ECM-QM77

Intel® Ivy Bridge Processors 3.5” Micro Module with Intel® QM77 Chipset

User’s manual

5th Ed – 01 June 2015

Part No. E2047391204R

FCC Statement

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:
(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.
(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.
THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.
THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.
OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

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1. Collect all the information about the problem encountered. (For example, CPU type and speed, Avalue's products model name, hardware & BIOS revision number, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your good return more quickly.
4. Carefully pack the defective product, a complete Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Content

1. Getting Started

1.1 Safety Precautions

Warning!

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

1.2 Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:

- 1 x 3.5" ECM-QM77 Micro Module
- 1 x AUX-056 daughter board
- 1 x DVD-ROM contains the followings:
  - User's Manual (this manual in PDF file)
  - Ethernet driver and utilities
  - VGA drivers and utilities
  - Audio drivers and utilities
- 1 x Cable set contains the followings:
  - 1 x Audio cable (12pin,2.0 pitch)
  - 1 x USB 2.0 cable (10P/2.0mm-10P/2.0mm)
  - 1 x USB 3.0 cable ((20P/2.0mm-20P/2.0mm)
  - 1 x Serial ATA cable (7-pin, standard)
  - 1 x Wire SATA power cable (15-pin,4P/2.5mm)
  - 1 x Flat cable 9P(M)-PHD 10P/2.0mm)
- 3M foam (VHB-4622 10mm*20mm*1.1mm)

1.3 Document Amendment History

Revision	Date	Comment
1st	October 2012	Initial Release
2nd	December 2012	Connector List Update
3rd	January 2013	Increase Installing the CPU
4th	September 2013	Update Mechanical Drawing
5TH	June 2015	Update JDIO1 Pin Signal

1.4 Manual Objectives

This manual describes in detail the Avalue Technology ECM-QM77 Single Board.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to interface with ECM-QM77 series or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors concerning this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

1.5 System Specifications

System	
CPU	Intel® rPGA988B（Socket G2）supports Intel® Ivy Bridge Processors （35 ～ 45W CPU）
BIOS	AMI uEFI BIOS, 64Mbit SPI Flash ROM iAMT8.0 Supported
System Chipset	Intel® QM77 Chipset
I/O Chip	Nuvoton NCT6776F
System Memory	One 204-pin DDR3 SODIMM Socket Supports Up to 8GB DDR3 1333/ 1600 SDRAM
Watchdog Timer	Reset: 1sec. ~ 255sec./min. and 1sec. or 1min./step
H/W Status Monitor	Monitoring System Temperature, Voltage with Auto Throttling Control
Expansion	1 x Mini PCIe
TPM	TPM 1.2 supported
I/O	
MIO	1 x RS-232, 1 x RS-232/ 422/ 485, LPC, 2 x SATA III
USB	2 x USB 2.0, 4 x USB 3.0
DIO	4-bit GPI, 4-bit GPO
Display	
Chipset	Intel® QM77
Resolution	VGA Mode: 1920 x 1200 @ 60Hz
	HDMI Mode: 1920 x 1200 @ 60Hz
	LVDS Mode: 1920 x 1200 @ 60Hz
Multiple Display	VGA + LVDS + HDMI
LCD Interface	Dual-channel 18/ 24-bit LVDS
Audio	
HD Codec	Realtek ALC892 Supports 7.1-CH Audio
Audio Interface	Mic-in, Line-in, Line-out
Ethernet	
LAN Chip	1 x Intel® 82574L Gigabit Ethernet
	1 x Intel® 82579 Gigabit Ethernet
Ethernet Interface	10/ 100/ 1000 Base-Tx Gigabit Ethernet Compatible
Mechanical & Environmental	

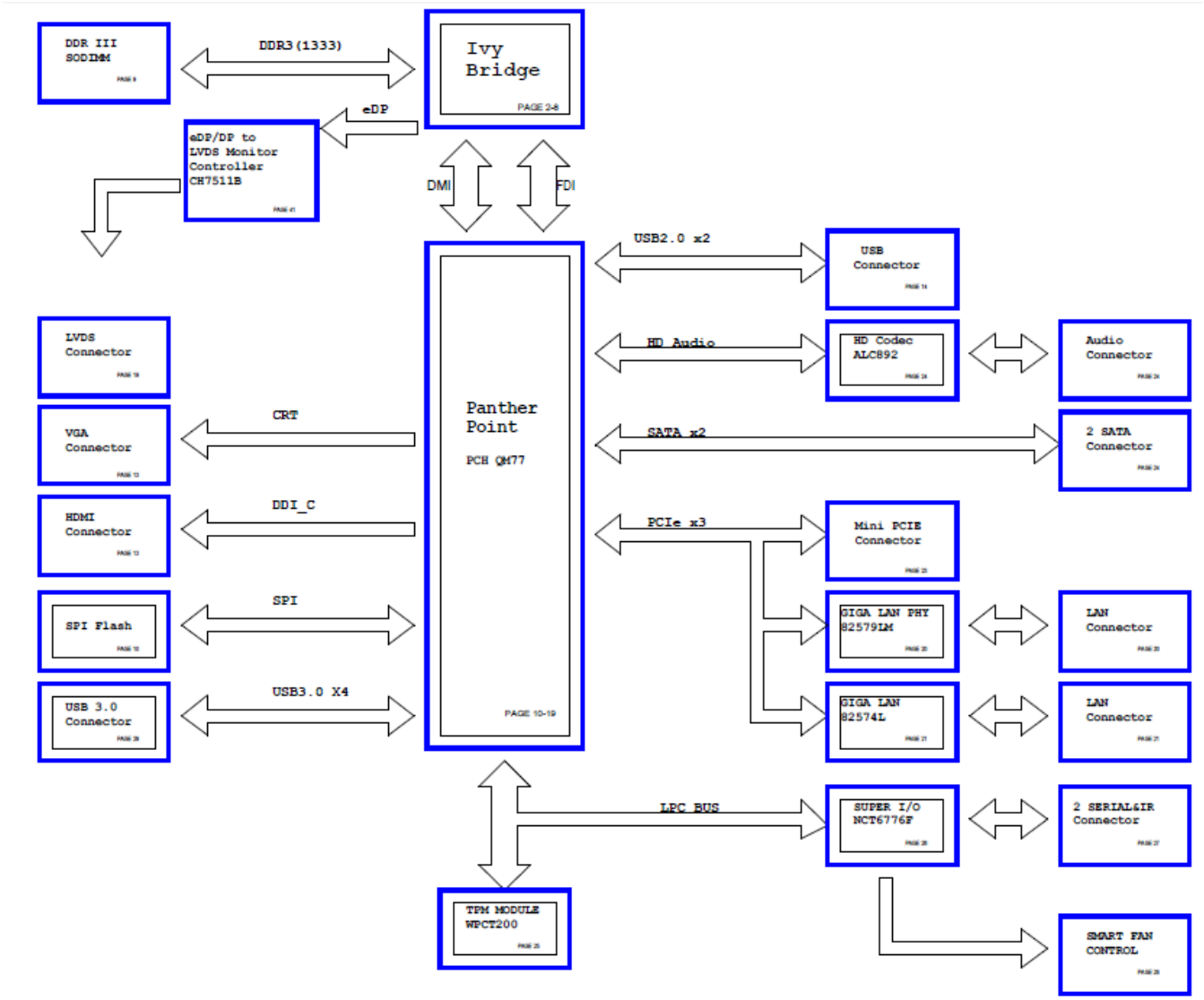
ECM-QM77

Power Requirement	+12V
ACPI	Single Power ATX Support S0, S1, S3, S4, S5 ACPI 3.0 Compliant
Power Type	AT/ATX
Operating Temp.	0 ~ 60°C (32 ~ 140°F)
Storage Temperature	-40 ~ 75°C (-40 ~ 167°F)
Operating Humidity	0%~90% Relative Humidity, Non-condensing
Size (L x W)	5.7" x 4" (146mm x 101mm)
Weight	0.44lbs (0.2kg)

Note: Specifications are subject to change without notice.

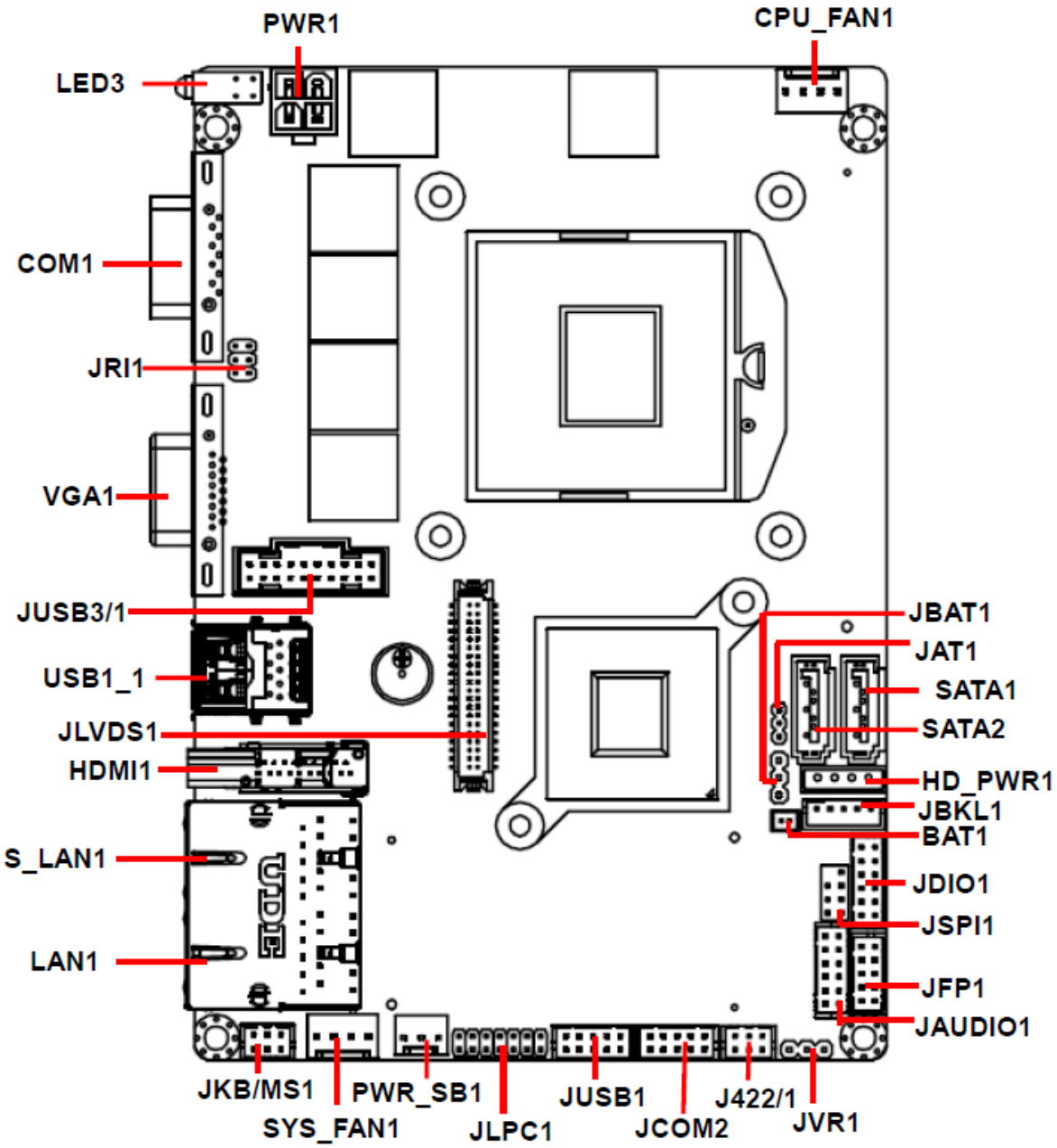
1.6 Architecture Overview – Block Diagram

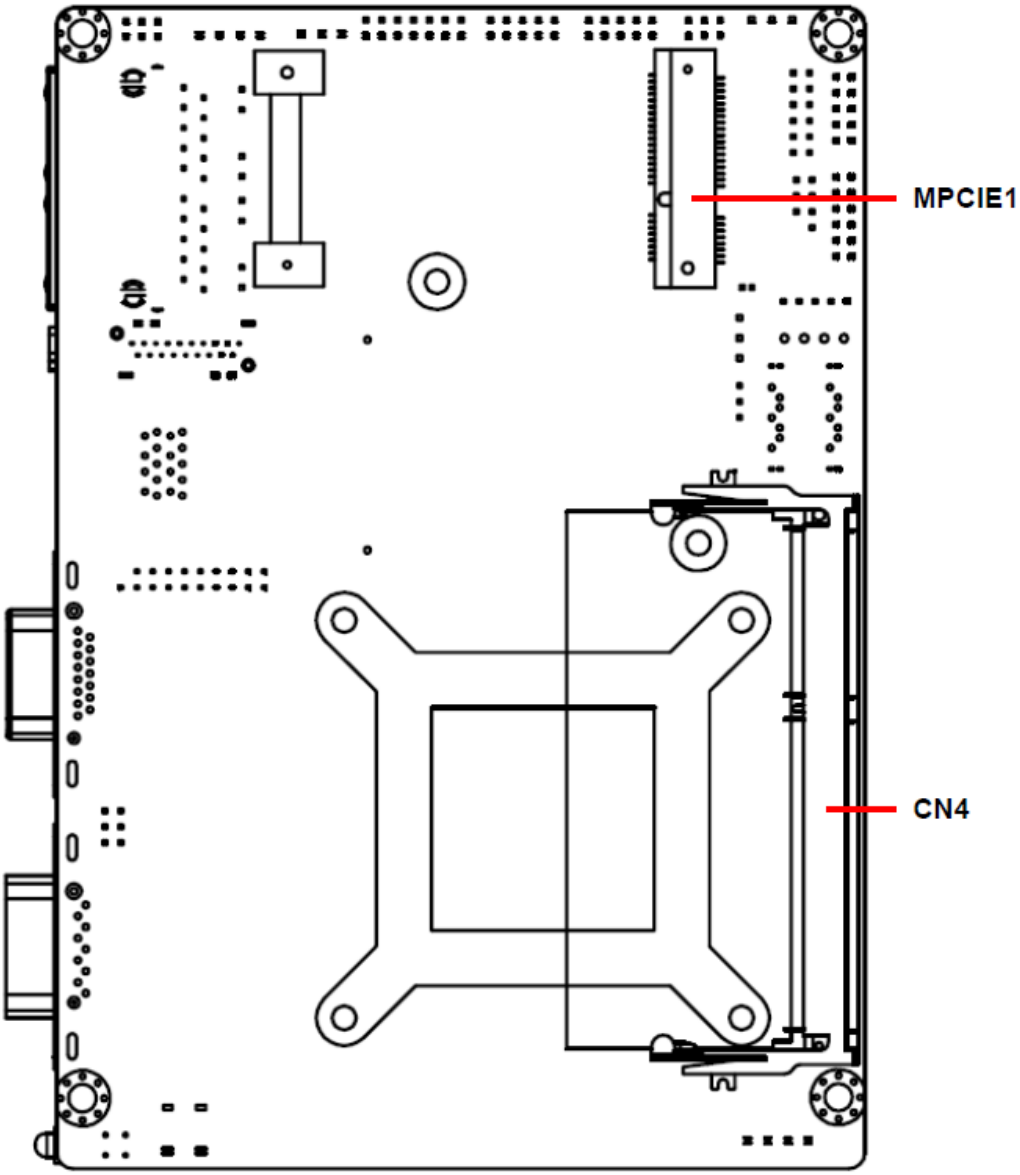
The following block diagram shows the architecture and main components of ECM-QM77.



2. Hardware Configuration

2.1 Product Overview




MPCIE1
CN4

2.2 Installation Procedure

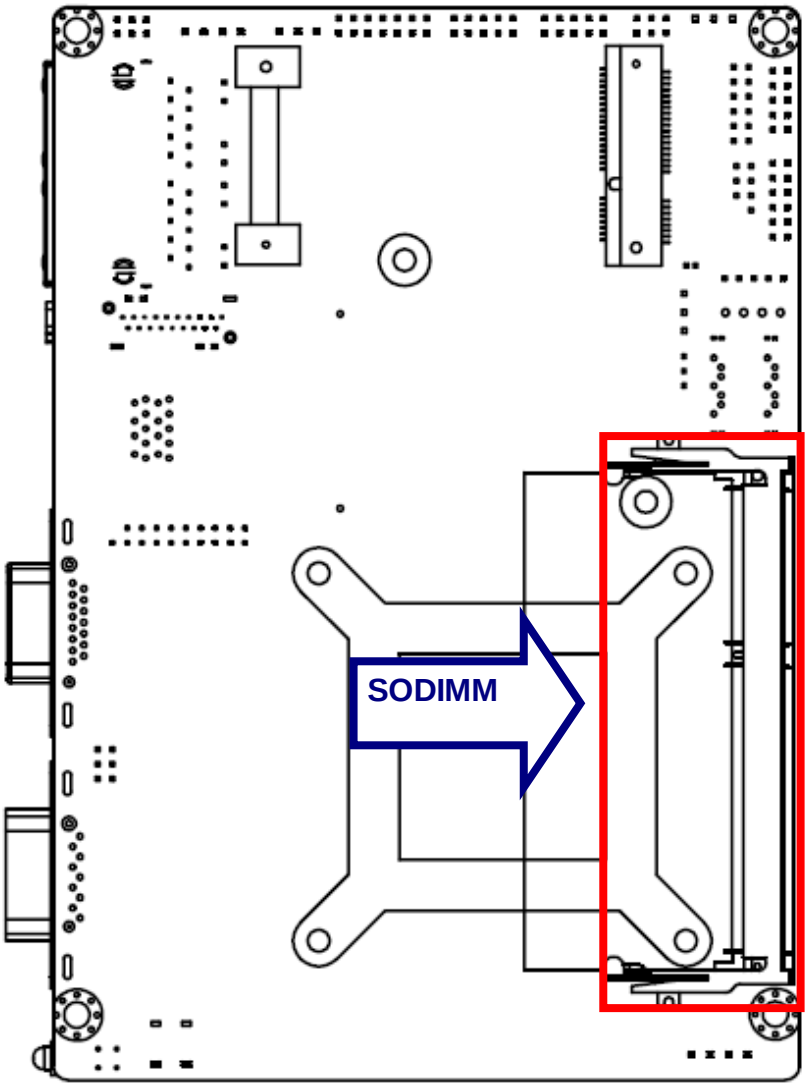
This chapter explains you the instructions of how to setup your system.

1. Turn off the power supply.
2. Insert the SODIMM module (be careful with the orientation).
3. Insert all external cables for hard disk, floppy, keyboard, mouse, USB etc. except for flat panel. A CRT monitor must be connected in order to change CMOS settings to support flat panel.
4. Connect power supply to the board via the ATXPWR.
5. Turn on the power.
6. Enter the BIOS setup by pressing the delete key during boot up. Use the "LOAD BIOS DEFAULTS" feature. The ***Integrated Peripheral Setup*** and the ***Standard CMOS Setup*** Window must be entered and configured correctly to match the particular system configuration.
7. If TFT panel display is to be utilized, make sure the panel voltage is correctly set before connecting the display cable and turning on the power.

Note: Make sure the heat sink and the CPU top surface are in total contact to avoid CPU overheating problem that would cause the system to hang or unstable

2.2.1 Main Memory

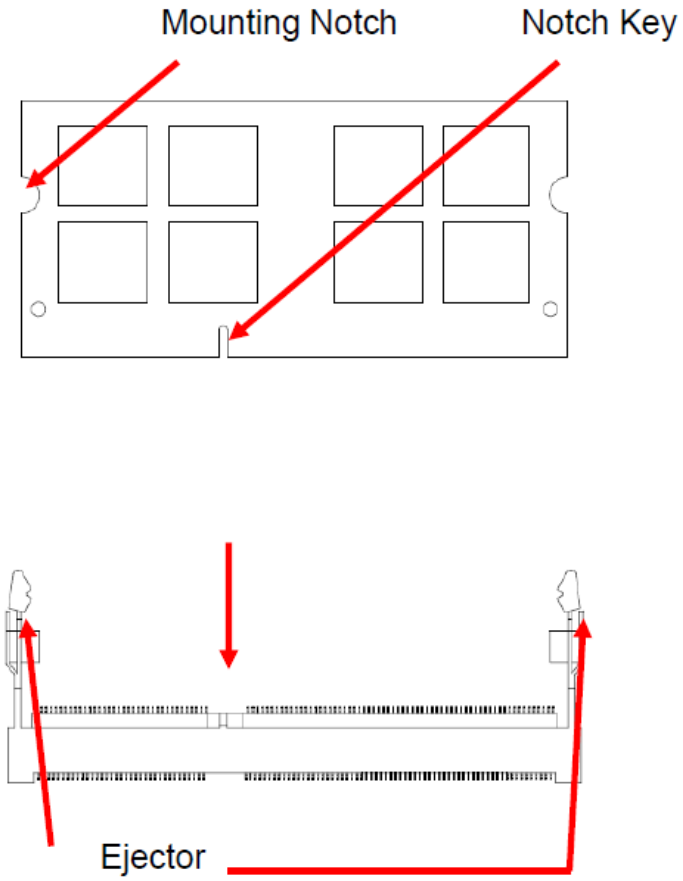
ECM-QM77 provides one 204-pin DDR3 SODIMM socket, supports up to 8GB DDR3 1333/1600 SDRAM.



(Rear side)

Make sure to unplug the power supply before adding or removing SODIMMs or other system components. Failure to do so may cause severe damage to both the board and the components.

- Locate the SODIMM socket on the board.
- Hold two edges of the SODIMM module carefully. Keep away of touching its connectors.
- Align the notch key on the module with the rib on the slot.
- Firmly press the modules into the socket automatically snaps into the mounting notch. Do not force the SODIMM module in with extra force as the SODIMM module only fit in one direction.



204-pin DDR3 SODIMM

- To remove the SODIMM modules, push the two ejector tabs on the slot outward simultaneously, and then pull out the SODIMM module.

Note:

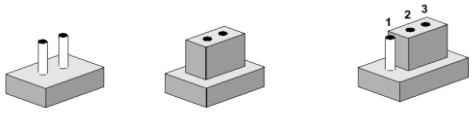
(1) Please do not change any DDR3 SDRAM parameter in BIOS setup to increase your system's performance without acquiring technical information in advance.

(2) Static electricity can damage the electronic components of the computer or optional boards. Before starting these procedures, ensure that you are discharged of static electricity by touching a grounded metal object briefly.

2.3 Jumper and Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



Open Closed Closed 2-3

The jumper settings are schematically depicted in this manual as follows:

Open Closed Closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The following tables list the function of each of the board's jumpers and connectors.

Jumpers

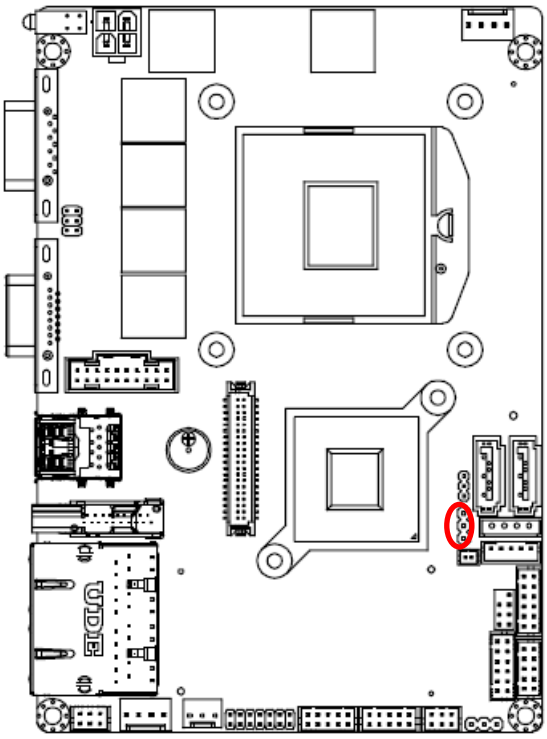
Label	Function	Note
JBAT1	Clear CMOS	3 x 1 header, pitch 2.54 mm
JRI1	COM 1 pin 9 signal select	3 x 2 header, pitch 2.00 mm
JAT1	AT/ ATX Input power select	3 x 1 header, pitch 2.00 mm

Connectors

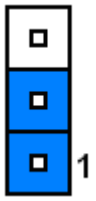
Label	Function	Note
BAT1	Battery connector	2 x 1 wafer, pitch 1.25 mm
COM1	Serial port 1 connector	D-sub 9-pin, male
CPU_FAN1	CPU fan connector	4 x 1 wafer, pitch 2.54 mm
HDMI1	HDMI connector	
J422/1	COM 1 RS-422-485 mode	3 x 2 header, pitch 2.00 mm
JAUDIO1	Audio connector	6 x 2 header, pitch 2.00 mm
JBKL1	LCD inverter connector	5 x 1 wafer, pitch 2.00 mm
JCOM2	Serial port 2 connector	5 x 2 header, pitch 2.00 mm
JDIO1	General purpose I/O connector	6 x 2 header, pitch 2.00 mm
JFP1	Miscellaneous setting connector	5 x 2 header, pitch 2.00 mm
JLPC1	Low pin count interface	7 x 2 header, pitch 2.00 mm
JLVDS1	LVDS connector	20 x 2 header, pitch 1.25 mm
JSPI1	SPI connector	4 x 2 header, pitch 2.00 mm
JUSB1	On-board box header for USB2.0	5 x 2 header, pitch 2.00 mm
JUSB3/1	On-board box header for USB3.0	10 x 2 wafer, pitch 2.00 mm
JVR1	LCD backlight brightness adjustment	3 x 1 header, pitch 2.54 mm
LAN1/S_LAN1	RJ-45 Ethernet connector	
LED3	LED connector	
PWR_SB1	5VSB connector in ATX	3 x 1 wafer, pitch 2.54 mm
PWR1	Power connector	2 x 2 wafer, pitch 4.2 mm
JKB/MS1	PS/2 keyboard & mouse connector	2 x 3 wafer, pitch 2.00 mm
HD_PWR1	HD power connector	1 x 4 wafer, pitch 2.50 mm
SATA1	Serial ATA connector 1	
SATA2	Serial ATA connector 2	
SYS_FAN1	System fan connector	4 x 1 wafer, pitch 2.54 mm
USB1_1	On-board connector for USB3.0	
VGA1	VGA connector	D-sub 15-pin, female
MPCIE1	Mini-PCI connector	
CN4	DDR3 SODIMM connector	

2.4 Setting Jumpers & Connectors

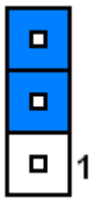
2.4.1 Clear CMOS (JBAT1)



Protect*

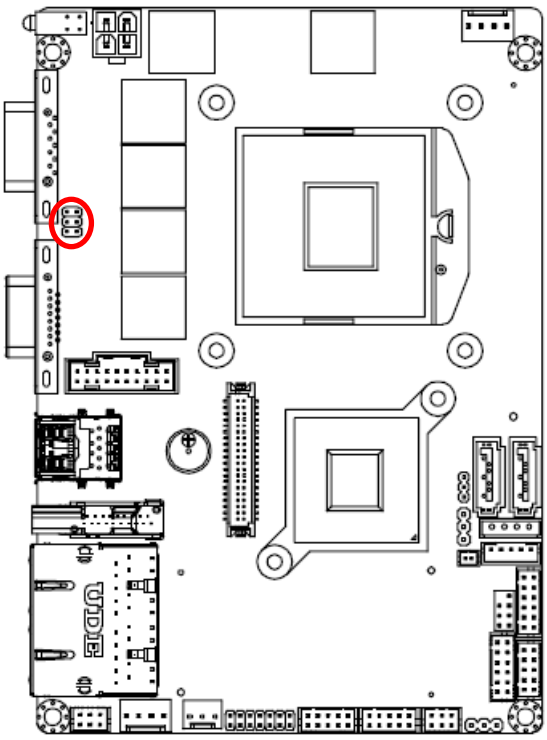


Clear CMOS

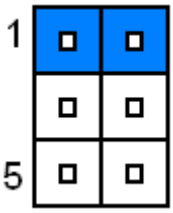


*** Default**

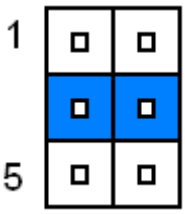
2.4.2 COM 1 pin 9 signal select (JRI1)



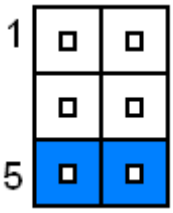
Ring*



+5V

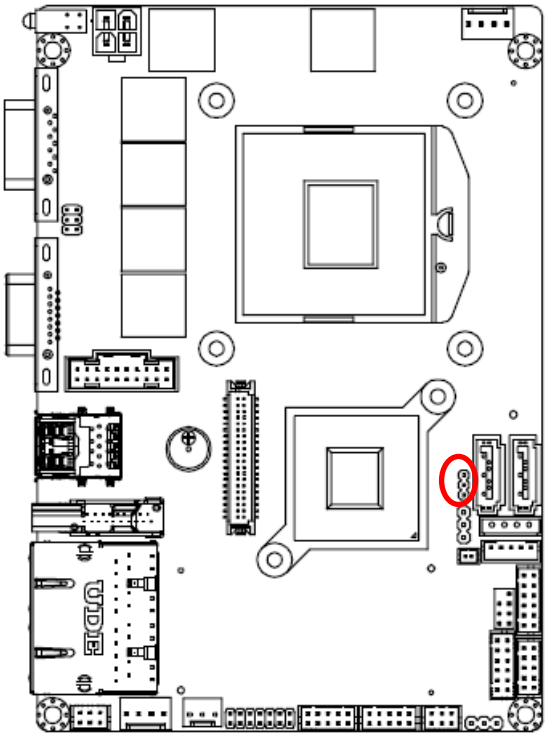


+12V



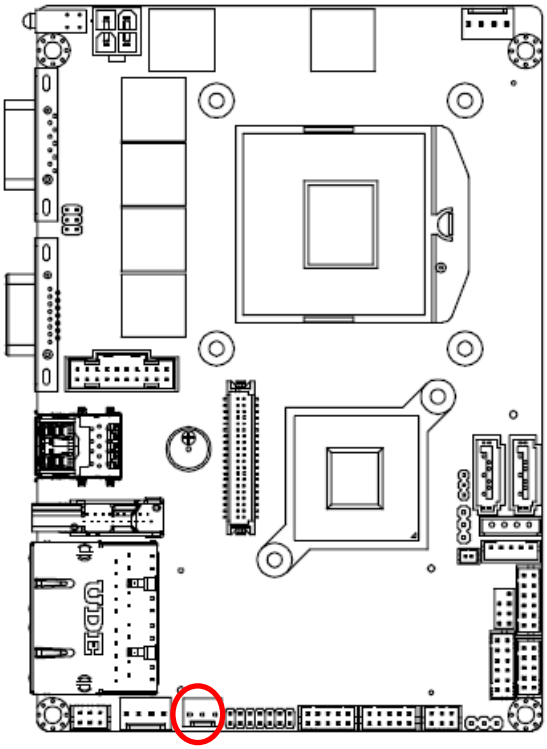
*** Default**

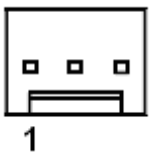
2.4.3 AT/ ATX Input power select (JAT1)



*** Default**

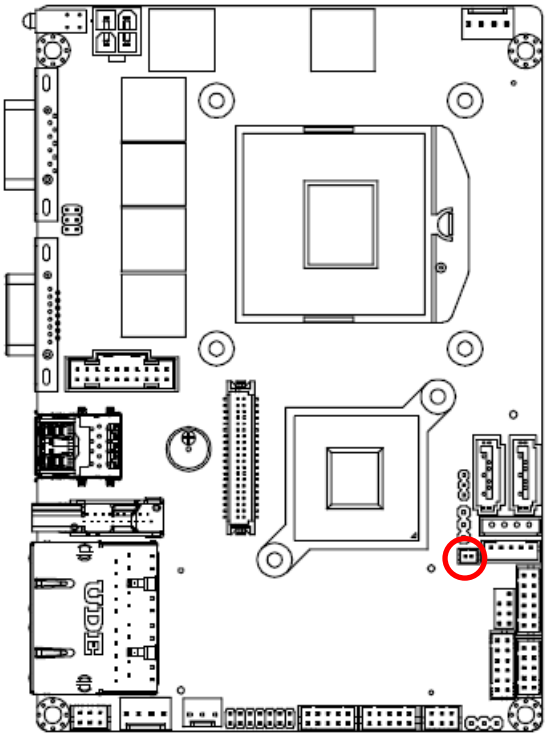
2.4.4 5VSB connector in ATX (PWR_SB1)





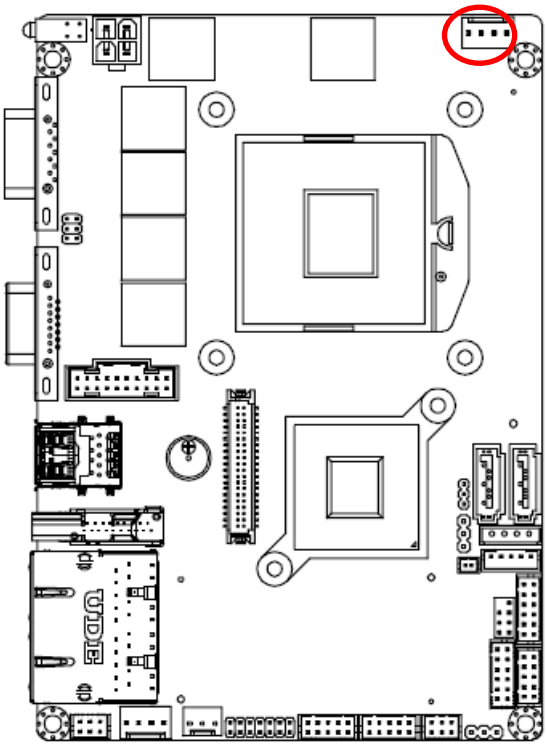
Signal	PIN
SIO_PSON#	1
GND	2
+ATX5VSB	3

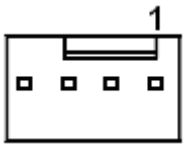
2.4.5 Battery connector (BAT1)



Signal	PIN
+3.3V	1
GND	2

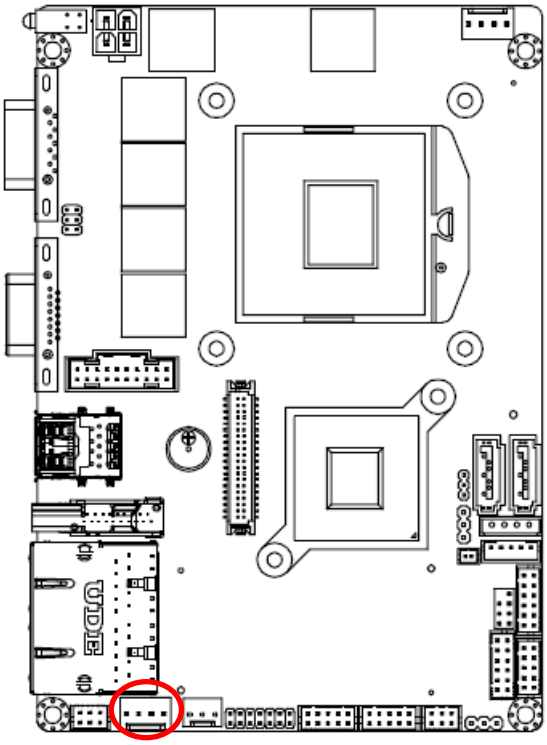
2.4.6 CPU fan connector (CPU_FAN1)

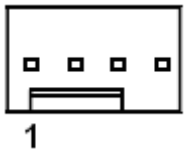




Signal	PIN
GND	1
+12V	2
CPUFANIN0	3
CPUFANOUT0	4

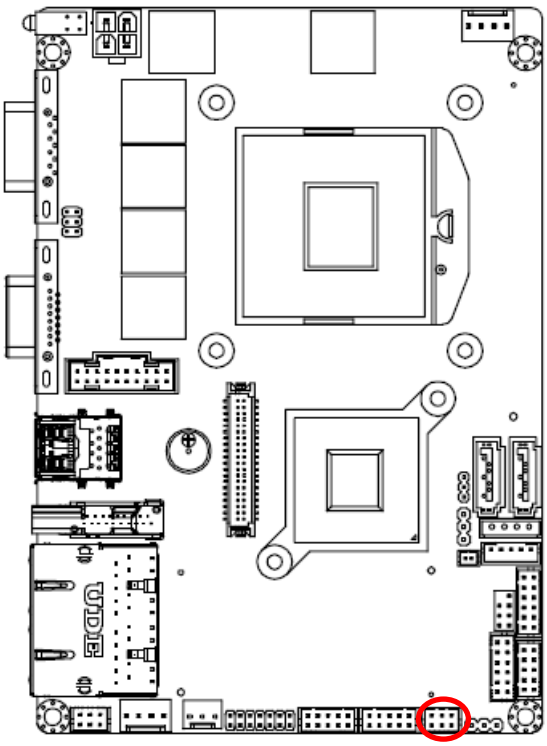
2.4.7 System fan connector (SYS_FAN1)

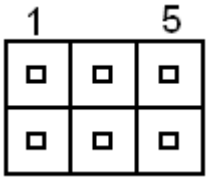




Signal	PIN
GND	1
+12V	2
SYSFANIN	3
SYSFANOUT	4

2.4.8 COM 1 RS-422-485 mode (J422/1)



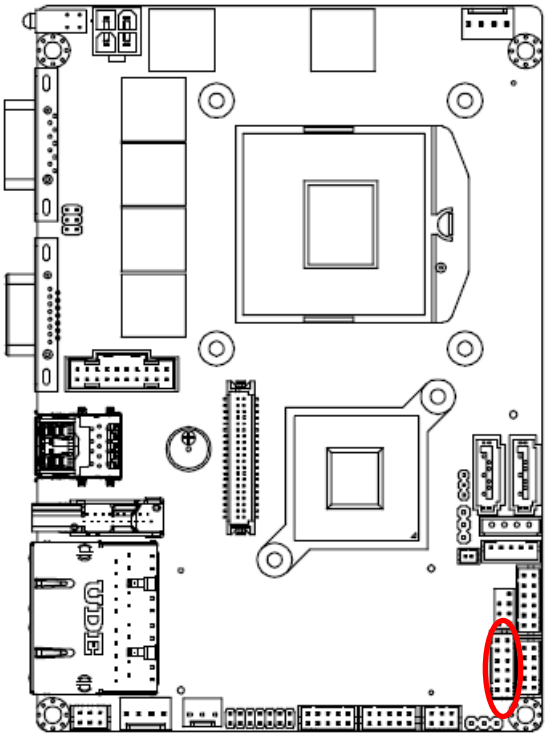


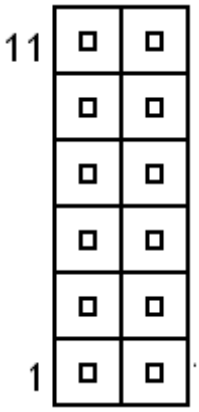
Signal	PIN	PIN	Signal
485_422TX-	2	1	422RX-
485_422TX+	4	3	422RX+
+5V	6	5	GND

Note:

J422/485 is available after modify the mode of COM1 in BIOS setting

2.4.9 Audio connector (JAUDIO1)



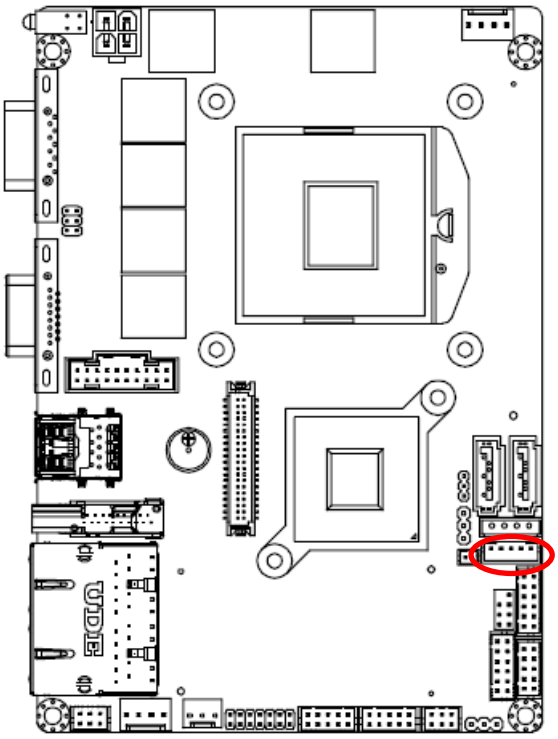


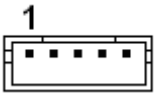
Signal	PIN	PIN	Signal
GND	11	12	MIC1-JD
LINE1-JD	9	10	FRONT-JD
MIC1-L-IN	7	8	MIC1-R-IN
LINE1-L-IN	5	6	LINE1-R-IN
GND	3	4	GND
FRONT-L-OUT	1	2	FRONT-R-OUT

2.4.9.1 Signal Description – Audio connector (JAUDIO1)

Signal	Signal Description
LINE1_JD	AUDIO IN (LINE_RIN/LIN)sense pin
FRONT_JD	AUDIO Out(ROUT/LOUT) sense pin
MIC1_JD	MIC IN (MIC_RIN/LIN) sense pin

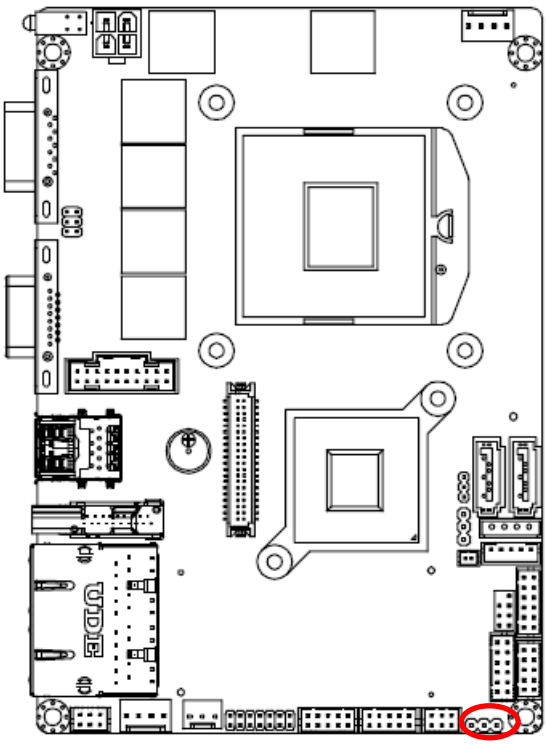
2.4.10 LCD inverter connector (JBKL1)

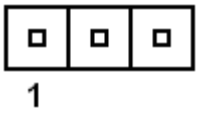




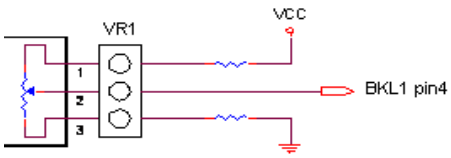
Signal	PIN
+12V	1
GND	2
BKLEN	3
BRIADJ	4
+5V	5

2.4.11 LCD backlight brightness adjustment (JVR1)





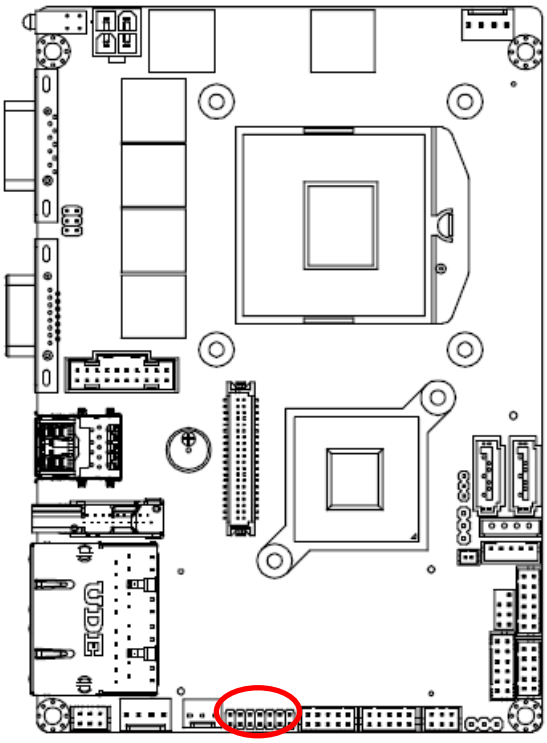
Signal	PIN
+5V	1
BRIGHT	2
GND	3

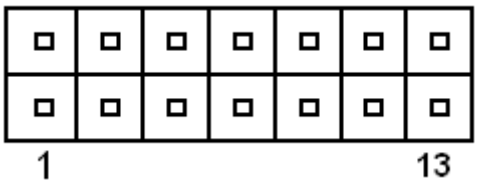


Variation Resistor

(Recommended: 4.7KΩ, >1/16W)

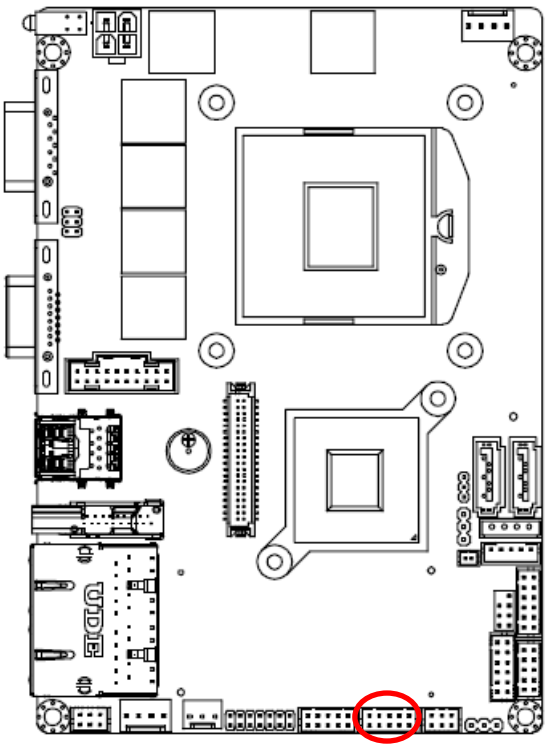
2.4.12 Low pin count connector (JLPC1)

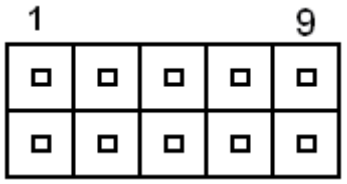




Signal	PIN	PIN	Signal
LPC_AD0	1	2	+3.3V
LPC_AD1	3	4	LPC_RST#
LPC_AD2	5	6	LPC_FRAME#
LPC_AD3	7	8	CLK_PCI_LPC
INT_SERIRQ	9	10	GND
+V5S	11	12	GND
+V5A	13	14	PCH_DRQ#1

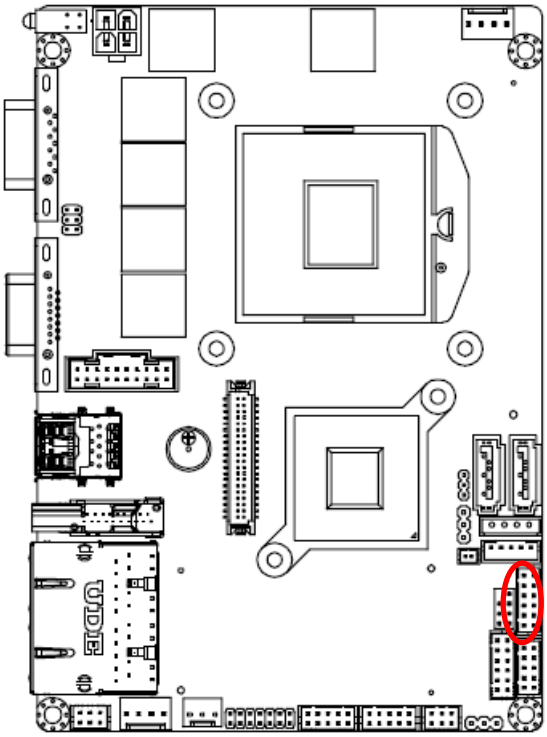
2.4.13 Serial port 2 connector (JCOM2)

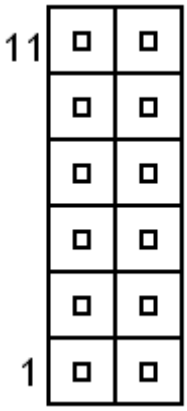




Signal	PIN	PIN	Signal
DCD2	1	2	RxDD2
TxDD2	3	4	DTR2
GND	5	6	DSR2
RTS2	7	8	CTS2
RI2	9	10	NC

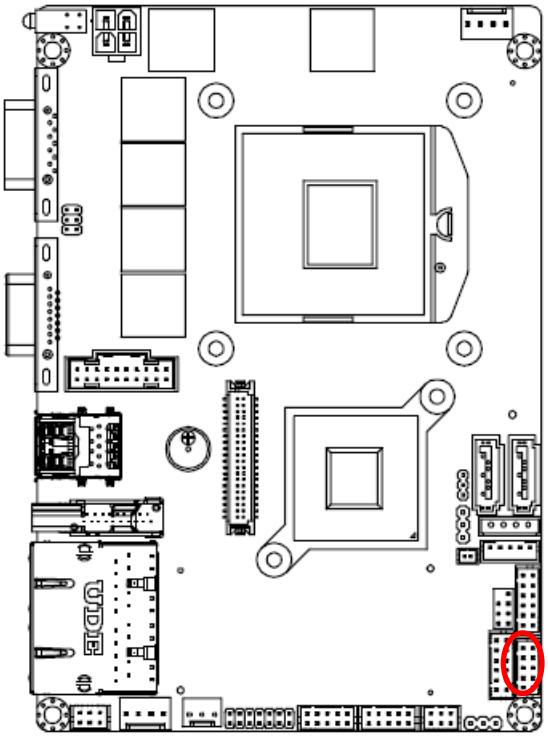
2.4.14 General purpose I/O connector (JDIO1)

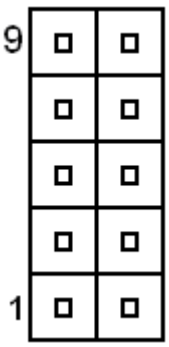




Signal	PIN	PIN	Signal
+5V	11	12	GND
SMB_DATA_9555	9	10	SMB_CLK_9555
DIO_GP13	7	8	DIO_GP23
DIO_GP12	5	6	DIO_GP22
DIO_GP11	3	4	DIO_GP21
DIO_GP10	1	2	DIO_GP20

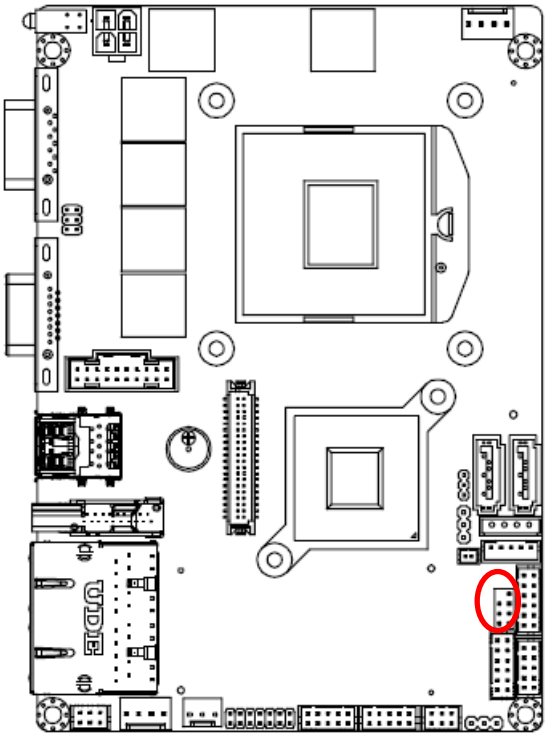
2.4.15 Miscellaneous setting connector (JFP1)





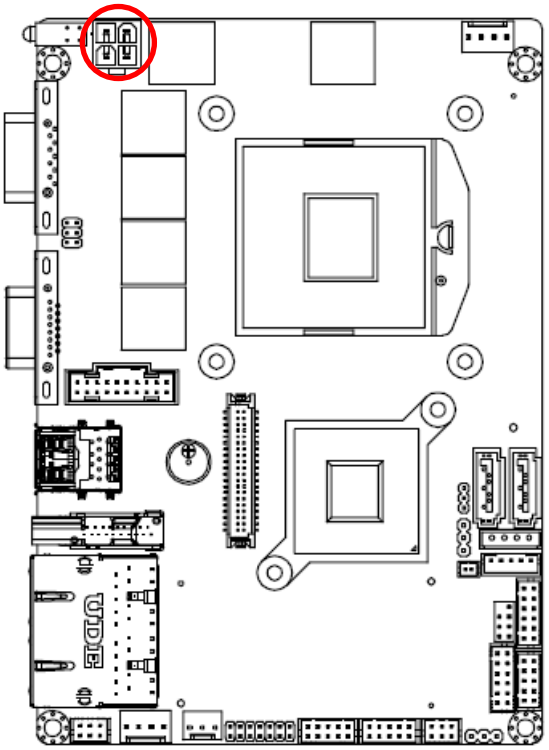
Signal	PIN
PWBT	1
	2
RST#	3
	4
PWR-LED	5
	6
HDD-LED	7
	8
COPEN#	9
	10

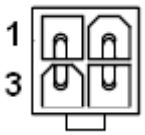
2.4.16 SPI connector (JSPI1)



Signal	PIN	PIN	Signal
		7	HOLD#
SPI_SI	6	5	SPI_SO
SPI_CLK	4	3	SPI_CS0#
GND	2	1	+3.3V

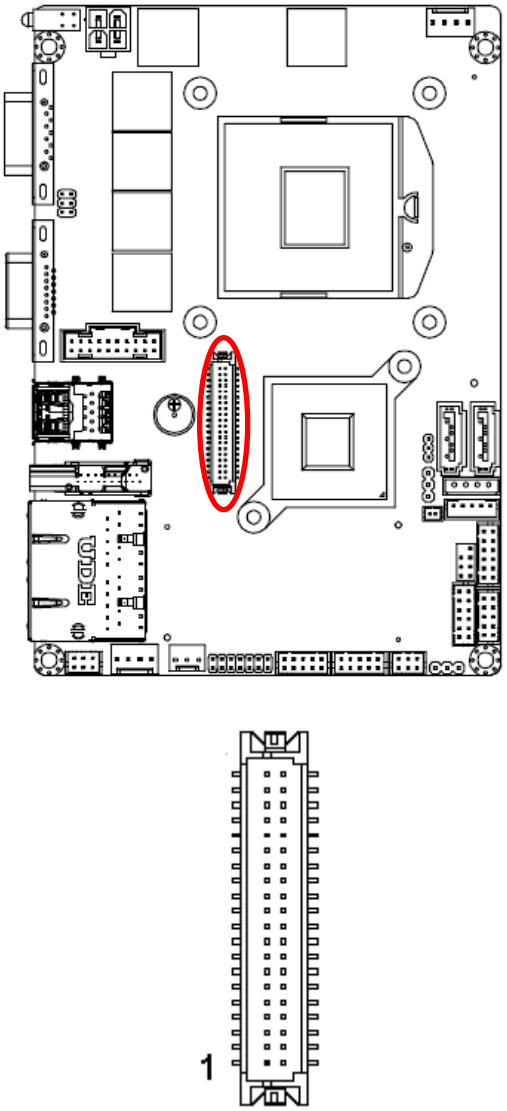
2.4.17 Power connector (PWR1)





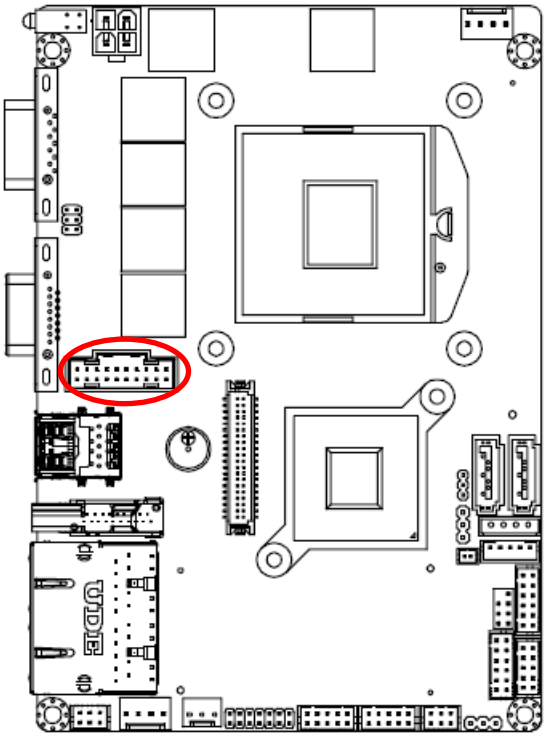
Signal	PIN	PIN	Signal
GND	1	2	GND
+12V	3	4	+12V

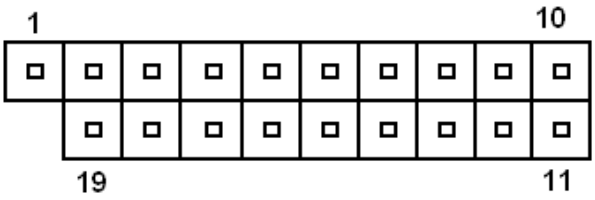
2.4.18 LVDS connector (JLVDS1)



Signal	PIN	PIN	Signal
+12V	39	40	+12V
GND	37	38	GND
LVDS_CLK2_N	35	36	LVDS_CLK1_N
LVDS_CLK2_P	33	34	LVDS_CLK1_P
GND	31	32	GND
LVDS_DATA7_N	29	30	LVDS_DATA6_N
LVDS_DATA7_P	27	28	LVDS_DATA6_P
GND	25	26	GND
LVDS_DATA5_N	23	24	LVDS_DATA4_N
LVDS_DATA5_P	21	22	LVDS_DATA4_P
GND	19	20	GND
LVDS_DATA3_N	17	18	LVDS_DATA2_N
LVDS_DATA3_P	15	16	LVDS_DATA2_P
GND	13	14	GND
LVDS_DATA1_N	11	12	LVDS_DATA0_N
LVDS_DATA1_P	9	10	LVDS_DATA0_P
GND	7	8	GND
NC	5	6	NC
+3.3V	3	4	+5V
+3.3V	1	2	+5V

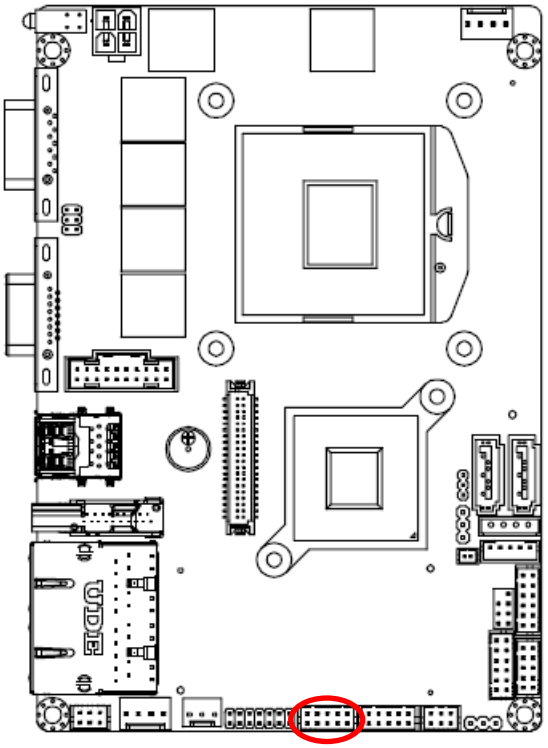
2.4.19 On-board box header for USB3.0 (JUSB3/1)

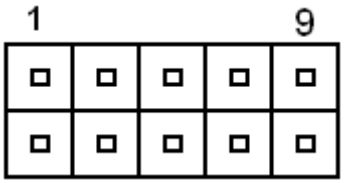




Signal	PIN	PIN	Signal
+5V	1		
USB3_RXN3_L	2	19	+5V
USB3_RXP3_L	3	18	USB3_RXN4_L
GND	4	17	USB3_RXP4_L
USB3_TXN3_L	5	16	GND
USB3_TXP3_L	6	15	USB3_TXN4_L
GND	7	14	USB3_TXP4_L
USB_PN_Z_2	8	13	GND
USB_PP_Z_2	9	12	USB_PN_Z_3
NC	10	11	USB_PP_Z_3

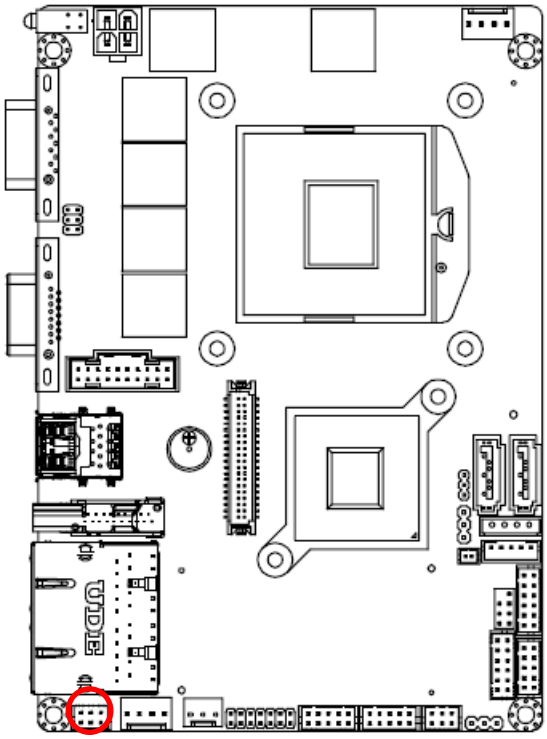
2.4.20 On-board box header for USB2.0 (JUSB1)

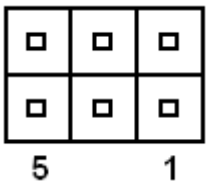




Signal	PIN	PIN	Signal
+5V	1	2	+5V
USB_PN_Z_5	3	4	USB_PN_Z_4
USB_PP_Z_5	5	6	USB_PP_Z_4
GND	7	8	GND
GND	9	10	GND

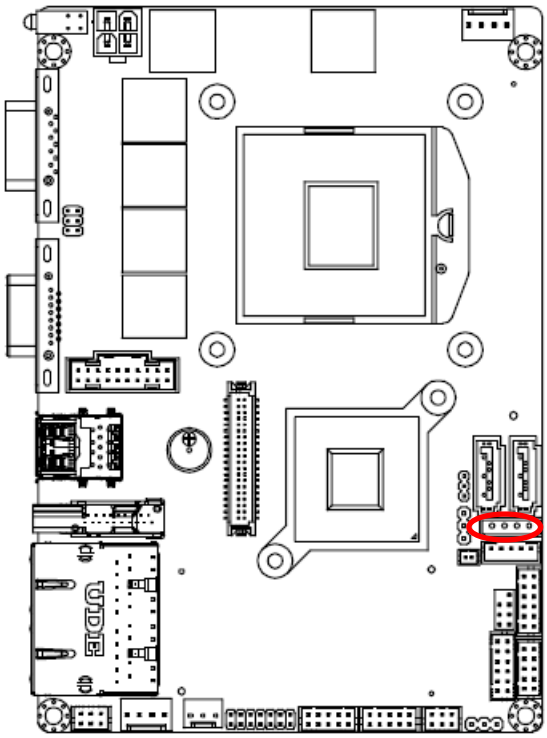
2.4.21 PS/2 keyboard & mouse connector (JKB/ MS1)

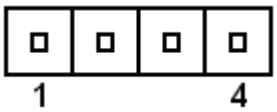




Signal	PIN	PIN	Signal
KBCK	1	2	KBDT
KBVCC	3	4	GND
MSCK	5	6	MSDT

2.4.22 HD power connector (HD_PWR1)

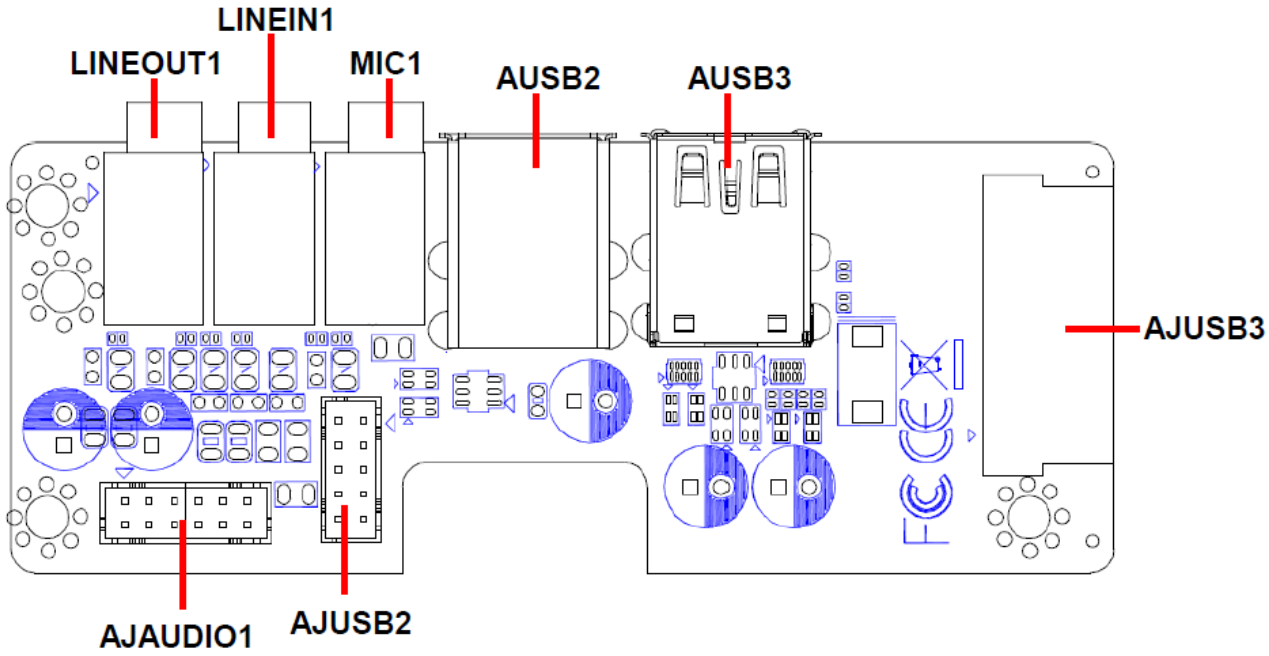




Signal	PIN
GND	1
GND	2
+5V	3
+5V	4

2.5 Audio / USB Daughter Board User's Guide

2.5.1 Jumper and Connector Layout



2.5.2 Jumper and Connector List

Connectors

Label	Function	Note
AUSB2	USB connector 2.0	
AUSB3	USB connector 3.0	
MIC1	Mic in connector	Phone Jack
LINEOUT1	Line out connector	Phone Jack
LINEIN1	Line in connector	Phone Jack
AJAUDIO1	Audio connector	6 x 2 header, pitch 2.00mm
AJUSB2	2.00mm USB connector	5 x 2 header, pitch 2.00mm
AJUSB3	2.00mm USB connector	10 x 2 header, pitch 2.00mm

2.5.3 Setting Jumper and Connector

Audio Connector (AJAUDIO1)

Signal	PIN	PIN	Signal
AFRONT1-L-OUT	1	2	AFRONT1-R-OUT
GND	3	4	GND
ALINE1-L-IN	5	6	ALINE1-R-IN
AMIC1-L-IN	7	8	AMIC1-R-IN
ALINE1-JD	9	10	AFRONT1-JD
GND	11	12	AMIC1-JD

2.00mm USB Connector (AJUSB2)

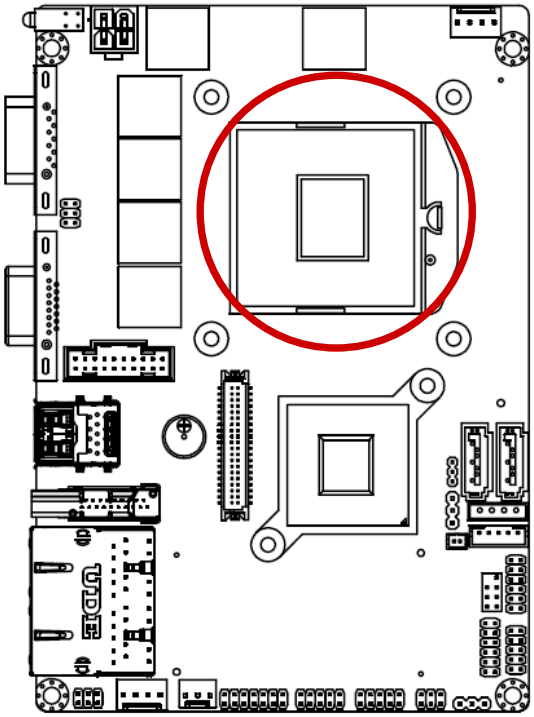
Signal	PIN	PIN	Signal
USB2VCC	1	2	USB2VCC
AUSB_PN2	3	4	AUSB_PN1
AUSB_PP2	5	6	AUSB_PP1
GND	7	8	GND
GND	9	10	GND

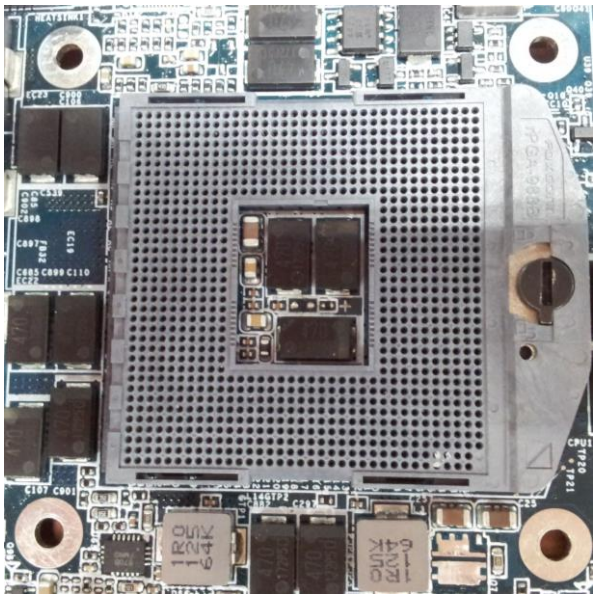
2.00mm USB Connector (AJUSB3)

Signal	PIN	PIN	Signal
AUSBVCC2	1		
AUSB3_RXN1_L	2	19	AUSBVCC3
AUSB3_RXP1_L	3	18	AUSB3_RXN2_L
GND	4	17	AUSB3_RXP2_L
AUSB3_TXN1_L	5	16	GND
AUSB3_TXP1_L	6	15	AUSB3_TXN2_L
GND	7	14	AUSB3_TXP2_L
AUSB_PN3	8	13	GND
AUSB_PP3	9	12	AUSB_PN4
NC	10	11	AUSB_PP4

2.6 Installing the CPU

2.6.1 Locate the CPU socket on the board.

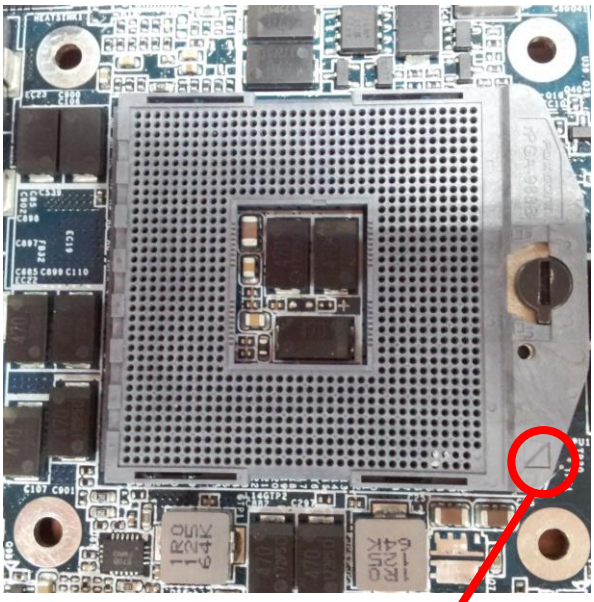




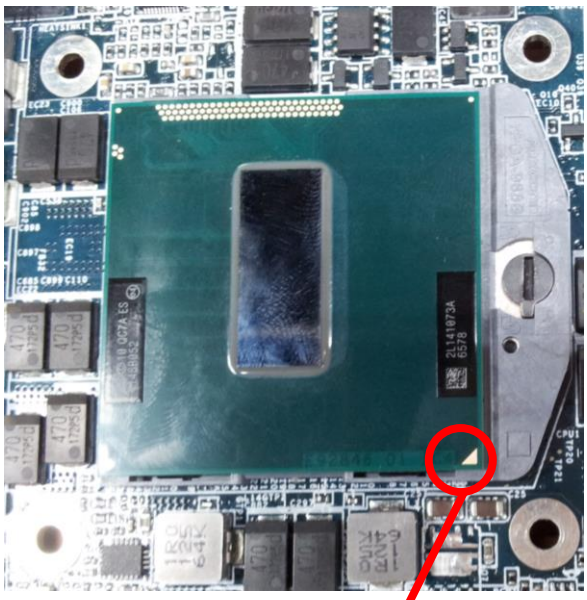
Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

2.6.2 Separate CPU cooler and its base first by screw drawer

1. Position the CPU over the socket, making sure that the gold triangle is the same side as CPU Socket triangle

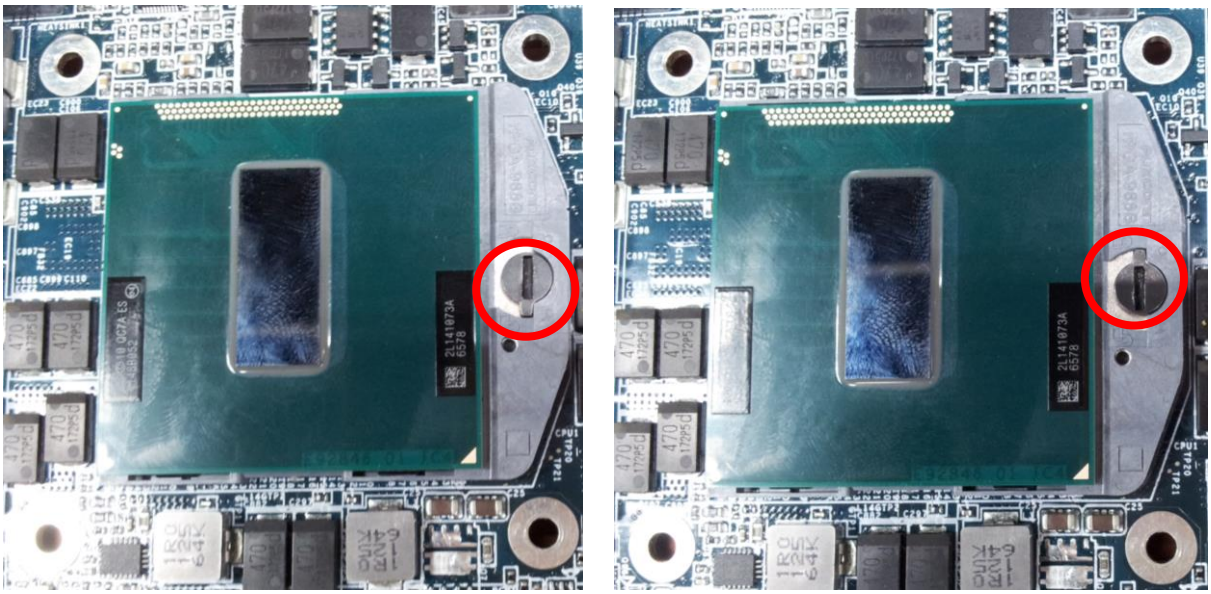


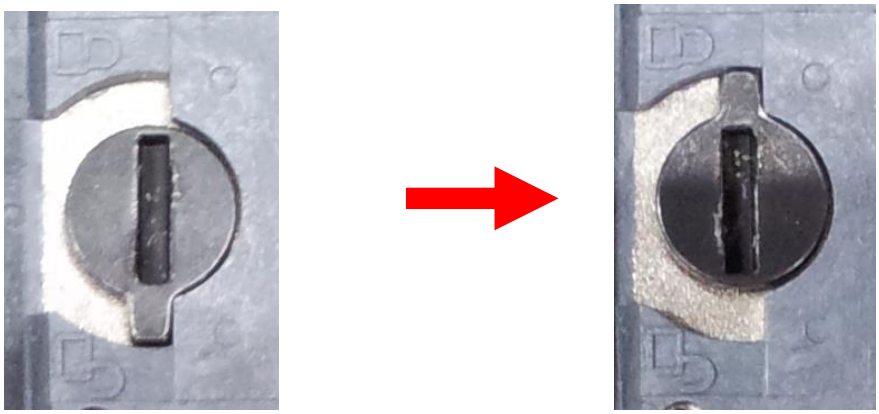
CPU Socket triangle



Gold triangle

2. turn the CPU lock clockwise to lock CPU





The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

3. BIOS Setup

3.1 Introduction

The BIOS setup program allows users to modify the basic system configuration. In this following chapter will describe how to access the BIOS setup program and the configuration options that may be changed.

3.2 Starting Setup

The AMI BIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:
By pressing <Del> immediately after switching the system on, or
By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test).

Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to.

Press F1 to Continue, DEL to enter SETUP

3.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Button	Description
↑	Move to previous item
↓	Move to next item
←	Move to the item in the left hand
→	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Previous Values.
F3 key	Optimized defaults
F4 key	Save & Exit Setup

- **Navigating Through The Menu Bar**

  Use the left and right arrow keys to choose the menu you want to be in.

Note: Some of the navigation keys differ from one screen to another.

- **To Display a Sub Menu**

  Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A "➢" pointer marks all sub menus.

3.4 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

3.5 In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMI BIOS supports an override to the CMOS settings which resets your system to its defaults.

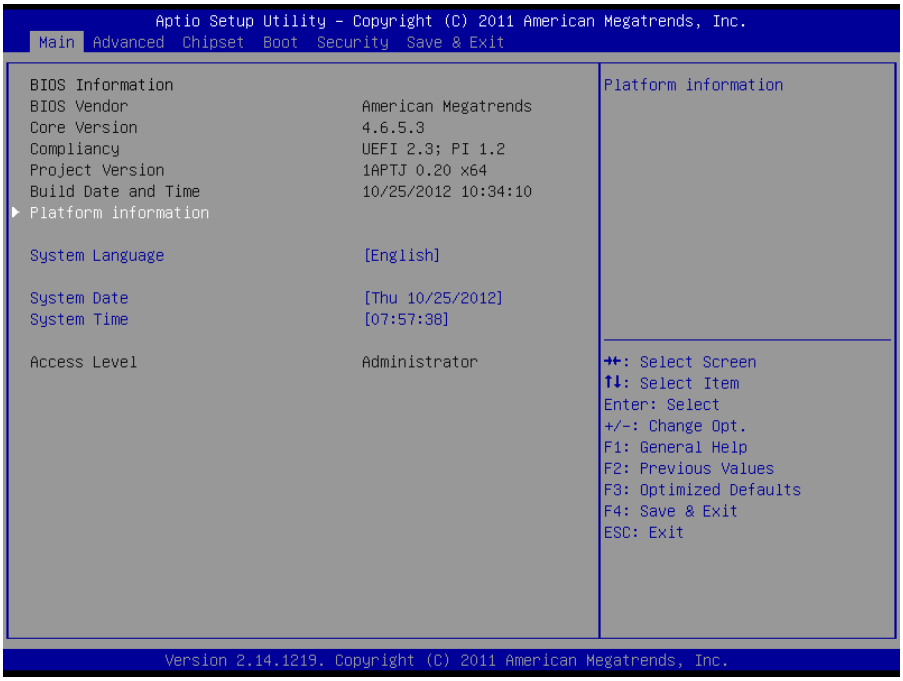
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

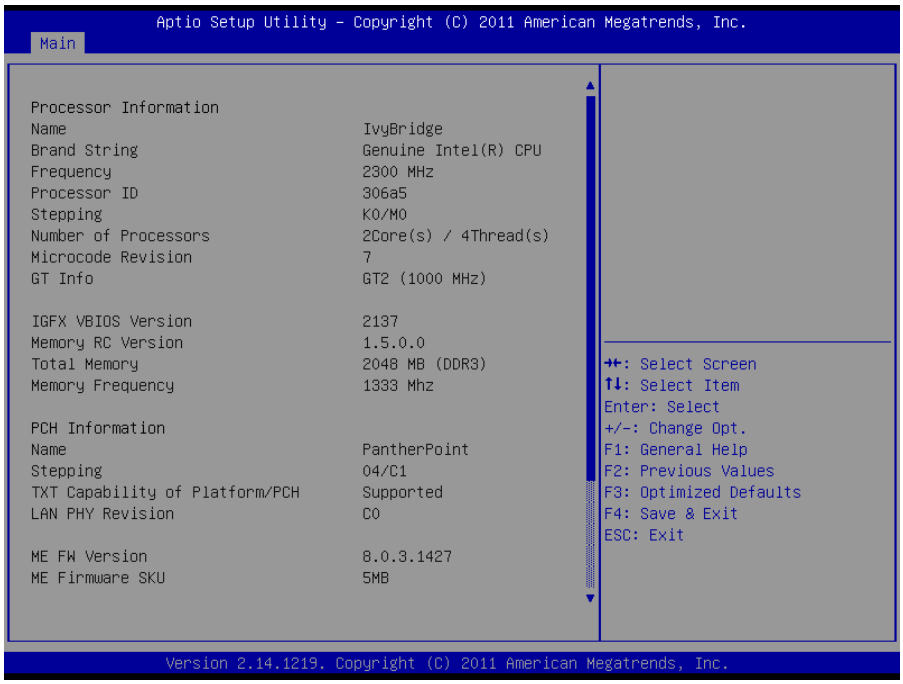
3.6 BIOS setup

Once you enter the AMI BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

3.6.1 Main Menu

This section allows you to record some basic hardware configurations in your computer and set the system clock.





3.6.1.1 System Language

This option allows choosing the system default language.

3.6.1.2 System Date

Use the system date option to set the system date. Manually enter the day, month and year.

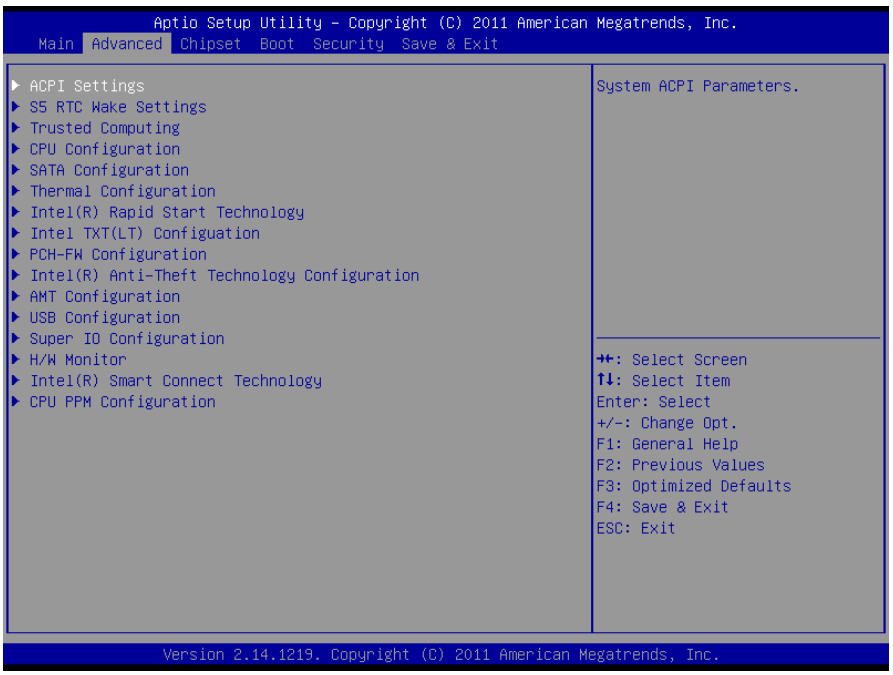
3.6.1.3 System Time

Use the system time option to set the system time. Manually enter the hours, minutes and seconds.

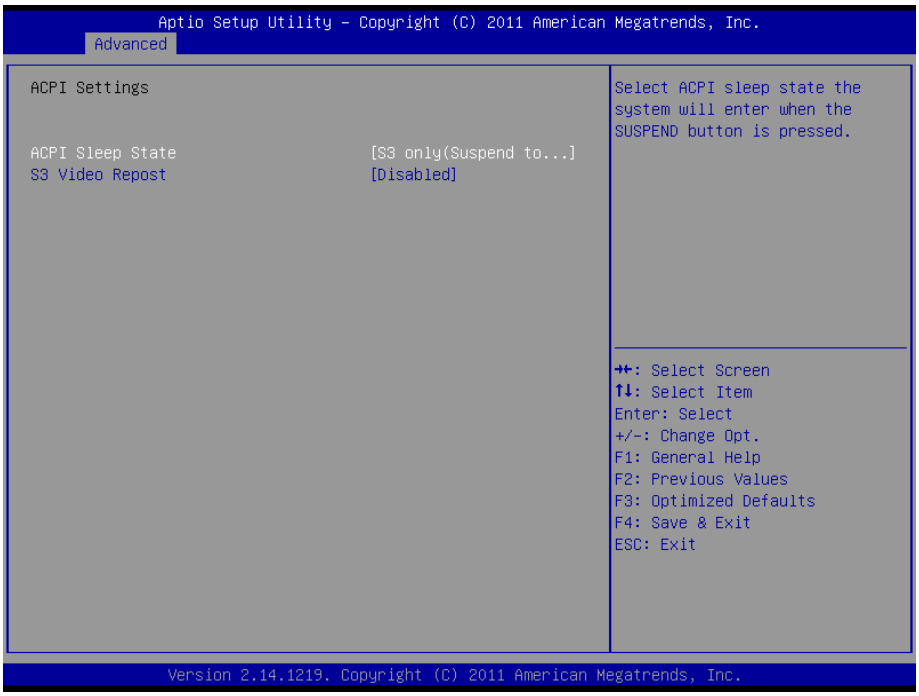
Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.
Visit the Avalue website (www.avalue.com.tw) to download the latest product and BIOS information.

3.6.2 Advanced Menu

This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.

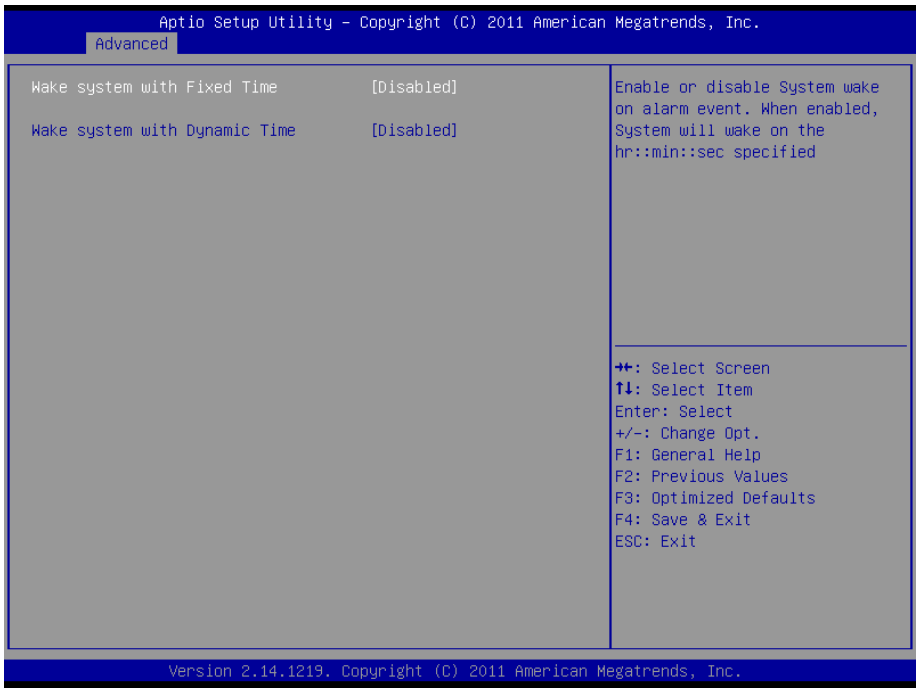


3.6.2.1 APCI Settings



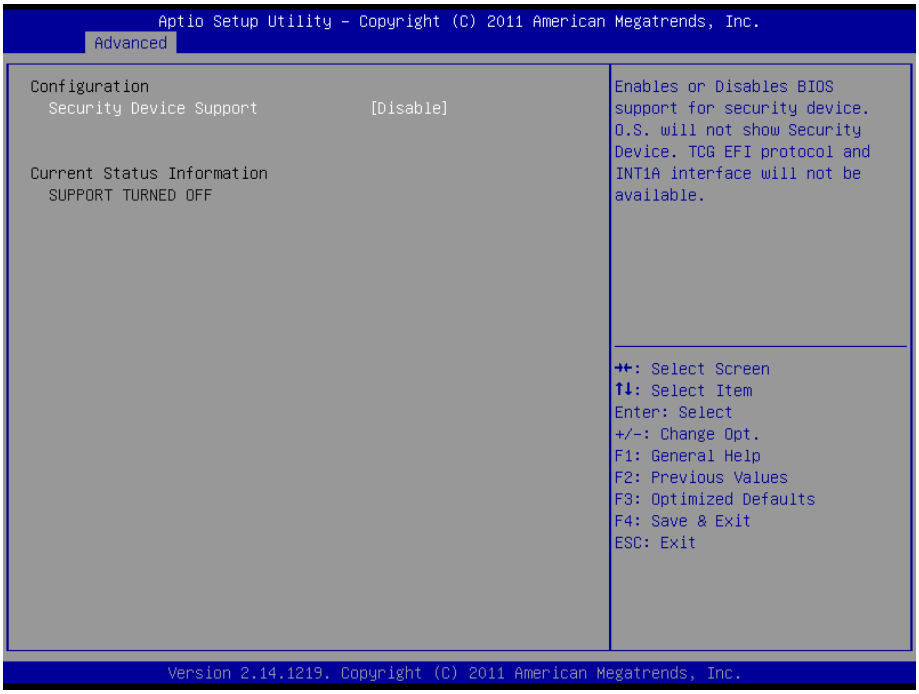
Item	Options	Description
APCI Sleep State	Suspend Disabled S1 only(CPU Stop Clock) S3 only(Suspend to RAM)**[Default]**	Select ACPI sleep state the system will enter when the SUSPEND button is pressed.
S3 Video Repost	Disabled**[Default]** Enabled	Enable or Disable S3 Video Repost.

3.6.2.2 S5 RTC Wake Settings



Item	Options	Description
Wake system with Fixed Time	Disabled**[Default]**, Enabled	Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.
Wake system with Dynamic Time	Disabled**[Default]**, Enabled	Enable or disable System wake on alarm event. When enabled, System will wake on the current time + Increase minute(s).

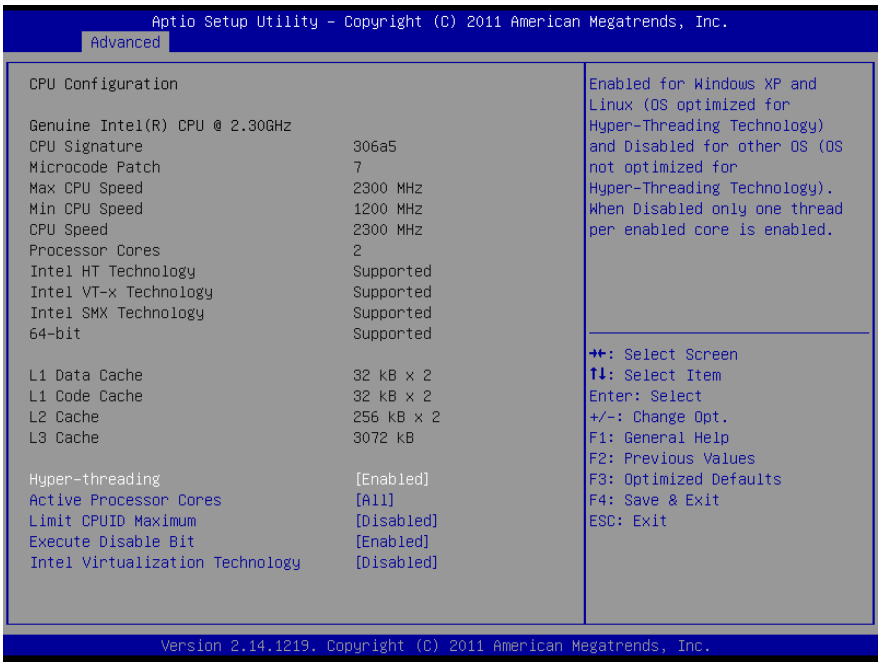
3.6.2.3 Trusted Computing



Item	Options	Description
Security Device Support	Disable**[Default]**, Enable	Enables or Disables BIOS support for security device. O.S will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

3.6.2.4 CPU Configuration

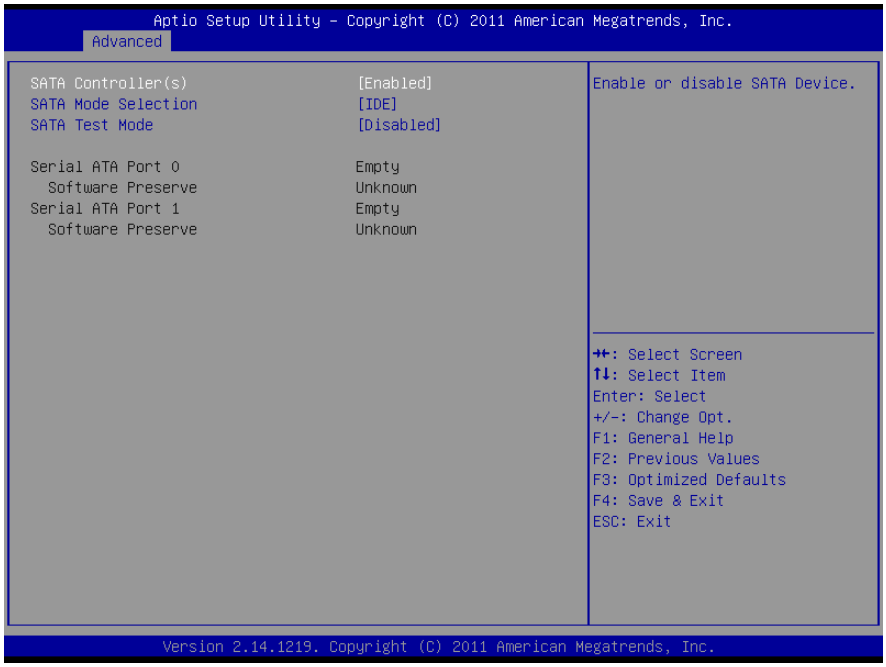
Use the CPU configuration menu to view detailed CPU specification and configure the CPU.



Item	Options	Description
Hyper-threading	Disabled Enabled**[Default]**	Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.
Active Processor Cores	All**[Default]** 1/2/3	Number of cores to enable in each processor package
Limit CPUID Maximum	Disabled**[Default]** Enabled	Disabled for Windows XP
Execute Disable Bit	Disabled Enabled**[Default]**	XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.)
Intel Virtualization Technology	Disabled**[Default]** Enabled	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

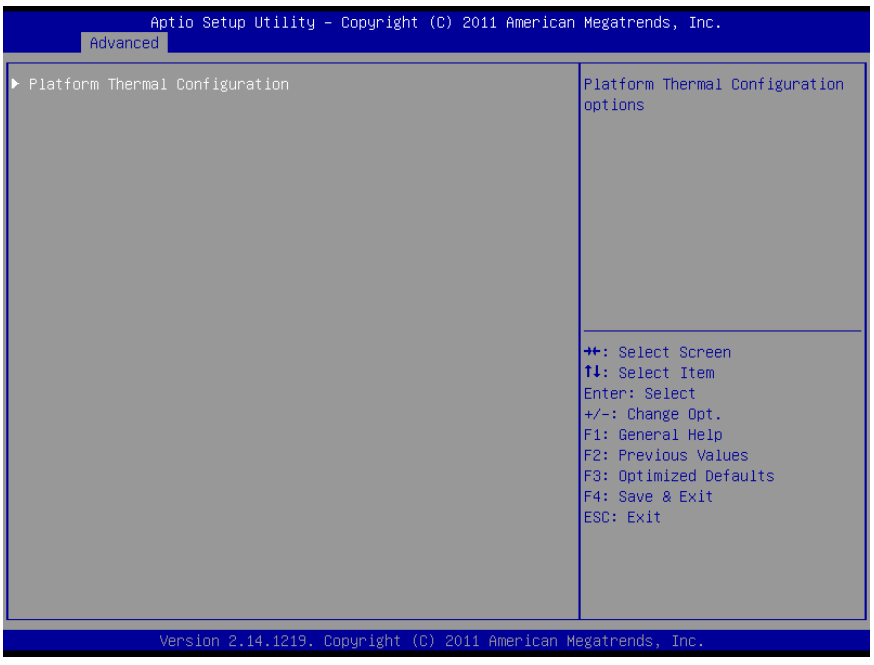
3.6.2.5 SATA Configuration

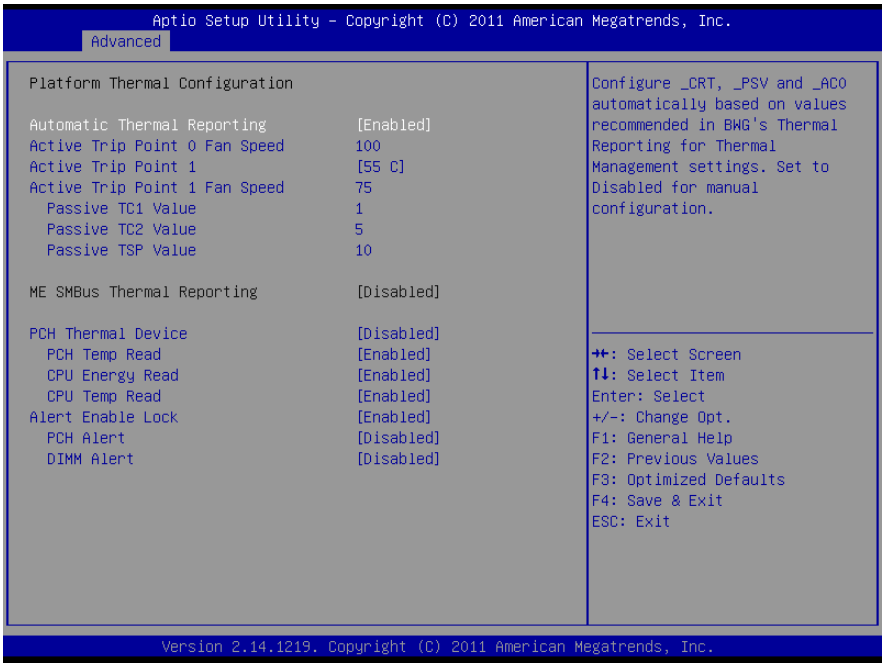
It allows you to select the operation mode for SATA controller.



Item	Options	Description
SATA Controller(s)	Enabled**[Default]** Disabled	Enable or disable SATA Device.
SATA Mode Selection	IDE**[Default]** AHCI RAID	Determines how SATA controller(s) operate.
SATA Test Mode	Enabled Disabled**[Default]**	Enable or disable Test Mode.

3.6.2.6 Thermal Configuration

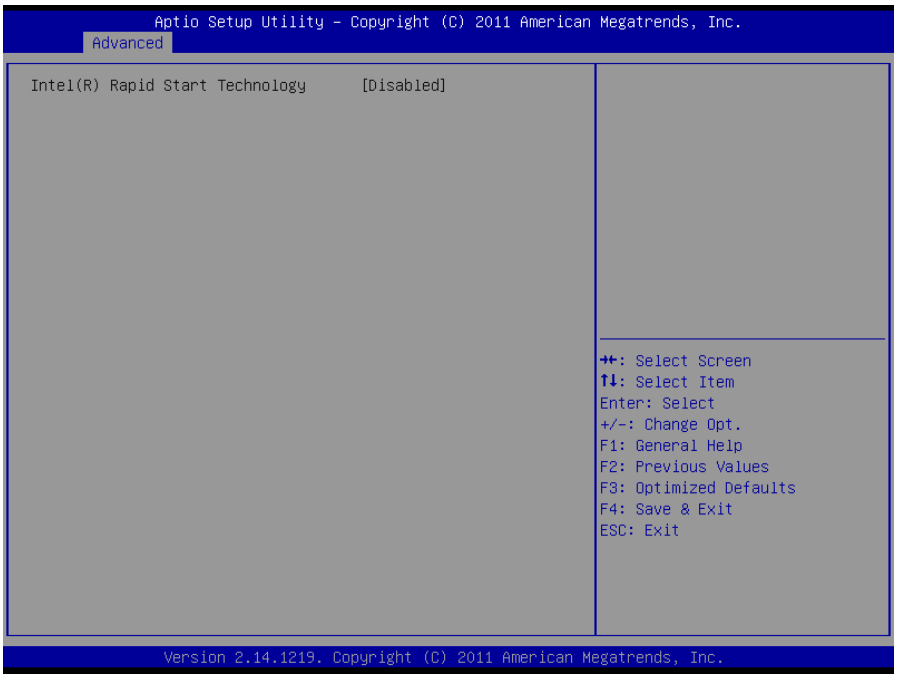




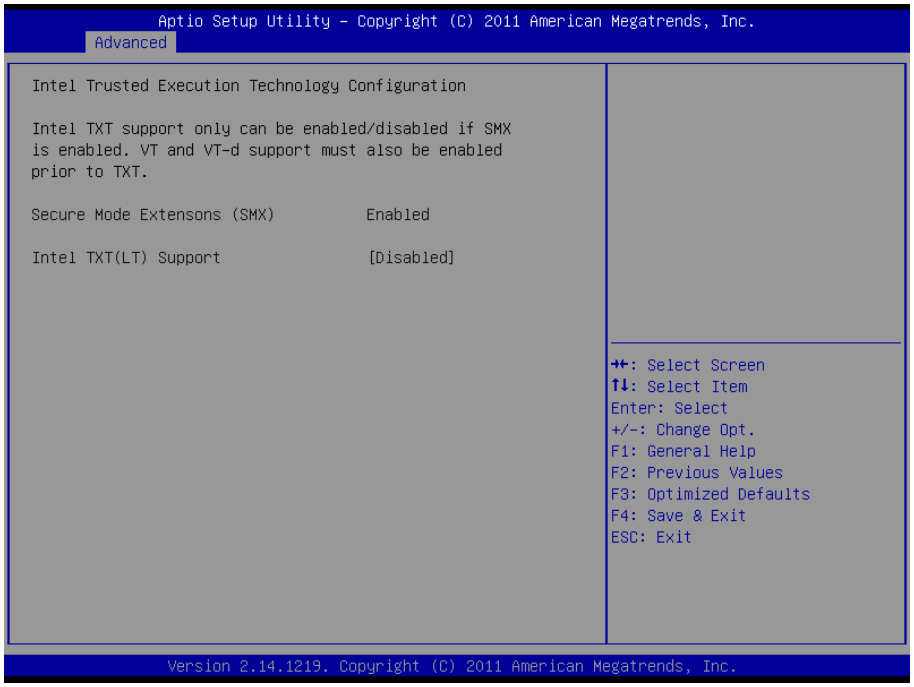
Item	Options	Description
Automatic Thermal Reporting	Disabled, Enabled**[Default]**	Configure _CRT, _PSV and _AC0 automatically based on values recommended in BWG's Thermal Reporting for Thermal Management settings. Set to Disabled for manual configuration.
Active Trip Point 0 Fan Speed	0 ~ 100**[Default]**	Active Trip Point 0 Fan Speed in percentage. Value must be between 0 (Fan off) -100 (Max fan speed). This is the speed at which fan will run when Active Trip Point 0 is crossed.
Active Trip Point 1	Disabled 15/23/31/39/47/55**[Default]**/63/71/79/87/95 /103/111/119C	This value controls the temperature of the ACPI Active Trip Point 1 - the point in which the OS will turn the processor fan on Active Trip Point 1 Fan Speed.
Active Trip Point 1 Fan Speed	0 ~ 100 (75 **[Default]**)	Active Trip Point 1 Fan Speed in percentage. Value must be between 0 (Fan off) – 100 (Max fan speed). This value must be less than Active Trip Point 0 Fan speed. This is the speed at which fan will run when Active Trip 1 is crossed.
Passive TC1 Value	1-16 (1 **[Default]**)	This value sets the TC1 value for the ACPI Passive Cooling Formula. Range 1-16
Passive TC2 Value	1-16 (5 **[Default]**)	This value sets the TC2 value for the ACPI Passive Cooling Formula. Range 1-16
Passive TSP Value	2 ~ 32 (10 **[Default]**)	This item sets the TSP value for the ACPI Passive Cooling Formula. It represents in tenths of a second how often the OS will read the temperature when passive cooling is enabled. Range 2- 32
PCH Thermal Device	Enable or Disable PCH Thermal Device (D31:F6)	
PCH Temp Read	Disabled, Enabled**[Default]**	PCH Temperature Read Enable
CPU Energy Read	Disabled, Enabled**[Default]**	CPU Energy Read Enable
CPU Temp Read	Disabled, Enabled**[Default]**	CPU Temperature Read Enable

Alert Enable Lock	Disabled, Enabled**[Default]**	Lock all Alert Enable settings
PCH Alert	Disabled**[Default]**, Enabled	PCH Alert pin enable
DIMM Alert	Disabled**[Default]**, Enabled	DIMM Alert pin enable

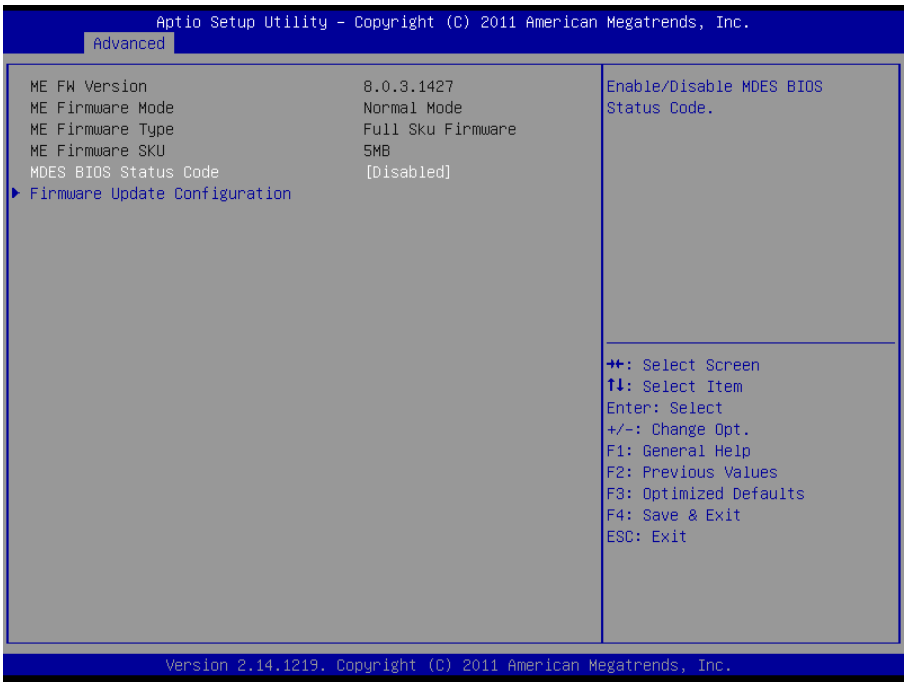
3.6.2.7 Intel(R) Rapid Start Technology



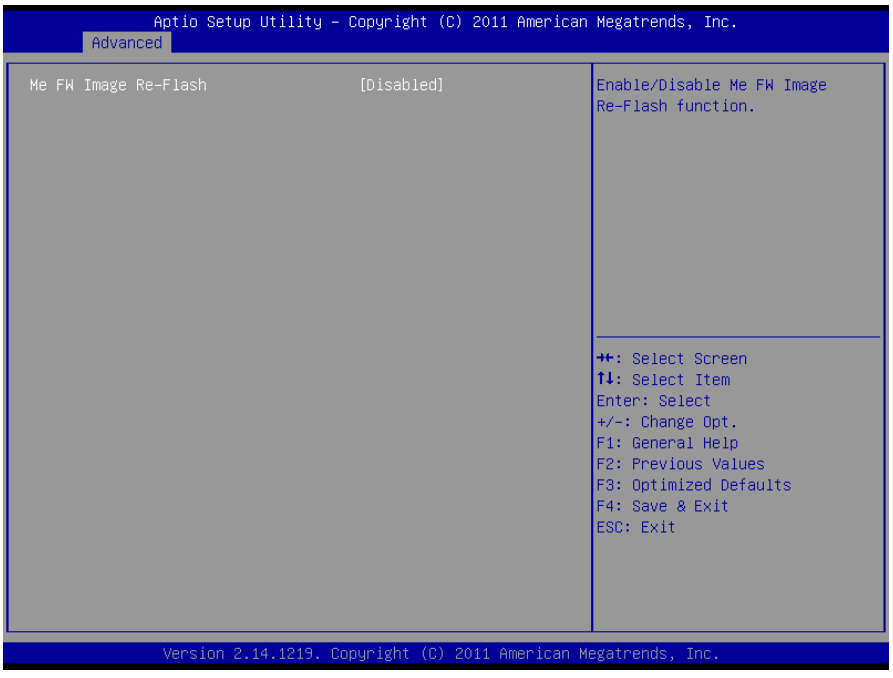
3.6.2.8 Intel TXT (LT) Configuration



3.6.2.9 PCH-FW Configuration

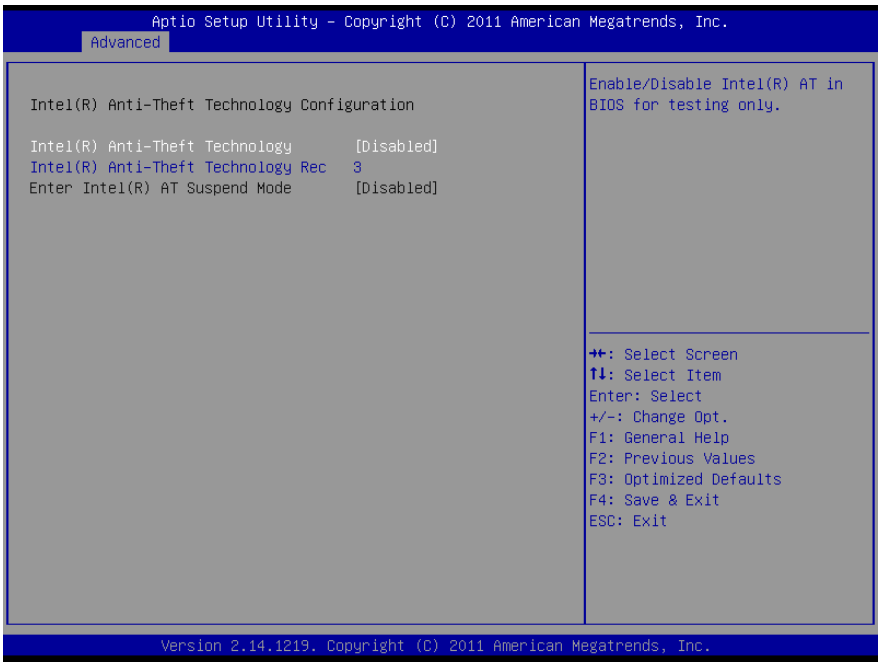


Item	Options	Description
MDES BIOS Status Code	Disabled**[Default]** Enabled	Enable/Disable MDES BIOS Status Code.
Firmware Update Configuration	Configure Management Engine Technology Parameters.	



Item	Options	Description
Me FW Image Re-Flash	Disabled**[Default]** Enabled	Enable/Disable Me FW Image Re-Flash function.

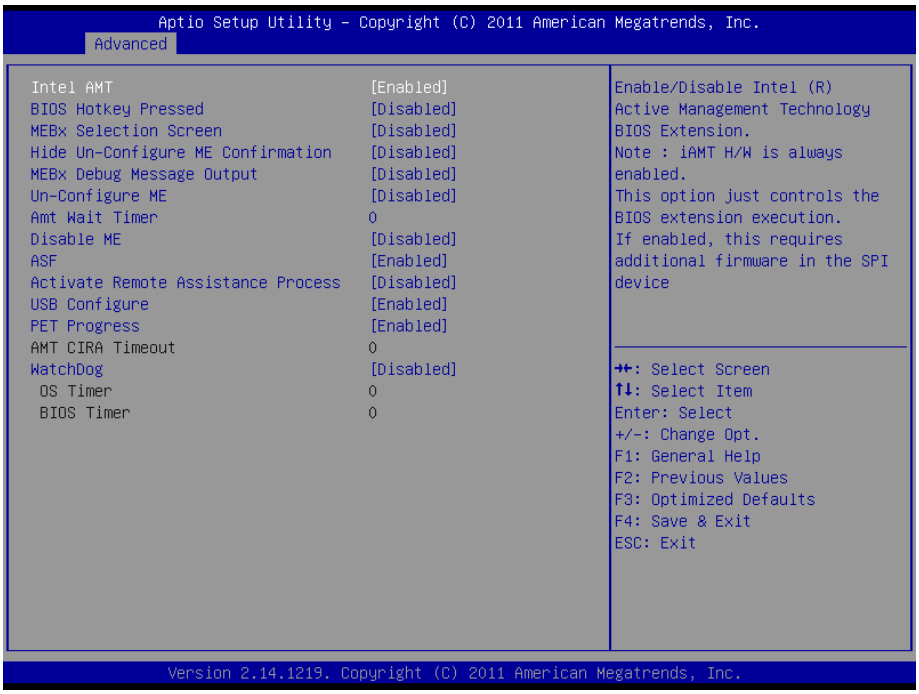
3.6.2.10 Intel(R) Anti-Theft Technology Configuration



Item	Options	Description
Intel(R) Anti-Theft Technology	Enabled Disabled**[Default]**	Enable/Disable Intel(R) AT in BIOS for testing only
Intel(R) Anti-Theft Technology Recovery	1 ~ 64	Set the number of times Recovery attemped will be allowed
Enter Intel(R) AT Suspend Mode	Enabled Disabled**[Default]**	Request that platform enter Intel(R) AT Suspend Mode

3.6.2.11 AMT Configuration

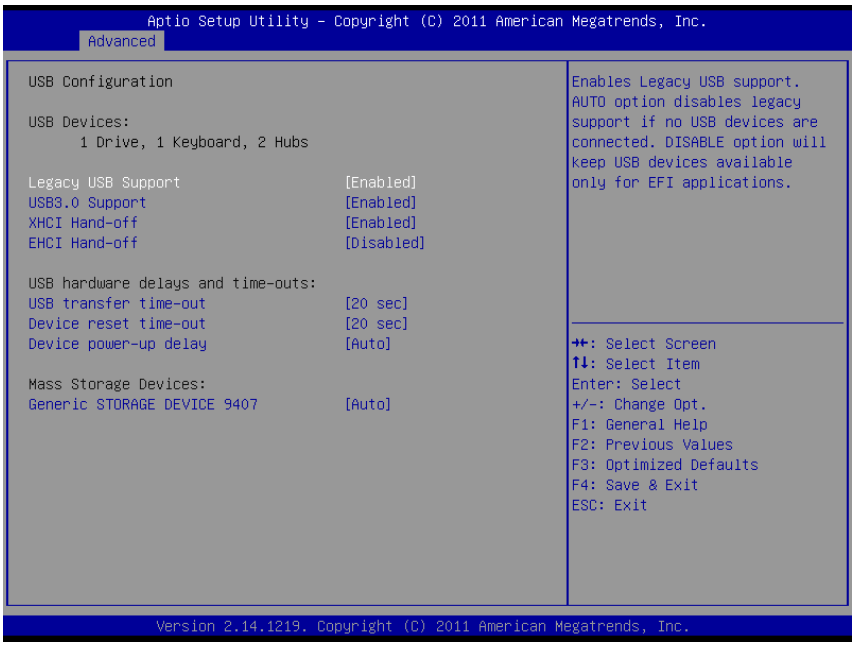
Intel AMT allows hardware-based remote management, security, power-management, and remote-configuration features.



Item	Options	Description
Intel AMT	Enabled**[Default]** Disabled	Enable/Disable Intel ® Active Management Technology BIOS Extension. 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
BIOS Hotkey Pressed	OEMFLag Bit 1: Enable/Disable BIOS hotkey press.	
MEBx Selection Screen	OEMFLag Bit 2: Enable/Disable MEBx selection screen	
Hide Un-Configure ME Confirmation	OEMFLag Bit 6: Hide Un-Configure ME without password Confirmation Prompt.	
MEBx Debug Message Output	OEMFLag Bit 14: Enable MEBx debug message output	
Un-configure ME	OEMFLag Bit 15: Un-Configure ME without password	
Amt Wait Timer	**0**	Set time to wait before sending ASF_GET_BOOT_OPTIONS.
Disable ME	Enabled**[Default]** Disabled	Set ME to Soft Temporary Disabled.
ASF	Enabled**[Default]** Disabled	Enable/Disable Alert Specification Format.
Active Remote Assistance Process	Trigger CIRA boot.	
USB Configure	Enabled**[Default]** Disabled	Enable/Disable USB Configure function.
PET Progress	Enabled**[Default]** Disabled	User can Enable/Disable PET Events progress to recieve PET events or not..
WatchDog	Enabled Disabled**[Default]**	Enable/Disable WatchDog Timer.

3.6.2.12 USB Configuration

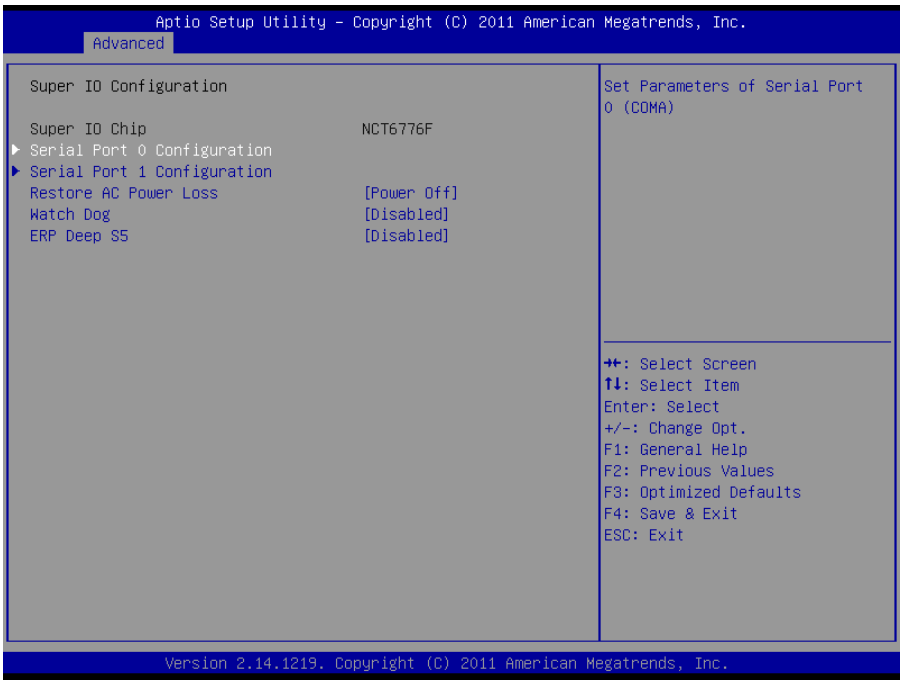
The USB Configuration menu helps read USB information and configures USB settings.



Item	Options	Description
Legacy USB Support	Enabled**[Default]** Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
USB3.0 Support	Enabled**[Default]** Disabled	Enable/Disable USB3.0 (XHCI) Controller support.
XHCI Hand-off	Enabled**[Default]** Disabled	This is a workaround for OSew without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
EHCI Hand-off	Enabled Disabled**[Default]**	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	1 sec 5 sec 10 sec 20 sec**[Default]**	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 sec 20 sec**[Default]** 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto**[Default]** Manual	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 form Hub descriptor.

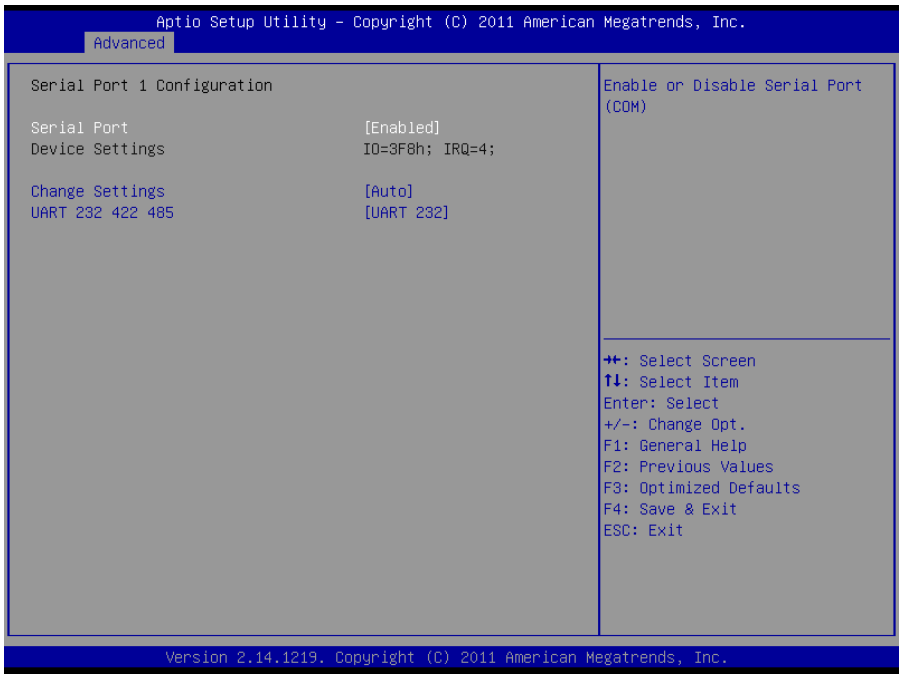
3.6.2.13 Super IO Configuration

You can use this item to set up or change the Super IO configuration for serial ports. Please refer to 3.6.2.13.1 and 3.6.2.13.2 for more information.



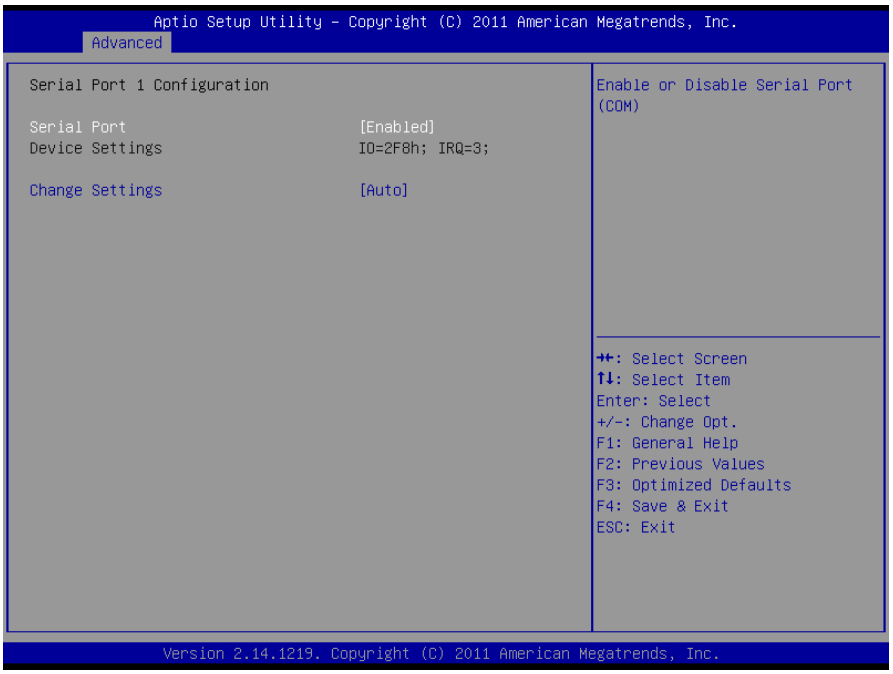
Item	Options	Description
Restore AC Power Loss	Power Off**[Default]** Power On	Specify what state to go to when power is re-applied after a power failure (G3 state)
Watch Dog	Disabled**[Default]** 30 sec 40 sec 50 sec 60 sec 2 min 10 min 30 min	Set SIO watch dog timer.
ERP Deep S5	Enabled Disabled**[Default]**	Deep S5 for power saving.

3.6.2.13.1 Serial Port 0 Configuration



Item	Option	Description
Serial Port	Enabled, Disabled**[Default]**	Enable or Disable Serial Port (COM)
Change Settings	Auto**[Default]** IO=3F8h; IRQ=4, IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12 IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12 IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12 IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12	Select an optimal setting for Super IO device.
UART 232 422 485	UART 232**[Default]**, UART 422, UART 485	Change the Serial Port as RS232/ 422/ 485

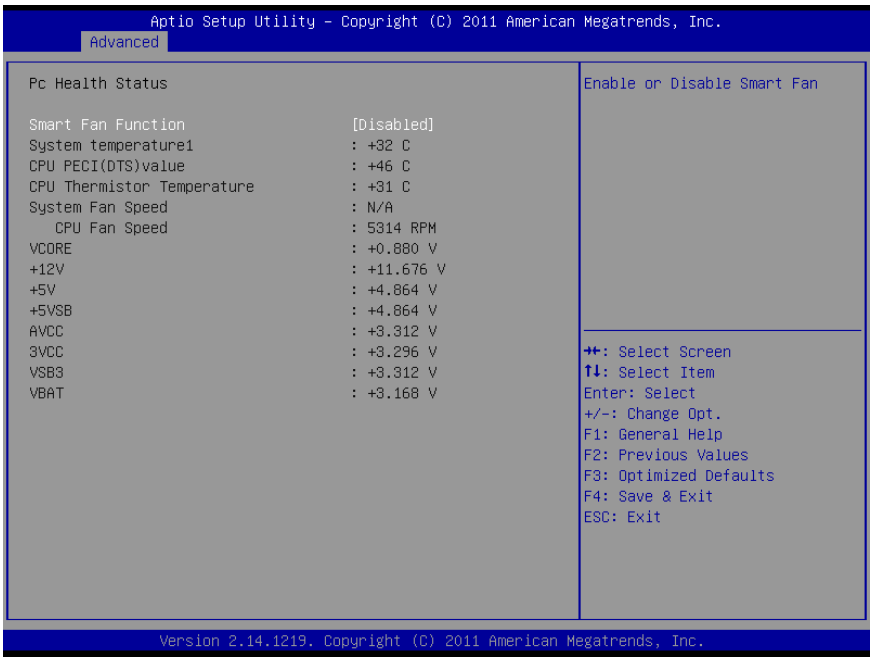
3.6.2.13.2 Serial Port 1 Configuration



Item	Option	Description
Serial Port	Enabled, Disabled**[Default]**	Enable or Disable Serial Port (COM)
Change Settings	Auto**[Default]** IO=2F8h; IRQ=3 IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12 IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12 IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12 IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12	Select an optimal setting for super IO device.

3.6.2.14 Hardware Monitor

Displays system health status



Item	Description
Smart Fan Function	Enable or Disable Smart Fan.

The following system temperature, fan speed and voltage are monitored.

Temperature:

- System Temperature
- CPU Thermistor Temperature

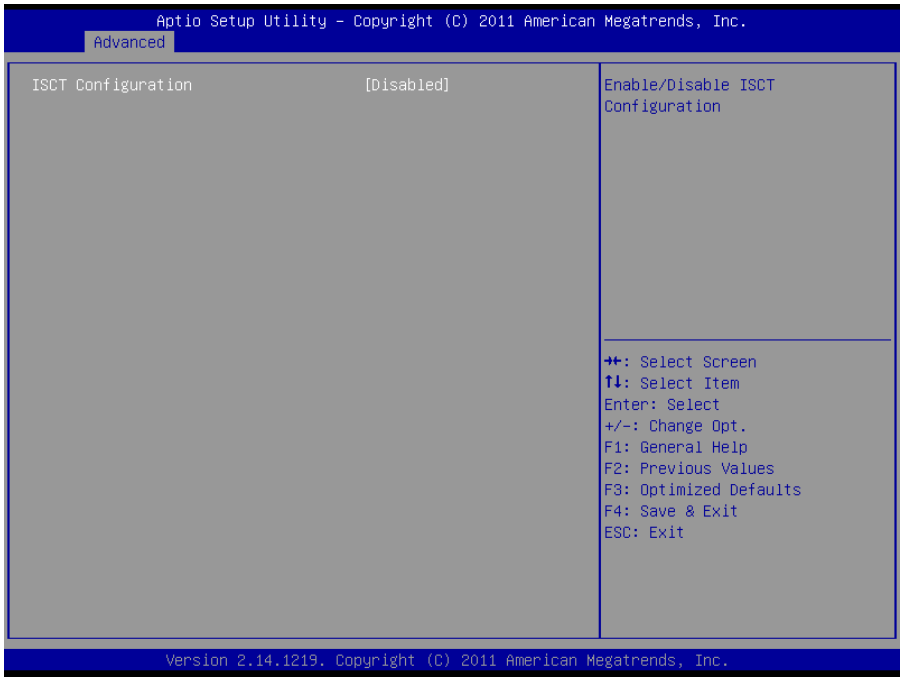
Fan Speed:

- System Fan Speed
- CPU Fan speed

Voltage:

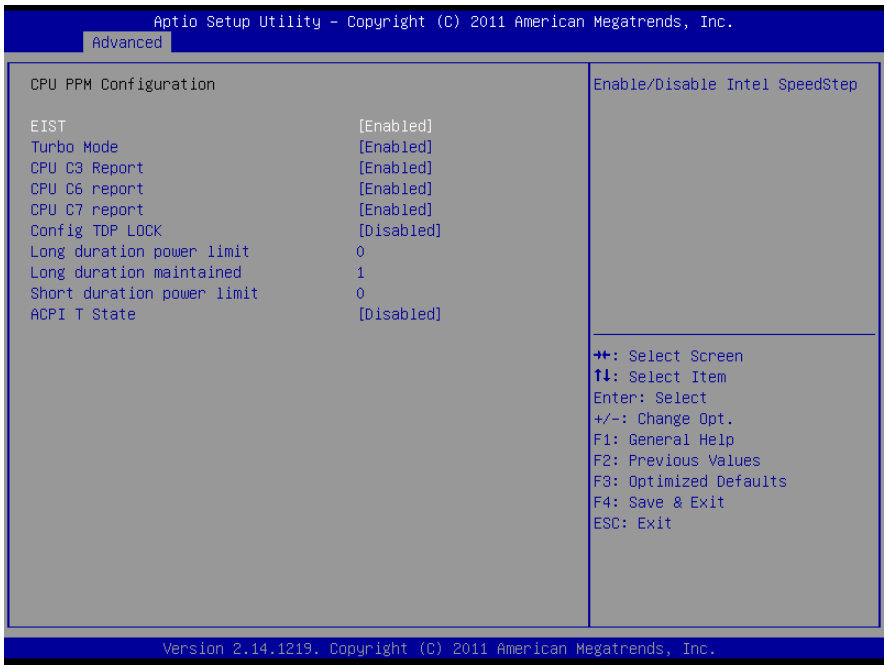
- VCORE
- +12V
- +5V
- +5VSB
- AVCC
- 3VCC
- VSB3
- VBAT

3.6.2.15 Intel® Smart Connect Technology



Item	Description	
ISCT Configuration	Enabled Disabled**[Default]**	Enable/Disable ISCT Configuration.

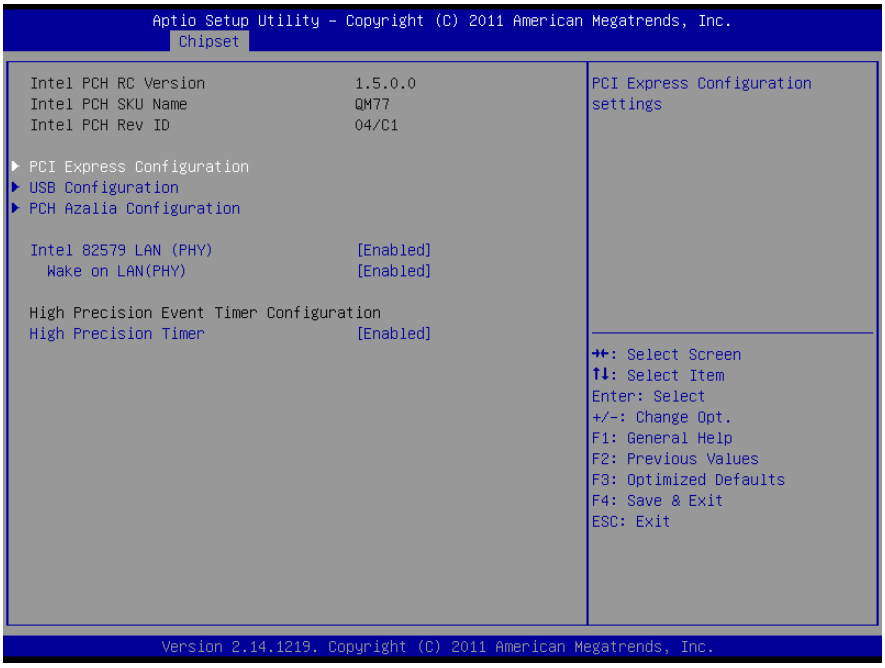
3.6.2.16 CPU PPM Configuration



Item	Option	Description
EIST	Disabled Enabled**[Default]**	Enable or Disable Intel Speedstep.
Turbo Mode		Turbo Mode.
CPU C3/6/7 Report		Enable or Disable CPU C3(ACPI C2)/6(ACPI C3)/7(ACPI C3) report to OS.
Config TDP LOCK	Disabled**[Default]** Enabled	Lock the Config TDP Control register.
Long duration power limit	Long duration power limit in Watts, 0 means use factory default.	
Long duration maintained	Time window which the long duration power is maintained.	
Short duration power limit	Short duration power limit in Watts, 0 means use factory default.	
ACPI T State	Disabled**[Default]** Enabled	Enable/Disable ACPI T state support.

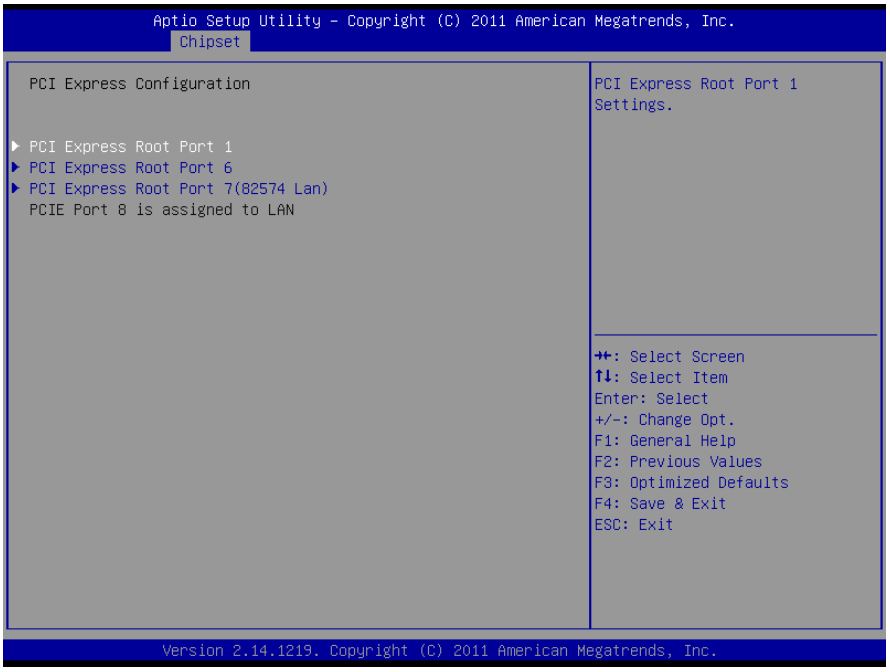
3.6.3 Chipset

3.6.3.1 PCH-IO Configuration



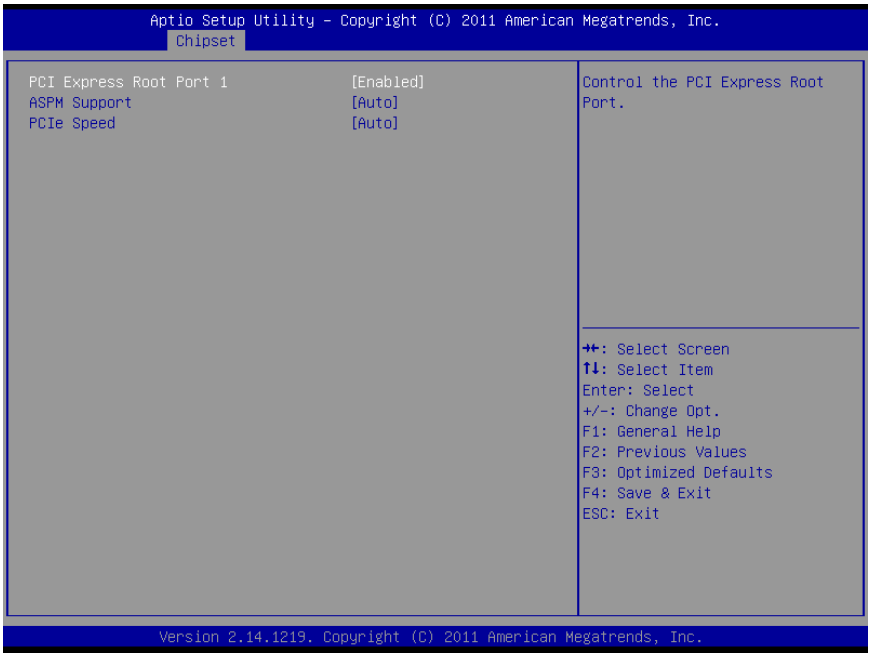
Item	Option	Description
PCI Express Configuration	PCI Express Configuration settings.	
USB Configuration	USB Configuration settings.	
PCH Azalia Configuration	PCH Azalia Configuration settings.	
Intel 82579 LAN (PHY)	Disabled Enabled**[Default]**	Enable or disable onboard NIC.
Wake on LAN (PHY)	Disabled Enabled**[Default]**	Enable or disable integrated LAN to wake the system. (The Wake On LAN cannot be disabled if ME is on at Sx state.)
High Precision Timer	Disabled Enabled**[Default]**	Enable or Disable the High Precision Event Timer.

3.6.3.1.1 PCI Express Configuration



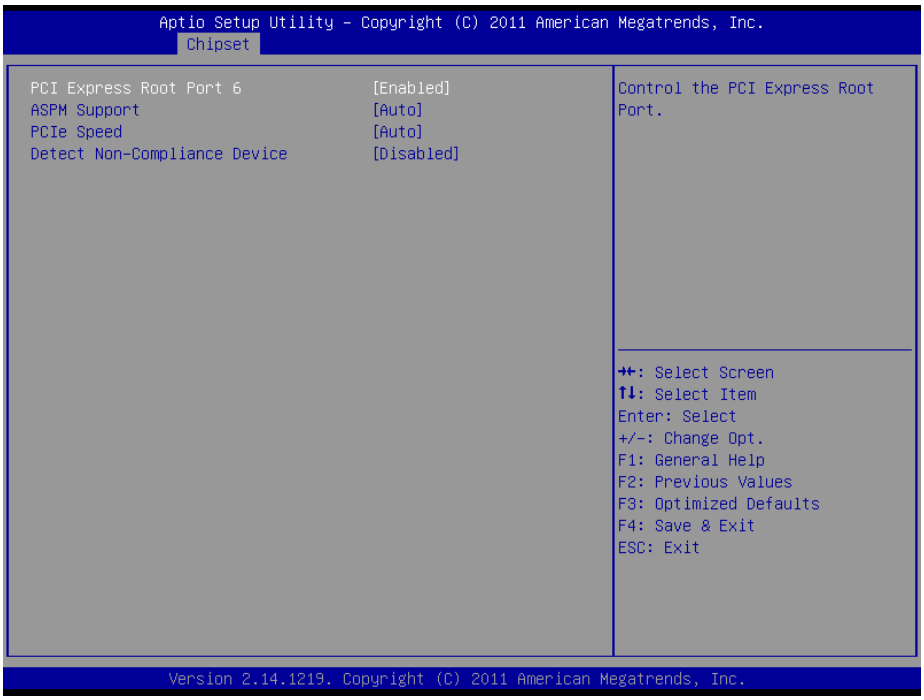
Item	Description
PCI Express Root Port 1	PCI Express Root Port 1 Settings.
PCI Express Root Port 6	PCI Express Root Port 6 Settings.
PCI Express Root Port 7(82574 Lan)	PCI Express Root Port 7 Settings.

3.6.3.1.1.1 PCI Express Root Port 1



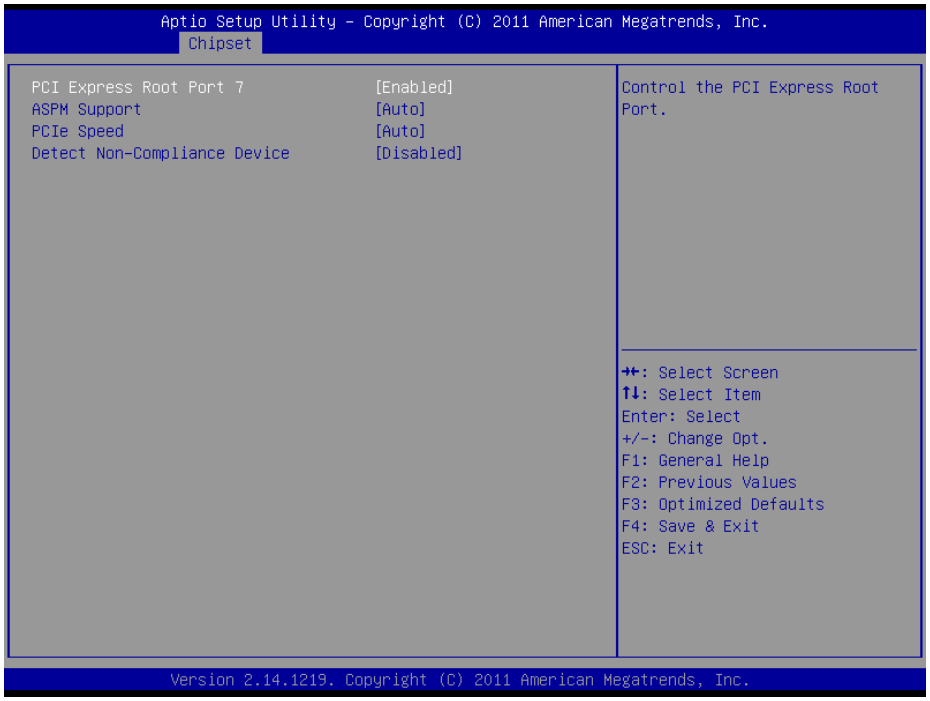
Item	Option	Description
PCI Express Root Port 1	Disabled Enabled**[Default]**	Control the PCI Express Root Port.
ASPM Support	Disabled L0s L1 L0sL1 Auto**[Default]**	Set the ASPM Level: Force L0s-Force all links to L0s State: AUTO-BIOS auto configure: DISABLE-Disables ASPM.
PCIe Speed	Auto**[Default]** Gen1 Gen2	Select PCI Express port speed.
Detect Non-Compliance Device	Disabled**[Default]** Enabled	Detect Non-Compliance PCI Express Device, If enable, it will take more time at POST time.

3.6.3.1.1.2 PCI Express Root Port 6



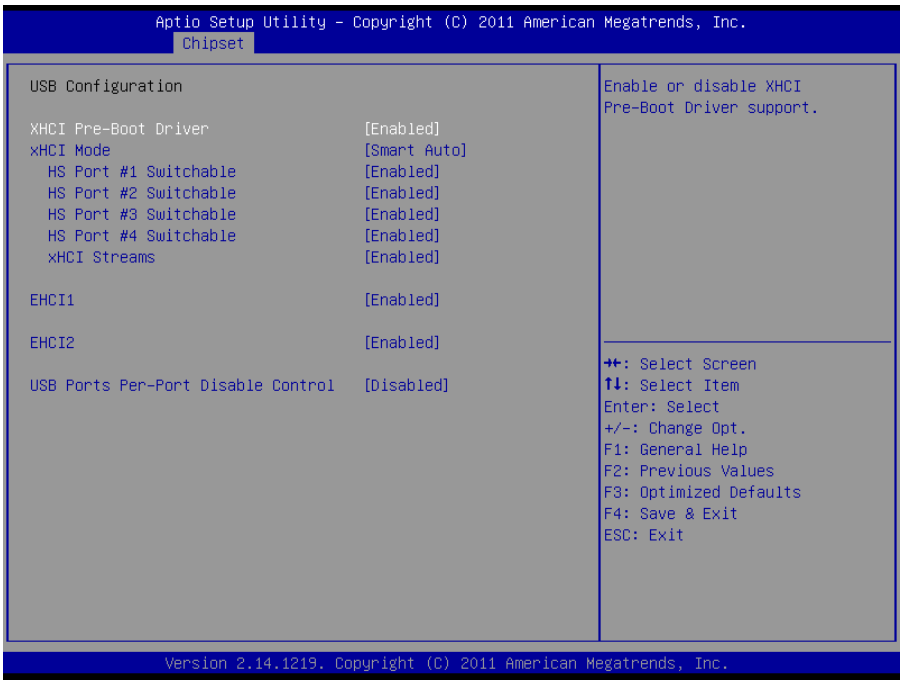
Item	Option	Description
PCI Express Root Port 6	Disabled Enabled**[Default]**	Control the PCI Express Root Port.
ASPM Support	Disabled L0s L1 L0sL1 Auto**[Default]**	Set the ASPM Level: Force L0s-Force all links to L0s State: AUTO-BIOS auto configure: DISABLE-Disables ASPM.
PCIe Speed	Auto**[Default]** Gen1 Gen2	Select PCI Express port speed.
Detect Non-Compliance Device	Disabled[Default] Enabled	Detect Non-Compliance PCI Express Device, If enable, it will take more time at POST time.

3.6.3.1.1.3 PCI Express Root Port 7(82574 LAN)



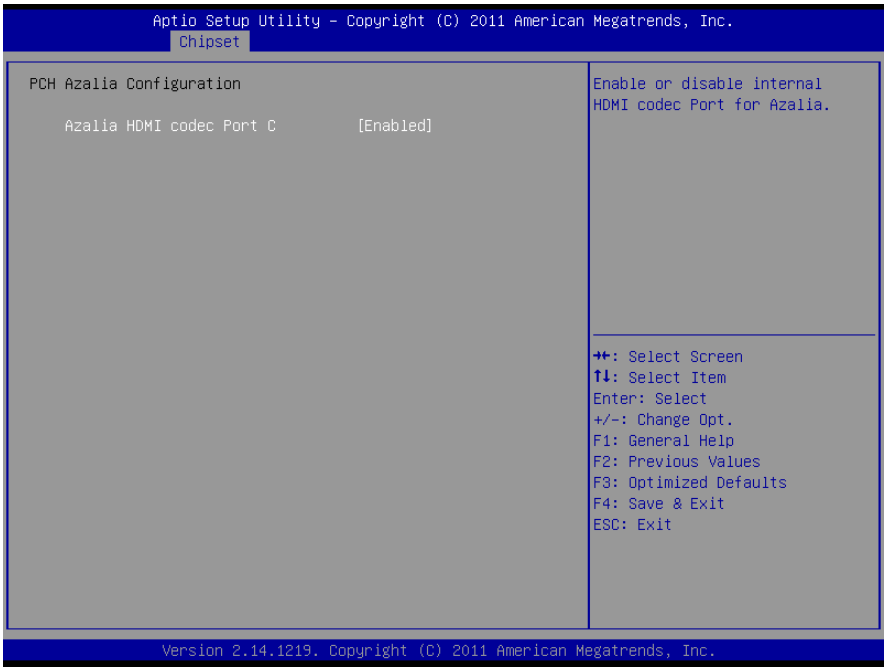
Item	Option	Description
PCI Express Root Port 7	Disabled Enabled**[Default]**	Control the PCI Express Root Port.
ASPM Support	Disabled L0s L1 L0sL1 Auto**[Default]**	Set the ASPM Level: Force L0s-Force all links to L0s State: AUTO-BIOS auto configure: DISABLE-Disables ASPM.
PCIe Speed	Auto**[Default]** Gen1 Gen2	Select PCI Express port speed.
Detect Non-Compliance Device	Disabled**[Default]** Enabled	Detect Non-Compliance PCI Express Device, If enable, it will take more time at POST time.

3.6.3.1.2 USB Configuration



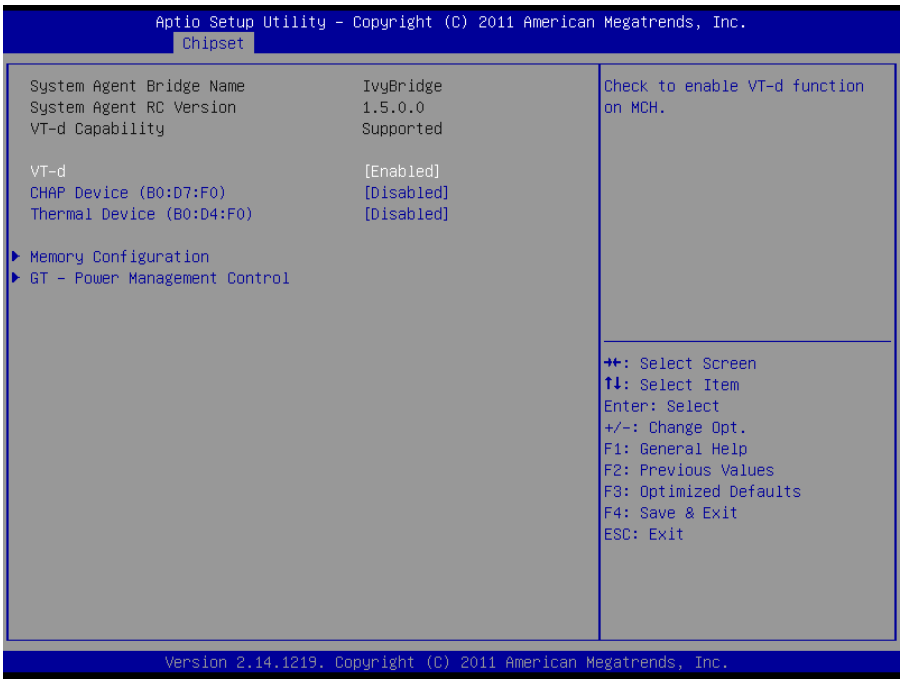
Item	Option	Description
XHCI Pre-Boot Driver	Disabled Enabled**[Default]**	Enable or disable XHCI Pre-Boot Driver support.
xHCI Mode	Smart Auto**[Default]** Auto Enabled Disabled	Mode of operation of xHCI controller.
HS Port #1/#2/#3/#4 Switchable	Disabled Enabled**[Default]**	Allows for HS port switching between xHCI and EHCI. If disabled, port is routed to EHCI. If HS port is routed to xHCI, the corresponfing SS port is enabled.
xHCI Streams	Disabled Enabled**[Default]**	Enable or disable xHCI Maximum Primary Stream Array Size.
EHCI1/2	Disabled Enabled**[Default]**	Control the USB EHCI (USB 2.0) functions. One EHCI controller must always be enabled.
USB Ports Per-Port Disable Control	Disabled**[Default]** Enabled	Control each of the USB ports (0~13) disabling.

3.6.3.1.3 PCH Azalia Configuration



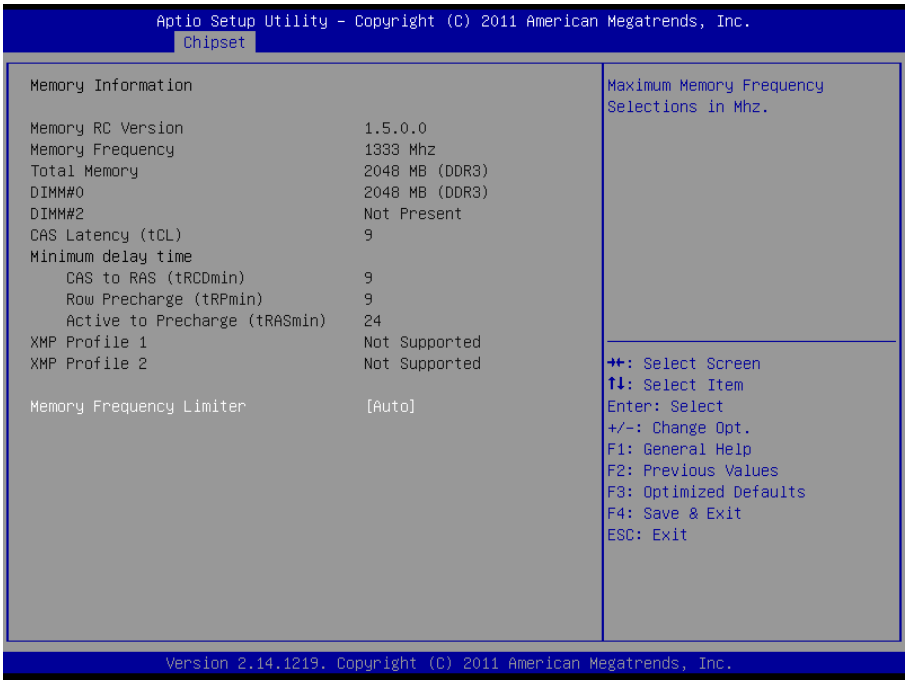
Item	Option	Description
Azalia HDMI codec Port C	Disabled Enabled**[Default]**	Enable or disable internal HDMI codec Port for Azalia.

3.6.3.2 System Agent (SA) Configuration



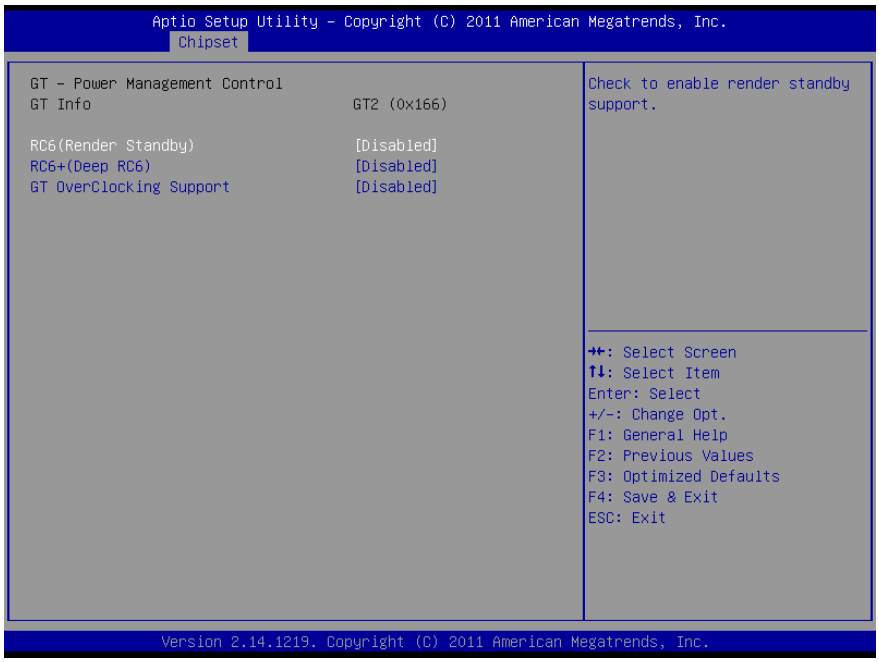
Item	Option	Description
VT-d	Disabled Enabled**[Default]**	Check to enable VT-d function on MCH.
CHAP Device (B0:D7:F0)	Disabled**[Default]** Enabled	Enable or Disable SA CHAP Device.
Thermal Device (B0:D4:F0)		Enable or Disable SA Thermal Device.
Memory Configuration	Memory Configuration Parameters.	
GT – Power Management Control	GT – Power Management Control Options.	

3.6.3.2.1 Memory Configuration



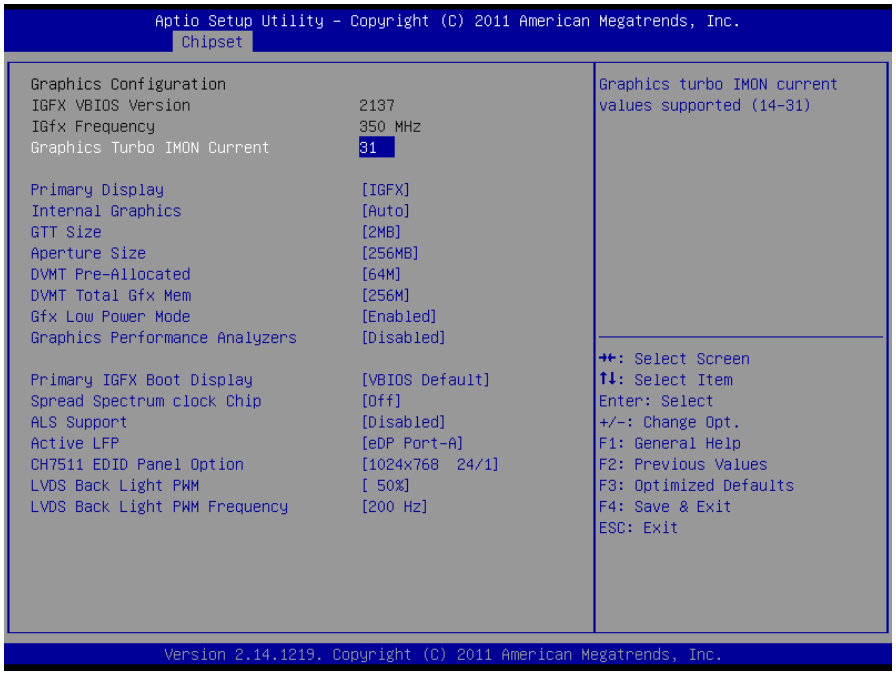
Item	Option	Description
Memory Frequency Limiter	Auto**[Default]** 1067 1333 1600 1867 2133 2400 2667	Maximum Memory Frequency Selections in Mhz.

3.6.3.2.2 GT – Power Management Control



Item	Option	Description
RC6 (Render Standby)	Disabled**[Default]** Enabled	Check to enable render standby support.
RC6+(Deep RC6)		Check to enable Deep RC6(RC6+) support.
GT Overclocking Support		Enable or disable GT OverClocking Support.

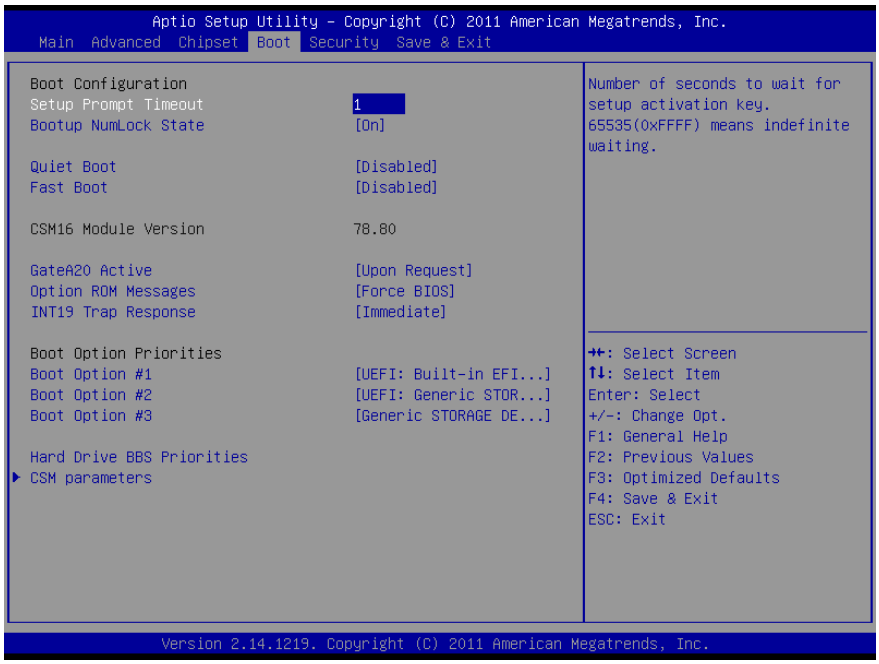
3.6.3.3 Graphics Configuration



Item	Option	Description
Graphics Turbo IMON Current	14 ~31**[Default]**	Graphics turbo IMON current values (14 -31)
Primary Display	Auto IGFX**[Default]**	Select which of IGFX/PEG Graphics device should be Primary Display Or select SG for Switchable Gfx.
Internal Graphics	Auto**[Default]** Disabled Enabled	Keep IGD enabled based on the setup options.
GTT Size	1MB 2MB**[Default]**	Select the GTT size
Aperture Size	[128MB] [256MB] **[Default]** [512MB]	Select the Aperture Size
DVMT Pre-Allocated	[32M] [64M] **[Default]** [96M] [128M] [160M] [192M] [224M] [256M] [288M] [320M] [352M] [384M] [416M] [448M] [480M] [512M] [1024M]	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.
DVMT Total Gfx Mem	[128MB] [256MB] **[Default]** [MAX]	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.
Gfx Low Power Mode	Disabled Enabled**[Default]**	This option is applicable for SFF only.
Graphics Performance Analyzers	Disabled**[Default]** Enabled	Enable or disable Intel Graphics Performance Analyzers Counters.

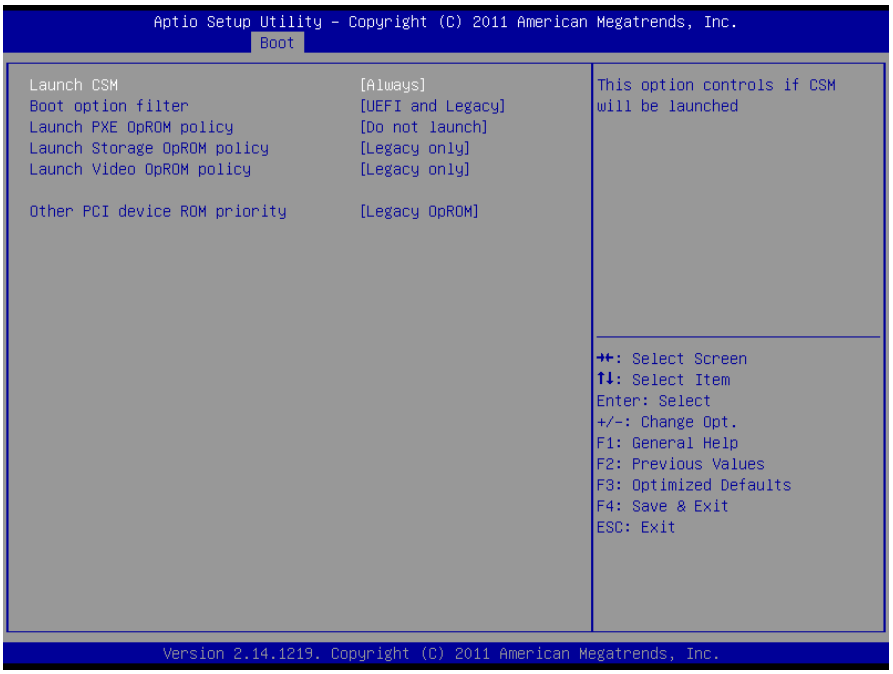
Primary IGFX Boot Display	VBIOS Default**[Default]** CRT LVDS HDMI	Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display.
Spread Spectrum clock Chip	Off**[Default]** Hardware Software	>>Hardware : Spread is controlled by chip;>>Software : Spread is controlled by BIOS.
ALS Support	Disabled**[Default]** Enabled	Valid only for ACPI. Legacy= ALS Support through the IGD INT10 function. ACPI= ALS support through an ACPI ALS driver.
Active LFP	No LVDS eDP Port-A**[Default]**	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. eDP Port-D: LFP Driven by Int-DisplayPort encoder from Port-D (through PCH).
CH7511 EDID Panel Option	1024x768 24/1**[Default]** 800x600 18/1 1024x768 18/1 1366x768 18/1 1024x600 18/1 1280x800 18/1 1920x1200 24/2 640x480 18/1 800x480 18/1 1920x1080 18/2 1280x1024 24/2 1440x900 18/2 1600x1200 24/2 1366x768 24/1 1920x1080 24/2 1680x1050 24/2	Port1-EDP to LVDS(Chrotel 7511) Panel EDID Option.
LVDS Back Light PWM	00% 25% 50%**[Default]** 75% 100%	Select LVDS back light PWM duty.
LVDS Back Light PWM Frequency	200 Hz**[Default]**/330 Hz/500 Hz 1 kHz/2 kHz/3 kHz 5 kHz/10 kHz/24 kHz 31 kHz/47 kHz/94 kHz	Select LVDS back light PWM Frequency.

3.6.4 Boot



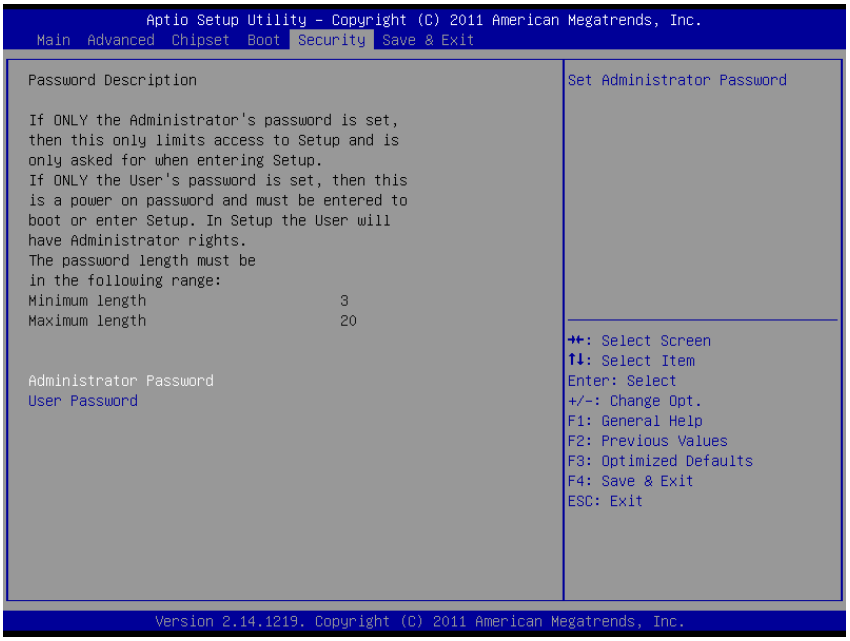
Item	Option	Description
Setup Prompt Timeout	1~ 65535	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On Off**[Default]**	Select the Keyboard NumLock state
Quiet Boot	Disabled**[Default]** Enabled	Enables or disables Quiet Boot option
Fast Boot	Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.	
GateA20 Active	Upon Request**[Default]** Always	UPON REQUEST –GA20 can be disabled using BIOS services. ALWAYS – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.
Option ROM Messages	Force BIOS**[Default]** Keep Current	Set display mode for Option ROM.
INT19 Trap Response	Immediate**[Default]** Postponed	BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE – execute the trap right away; POSTPONED – execute the trap during legacy boot.
Boot Option #1/2/3	Sets the system boot order	
CSM parameters	OpROM execution, boot options filter,etc.	

3.6.4.1 CSM parameters



Item	Option	Description
Launch CSM	Always**[Default]** Never	This option controls if CSM will be launched.
Boot option filter	UEFI and Legacy[**Default]** Legacy only UEFI only	This option controls what devices system can boot to.
Launch PXE OpROM policy	Do not launch UEFI only**[Default]** Legacy only	Controls the execution of UEFI and Legacy PXE OpROM.
Launch Storage OpROM policy	Do not launch UEFI only**[Default]** Legacy only	Controls the execution of UEFI and Legacy Storage OpROM.
Launch Video OpROM policy	Do not launch**[Default]** UEFI only Legacy only	Controls the execution of UEFI and Legacy Video OpROM.
Other PCI device ROM priority	UEFI OpROM**[Default]** Legacy OpROM	For PCI devices other than Network, Mass storage or Video defines which OpROM to launch.

3.6.5 Security



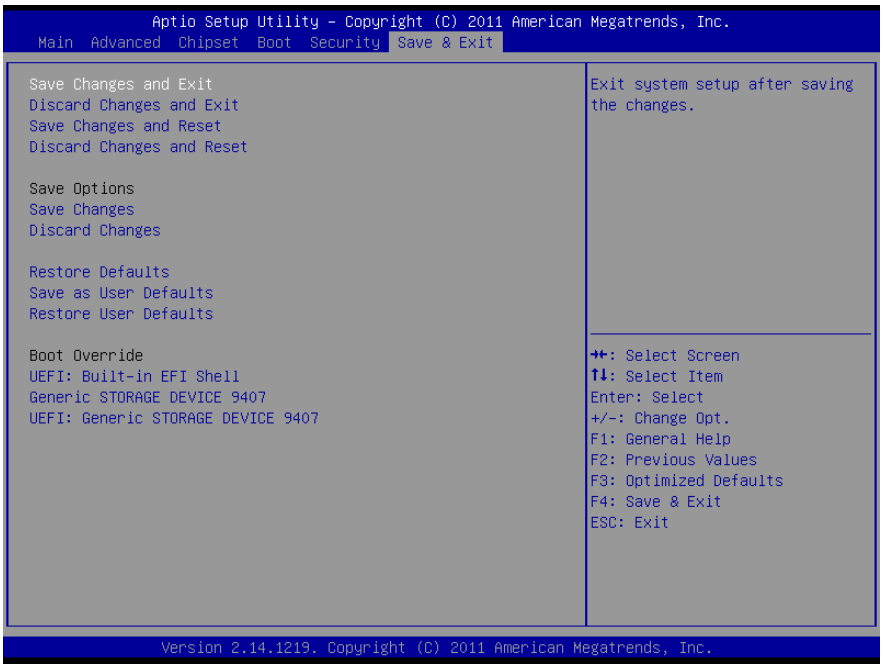
- **Administrator Password**

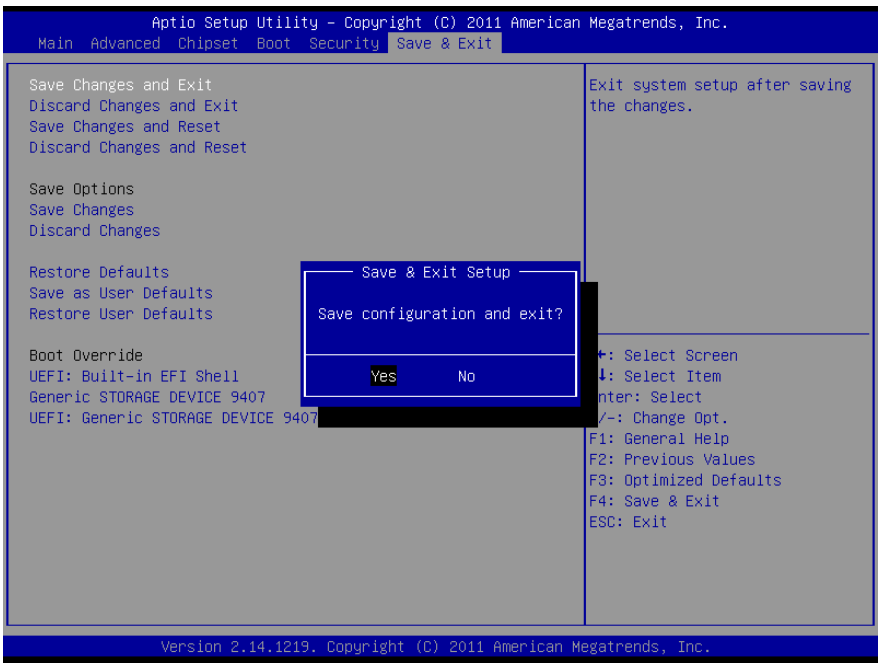
Set setup Administrator Password

- **User Password**

Set User Password

3.6.6 Save and exit





3.6.6.1 Save Changes and Exit

Exit system setup after saving the changes.

3.6.6.2 Discard Changes and Exit

Exit system setup without saving any changes.

3.6.6.3 Save Changes and Reset

Reset the system after saving the changes.

3.6.6.4 Discard Changes and Reset

Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The setup program then exits and reboots the controller.

3.6.6.5 Save Changes

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

3.6.6.6 Discard Changes

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

3.6.6.7 Restore Defaults

This option restores all BIOS settings to the factory default. This option is useful if the controller exhibits unpredictable behavior due to an incorrect or inappropriate BIOS setting.

3.6.6.8 Save as User Defaults

This option saves a copy of the current BIOS settings as the User Defaults. This option is useful for preserving custom BIOS setup configurations.

3.6.6.9 Restore as User Defaults

This option restores all BIOS settings to the user defaults. This option is useful for restoring previously preserved custom BIOS setup configurations.

4. Drivers Installation

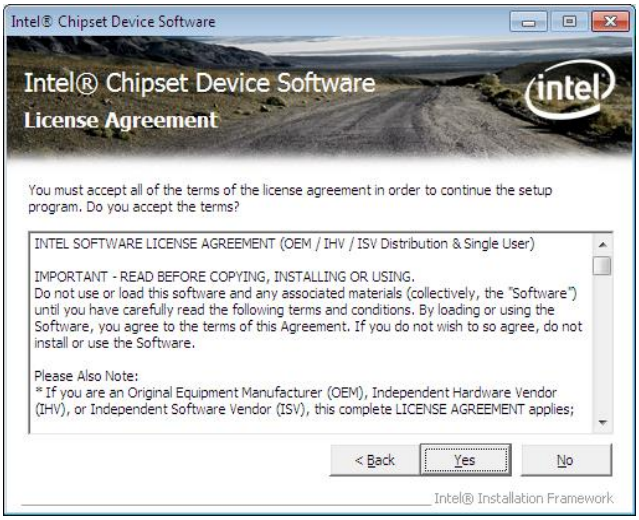
Note: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

4.1 Install Chipset Driver (For Intel QM77)

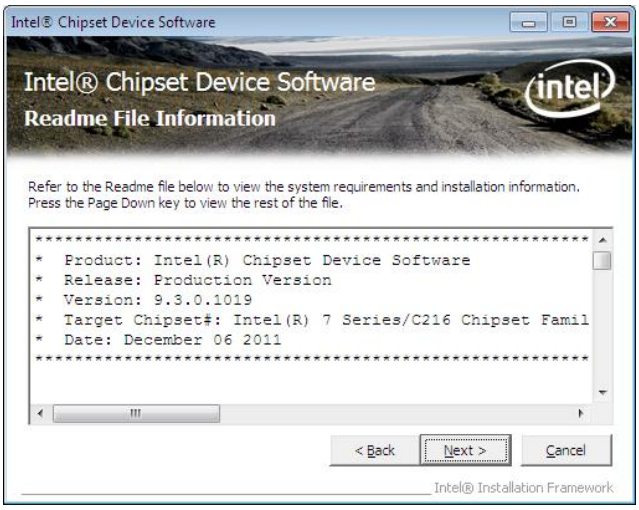
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\Driver_Chipset\Intel\ECM-QM77_INF**.

Note: The installation procedures and screen shots in this section are based on Windows 7 operation system. If the warning message appears while the installation process, click Continue to go on.

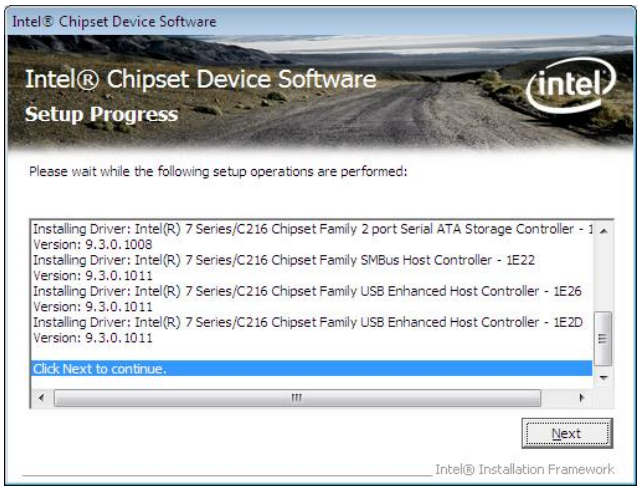
Step1. Click **Next**..



Step 2. Click **Yes**.



Step 3. Click **Next**.



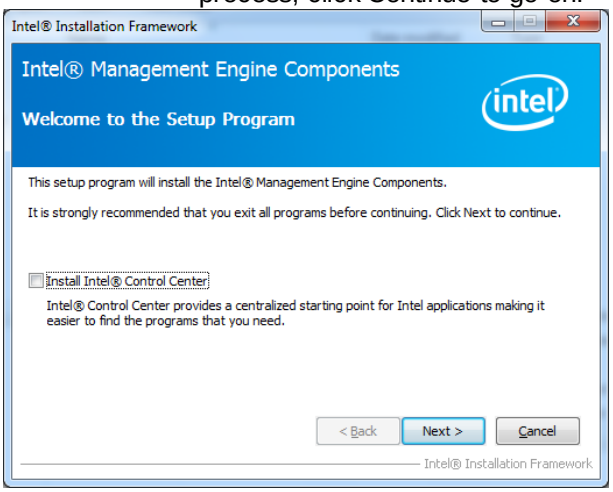
Step 4. Click **Next**.

Step 5. Click **Finish** to complete setup.

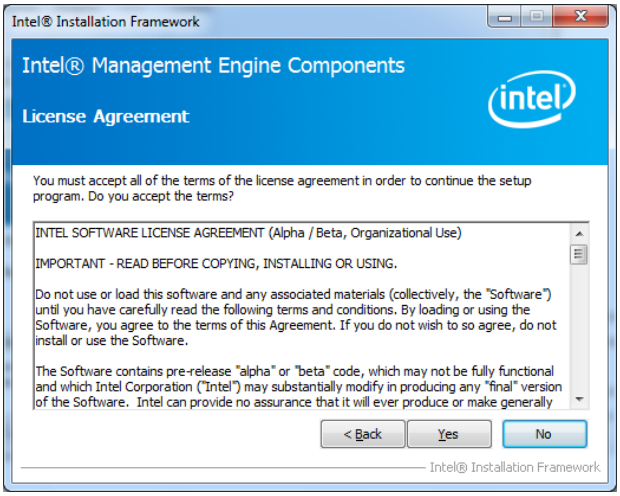
4.2 Install ME Driver (For Intel QM77)

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\ Utility\ECM-QM77_ME**

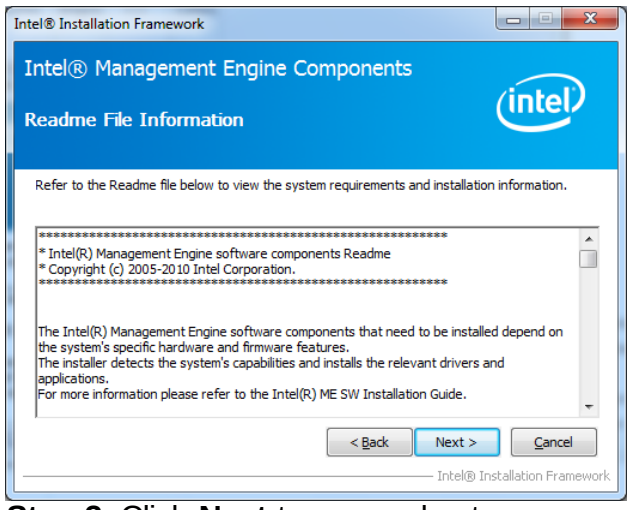
Note: The installation procedures and screen shots in this section are based on Windows 7 operation system. If the warning message appears while the installation process, click Continue to go on.



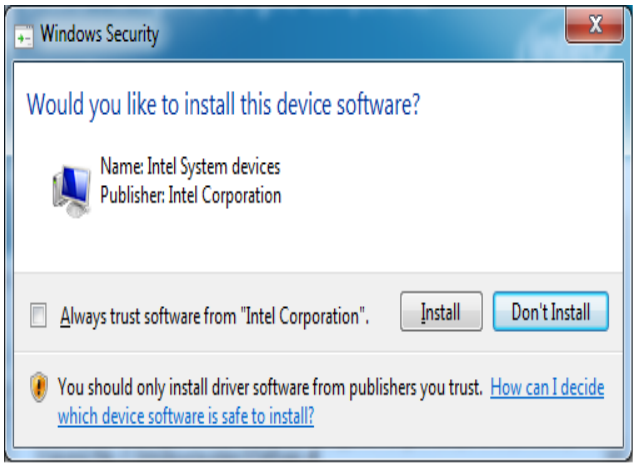
Step1. Click **Next** to start installation.



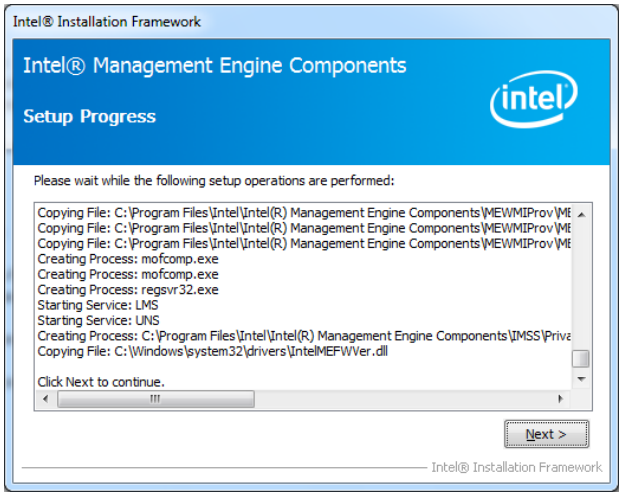
Step 2. Click **Yes** to accept license agreement.



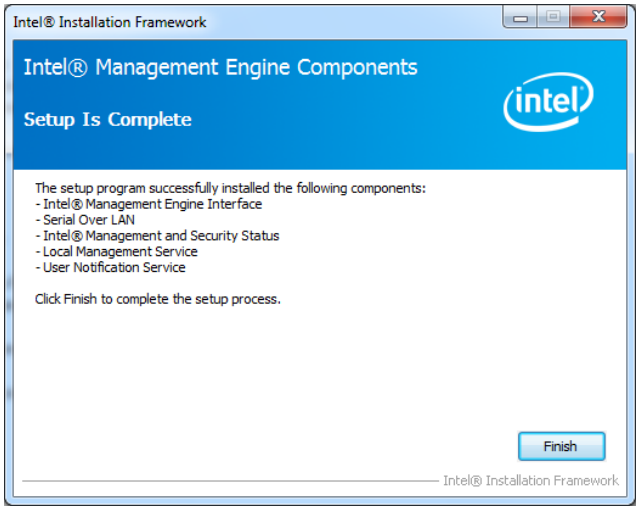
Step 3. Click **Next** to proceed setup.



Step 4. Click **Install.**



Step 5. Click **Next** to continue.

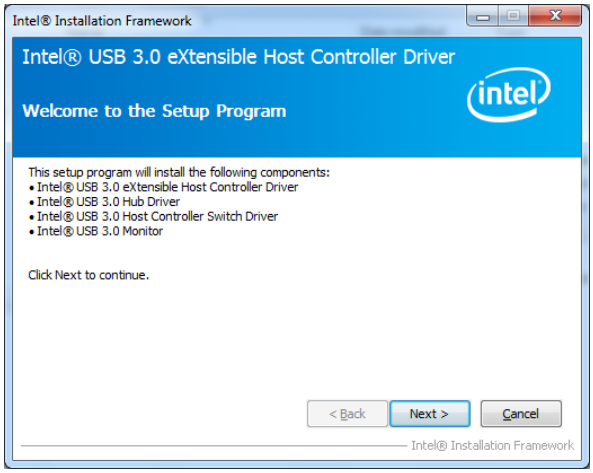


Step 6. Click **Finish** to complete setup.

4.3 Install USB 3.0 Driver (For Intel QM77)

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to**\ Utility\ECM-QM77_USB3.0.**

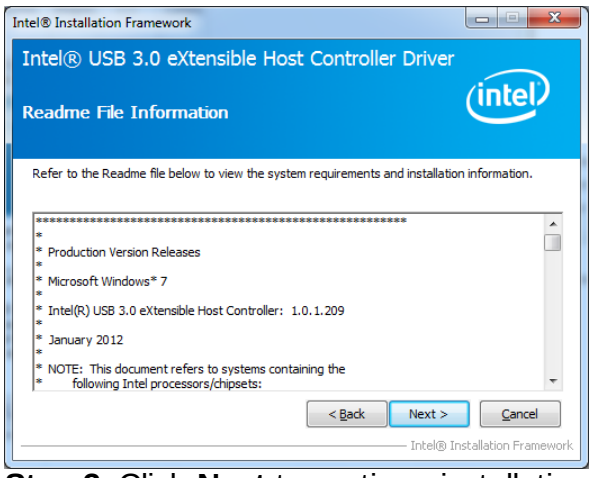
Note: The installation procedures and screen shots in this section are based on Windows 7 operation system. If the warning message appears while the installation process, click Continue to go on.



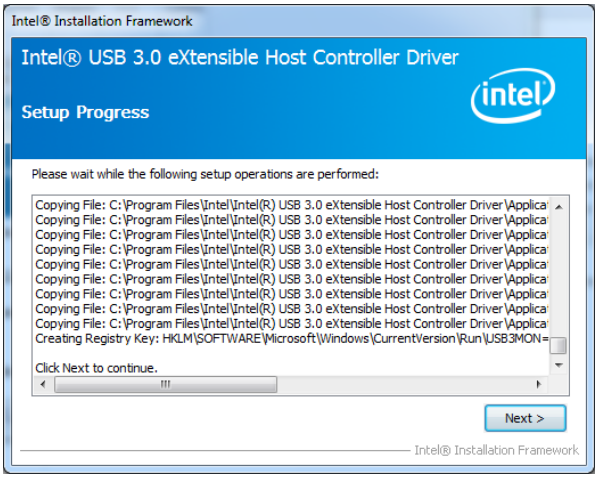
Step1. Click **Next** to start installation.

.

Step 2. Click **Yes**.



Step 3. Click **Next** to continue installation.



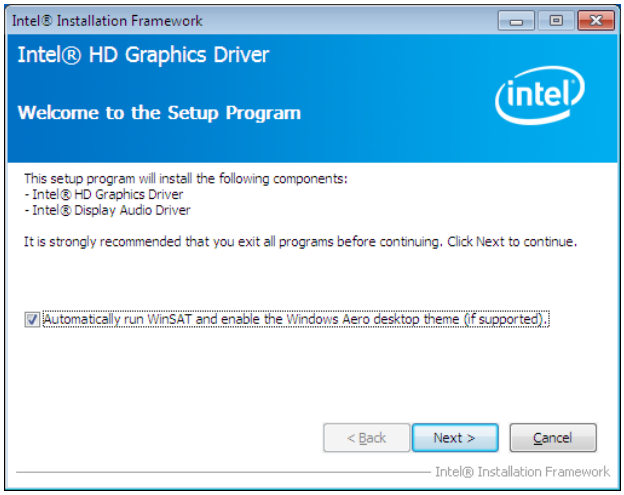
Step 4. Click **Next** to continue installation.

Step 5. Click **Finish** to complete setup.

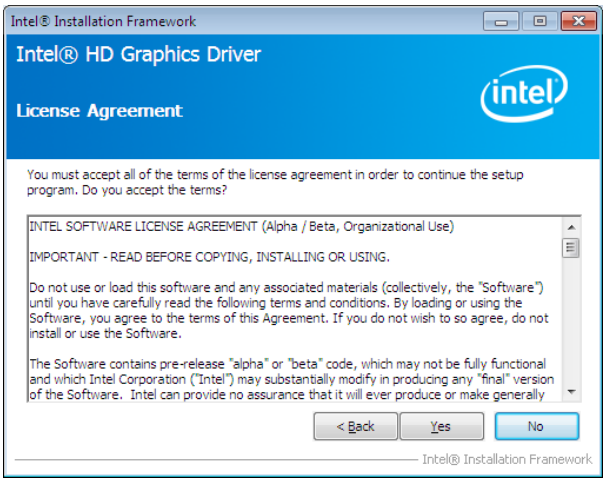
4.4 Install VGA Driver (For Intel QM77)

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\ VGA\ECM-QM77_VGA.**

Note: The installation procedures and screen shots in this section are based on Windows XP operation system.

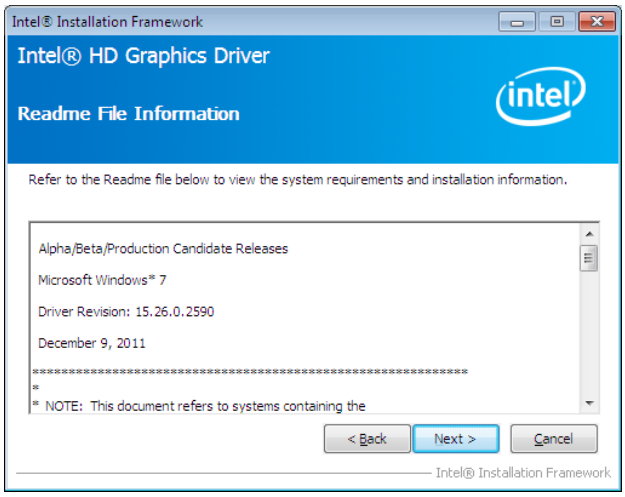


Step 1. Click **Next** to continue installation.

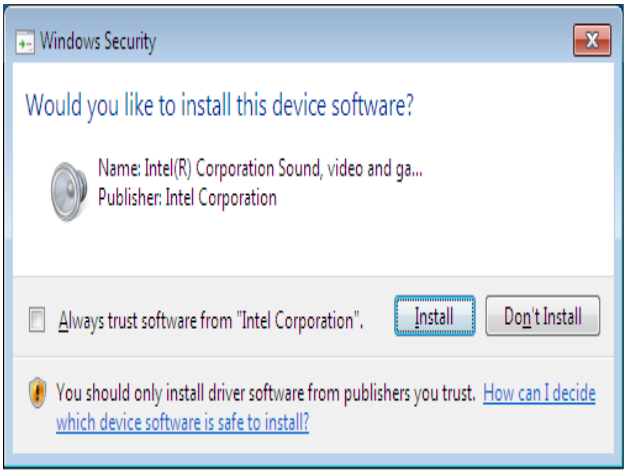


Step 2.

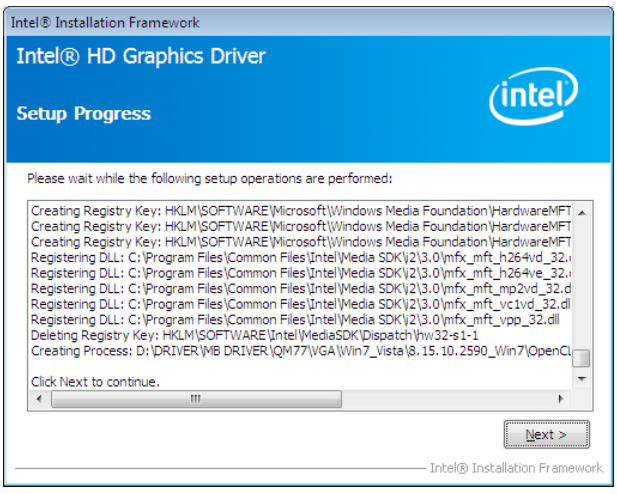
Click **Yes** to accept license agreement.



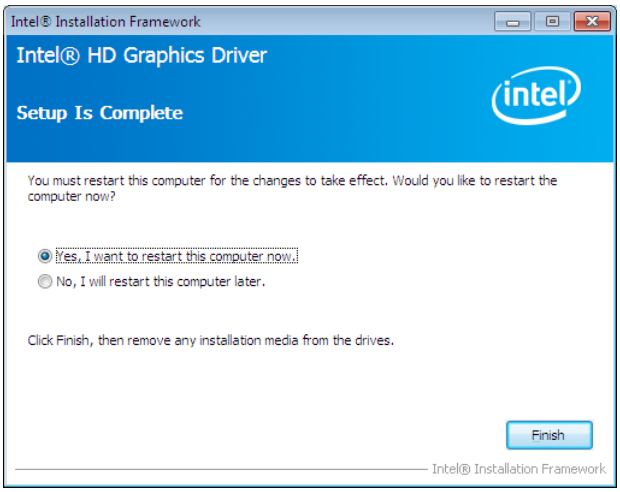
Step 3. Click **Next.**



Step 4. Click **Install**.



Step 5. Click **Next**.



Step 6. Click **Finish** to complete setup.

4.5 Install Audio Driver (For Realtek ALC892)

Insert the Supporting CD-ROM to CD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\ Driver_Audio\Realtek\ALC892\ECM-QM77_Audio.**

Note: The installation procedures and screen shots in this section are based on Windows 7 operation system.

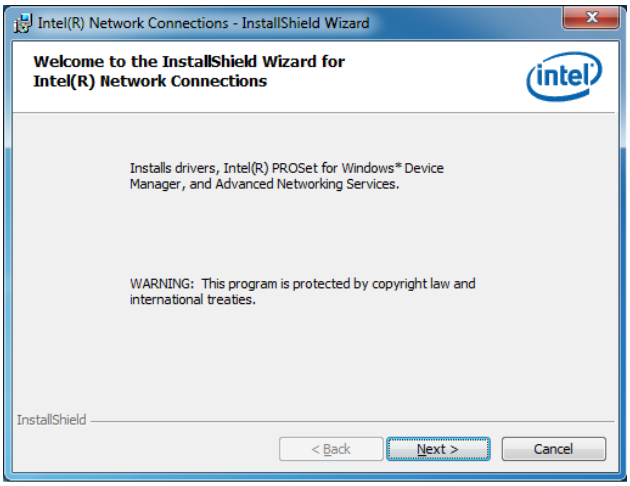
Step 1. Click **Next** to continue setup.

Step 2. Click **Finish** to complete the setup.

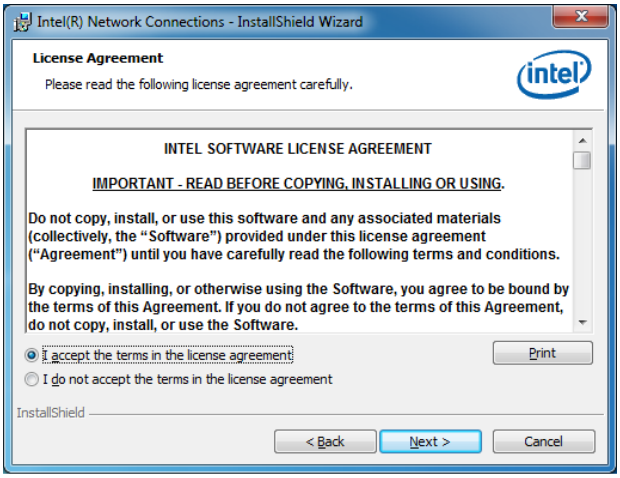
4.6 Install Ethernet Driver (For Intel 82579LM and 82574L)

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **D:\Driver_Gigabit\Intel\82579\ECM-QM77_LAN.**

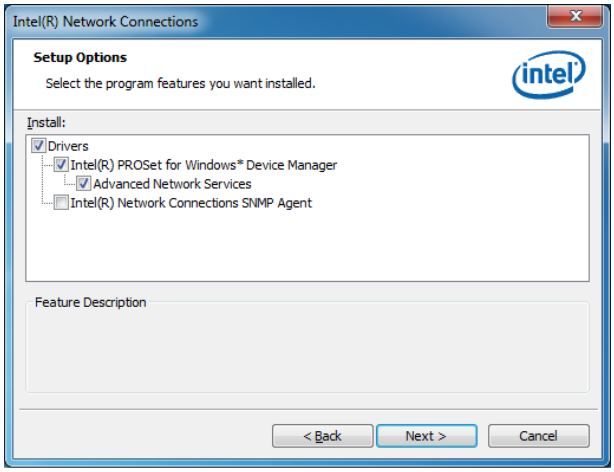
Note: The installation procedures and screen shots in this section are based on Windows 7 operation system.



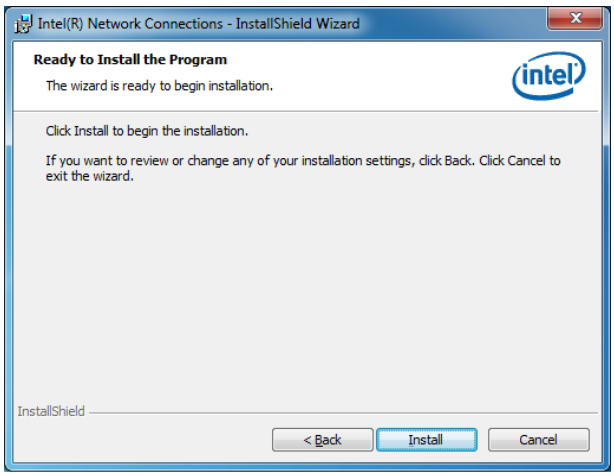
Step 1. Click **Next**.



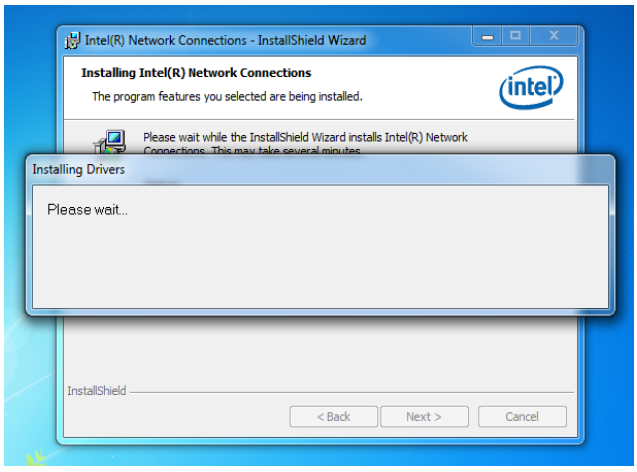
Step 2. Click **Next** to accept license agreement.



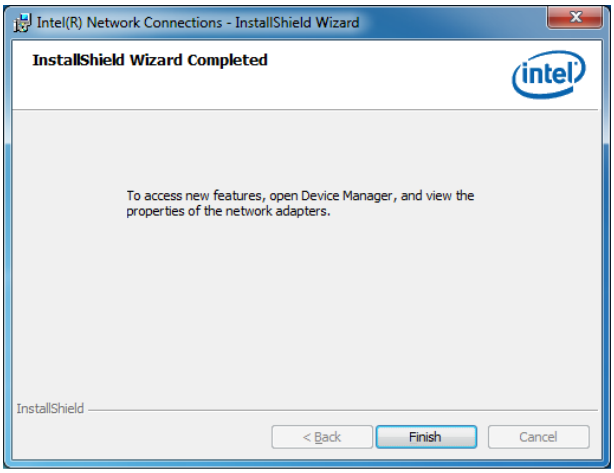
Step 3. Click **Next** after choosing features to install.



Step 4. Click **Install** to proceed.

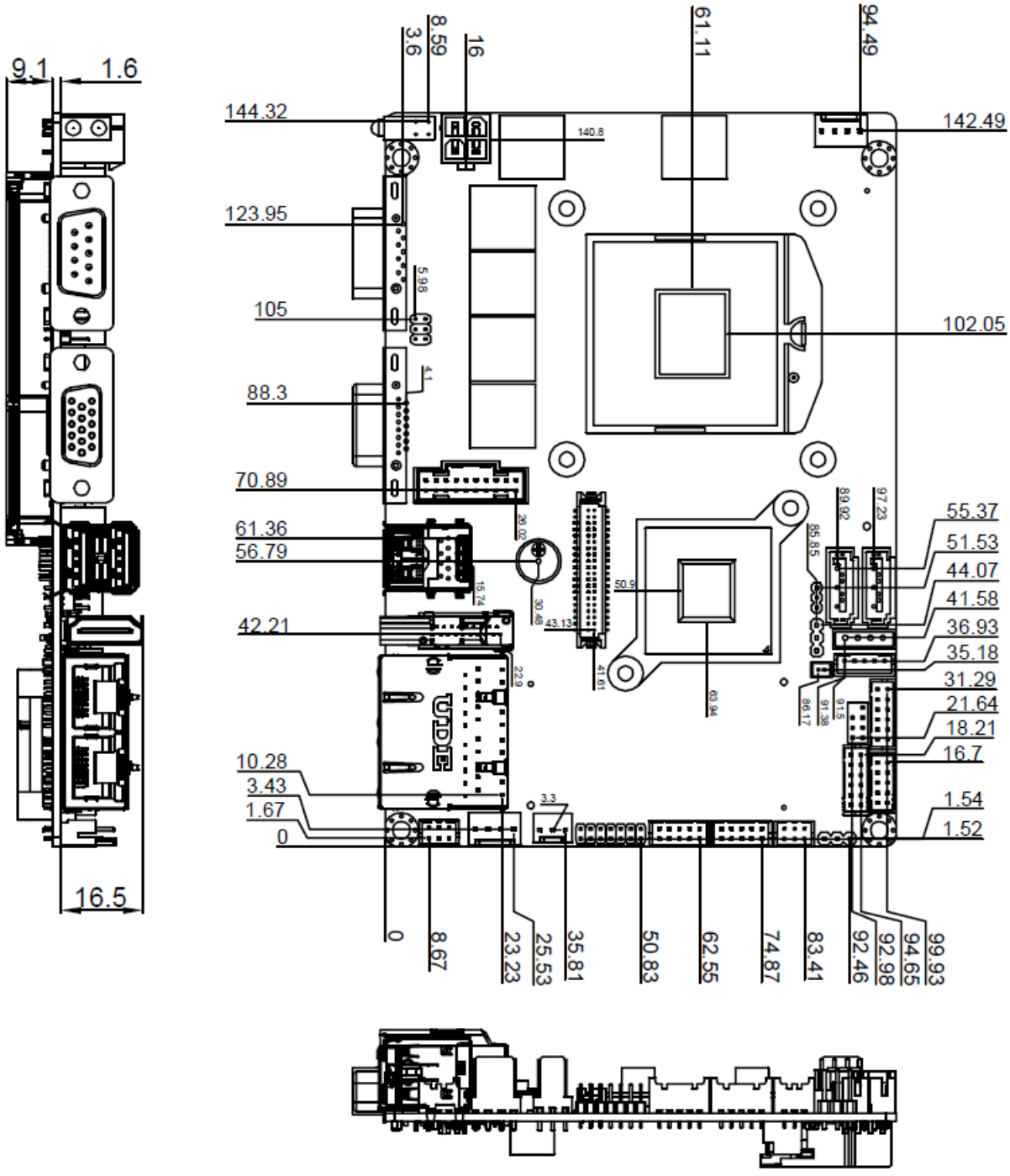


Step 5. Click **Next** to continue installation

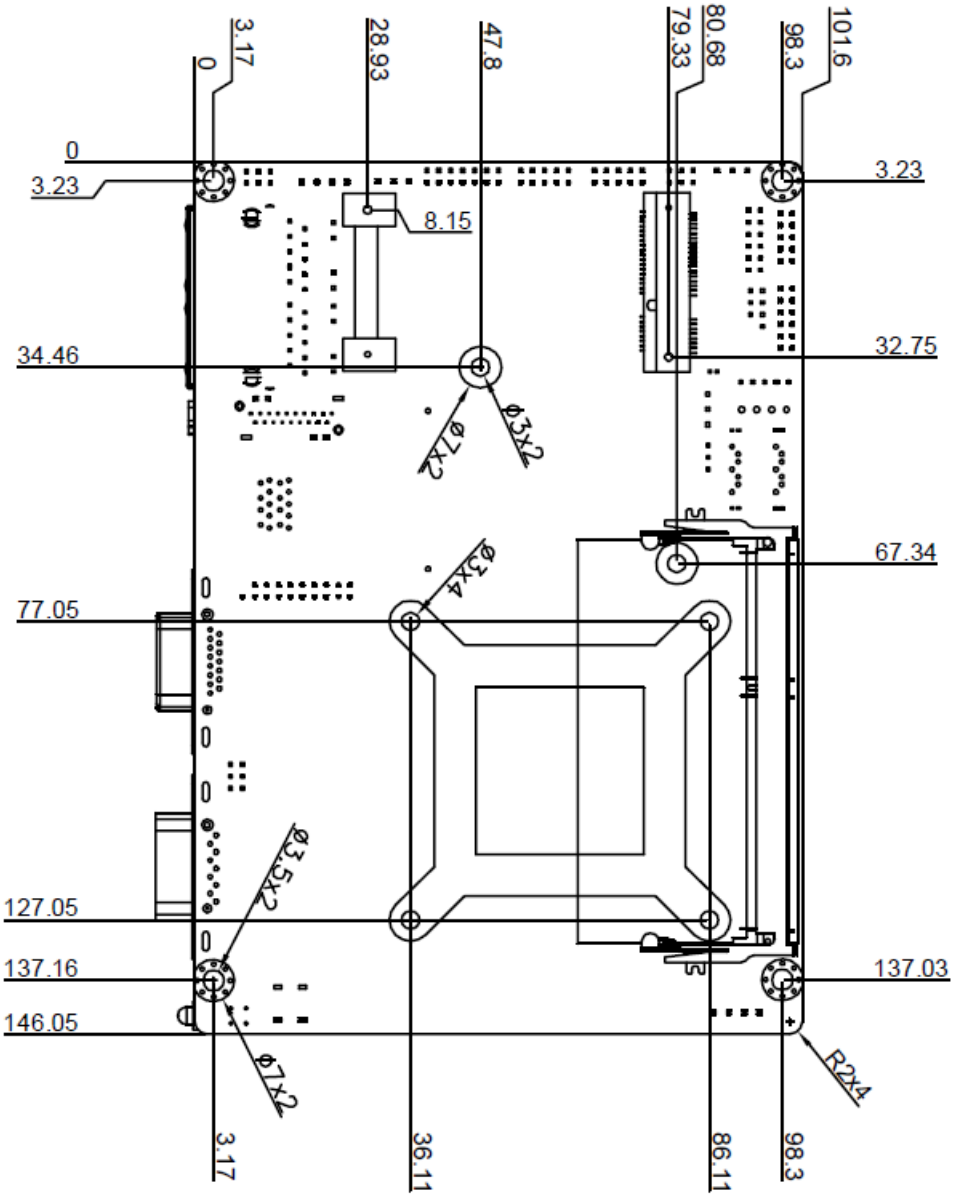


Step 6. Click **Finish** to complete the setup.

5. Mechanical Drawing


9.1
1.6
16.5
144.32
123.95
105
88.3
70.89
61.36
56.79
42.21
10.28
3.43
1.67
0
3.6
8.59
16
61.11
94.49
142.49
102.05
55.37
51.53
44.07
41.58
36.93
35.18
31.29
21.64
18.21
16.7
1.54
1.52
0
8.67
23.23
25.53
35.81
50.83
62.55
74.87
83.41
92.46
92.98
94.65
99.93

Unit: mm


3.17
0
28.93
47.8
79.33
80.68
98.3
101.6
0
3.23
8.15
3.23
34.46
32.75
67.34
77.05
127.05
137.16
146.05
137.03
3.17
36.11
86.11
98.3

Unit: mm