

Reference Manual

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VL-EPHs-B1

SUMIT-Micro USB expansion
board for VersaLogic SBCs,
with optional eUSB site



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The SUMIT name and logo are trademarks of the Small Form Factor Special Interest Group.

Product Release Notes

Rev 1.0 Release

Initial commercial release.

Support

The VL-EPHs-B1 support page, at <http://www.versalogic.com/private/ephsb1support.asp>, contains additional information and resources for this product including:

- Reference Manual (PDF format)
- Links to product advisories and KnowledgeBase articles
- Photograph of the circuit board

This is a private page for VL-EPHs-B1 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](#)

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Description

The VL-EPHs-B1 is a USB expansion board for SUMIT-enabled VersaLogic single board computers. Its features include:

- Two USB 2.0 Type A ports (VL-EPHs-B1A)
- Two USB 2.0 channels through a 10-pin header
- Optional eUSB flash site (VL-EPHs-B1B, replaces one Type A port)

The VL-EPHs-B1 features high reliability design and construction. VL-EPHs-B1 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 module.

Technical Specifications

Board Size:

3.55" x 1.26"

Storage Temperature:

-40° to +85°C

Operating Temperature:

-40° to +85°C

Power Requirements:

+5V ± 5%

USB:

Four USB 2.0/1.1 channels:
Two Type A ports
Two channels via 10-pin header

Flash Storage:

eUSB site (Model B, replaces one USB Type A port)

Compatibility:

SUMIT-Micro

Weight:

VL-EPHs-B1a – 0.018 kg (0.040 lb)
VL-EPHs-B1b – 0.017 kg (0.038 lb)

SUMIT Resources		
Form Factor: SUMIT-I/O Mini		
	SUMIT A	SUMIT B
PCIe x1	–	
PCIe x4		
USB	4	
ExpressCard	–	
LPC	–	
SPI / uWire	–	
SMBus/ I ² C	–	
+12V	–	
+5V	✓	
+5Vsb	–	
+3.3V	–	

Specifications are subject to change without notification.

RoHS Compliance

The VL-EPHs-B1 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.

HANDLING CARE

Warning! Care must be taken when handling the board not to touch the exposed circuitry with your fingers. Though it will not damage the circuitry, it is possible that small amounts of oil or perspiration on the skin could have enough conductivity to cause the contents of CMOS RAM to become corrupted through careless handling, resulting in CMOS resetting to factory defaults.

EARTH GROUND REQUIREMENT

Warning! All mounting standoffs should be connected to earth ground (chassis ground). This provides proper grounding for ESD and EMI purposes.

Technical Support

If you are unable to solve a problem after reading this manual, please visit the VL-EPHs-B1 product support web page below. The support page provides links to this manual, product advisories, and the VersaTech KnowledgeBase .

[VL-EPHs-B1 Support Page](http://www.versalogic.com/private/ephsb1support.asp)

<http://www.versalogic.com/private/ephsb1support.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-EPHs-B1.

[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 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 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.

Dimensions and Mounting

The VL-EPHs-B1 complies with SUMIT-Micro dimensional standards. Dimensions are given below to help with pre-production planning and layout.

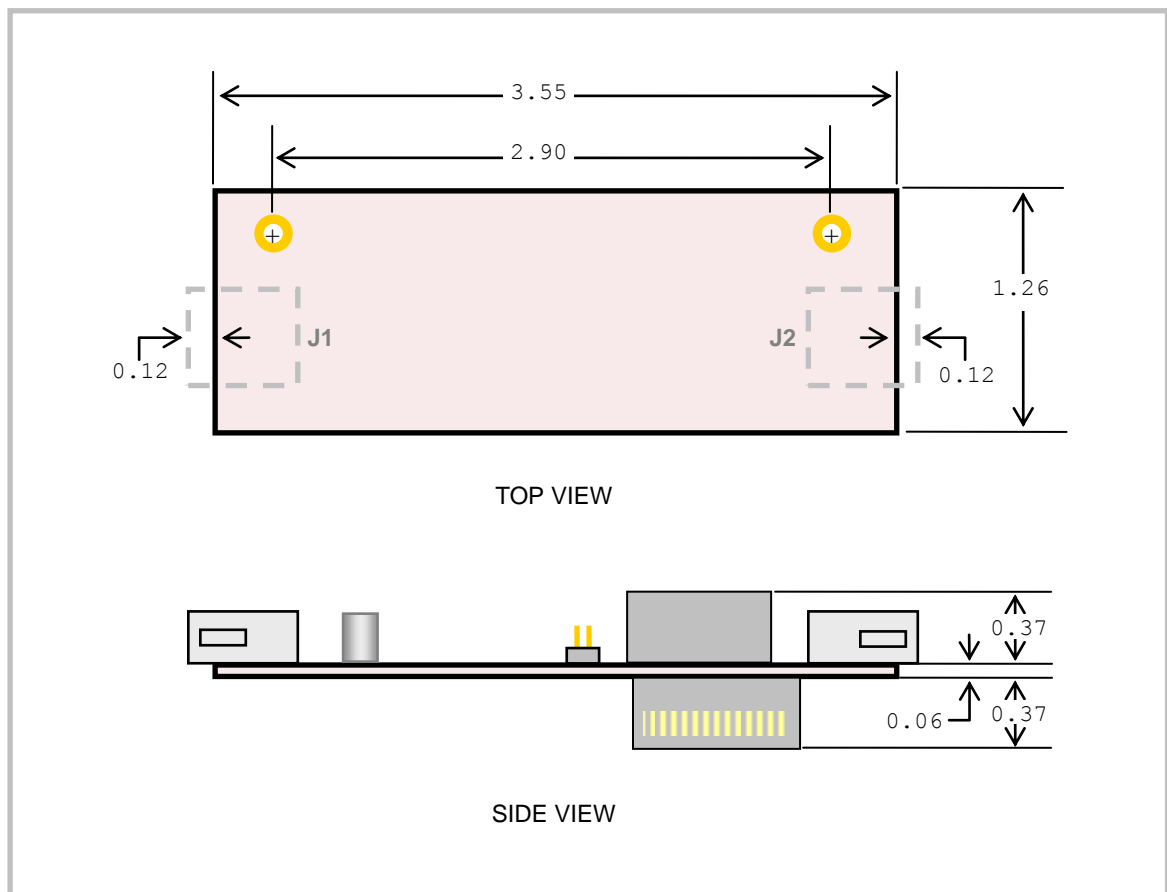


Figure 1.VL-EPHs-B1 Dimensions and Mounting Holes

(Not to scale. All dimensions in inches.)

HARDWARE ASSEMBLY

The VL-EPHs-B1 uses a SUMIT-A bottom connector that attaches to the top of the stack. The board is secured using two hardware standoffs on the corner mounting holes. These standoffs are attached to the CPU board using pan head screws. Standoffs and screws are available as part number VL-HDW-105 (metric thread) or VL-HDW-106 (English thread). The figure below shows a typical installation.

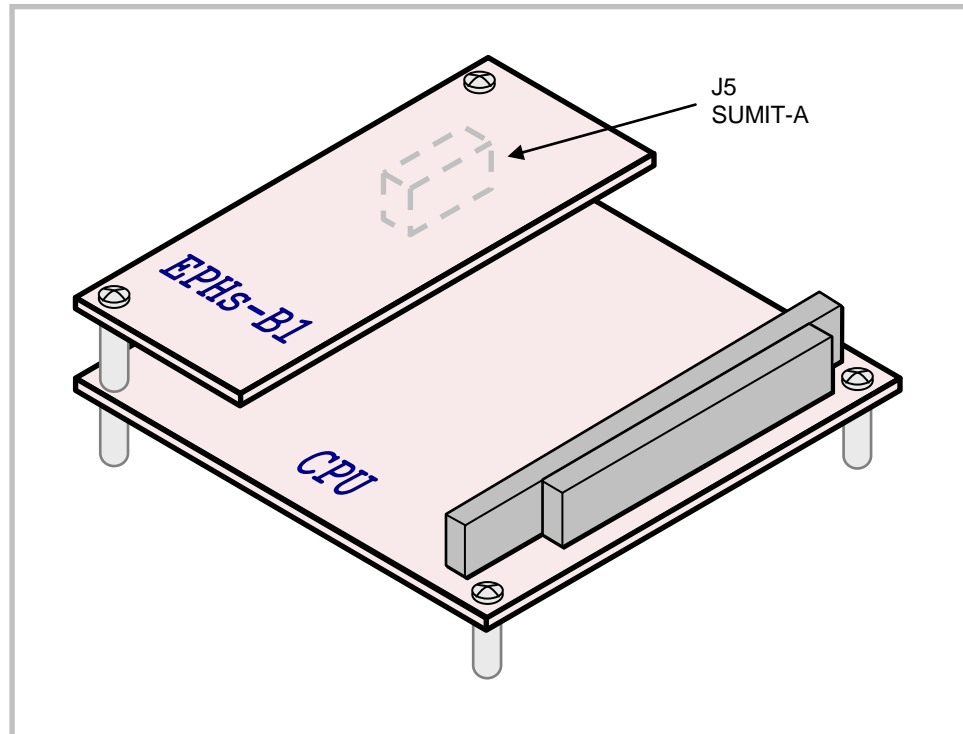


Figure 2. VL-EPHs-B1 Hardware Assembly

External Connectors

VL-EPHS-B1 CONNECTOR LOCATIONS

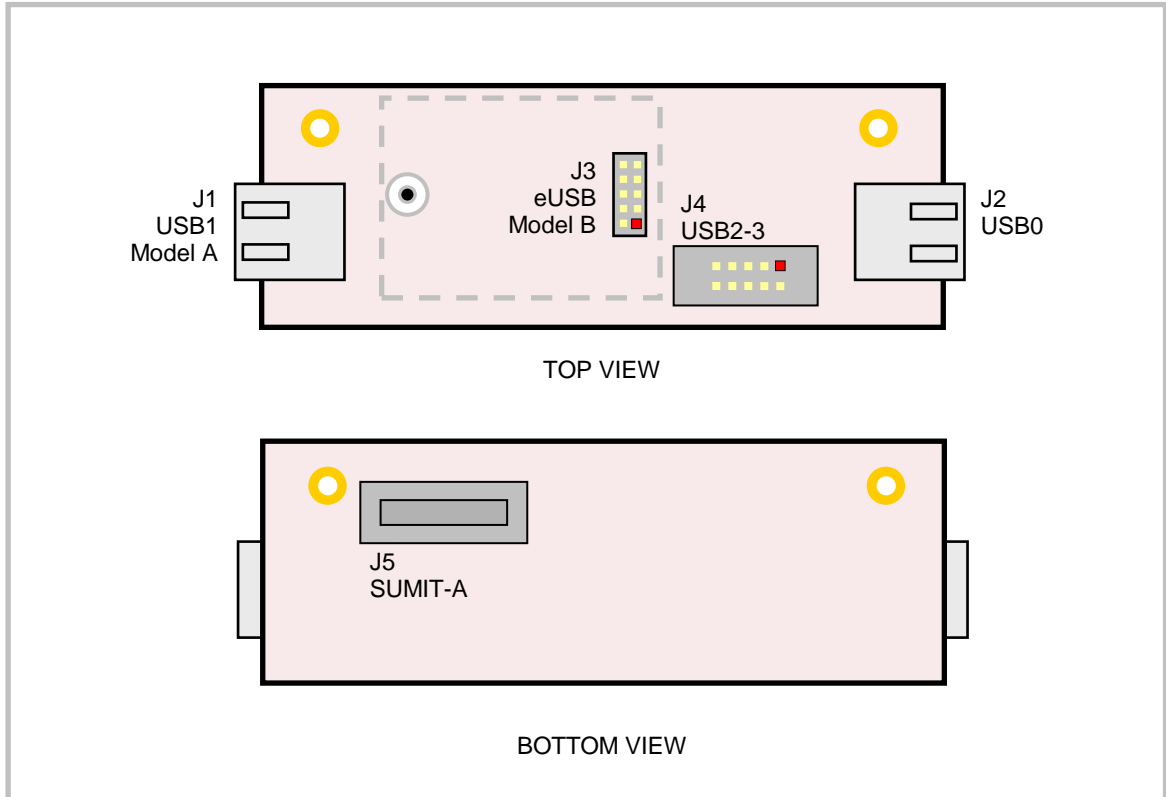


Figure 3. Connector Locations

VL-EPHS-B1 CONNECTOR FUNCTIONS AND INTERFACE CABLES

Table 1 provides information about the function, mating connectors, and transition cables for VL-EPHS-B1 connectors.

Table 1: Connector Functions and Interface Cables

Connector	Function	Mating Connector/Device	Transition Cable	Cable Description
J1	USB1 (Model A)	USB Type A	—	—
J2	USB0	USB Type A	—	—
J3	eUSB (Model B)	eUSB Flash Drive	—	—
J4	USB2-3	FCI 71600-010LF	VL-CBR-1013	12" 10-pin IDC transition to VL-CBR-8006B dual USB translator board
J5	SUMIT A – 4 USB, +5V	Samtec ASP-129646-01	—	—

SUMIT Connector

The SUMIT-A bottom connector (J5) provides USB and +5V power to the VL-EPHs-B1, as shown in the following table. See the [SUMIT Specification](#) for a complete description of the SUMIT interface.

Table 2: VL-EPHs-B1 SUMIT-A Bottom Connector (J5) Pinout

Pin	Signal Name	Function
1	NC	No connect
3	NC	No connect
5	NC	No connect
7	NC	No connect
9	NC	No connect
11	USB_OC#	USB overcurrent flag
13	Reserved	Reserved
15	+5V	+5V power
17	USB7+	USB7 data +
19	USB7-	USB7 data –
21	+5V	+5V power
23	USB6+	USB6 data +
25	USB6-	USB6 data –
27	+5V	+5V power
29	USB5+	USB5 data +
31	USB5-	USB5 data –
33	+5V	+5V power
35	USB4+	USB4 data +
37	USB4-	USB4 data –
39	GND	Ground
41	NC	No connect
43	NC	No connect
45	GND	Ground
47	NC	No connect
49	NC	No connect
51	+5V	+5V power

Pin	Signal Name	Function
2	NC	No connect
4	NC	No connect
6	NC	No connect
8	NC	No connect
10	NC	No connect
12	NC	No connect
14	NC	No connect
16	NC	No connect
18	NC	No connect
20	NC	No connect
22	NC	No connect
24	NC	No connect
26	NC	No connect
28	NC	No connect
30	NC	No connect
32	NC	No connect
34	NC	No connect
36	NC	No connect
38	NC	No connect
40	GND	Ground
42	NC	No connect
44	NC	No connect
46	NC	No connect
48	NC	No connect
50	NC	No connect
52	GND	Ground

USB and eUSB Interfaces

The VL-EPHs-B1A includes four USB 2.0/1.1 channels: two USB Type A ports at connectors J1 and J2, and two USB channels through a 10-pin header at connector J4. A dual USB Type A connector transition board (VL-CBR-1013) is available for connector J4. The pinout of the J4 connector is shown below.

Table 3: J4 USB Connector Pinout

J4 Pin	Signal Name	Function
1	+5V	Protected power supply
2	USBH2_P	USB2 data +
3	USBH2_N	USB2 data –
4	GND	Ground
5	EARTH1	Earth ground
6	EARTH1	Earth ground
7	GND	Ground
8	USBH3_N	USB3 data –
9	USBH3_P	USB3 data +
10	+5V	Protected power supply

The VL-EPHs-B1B includes connectors J1 and J4, and an eUSB site (J5) for an eUSB solid state drive (SSD). The VersaLogic VL-F15 series of eUSB SSDs come in sizes of 2 GB, 4 GB and 8 GB, and have extended temperature ratings. Contact [VersaLogic Sales](#) for information. eUSB modules are secured to the board using the VL-HDW-109 hardware kit from VersaLogic. The kit contains one M2.5 x 6mm round aluminum standoff and two M2.5 x 4mm pan head Philips screws. The pinout of the J5 connector is shown below.

Table 4: J5 eUSB Connector Pinout

J5 Pin	Signal Name	Function
1	+5V	Protected power supply
2	NC	Not connected
3	D-	Data –
4	NC	Not connected
5	D+	Data +
6	NC	Not connected
7	GND	Ground
8	NC	Not connected
9	Key	Physical key
10	NC	Not connected

Appendix A – References



SUMIT Interface

[SUMIT Specification](#)