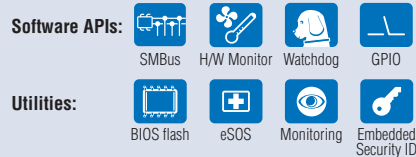# AIMB-581

Intel® Xeon® E3/ Core™ i7/i5/i3 LGA1155 MicroATX with VGA/DVI/LVDS, 6 COM, Dual LAN, DDR3 and SATAIII

NEW

Features

- Supports Intel® Xeon®/ Core™ i7/i5/i3 processor with Q67/C206 chipset
- Four DIMM socket supports up to 16 GB DDR3 1066/1333 MHz SDRAM
- Supports dual display of VGA, DVI, LVDS and dual GbE LAN
- Supports Inel vPro, AMT 7.0, PECI 3.0, USB 3.0, Software RAID 0, 1, 5, 10, TPM 1.2 (optional)
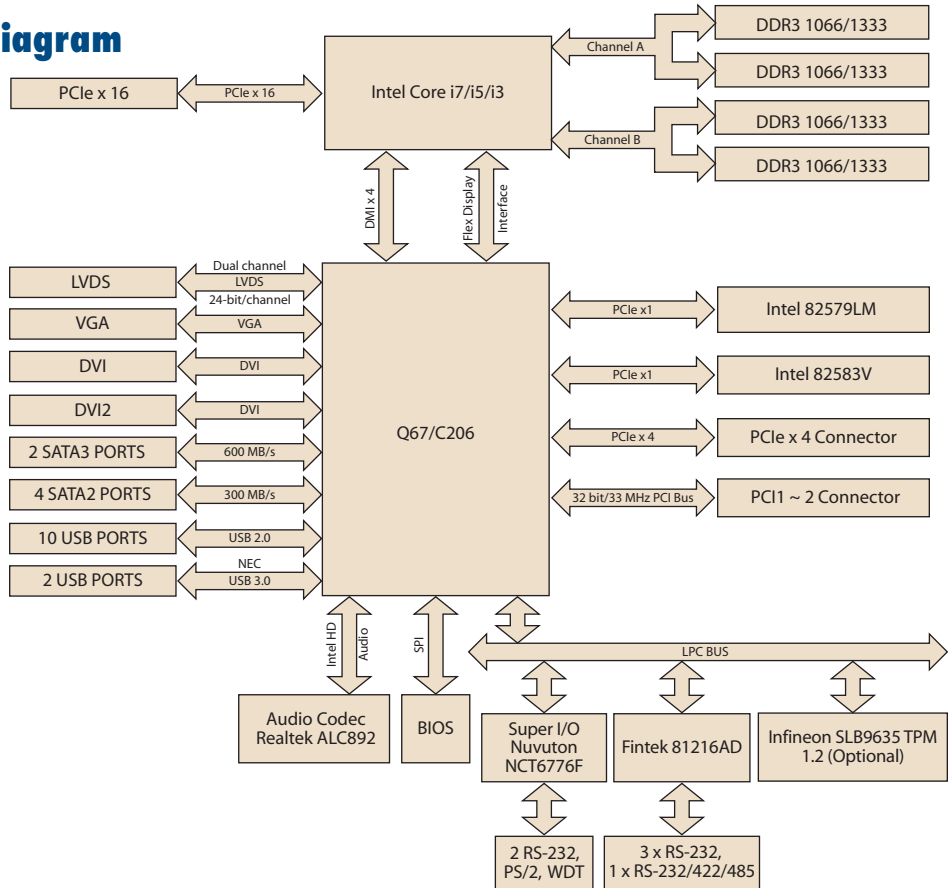- Supports embedded software APIs and utilities

Software APIs: SMBus | H/W Monitor | Watchdog | GPIO

Utilities: BIOS flash | eSOS | Monitoring | Embedded Security ID

Note: eSOS requires ODM BIOS, available by request

Windows Embedded

RoHS COMPLIANT 2002/95/EC CE FCC

Specifications

		Intel Xeon E3-1275	Intel Xeon E3-1225	Intel Core i3-2120	Intel Pentium G850	Intel Core i7-2600	Intel Core i5-2400	Intel Core i3-2120
Processor System	CPU							
	Core Number	4	4	2	2	4	4	2
	Max. Speed	3.4 GHz	3.1 GHz	3.3 GHz	2.9 GHz	3.4 GHz	3.1 GHz	3.3 GHz
	Integrated Graphic	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	L3 Cache	8 MB	6 MB	3 MB	3 MB	8 MB	6 MB	3 MB
	Support Model	WG2	WG2	WG2	WG2	QG2	QG2	QG2
	Chipset	Q67/C206						
	BIOS	AMI64 Mbit SPI						
Expansion Slot	PCI	32-bit/33 MHz, 2 slots						
	PCIe x4 (Gen2)	2.0 GB/s per direction, 1 slot						
	PCIe x16 (Gen2)	8 GB/s per direction, 1 slot						
Memory	Technology	Dual Channel DDR3 1066/1333 MHz SDRAM						
	Max. Capacity	16 GB						
	Socket	4 x 240-pin DIMM						
Graphics	Controller	Intel HD Graphics						
	VRAM	1 GB maximum shared memory with 2 GB and above system memory installed						
	LVDS	Single channel 24-bit/dual channel 48-bit LVDS						
	1st DVI	Yes, supports max. resolution 1920 x 1200						
	2nd DVI	Yes, with internal pin header, supports max. resolution 1920 x 1200						
	Dual Display	CRT+LVDS, CRT+DVI, LVDS+DVI						
Ethernet	Interface	10/100/1000 Mbps						
	Controller	GbE LAN1: Intel 82579LM, GbE LAN2: Intel 82583V						
	Connector	RJ-45 x 2						
SATA	Max Data Transfer Rate	600 MB/s (SATA 3.0)/ 300 MB/s (SATA 2.0)						
	Channel	2/4						
Rear I/O	VGA	1						
	DVI	1						
	Ethernet	2						
	USB	4 (2 USB 2.0, 2 USB 3.0)						
	Audio	2 (Mic-in, Line-out)						
	Serial	2 (RS-232)						
	PS/2	2 (1 x keyboard and 1 x mouse)						
Internal Connector	USB	8 (USB 2.0 compliant)						
	Serial	4 (3 x RS-232, 1 x RS-232/422/485 to support auto flow control)						
	IDE	-						
	SATA	2 x 600 MB/s (SATA 3.0)/4 x 300 MB/s (SATA 2.0)						
	LVDS & Inverter	1						
	Parallel	1						
	IrDA	-						
	GPIO	8-bit GPIO						
Watchdog Timer	Output	System reset						
	Interval	Programmable 1 ~ 255 sec/min						
Power Requirements		Intel Core i7-2600 3.4GHz, 2GB DDR3 1333 MHz x 4pcs						
	Power On	5V	3.3V	12V	5Vsb	-12V		
		2.88A	1.06A	3.3A	0.36A	0.01A		
Environment		Operating				Non-Operating		
	Temperature	0 ~ 60° C (32 ~ 140° F), depends on CPU speed and cooler solution				-20 ~ 70° C (-4 ~ 158° F)		
Physical Characteristics	Dimensions	244 mm x 244 mm (9.6" x 9.6")						

ADVANTECH | **Industrial Motherboards**

Board Diagram

Board diagram showing:
- PCIe x 16 ←→ (PCIe x 16) Intel Core i7/i5/i3
- Intel Core i7/i5/i3 ←→ Channel A → DDR3 1066/1333, DDR3 1066/1333
- Intel Core i7/i5/i3 ←→ Channel B → DDR3 1066/1333, DDR3 1066/1333
- DMI x 4, Flex Display Interface → Q67/C206
- LVDS ← Dual channel LVDS 24-bit/channel
- VGA ← VGA
- DVI ← DVI
- DVI2 ← DVI
- 2 SATA3 PORTS ← 600 MB/s
- 4 SATA2 PORTS ← 300 MB/s
- 10 USB PORTS ← USB 2.0
- 2 USB PORTS ← NEC USB 3.0
- Q67/C206 → PCIe x1 → Intel 82579LM
- Q67/C206 → PCIe x1 → Intel 82583V
- Q67/C206 → PCIe x 4 → PCIe x 4 Connector
- Q67/C206 → 32 bit/33 MHz PCI Bus → PCI1 ~ 2 Connector
- Intel HD Audio → Audio Codec Realtek ALC892
- SPI → BIOS
- LPC BUS → Super I/O Nuvuton NCT6776F, Fintek 81216AD, Infineon SLB9635 TPM 1.2 (Optional)
- Super I/O Nuvuton NCT6776F → 2 RS-232, PS/2, WDT
- Fintek 81216AD → 3 x RS-232, 1 x RS-232/422/485

Ordering Information

Part Number	Chipset	Memory	USB 3.0	VGA	DVI 1/2	LVDS	USB	COM	TPM	GbE LAN
AIMB-581QG2-00A1E	Q67	Non-ECC	2	Yes	1/(1)	(1)	12	6	(1)	2
AIMB-581WG2-00A1E	C206	ECC/Non-ECC	2	Yes	1/(1)	(1)	12	6	(1)	2

*() means do not populated on MP version.

Riser Card

Part Number	Description
AIMB-RP10P-01A1E	1U riser card with 1 PCI expansion
AIMB-RP30P-03A1E	2U riser card with 3 PCI expansion
AIMB-RP3PF-12A1E	2U riser card for 1 PCIe x 16 abd 2 PCI expansion
AIMB-RP3P8-12A1E	2U riser card with 2 PCIe x 8 & 1 PCI slots expansion (For WG2 Sku)

I/O View

AIMB-581QG2-00A1E
AIMB-581WG2-00A1E

Packing List

Part Number	Description	Quantity
1700003194	SATA HDD cable	2
1703150102	SATA power cable	2
1960050472T000	I/O port braket	1
2002058100	Startup manual	1
2062058100	Driver CD	1

Optional Accessories

Part Number	Description
1700002204	Dual port USB cable (27 cm) with bracket
1960047669N001	LGA1156 CPU cooler for 4U and wallmount chassis
1960047831N001	LGA1156 CPU cooler for 2U and wallmount chassis
1960049408N001	LGA1156 CPU cooler for 1U and wallmount chassis
1700008809	Printer port cable kit
1700018699	KBMS cable 1*6P-2.5/DIN-6P(F)*2, 25 cm

Note. Purchasing AIMB-581's proprietary CPU cooler from Advantech is a must, other brand's CPU cooler are NOT compatible with AIMB-581.

Embedded OS/API

OS/API	Part No.	Description
Win XPE	2070010800	XPE WES 2009 V4.0 ENG with Acronis PSNL
	2070010820	XPE WES09 AIMB-581 V4.0 ENG_CHT ATI PSNL
Software API		SUSI V3.0

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 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
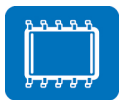
BIOS Flash

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.