VL-EPMs-M1

SUMIT™ USB / SATA™ / PCIe / mSATA™ Adapter

- PCIe Mini Card socket (optional)
- USB 2.0 (3 or 4 ports)
- SATA (1 or 2 drives)
- mSATA flash site (optional)
- Industrial temp. operation
- MIL-STD-202G shock / vibe

Highlights

PCIe Mini Card Socket (optional)
Supports Wi-Fi modems, GPS receivers, flash data storage, and other plug-in devices.

USB
Up to four USB 2.0 ports support keyboard, mouse, and other devices.

SATA
Supports bootable SATA hard drive and mSATA flash storage options.

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

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

SUMIT
Rugged industry-standard format.

Overview

The VL-EPMs-M1 expansion modules provide access to a variety of I/O ports in SUMIT-based embedded systems. With a full industrial temperature rating and extensive ruggedization, the VL-EPMs-M1 is an ideal solution for SUMIT-based applications that require USB, SATA, PCI Express, and mSATA capabilities. See the *Ordering Information* section for available models and the port combinations that they provide.

The VL-EPMs-M1 is designed to support OEM applications where high reliability and long-term availability are required. From application design-in support, to the 5+ year production life guarantee, the VL-EPMs-M1 provides a rugged embedded computer solution with an excellent cost of ownership. The VL-EPMs-M1 is manufactured and tested to the highest quality standards and is fully RoHS compliant. Customization is available, even in low OEM quantities.

Details

Based on the SUMIT standard, the VL-EPMs-M1 supports SUMIT and PC/104™ stackable expansion buses on an industry-standard 90 mm x 96 mm (3.55" x 3.78") expansion module.

- The VL-EPMs-M1 provides up to four USB ports: two via standard Type A connectors and two via a 10-pin connector.

- The on-board SATA controller supports two SATA drives. Utilizing a standard latching right angle SATA connector, the VL-EPMs-M1 is compatible with traditional rotating drives, as well as solid-state drives (SSDs). The on-board BIOS extension supports system booting from a SATA device.

- An optional mSATA interface provides high-throughput, low-latency flash storage capabilities utilizing small form factor mSATA SSDs.

- An optional PCI Express Mini Card socket accommodates plug-in Wi-Fi modems, GPS receivers, flash data storage, and other cards.

Designed for full industrial (-40° to +85°C) temperature operation, the VL-EPMs-M1 is built to withstand thermal extremes. The VL-EPMs-M1 boards also meet MIL-STD-202G specifications for mechanical shock and vibration for use in harsh environments.

Transient voltage suppression (TVS) devices on all USB channels provide enhanced electrostatic discharge (ESD) protection for the system.

The VL-EPMs-M1 is compatible with a variety of popular operating systems including Windows, Windows Embedded, Linux, VxWorks, and QNX using standard software drivers.

RoHS

Ordering Information

Model	USB Type A Conn.	USB Pin-Header Conn.	SATA Ports	PCIe Mini Card Socket	mSATA Site	Stackable Bus Connectors
VL-EPMs-M1A	2	2	2	–	–	SUMIT-A
VL-EPMs-M1B	1	2	2	Y	–	SUMIT-AB, ISA
VL-EPMs-M1C	2	2	1	–	Y	SUMIT-A

Accessories

Part Number	Description
Cables	
VL-CBR-0201	Wi-Fi antenna interface cable
VL-CBR-0401	6.25" ATX to SATA cable
VL-CBR-0701	19.75" SATA cable
VL-CBR-0702	19.75" SATA cable, latching
VL-CBR-1013	Dual USB transition cable
Drives	
VL-HDS35-xxx	3.5" hard drive (SATA)
SSDs	
VL-F29-xxxx	mSATA module (SATA)
PCIe Mini Cards	
VL-WD10-CBN	802.11 g/n Wi-Fi transceiver module
Antennas	
VL-CBR-ANT-01	802.11 n Wi-Fi antenna
Mounting Hardware	
VL-HDW-105	0.6" standoff package (metric thread)
VL-HDW-106	0.6" standoff package (English thread)
VL-HDW-107	PCIe Mini Card/mSATA hardware kit (metric thread)
Miscellaneous	
VL-HDW-203	PC/104 extractor tool, metal

SPECIFICATIONS

General	Board Size	PC/104 standard: 90 mm x 96 mm (3.55" x 3.78")			
	Power Requirements (+5V) *	Idle	With USB	With Dual SATA	With PCIe Wi-Fi
		1.15W	3.36W	12.54W	4.16W
	Stackable Bus	SUMIT, ISA (optional, pass-through only)			
	Manufacturing Standards	IPC-A-610 Class 2 compliant			
	RoHS	Compliant			
Environmental	Operating Temperature	-40° to +85°C			
	Storage Temperature	-40° to +85°C			
	Airflow Requirements	Free air from -40° to +85°C			
	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 minutes per axis			
	Vibration, Random	MIL-STD-202G, Method 214A, Condition A: 5.35g rms, 5 minutes per axis			
	Mechanical Shock	MIL-STD-202G, Method 213B, Condition G: 20g half-sine, 11 ms duration per axis			
Mass Storage	Hard Drive	Two SATA (Revision 2.0) ports. Bootable. Latching right angle SATA connectors.			
	Flash	Optional PCIe Mini Card socket or mSATA interface			
Device I/O	USB †‡	Model	USB 2.0/1.1 Ports		
		VL-EPMs-M1A/C	4		
		VL-EPMs-M1B	3		
Other I/O	PCI Express Mini Card Socket (optional)	Supports Wi-Fi modems, GPS receivers, non-volatile flash data storage, and other plug-in modules			
Software	Operating Systems	Compatible with most x86 operating systems including Windows, Windows Embedded, Linux, VxWorks, and QNX using standard software drivers			

* Power specifications represent typical power draw at +25°C with +5V supply running Windows XP

† TVS protected port (enhanced ESD protection)

‡ Power pins on this port are overload protected

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SUMIT Resources

Form Factor: SUMIT-ISM (Legacy Type 1)

	SUMIT-A	SUMIT-B
PCIe x1	1	1
PCIe x4		–
USB	4	
ExpressCard	–	
LPC	–	
SPI/µWire	–	
SMBus/I²C	SMBus	
+12V	–	
+5V	✓	✓
+5V_sb	–	–
+3.3V	–	–

SUMIT-A: Bottom only on VL-EPMs-M1A/C
SUMIT-AB: Top and bottom on VL-EPMs-M1B
SMBus: VL-EPMs-M1B only