

PCI-7031

Intel® Atom N450/D510, PCI Half-Sized SBC with On-board DDR2/VGA/LVDS/Dual GbE/SATA/COM

Preliminary



CE FCC

Features

- Ultra low power, fan-less N450 CPU and 1 GB on-board DDR2 667 memory (Only for N SKU)
- Dual core high performance D510 CPU and maximum 2 GB DDR2 800 memory (Only for D SKU)
- VGA/LVDS dual video outputs
- Optional module for 4 x RS-485 w/ auto-flow control
- Supports embedded software APIs and Utilities

Software APIs:



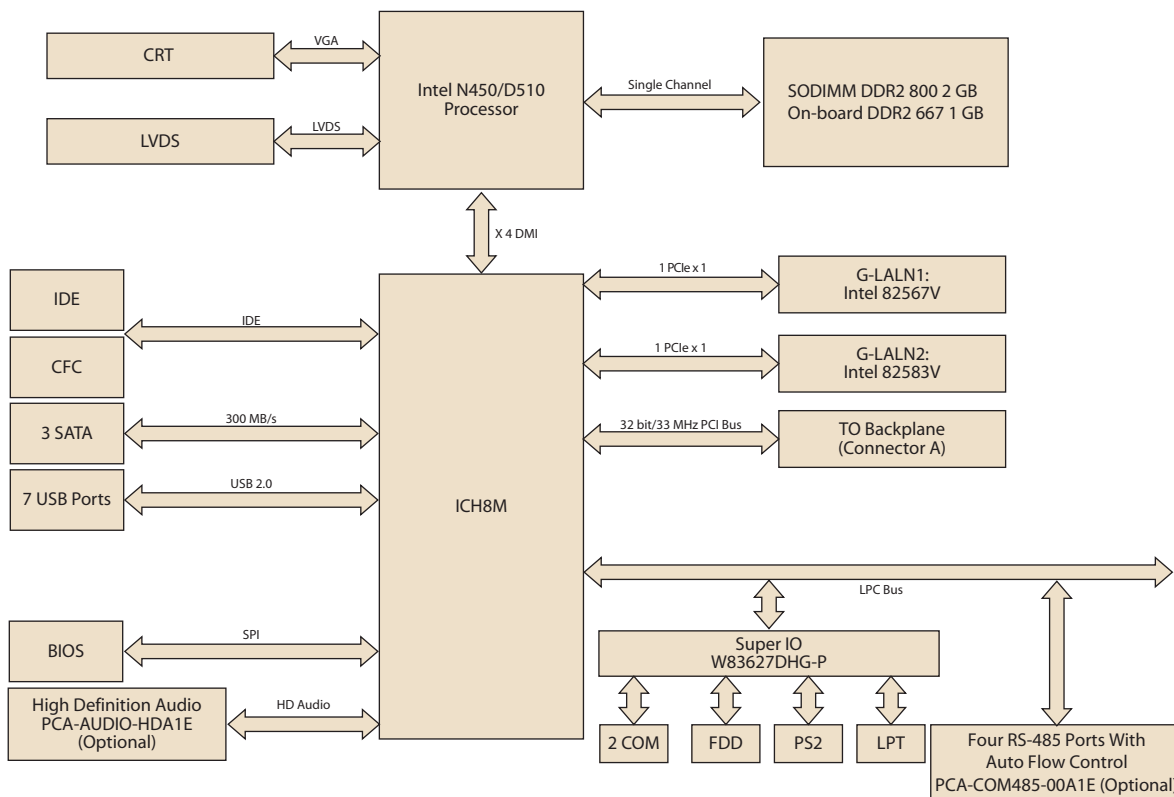
Utilities:



Specifications

Processor System	CPU	Intel Atom N450	Intel Atom D510					
	Speed	1.66 GHz	1.66 GHz					
	L2 Cache	512 KB	1 MB					
	Chipset	ICH8M						
	BIOS	AMI 16Mb SPI Flash						
Bus	PCI-Express	N/A						
	PCI	Four 32 bit/33 MHz PCI Masters to Backplane						
Memory	Technology	Single channel DDR2 667 MHz for N SKU; single channel DDR2 667/800 MHz for D SKU						
	Max. Cap.	1 GB on-board for N SKU; max 2 GB SODIMM for D SKU						
	Socket	No socket for N SKU; 200-pin DIMM x 1 for D SKU						
Graphic	On board VRAM	Embedded Gen3.5+ GFX Core technology, Direct X 9/Pixel Shader 2.0 compliant						
	Video Intercae	Shared 224 MB						
	Video Output	15 pin VGA D-sub connector x1/On-board LVDS pin header x 1 (supports single channel 18-bit LVDS)						
	Video Output	VGA: Supports up to SXGA 1400 x 1050 @ 60 Hz for N SKU, up to 2048 x 1536 @ 60 Hz for D SKU LVDS: Supports 18-bit single channel and up to WXGA 1366 x 768 or 1280 x 800 for both N and D SKUs Dual Display: CRT + LVDS, support extended mode and clone mode for both N and D SKUs						
Ethernet	Interface	10/100/1000Base-T						
	Controller	LAN1: Intel 82567V LAN2: Intel 82583V						
	Connector	RJ45 with LED Connector x 2						
SATA 2	Max. transfer rate	300MB/s						
	Channel	3						
EIDE	Mode	ATA 100/66/33						
	Channel	1 (support up to 2 IDE devices)						
I/O Interface	USB 2.0	7 ports on the SHB						
	Serial	Two serial RS-232 on-board pin-headers, plus four ports of RS-485 with auto-flow control by module (Advantech P/N: PCA-COM485-00A1E)						
	Parallel	1 (EPP/ECP)						
	FDD	1						
	PS/2	1 (for mouse and keyboard, an Y cable is included in the package)						
Watchdog Timer	Output	System reset						
	Interval	Programmable 1, 2, 4, 8, ..., 256 sec/min						
Miscellaneous	Audio Output	Intel High Definition audio interface (requires an audio extension module, P/N: PCA-AUDIO-HDA1E)						
Power Requirement	Test Equipment	Atom D510 CPU 1.66 GHz; Memory: 1 Piece of 2 GB DDR2 800 MHz SODIMM; Storage: One IDE HDD and one SATA CD ROM						
	Test program	BurnIn test 6.0						
	Voltage	+12 V	+5 V	+3.3 V	+5 SBY	-12 V	-5 V	Total
	Current	0.228 A	2.952 A	0 A	0.060 A	0 A	0 A	17.796 W
	Test Equipment	Atom N450 CPU 1.66 GHz; Memory: On-board 1GB DDR2 667 MHz; Storage: One IDE HDD and one SATA CD ROM						
	Test program	BurnIn test 6.0						
	Voltage	+12 V	+5 V	+3.3 V	+5 SBY	-12 V	-5 V	Total
	Current	0.192 A	2.532 A	0 A	0.060 A	0 A	0 A	15.264 W
Environment	Status	Operating			Non-Operating			
	Temperature	0 ~ 60° C (32 ~ 140° F) (operation humidity: 40° C @ 85% RH Non-Condensing)			-40 ~ 85° C and 60° C @ 95% RH Non-Condensing			
Physical	Dimensions	185 mm (L) x 122 mm (W) (7.3" x 4.8")						

Board Diagram



Ordering Information

Model Name	CPU	Memory	Fan-less	VGA	LVDS	SATA	USB	COM	CF
PCI-7031D-S6A1E	Atom D510	1 SODIMM Socket 2 GB DDR2 667/800 On-board 0 GB	No	Yes	Yes	3	7	2	Yes
PCI-7031N-S6A1E	Atom N450	No SODIMM Socket On-board 1 GB DDR2 667	Yes	Yes	Yes	3	7	2	Yes

Accessories

Part Number	Description
PCA-COM485-00A1E	Extension module for four ports of RS-422/485 with auto-flow control function
PCA-AUDIO-HDA1E	Extension module for 7.1 channel High Definition audio

Bracket View



PCI-7031D-S6A1E
PCI-7031N-S6A1E

Packing List

Part Number	Description	Quantity
960046526N001	CPU Cooler for Atom D510 CPU (Only Available for D SKU)	1
1700340640	FDD cable	1
1701400452	Ultra ATA 66/100 HDD cables	1
1700003194	Serial ATA HDD data cable	2
1703150102	Serial ATA HDD power cable	2
1701260301	Printer (parallel) port cable kit	1
1700008762	Dual COM ports cable kit	1
1700002343	ATX Feature Cable	1
1700008887	4-port USB cable kit	1
1700060202	Y cable for PS/2 keyboard and PS/2 mouse	1
1700000265	AT/ATX PSU 20-Pin to 12-Pin Cable Kit	1
9689000068	Jumper Pack	1
	Warranty card	1
	PCI-7031 Startup Manual	1
	CD with driver utility and manual (in PDF format)	1

Value-Added Software Services

Software API: An interface that defines the ways by which an application program may request services from libraries and/or operating systems. Provides not only the underlying drivers required but also a rich set of user-friendly, intelligent and integrated interfaces, which speeds development, enhances security and offers add-on value for Advantech platforms. It plays the role of catalyst between developer and solution, and makes Advantech embedded platforms easier and simpler to adopt and operate with customer applications.

Software APIs

Control



GPIO

General Purpose Input/Output is a flexible parallel interface that allows a variety of custom connections. It allows users to monitor the level of signal input or set the output status to switch on/off a device. Our API also provides Programmable GPIO, which allows developers to dynamically set the GPIO input or output status.



SMBus

SMBus is the System Management Bus defined by Intel® Corporation in 1995. It is used in personal computers and servers for low-speed system management communications. The SMBus API allows a developer to interface a embedded system environment and transfer serial messages using the SMBus protocols, allowing multiple simultaneous device control.



I2C

I2C is a bi-directional two wire bus that was developed by Philips for use in their televisions in the 1980s. The I2C API allows a developer to interface with an embedded system environment and transfer serial messages using the I2C protocols, allowing multiple simultaneous device control.

Display



Brightness Control

The Brightness Control API allows a developer to interface with an embedded device to easily control brightness.



Backlight

The Backlight API allows a developer to control the backlight (screen) on/off in an embedded device.

Monitor



Watchdog

A watchdog timer (WDT) is a device that performs a specific operation after a certain period of time if something goes wrong and the system does not recover on its own. A watchdog timer can be programmed to perform a warm boot (restarting the system) after a certain number of seconds.



Hardware Monitor

The Hardware Monitor (HWM) API is a system health supervision API that inspects certain condition indexes, such as fan speed, temperature and voltage.



Hardware Control

The Hardware Control API allows developers to set the PWM (Pulse Width Modulation) value to adjust fan speed or other devices; it can also be used to adjust the LCD brightness.

Power Saving



CPU Speed

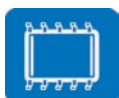
Make use of Intel SpeedStep technology to reduce power consumption. The system will automatically adjust the CPU Speed depending on system loading.



System Throttling

Refers to a series of methods for reducing power consumption in computers by lowering the clock frequency. These APIs allow the user to lower the clock from 87.5% to 12.5%.

Software Utilities



BIOS Flash

The BIOS Flash utility allows customers to update the flash ROM BIOS version, or use it to back up current BIOS by copying it from the flash chip to a file on customers' disk. The BIOS Flash utility also provides a command line version and API for fast implementation into customized applications.



Embedded Security ID

The embedded application is the most important property of a system integrator. It contains valuable intellectual property, design knowledge and innovation, but it is easily copied! The Embedded Security ID utility provides reliable security functions for customers to secure their application data within embedded BIOS.



Monitoring

The Monitoring utility allows the customer to monitor system health, including voltage, CPU and system temperature and fan speed. These items are important to a device; if critical errors happen and are not solved immediately, permanent damage may be caused.



eSOS

The eSOS is a small OS stored in BIOS ROM. It will boot up in case of a main OS crash. It will diagnose the hardware status, and then send an e-mail to a designated administrator. The eSOS also provides remote connection: Telnet server and FTP server, allowing the administrator to rescue the system.



Flash Lock

Flash Lock is a mechanism that binds the board and CF card (SQFlash) together. The user can "Lock" SQFlash via the Flash Lock function and "Unlock" it via BIOS while booting. A locked SQFlash cannot be read by any card reader or boot from other platforms without a BIOS with the "Unlock" feature.