

- Low power LX 800 processor
- Fanless operation
- CompactFlash socket
- High performance video
- Extended temperature version
- PC/104-Plus expansion

## Highlights

### PC/104-Plus Form Factor

Supports PC/104 and PC/104-Plus expansion on a compact, highly rugged format.

### AMD LX 800 Processor

500 MHz performance with low power draw.

### Fanless Operation

No moving parts required for CPU cooling.

### Extended Temperature Version

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

### Soldered-on System RAM

Includes 256 MB soldered-on RAM for harsh environments.

### High Performance Video

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

### Network Support

10/100 Ethernet with boot ROM support.

### USB I/O

Four USB 2.0 ports support keyboard, mouse, and other devices.

### Device I/O

Three COM ports, IDE interface, and LPT port.

### CompactFlash® Socket

Supports removable, bootable Flash memory in a latching (optional) socket.

### Puma Compatibility

Provides pin-out and functional migration path for VersaLogic Puma users.

### RoHS-compliant

Full compliance with EU Directive 2002/95/EC for devices used in Europe.

## Overview

The Manx is a compact, rugged single board computer that combines a high degree of functionality with low power requirements and no moving parts. The inherent ruggedness of the Manx's PC/104 size combined with the low power AMD Geode LX 800 processor make this board a great fit for vehicular/aircraft controls, medical electronics, and many other OEM applications.

The Manx has an impressive list of on-board features, including high-performance video with flat panel support, 10/100 Ethernet, four USB ports, three COM ports, LPT port, and IDE interface. A CompactFlash socket provides bootable media storage and TVS devices provide enhanced ESD protection on user I/O ports. The Manx includes 256 MB of soldered-on RAM for use in applications requiring a high degree of ruggedness.

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. The Manx is manufactured and tested to the highest quality standards, is compliant with RoHS regulations, and is backed by a two year limited warranty. Customization is available on as few as 100 pieces.

## Details

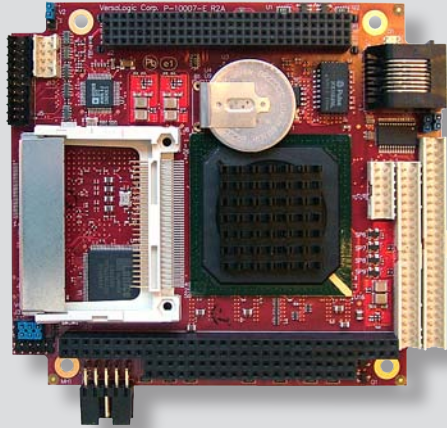
The Manx features the AMD Geode LX 800 processor, which offers outstanding performance and low power draw (5W). This highly-integrated processor provides fast on-board transfers (6 GB per second), high-speed memory access, and integrated high-performance video with both analog and LVDS flat panel support. It is available in both standard temperature (0° to +60°C) and extended temperature (-40° to +85°C) versions.

The suspend-to-RAM power management feature supports a very low power sleep mode (0.2W) for use between active sessions.

The Manx can operate as a stand-alone SBC or can be combined with specialized PC/104 or PC/104-Plus I/O boards for additional functionality. Pass-through connectors for the PC/104 and PC/104-Plus interfaces provide support for many off-the-shelf I/O boards and also provide an interface for custom baseboards that may be larger than the Manx. In addition, the Manx has been designed to provide a migration path for VersaLogic Puma (VL-EPM-5x) SBC users.

The Manx includes several features to support reliable operation in the field, including TVS devices and fanless cooling. The TVS devices provide enhanced ESD protection for the analog video output, USB, COM, LPT, and Ethernet ports.

The board features a Phoenix Technologies (formerly General Software) Embedded BIOS with OEM enhancements and power management. The field-reprogrammable BIOS supports custom defaults and optional addition of firmware and firmbase applications for security processes, remote booting, and other pre-OS software functions. The Manx is compatible with a variety of popular operating systems, including Windows, Linux, VxWorks, and QNX.



## Ordering Information

VL-EPM-15S .....Manx LX 800 SBC. Standard temp., fanless  
VL-EPM-15E .....Manx LX 800 SBC. Extended temp., fanless

## Accessories

VL-CBR-0803 ..... Audio cable, stereo in/out (RoHS)  
VL-CBR-1008\* ..... ATX power adapter 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-4405\* ..... 1" connector IDE adapter board (RoHS)  
VL-CBR-4406\* ..... IDE cable (RoHS)  
VL-CBR-5010\* ..... I/O cable set (RoHS)  
VL-CF-CLIP1 ..... CompactFlash retention clip  
VL-CFM-xxxx ..... CompactFlash module  
VL-CKR-MANX ..... Development cable kit (RoHS)  
VL-DEV-CD-L6 ..... Debian Linux CD for VL-EPM-15  
VL-ENCL-4 (VersaTainer) ..... Ruggedized enclosure  
VL-ENCL-5c ..... Development enclosure  
VL-FDD-144U ..... USB floppy drive  
VL-HDD25-100 ..... 100 GB 2.5" IDE hard drive  
VL-HDW-101\* ..... Mounting standoffs, metric thread

\* Included in VL-CKR-MANX cable kit

## SPECIFICATIONS

<b>General</b>	Board Size	PC/104 standard: 90 mm x 96 mm (3.55" x 3.78") with wings
	Processor	AMD Geode LX 800
	Chipset	AMD Geode CS5536
	Power Requirements	+5V (with 256 MB RAM, keyboard, mouse, running Windows XP): • Active - 1.00A (5.0W) • Idle - 0.76A (3.8W) • Sleep - 0.04A (0.2W)
	System Reset & Hardware Monitors	Watchdog timeout. 3.3V rail monitored (resets below 2.94V typ.).
	Expansion	PC/104-Plus: Footprint compatible, supports 3.3V signaling, PCI 2.2 compatible
	RoHS	Compliant
<b>Environmental</b>	Operating Temperature	0° to +60°C (VL-EPM-15S) -40° to +85°C (VL-EPM-15E)
	Storage Temperature	-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: 0.02g <sup>2</sup> /Hz (5.35g rms), 15 minutes per axis
	Mechanical Shock	MIL-STD-202G, Method 213B, Condition J: 30g half-sine, 11 ms duration per axis
<b>Memory</b>	System RAM	256 MB soldered-on DDR SDRAM
	Flash Interface	CompactFlash socket. Type 1 and 2 supported. Optional latching retention clip available.
<b>Video</b>	General	Integrated high-performance video. LVDS and Analog VGA. Up to 1600 x 1200 with 32-bit color. MMX™, 3DNow!™, and Windows® GDI GUI acceleration. Simultaneous analog and flat panel output.
	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*	Autodetect 10BaseT/100BaseTX port
	Network Boot Option	Argon Managed Boot Agent (optional with royalty fee); supports PXE, RPL, NetWare, TCP/IP (DHCP, BOOTP) remote boot protocols
<b>Device I/O</b>	USB*‡	Four USB 2.0/1.1 ports
	IDE Interface	ATA-5, UDMA66 interface. 44-pin 2 mm connector.
	COM 1 Interface*	RS-232. 16C550 compatible. 115K baud max.
	COM 2 & 3 Interface*	RS-422/485 selectable. 16C550 compatible. 460K baud max.
	LPT Interface*	Bi-directional/EPP/ECP mode compatible
	Audio	AC'97 stereo line in/out
<b>Software</b>	Operating Systems	Compatible with most x86 operating systems, including Windows CE/XP, Linux, VxWorks, and QNX
	ACPI	Supports S3 suspend-to-RAM state. Resume time ~ 6 secs.
	BIOS	Phoenix Technologies Embedded BIOS with OEM enhancements. Field reprogrammable. Support for USB keyboard/mouse and USB boot. User-configurable CMOS defaults.

\* TVS protected port (enhanced ESD protection)

‡ Power pins on this port are overload protected

Data represents standard operation at 25°C with 5V supply unless otherwise noted. Specifications are subject to change without notification. AMD and Geode are trademarks of Advanced Micro Devices, Inc. PC/104 and PC/104-Plus are trademarks of the PC/104 Consortium.