

- 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.

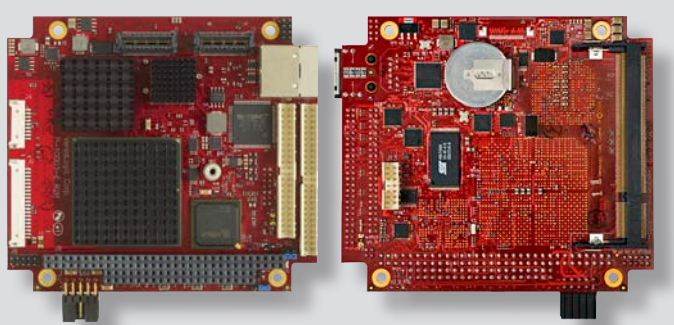
The SUMIT interface provides three x1 PCIe lanes, LPC, SPI, SMBus, and four additional USB channels. The PC/104 connector provides ISA bus compatibility for many off-the-shelf I/O boards. The pass-through versions provide PC/104 stack-down capability to support custom baseboards that may be larger than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

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 firmware 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/I <sup>2</sup> C	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) Intel Atom Z520PT (VL-EPMs-21b/h)									
	Chipset	US15WP (VL-EPMs-21a/g) US15WPT (VL-EPMs-21b/h)									
	Power Requirements	+5V running Windows XP with 2 GB RAM, keyboard, and mouse: <table border="1"> <thead> <tr> <th></th> <th>Active</th> <th>Sleep (S3)</th> </tr> </thead> <tbody> <tr> <td>VL-EPMs-21a/g</td> <td>1.5A (7.5W) typ.</td> <td>0.2A (1W) typ.</td> </tr> <tr> <td>VL-EPMs-21b/h</td> <td>1.3A (6.5W) typ.</td> <td>0.2A (1W) typ.</td> </tr> </tbody> </table>		Active	Sleep (S3)	VL-EPMs-21a/g	1.5A (7.5W) typ.	0.2A (1W) typ.	VL-EPMs-21b/h	1.3A (6.5W) typ.	0.2A (1W) typ.
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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) -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: 0.02g <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									
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.