VERSALOGIC CORPORATION

TIGER

PC/104-*Plus* Single Board Computer

- Intel® Atom™ Z5xx processor
- High-performance video
- Gigabit Ethernet
- DDR2 RAM (up to 2 GB)
- USB 2.0 (7 ports)
- Serial I/O (4 ports)
- IDE Interface
- HD audio
- DOM flash socket
- Fanless operation
- Industrial temp. version
- MIL-STD-202G shock/vibe

Highlights

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

Intel Atom Z5xx Processor
Up to 1.6 GHz performance with very low power draw.

High-performance Video
Advanced 3D graphics and high-definition video decode.

Network Support
Gigabit Ethernet with remote boot support.

System RAM
Up to 2 GB DDR2 RAM.

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

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

Flash Memory
Disk on Module socket for plug-in flash storage.

Fanless Operation
No moving parts required for CPU cooling.

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

MIL-STD-202G
Qualified for high shock/vibration environments.

SPX Expansion
Add additional analog, digital, or CANbus modules.

Overview

The Tiger is an embedded single board computer (SBC) featuring a high-performance Intel Atom Z5xx processor. Based on the PC/104-*Plus* industry standard form factor, the Tiger supports both PC/104 and PC/104-*Plus* stackable expansion boards. With its combination of high performance (up to 1.6 GHz), low power consumption (6W typ. while executing code), and fanless operation, the Tiger is an ideal embedded computer solution for space, weight, and power (SWaP) constrained embedded applications in industrial, energy, defense/aerospace, medical, and robotics markets.

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

Details

Driven by an Intel Atom Z5xx processor designed specifically for embedded applications, the Tiger runs completely fanless at 1.6 GHz (commercial temperature) or 1.33 GHz (industrial temperature). Enhanced Intel SpeedStep® technology provides dynamic processor frequency scaling to meet instantaneous performance needs while minimizing power draw and heat dissipation. This allows users to fine-tune the balance between power conservation and performance to suit their application needs. Enhanced low-power states, including the new C6 state (Deep Power Down Technology), allow designers to further minimize overall power consumption.

The integrated graphics core of the Atom Z5xx processor supports advanced 3D graphics and high-definition video decode. Video output is provided through an integrated LVDS flat panel video interface and optional analog VGA support.

Tiger's standard on-board features include gigabit Ethernet with network boot capability, SO-DIMM socket for up to 2 GB DDR2 RAM, seven USB 2.0 ports, four serial ports, IDE controller with support for two devices, HD audio, and a Disk on Module (DOM) socket for removable flash storage. PC/104-*Plus* expansion provides plug-in access to a wide variety of industry standard expansion modules. VersaLogic's SPX expansion interface provides access to cost-effective plug-in I/O including analog, digital, CANbus, and custom I/O solutions.

Available in both industrial (-40° to +85°C) and commercial (0° to +60°C) temperature versions; the Tiger meets MIL-STD-202G specifications for shock and vibration. Transient voltage suppression

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RoHS

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(TVS) devices on critical I/O ports provide enhanced electrostatic discharge (ESD) protection which is critical in many OEM applications.

The Tiger 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 Tiger is compatible with a variety of popular operating systems including Windows, Windows Embedded, Linux, VxWorks, and QNX.

Ordering Information

Model	Processor	Speed	Operating Temp.	Cooling
VL-EPM-24SU	Intel Atom Z530P	1.6 GHz	0° to +60°C	Fanless
VL-EPM-24EU	Intel Atom Z520PT	1.33 GHz	-40° to +85°C	Fanless

Accessories

Part Number	Description
VL-CKR-TIGER	Development cable kit. *Includes bold items below.*
VL-CBR-1008	**ATX power adapter cable**
VL-CBR-2012	**20" 24-bit LVDS flat panel cable (Hirose)**
VL-CBR-2014	**LVDS to VGA adapter board**
VL-CBR-4405	**IDE adapter board**
VL-CBR-4406	**IDE cable**
VL-CBR-5012	**I/O cable set and paddleboard**
VL-HDW-105	**0.6" standoff package (metric thread)**
VL-CBR-1401	Cable assembly for (2) SPX modules
VL-CBR-1402	Cable assembly for (4) SPX modules
VL-CBR-1603	Quad USB transition cable
VL-CBR-2010	20" 18-bit LVDS flat panel cable (Hirose)
VL-CBR-2011	20" 18-bit LVDS flat panel cable (JAE)
VL-CDD-xxxx	CD-RW/DVD-ROM drive
VL-ENCL-5D	Development enclosure
VL-F20-xxxx	Disk on Module (IDE)
VL-HDD25-xxx	2.5" hard drive (IDE)
VL-HDW-106	0.6" standoff package (English thread)
VL-HDW-108	DOM hardware kit (metric thread)
VL-HDW-201	PC/104 module separator tool
VL-MM8-xxxx	DDR2 RAM module
VL-PS200-ATX	200W ATX-style development power supply
VL-SPX-x	SPX expansion modules

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** Power specifications represent operation at +25°C with +5V supply running Windows XP with 2 GB RAM, Ethernet, keyboard, and mouse. Typical power computed as the mean value of Idle and Maximum power specifications. Maximum power is measured with 95% CPU utilization.*

† Signal lines on this port are TVS protected (enhanced ESD protection)

‡ Power pins on this port are overload protected

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SPECIFICATIONS

General	Board Size	PC/104 compliant: 114 mm x 96 mm (4.49" x 3.78")
	Processor + Chipset	Model / Processor / Speed / Chipset VL-EPM-24SU / Atom Z530P / 1.6 GHz / US15WP VL-EPM-24EU / Atom Z520PT / 1.33 GHz / US15WPT 533 MHz FSB. Dynamic 512 KB L2 cache. Supports Enhanced Intel SpeedStep Technology and Hyper-Threading Technology (HTT).
	Power Requirements *	Model / Sleep (S3) / Typical VL-EPM-24SU / 0.21A (1.05W) / 1.20A (6.0W) VL-EPM-24EU / 0.23A (1.15W) / 1.18A (5.9W)
	Hardware Monitors	Watchdog Timer: 1 second to 255 minutes. Warm reset, cold reset, or power down. Power Quality Monitor: System reset on undervoltage conditions
	Stackable Bus	PC/104-*Plus* (PCI, ISA)
	Other I/O Expansion	VersaLogic SPX interface
	RoHS	RoHS (2002/95/CE) compliant
Environmental	Operating Temperature	Model / Operating Temperature VL-EPM-24SU / 0° to +60°C VL-EPM-24EU / -40° to +85°C
	Storage Temperature	-40° to +85°C
	Airflow Requirements	Model / Airflow Requirements VL-EPM-24SU / Free air from 0° to +60°C VL-EPM-24EU / 100 LFPM from +60° 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 minutes per axis
	Vibration, Random	MIL-STD-202G, Method 214A, Condition A: 5.35g rms, 5 minutes per axis
	Mechanical Shock	MIL-STD-202G, Method 213B, Condition G: 20g half-sine, 11 ms duration per axis
Memory	System RAM	SO-DIMM socket. Up to 2 GB DDR2 SDRAM.
Video	General	Integrated high-performance video. Intel GMA 500 graphics core supports advanced 3D graphics and high-definition video decode.
	VRAM	Up to 256 MB shared DRAM
	OEM Flat Panel Interface	18/24-bit LVDS interface. CMOS-selectable TFT panel types. Up to 1280 x 1024 (24 bits) @ 85 Hz.
	Desktop Display Interface	Analog output (VGA) via optional adapter cable †
Mass Storage	Hard Drive	IDE controller (ATA-6, UDMA/100) supports two IDE devices
	Flash	Right angle IDE Disk on Module (DOM) site with retention screw
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 †‡	Seven USB 2.0/1.1 ports (one client, six host)
	COM 1/2/3/4 †	RS-232/422/485 selectable. 16C550 compatible. 460 Kbps.
	Audio	Intel High Definition Audio (HDA) compatible. Stereo line in/out.
Software	BIOS	Phoenix Technologies Embedded BIOS with OEM enhancements. Field reprogrammable. Support for USB boot. User-configurable CMOS defaults.
	Sleep Mode	ACPI 2.0 compatible. Support for Deep Power Down Technology (C6).
	Operating Systems	Compatible with most x86 operating systems including Windows, Windows Embedded, Linux, VxWorks, and QNX