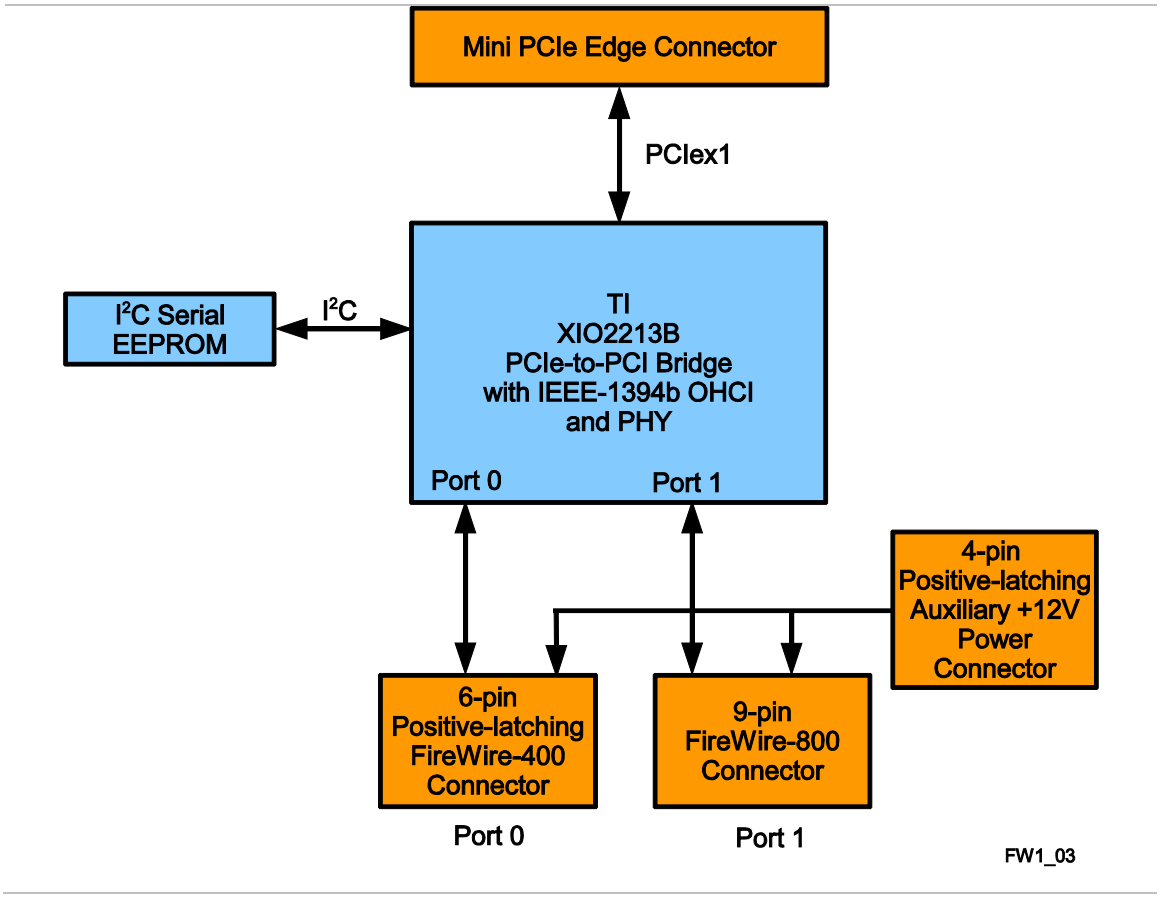


Figure 1. VL-MPEe-FW1E Block Diagram

RoHS Compliance

The VL-MPEe-FW1E 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.

Cautions

ELECTROSTATIC DISCHARGE

CAUTION:

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.

HANDLING CARE

CAUTION:

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, visit the VL-MPEe-FW1E product support page below. This page provides links to component datasheets and device drivers.

VL-MPEe-FW1E Support Page

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. 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. Specify the shipping method you prefer and provide a purchase order number for invoicing the repair.

Note:

Mark the RMA number clearly on the outside of the box before returning.

Board Layout and Mounting

VL-MPEe-FW1E Mounting

The VL-MPEe-FW1E is a full size Mini PCIe card and needs to be mounted onto 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 may be accomplished using a latching system.

Note:

Do not over-tighten the nylon mounting screws. Optimum tightness is 1 lbf-in (0.1 N-m).

VL-MPEe-FW1E Dimensions

The VL-MPEe-FW1E complies with MiniPCIe Mini Card (full size) dimensional standards. Figure 2 provides dimensions to help with pre-production planning and layout.

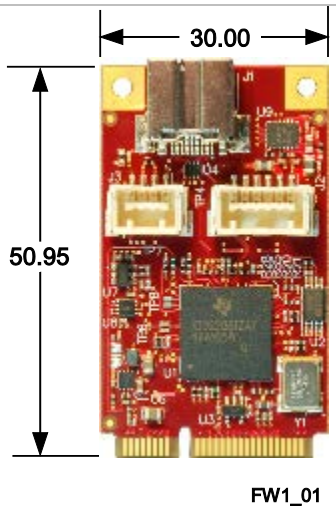


Figure 2. VL-MPEe-FW1E Dimensions

(Not to scale. All dimensions in millimeters.)

Figure 3 shows the locations of the FireWire connectors and the auxiliary power connector.

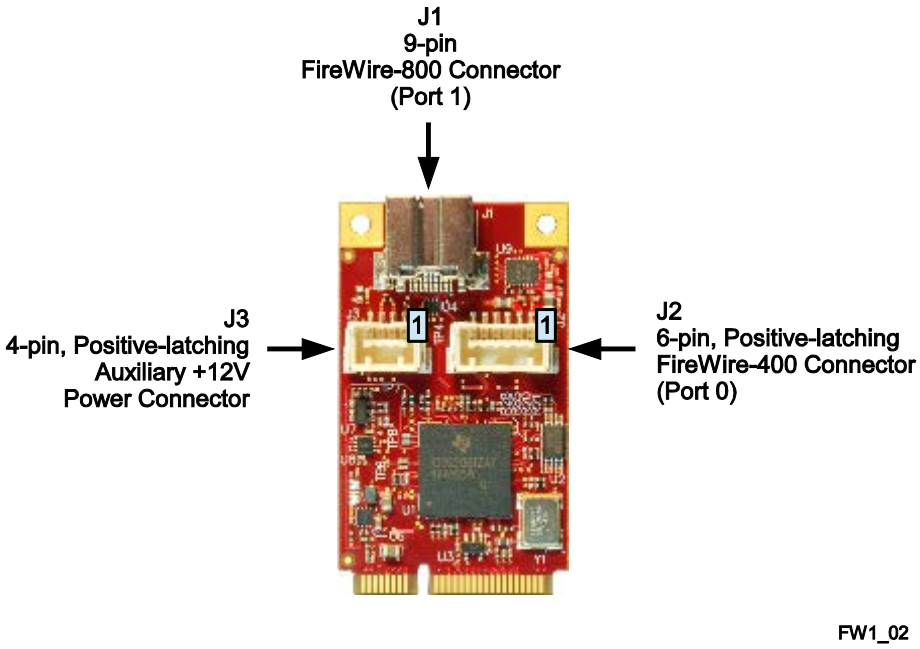


Figure 3. MPEe-FW1E Connector Locations and Pin Orientation

Connector J1 is a standard 1394b Firewire-800 connector and works with standard 1394b cables. Table 1 provides information about the function, mating connectors, and transition cables for the board's J2 and J3 connectors.

Table 1. Connector Functions and Interface Cables

Connector	Function	Mating Connector	Transition Cable	Cable Description
J2	FireWire-400 port connector	Molex 502578-0600	CBR-0602	1.5 m, 6-pin latching to 6-pin FireWire cable
J3	Auxiliary +12V power connector	Molex 502578-0400	CBR-0403	12-inch, 4-pin (2x2) ATX +12V power cable

FireWire-400 Port Connector

Table 2 lists the signals of the FireWire-400 connector at location J2. This connector is not a standard 1394a Firewire-400 connector; it is a header that supports the 1394a signals and adapts to a standard 1394a Firewire-400 connector using the CBR-0602 (described in Table 1). A standard 1394a cable plugs into the end of the CBR-0602.

Table 2. FireWire-400 Port Connector J2

Pin	Signal Name	Description
1	Power	+12V ±10%
2	Ground	Ground for power and inner cable shield
3	TPB-	Twisted-Pair B, differential signal
4	TPB+	Twisted-Pair B, differential signal
5	TPA-	Twisted-Pair A, differential signal
6	TPA+	Twisted-Pair A, differential signal

+12V Power Connector

Table 3 lists the signals of the auxiliary +12V power connector at location J3. An external +12V power source is required only when connecting Firewire devices that are powered by the Firewire port.

Table 3. Auxiliary +12V Power Connector J3

Pin	Signal Name	Description
1	Power	+12V ±10% – 1.5 A maximum
2	Power	+12V ±10% – 1.5 A maximum
3	Ground	Ground return – 1.5 A maximum
4	Ground	Ground return – 1.5 A maximum

Notes for Table 3:

- Pins 1 and 2 are physically connected to each other on the MPEe-FW1E.
- Pins 3 and 4 are physically connected to each other on the MPEe-FW1E.
- If the +12V maximum current being drawn by all Firewire devices connected to the MPEe-FW1E is less than 1.5A, then only one power pin and one ground pin need to be connected externally.