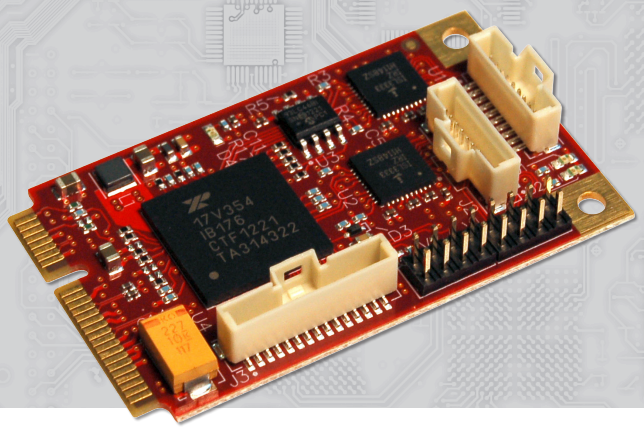
VERSALOGIC CORPORATION

Serial + GPIO

Mini PCIe Module



- Extremely small Mini PCIe module format
- Four RS-232/422/485 ports
- Twelve general purpose I/O lines
- Three indicator LEDs
- Industrial temp. (-40º to +85ºC) operation
- MIL-STD-202G shock/vibe
- Latching connectors

Highlights

Mini PCIe Module Format
Small and flexible.

Serial I/O
Four serial ports that support RS-232, RS-422, and RS-485 interfaces.

Digital I/O
Twelve general purpose I/O lines.

User LEDs
Two user LEDs for use with GPIO pins.

Application Programming Interface
Simplifies software development

Industrial Temperature Operation
-40° to +85°C operation for harsh environments.

MIL-STD-202G
Qualified for high shock/vibration environments.

Latching Connectors
Prevents detachment failures.

Class 3 Manufacturing (optional)
IPC-A-610 Class 3 for applications requiring extreme reliability.

RoHS

Overview

The VL-MPEe-U2 is an extremely small and rugged I/O module based on the industry-standard Mini PCIe module format. Unlike typical I/O expansion boards, Mini PCIe allows additional I/O functions to be added to a system with almost no increase in overall system / package size. Mini PCIe modules provide a simple, economical, and standardized way to add I/O functions to embedded computer products.

Details

In a very small package, this board provides four serial ports, twelve general purpose I/O lines, and three indicator LEDs.

This serial plus GPIO module provides a traditional serial I/O interface for legacy communication. The serial ports operate in 4-wire mode with auto-direction control and baud rates up to 400 Kbps. Each port can be independently configured (hard jumpered) for RS-232, RS-422, or RS-485 operation.

The twelve GPIO lines are independently configurable as an input or output. GPIO inputs can be set for normal or inverted level, and optionally set to generate an interrupt. GPIO outputs can be set to be normal HIGH or LOW state, or open drain.

The on-board indicator LEDs include one power indicator and two user LEDs that can be jumpered to GPIO pins.

This rugged product is designed and tested for full industrial temperature operation (-40º to +85ºC). It also meets MIL-STD-202G specifications for shock and vibration. Latching connectors provide additional ruggedization, making it at home in harsh environments.

The VL-MPEe-U2 board includes device drivers and the VersaAPI Application Programing Interface. The VersaAPI includes pre-defined calls to send or retrieve data from the on-board I/O ports. These calls greatly simplify development of the user code needed to access these ports. On the VL-MPEe-U2 board, the VersaAPI supports the on-board GPIO lines. The VersaAPI is compatible with Windows, Windows Embedded, and Linux operating systems.

This I/O board is compatible with a variety of popular x86 operating systems including Windows, Windows Embedded, Linux, VxWorks, and QNX.

The module utilizes PCIe signaling and can be used in any system that supports PCIe signaling at the Mini PCIe socket.

It is manufactured to IPC-A-610 Class 2 standards. Class 3 versions are available for extremely-high-reliability applications.

Product customization is available, even in low quantities. Options include conformal coating, application-specific testing, BOM revision locks, special labeling, etc.

Serial + GPIO

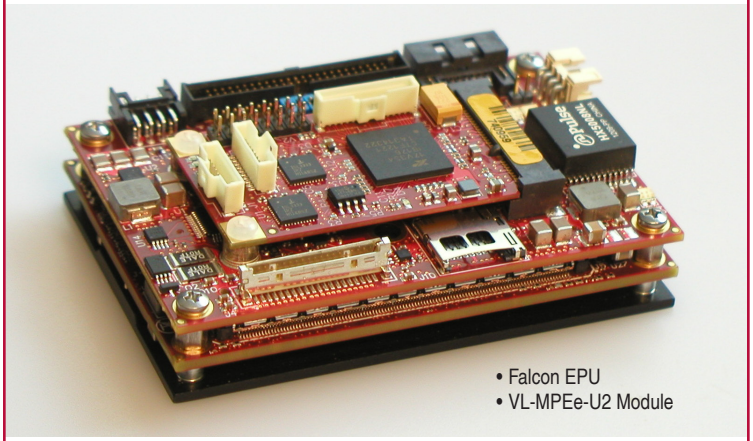
Mini PCIe Module

Ordering Information

Model	Function	Operating Temp.
VL-MPEe-U2E	Four serial ports. Twelve GPIO lines.	-40° to +85°C

Accessories

Part Number	Description
Cables	
VL-CBR-1014	12" dual-channel serial cable. Latching 10-pin connector to dual D-sub (9-pin).
VL-CBR-1502	12" GPIO cable and paddleboard with 15-position screw terminal
Hardware	
VL-HDW-108	Mini PCIe module hold-down screws (10) for use with 2.5 mm standoffs
VL-HDW-110	Mini PCIe module hold-down screws (10) for use with 2.0 mm standoffs



- Falcon EPU
- VL-MPEe-U2 Module

Other VersaLogic Mini PCIe Modules

Model	Function	Signaling
VL-MPEe-A1E	Analog input (12-bit resolution)	PCIe
VL-MPEe-A2E	Analog input (16-bit resolution)	PCIe
VL-MPEe-FW1	1394 Firewire Module, Industrial Temp.	PCIe
VL-MPEe-E3E	Gigabit Ethernet adapter	PCIe
VL-MPEe-W2E	Wi-Fi 802.11 a/b/g/n	PCIe
VL-MPEs-F1E	mSATA drive (4/16/32 GB)	SATA
VL-MPEs-S3E	SATA adapter	SATA
VL-MPEu-G2E	GPS receiver	USB

Specifications

General	Board Size	Mini PCIe module (full size): 30 mm x 50.95 mm x 6.39 mm	
	Power Requirements	3.3V ±5% @ 0.25W (supplied by the Mini PCIe socket)	
	Manufacturing Standards	Standard	IPC-A-610 Class 2 modified
		Optional	IPC-A-610 Class 3 modified
	Regulatory Compliance	RoHS	
	Mini PCIe Signal Type	PCI Express Base Specification, Rev 2.0	
Environmental	Operating Temperature	-40° to +85°C	
	Storage Temperature	-40° to +85°C	
	Altitude *	Operating	To 15,000 ft. (4,570m)
		Storage	To 40,000 ft. (12,000m)
	Cooling	None (fanless)	
	Airflow Requirements	None (free air)	
	Thermal Shock	5°C/min. over operating temperature	
	Humidity	Less than 95%, noncondensing	
	Vibration, Sinusoidal Sweep †	MIL-STD-202G, Method 204, Modified Condition A: 2g constant acceleration from 5 to 500 Hz, 20 min. per axis	
	Vibration, Random †	MIL-STD-202G, Method 214A, Condition A: 5.35g rms, 5 min. per axis	
	Mechanical Shock †	MIL-STD-202G, Method 213B, Condition G: 20g half-sine, 11 msec. duration per axis	
Device I/O	COM 1/2/3/4 Interface	RS-232/422/485 selectable. 16C550 compatible. 400 Kbps max.	
	GPIO	Twelve general purpose I/O lines	
	LEDs	One power indicator. Two user LEDs.	
Software	Drivers	Device drivers and VersaAPI included. Provides simplified I/O interface for most application languages. Supports on-board GPIO lines. Compatible with Windows, Windows Embedded, and Linux operating systems.	

* *Extended altitude specifications available upon request*

† *MIL-STD-202G shock and vibe levels are used to illustrate the ruggedness of this product in general. Testing to higher levels and/or different types of shock or vibration methods can be accommodated per the specific requirements of the application. Contact a VersaLogic Sales Engineer for further information.*

03/16/16