

- Up to 4 USB 2.0 ports
- eUSB interface (optional)
- Industrial temp. operation
- MIL-STD-202G shock/vibe

## Highlights

### SUMIT-micro Form Factor

Small footprint board expands any SUMIT™-based system.

### USB I/O

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

### Flash Memory

Optional eUSB interface for plug-in flash storage.

### Industrial Temperature

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

### MIL-STD-202G

Qualified for high shock/vibration environments.

## Overview

The VL-EPHs-B1 expansion module provides plug-in access to the additional USB capabilities provided by SUMIT-enabled embedded computers. With a small footprint, simplified interface, and extensive ruggedization, the VL-EPHs-B1 is an ideal solution for all embedded applications that require additional USB capabilities.

The VL-EPHs-B1 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-EPHs-B1 provides a rugged embedded computer solution with an excellent cost of ownership. The VL-EPHs-B1 is manufactured and tested to the highest quality standards and is fully RoHS compliant. Customization is available, even in low OEM quantities.

## Details

The VL-EPHs-B1 provides USB signals from the SUMIT-A connector on a 90 mm x 32 mm (3.54" x 1.26") mezzanine "SUMIT-micro" card. It mounts to the top of the SUMIT stack using two hardware standoffs. The VL-EPHs-B1A provides two Type A USB ports while the VL-EPHs-B1B provides one Type A USB port and an eUSB interface for flash storage. Both models also provide two additional USB channels via a 10-pin header. A transition cable is available which provides two USB Type A ports from the 10-pin header.

Designed for full industrial (-40° to +85°C) temperature operation; the VL-EPHs-B1 meets 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-EPHs-B1 is compatible with a variety of popular operating systems including Windows, Windows Embedded, Linux, VxWorks, and QNX.

**SPECIFICATIONS**


VL-EPHs-B1A (Top)



VL-EPHs-B1A (Bottom)

**Ordering Information**

| Model       | USB Type A Ports | USB Pin-Header Ports | eUSB Interface |
|-------------|------------------|----------------------|----------------|
| VL-EPHs-B1A | 2                | 2                    | N              |
| VL-EPHs-B1B | 1                | 2                    | Y              |

**Accessories**

| Part Number | Description                            |
|-------------|--|
| VL-CBR-1013 | Dual USB transition cable              |
| VL-F15-xxxx | eUSB module (USB)                      |
| VL-HDW-105  | 0.6" standoff package (metric thread)  |
| VL-HDW-106  | 0.6" standoff package (English thread) |
| VL-HDW-109  | eUSB mounting hardware kit             |

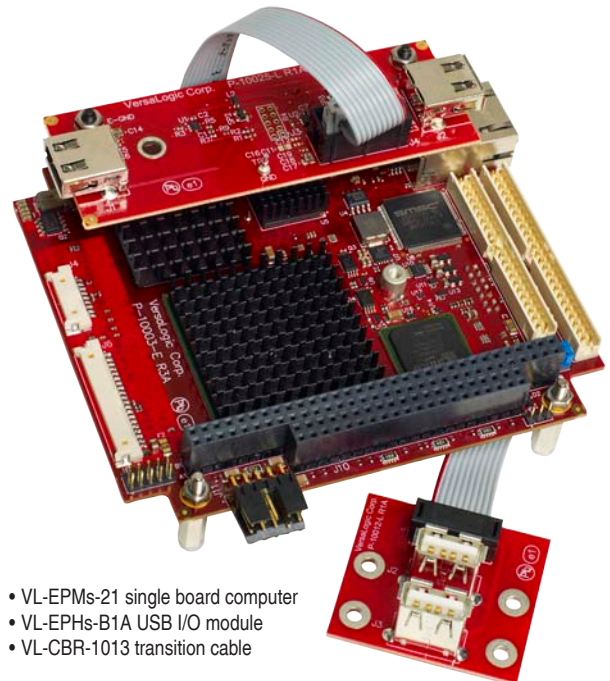
| SUMIT Resources          |         |         |
|--------------------------|---------|---------|
| Form Factor: SUMIT-micro |         |         |
|                          | SUMIT-A | SUMIT-B |
| PCIe x1                  | -       |         |
| PCIe x4                  |         |         |
| USB                      | 4       |         |
| ExpressCard              | -       |         |
| LPC                      | -       |         |
| SPI/μWire                | -       |         |
| SMBus/I <sup>2</sup> C   | -       |         |
| +12V                     | -       |         |
| +5V                      | ✓       |         |
| +5V <sub>ab</sub>        | -       |         |
| +3.3V                    | -       |         |

| General       | Board Size                  | SUMIT-micro: 32 mm x 90 mm (1.26" x 3.54")   |       |                   |             |   |             |   |
|---------------|-----------------------------|--|-------|-------------------|-------------|---|-------------|---|
|               | Stackable Bus               | SUMIT (top of stack only)  |       |                   |             |   |             |   |
|               | RoHS                        | RoHS (2002/95/CE) 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  | Flash                       | eUSB interface (optional) with USB signaling   |       |                   |             |   |             |   |
| Device I/O    | USB †‡                      | <table border="1"> <thead> <tr> <th>Model</th> <th>USB 2.0/1.1 Ports</th> </tr> </thead> <tbody> <tr> <td>VL-EPHs-B1A</td> <td>4</td> </tr> <tr> <td>VL-EPHs-B1B</td> <td>3</td> </tr> </tbody> </table> | Model | USB 2.0/1.1 Ports | VL-EPHs-B1A | 4 | VL-EPHs-B1B | 3 |
| Model         | USB 2.0/1.1 Ports           |  |       |                   |             |   |             |   |
| VL-EPHs-B1A   | 4                           |  |       |                   |             |   |             |   |
| VL-EPHs-B1B   | 3                           |  |       |                   |             |   |             |   |
| Software      | Operating Systems           | Compatible with most x86 operating systems, including Windows, Windows Embedded, Linux, VxWorks, and QNX   |       |                   |             |   |             |   |

† TVS protected port (enhanced ESD protection)

‡ Power pins on this port are overload protected

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- VL-EPHs-B1A USB I/O module
- VL-CBR-1013 transition cable