



- SiS™ Volari™ Z9M GPU
- 8 MB VRAM
- Analog VGA and LVDS output
- Industrial temp. operation
- MIL-STD-202G shock/vibe

## Highlights

### PC/104-Plus™

Rugged industry-standard form factor.

### Video

Analog VGA and LVDS video output.

### Industrial Temperature

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

### MIL-STD-202G

Qualified for high shock/vibration environments.

## Overview

The VL-EPM-V4 expansion module provides video capabilities for PC/104-Plus embedded systems. With a full industrial temperature rating and rugged construction, the VL-EPM-V4 is an ideal solution for embedded video applications in harsh, mobile, and/or remote environments.

The VL-EPM-V4 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-EPM-V4 provides a rugged embedded computer solution with an excellent cost of ownership. The VL-EPM-V4 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 PC/104-Plus standard, the VL-EPM-V4 supports PCI and ISA stackable expansion buses on an industry-standard 90 mm x 96 mm (3.55" x 3.78") expansion module.

Utilizing an SiS Volari Z9M GPU for high-performance graphics capabilities, the VL-EPM-V4 provides analog VGA and LVDS video output (simultaneous).

The on-board video BIOS supports VESA™ standard graphics modes. The VL-EPM-V4 can be used as a development tool for VersaLogic's headless (no video output) Tomcat and Newt single board computers or to provide a secondary video output for any PC/104-Plus embedded system.

The Z9M GPU features advanced power reduction (throttling) and power down (sleep) controls, which can be accessed in various ways depending on the operating system in use.

Designed for full industrial temperature operation (-40° to +85°C), the VL-EPM-V4 is built to withstand thermal extremes. The VL-EPM-V4 board also meets MIL-STD-202G specifications for mechanical shock and vibration for use in harsh environments.

The VL-EPM-V4 is compatible with a variety of popular operating systems including Windows, Windows Embedded, Linux, VxWorks, and QNX using standard software drivers.

### Ordering Information

| Model      | VGA | LVDS | Operating Temp. |
|------------|-----|------|-----------------|
| VL-EPM-V4E | Y   | Y    | -40° to +85°C   |

### Accessories

| Part Number          | Description                                 |
|----------------------|---|
| <b>Cables</b>        |   |
| VL-CBR-1201          | 12-pin 2 mm (latching) / 15-pin VGA adapter |
| VL-CBR-2010          | 20" 18-bit LVDS flat panel (Hirose)         |
| VL-CBR-2011          | 20" 18-bit LVDS flat panel (JAE)            |
| <b>Hardware</b>      |   |
| VL-HDW-105           | 0.6" standoff package (metric thread)       |
| VL-HDW-106           | 0.6" standoff package (English thread)      |
| <b>Miscellaneous</b> |   |
| VL-HDW-201           | PC/104™ board extraction tool               |

### Specifications

| General       | Board Size                  | PC/104 standard: 96 mm x 96 mm (3.55" x 3.78")  |               |               |
|---------------|-----------------------------|---|---------------|---------------|
|               | Power Requirements (+5V)*   | Idle  | Typical       | Max           |
|               |                             | 0.22A (1.10W)   | 0.30A (1.48W) | 0.37A (1.85W) |
|               | Stackable Bus               | PC/104-Plus: PCI, ISA (pass-through only)   |               |               |
|               | Manufacturing Standards     | IPC-A-610 Class 2 compliant   |               |               |
|               | 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  |               |               |
| Video         | Controller                  | SiS Volari Z9M. 64-bit 2D graphics engine.  |               |               |
|               | VRAM                        | Integrated 8 MB DDR SDRAM   |               |               |
|               | Desktop Display Interface   | Analog output (VGA). 16/24-bit. Up to 1280 x 1024 (24-bit) or 1920 x 1200 (16-bit).   |               |               |
|               | OEM Flat Panel Interface    | Single-channel LVDS interface. Up to 1280 x 1024 (18-bit).  |               |               |
| Software      | BIOS                        | On-board SPI-based video BIOS supports VESA standard graphics modes   |               |               |
|               | Operating Systems           | Compatible with most x86 operating systems including Windows, Windows Embedded, Linux, VxWorks, and QNX using standard software drivers |               |               |

\* Power specifications represent operation at +25°C with +5V supply running Windows XP. Typical power computed as the mean value of Idle and Maximum power specifications. Maximum power is measured with 50% GPU utilization.

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