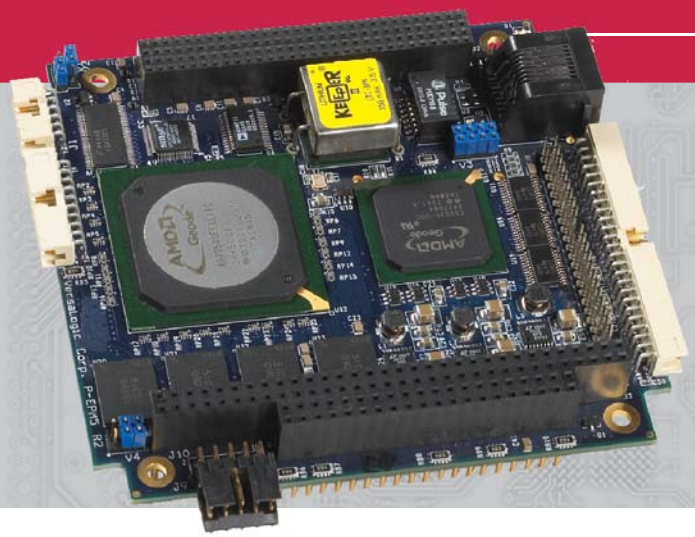
VERSALOGIC CORPORATION

PUMA

PC/104-*Plus* Single Board Computer



- Low power AMD GX 500 processor
- 256 MB soldered-on DDR RAM
- Integrated video
- PC/104-*Plus* expansion
- CompactFlash socket
- RoHS-compliant

Highlights

PC/104-*Plus* Form Factor
Proivides PC/104 and PC/104-*Plus* expansion on a compact 3.6" x 3.8" board. Provides a high degree of ruggedness.

GX 500 Processor
Equivalent 500 MHz performance with low power draw.

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

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

4 USB Ports
Multiple USB ports provide flexible I/O options for keyboard, mouse, floppy drives, and other devices.

Serial and Parallel I/O
Three COM ports (1-RS-232, two RS-422/485), and one LPT port with SPP and enhanced modes.

IDE Interface
Attach standard hard drives and CD-ROM drives.

TVS Protection
Enhanced ESD resistance.

CompactFlash Socket
Removable storage media has no moving parts and supports bootable media.

Fanless Operation
No moving parts required for CPU cooling.

Watchdog Timer
Provides hardware-level safety control for application run-away conditions.

Embedded BIOS
OEM embedded features and firmware support. Field-upgradable, customization available.

Overview

The Puma is an extremely compact and rugged single board computer that combines a high degree of functionality with low power requirements and no moving parts. The inherent ruggedness of the Puma's PC/104 size combined with the low power AMD GX 500 processor make this board a great fit for portable devices, vehicular/aircraft controls, medical electronics, and many other OEM applications.

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

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 Puma is manufactured and tested to the highest quality standards and is backed by a two year limited warranty.

Details

The Puma features the AMD GX 500 processor, which offers excellent performance (500 MHz equivalent) while drawing only one watt of power. This highly-integrated processor provides extremely fast on-board transfers (6 GB per second), high-speed memory access, and integrated high-performance video with LVDS flat panel support.

The Puma 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 Puma.

The Puma includes several features to support the reliable operation of the board in the field, including TVS devices and self-resetting fuses on USB port power pins. The TVS devices provide enhanced ESD protection for the analog video output, USB, COM, LPT, and Ethernet ports.

PARHELIA

For more information, contact
Parhelia B.V.
The Netherlands
Phone : +31 (0) 10 284 95 46
Fax : +31 (0) 10 284 95 45
info@parhelia.biz
www.parhelia.biz

RoHS

VL-EPM-5

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

Ordering Information

Puma PC/104-Plus SBC

VL-EPM-5g ..... AMD GX 500, Standard Operating Temperature
VL-EPM-5e ..... AMD GX 500, Extended Temperature

Accessories

VL-CBL-0803 ..... Audio cable, stereo in/out
VL-CBL-5010 ..... I/O cable set*
VL-CBL-1201 ..... Analog video interface cable*
VL-CBL-2010 ..... LVDS / FPD interface cable (Hirose)
VL-CBL-2011 ..... LVDS / FPD interface cable (JAE)
VL-CBL-4404 ..... IDE cable*
VL-CBL-4405 ..... 1" connector IDE adapter board*
VL-CBL-2003 ..... LPT interface cable*
VL-CBL-1008 ..... ATX power adapter cable*
VL-CBR-0803 ..... Audio cable, stereo in/out (RoHS)
VL-CBR-5010 ..... I/O cable set (RoHS)*
*VL-CBR-1201** ..... Analog video interface cable (RoHS)*
VL-CBR-2010 ..... LVDS / FPD interface cable (Hirose) (RoHS)
VL-CBR-2011 ..... LVDS / FPD interface cable (JAE) (RoHS)
*VL-CBR-4404** ..... IDE cable (RoHS)*
*VL-CBR-4405** ..... 1" connector IDE adapter board (RoHS)*
*VL-CBR-2003** ..... LPT interface cable (RoHS)*
*VL-CBR-1008** ..... ATX power adapter cable (RoHS)*
VL-CDD-IDE1 ..... IDE CD-RW, DVD-ROM drive
VL-CF-CLIP1 ..... CompactFlash retention clip
VL-CFM-xxxx ..... CompactFlash Module
VL-CKT-PUMA ..... Development cable kit
VL-CKR-PUMA ..... Development cable kit (RoHS)
VL-ENCL-5c ..... Development enclosure
VL-FDD-144U ..... USB floppy drive
VL-HDD35-80 ..... 80 GB 3.5" IDE hard drive
VL-HDW-101 ..... Mounting standoffs, metric thread*

** Included in VL-CKT-PUMA cable kit*
*** Included in VL-CKR-PUMA cable kit*

Specifications

General	Processor	AMD GX 500
	Chipset	CS 5535
	Power Requirements	+5.0V ±5% @ 1A typ. (5W)
	System Reset	Watchdog timout. VCC sensing (resets below 4.7 V typ.).
	Compatibility	PC/104: footprint compatible. PC/104-*Plus*: supports 3.3V PCI signaling (2.1 compliant). RoHS: compliant.
Mechanical	Board Size	3.55" x 3.755" with .20" connector overhangs in the designated connector areas.
	Storage Temperature	-40° to +85° C
	Operating Temperature	0° to +60° C (VL-EPM-5c). -40° to +85° C (VL-EPM-5e).
	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	.02g2/Hz – 5.35g rms, 15 minutes per axis, MIL-STD-202G, Method 214A, Condition A.
	Humidity	Less than 95%, noncondensing.
Memory	System RAM	256 MB Soldered-on DDR SDRAM.
	Flash Interface	High-retention CompactFlash socket. Type I or II supported.
Video	General	Integrated high-performance video. Up to 1280 x 1024 with 24-bit color. MMX™ + 3D Now!™
	Desktop Display Interface*	Standard analog output. 2mm IDC connector.
	OEM Flat Panel Interface	18/24 bit LVDS interface. CMOS-selectable TFT panel types.
Network Interface	Ethernet*	Autodetect 10BaseT/100BaseTX port. Right Angle connector.
	Network Boot Option	Firmware-based Argon Managed Boot Agent. Supports PXE, RPL, NetWare, TCP/IP (DHCP, BOOTP) remote boot protocols.
Device I/O	USB*‡	4 USB 2.0 ports.
	IDE Interface	ATA-5, UDMA66 interface. 44-pin 2mm connector.
	COM 1 Interface*	RS-232 compatible, standard PC serial connector. 115k baud max.
	COM 2 Interface	N/A
	COM 3 & 4 Interface*	RS-422/485 selectable. 460K baud max.
	LPT Interface*	Standard PC parallel port. 2mm 20-pin latching connector. SPP and enhanced modes supported.
	Audio	AC97 stereo line in, stereo line out.
	Other	Floppy, mouse and keyboard support provided via USB.
Software	Operating Systems	Compatible with most X86 operating systems including WinCE/XP, 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).*
‡ Power pins on this port are protected with a self-resetting fuse.

Data represent standard operation at 25° C with 5.0V supply unless otherwise noted. Specifications are subject to change without notice. PC/104 is a trademark of the PC/104 Consortium.

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