



- Up to 1.8 GHz Pentium® M processor
- Extreme Graphics 2 video
- High speed DDR RAM
- CompactFlash socket
- Dual Gigabit Ethernet version
- Standard and extended temp versions
- RoHS-compliant

## Highlights

### High Performance Processor

Pentium M 1.8 GHz or ULV Celeron M 1.0 GHz options.

### Extreme Graphics 2 Video

Very high speed rendering and MPEG-2 support.

### SODIMM Memory Sockets

Two low profile, high capacity sockets. Up to 2 GB.

### High Speed Networking

Dual 10/100 and Gigabit Ethernet versions.

### Full SBC I/O

On-board sound, four USB 2.0 ports, four COM ports (two RS-422/485/232 configurable), IDE interface.

### ESD Protection

Transient Voltage Suppressor (TVS) devices provide enhanced ESD protection for keyboard, mouse, USB, Ethernet, and other external I/O lines.

### CompactFlash Socket

Removable storage device has no moving parts.

### Analog I/O Option

Reduces need for external expansion.

### CPU Temperature Sensor

Supports software-controlled cooling options.

### Watchdog Timer

Controls application run-away conditions.

### Digital I/O

32-line TTL I/O port reduces need for I/O expansion.

### 400 MHz Processor-side Bus

Improved system throughput.

### Embedded BIOS

OEM embedded features. Field-upgradeable. Customization available.

### RoHS-compliant

Meet EU Directive 2002/95/EC.

## Overview

The Cobra belongs to a new class of embedded computers offering higher processing performance with lower power consumption, extreme graphics capability and enhanced ruggedization. The advanced design makes it suitable for a wide range of higher-end applications with demanding speed and graphics requirements, including gaming devices, information kiosks, telecommunications devices and advanced security systems. In addition, its PC architecture and small footprint make it an excellent choice for traditional embedded applications.

The system is built around the M-series processors, and their companion chipset, the 855GME with integrated Extreme Graphics 2 and audio functions. The Pentium M version Cobra incorporates a number of power saving features, including the SpeedStep technology, and performance enhancing features such as a large 1 MB level 2 cache. The advanced graphics controller provides exceptionally sharp images, ultra-fast rendering, and smooth sequencing to produce realistic 3-D graphics and animation.

The board features two SODIMM sockets, which support up to 2 GB of system RAM. The rugged, low-profile RAM sockets provide more reliable operation in applications subject to shock and vibration. The DDR (Double Data Rate) RAM interface provides fast memory access and increased system throughput.

Like all VersaLogic products, the Cobra is designed and guaranteed for long-term availability. From application design to continuing production, it provides a cost-effective solution with low total cost of ownership. The Cobra is manufactured to the highest quality standards, and is backed with excellent technical and engineering support. Customization is available in quantities as low as 100 pieces.

## Details

The Cobra features an Intel Pentium M or ULV Celeron M processor and 855 GME chipset to provide main processing, device support, and analog or flat panel video output. The system is complemented by a wide array of I/O devices for communication with peripherals, networked systems and specialized devices. On-board I/O includes two Gigabit or 10/100 Ethernet ports, four USB 2.0 ports, RS-232 and RS-422/485 COM ports, CompactFlash socket, LPT port, digital I/O ports, counter/timers, field-reprogrammable BIOS, and optional A/D converter. The PC/104-Plus expansion site can accept a wide variety of PC/104 and PC/104-Plus I/O modules for additional expansion when needed.



The Cobra also provides durability and reliability through features like latching I/O connectors, a programmable CPU temperature sensor, voltage-sensing reset circuit, watchdog timer, and long-life industrial battery. TVS (Transient Voltage Suppression) devices on the primary system I/O connections help protect the system from ESD (electrostatic discharge) damage. A self-resetting fuse on the 5V power to the keyboard, mouse and USB ports protects the board from cable or connector shorts.



### Ordering Information

- VL-EBX-12p ..... Pentium M 1.8 GHz (RoHS)
- VL-EBX-12pr ..... Pentium M 1.8 GHz, conformal coated (RoHS)
- VL-EBX-12r ..... Pentium M 1.8 GHz, dual GB Ethernet (RoHS)
- VL-EBX-12t ..... Pentium M 1.0 GHz, -40° to +85°C (RoHS)
- VL-EBX-12tr ..... Pentium M 1.0 GHz, -40° to +85°C, conformal coated (RoHS)
- VL-EBX-12v ..... ULV Celeron M 1.0 GHz, fanless (RoHS)

### Accessories

- VL-CBR-0501\*\* ..... USB channel 3 & 4 transition cable (RoHS)
- VL-CBR-1007\* ..... Video adapter cable (RoHS)
- VL-CBR-2010 ..... LVDS cable, HIROSE style (RoHS)
- VL-CBR-2011 ..... LVDS cable, JAE style (RoHS)
- VL-CBR-2022\* ..... Power adapter cable (RoHS)
- VL-CBR-2501 ..... LPT / Floppy interface cable (RoHS)
- VL-CBR-4003\* ..... Hard drive connector cable (RoHS)
- VL-CBL-8003 ..... Primary I/O breakout board
- VL-CBR-8004\* ..... Secondary I/O breakout board (RoHS)
- VL-CBR-8005\* ..... Primary I/O breakout board (RoHS)
- VL-CKR-COBRA ..... Development cable kit (RoHS)
- VL-FDD-144U ..... 1.44 MB USB Floppy drive
- VL-HDD35-xx ..... 3.5" IDE hard disk drive
- VL-CDD-IDE-1 ..... CD-RW, DVD-ROM drive
- VL-MM5D-xxx ..... DDR RAM module
- VL-HDW-301 ..... Analog input chip, 0° to +60°C (RoHS)
- VL-HDW-101\* ..... Metric standoff package
- VL-PS200-ATX ..... Development power supply
- VL-ENCL-5 ..... Development enclosure
- DEV-CD-L2 ..... Debian Linux Board Support Package

\* Included in VL-CKR-COBRA cable kit  
 \*\* Connects to VL-CBL-8003 paddle board



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### Specifications

<b>General</b>	Processor	Intel Pentium® M or ULV Celeron® M series
	Chipset	Intel 855GM(E)
	Power Requirements	+5.0V only with 128 MB RAM, keyboard, mouse, running Windows XP: 12-25W‡ EBX-12p/pr/r 8-12W‡ EBX-12t/tr 10.5W EBX-12v
	System Reset	Watchdog timeout VCC sensing (resets below 4.70V typ.)
	Bus Speed	CPU PSB: 400 MHz PCI, PC/104-Plus: 33 MHz, 2.2 Compliant PC/104: 8 MHz
	Compatibility	EBX: Mechanically Compatible. PC/104-Plus expansion: Footprint compatible, 3.3V signaling, PCI 2.2 compatible. RoHS: Compliant versions.
<b>Mechanical</b>	Board Size	5.75" x 8" (146.05 mm x 203.2 mm)
	Storage Temperature	-40° to +85°C
	Operating Temperature	0° to +60°C (EBX-12p/pr/r/v) -40° to +85°C (EBX-12t/tr)
	Humidity	Less than 95%, noncondensing
<b>Memory</b>	DRAM Interface	Two 200-pin SODIMM sockets. Up to 1 GB of 266 MHz PC2100 or 333 MHz PC2700 compatible DDR RAM each.
	Flash Interface	CompactFlash socket. Type I or II supported.
<b>Video</b>	Video Interface	Extreme Graphics 2 chip set. LVDS and analog interface. Uses up to 64 MB system memory. Resolutions up to 2048 x 1536. Full motion video, MPEG-2 decoder, 3-D, edge smoothing and ultra-fast rendering.
<b>Network Interface</b>	Ethernet*	Dual ports based on Intel 82551ER or 82541ER. Autodetect 10BaseT / 100BaseTX / 1000BaseT ports available.
	Network Boot Option	Argon Managed Boot Agent. Supports PXE, RPL, NetWare, TCP/IP (DHCP, BOOTP) remote boot protocols.
<b>Device I/O</b>	USB*	Four USB 2.0/1.1 protocol.
	IDE Interface	Dual channel PCI-based. Up to 4 IDE devices (including CompactFlash). ATA 100 compatible.
	COM 1 & 2 Interface*	RS-232, 16C550 compatible. 115K baud max.
	COM 3 & 4 Interface	RS-232/422/485, 16C550 compatible, 460K baud max.
	LPT Interface*	Bi-directional/EPP/ECP/floppy mode compatible.
	Digital I/O	32 line TTL I/O. 2 lines IRQ routable.
	Counter/Timers	Two 8254 style counter/timers.
	Analog I/O (optional)	8 channel 12-bit 6 µs A/D with interrupt capability.
	Audio	AC'97 PCI compatible. 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 Win95/98/NT/CE/XP, QNX, VxWorks, and Linux.
	BIOS	General Software's Embedded BIOS with OEM Enhancements. Field reprogrammable. Support for USB keyboard/mouse and USB boot.

\*TVS protected port (Enhanced ESD protection).

‡ Depends on CPU speed set in CMOS setup options.

Data represents standard operation at 25°C with 5.0V supply unless otherwise noted. Specifications are subject to change without notice. Intel, Pentium and Celeron are Intel Corporation trademarks. PC/104 is a trademark of the PC/104 Consortium.