Overview

The Cougar is a feature-rich, mid-performance single board computer that offers very low power consumption without sacrificing performance. The highly efficient AMD Geode LX 800 processor provides fanless extended temperature operation, while soldered-on memory ensures high reliability. Equipped with dual 10/100 Ethernet, USB 2.0 ports, and RS-232/422/485 COM ports, the Cougar is ideal for defense, aerospace, homeland security, medical, and other embedded computing applications.

Like all VersaLogic products, the Cougar is designed to support OEM applications where high reliability and long-term availability are required. From application design-in support, to its 15+ year production life guarantee, the Cougar provides a durable embedded computer solution with an excellent cost of ownership. The Cougar is manufactured and tested to the highest quality standards and is fully RoHS compliant. Customization is available, even in low OEM quantities.

Highlights

- AMD Geode LX 800 Processor
- Very low power consumption
- 256 MB soldered-on DDR memory
- Integrated video
- CompactFlash socket
- Extended temp. operation
- RoHS-compliant
Features

1. **AMD Geode LX 800 Processor**
   800 MHz performance with ultra-low power consumption.

2. **High-performance Video**
   Analog and LVDS flat panel outputs for 18 and 24-bit displays.

3. **256 MB DDR Memory**
   Soldered-on RAM for high reliability.

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

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

6. **Integrated I/O**
   Three COM ports (two RS-232, one RS-422/485) and one IDE interface.

7. **CompactFlash Socket**
   Removable non-volatile media has no moving parts and is bootable.

8. **Fanless Operation**
   No moving parts required for CPU cooling.

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

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

- **PC/104-Plus Form Factor**
  Supports PCI and ISA expansion on a highly rugged format.

- **MIL-STD-202G**
  Qualified for high shock and vibration operation.

---

**Product Data Sheet**

1. **AMD Geode LX 800 Processor**
   800 MHz performance with ultra-low power consumption.

2. **High-performance Video**
   Analog and LVDS flat panel outputs for 18 and 24-bit displays.

3. **256 MB DDR Memory**
   Soldered-on RAM for high reliability.

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

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

6. **Integrated I/O**
   Three COM ports (two RS-232, one RS-422/485) and one IDE interface.

7. **CompactFlash Socket**
   Removable non-volatile media has no moving parts and is bootable.

8. **Fanless Operation**
   No moving parts required for CPU cooling.

---

**Modify Cougar to Your Exact Requirements**

Modified COTS options are available in quantities as low as 100 pieces.

- Standard Temperature Version
- Conformal Coating
- Connector & I/O Changes
- Custom Testing
- Custom Labeling
- BGA Underfill
- BIOS Modifications
- Software and Drivers
- Revision Locks
- Custom Screening
- Application-Specific Testing
- Etc.
Specifications

General
- **Board Size**: PC/104-Plus compliant: 108 x 96 mm (4.25 x 3.78")
- **Weight**: 99 grams (3.5 oz.)
- **Processor**: AMD Geode LX 800
- **Chipset**: AMD Geode CS5536
- **Power Requirements**: 4.5W
- **Input Voltage**: 5V ± 5%
- **System Reset and Hardware Monitors**: Watchdog timeout, Voltage rail monitoring.
- **Stackable Bus**: PC/104-Plus: supports 3.3V PCI signaling (2.2 compliant)
- **Manufacturing Standards**: IPC-A-610 Class 2 modified
- **Regulatory Compliance**: RoHS (2011/65/EU), Conflict Minerals 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 min. per axis
- **Vibration, Random**: MIL-STD-202G, Method 214A, Condition A: 5.35g rms, 5 min. per axis
- **Mechanical Shock**: MIL-STD-202G, Method 213B, Condition G: 20g half-sine, 11 ms duration per axis

Memory
- **System RAM**: 256 MB soldered-on DDR memory.

Video
- **Interface**: 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.

Mass Storage
- **Hard Drive**: ATA-5, UDMA66 interface. 44-pin 2 mm connector.
- **Flash**: One CompactFlash socket (Type II) with DMA. Optional latching retention clip available.

Network Interface
- **Ethernet**: Dual Autodetect 10BaseT/100BaseTX ports. Horizontal RJ45 connectors.
- **Network Boot Option**: Intel boot agent (downloadable) supports PXE protocol. Argon Managed Boot Agent (optional with royalty fee) supports PXE, RPL, NetWare, TCP/IP (DHCP, BOOTP) remote boot protocols.

Device I/O
- **USB**: Four USB 2.0/1.1 ports
- **COM 1/2**: RS-232. 16C550 compatible. 115 Kbps.
- **COM 3 Interface**: RS-422/485 selectable. 16C550 compatible. 460 Kbps.

Software
- **Operating Systems**: Compatible with most x86 operating systems, including Windows, Windows Embedded, Linux, VxWorks, and QNX.

Notes:
- § All power specifications represent operation at +25°C with +5V supply running Windows XP with Ethernet, keyboard, and mouse.
- *TVS protected port (enhanced ESD protection).
- ‡ Power pins on this port are protected with a self-resetting fuse.

Specifications are subject to change without notice. PC/104 and PC/104-Plus are trademarks of the PC/104 Consortium. CompactFlash is a trademark of SanDisk Corp. All other trademarks are the property of their respective owners.
# Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Processor</th>
<th>Speed</th>
<th>Operating Temp.</th>
<th>Cooling</th>
</tr>
</thead>
<tbody>
<tr>
<td>VL-EPM-14h</td>
<td>AMD Geode LX 800</td>
<td>500 MHz</td>
<td>-40° to +85°C</td>
<td>Fanless</td>
</tr>
</tbody>
</table>

## Accessories

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable Kit</td>
<td></td>
</tr>
<tr>
<td>VL-CBR-1008</td>
<td>Power cable, ATX to 10-pin</td>
</tr>
<tr>
<td>VL-CBR-1201</td>
<td>VGA interface cable, 12-pin 2 mm (latching) / 15-pin VGA</td>
</tr>
<tr>
<td>VL-CBR-2003</td>
<td>LPT cable, 20-pin 2 mm / DB-25F, 12'</td>
</tr>
<tr>
<td>VL-CBR-4405</td>
<td>IDE adapter board, 2 mm to 0.1&quot;</td>
</tr>
<tr>
<td>VL-CBR-4406</td>
<td>IDE cable, 44-pin latching, 18&quot;</td>
</tr>
<tr>
<td>VL-CBR-5011</td>
<td>I/O cable set and paddleboard</td>
</tr>
<tr>
<td>VL-HDW-101</td>
<td>Standoff package, 4x screws, 4x standoffs, 15mm, Metric thread</td>
</tr>
<tr>
<td>VL-CBR-2010</td>
<td>LVDS / flat panel interface cable, 18-bit (Hirose), 20'</td>
</tr>
<tr>
<td>VL-CBR-2011</td>
<td>LVDS / flat panel cable, 18-bit (JAE), 20'</td>
</tr>
<tr>
<td>VL-CBR-5009A</td>
<td>I/O ribbon cable, 50-pin to 50-pin, 18&quot;</td>
</tr>
<tr>
<td>VL-CBR-2034</td>
<td>6&quot; 20-pin (F) ATX to 24-pin (M) ATX adapter cable (use with PS-ATX12-300A)</td>
</tr>
<tr>
<td>Solid State Drives</td>
<td></td>
</tr>
<tr>
<td>VL-CFM-4GB</td>
<td>SSD 4 GB CompactFlash</td>
</tr>
<tr>
<td>VL-CFM-2GB</td>
<td>SSD 2 GB CompactFlash</td>
</tr>
<tr>
<td>VL-CFM-1GB</td>
<td>SSD 1 GB CompactFlash</td>
</tr>
<tr>
<td>VL-CFM-1GBET</td>
<td>SSD 1 GB CompactFlash, industrial temperature</td>
</tr>
<tr>
<td>VL-CFM-512</td>
<td>SSD 512 MB CompactFlash Type1</td>
</tr>
<tr>
<td>VL-CFM-512ET</td>
<td>SSD 512 MB CompactFlash Type1, industrial temperature</td>
</tr>
<tr>
<td>Audio</td>
<td></td>
</tr>
<tr>
<td>VL-ADR-01S</td>
<td>USB to Audio Adapter -25° to +85°C</td>
</tr>
<tr>
<td>Development</td>
<td></td>
</tr>
<tr>
<td>VL-PS200-ATX</td>
<td>200W ATX-style development power supply (20+4+4-pin ATX connector)</td>
</tr>
<tr>
<td>VL-PS-ATX12-300A</td>
<td>ATX development power supply (requires VL-CBR-2034)</td>
</tr>
<tr>
<td>Hardware</td>
<td></td>
</tr>
<tr>
<td>VL-ENCL-5C</td>
<td>Development enclosure</td>
</tr>
<tr>
<td>VL-HDW-203</td>
<td>PC/104 extractor tool (metal)</td>
</tr>
<tr>
<td>VL-CF-CLIP1</td>
<td>CompactFlash retention clips x10</td>
</tr>
<tr>
<td>VL-HDW-106</td>
<td>Standoff package, 0.6&quot;, English thread</td>
</tr>
</tbody>
</table>