ASB200-908

User Manual

2014 Nov Ver. A1

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Safety Information

Your ASB200-908 is designed and tested to meet the latest standards of safety for information technology equipment. However, to ensure your safety, it is important that you read the following safety instructions

Setting up your system

- Read and follow all instructions in the documentation before you operate your system.
- Do not use this product near water.
- Set up the system on a stable surface. Do not secure the system on any unstable plane.
- Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
- Slots and openings on the chassis are for ventilation. Do not block or cover these openings. Make sure you leave plenty of space around the system for ventilation. ***Never insert objects of any kind into the ventilation openings***.
- This system should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- Use this product in environments with ambient temperatures between 0˚C and 40˚C.
- If you use an extension cord, make sure that the total ampere rating of the devices plugged into the extension cord does not exceed its ampere rating.
- DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THESTORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 80° C (176° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.

Care during use

- Do not walk on the power cord or allow anything to rest on it.
- Do not spill water or any other liquids on your system.
- When the system is turned off, a small amount of electrical current still flows. Always unplug all power, and network cables from the power outlets before cleaning the system.
- If you encounter the following technical problems with the product, unplug the power cord and contact a qualified service technician or your retailer.
  - The power cord or plug is damaged.
  - Liquid has been spilled into the system.
  - The system does not function properly even if you follow the operating instructions.
  - The system was dropped or the cabinet is damaged.

Lithium-Ion Battery Warning

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

NO DISASSEMBLY

The warranty does not apply to the products that have been disassembled by users

WARNING
HAZARDOUS MOVING PARTS
KEEP FINGERS AND OTHER BODY PARTS AWAY

Acknowledgments

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CHAPTER 1 INTRODUCTION

1.1 General Description

ASB200-908 Embedded Box PC comes with 4th Gen. Intel® Core™ i7/i5/i3 Celeron Quad Core/Dual Core processors and Intel HD Integrated Graphics Engine with high performance and low power. It supports DVI-I display output, 2 x USB 3.0, 2 x USB 2.0, 1x CFAST expansion slot, and 2 x Gigabit LAN giving a great selection for data communication in display applications. The compact design 180 x 150 x 66 mm chassis enables the unit to easily fit into the tightest spaces behind displays. This embedded box computer is ideal for digital signage player, Kiosk, entry-level gaming, video surveillance, and other automation & embedded application.

1.2 System Specifications

1.2.1 Hardware Specifications

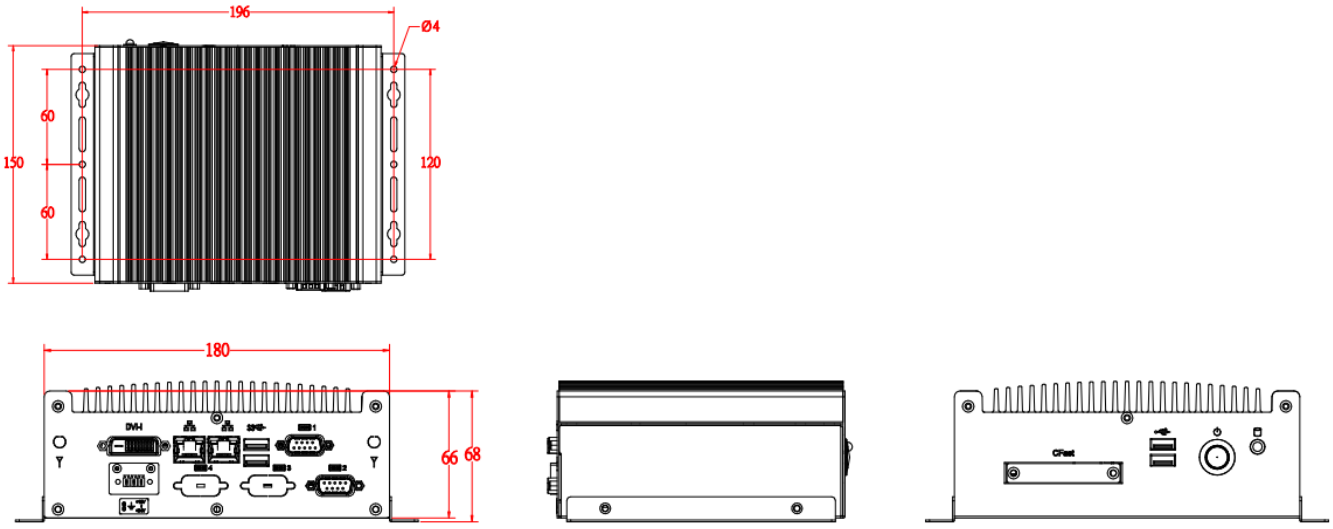
Engineer Specifications

Product Name	**ASB200-908** **ASB200-908-4650** **ASB200-908-4COM**
Motherboard	IB908
CPU type	Intel® 4th generation Core™ i5-4300U Processor (1.9 GHz, 3MB cache) TDP=15W
Chipset	Integrated in SoC
Memory	2 x DDR3L-1333 SO-DIMM 2GB, Max. 16GB (Non-ECC) *memory module with heatsink*
Storage	1 x 2.5” SATA HDD 2.5” 320GB 5400RPM Toshiba MQ01ABF032 HDD
Front Panel I/O	1 x power button 2 x USB2.0 1 x CFAST socket 1 x HDD LED
Rear Panel I/O	2 x Antenna reserved on real panel 1 x COM Ports 2 x DB9 for COM Port 1 x 12V~24V DC-in (Terminal block 3 pins) 1 x DC Jack with lock (share Terminal 3 pins space) *DC-in connector must be near power pin header* IB908 edge I/O as below : - 1 x DB9 for COM#1(RS232/422/485, select from BIOS) - 1 x USB 3.0 Stacking Connector (2-ports) - 2 x RJ-45 GbE Connector - 1 x DVI-I
Power Adaptor [optional]	DPS-60PBA-A00 60W Adapter Input Voltage: 90~264V Input Frequency: 47~63Hz Output Voltage: 12V/5A
Mounting	Desktop or wall mount

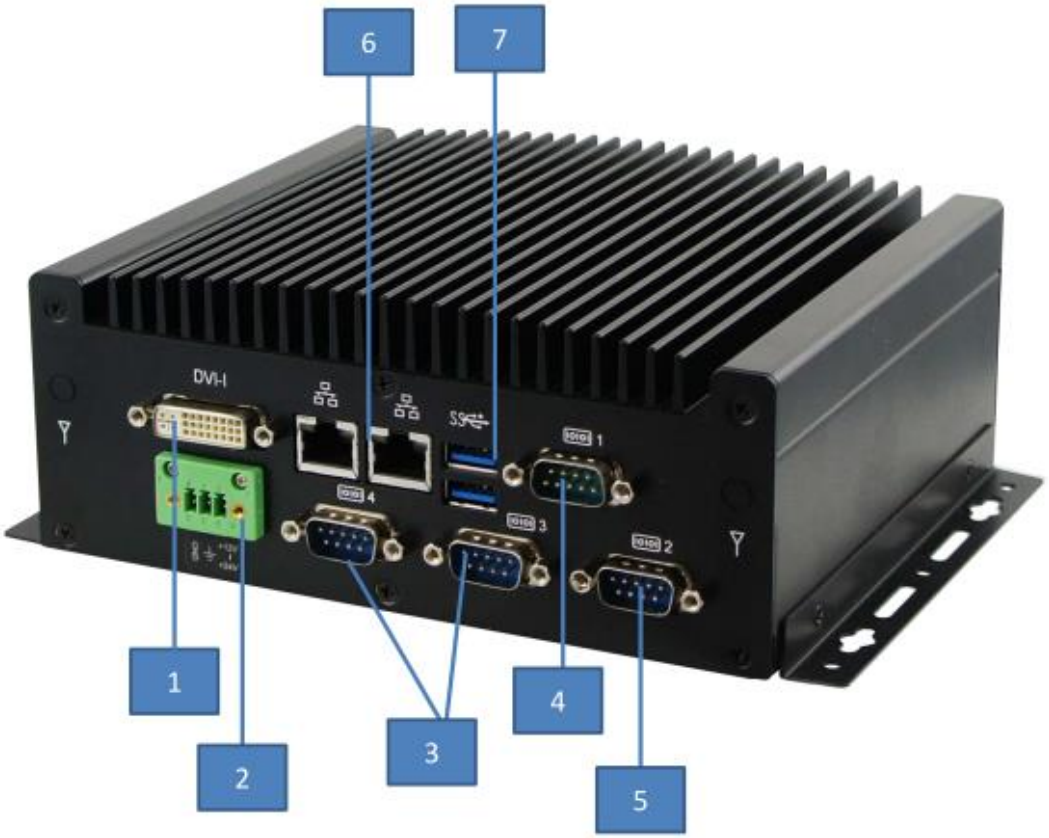
VESA Mounting	VESA mount kit for optional
Chassis Material	SPCC for EMI enhancement
Chassis Color	Black
External dimensions	180 (W) x ~150 (D) x 60 (H) mm
Operating Temperature	0°C~45°C (14°F~113°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	5%~90%@45°C (non-condensing)
Vibration	Operating : 0.25Grms / 5~500Hz Non-operating : 1Grms / 5~500Hz
Shock	Operating : 20G / 11ms Non-operating : 40G / 11ms
Certification	CE / LVD / FCC / CCC / UL-CB
Regulation	RoHS
Eup/Erp function	N/A

·This specification is subject to change without prior notice.

1.2.2 Dimensions

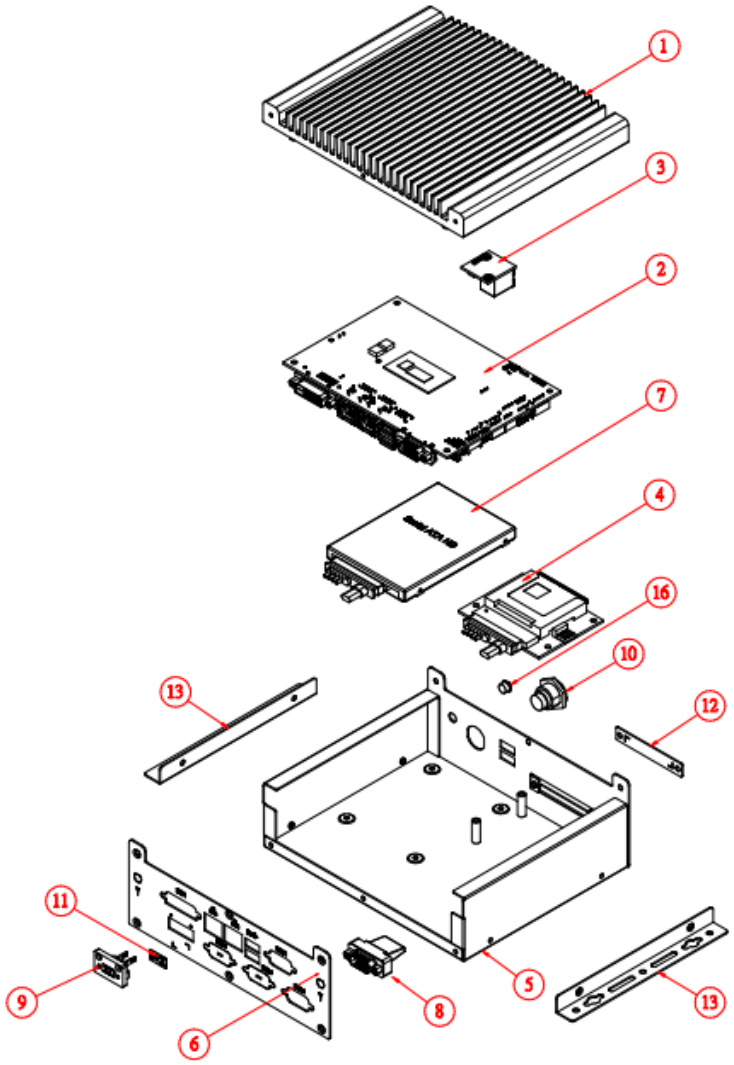


1.2.3 I/O View



Item	Connector	Item	Connector
1	DVI-I	5	1x RS232
2	12V~24V DC in	6	2x Gigabit LAN
3	2x RS232 for optional	7	2x USB3.0
4	1x RS232/422/485		

1.3 Exploded View of the ASB200-908 Assembly



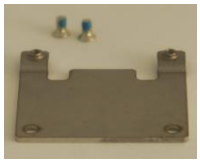
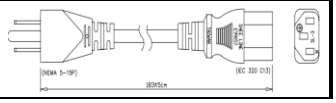
1.3.1 Parts Description

Part No.	Description	Part No.	Description
1	ASB200-908 Heatsink	2	DIP PCBA, IB908
3	DIP PCBA, ID112	4	DIP PCBA, IBCFAST
5	BASE	6	ASB200-908_Front
7	2.5” HDD	8	COM Port
9	Power input connector	10	Power button
11	Sticker_12V~24V	12	CFAST Cover
13	ASB200-908_Bracket		

1.4 Packing List

Item No.	Description	Qty
1	Driver CD	1
2	User manual	1
3	Wall mount kit	2

1.4.1 Optional Items

WiFi Solution	Description	
WiFi module	WIRELESS;PCI-E MINI CARD 802.11B/G/N [AW-NE238H] (A008WLAWNE238H000P)	
External Antenna	WiFi Antenna (A055RFA02C2M20800P)	
Internal cable-1/2	From Wifi module to Rear/Front panel (A055RFA0000021000P/A055RFA0000032000P)	 
Bracket	MPCIE-EXT V-B1 Bracket, RoHS; Extend Half to Full size. (SC2MPCIEEXT0B1100P)	
3G Solution	**Description**	
ZU 202	Wireless; 3.75G UMTS/HSPA [ZU202] RoHS (A008WIRELESS00520P)	
ZU 200	Wireless; 3.75G UMTS/HSPA & GPS Module [ZU200] RoHS (A008WIRELESS00510P)	
Cable	Cable; Antenna-2 30CM P 2pcs (C501ANT0200300000P)	
Antenna	Antenna; 3G, P, 2pcs (A055ANT0921Q2P000P)	
VESA/Power kit	**Description**	
VESA BRACKET	Bracket; VESA mount bracket RoHS (H06Z01VESI66SG00BP)	
Power Adaptor	P/S; ADAPTER 60W 12V 2 PIN bare wire type, DPS-60PBA-A00] RoHS (A005PS060W0702000P)	
Power Cord	PW CORD; Chinese/American/Japan 3PIN 10A (A030PCAM040100000P)	

CHAPTER 2 MOTHERBOARD INTRODUCTION

2.1 Introduction

The IB908F is a 3.5-inch single board computer based on the Intel® Haswell-ULT MCP processors.

The IB908F platform is well-suited for low-power and high-performance designs in a broad range of markets including Industrial Control & Automation, Digital Signage, Thin Client, Electronic Gaming Machines, and SMB storage appliances.

IB908F Features:

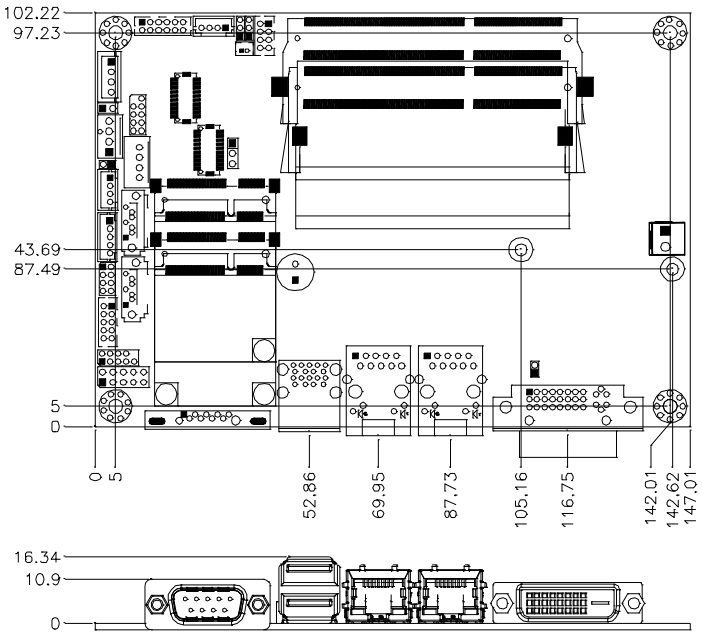
- Supports Intel® 4th generation mobile Core™ i MCP processors
- Two DDR3L SO-DIMM, 1333/1600 MHz, Max. 16GB memory
- Integrated graphics for DVI-I, LVDS displays
- 2 x SATA III connector
- 2x COM port connector
- 2 x Mini-PCIe(x1) slot *(w/ USB/MSATA support)*
- 2x GbE (RJ-45) connector
- 1x 12V to 24V DC-IN power connector

Product Name	**IB908F**
Form Factor	3.5”
CPU Type	- Intel® 4th generation mobile Core™ i MCP processors (22nm monolithic) - TDP = 15W (DC) , FCBGA1168 @ solder side ,
CPU Speed	Intel® Core™ i7-4650U processor (1.7GHz) Intel® Core™ i5-4300U processor (1.9GHz) Intel® Core™ i3-4010U processor (1.7GHz) Intel® Celeron® 2980U processor (1.6GHz)
Cache	Up to 4MB
Chipset	Integratd in Intel® 4th Generation Core™ i U-series processor
BIOS	AMI BIOS
Memory	Intel® 4th Gen. Core™ i U-series processor integrated memory controller - DDR3L (1.35V) @1600 MHz , SO-DIMM [204-pin vertical type] x **2** - Max. 16GB , Non-ECC
Display	Intel® 4th Gen. Core™ i U-series processor integrated Gfx,

	supports 3 independent displays, Direct X 11.1, OpenGL 3.2, Open CL 1.2 - DVI-I x 1 (Thru DDI#1 w/ Level shifter [ASM1442K] for DVI + DP to VGA [NXP PTN3392])
LVDS	- LVDS(Thru eDP, via NXP PTN3460 bridge IC) 24-bit dual channels LVDS interface w/DF20 socket x2
LAN	1. Intel® I218LM GbE PHY (IB908**A**F-4650 & IB908**A**F-4300) or I218V GbE PHY 2. Intel® I211AT as 2nd GbE
USB (Universal Serial Bus)	- Intel® 4th Gen. Core™ i U-series processor integrated USB 2.0 host controller, supports **6** x USB 2.0 : **2**-ports onboard pin header + 2 port thru MiniPCIe - Intel® 4th Gen. Core™ i U-series processor integrated USB 3.0 host controller, support **2** x USB 3.0 in the rear panel
Serial ATA Ports	Intel® 4th Gen. Core™ i U-series processor built-in SATA controller 2 x SATA 3.0 (6Gbps) and 2 x mSATA via MiniPCIe slots (w/NXP CBTL02043A switching IC)
Audio	Intel® 4th Gen. Core™ i U-series processor built-in High Definition Audio controller + Realtek ALC269Q-VC2-GR Codec [6mm x 6mm @ MQFN48] w/class-D speaker amplifier(2W per channel @ 5V power supply)
LPC I/O	Nuvoton NCT6102D [128-pin LQFP, 14 mm x 14mm x 1.4mm) COM1 (RS232/422/485) [EXAR SP339EER1 232/422/485 transceiver for jumper-less] ;COM2(RS232 only) [SIPEX SP3243EBER, QFN32] [Hardware Monitor] 2 x Thermal inputs 2 x Voltage monitoring 1 x CPU Fan (PWM Fan type, 4-pin connector)
Digital IO	4 in & 4 out
iAMT(9.5)	IB908AF-4650 & IB908AF-4300
Expansion Slots	1 x mSATA/mPCIe(x1) w/ USB signal [Half-sized] 1 x mSATA/mPCIe(x1) w/ USB signal [Full-sized]
Edge Connector	DVI-I x 1 RJ45 x2 for LAN#1 & #2

	USB 3.0 stack connector x 1 for USB1 / 2 [Blue color] DB9 x 1 for COM #1
On Board Header/Connector	DF20-20 socket connector x 2 for 24-bit dual channel LVDS 2 ports x SATA **III** [Blue color] 2x4 pins header x 2 for 4 USB 2.0 ports[DF11] 2x6 pins box header x1 for Audio [DF11] 1 x 4 pins box header x 1 for Speaker out 2x5 pins box header x 1 for COM2 2x5 pins headers x 1 for LPC (Debug purpose only) 5 pins box header x 1 for smart battery 4 pins box header x 1 for backlight/brightness control 4 pins power connector x **1** for SATA HDD 2 pins power connector x 1 for DC-in [180 degree vertical type]
Watchdog Timer	Yes (256 segments, 0, 1, 2…255 sec/min)
Power Input	**+12V ~ +24V DC-in**
RoHS	Yes
Board Size	102mm x 147mm
OS supporting	- Windows 8 / Embedded ; Windows 7 / Embedded - Linux

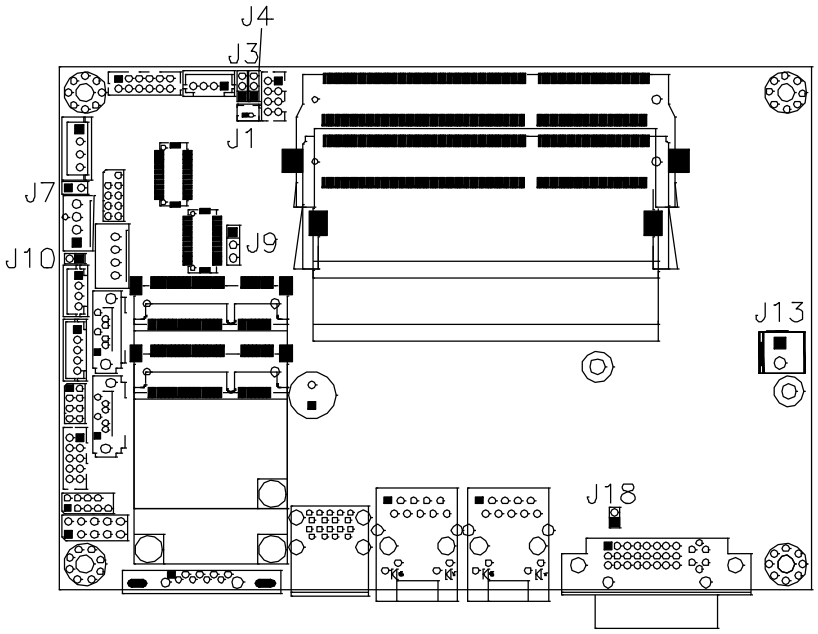
2.2 Board Dimensions



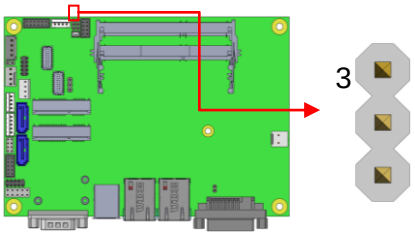
2.3 Setting the Jumpers

Jumpers are used on IB908F to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on IB908F and their respective functions.

2.4 Jumper Locations on IB908

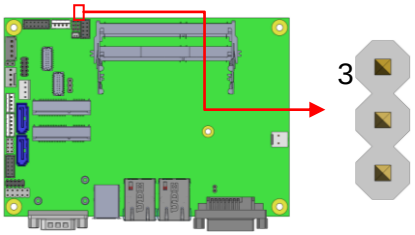


J3: Clear CMOS Contents



J3	Setting	Function
	Pin 1-2 Short/Closed	Normal
	Pin 2-3 Short/Closed	Clear CMOS

J4: Clear ME Contents

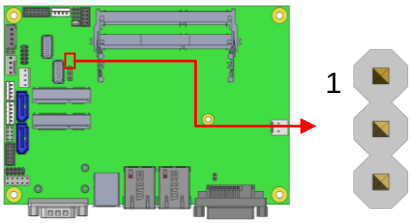


J4	Setting	Function
	Pin 1-2 Short/Closed	Normal
	Pin 2-3 Short/Closed	Clear ME RTC REGISTER

J7: Flash Descriptor Security Override (Factory use only)

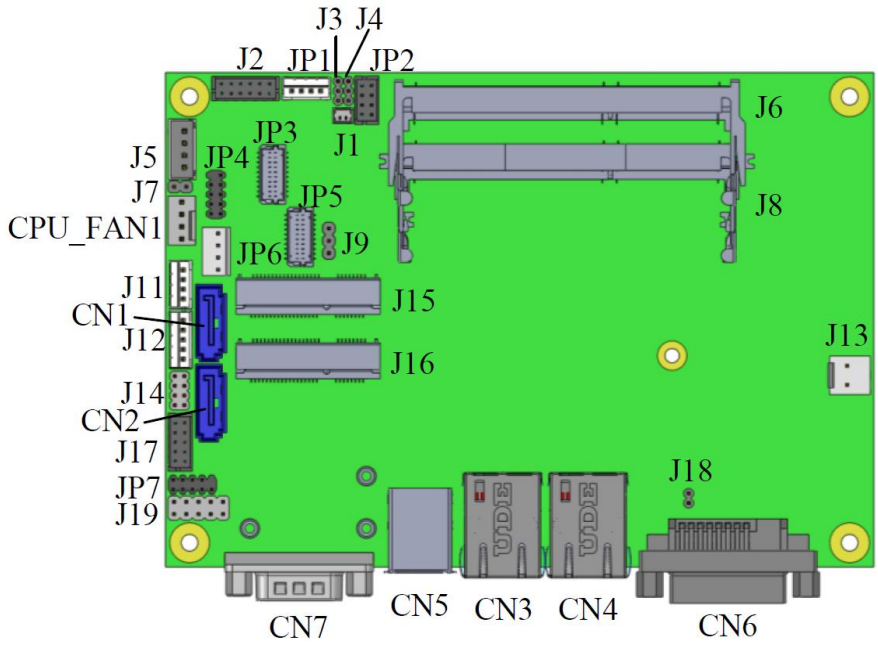
J7	Flash Descriptor Security Override
Open	Disabled (Default)
Close	Enabled

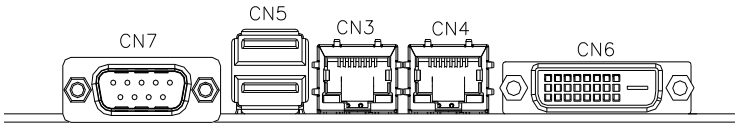
J9: LVDS Panel Power Selection



J9	Setting	Panel Voltage
	Pin 1-2 Short/Closed	3.3V (default)
	Pin 2-3 Short/Closed	5V

Connector Locations on IB908F





CN3, CN4: Gigabit LAN

CN3: Intel® Clarkville I218V/I218LM GbE PHY

CN4: Intel® Pearsonville I211AT as 2nd GbE

CN5: USB 1/2 Connector

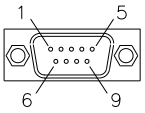
CN6: VGA DVI-I Connector

CN7: DB9 Connector

(COM1) is a DB-9 connector.

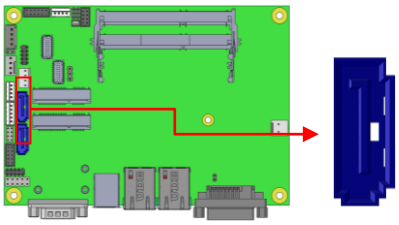
Signal Name	Pin #	Pin #	Signal Name
DCD, Data carrier detect	1	6	DSR, Data set ready
RXD, Receive data	2	7	RTS, Request to send
TXD, Transmit data	3	8	CTS, Clear to send
DTR, Data terminal ready	4	9	RI, Ring indicator
GND, ground	5	10	Not Used

COM1 is jumper-less for RS-232, RS-422 and RS-485 and is to be configured with BIOS Selection.

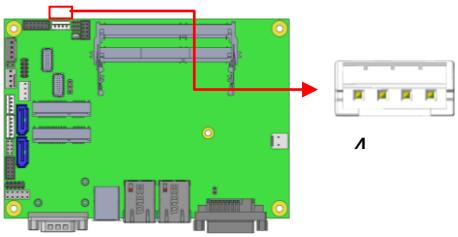


Pin #	Signal Name		
	RS-232	R2-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	Ground	Ground	Ground
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC
10	NC	NC	NC

CN1, CN2: SATA Connectors

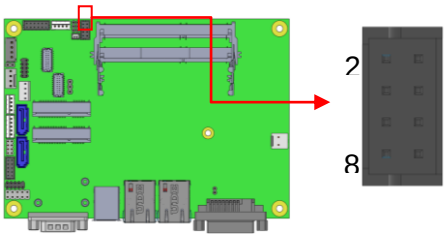


JP1: LCD Backlight Connector



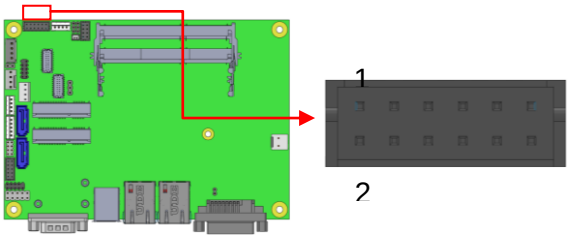
Pin #	Signal Name
1	+12V
2	Backlight Enable
3	Brightness Control
4	Ground

JP2: USB3/4 Connector



Signal Name	Pin #	Pin #	Signal Name
Vcc	1	2	Ground
D0-	3	4	D1+
D0+	5	6	D1-
Ground	7	8	Vcc

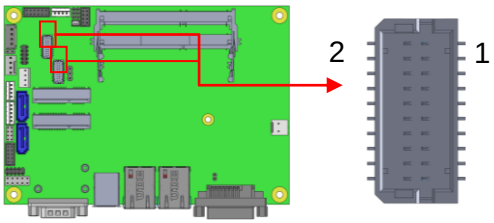
J2: Audio Connector (DF11 Connector)



Signal Name	Pin #	Pin #	Signal Name
LINEOUT_R	2	1	LINEOUT_L
Ground	4	3	JD_FRONT
LINEIN_R	6	5	LINEIN_L
Ground	8	7	JD_LINEIN
MIC-R	10	9	MIC_L
Ground	12	11	JD_MIC1

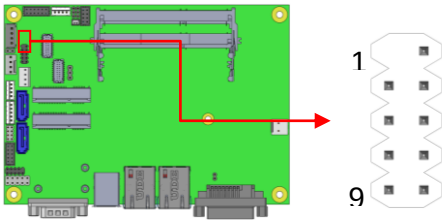
JP3, JP5: LVDS Connectors (LVDS1,LVDS2)

The LVDS connectors (Hirose DF20G-20DP-1V) on board consist of the first channel (LVDS1) and second channel (LVDS2).

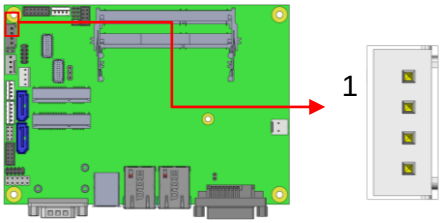


Signal Name	Pin #	Pin #	Signal Name
TX0N	2	1	TX0P
Ground	4	3	Ground
TX1N	6	5	TX1P
Ground	8	7	Ground
TX2N	10	9	TX2P
Ground	12	11	Ground
CLKN	14	13	CLKP
Ground	16	15	Ground
TX3N	18	17	TX3P
Power	20	19	Power

JP4: SPI Flash Connector (factory use only)

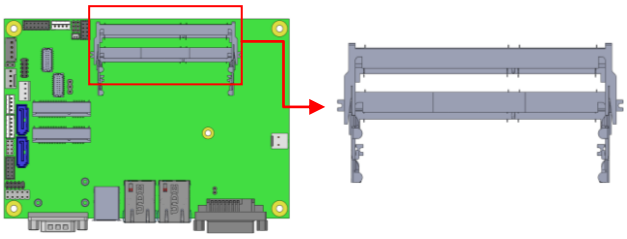


J5: Amplifier Connector

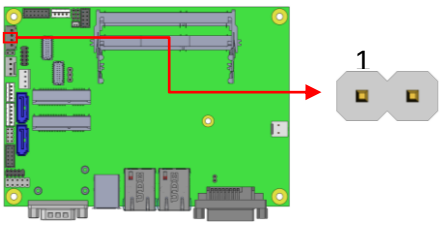


Pin #	Signal Name
1	OUTL+
2	OUTL-
3	OUTR-
4	OUTR+

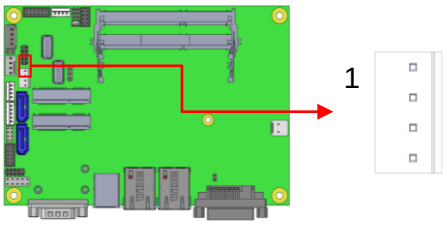
J6, J8: DDR3L SO-DIMM Sockets



J7: Factory use only

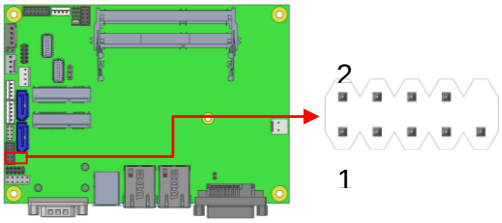


JP6: SATA HDD Power Connectors

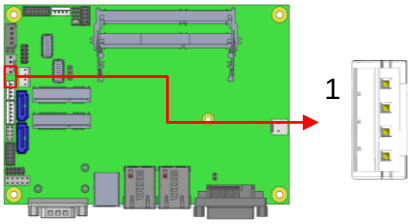


Pin #	Signal Name
1	+5V
2	Ground
3	Ground
4	+12V

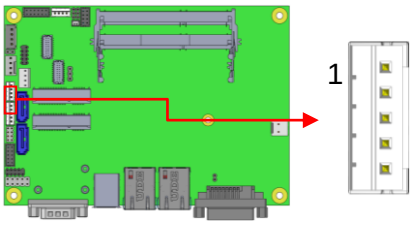
JP7: Debug 80 Port Connector (factory use only)



J11: MCU Flash Connector (factory use only)

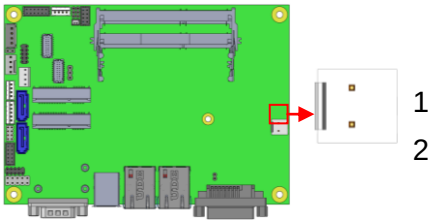


J12: Smart Battery



Pin #	Signal Name
1	RST#
2	ICHSWI#
3	Ground
4	SMB_DATA
5	SMB_CLK

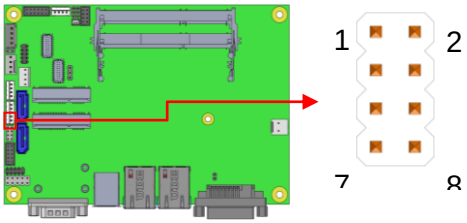
J13: Board Input Power Connector



Pin #	Signal Name
1	**+9V to +24V**
2	GND

J14: Front Panel Connector

The following table shows the pin outs of the 2x4 pin header



Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	PWR_SW
PWR_LED +	3	4	PWR_LED-
HDD_LED +	5	6	HDD_LED-
Ground	7	8	RESET

J14 provides connectors for system indicators that provide light indication of the computer activities and switches to change the computer status.

J14 is an 8-pin header that provides interfaces for the following functions.

ATX Power ON Switch: Pins 1 and 2

This 2-pin connector is an “ATX Power Supply On/Off Switch” on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.

Power LED: Pins 3 and 4

Pin #	Signal Name
3	LED(+)
4	LED(-)

Hard Disk Drive LED Connector: Pins 5 and 6

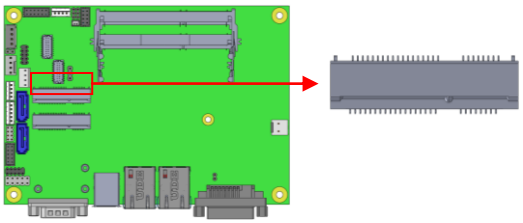
This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.

Pin #	Signal Name
5	LED(+)
6	LED(-)

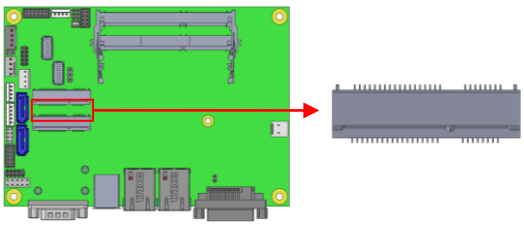
Reset Switch: Pins 7 and 8

The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.

J15: Mini PCIE Connector (Supports mSATA)

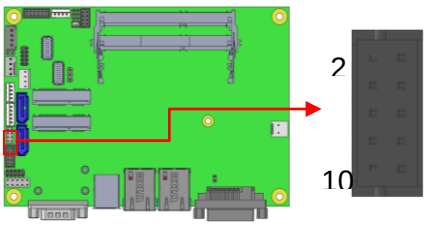


J16: Mini PCIE Connector (Half Size/ Supports mSATA)



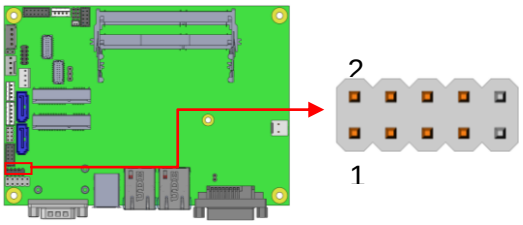
**** The gap of height between J15 & J16 is following PCI Express Mini Card electromechanical spec. ****

J17: COM2/RS232 Serial Port



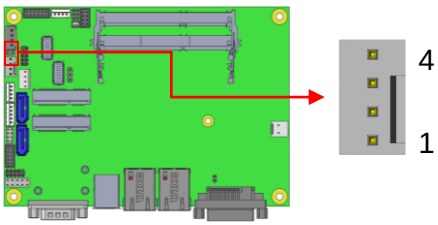
Signal Name	Pin #	Pin #	Signal Name
DCD, Data carrier detect	1	2	RXD, Receive data
TXD, Transmit data	3	4	Data terminal ready
GND, ground	5	6	DSR, Data set ready
RTS, Request to send	7	8	CTS, Clear to send
RI, Ring indicator	9	10	Not Used

J19: Digital I/O Connector



Signal Name	Pin #	Pin #	Signal Name
GND	1	2	VCC
OUT3	3	4	OUT1
OUT2	5	6	OUT0
IN3	7	8	IN1
IN2	9	10	IN0

CPU_FAN1: CPU Fan Power Connector



Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection
4	Control

CHAPTER 3 BIOS SETUP

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

BIOS Introduction

The BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

```
Press  <DEL> or <F2> to  Enter  Setup
```

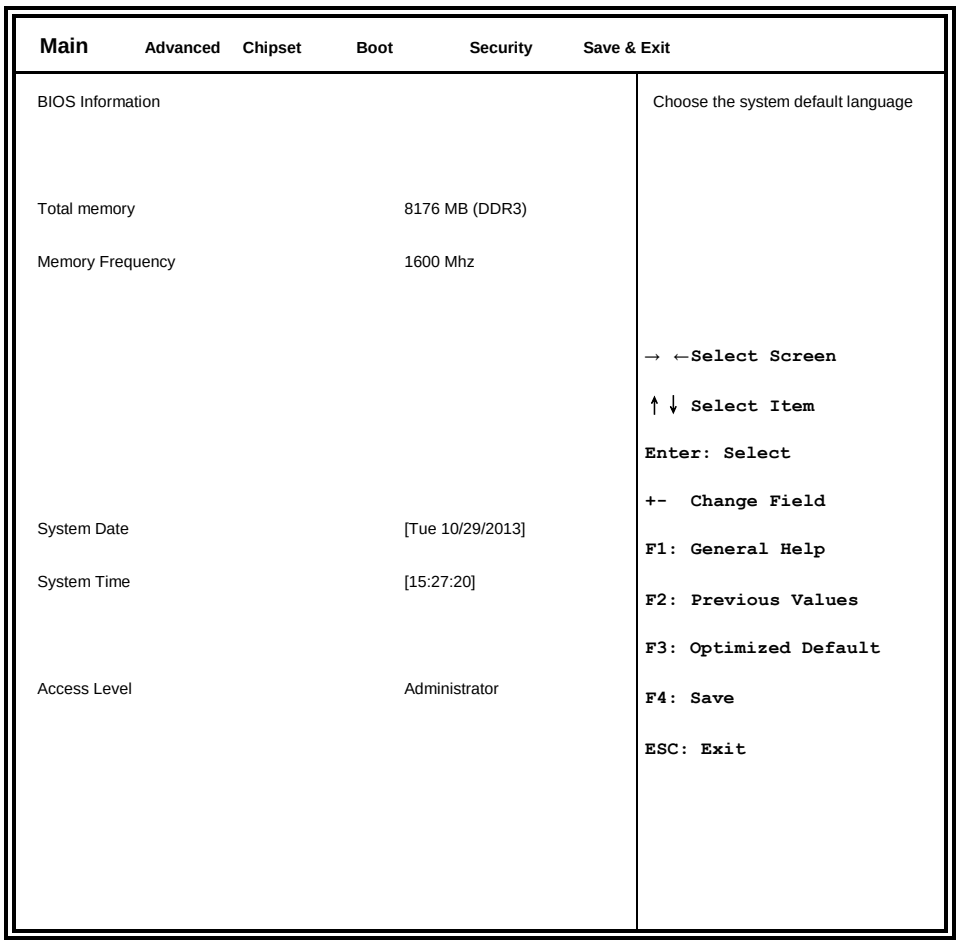
In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Warning: *It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.*

Main Settings

Aptio Setup Utility – Copyright © 2011 American Megatrends, Inc.



System Date

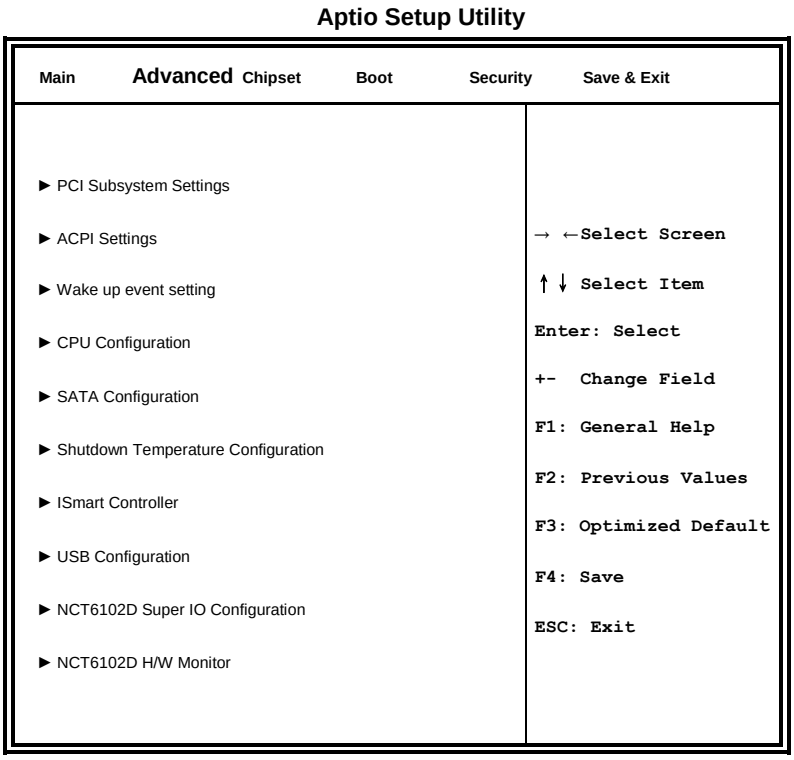
Set the Date. Use Tab to switch between Data elements.

System Time

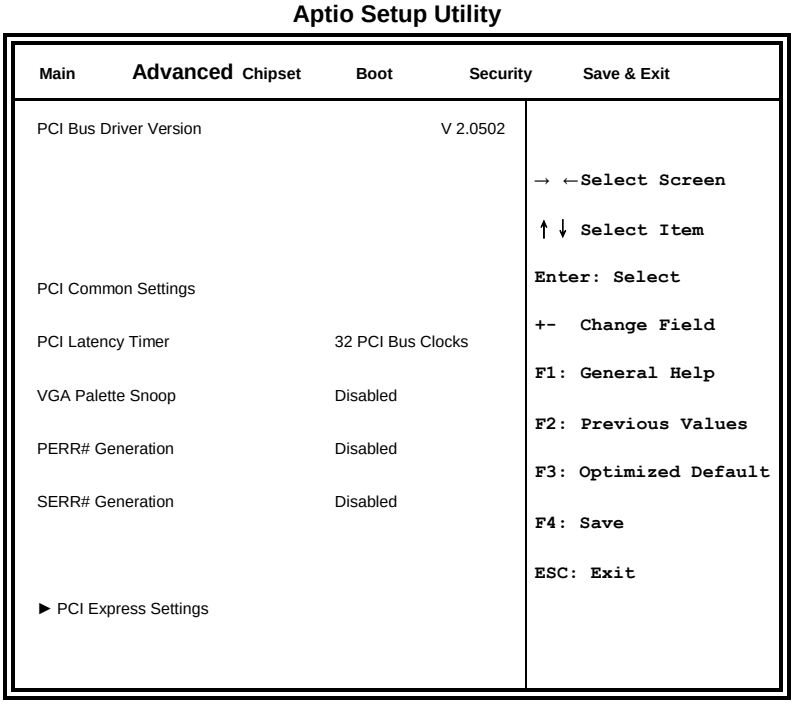
Set the Time. Use Tab to switch between Data elements.

Advanced Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.



PCI Subsystem Settings



PCI Latency Timer

Value to be programmed into PCI Latency Timer Register.

VGA Palette Snoop

Enables or disables VGA Palette Registers Snooping.

PERR# Generation

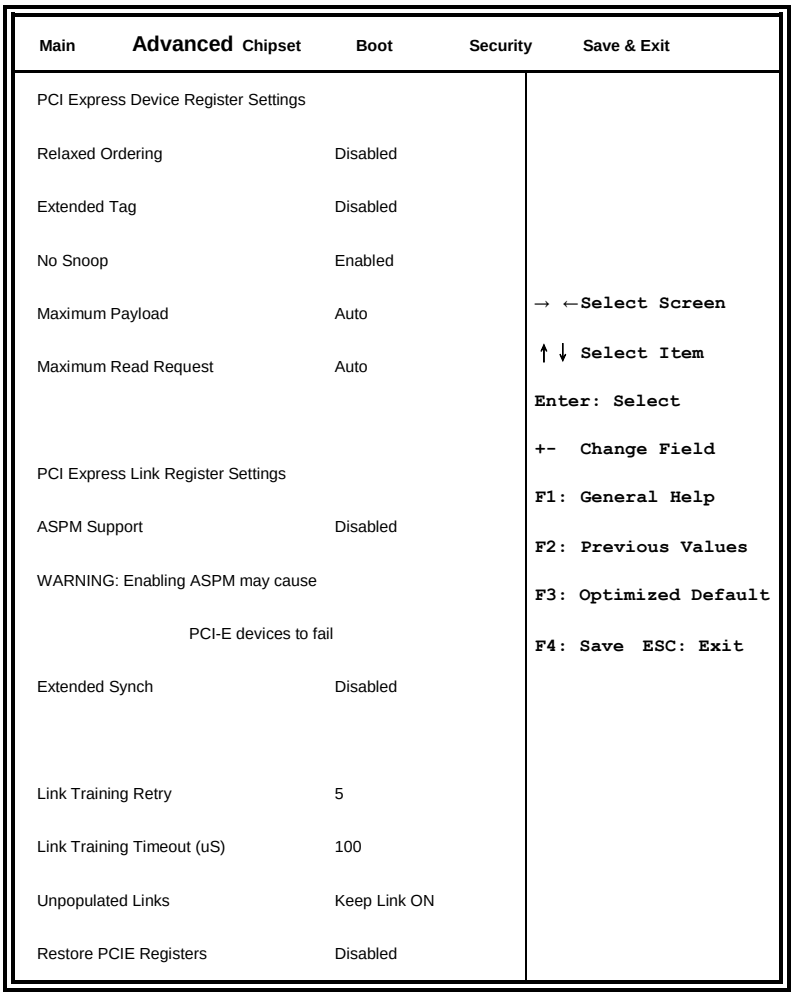
Enables or disables PCI device to generate PERR#.

SERR# Generation

Enables or disables PCI device to generate SERR#.

PCI Express Settings

Aptio Setup Utility



Relaxed Ordering

Enables or disables PCI Express Device Relaxed Ordering.

Extended Tag

If ENABLED allows device to use 8-bit Tag field as a requester.

No Snoop

Enables or disables PCI Express Device No Snoop option.

Maximum Payload

Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.

Maximum Read Request

Set Maximum Read Request Size of PCI Express Device or allow System BIOS to select the value.

ASPM Support

Set the ASPM Level: Force L0s – Force all links to L0s State:

AUTO – BIOS auto configure: DISABLE – Disables ASPM.

Extended Synch

If ENABLED allows generation of Extended Synchronization patterns.

Link Training Retry

Defines number of Retry Attempts software will take to retrain the link if previous training attempt was unsuccessful.

Link Training Timeout (uS)

Defines number of Microseconds software will wait before polling 'Link Training' bit in Link Status register. Value range from 10 to 1000 uS.

Unpopulated Links

In order to save power, software will disable unpopulated PCI Express links, if this option set to 'Disable Link'.

Restore PCIE Registers

On non-PCI Express aware OS's (Pre Windows Vista) some devices may not be correctly reinitialized after S3.Enabling this restore PCI Express device configuration on S3 resume

Warning: Enabling this may cause issues with other hardware after S3 resume.1

ACPI Settings

Aptio Setup Utility

Main	Advanced	Chipset	Boot	Security	Save & Exit

ACPI Settings		→ ←Select Screen
Enable Hibernation	Enabled	↑↓ Select Item
ACPI Sleep State	S3 (Suspend to R…)	Enter: Select
Lock Legacy Resources	Disabled	+- Change Field
S3 Video Repost	Disabled	F1: General Help
		F2: Previous Values
		F3: Optimized Default
		F4: Save
		ESC: Exit

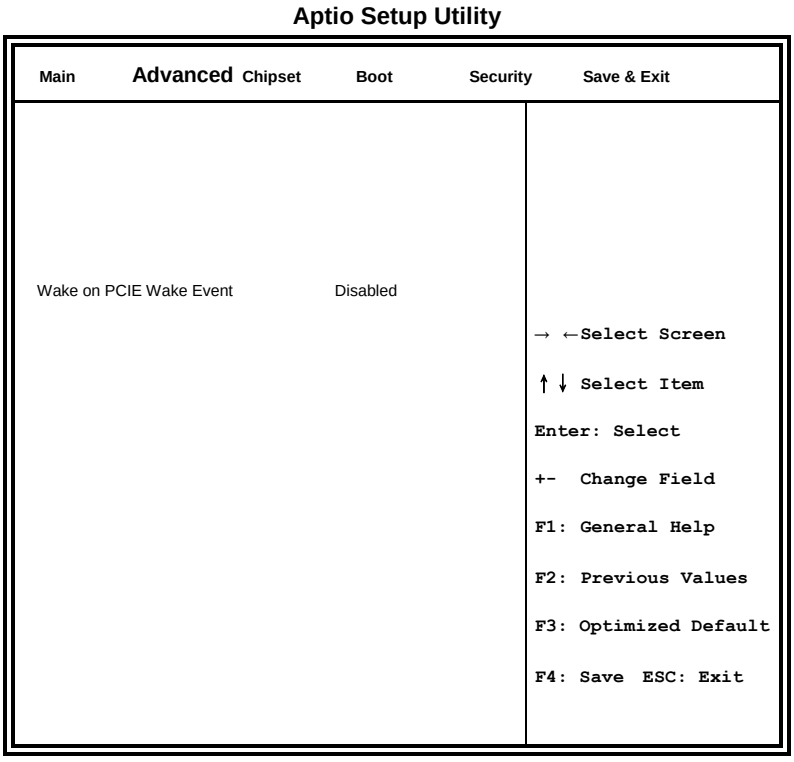
Enable Hibernation
Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

ACPI Sleep State
Select ACPI sleep state the system will enter, when the SUSPEND button is pressed.

Lock Legacy Resources
Enabled or Disabled Lock of Legacy Resources.

S3 Video Repost
Enable or disable S3 Video Repost.

Wake up event settings



Wake on PCIE PME Wake Event
The options are Disabled and Enabled.

CPU Configuration

Aptio Setup Utility

Main	**Advanced**	Chipset	Boot	Security	Save & Exit

CPU Configuration		
Intel(R) CPU Core(TM)i3-4010U @ 1.70GHz		
CPU Signature	40651	
Processor Family	6	
Microcode Patch	16	
FSB Speed	100MHz	
Max CPU Speed	1700 MHz	
Min CPU Speed	800 MHz	
CPU Speed	800 MHz	
Processor Cores	2	
Intel HT Technology	Supported	
Intel VT-x Technology	Supported	
Intel SMX Technology	Not Supported	
64-bit	Supported	
EIST	Supported	
CPU C3 State	Supported	
CPU C6 State	Supported	
CPU C7 State	Supported	
L1 Data Cache	Supported	
L1 Code Cache	Supported	
L2 Cache	Supported	→ ←Select Screen
L3Cache	Supported	↑ ↓ Select Item
		Enter: Select
Hyper-threading	Enabled	+- Change Field
Active Processor Cores	All	F1: General Help
Overclocking lock	Disabled	F2: Previous Values
Limit CPUID Maximum	Disabled	F3: Optimized Default
Execute Disable Bit	Enabled	F4: Save ESC: Exit
Intel Virtualization Technology	Enabled	
CPU AES	Enabled	
EIST	Enabled	

Hyper-threading

Select the performance state that the BIOS will set before OS handoff.

Active Processor Cores

Number of cores to enable in each processor package.

Overclocking lock

Flex_RATIO(194)MSR

Limit CPUID Maximum

Disabled for Windows XP.

Execute Disable Bit

XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS

Intel Virtualization Technology

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

CPU AES

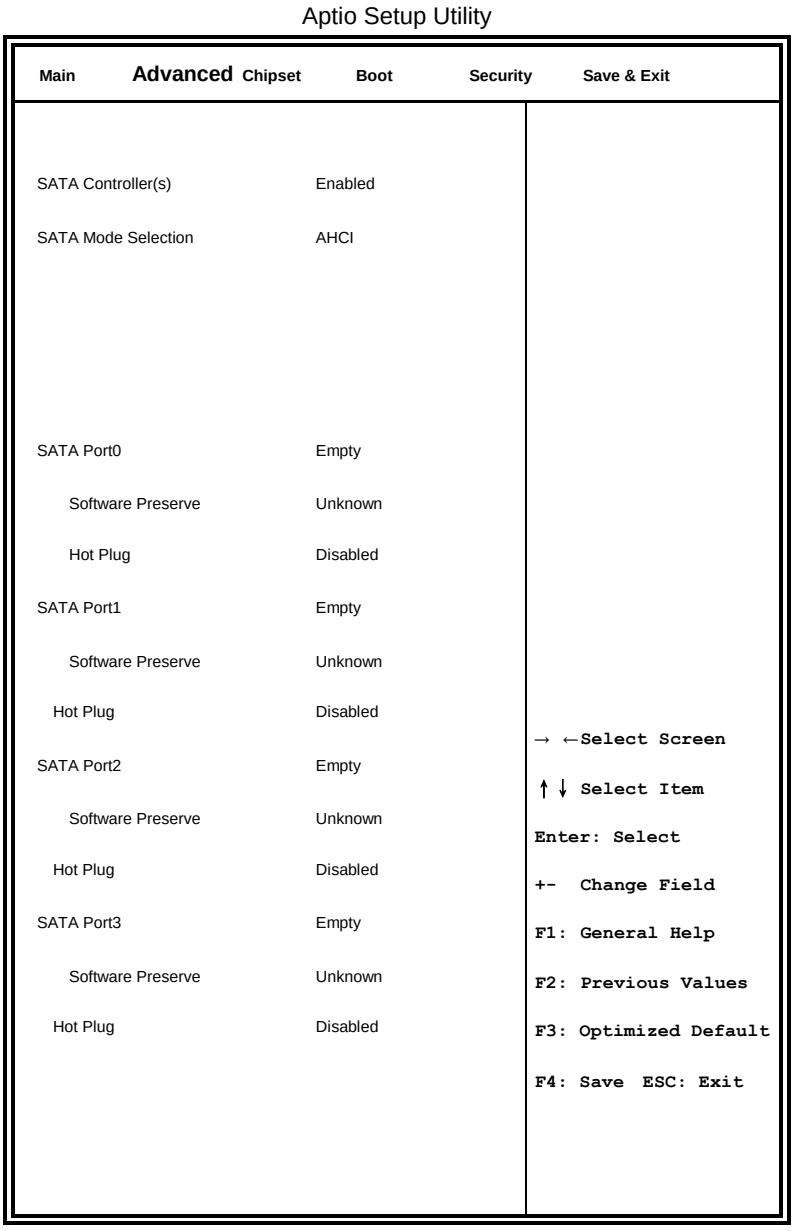
Enabled/Disabled CPU Advanced Encryption Standard instructions

EIST

Enabled/Disabled Intel Speedstep.

SATA Configuration

SATA Devices Configuration.



SATA Controller(s)

Enable / Disable Serial ATA Controller.

SATA Mode Selection

(1) AHCI Mode.

(2) RAID Mode.

Hot Plug

Designates this port as Hot Plugable.

Shutdown Temperature Configuration

Aptio Setup Utility

Main	Advanced	Chipset	Boot	Security	Save & Exit
APCI Shutdown Temperature			Disabled		

→ ← Select Screen
↑ ↓ Select Item
Enter: Select
+- Change Field
F1: General Help
F2: Previous Values
F3: Optimized Default
F4: Save ESC: Exit

ACPI Shutdown Temperature

The default setting is Disabled.

iSmart Controller

Aptio Setup Utility

Main	**Advanced**	Chipset	Boot	Security	Save & Exit
iSmart Controller					
Power-On after Power failure			Disable		
Schedule Slot 1			None		
Schedule Slot 2			None		

→ ← Select Screen
↑ ↓ Select Item
Enter: Select
+- Change Field
F1: General Help
F2: Previous Values
F3: Optimized Default
F4: Save ESC: Exit

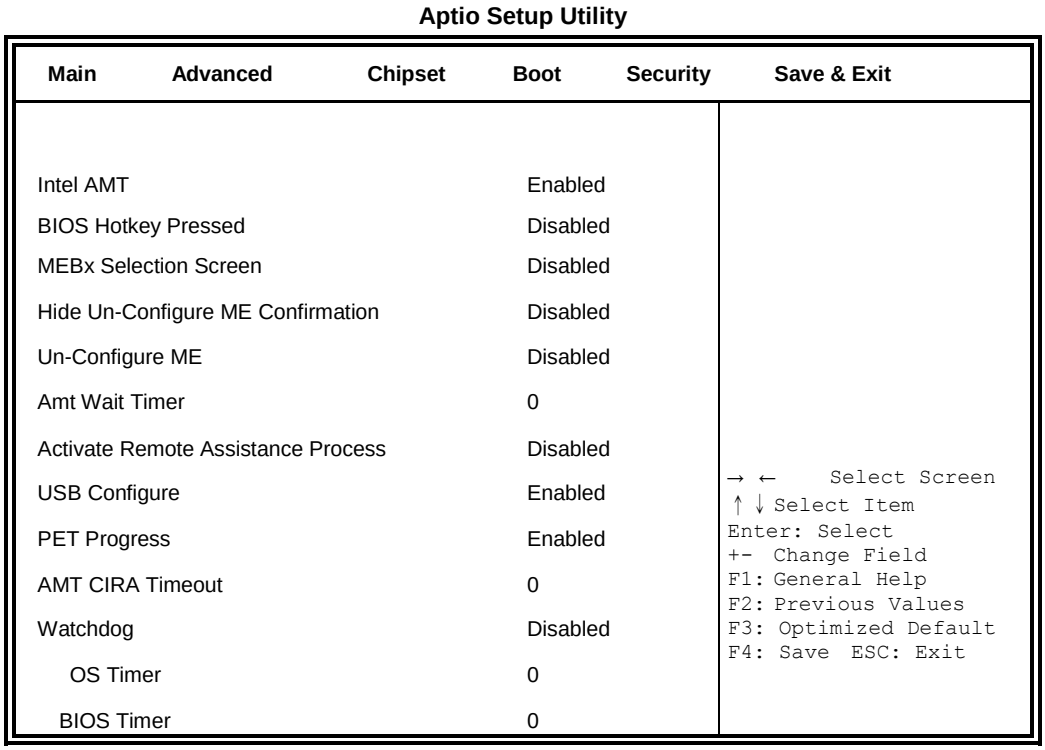
ISmart Controller

Setup the power on time for the system.

Schedule Slot 1 / 2

Setup the hour/minute for system power on.

AMT Configuration



AMT Configuration

This configuration is supported only with IB902VF (with iAMT function). Options are Enabled and Disabled.

Note: iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device.

Unconfigure ME

This configuration is supported only with IB902VF (with iAMT function). Perform AMT/ME unconfigure without password operation.

Amt Wait Timer

Set timer to wait before sending ASF_GET_BOOT_OPTIONS.

Activate Remote Assistance Process

Trigger CIRA boot.

PET Progress

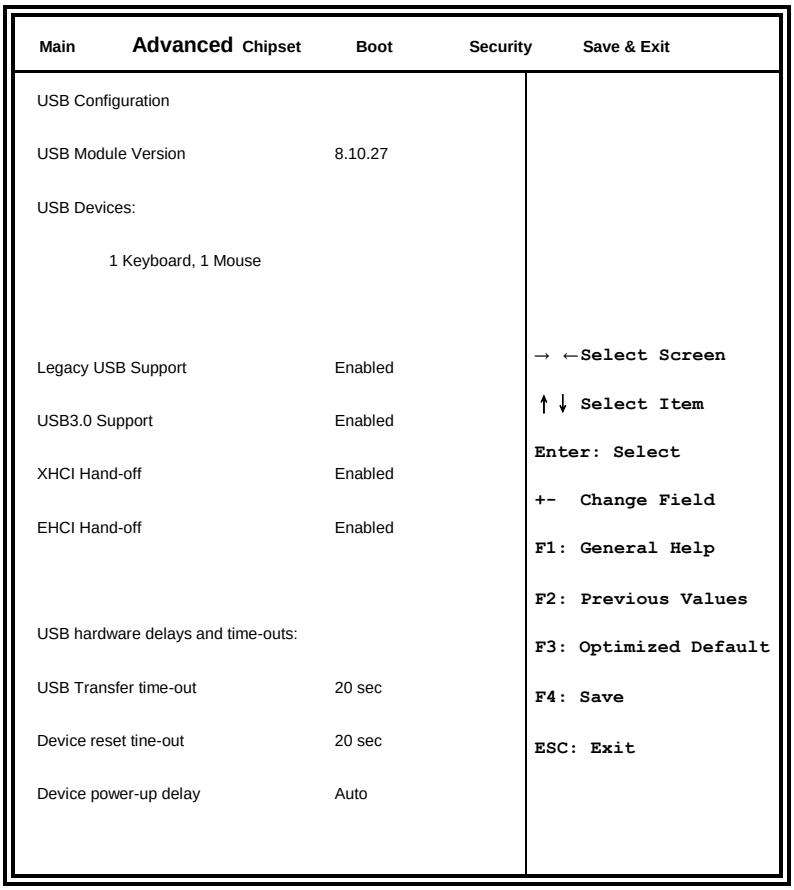
User can Enable/Disable PET Events progress to receive PET events or not.

Watchdog Timer

This configuration is supported only with IB902VF (with iAMT function).

Enable/Disable Watchdog Timer.

USB Configuration



Legacy USB Support

Enables Legacy USB support.

AUTO option disables legacy support if no USB devices are connected.

DISABLE option keeps USB devices available only for EFI applications.

USB3.0 Support

Enable/Disable USB3.0 (XHCI) Controller support.

XHCI Hand-off

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

EHCI Hand-off

Enabled/Disabled. This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

USB Transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers.

Device reset time-out

USB mass Storage device start Unit command time-out.

Device power-up delay

Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.

NCT6102D Super IO Configuration

Aptio Setup Utility

Main	Advanced	Chipset	Boot	Security	Save & Exit
NCT6102D Super IO Configuration					
NCT6102D Super IO Chip		NCT6102D			
► Serial Port 0 Configuration					
► Serial Port 1 Configuration					

→ ←Select Screen
↑ ↓ Select Item
Enter: Select
+- Change Field
F1: General Help
F2: Previous Values
F3: Optimized Default
F4: Save
ESC: Exit

Serial Port Configuration

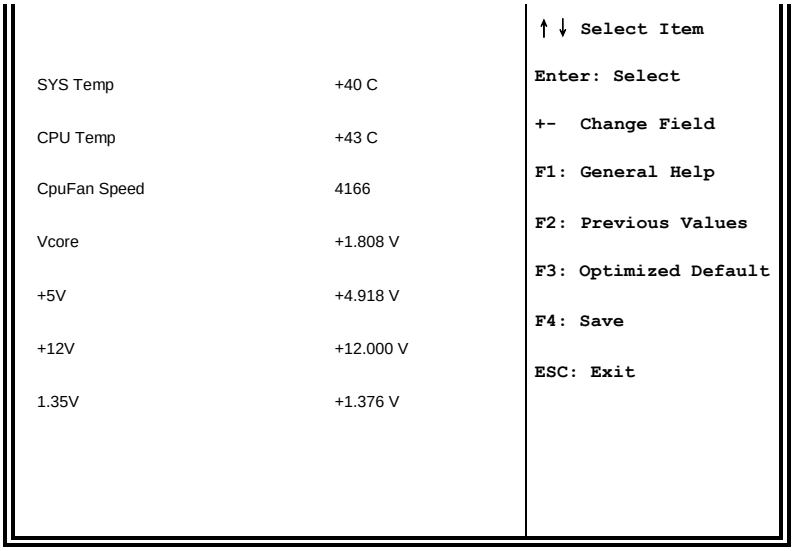
Set Parameters of Serial Ports. User can Enable/Disable the serial port and Select an optimal settings for the Super IO Device.

NCT6102 H/W Monitor

Aptio Setup Utility

Main	Advanced	Chipset	Boot	Security	Save & Exit
PC Health Status					
Smart Fan Function		Disabled			

→ ←Select Screen



Smart Fan Function

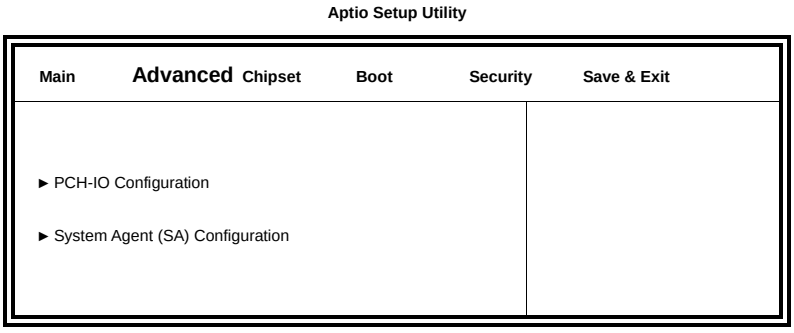
This field enables or disables the smart fan feature. At a certain temperature, the fan starts turning. Once the temperature drops to a certain level, it stops turning again.

Temperatures/Voltages

These fields are the parameters of the hardware monitoring function feature of the board. The values are read-only values as monitored by the system and show the PC health status.

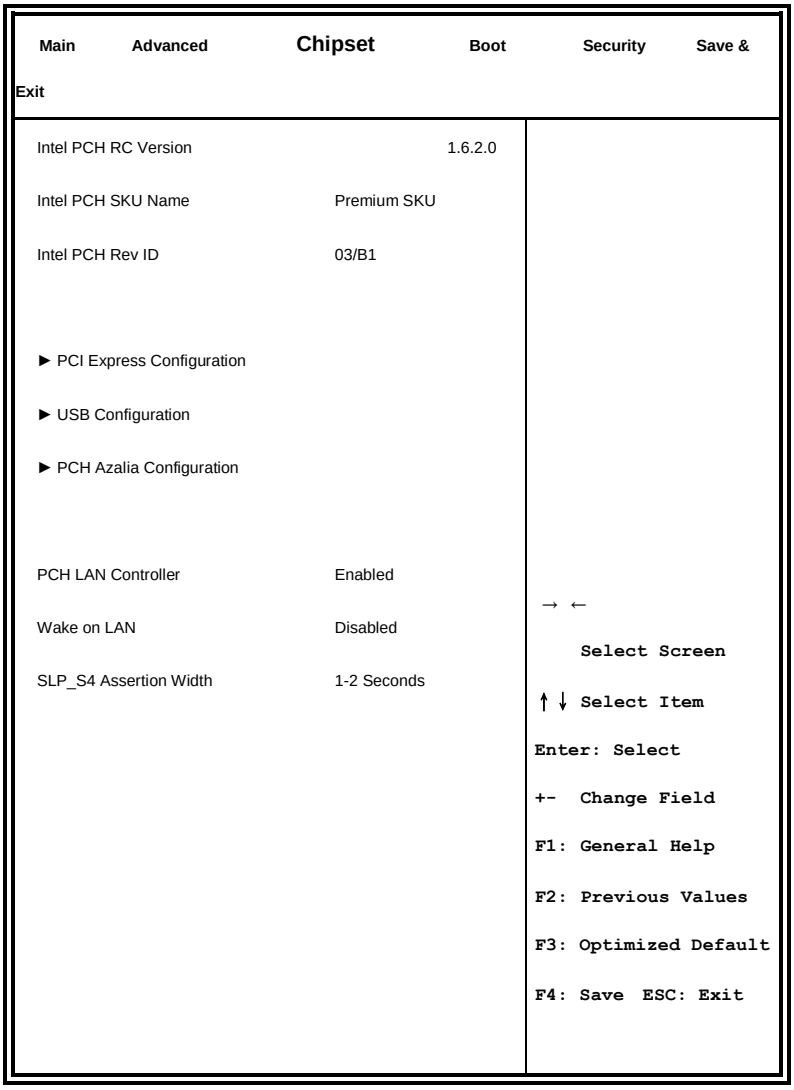
Chipset Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.



PCH-IO Configuration

This section allows you to configure the North Bridge Chipset.



PCH LAN Controller

Enable or disable onboard NIC.

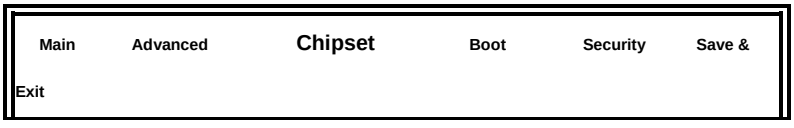
Wake on LAN

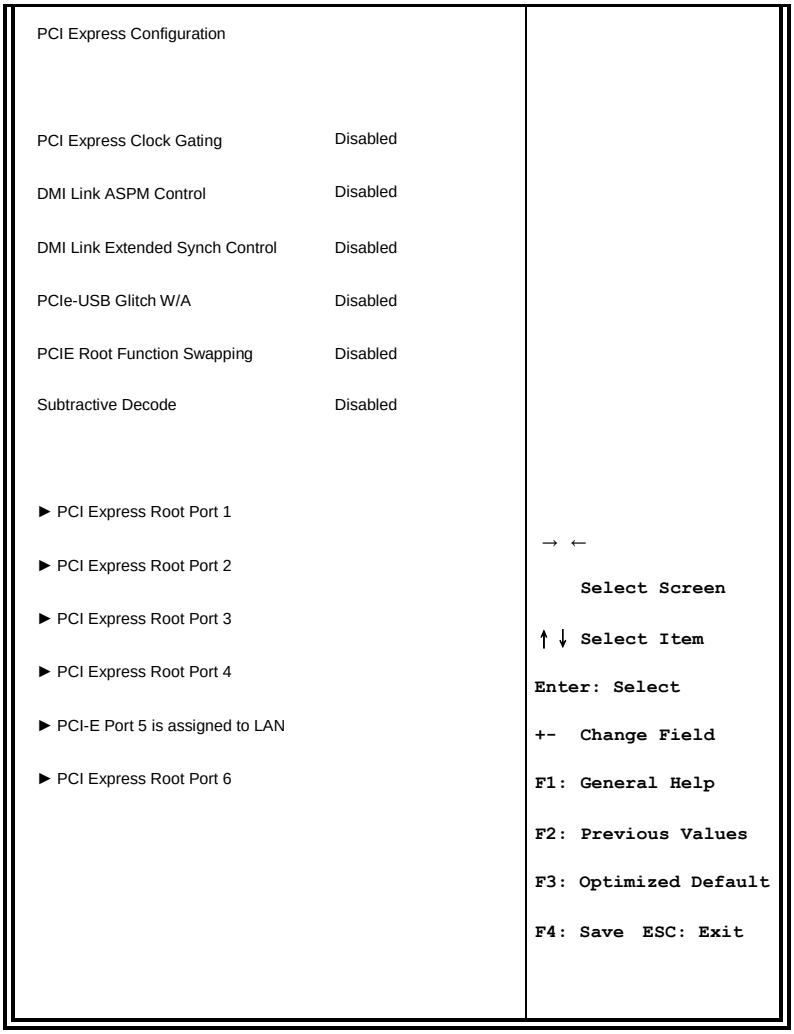
Enable or disable integrated LAN to wake the system. (The Wake On LAN cannot be disabled if ME is on at Sx state.)

SLP_S4 Assertion Width

Select a minimum assertion width of the SLP_S4# signal.

PCI Express Configuration





PCI Express Clock Gating

Enable or disable PCI Express Clock Gating for each root port

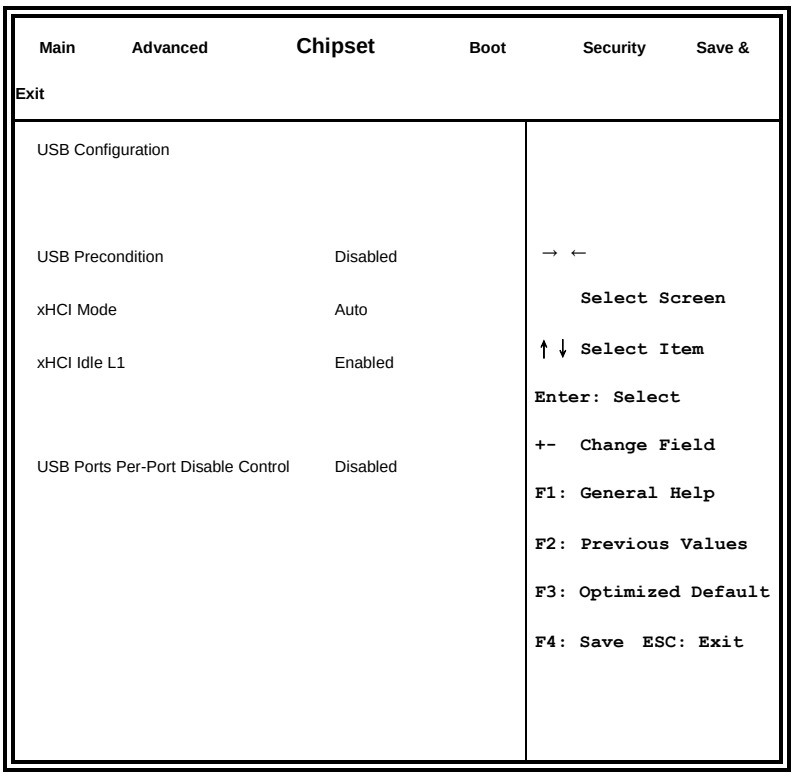
DMI Link ASPM Control

The control of Active State Power Management on both NB side and SB side of the DMI link.

PCIe-USB Glitch W/A

PCIe-USB Glitch W/A for bad USB device(s) connected behind PCIE/PEG port.

USB Configuration



USB Precondition

Precondition work on USB host controller and root ports for faster enumeration.

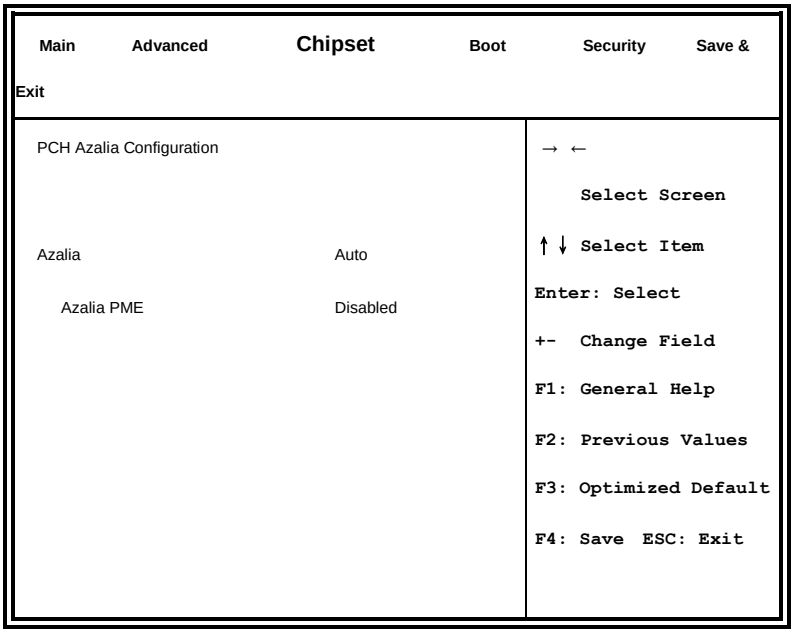
xHCI Mode

Mode of operation of xHCI controller.

USB Ports Per-Port Disable Control

Control each of the USB ports (0~13) disabling.

PCH Azalia Configuration



Azalia

Control Detection of the Azalia device.

Disabled = Azalia will be unconditionally be disabled.

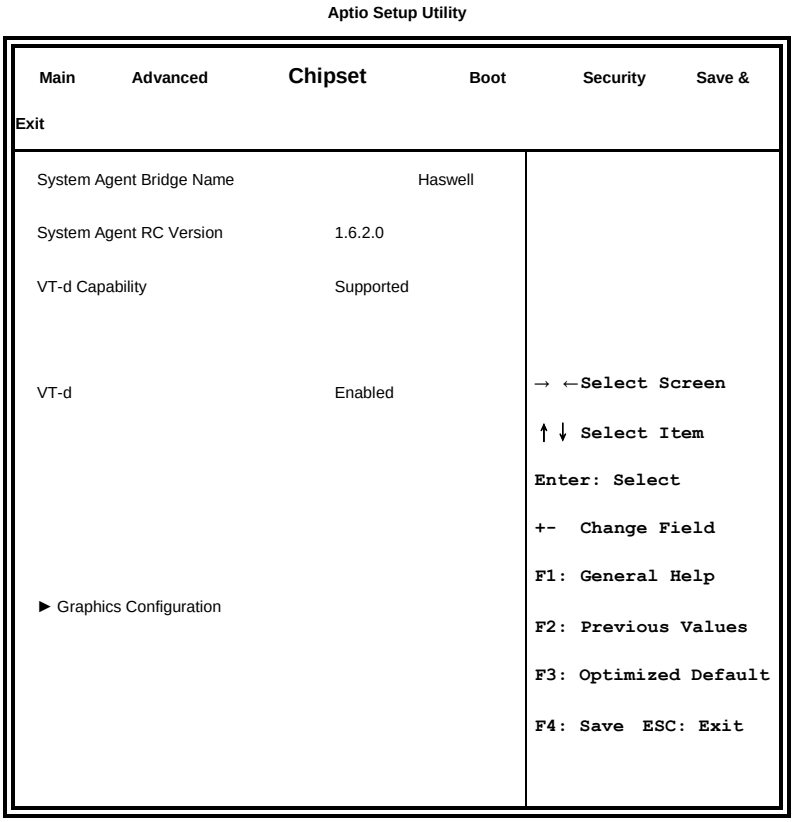
Enabled = Azalia will be unconditionally be enabled.

Auto = Azalia will be enabled if present, disabled otherwise.

Azalia PME

Enable or disable power management capability of the audio controller.

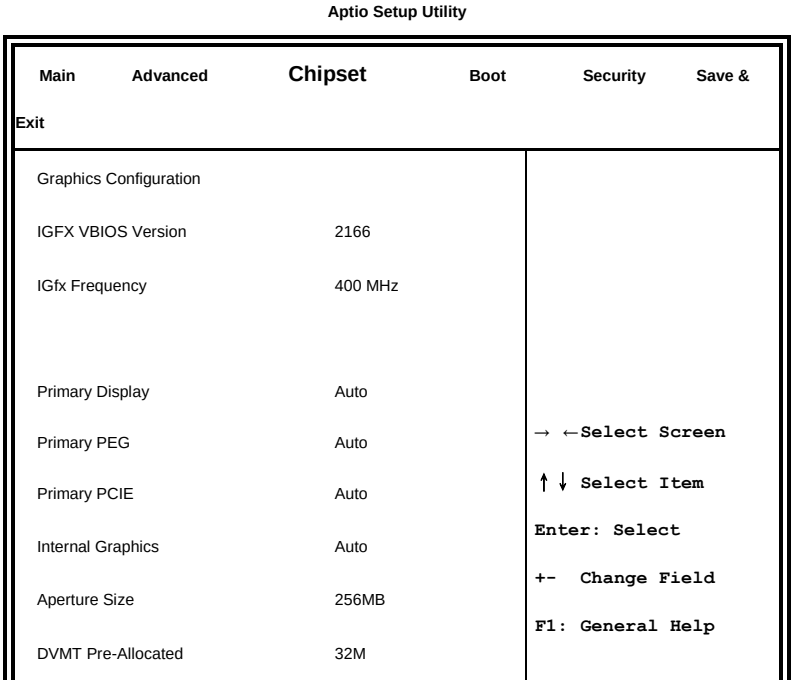
System Agent (SA) Configuration

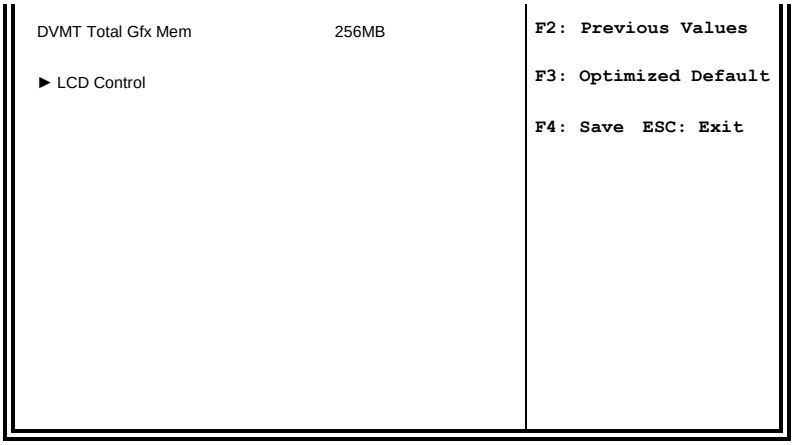


VT-d

Check to enable VT-d function on MCH.

Graphics Configuration





Primary Display

Select which of IGFX/PEG/PCI graphics device should be primary display or select SG for switchable Gfx.

Primary PEG

Select PEGO/PEG1/PEG2/PEG3 Graphics device should be Primary PEG.

Primary PCIE

Select PCIE0/PCIE1/PCIE2/PCIE3/PCIE4/PCIE5/PCIE6PCIE7 Graphics device should be primary PCIE.

Internal Graphics

Keep IGD enabled based on the setup options.

DVMT Pre-Allocated

Select DVMT 5.0 Pre-Allocated (Fixed) graphics memory size used by the internal graphics device.

DVMT Total Gfx Mem

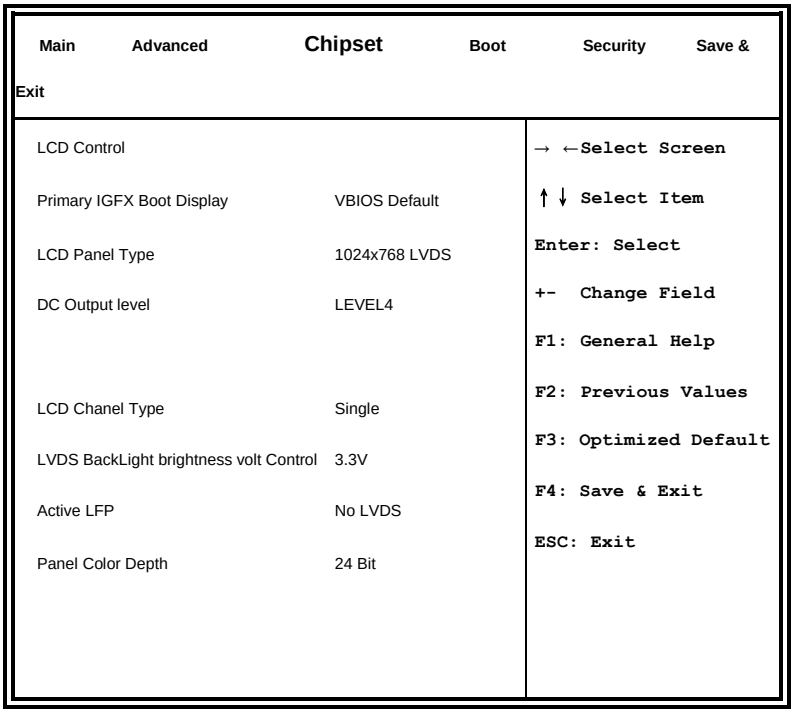
Select DVMT 5.0 total graphics memory size used by the internal graphics device.

LCD Control

Select the Video Device that will be activated during POST. This has no effect if external graphics present. Secondary booty display selection will appear based on your selection. VGA modes will be supported only on primary display.

LCD Control

Aptio Setup Utility



Primary IGFX Boot Display

Select the Video Device, which will be activated during POST. This has no effect if external graphics present.

Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display.

LCD Panel Type

Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item: 640x480 LVDS ~ 2048x1536 LVDS.

DC Output level

Backlight Brightness Control

LCD Chanel Type

Select LCD Chanel Type

LVDS Back Light Brightness Volt Control

LVDS Back Light Volt Control: 3.3V, 5V

Active LFP

Select the Active LFP Configuration.

No LVDS: VBIOS does not enable LVDS.

Int-LVDS: VBIOS enables LVDS driver by Integrated encoder.

SDVO LVDS: VBIOS enables LVDS driver by SDVO encoder.

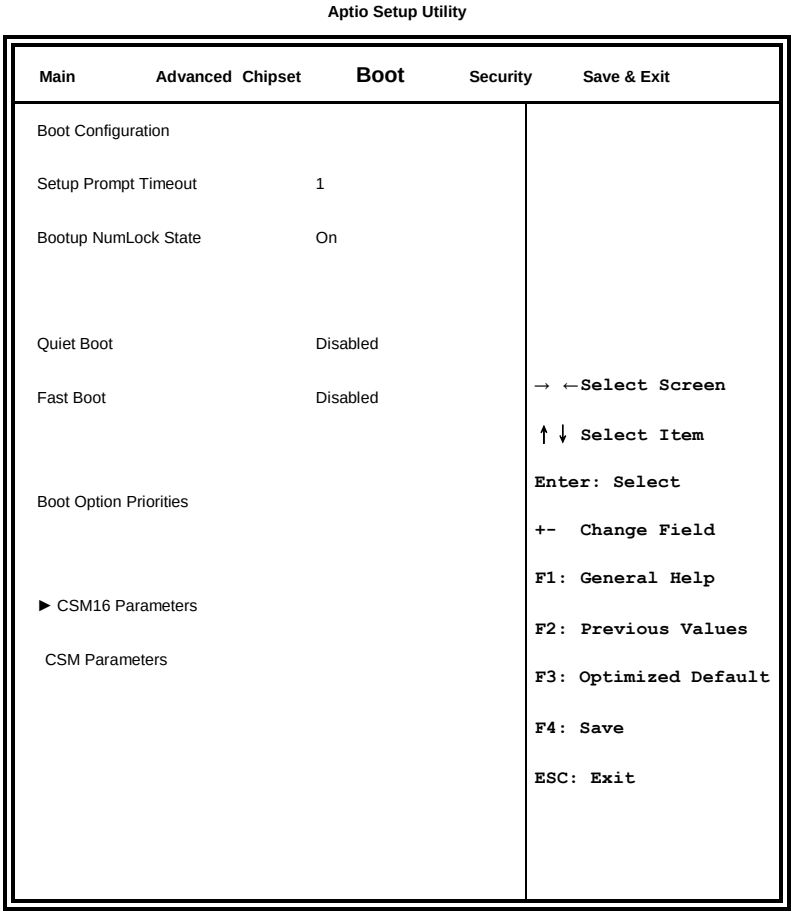
eDP Port-A: LFP Driven by Int-DisplayPort encoder from Port-A.

Panel Color Depth

Select the LFP Panel Color Depth: 18 Bit, 24 Bit.

Boot Settings

This section allows you to configure the boot settings.



Setup Prompt Timeout

Number of seconds to wait for setup activation key.

65535(0xFFFF) means indefinite waiting.

Bootup NumLock State

Select the keyboard NumLock state.

Quiet Boot

Enables/Disables Quiet Boot option.

Fast Boot

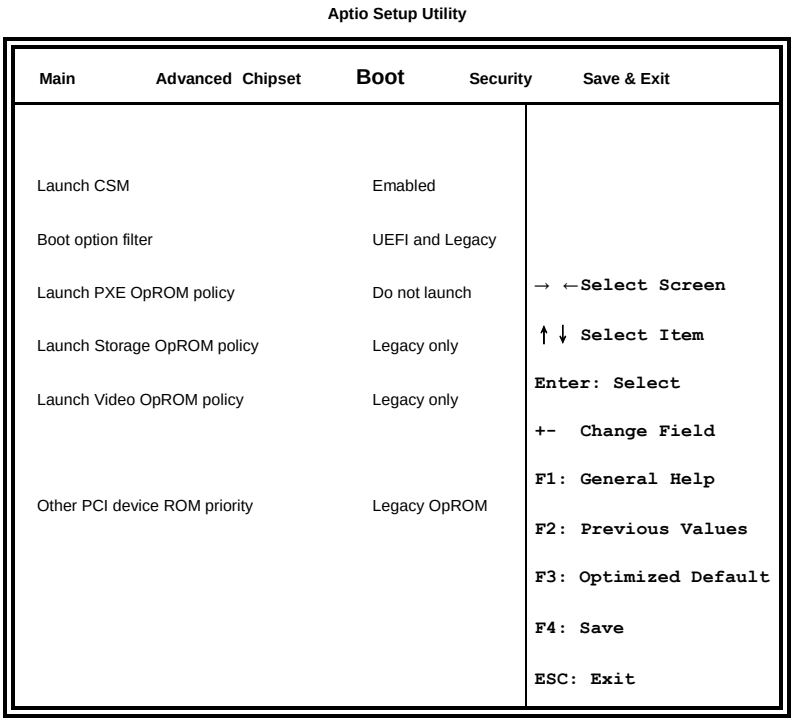
Enables/Disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

Boot Option Priorities

Sets the system boot order.

CSM parameters

OpROM execution, boot options, filter, etc.



Launch CSM

This option controls if CSM will be launched.

Boot option filter

This option controls what devices system can boot to.

Launch PXE OpROM policy

Controls the execution of UEFI and Legacy PXE OpROM.

Launch Storatge OpROM policy

Controls the execution of UEFI and Legacy Storage OpROM.

Launch Video OpROM policy

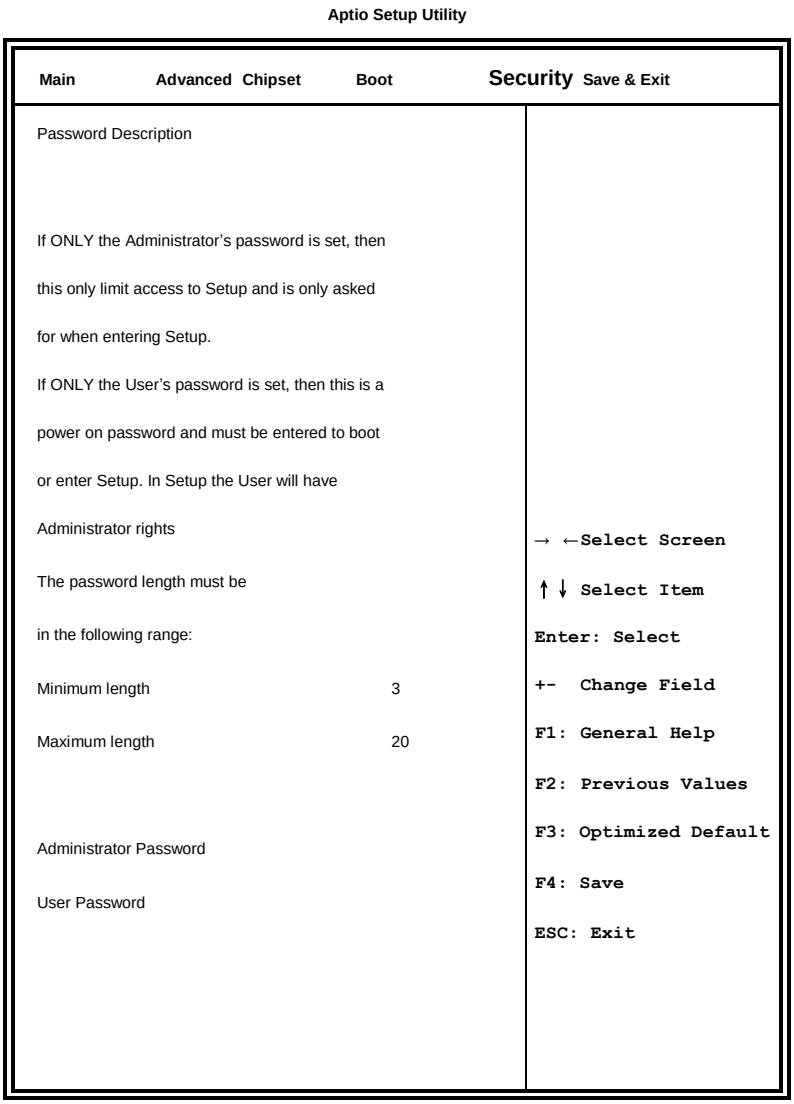
Controls the execution of UEFI and Legacy Video OpROM.

Other PCI device ROM priority

For PCI devices other than Network, Mass storage or Video defines which OpROM to launch.

Security Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.



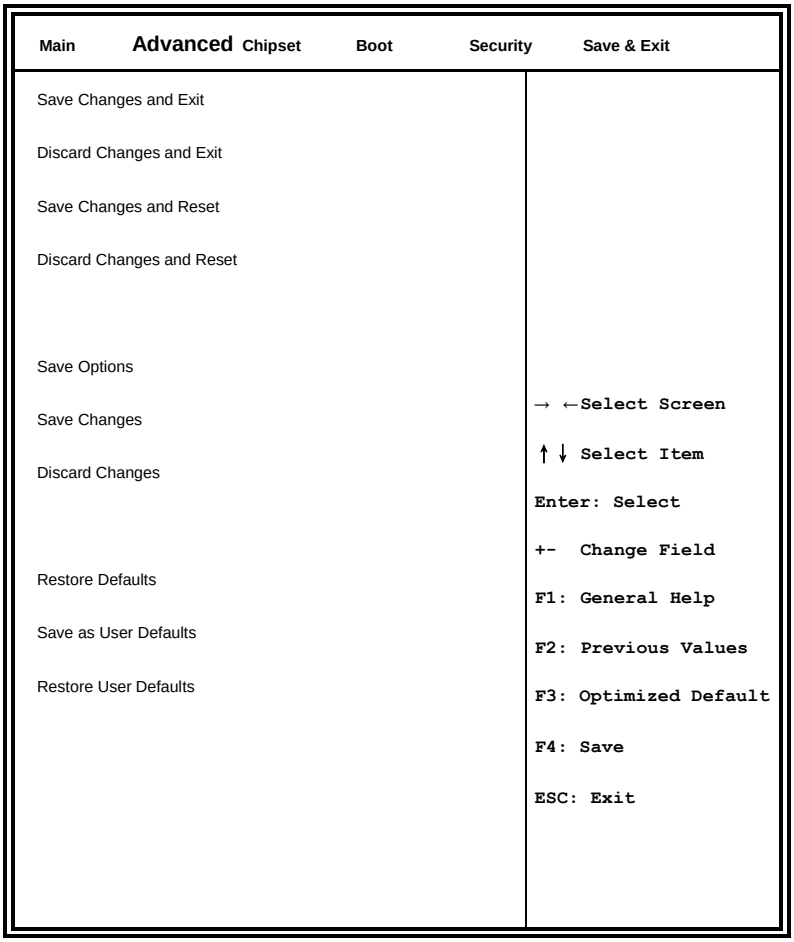
Administrator Password

Set Setup Administrator Password.

User Password

Set User Password.

Save & Exit Settings



Save Changes and Exit

Exit system setup after saving the changes.

Discard Changes and Exit

Exit system setup without saving any changes.

Save Changes and Reset

Reset the system after saving the changes.

Discard Changes and Reset

Reset system setup without saving any changes.

Save Changes

Save Changes done so far to any of the setup options.

Discard Changes

Discard Changes done so far to any of the setup options.

Restore Defaults

Restore/Load Defaults values for all the setup options.

Save as User Defaults

Save the changes done so far as User Defaults.

Restore User Defaults

Restore the User Defaults to all the setup options.

CHAPTER 4 DRIVERS INSTALLATION

This section describes the installation procedures for software and drivers. The software and drivers are included with the motherboard. If you find the items missing, please contact the vendor where you made the purchase.

IMPORTANT NOTE:

After installing your Windows operating system, you must install first the Intel Chipset Software Installation Utility before proceeding with the drivers installation.

4.1 Intel Chipset Software Installation Utility

The Intel Chipset Drivers should be installed first before the software drivers to enable Plug & Play INF support for Intel chipset components. Follow the instructions below to complete the installation.

1. Insert the DVD that comes with the board. Click ***Intel*** and then ***Intel(R) 8 Series Chipset Drivers***.

2. Click ***Intel(R) Chipset Software Installation Utility.***

3. When the Welcome screen to the Intel® Chipset Device Software appears, click ***Next*** to continue.

4. Click ***Yes*** to accept the software license agreement and proceed with the installation process.

5. On the Readme File Information screen, click ***Next*** to continue the installation.

6. The Setup process is now complete. Click ***Finish*** to restart the computer and for changes to take effect.

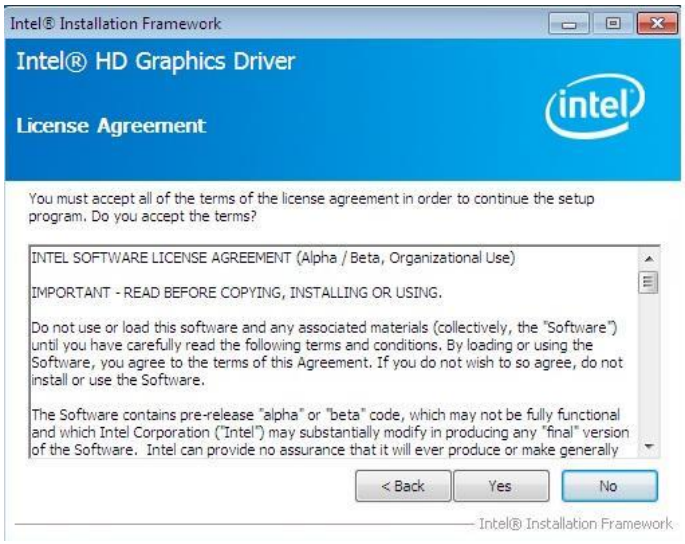
4.2 VGA Drivers Installation

1. Insert the DVD that comes with the board. Click ***Intel*** and then ***Intel(R) 8 Series Chipset Drivers***.

2. Click ***Intel(R) Core(TM) i3/i5/i7 Graphics Driver.***

3. When the Welcome screen appears, click ***Next*** to continue.

4. Click ***Yes*** to to agree with the license agreement and continue the installation.



5. On the screen shown below, click ***Install*** to continue.

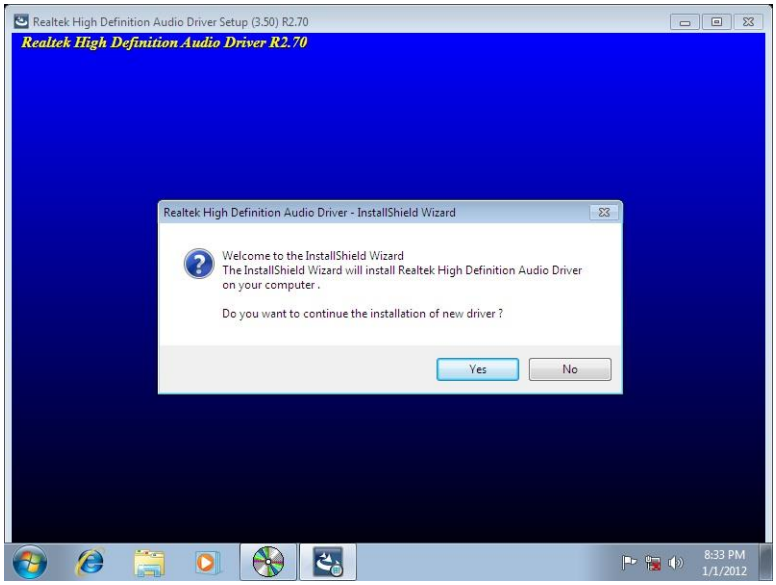
6. Setup complete. Click ***Finish*** to restart the computer and for changes to take effect.

4.3 Realtek HD Audio Driver Installation

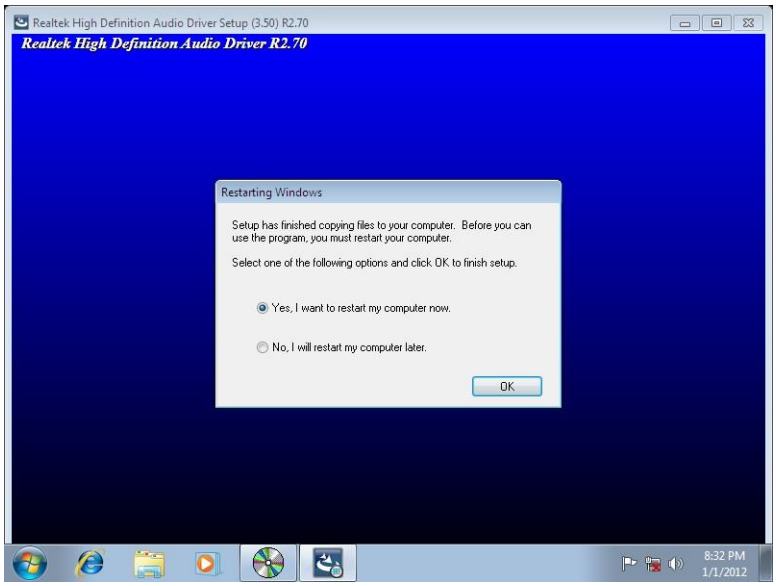
1. Insert the DVD that comes with the board. Click ***Intel*** and then ***Intel(R) 8 Series Chipset Drivers***.

2. Click ***Realtek High Definition Audio Driver.***

3. On the Welcome to the InstallShield Wizard screen, click ***Yes*** to proceed with and complete the installation process.



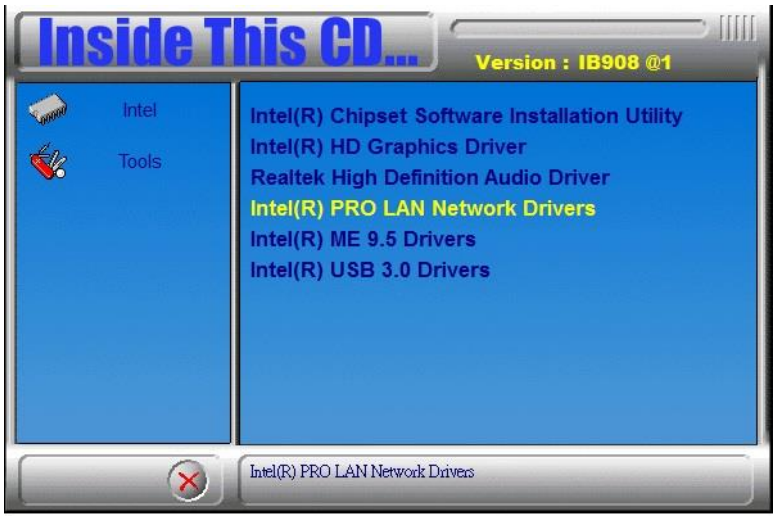
4. The InstallShield Wizard Complete. Click ***Finish*** to restart the computer and for changes to take effect.



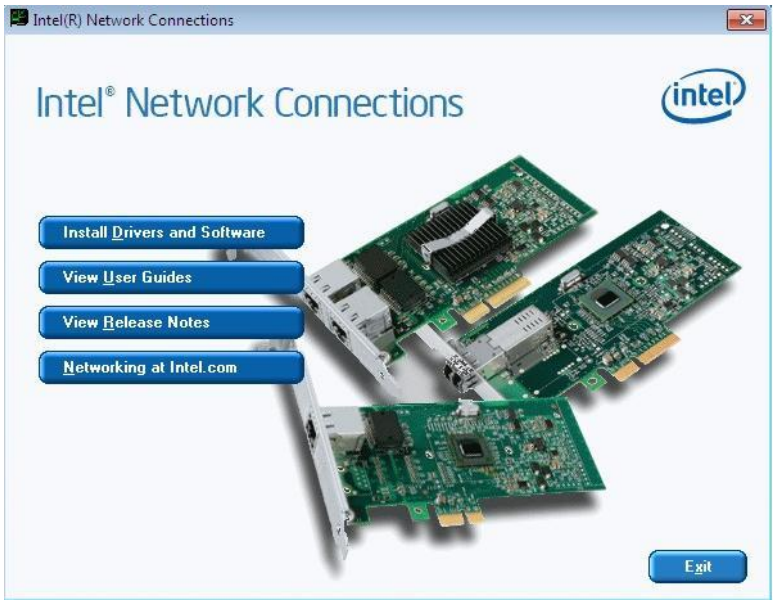
4.4 LAN Driver Installation

1. Insert the DVD that comes with the board. Click ***Intel*** and then ***Intel(R) 8 Series Chipset Drivers***.

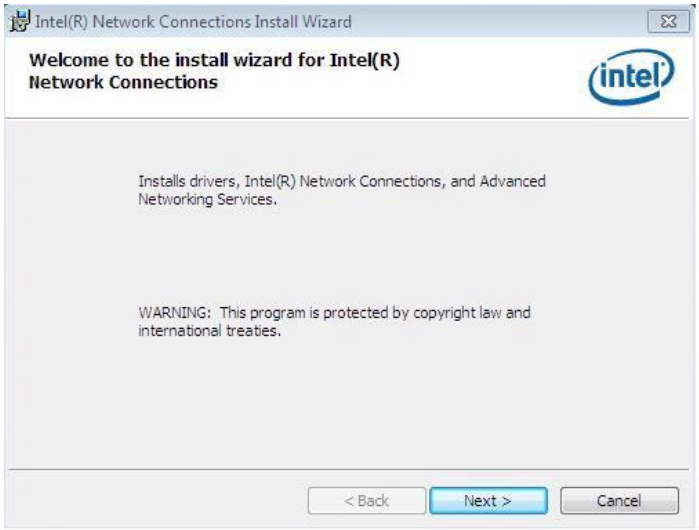
2. Click ***Intel(R) PRO LAN Network Driver.***



3. Click ***Install Drivers and Software.***

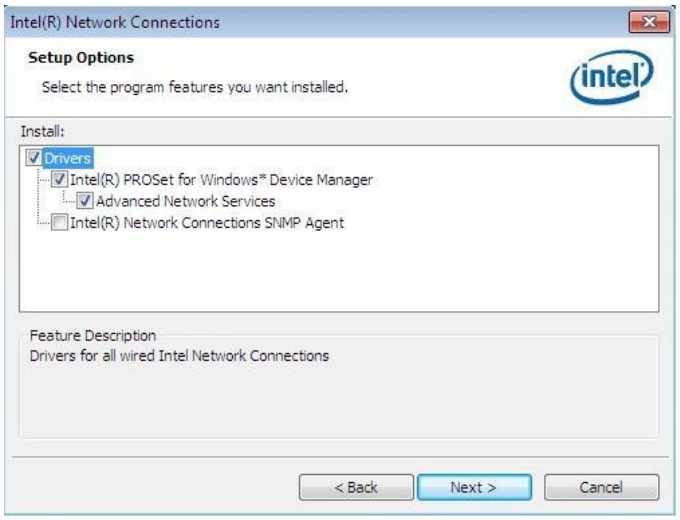


4. When the Welcome screen appears, click ***Next***.

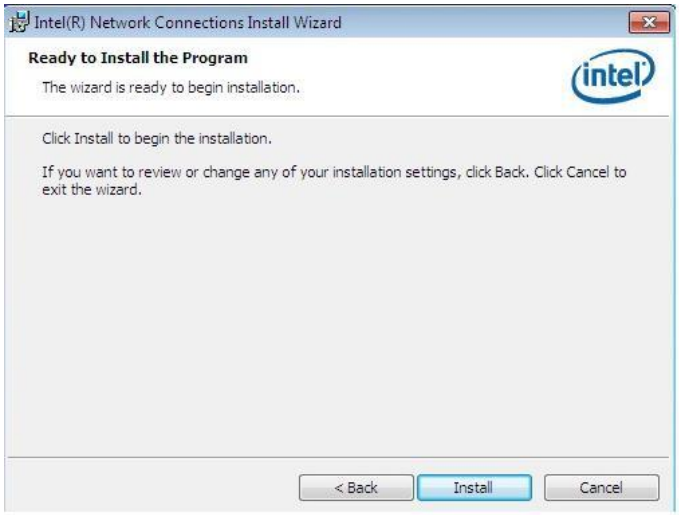


5. Click ***Next*** to to agree with the license agreement.

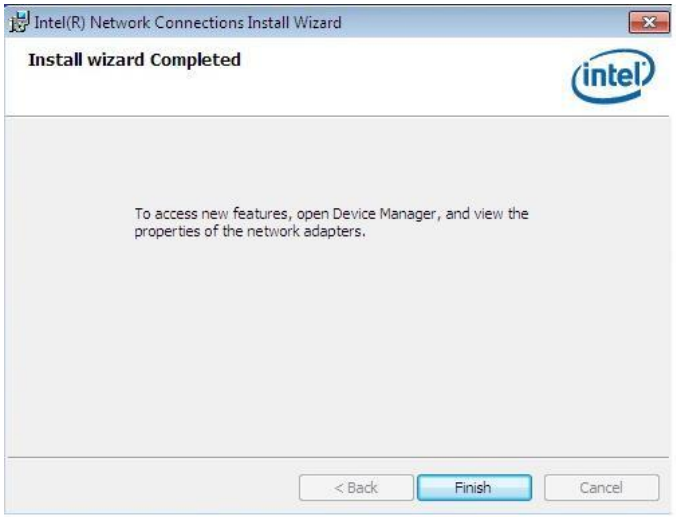
6. Click the checkbox for **Drivers** in the Setup Options screen to select it and click **Next** to continue.



7. The wizard is ready to begin installation. Click ***Install*** to begin the installation.



8. When InstallShield Wizard is complete, click ***Finish***.

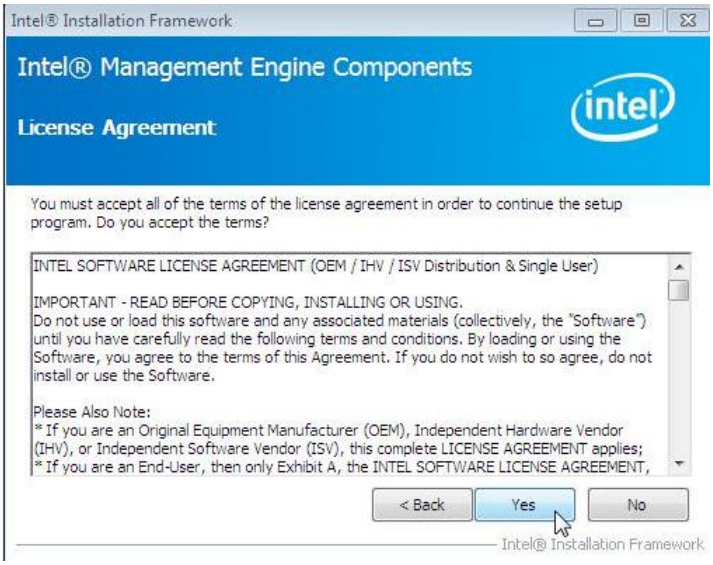


Intel® Management Engine Interface

1. Insert the DVD that comes with the board. Click ***Intel*** and then ***Intel(R) 8 Series Chipset Drivers*** and then ***Intel(R) AMT 9.5 Drivers***.

2. When the Welcome screen to the InstallShield Wizard for Intel® Management Engine Components, click the checkbox for **Install Intel® Control Center** & click ***Next***.

3. Click ***Yes*** to to agree with the license agreement.



4. When the Setup Progress screen appears, click ***Next***. Then, click ***Finish*** when the setup progress has been successfully installed.

Intel® USB 3.0 Drivers

1. Insert the DVD that comes with the board. Click ***Intel*** and then ***Intel(R) 8 Series Chipset Drivers***.

2. Click ***Intel(R) USB 3.0 Drivers.***

3. When the Welcome screen to the InstallShield Wizard for Intel® USB 3.0 eXtensible Host Controller Driver, click ***Next***.

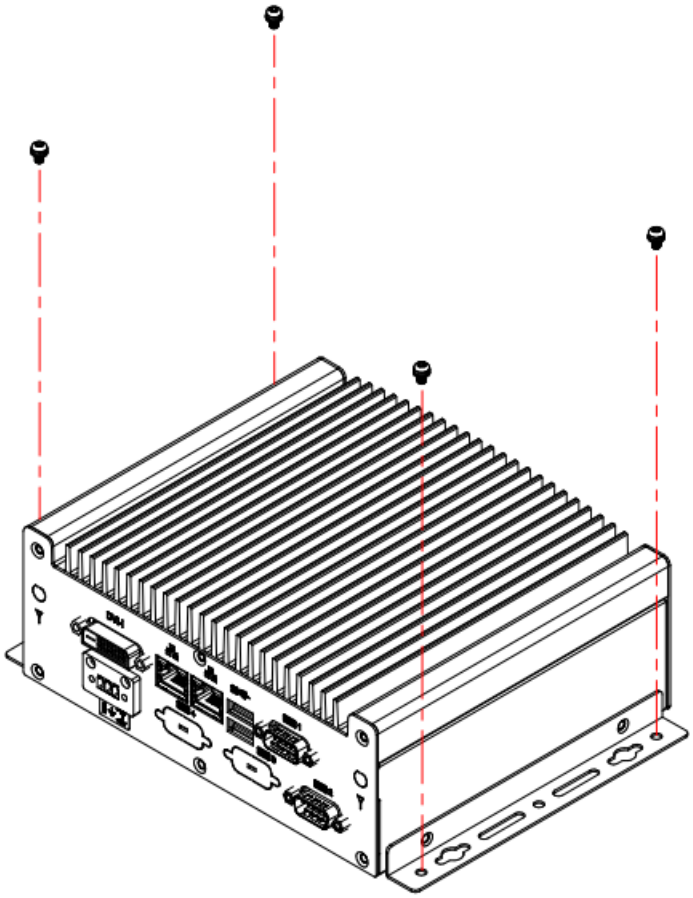
4. Click ***Yes*** to to agree with the license agreement and continue the installation.

5. On the Readme File Information screen, click ***Next*** to continue the installation of the Intel® USB 3.0 eXtensible Host Controller Driver.

6. Setup complete. Click ***Finish*** to restart the computer and for changes to take effect.

Appendix

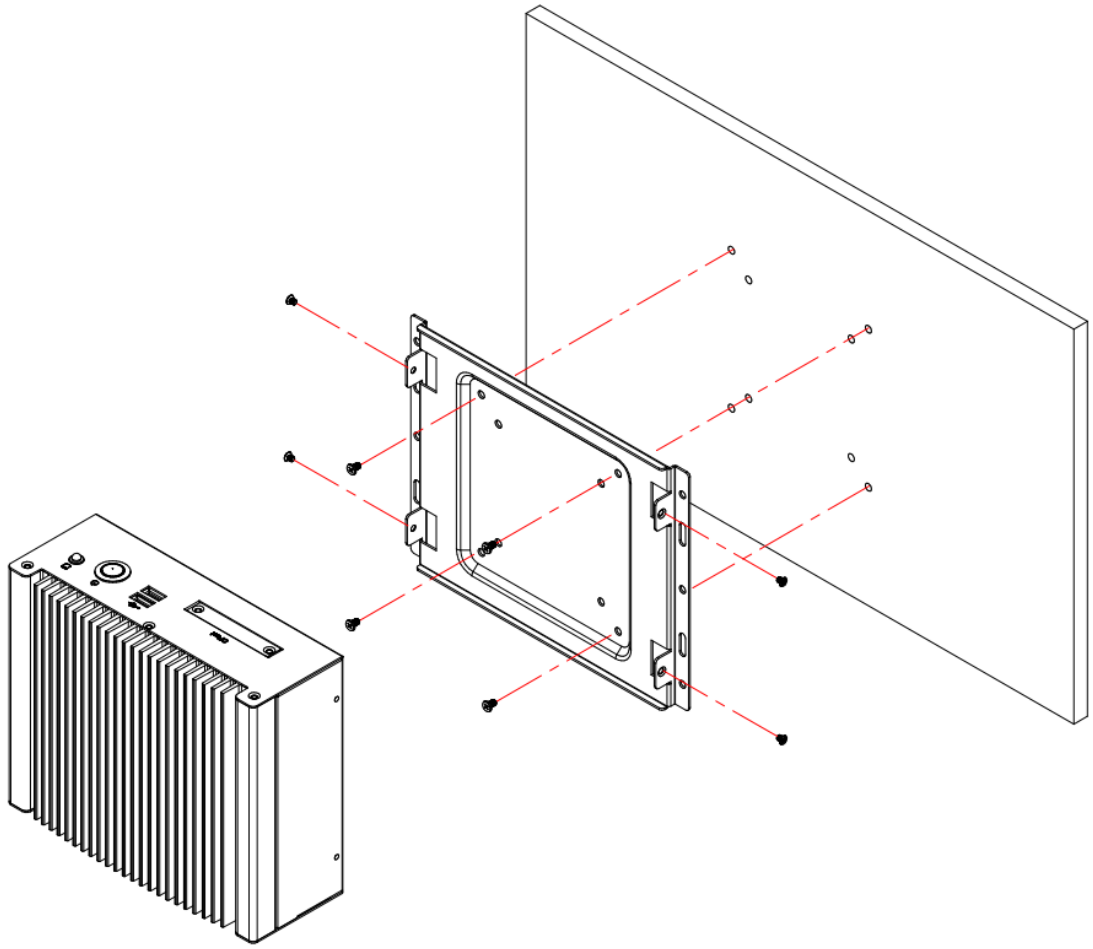
Mounting ASB200-908 to the Wall



You can install ASB200-908 on plastic (LCD monitor), wood, drywall surface over studs, or a solid concrete or metal plane directly. Ensure the installer uses at least four M3 length 6mm screws to secure the system on wall. ***Four M3 length 6mm screws [Four M3 length 4.4mm for VESA mounting] are recommended to secure the system on wall.***

Fasteners are not included with the unit, and must be supplied by the installer. The types of fasteners required are dependent on the type of wall construction. Choose fasteners that are rated either ”Medium Duty“ or ”Heavy Duty.“ To assure proper fastener selection and installation, follow the fastener manufacturer’s recommendations.

VESA Mounting [Optional item]



Wall Mounting Requirements

Note: *Before mounting the system on wall, ensure that you are following all applicable building and electric codes.*

When mounting, ensure that you have enough room for power and signal cable routing. And have good ventilation for power adapter. The method of mounting must be able to support weight of the CSB110-902 plus the suspend weight of all the cables to be attached to the system. Use the following methods for mounting your system:

Mounting to hollow walls

- **Method 1: Wood surface** – A minimum wood thickness – 38mm (1.5in.) by 25.4 cm (10in.) – of high, construction – grade wood is recommended.
  Note: This method provides the most reliable attachment of the unit with little risk that the unit will come loose or require ongoing maintenance.
- **Method 2: Drywall walls** - Drywall over wood studs is acceptable.

Mounting to a solid concrete or brick wall - Mounts on a flat smooth surface.

Selecting the Location

Plan the mounting location thoroughly. Locations such as walkway areas, hallways, and crowded areas are not recommended. Mount the unit to a flat, sturdy, structurally sound column or wall surface.

The best mounting surface is a standard countertop, cabinet, table, or other structure that is minimally the width and length of the unit. This recommendation reduces the risk that someone may accidentally walk into and damage the device. Local laws governing the safety of individuals might require this type of consideration.