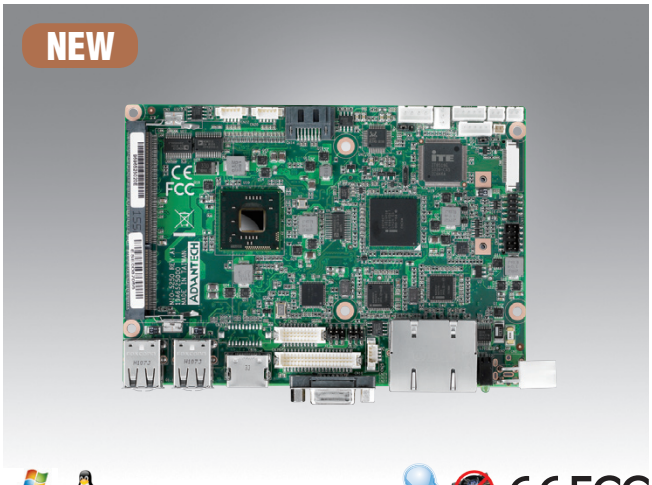
MIO-5250

Intel® Atom™ N2600/ N2800/ D2700, MI/O Extension SBC, DDR3, HDMI, Dual LVDS, VGA, 2 GbE, CFast, iManager, MIOe



Windows Embedded

iManager

CE FCC

Features

- Embedded Intel® Atom™ N2600/ N2800/ D2700 dual core processor + Intel NM10, 1 x DDR3 memory support up to 4 GB
- DirectX® 9, multiple display: 18/24-bit LVDS1, 48-bit LVDS2, HDMI, VGA
- Flexibile design by using integrated multiple I/O: MIOe to approach vertical applications & keep domain knowhow.
- 2 GbE support, HD Audio, Rich I/O interface with 4 COM, 1 SATA, SMBUS, 8-bit GPIO, PCIe Mini Card & CFast
- Supports iManager, embedded software APIs and Utilities

Software APIs: GPIO, H/W Monitor, Brightness, Watchdog, Backlight On/Off, SMBus, CPU Speed, System Throttling

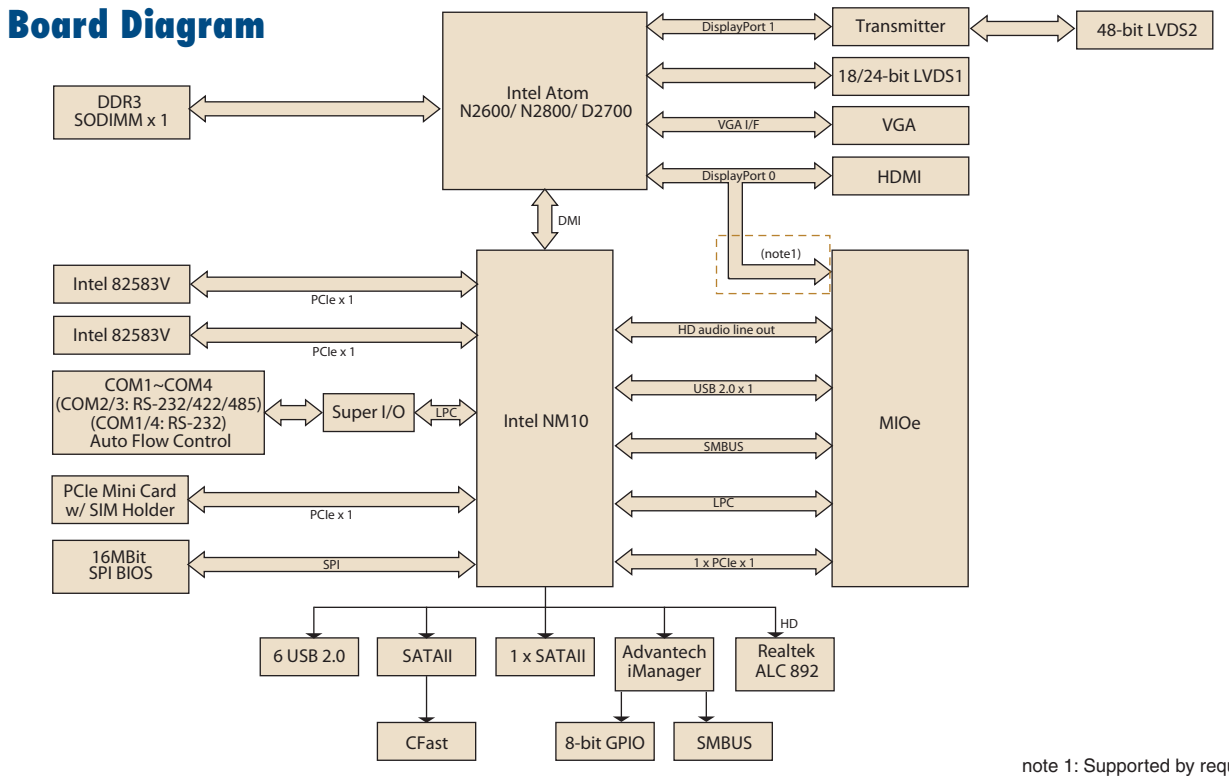
Utilities: Monitoring, eSOS, Embedded Security ID

Specifications

Processor System	CPU	Intel Atom Dual Core processor N2600 1.6GHz/ N2800 1.86GHz / D2700 2.13GHz
	Frequency	Dual Core 1.6GHz/ 1.86GHz / 2.13GHz
	L2 Cache	1MB
	System Chipset	Intel Atom N2600/ N2800/ D2700 + Intel NM10
	BIOS	AMI EFI 32Mbit
Memory	Technology	DDR3 1066MHz (N2800 & D2700), DDR3-800 (N2600)
	Max. Capacity	4 GB
	Socket	1 x 204-pin SODIMM
Display	Chipset	Intel Atom N2600/ N2800/ D2700
	Graphic Engine	DirectX 9 and OpenGL3.0 support Hardware decode H/W acceleration: MPEG2 H/W Decode/Acceleration: H.264/ VC1/ WMV9
	LVDS	18/24-bit LVDS1: up to 1366 x 768 (18-bit for N2600, N2800), 1440 x 900 (24-bit for D2700) 48-bit LVDS2: up to 1600x1200 (N2600, N2800), 2560 x 1600 (D2700) (only for MIO-5250D-U1A1E)
	VGA	Up to 1920 x 1200
	HDMI	Supports 1920 x 1200, Max data rate: up to 1.65 Gb/s, Supports HDMI v1.3 Up to 1080p support
	Dual Display	Yes (VGA + LVDS1 or VGA + HDMI or HDMI + LVDS1 or LVDS1 + LVDS2)
Ethernet	Speed	10/100/1000Mbps
	Controller	GbE1 Intel 82583V 10/100/1000Mbps, GbE2 Intel 82583V 10/100/1000Mbps
	Connector	2 RJ45 on Rear I/O
Audio	Chipset	Realtek ALC892, High Definition Audio(HD),Line-in, Line out, Mic-in
	Amplifier	Can be supported via MIOe
WatchDog Timer		255 levels timer interval, programmable by software
Storage	CFast	1
	SATA	1 x SATA II (Max. Data Transfer Rate 300 MB/s)
Rear I/O	Ethernet	2 (10/100/1000Mbps)
	VGA	1
	HDMI	1
	USB	4 x USB 2.0
	LED	Power, Hard disk
	DC Power	1 (Supported only on MIO-5250D-U1A1E)
Internal I/O	USB	2 x USB 2.0
	Seriel	2 RS-232 from COM1/4, 2 RS-232/422/485 from COM2/3 (ESD protection for RS-232: Air gap ±15kV, Contact ±8kV)
	SMBUS	Supported
	GPIO	8-bit general purpose input/output
Expansion	PCIe Mini Card	1 (full size) with SIM Holder
	MIOe	1
Power	Power Type	Single 12V DC power input
	Power Supply Voltage	Supports single 12V input, ± 10%
	Power Consumption (Typical)	N2600: 0.606 A @ 12 V(7.27W), N2800: 0.715 A @ 12 V(8.58W), D2700: 0.891 A @ 12 V(10.69W)
	Power Consumption (Max, test in HCT)	N2600: 0.729 A @ 12 V (8.75W), N2800: 0.903 A @ 12 V (10.84W), D2700: 1.056 A @ 12 V (12.67W)
	Power Management	ACPI
	Battery	3 V / 210 mAH
Environment	Operational	0 ~ 60° C (32 ~ 140° F) (Operational humidity: 40° C @ 95% RH Non-Condensing)
	Non-Operational	-40° C ~ 85° C and 60° C @ 95% RH Non-Condensing
Physical Characteristics	Dimensions (L x W)	146 x 102 mm (5.7" x 4")
	Weight	0.85 kg (1.87 lb), weight of total package

Last updated : 27-Dec-2011

Board Diagram



note 1: Supported by request

Ordering Information

Part No.	CPU	L2 Cache	LVDS1	LVDS2	VGA	HDMI	GbE1	GbE2	Audio	RS-232/ 422/485	RS-232	USB 2.0	GPIO	SATAII	CFast	Mini Card	MIOe	Power Connector	Thermal Solution	Operational Temp.
MIO-5250N-S6A1E	Intel Atom N2600 1.6G	1MB L2	18-bit	-	Yes	Yes	1	1	Yes	2	2	6	8-bit	1	1	1	Yes	DC Jack	Fan-less	0 ~ 60° C
MIO-5250N-S8A1E	Intel Atom N2800 1.86G	1MB L2	18-bit	-	Yes	Yes	1	1	Yes	2	2	6	8-bit	1	1	1	Yes	DC Jack	Fan-less	0 ~ 60° C
MIO-5250D-U1A1E	Intel Atom D2700 2.13G	1MB L2	24-bit	48-bit	Yes	Yes	1	1	Yes	2	2	6	8-bit	1	1	1	Yes	2x2 type	Fan-less	0 ~ 60° C

Packing List

Part No.	Description	Quantity
	MIO-5250 SBC	
	Startup Manual	
	Utility CD	
1700008941	SATA cable 7P 32CM C=R 180/180D W/Lock	1
1700018785	SATA 35cm power cable	1
1700019435	COM RS-485 D-SUB 9P (M)/1*4P 2.0 25cm cable	2
1701200220	COM RS232 Cable 2*10P-2.0/D-SUB 9P (M)*2 22CM	2
1700019584	Audio Cable 2*5P-2.0/JACK*3 20cm	1
9689000002	mini Jumper pack	

Optional Accessories

Part No.	Description
	Heat spreader for MIO-5250 (137 x 84.2 x 16.7 mm)
	USB5/6 cable

Embedded OS/API

Embedded OS/API	Description
WinCE 7.0	
Win XPE	
WES 7	
Linux	
Software API	

Rear I/O View

MIO-5250N-S6A1E
MIO-5250N-S8A1E

MIO-5250D-U1A1E

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

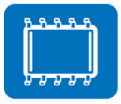
CPU Speed

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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