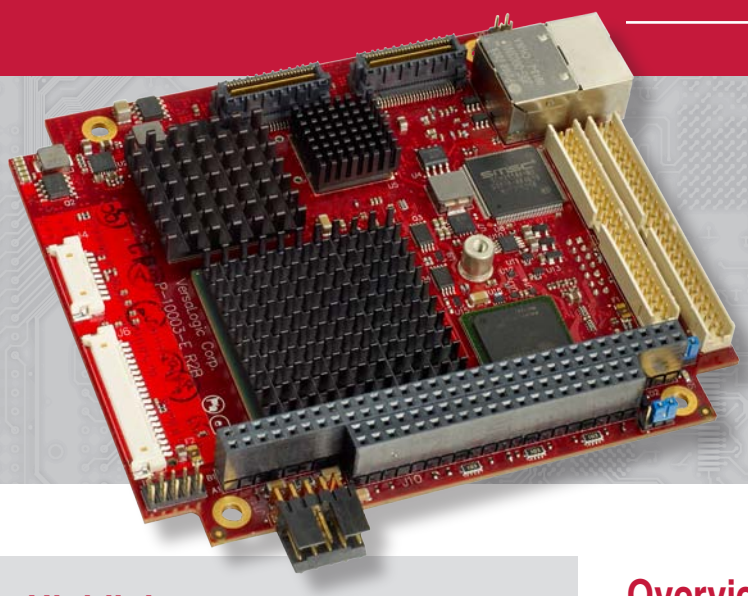
VERSALOGIC CORPORATION

# OCELOT

## SUMIT™-104 Single Board Computer



- Intel® Atom™ Z5xx processor
- Low power draw
- SUMIT and PC/104™ expansion
- Fanless operation
- Extended temp. version
- Gigabit Ethernet interface
- High-performance video
- Four serial ports

## Highlights

**SUMIT and PC/104 Compatible**
Supports SUMIT and ISA expansion on a compact, highly rugged format.

**Intel Atom Z5xx Processor**
Up to 1.6 GHz performance with only 7W power draw.

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

**Extended Temperature Version**
-40° to +85°C fanless operation for harsh environments.

**System RAM**
Up to 2 GB socketed RAM for system flexibility.

**High-performance Video**
LVDS flat panel output. Optional analog support.

**Network Support**
Gigabit Ethernet with boot ROM support.

**USB I/O**
Three USB 2.0 ports support keyboard, mouse, and other devices.

**Device I/O**
Four serial ports, IDE interface, and HD audio.

**Disk on Module Flash Socket**
Supports removable, bootable DOM storage.

**SPX™ Module Interface**
Supports expansion with versatile SPX add-on I/O modules.

## Overview

The Ocelot is a compact, rugged, single board computer (SBC) which features Intel's 45 nm Atom Z5xx processor designed specifically for embedded applications. This compact SUMIT-104 SBC is ideal for defense, aerospace, medical device, robotics, and factory automation applications where high-performance, fanless, extended temperature operation is required.

Based on the industry standard PC/104 footprint, the Ocelot features the SUMIT expansion interface. This provides OEMs with a stackable multi-board expansion interface that supports both high- and low-speed signals. This simplifies adding both standard and custom I/O boards to the system. The Ocelot expansion interfaces include PCIe, USB, LPC, SPI, SMBus, as well as ISA bus support for PC/104 modules.

Like all VersaLogic products, the Ocelot is designed to support OEM applications where high reliability and long-term availability are required. From application design-in to 5+ guaranteed years of production life, the Ocelot provides a durable embedded computer solution with an exceptional cost of ownership. The Ocelot is manufactured and tested to the highest quality standards and is fully RoHS compliant. Customization is available, even in low OEM quantities.

## Details

Based upon Intel's 45 nm Hi-k metal gate silicon technology, the Atom Z5xx processor offers very high performance (up to 1.6 GHz) with excellent power management capabilities.

The on-board features include gigabit Ethernet, three USB 2.0 ports, four serial ports, IDE interface, HD audio, and SPX expansion interface. An IDE-based Disk on Module site offers bolt-down, bootable flash storage. The highly-integrated processor facilitates fast on-board transfers, high-speed memory access, and integrated high-performance video with flat panel LVDS or optional analog video output. An SO-DIMM socket supports up to 2 GB of DDR2 RAM.

The SUMIT interface provides three x1 PCIe lanes, LPC, SPI, SMBus, and four additional USB channels. The PC/104 connector provides ISA bus compatibility for many off-the-shelf I/O boards. The pass-through versions provide PC/104 stack-down capability to support custom baseboards that may be larger than the Ocelot.

The Ocelot draws about 7W typically, but the built-in ACPI 2.0 power management allows the board to enter sleep mode for greater power savings (typically 1W between transactions).

Available in both standard (0° to +60°C) and extended (-40° to +85°C) temperature versions; the Ocelot meets MIL-STD-202G specifications for shock and vibration. The Ocelot supports reliable

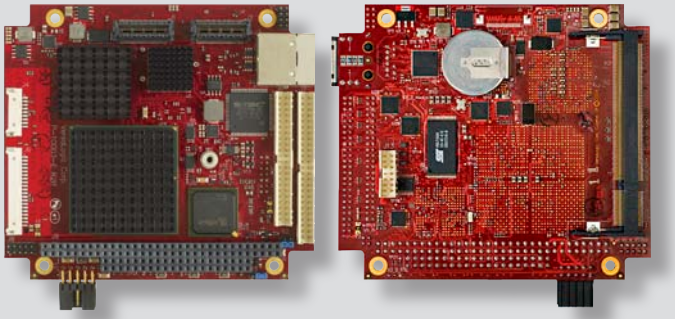
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sumit™ RoHS

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## SUMIT-104 Single Board Computer

field operation with fanless operation and transient voltage suppression (TVS) for electrostatic discharge (ESD) protection.

The Ocelot features an embedded BIOS with OEM enhancements from Phoenix Technologies. The field reprogrammable BIOS supports custom defaults and the addition of firmbase applications for security processes, remote booting, and other pre-OS software functions. The Ocelot is compatible with a variety of popular operating systems including Windows, Windows Embedded, Linux, VxWorks, and QNX.



VL-EPMs-21g (Top) VL-EPMs-21g (Bottom)

## Ordering Information

*VL-EPMs-21a ..... Intel Atom Z530, 1.6 GHz, standard temp., pass-through*
*VL-EPMs-21b ..... Intel Atom Z520, 1.33 GHz, extended temp., pass-through*
*VL-EPMs-21g ..... Intel Atom Z530, 1.6 GHz, standard temp.*
*VL-EPMs-21h ..... Intel Atom Z520, 1.33 GHz, extended temp.*

## Accessories

*VL-CBR-1008*.....ATX power adapter cable*
*VL-CBR-2010..... 20" 18-bit LVDS flat panel (Hirose)*
*VL-CBR-2011 ..... 20" 18-bit LVDS flat panel (JAE)*
*VL-CBR-2012*..... 20" 24-bit LVDS flat panel (Hirose)*
*VL-CBR-2014*..... LVDS to VGA adapter board*
*VL-CBR-4405*.....1" connector IDE adapter board*
*VL-CBR-4406*.....IDE cable*
*VL-CBR-5009A ..... 18" I/O ribbon cable*
*VL-CBR-5012*.....I/O cable set and paddleboard*
*VL-CDD-IDE1**.....CD-RW, DVD-ROM drive*
*VL-CKR-OCEL ..... Development cable kit*
*VL-ENCL-5D**.....Development enclosure*
*VL-EPHs-B1x..... SUMIT to USB adapter board*
*VL-F20-xxxx.....Disk on Module (IDE)*
*VL-HDD25-xxx ..... 2.5" IDE hard drive*
*VL-HDW-105*.....0.6" standoff package (metric thread)*
*VL-HDW-108 ..... Nylon screw kit (metric thread)*
*VL-MM8-xxxx..... DDR2 RAM module*
*VL-SPX-x.....SPX expansion modules*

** Included in VL-CKR-OCEL cable kit*
*** Not RoHS compliant*

| SUMIT Resources | | |
|---|---|---|
| **Form Factor:** SUMIT-104 | | |
| | **SUMIT-A** | **SUMIT-B** |
| **PCIe x1** | 1 | 2 |
| **PCIe x4** | | – |
| **USB** | 4 | |
| **ExpressCard** | – | |
| **LPC** | ✓ | |
| **SPI/µWire** | SPI | |
| **SMBus/I²C** | SMBus | |
| **+12V** | ✓ | |
| **+5V** | ✓ | ✓ |
| **+5Vsb** | ✓ | ✓ |
| **+3.3V** | ✓ | ✓ |

## SPECIFICATIONS

| | | |
|---|---|---|
| **General** | Board Size | PC/104 standard: 90 mm x 96 mm (3.55" x 3.78") |
| | Processor | Intel Atom Z530P (VL-EPMs-21a/g)<br>Intel Atom Z520PT (VL-EPMs-21b/h) |
| | Chipset | US15WP (VL-EPMs-21a/g)<br>US15WPT (VL-EPMs-21b/h) |
| | Power Requirements | +5V running Windows XP with 2 GB RAM, keyboard, and mouse:<br>Active / Sleep (S3)<br>VL-EPMs-21a/g: 1.5A (7.5W) typ. / 0.2A (1W) typ.<br>VL-EPMS-21b/h: 1.3A (6.5W) typ. / 0.2A (1W) typ. |
| | System Reset & Hardware Monitors | Watchdog timeout (1 to 255 sec. with 1 sec. resolution; 1 to 255 min. with 1 min. resolution). All voltage rails monitored. |
| | Expansion | SUMIT, PC/104 (ISA), SPX |
| | RoHS | Compliant |
| **Environmental** | Operating Temperature | 0° to +60°C (VL-EPMs-21a/g)<br>-40° to +85°C (VL-EPMs-21b/h) |
| | Storage Temperature | -40° to +85°C |
| | Airflow Requirements | 150 LFPM from +60° to +85°C (VL-EPMs-21b/h) |
| | 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: 0.02g²/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 |
| **Memory** | System RAM | One SO-DIMM socket. Up to 2 GB DDR2 SDRAM. |
| | Flash Interface | Right angle IDE DOM with retention screw |
| **Video** | General | Integrated high-performance video. Intel GMA 500 graphics core supports advanced 3D graphics and high-definition video decode. |
| | OEM Flat Panel Interface | 18/24-bit LVDS interface. CMOS-selectable TFT panel types. |
| | Desktop Display Interface | Analog output via optional adapter cable* |
| **Network Interface** | Ethernet* | Autodetect 10BaseT/100BaseTX/1000BaseT port |
| | 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*‡ | Three USB 2.0/1.1 ports (one client and two host) |
| | IDE Interface | ATA-6, UDMA66/100 interface. 44-pin 2 mm connector. |
| | COM 1/2/3/4 Interface* | RS-232/422/485 selectable. 16C550 compatible. 460 Kbps. |
| | Audio | Stereo HD audio in/out |
| | Other | Four additional USB ports available through SUMIT interface with the appropriate adapter board |
| **Software** | BIOS | Phoenix Technologies Embedded BIOS with OEM enhancements. Field reprogrammable. Support for USB keyboard/mouse and USB boot. User-configurable CMOS defaults. |
| | Sleep Mode | ACPI 2.0 compatible |
| | Operating Systems | Compatible with most x86 operating systems, including Windows, Windows Embedded, Linux, VxWorks, and QNX |

** 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. Intel and Atom are trademarks of Intel Corp. PC/104 is a trademark of the PC/104 Consortium. SUMIT is a trademark of the SFF-SIG.*

10/17/10