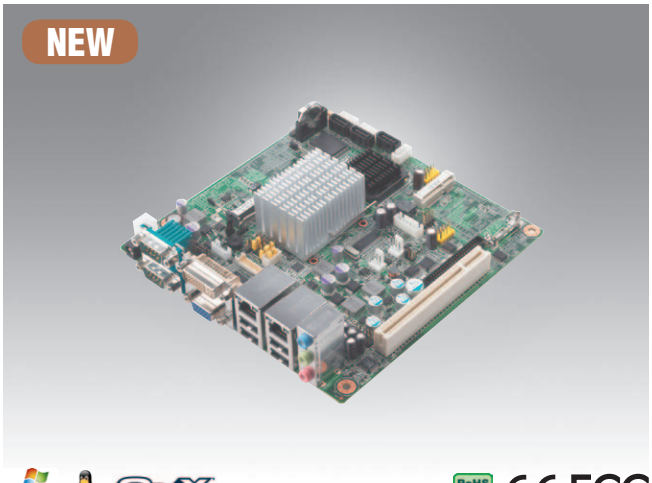
AIMB-213

Intel® Atom™ N455/D525 Mini-ITX with VGA/DVI/LVDS, 6 COM, and Dual LAN



Features

- Supports Intel® Atom™ processor N455 and D525 dual core
- Two 204-pin SODIMM up to 2 GB/4 GB DDR3 800 MHz SDRAM
- Supports 1 PCI and 1 Mini-PCIe expansion, 6 serial ports, 8 USB, and CF
- Lower total cost of ownership with DC12V support and support 18/24-bit LVDS
- Onboard TPM 1.2 support (optional)
- Supports embedded software APIs and Utilities

Software APIs: SMBus, H/W Monitor, Brightness, Watchdog, GPIO

Utilities: BIOS flash, eSOS, Monitoring, Flash Lock, Embedded Security ID

Note: eSOS requires ODM BIOS, available by request

Specifications

Processor System	CPU (45 nm)	Intel Atom N455	Intel Atom D525
	Max. Speed	1.66 GHz (single core)	1.8 GHz (dual core)
	L2 Cache	512 KB	1 MB
	Chipset	ICH8M	
	BIOS	AMI 16 Mbit SPI	
Expansion Slot	PCI	32-bit/33 MHz, 1 slot	
	Mini-PCIe	1	
	PCIe	-	
Memory	Technology	Single channel DDR3 800 MHz SDRAM	
	Max. Capacity	2 GB/4 GB	
	Socket	2 x 204 pin SODIMM	
Graphics	Controller	Embedded Gen3.5+ GFX Core, 200/400-MHz render clock frequency for N455/D525	
	VRAM	Shared system memory up to 224 MB SDRAM	
	VGA	Supports up to SXGA 1400 x 1050 @ 60Hz for Atom N455, up to 2048 x 1536 for Atom D525	
	LVDS	Supports 18/24-bit single channel and up to WXGA 1366 x 768 (Chrontel 7036)	
	DVI	Supports up to UXGA 1600 x 1200 @ 60Hz	
	Dual Display	VGA + DVI, VGA + LVDS, support extended mode and clone mode	
Ethernet	Interface	10/100/1000 Mbps	
	Controller	GbE LAN1: Intel 82567V; GbE LAN2: Intel 82583V	
	Connector	RJ-45 x 2	
SATA	Max Data Transfer Rate	300 MB/s	
	Channel	3	
EIDE	Mode	None	
	Channel	None	
SSD	CompactFlash	Supports CompactFlash Type I/II	
Rear I/O	VGA	1	
	DVI	1	
	Ethernet	2	
	USB	4 (USB 2.0 compliant)	
	Audio	3 (Mic-in, Line-out, Line-in)	
	Serial	2 (1 of RS-232,1 of RS-232/422/485)	
	Parallel	-	
	DC jack	1 (2.5 mm)	
Internal Connector	LVDS & Inverter	1	
	USB	4 (USB 2.0 compliant)	
	Serial	4 (RS-232), only COM6 supply 5V/12V	
	IDE	None	
	SATA	3	
	SATA PWR connector	3	
	CompactFlash	1	
	Parallel	None	
	DIO	8-bit GPIO	
Watchdog Timer	Output	System reset	
	Interval	Programmable 1 ~ 255 sec/min	
Power Requirements	Typical	DC 12V Input (Tolerance ±10%)	
Environment		Operating	Non-Operating
	Temperature	0 ~ 60° C (32 ~ 140° F)	-40 ~ 85° C (-40 ~ 185° F)
Physical Characteristics	Dimensions	170 mm x 170 mm (6.69" x 6.69")	

All product specifications are subject to change without notice.

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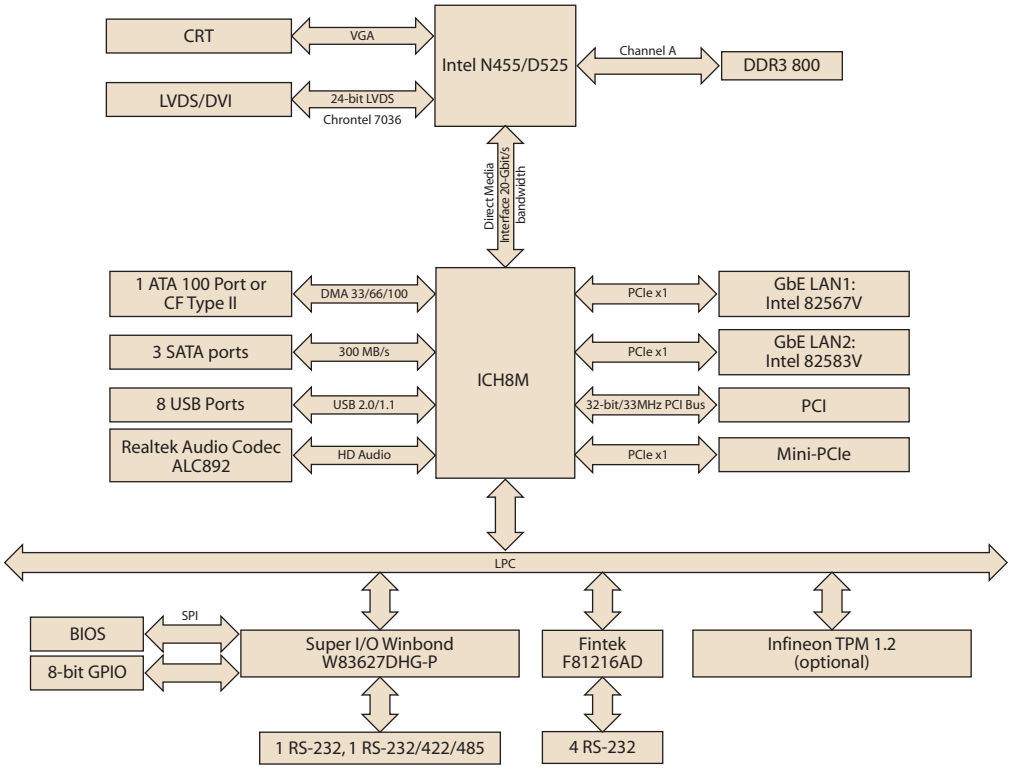
Board Diagram



Ordering Information

Part Number	CPU	SC/DC	GbE	COM	LVDS
AIMB-213N-S6A1E	Atom N455	Single core	2	6	1, 18/24-bit
AIMB-213D-S6A1E	Atom D525	Dual core	2	6	1, 18/24-bit

Packing List

Part number	Description	Quantity
1700003194	SATA HDD cable	3
1700018785	SATA power cable	3
1700008876	Serial port cable 1 to 4	1
1960046526N001	CPU cooler (For Atom D525 only)	1
1960050473T000	I/O port bracket	1
2002021310	Startup manual	1
2062021300	Driver CD	1

I/O View

AIMB-213N-S6A1E
AIMB-213D-S6A1E

Optional Accessories

Part Number	Description
1700003195	USB cable with four ports, 17.5 cm
1700002204	USB cable with four ports, 27 cm
1700008461	USB cable with four ports, 30.5 cm
1757003082	Adapter AC100-240V 60 W +12V/5A FSP
1757003062	Adapter AC100-240V 60W +12V/5A(Delta)
1700018699	KBMS cable 1*6P-2.5/DIN-6P(F)*2, 25 cm

Embedded OS / API

OS/API	Description
Win XPE	XPE WES 2009
Software API	SUSI V3.0

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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.

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.

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.

Power Saving

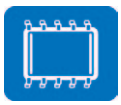
CPU Speed

Make use of Intel SpeedStep technology to reduce power 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.

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