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Aurora PC/104 SBC

Intel Atom Z-Series PC/104 Single Board Computer

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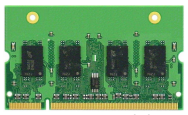
Description

Aurora is a rugged, single board computer (SBC) based on the Intel Atom Z-Series CPUs and conforming to the compact, PC/104 form-factor. Aurora is powered by either an Atom Z530 at 1.6GHz or and Atom Z510 at 1.1GHz.

The SBC supports either 1GB or 2GB of ruggedized DDR2 RSODIMM™ SDRAM. RSODIMM SDRAM is a new industry standard, expanding on the popular SO-DIMM format. RSODIMM extends the length of a standard SO-DIMM module, providing room for two mounting holes that are used to secure the memory module to the SBC, increasing resistance to shock and vibration. RSODIMM and SO-DIMM memory modules are electrically identical.



RSODIMM Module

Aurora provides high-resolution LVDS and SDVO graphics interfaces. Additional I/O ports include SATA, USB, serial, digital I/O, and Gigabit Ethernet. Flexible system expansion is based on industry-standard, stackable PC/104 (ISA) and SUMIT-A (PCIe) modules. A location is also provided for an optional on-board USB flashdisk. Aurora's ruggedized RSODIMM SDRAM modules are securely affixed to the SBC through a pair of standoffs and screws, providing improved performance in high shock and vibration environments.

Aurora's power-efficient design leverages Intel's ultra-low-power (Menlow) silicon platform, consisting of the Atom Z5xx (Silverthorne) processors and US15W chipset (Poulsbo). Aurora utilizes **conduction cooling** for improved ruggedness and reliability through the use of a heatspreader. The CPU ICs are positioned on the bottom of the board, resulting in easy and efficient heat removal via the heatspreader for wide-temperature, fanless operation. The four mounting holes on the bottom of the conduction cooled heatspreader are #6-32 threaded holes on 2.8" centers.

Aurora is compatible with Linux, Windows XP, and Windows Embedded Standard. All necessary drivers are provided with the product.

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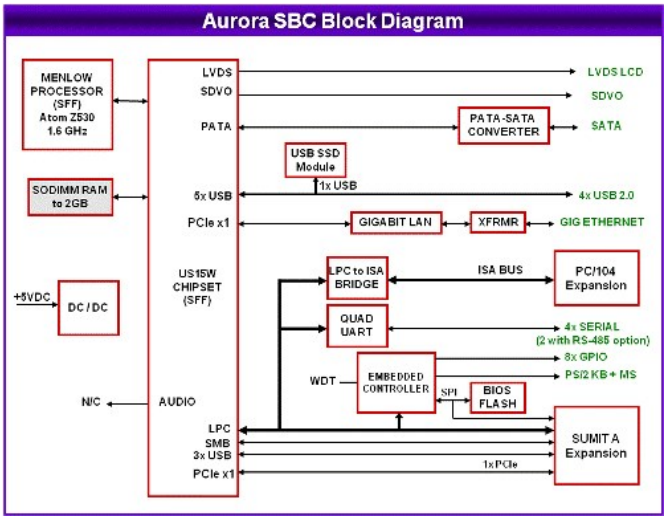
System Block Diagram



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Development Kits

The Aurora Development Kit (DK-AUR-01) provides all the components you need for fast and efficient embedded development. The kit includes an Aurora SBC, ACC-VGA-03, USB flashdisk with Linux pre-loaded, cable kit, power adapter cable, and software CD.

Software Development Kits are also available for Aurora for Linux (SDK-AUR-LNX) and Windows XP Embedded Standard (SDK-AUR-XPE) operating systems. Both software development kits come with a USB flashdisk pre-loaded with a bootable image of the operating system, a back up CD with the OS image, and documentation.

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VGA Accessories

VGA output can be generated from Aurora through one of several add-on I/O boards. Each of these I/O boards converts the SDVO output from Aurora via an on-board circuit, and produces VGA output available on a pin header.

- **ACC-VGA-03** provides VGA output from Aurora as well as pass-through ISA and SUMIT-A buses
- Corona **COR-LAN2-XT** is a dual Ethernet and dual USB SUMIT-ISM I/O module that also provides VGA output from Aurora SBCs
- Corona **COR-LANWIFI-XT** provides dual Ethernet, dual USB and a mini-PCI WiFi module on a SUMIT-ISM I/O module that also provides VGA output from Aurora SBCs

Corona COR-LANWIFI-XT I/O Module

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CK-AUR-01: Cable kit for Aurora PC/104 SBC

The Aurora cable kit includes cables for Aurora input and output. Many cables are also available individually.

FEATURES

System Features

- Intel Atom Z530 or Z510 CPU
- Up to 2GB of ruggedized RSODIMM™ DDR2 DRAM
- 4 USB 2.0 ports
- 2 RS-232, 2 RS-232/422/485 serial ports
- 1 Gigabit Ethernet
- 1 SATA port
- Support for USB flashdisk up to 8GB
- LVDS LCD and SDVO
- PS/2 keyboard and mouse
- 8 digital I/O
- PC/104 (ISA) and SUMIT-A expansion buses
- -40ºC to +80ºC operating temperature at heatspreader surface
- 3.55" x 3.775" x 0.9"

ACCESSORIES

Customers who use this product also use:

- Aurora Development Kit 
- Aurora Software Development Kit 
- Corona WiFi & Ethernet Module 
- USB Flashdisks 
- Aurora Cable Kit 
- Octavio Ruggedized Systems 

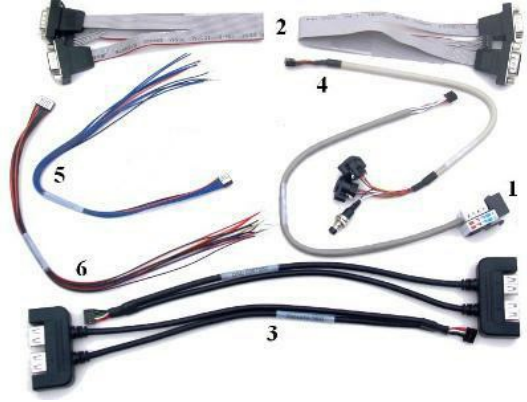
This product can be **customized** and **ruggedized**. **Click here** for more information.

ONLINE SUPPORT

- See Aurora PC/104 SBC Technical Resources
- Request Product information
- Request Technical Support

DOWNLOADS

- Aurora Datasheet (**.pdf**, 513.7 kb)
- Aurora SBC User Manual (**.pdf**, 1.3 MB)
- VGA Accessory Kit User Manual (**.pdf**, 521.3 kb)
- Pandora End Caps for Aurora (**.pdf**, 107.1 kb)
- Sharp LQ121S1LG42 LCD Specification (**.pdf**, 544.1 kb)
- Aurora Heatspreader Drawing (**.jpg**, 71.4 kb)
- Universal Driver Software
- XP/XPe Ethernet Driver (Aurora, COM Exp, Magellan) (**.zip**, 30.9 MB)
- Aurora XP/XPe VGA Driver (**.zip**, 7.5 MB)
- XP/XPe Chipset Driver for Aurora (**.zip**, 1.7 MB)
- XP/XPe SATA Driver (Aurora, COM Exp, Magellan) (**.zip**, 429.4 kb)



CK-AUR-01 includes the following cables:

No.	Qty	Cable	Description	Drawing
1	1	6981030	VGA cable	**Show**
2	2	6981081	Dual Serial Port 2mm 2x10 to 2x DB9M	**Show**
3	2	6981082	Dual USB 2.0 type A	**Show**
4	1	6981301	PS/2 Keyboard/Mouse, 2x5 2mm	**Show**
5	1	6981302	Digital I/O cable, 2x5 2mm	**Show**
6	1	6981303	Power input cable, 2x6 2mm	**Show**

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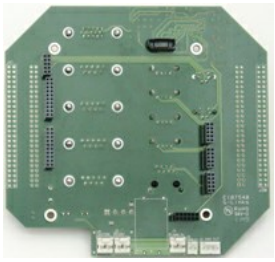
Pandora and Panel I/O Board

Aurora single board computers can be mounted inside Diamond's Pandora PC/104 enclosure with a cable-free panel I/O board to form a rugged, compact, completely self-contained industrial computer system. Aurora SBCs are available only in 1.7" tall Pandora enclosures, and no additional I/O cards may be stacked with Aurora in a Pandora enclosure. The Aurora panel I/O board (shown below) converts Aurora's pin headers to industry standard connectors for all I/O, additionally it converts Aurora's SDVO output to VGA output.

The Pandora enclosure, coupled with the panel I/O board, features fast and easy assembly due to the fact that most or all internal cables can be eliminated. Rather than requiring the installation of special corner mounts or forcing the stack into a set of corner guides, the entire stack is bolted directly to the front plate of the case, forming a rugged, easily-handled assembly. **Click here for more information on the Pandora PC/104 Enclosure**.

Panel I/O Board Top
Click here for a larger image



Panel I/O Board Bottom
Click for a larger image

Aurora in Pandora Enclosure

Transition Cables or PC-Style Connectors

All I/O on Aurora is made available on 2mm pitch pin headers for use with low-cost cables. To enhance the use of Aurora in harsh environments requiring outstanding resistance to shock and vibration, Diamond Systems offers our rugged Pandora PC/104 enclosure that provides a cable-free configuration via a small panel I/O board that installs directly on top of Aurora to instantly convert all I/O to PC-style connectors:

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Specifications

CPU and System	
Processor	1.6GHz Intel Atom Z530P or 1.1GHz Intel Atom Z510
Front Side Bus Speed	533MHz
Memory	1GB or 2GB of RSODIMM™ SO-DIMM DDR2 DRAM
Bus Interfaces	PC/104 (ISA) stackable SUMIT-A stackable
Display Type	LVDS LCD and SDVO
Display Resolution	1280X1024 maximum
USB Ports	(4) USB 2.0
Serial Ports	(2) RS-232; (2) RS-232/422/485
Networking	(1) Gigabit Ethernet
Mass Storage	(1) SATA port Support for USB flashdisk up to 8GB
Keyboard / Mouse	PS/2 with BIOS support for USB
Digital I/O	(8) Digital I/O lines
Watchdog timer	Yes
PCI Express	(1) PCIe x 1 lane to SUMIT-A bus
Input power	5V ±5%
Power Consumption	5.4W
Cooling	Heatspreader, no fan
Operating Temperature	-40°C to +80°C (-40°F to +176°F) operating temperature at heatspreader surface
Dimensions	3.550" x 3.775" x 0.9" (90mm x 96mm x 23mm)
Weight	7.5 oz / 212g
Shock	MIL-STD-202G Table 213-1 J Half-Sine Wave Shock 30 G, 11ms: 3 time shocks at both directions per axis: Vertical / Transverse / Longitudinal
Vibration	MIL-STD-202G Method 204, Modified Condition I A Random Vibration Axes: Vertical / Transverse / Longitudinal 20-2000Hz: 20-100Hz at 6dB/octave, 100-1000Hz at 0.04G^2/Hz, 1000-2000Hz at -6dB/octave Sine Sweep Vibration Axes: Vertical / Transverse / Longitudinal 10-2000Hz: 10-57Hz at 0.6", 57-2000Hz at 10G, sweep rate 20 minutes per cycle
MTBF	211,720 hours (Aurora Z530 models)
RoHS	Compliant

SUMIT Resources		
Company:	Diamond Systems Corp.	
Product:	Aurora SBC	
Form-factor:	PC/104	
	SUMIT A	**SUMIT B**
PCIe x1	1	
PCIe x4		
USB	3	
ExpressCard	–	
LPC	√	
SPI /uWire	–	
SMBus/ I2C	SMBus	
+12V	√	
+5V	√	
+5Vsb	–	
+3.3V	√	
Notes: www.sff-sig.org/sumitlabel.html		

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Get an online quote

Aurora PC/104 SBC

available models:	
AUR-Z510-11-0G	Aurora PC/104 SBC, 1.1GHz Atom Z510, 0GB SDRAM
AUR-Z510-11-1G	Aurora PC/104 SBC, 1.1GHz Atom Z510, 1GB SDRAM
AUR-Z530-16-0G	Aurora PC/104 SBC, 1.6GHz Atom Z530, 0GB SDRAM
AUR-Z530-16-1G	Aurora PC/104 SBC, 1.6GHz Atom Z530, 1GB SDRAM
AUR-Z530-16-2G	Aurora PC/104 SBC, 1.6GHz Atom Z530, 2GB SDRAM
DK-AUR-01	Aurora Development Kit with AUR-Z530-161G SBC, ACC-VGA-03, cables, power supply, Linux software and documentation
ACC-VGA-03	VGA Accessory Kit for Aurora

Please login or signup for an online quote request.

Cables and accessories

available models:	
CK-AUR-01	CK-AUR-01 cable kit
6981030	VGA cable
6981081	Dual Serial Port 2mm 2x10 to 2x DB9M
6981082	Dual USB 2.0 type A
6981301	PS/2 Keyboard/Mouse, 2x5 2mm
6981302	Digital I/O cable, 2x5 2mm
6981303	Power input cable, 2x6 2mm

Please login or signup for an online quote request.