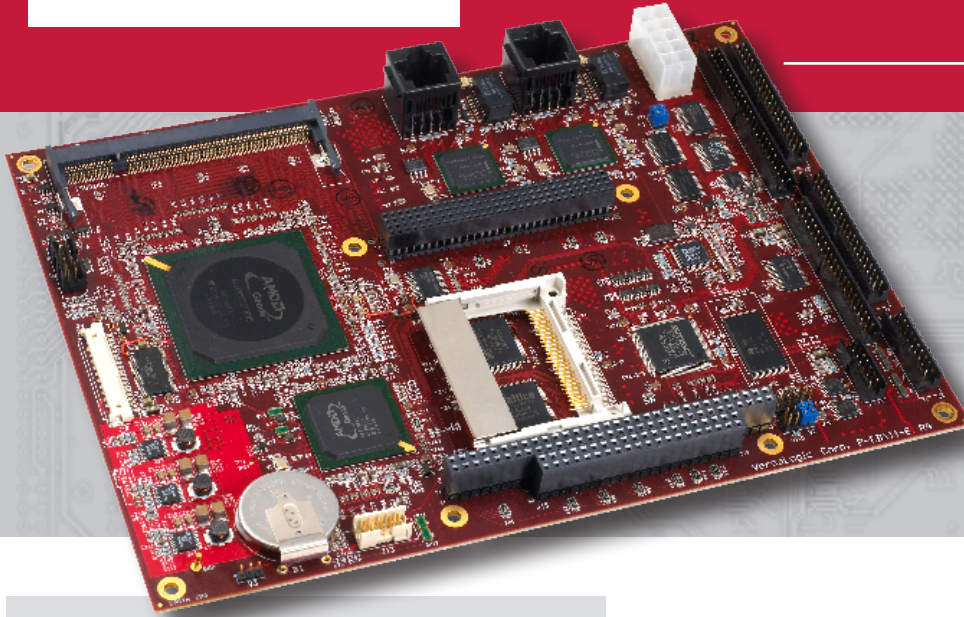


# PYTHON

## EBX Single Board Computer



- AMD Geode LX 800 processor
- Up to 1GB DDR RAM
- Integrated video
- PC/104-Plus expansion
- CompactFlash socket
- RoHS-compliant
- Standard and extended temp versions

## Highlights

### EBX Form Factor

PC/104 and PC/104-Plus expansion with a full complement of on-board I/O.

### Geode LX 800 Processor

500 MHz performance with lower power draw.

### High Performance Video

Analog and LVDS flat panel outputs for 18 and 24-bit displays.

### Network Support

Dual 10/100 Ethernet provides fast network access and boot ROM support.

### USB Ports

Four USB 2.0 ports provide flexible I/O options for keyboard, mouse, floppy drives, and other devices.

### Integrated I/O

Four COM ports (two RS-232, two RS-232/422), one IDE interface, and one LPT port with SPP and enhanced modes.

### Digital and Analog I/O

32 lines of digital I/O, eight 12-bit analog channels, and three pulse width modulation (PWM) outputs.

### CompactFlash Socket

Removable non-volatile media has no moving parts and is bootable.

### Fanless Operation

No moving parts required for CPU cooling.

### Embedded BIOS

OEM embedded features and firmware support. Field-upgradeable, customization available.

### Cost Effective Expansion

PC/104, PC/104-Plus and SPX™ expansion sites.

## Overview

The Python is a mid-performance single board computer that offers lower power consumption and superior performance over previous generation embedded computers. Advancements in technology allow the Python to be a more flexible core component in any embedded system, and reduce the amount of development time required to add specialized I/O or custom peripheral devices. The highly efficient AMD LX 800 processor is integrated with a wide range of on-board I/O from standard PC/104 and PC/104-Plus interfaces to versatile analog and digital I/O. With dual Ethernet channels, USB 2.0 ports, RS-232 and RS-422 COM ports, and fanless operation, the Python is ideal for industrial control and data acquisition applications. The Python is available in several versions, including models for standard and extended temperature operation.

Like all VersaLogic products, this small and efficient SBC is designed to support OEM applications where high reliability and long-term availability are required. From application design-in to 5+ years production life, its quality and longevity provide a cost-effective, long-term solution. Customization is available on as few as 100 pieces. The Python is manufactured and tested to the highest quality standards, is compliant with RoHS regulations, and is backed by a two year limited warranty.

## Details

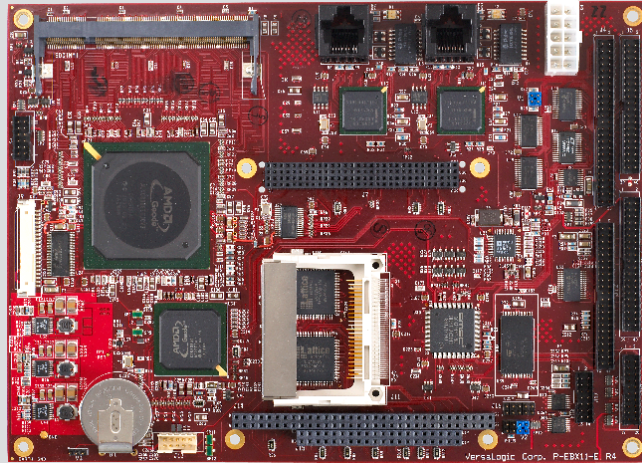
The Python features the AMD LX 800 processor, which offers 500 MHz performance while drawing less than 5 watts of power. This highly-integrated processor, along with its companion chip, provide the majority of the Python's on-board I/O, including USB support, audio, and video. The high resolution video output can be configured for either standard desktop-type displays or LVDS flat panels.

For cost-effective I/O expansion without the need for additional PC/104 modules, the Python includes VersaLogic's new SPX interface. SPX modules provide an inexpensive solution for additional I/O including analog, digital, CANbus, relay switching, and more. In addition, the simple SPX interface, which is based on Serial Peripheral Interface (SPI) signaling, can be used to easily design custom user I/O devices.

The board features a General Software Embedded BIOS with OEM enhancements. This BIOS supports custom defaults and the addition of firmware and firmware applications for security processes, remote booting, and other pre-OS software functions. The Python is compatible with a variety of popular operating systems, including Windows, QNX, VxWorks, and Linux.



### Specifications



### Ordering Information

VL-EBX-11g .....AMD LX 800, Standard Temp.  
VL-EBX-11h .....AMD LX 800, Extended Temp.

### Accessories

VL-CBR-1009 ..... Dual USB cable (RoHS)  
VL-CBR-1201\* ..... Analog video interface cable (RoHS)  
VL-CBR-2003 ..... LPT interface cable (RoHS)  
VL-CBR-2010 ..... LVDS / FPD interface cable, Hirose (RoHS)  
VL-CBR-2011 ..... LVDS / FPD interface cable, JAE (RoHS)  
VL-CBR-2022\* ..... ATX power adapter cable (RoHS)  
VL-CBR-4004 ..... Field wiring breakout cable (RoHS)  
VL-CBR-4405\* ..... 1" connector IDE adapter board (RoHS)  
VL-CBR-4406\* ..... 2.5" IDE drive cable (RoHS)  
VL-CBR-5009\* ..... Primary breakout cable (RoHS)  
VL-CKR-PYTH ..... Development cable kit (RoHS)  
VL-CDD-IDE1 ..... CD-RW, DVD-ROM drive  
VL-CF-CLIP1 ..... CompactFlash retention clip  
VL-DEV-CD-L4 ..... Debian Linux Board Support Package  
VL-DEV-CD-L6 ..... Debian Linux Board Support Package  
VL-ENCL-5c ..... Development enclosure  
VL-FDD-144U ..... USB floppy drive  
VL-HDD25-xxx ..... 2.5" IDE hard drive  
VL-HDW-101\* ..... Hardware standoffs (RoHS)  
VL-MM5D-xxx ..... DDR RAM module  
VL-SPX-x ..... SPX expansion modules (RoHS)  
VL-CBR-1401 ..... Cable Assembly, for two SPX Modules (RoHS)  
VL-CBR-1402 ..... Cable Assembly, for four SPX Modules (RoHS)

\* Included in VL-CKR-PYTH Cable Kit

|                          |                                    |                                                                                                                                 |
|--------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>General</b>           | Processor                          | AMD Geode LX 800                                                                                                                |
|                          | Chipset                            | AMD Geode CS5536                                                                                                                |
|                          | Power Requirements                 | +5.0V $\pm$ 5% @ .90A (4.5W) typ.                                                                                               |
|                          | System Reset and Hardware Monitors | Watchdog timeout<br>Voltage rail monitoring                                                                                     |
|                          | Compatibility                      | EBX: mechanically compatible.<br>PC/104-Plus: supports 3.3V PCI signaling (2.1 compliant).<br>SPX: compliant<br>RoHS: compliant |
| <b>Mechanical</b>        | Board Size                         | 5.75" x 8" (146 mm x 203 mm)                                                                                                    |
|                          | Storage Temperature                | -40° to +85°C                                                                                                                   |
|                          | Operating Temperature              | 0° to +60°C (VL-EBX-11g)<br>-40° to +85°C (VL-EBX-11h)                                                                          |
|                          | Thermal Shock                      | 5°C/min over operating temperature                                                                                              |
|                          | Vibration, Sinusoidal Sweep        | 2g constant acceleration from 5 to 500Hz, 20 minutes per axis, MIL-STD-202G, Method 204, Modified Condition A                   |
|                          | Vibration, Random                  | .02g <sup>2</sup> /Hz (5.35g rms) 15 minutes per axis, MIL-STD-202G, Method 214A, Condition A                                   |
|                          | Mechanical Shock                   | 30g half-sine, 11 ms duration per axis, MIL-STD-202G, method 213B, condition J                                                  |
|                          | Humidity                           | Less than 95%, noncondensing                                                                                                    |
|                          |                                    |                                                                                                                                 |
| <b>Memory</b>            | System RAM                         | One 200-pin SO-DIMM socket. Up to 1 GB of 333 MHz PC2700 compatible DDR RAM.                                                    |
|                          | Flash Interface                    | High-retention CompactFlash socket. DMA supported.                                                                              |
| <b>Video</b>             | General                            | Integrated high-performance video. Up to 1600 x 1200 with 32-bit color. MMX™ + 3DNow!™                                          |
|                          | Desktop Display Interface          | Standard analog output. 2 mm IDC connector.                                                                                     |
|                          | OEM Flat Panel Interface ‡         | 18/24-bit LVDS interface. CMOS-selectable TFT panel types.                                                                      |
| <b>Network Interface</b> | Ethernet*                          | Dual Autodetect 10BaseT/100BaseTX ports. Vertical RJ-45 connectors.                                                             |
|                          | Network Boot Option                | Firmware-based Argon Managed Boot Agent. Supports PXE, RPL, NetWare, TCP/IP (DHCP, BOOTP) remote boot protocols.                |
| <b>Device I/O</b>        | USB* ‡                             | 4 USB 2.0/1.1 ports                                                                                                             |
|                          | IDE Interface                      | ATA-5, UDMA66 interface. 44-pin 2 mm connector.                                                                                 |
|                          | COM 1 & 2 Interface*               | RS-232, 16C550 compatible. 115K baud max.                                                                                       |
|                          | COM 3 & 4 Interface*               | RS-232/422 selectable. 16C550 compatible. 460K baud max.                                                                        |
|                          | LPT Interface*                     | Standard PC parallel port. Bi-directional/EPP/ECP compatible.                                                                   |
|                          | Digital I/O                        | 32-line digital I/O port, 3.3V only.                                                                                            |
|                          | Analog Input                       | 8-channel, 12-bit port.                                                                                                         |
|                          | PWM Outputs and Tach Inputs†       | 3 PWM (pulse width modulation) outputs and tachometer inputs.                                                                   |
|                          | Audio                              | AC'97 stereo line in, stereo line out.                                                                                          |
|                          | AT Peripherals*‡                   | Keyboard and PS/2 mouse port.                                                                                                   |
|                          |                                    |                                                                                                                                 |
| <b>Software</b>          | Operating Systems                  | Compatible with most x86 operating systems, including Windows CE/XPe, QNX, VxWorks, and Linux.                                  |
|                          | BIOS                               | General Software's Embedded BIOS with OEM enhancements. Field reprogrammable. User-configurable CMOS defaults.                  |

\*TVS protected port (Enhanced ESD protection)

† Tachometer inputs can be used to time the interval between events or as feedback to PWM outputs

‡ Power pins on this port are protected with a self-resetting fuse

Data represents standard operation at 25°C with 5 V supply unless otherwise noted. Specifications are subject to change without notice. PC/104, PC/104-Plus, and EBX are trademarks of the PC/104 Consortium. SPX is a trademark of VersaLogic Corporation.

05/30/14