ECM-CDV

3.5" Intel Cedarview Module

User's Manual

4th Ed – 20 December 2013

Part No. E2047CDV003R

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 INSTATLLED 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.

A Message to the Customer

Avalue Customer Services

Each and every Avalue's product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Avalue device is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Avalue has come to be known.

Your satisfaction is our primary concern. Here is a guide to Avalue's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

Technical Support

We want you to get the maximum performance from your products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone. So please consult the user's manual first.

To receive the latest version of the user's manual; please visit our Web site at:
http://www.avalue.com.tw/

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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.

Always note that improper disassembling action could cause damage to the motherboard. We suggest not removing the heatsink without correct instructions in any circumstance. If you really have to do this, please contact us for further support.

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-CDV Micro Module
- 1 x Quick Installation Guide for ECM-CDV
- 1 x AUX-032 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, 2.0mm pitch)
  - 1 x USB cable
  - 1 x Serial ATA cable (7-pin, standard).
  - 1 x Wire SATA power (15-pin, 2P/2.0mm)
  - 1 x Flat Cable 9P(M)-Dupont 10P/2.0mm)
- 3M Foam (VHB-4622 10mm*20mm*1.1mm)

1.3 Document Amendment History

Revision	Date	By	Comment
1st	March 2012	Avalue	Initial Release
2nd	June 2012	Avalue	Specifications Update
3rd	March 2013	Avalue	Specifications Update
4th	December 2013	Avalue	Specifications Update

1.4 Manual Objectives

This manual describes in details Avalue Technology ECM-CDV 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 set up ECM-CDV 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 regarding this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

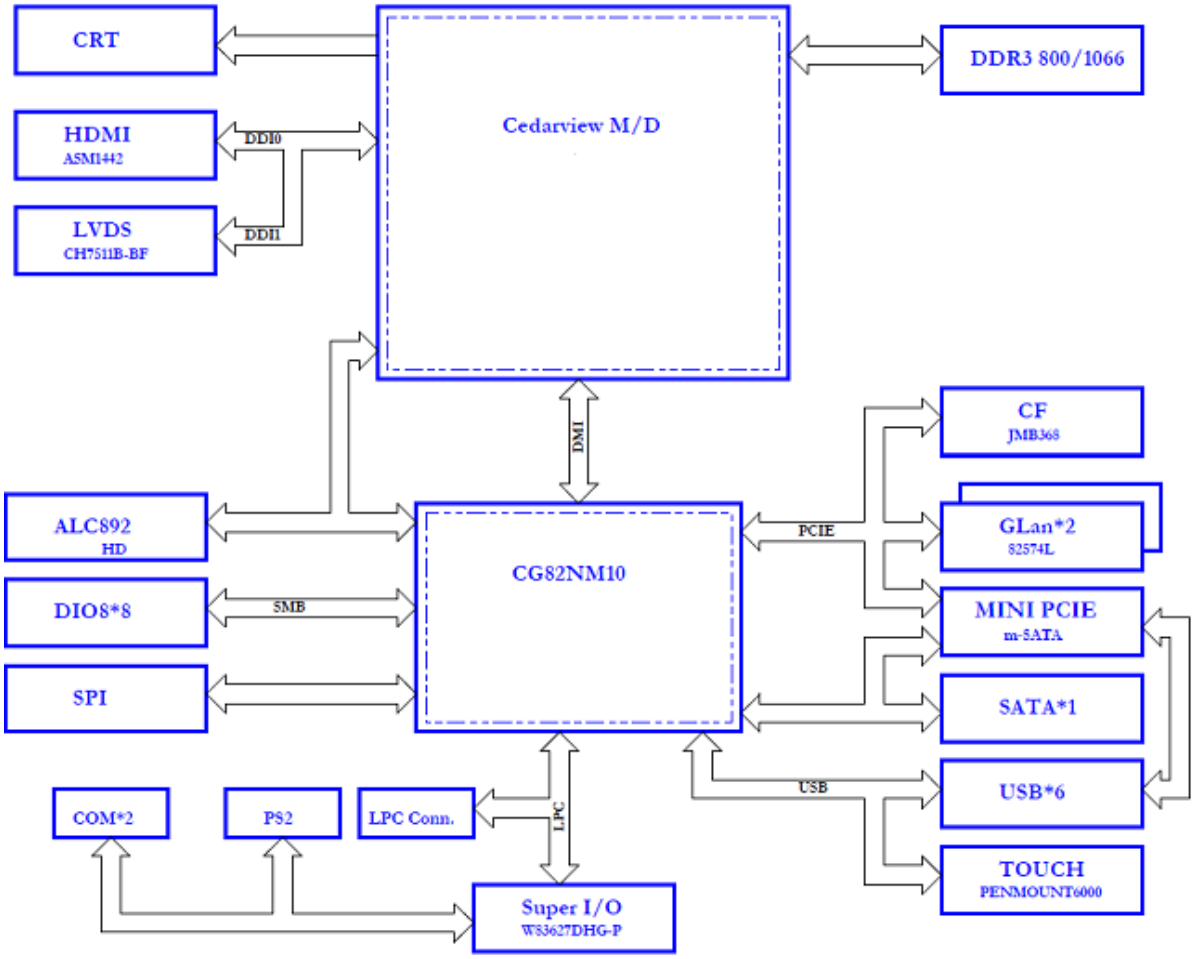
1.5 System Specifications

System	
CPU	"Intel Atom processor D2550/N2800/N2600"
BIOS	AMI 16M-bit SPI BIOS
System Chipset	Intel NM10 Express Chipset
I/O Chip	Nuvoton W83627DHG-P
System Memory	One 204-pin DDR3 SODIMM Socket, Supports Up to 4GB DDR3 800/ 1066 SDRAM for Intel® Atom™ D2550/2800 and Max.2GB for Intel® Atom™ N2600
SSD	1 x CF
Watchdog Timer	Reset: 1 sec.~ 255 sec./min.
H/W Status Monitor	Auto "throttling"
Expansion	1 x Mini-PCIe (mSATA Supported)
I/O	
MIO	1 x Serial ATA ports (7-pin with +5V power for SATADOM), 2 x Serial (COM2 with 5 x 2, pitch 2.0mm pin header. One COM can be set as RS-232/422/485 by BIOS), LPC (7 x 2, pitch 2.00mm pin header), 1 x SATA power connector (+5V)
USB	7 x USB 2.0 ports (1 for edge connector, 3 for 5 x 2, pitch 2.0mm pin header)
DIO	8-bit GPI, 8-bit GPO
Display	
Chipset	Intel Cedarview integrated graphics
Resolution	CRT mode: 1920 x 1200 @ 60Hz
	LCD/ Simultaneous Mode: D2550: 1920 x 1080 @ 60Hz (Through eDP) N2800/ N2600: 1366 x 768 @ 60Hz (Through eDP)
Multiple Display	CRT+LVDS, CRT+HDMI(Twin), LVDS+CRT, HDMI+LVDS
LCD Interface	Dual channel 18/24-bit LVDS (with eDP)

Built-in Touch Screen (Optional)	
Chipset	PenMount 6000
Touch Screen Interface	With 9-pin 2.0mm box header (can be selected to support 4/5/8-wire touch screen)
Audio	
AC97 Codec	Realtek ALC892 supports 5.1-CH Audio
Audio Interface	Mic In, Line in, Line out
Ethernet	
LAN Chip	2 x Intel 82574L Gigabit Ethernet
Ethernet Interface	10/100/1000 Base-Tx Gigabit Ethernet Compatible
Mechanical & Environmental	
Power Requirement	+12V~+26V
ACPI	Single power ATX Support S0, S3, S4, S5 ACPI 3.0 Compliant
Power Type	AT/ATX
Operating Temp.	0 to 60°C
Storage Temp.	-20~-80°C
Operating Humidity	0%~90% relative humidity, non-condensing
Size (L x W)	146 mm x 101 mm
Weight	TBD

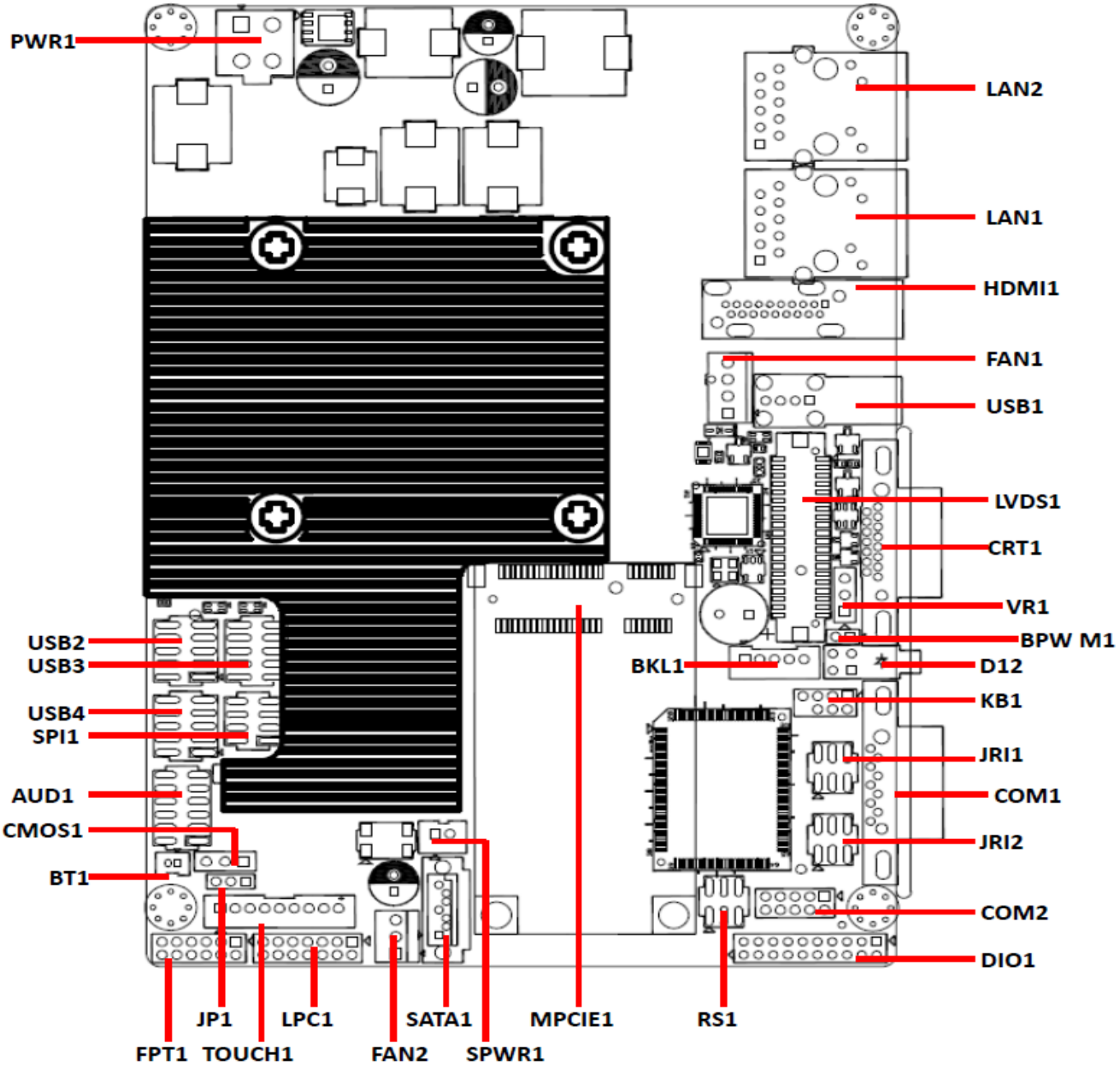
1.6 Architecture Overview—Block Diagram

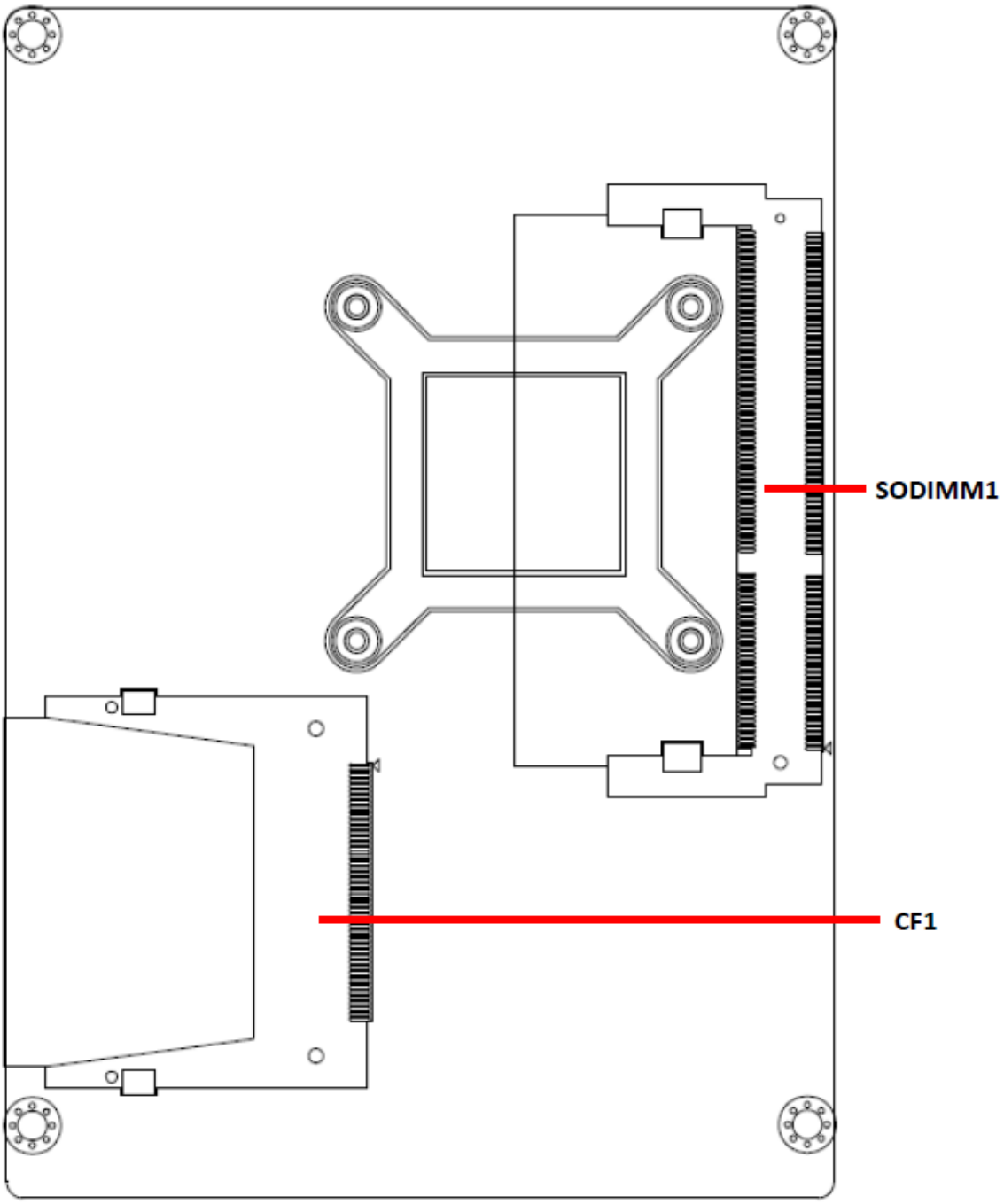
The following block diagram shows the architecture and main components of ECM-CDV.



2. Hardware Configuration

2.1 Product Overview




SODIMM1
CF1

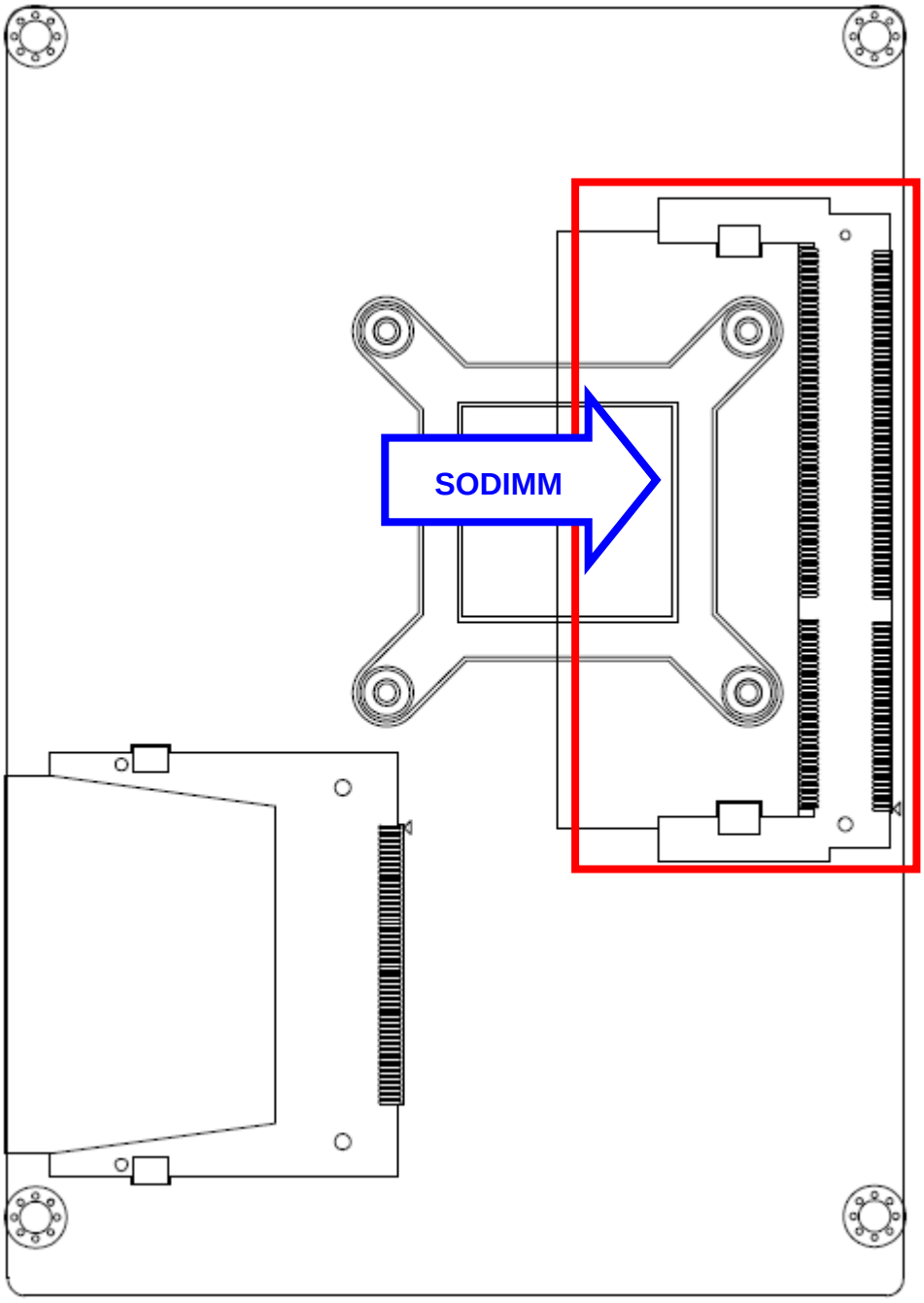
2.2 Installation Procedure

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

1. Turn off the power supply.
2. Insert the DIMM 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 "Save & Exit \ Restore Defaults" feature.
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.

2.2.1 Main Memory

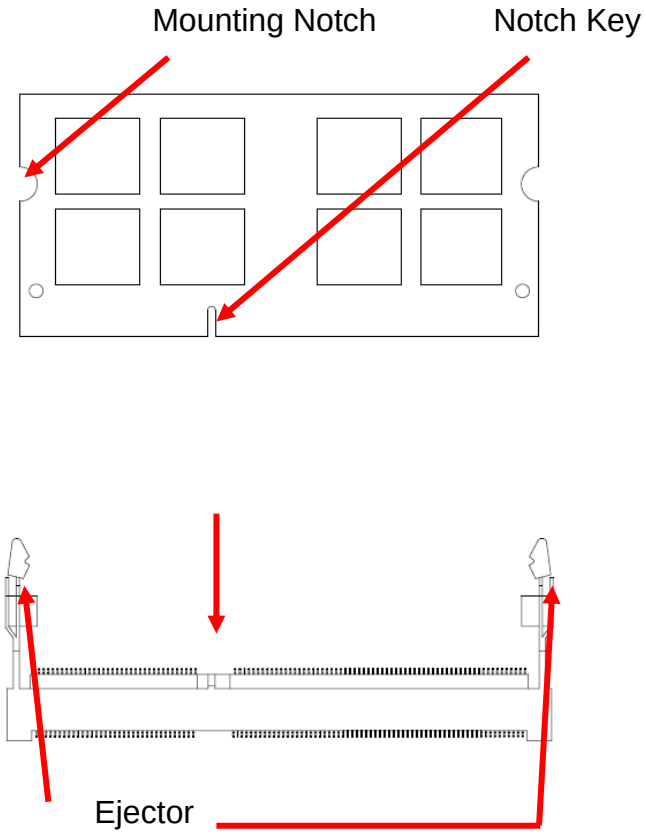
ECM-CDV provides one 204-pin DDR3 SODIMM socket, supports up to 4GB DDR3 800/1066 SDRAM



(Rear side)

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

- Locate the SODIMM socket on the board.
- Carefully hold two edges of the SODIMM module. avoid touching its connectors.
- Align the notch key on the module with the rib on the slot.
- Firmly press the modules into the socket which automatically snaps into the mounting notch. Do not force the SODIMM module in with extra force as the SODIMM module only fits in one direction.



204-pin DDR3 SODIMM

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

Note:

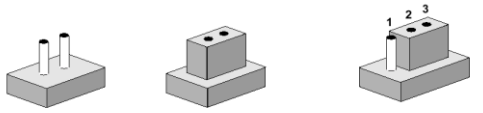
(1) Please do not change any DDR3 SDRAM parameter in BIOS setup to increase your system's performance without acquiring technical information in advance.

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

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

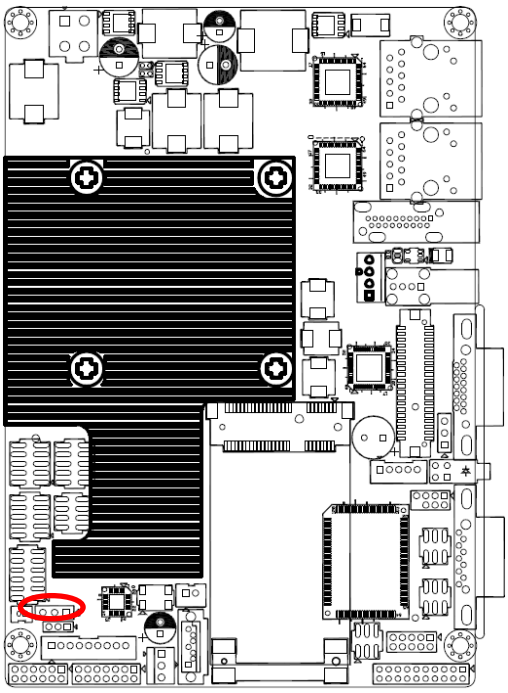
Label	Function	Note
CMOS1	Clear CMOS	3 x 1 header, pitch 2.54 mm
FPT1	Miscellaneous settings connector	6 x 2 header, pitch 2.0 mm
JP1	Touch Mode selector	3 x 1 header, pitch 2.0 mm
JRI1/ JRI2	Serial port 1/2 pin9 signal selector	3 x 2 header, pitch 2.0 mm
BPW M1	LCD PWM Mode Selector	2 x 1 header, pitch 2.0 mm

Connectors

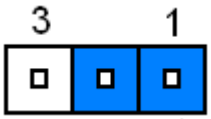
Label	Function	Note
AUD1	Audio connector	6 x 2 header, pitch 2.0 mm
BKL1	LCD inverter connector	5 x 1 wafer, pitch 2.0mm
BT1	Battery connector	2 x 1 wafer, pitch 1.25 mm
CF1	CF card slot	CF type II
COM1	Serial port 1 connector	D-sub 9-pin, male
COM2	Serial port 2 connector	5 x 2 header, pitch 2.0 mm
CRT1	CRT connector	D-sub 15-pin, female
DIO1	General purpose I/O connector	10 x 2 header, pitch 2.0 mm
D12	Power & HDD LED indicator	
FAN1	CPU fan connector	4 x 1 wafer, pitch 2.54 mm
FAN2	System fan connector	3 x 1 wafer, pitch 2.54 mm
LVDS1	LVDS connector	2 x 20 header, pitch 1.25mm
HDMI1	HDMI connector	
KB1	Keyboard & Mouse Connector	4 x 2 header, pitch 2.0 mm
LAN1/2	RJ-45 Ethernet connector 1/2	
LPC1	LPC connector	7 x 2 header, pitch 2.0 mm
MPCIE1	Mini PCI Express Connector	
PWR1	Power connector	2 x 2 wafer, pitch 4.2 mm
RS1	Serial port 2 in RS-422-485 mode	3 x 2 header, pitch 2.0 mm
SODIMM1	DDR3 SODIMM connector	204-pin
SPI1	SPI connector	4 x 2 header, pitch 2.0 mm
SPWR1	SATA power connector 1	2 x 1 wafer, pitch 2.0 mm
SATA1	Serial ATA connector 1	
TOUCH1	Touch connector	9 x 1 wafer, pitch 2.0 mm
USB1	USB connector 1	USB connector
USB2/ 3/ 4	USB connector 0&1 / 2&3 / 4&5	5 x 2 header, pitch 2.0 mm
VR1	LCD backlight brightness adjustment	3 x 1 header, pitch 2.54mm

2.4 Setting Jumpers & Connectors

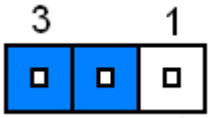
2.3.1 Clear CMOS (CMOS1)



Protect*

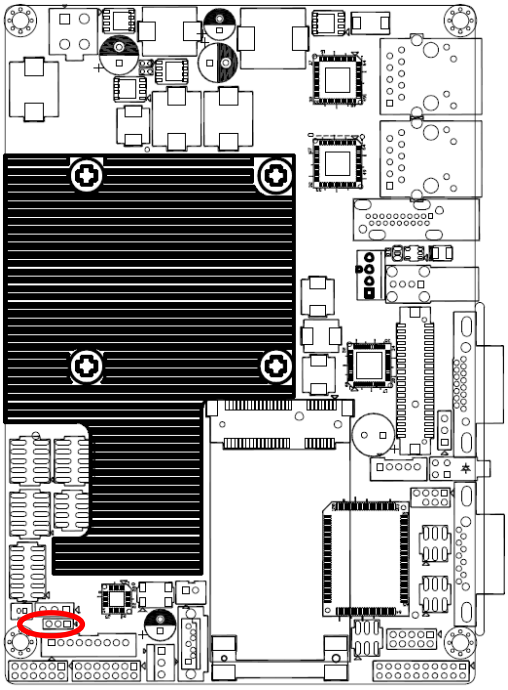


Clear CMOS

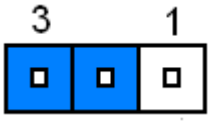


*** Default**

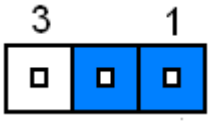
2.3.2 Touch Mode selector (JP1)



5-Wire*

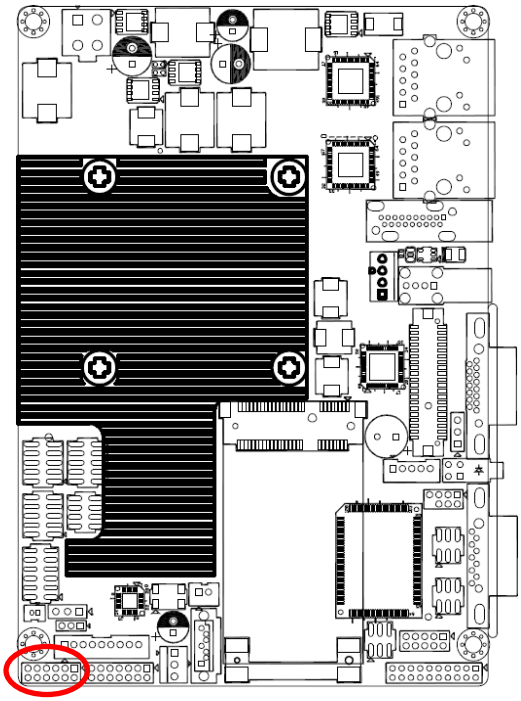


4/8-Wire



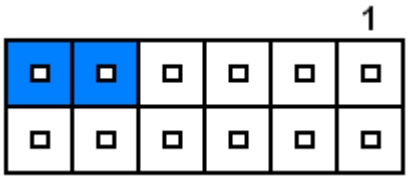
*** Default**

2.3.3 Miscellaneous settings connector (FPT1)

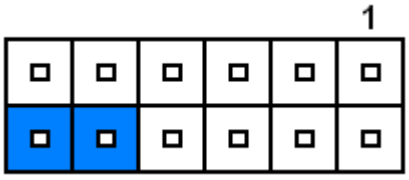


*** Default**

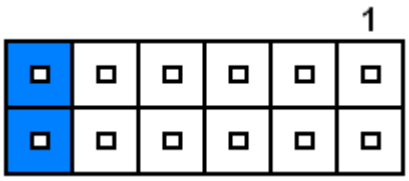
Power Button



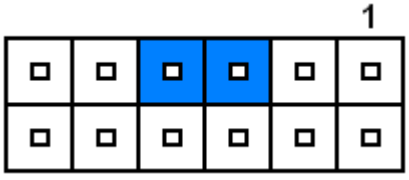
ATX Mode*



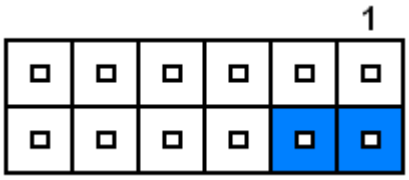
AT Mode



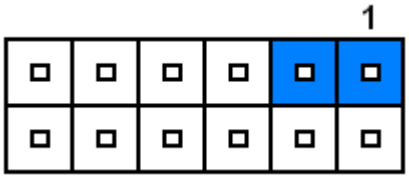
System Reset



Power LED Mode

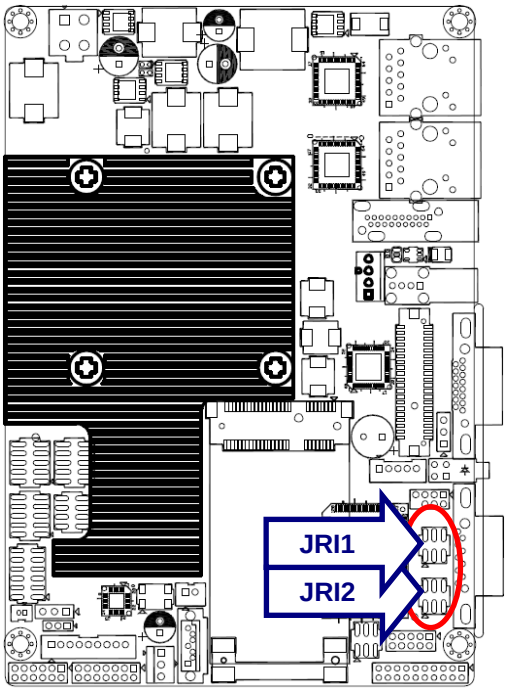


HDD LED Mode

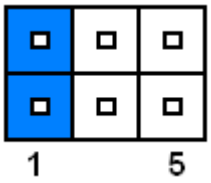


Signal	PIN	PIN	Signal
HDD_LED+	1	2	PWR_LED+
HDD_LED#	3	4	GND
GND	5	6	PWRSB_LED+
SYSRST	7	8	PWRSB_LED-
DS5_PANSW IN#	9	10	GND
ATX_EN#	11	12	ATX_EN#

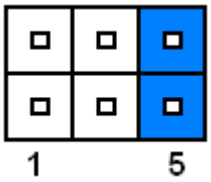
2.3.4 Serial port 1/ 2 pin9 signal select (JRI1/ JRI2)



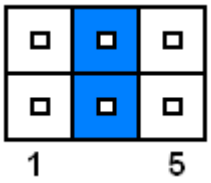
Ring*



+12V



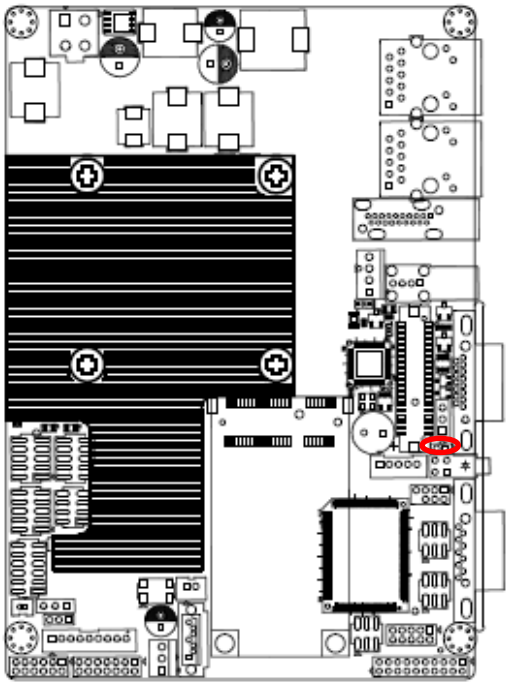
+5V



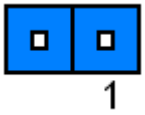
Signal	PIN	PIN	Signal
JNRIA/B#	1	2	NRIA/B#
+5V	3	4	NRIA/B#
+12V	5	6	NRIA/B#

*** Default**

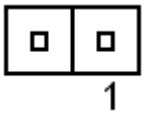
2.3.5 LCD PWM Mode Selector (BPW M1)



ON



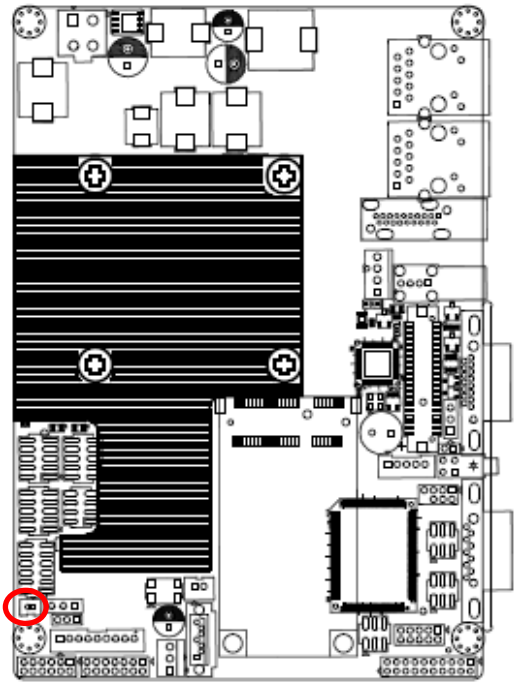
OFF*

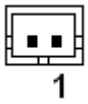


Signal	PIN
BRIGHT	1
LVDS_BKLTCTL	2

*** Default**

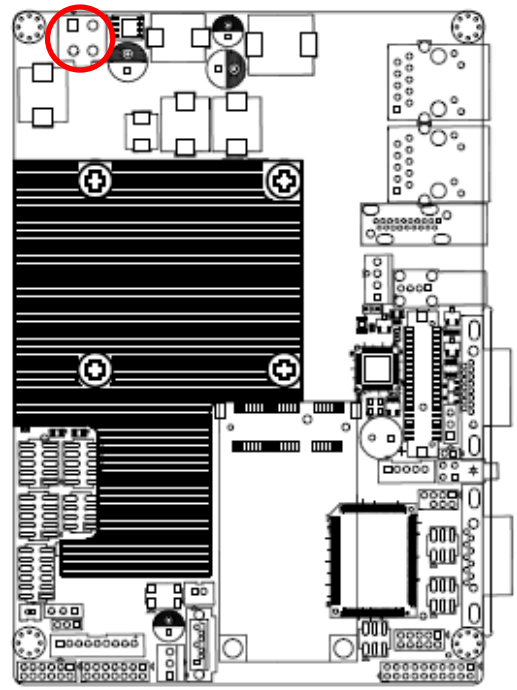
2.3.6 Battery connector (BT1)

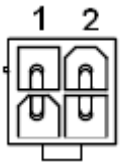




Signal	PIN
BAT	1
GND	2

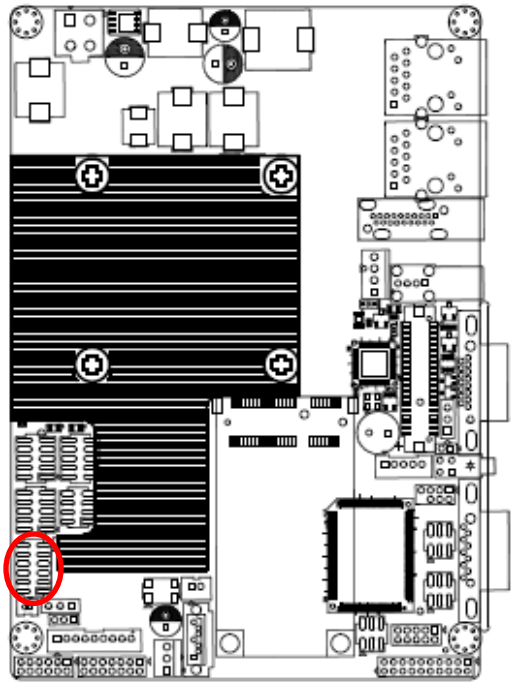
2.3.7 Power connector (PWR1)

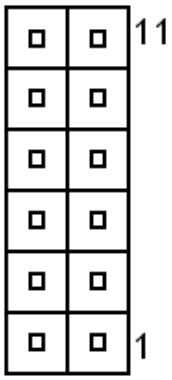




Signal	PIN	PIN	Signal
GND	1	2	GND
+12~26V	3	4	+12~26V

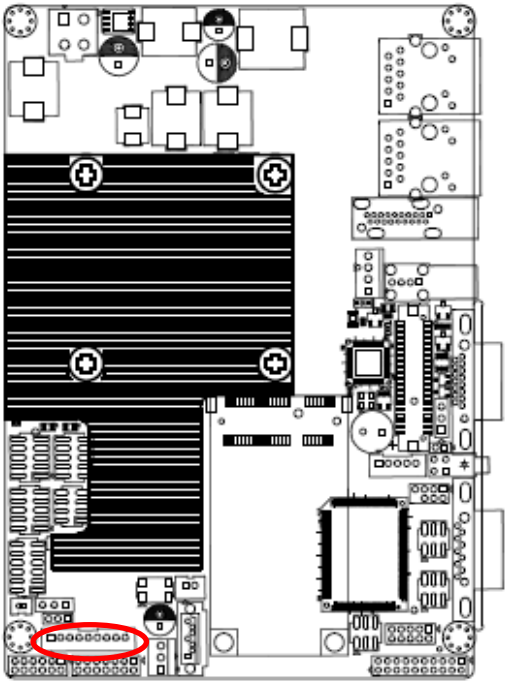
2.3.8 Audio connector (AUD1)

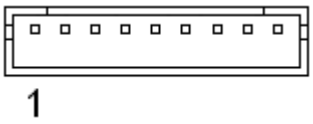




Signal	PIN	PIN	Signal
GND	12	11	MIC1-JD
LINE1-JD	10	9	FRONT-JD
MIC-LIN	8	7	MIC-RIN
LINE1_LIN	6	5	LINE1_RIN
GND	4	3	GND
LINEOUT_L	2	1	LINEOUT_R

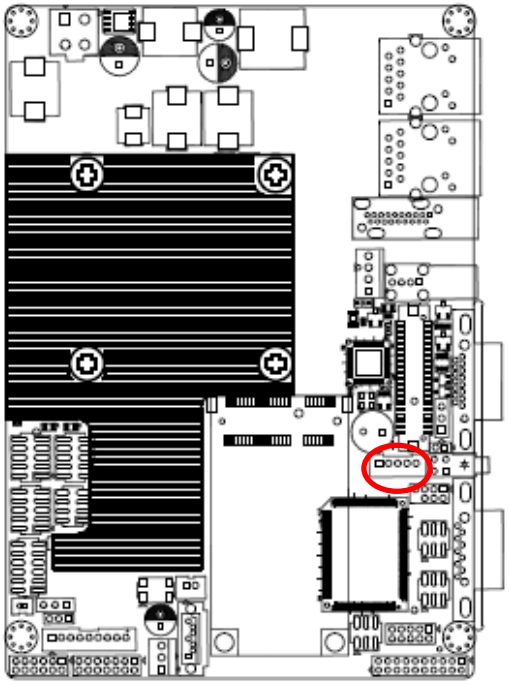
2.3.9 Touch connector (TOUCH1)

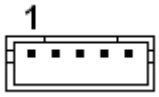




Signal	PIN	4-Wire	5-Wire	8-Wire
X+	1	NA	NA	Right Sense
X-	2	NA	NA	Left Sense
Y+	3	NA	NA	Bottom Sense
SENSE	4	NA	Sense	Top Sense
X+	5	Right	LR	Right Excite
X-	6	Left	LL	Left Excite
Y+	7	Bottom	UR	Bottom Excite
Y-	8	Top	UL	Top Excite
TOUCH_GND	9	GND	GND	GND

2.3.10 LCD inverter connector (BKL1)





Signal	PIN
+12V	1
GND	2
LVDS_BLKTEN	3
BRIGHT	4
+5V	5

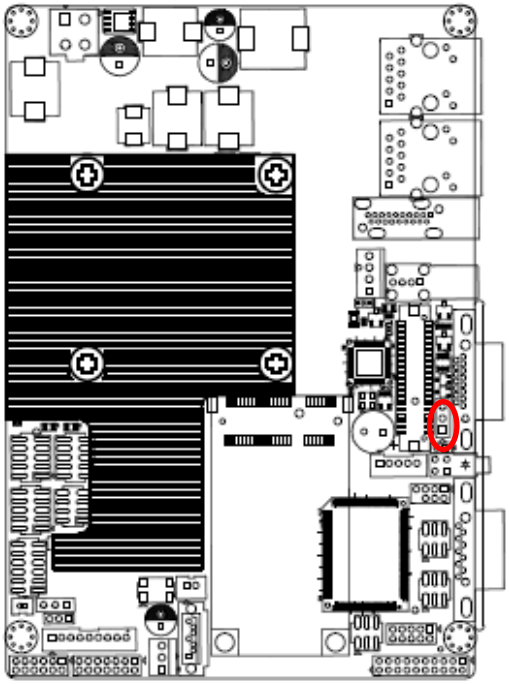
Note:

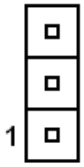
For inverters with adjustable Backlight function, it is possible to control the LCD brightness through the VR signal controlled by **VR1**.

2.3.10.1 Signal Description – LCD Inverter Connector (BKL1)

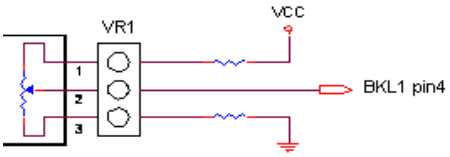
Signal	Signal Description
BRIGHT	Vadj = 0.75V ~ 4.25V (Recommended: 4.7KΩ, >1/16W)
LVDS_BLKTEN	LCD backlight ON/OFF control signal

2.3.11 LCD backlight brightness adjustment (VR1)





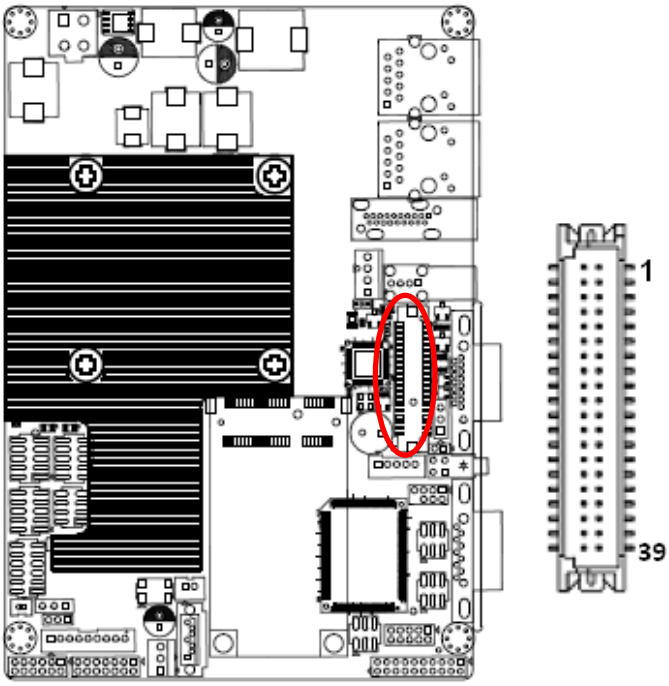
Signal	PIN
GND	3
BRIGHT	2
+5V	1



Variation Resistor

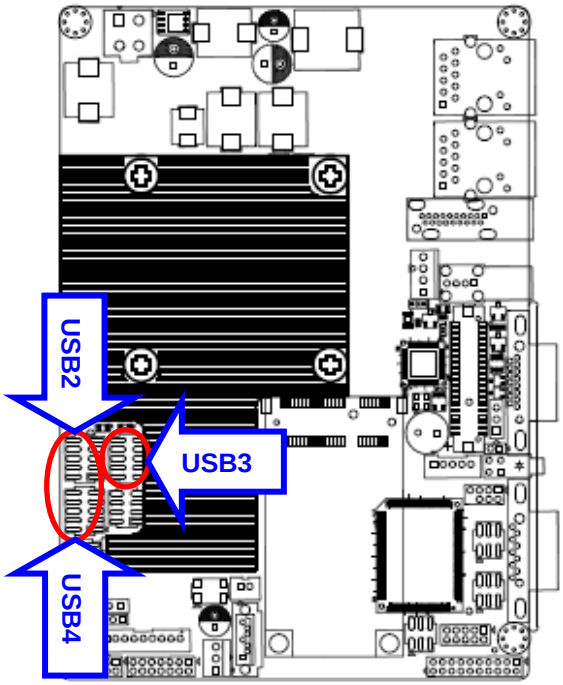
(Recommended: 4.7KΩ, >1/16W)

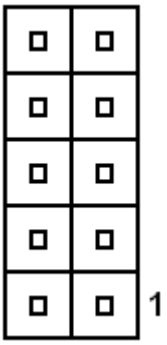
2.3.12 LVDS connector (LVDS1)



Signal	PIN	PIN	Signal
VDD5_LVDS	2	1	VDD3_LVDS
VDD5_LVDS	4	3	VDD3_LVDS
EDP_DDC_SDA	6	5	EDP_DDC_SCL
GND	8	7	GND
DATA0_P	10	9	DATA1_P
DATA0_N	12	11	DATA1_N
GND	14	13	GND
DATA2_P	16	15	DATA3_P
DATA2_N	18	17	DATA3_N
GND	20	19	GND
DATA4_P	22	21	DATA5_P
DATA4_N	24	23	DATA5_N
GND	26	25	GND
DATA6_P	28	27	DATA7_P
DATA6_N	30	29	DATA7_N
GND	32	31	GND
LVDS_CLK1_P	34	33	LVDS_CLK2_P
LVDS_CLK1_N	36	35	LVDS_CLK2_N
GND	38	37	GND
VDD12_LVDS	40	39	VDD12_LVDS

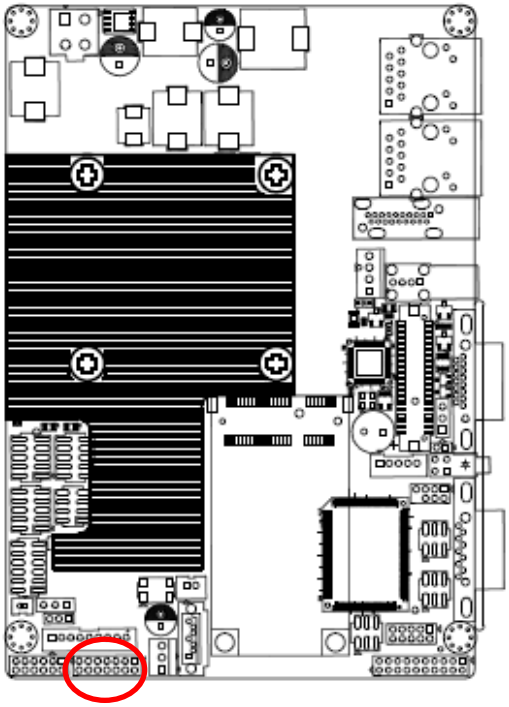
2.3.13 USB connector 0&1 / 2&3 / 4&5 (USB2/ 3/ 4)

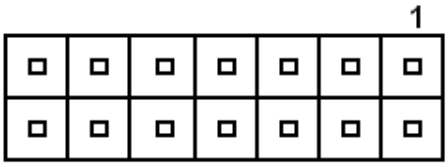




Signal	PIN	PIN	Signa
+5V	10	9	GND
USB_NP1/3/5	8	7	GND
USB_PP1/3/5	6	5	USB_PP0/2/4
GND	4	3	USB_NP0/2/4
GND	2	1	+5V

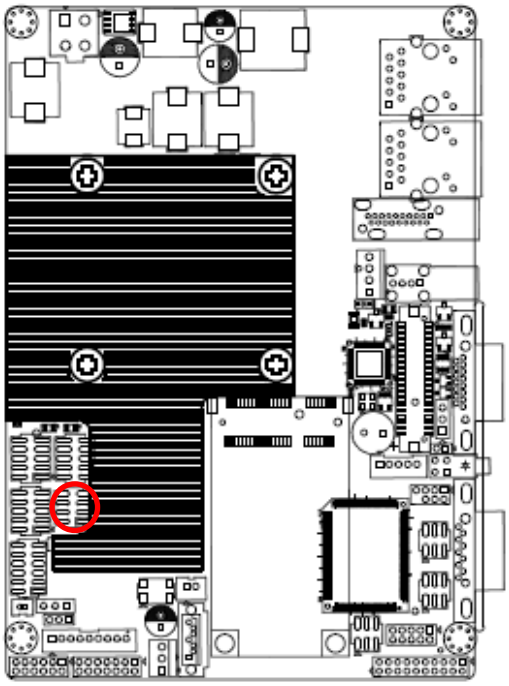
2.3.14 LPC connector (LPC1)

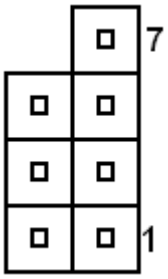




Signal	PIN	PIN	Signal
AD0	1	2	+V3P3_S
AD1	3	4	PLTRST#
AD2	5	6	LPC_FRAME#
AD3	7	8	LPC1_PCI_CLK
SERIRQ	9	10	GND
+V5S	11	12	GND
+V5A	13	14	LPC_LDRQ0#

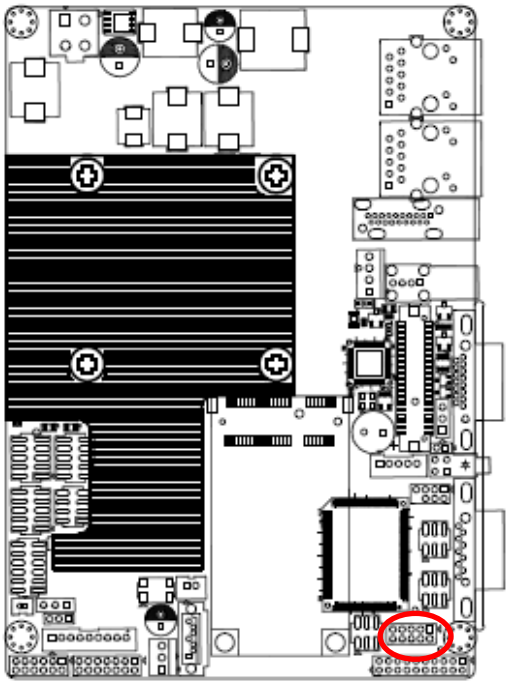
2.3.15 SPI connector (SPI1)

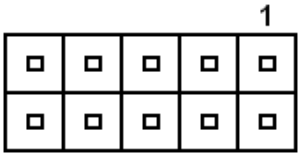




Signal	PIN	PIN	Signal
		7	SPI_HOLD#
SPI_SI	6	5	SPI_SO
SPI_CLK	4	3	SPI_CS#
GND	2	1	+V3P3A_SPI

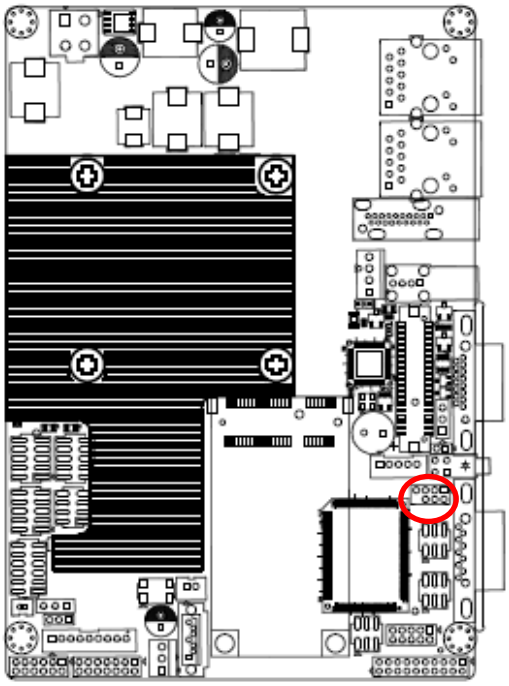
2.3.16 Serial port 2 connector (COM2)

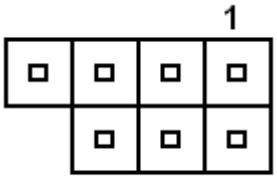




Signal	PIN	PIN	Signal
DCDB#	1	2	RxDB
TxDB	3	4	DTRB#
GND	5	6	DSRB#
RTSB#	7	8	CTSB#
RIB#	9	10	NC

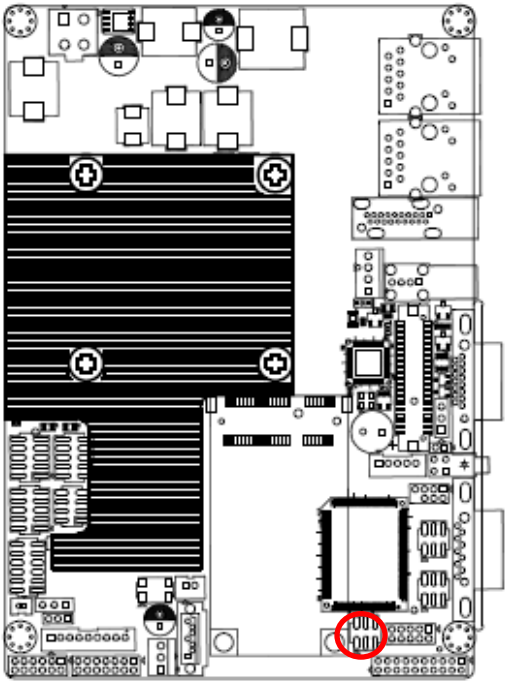
2.3.17 Keyboard & Mouse Connector (KB1)

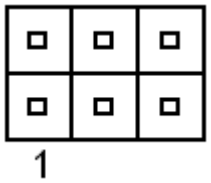




Signal	PIN	PIN	Signal
KBDA	1	2	KBCK
GND_PS2	3	4	VCC_PS2
MSDA	5	6	MSCK
NC	7		

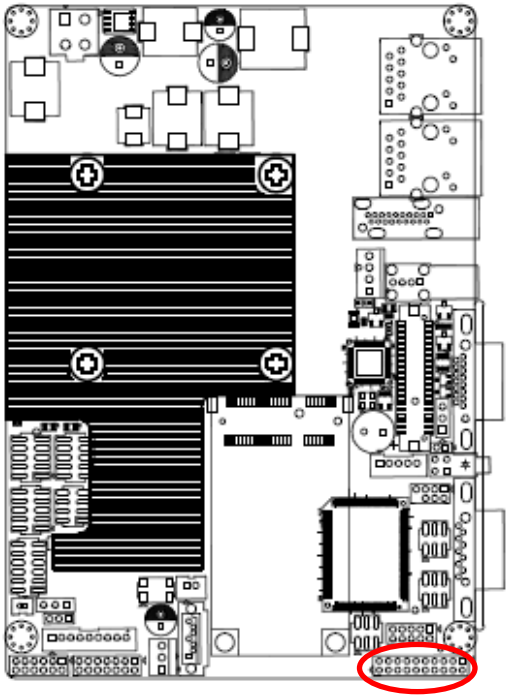
2.3.18 Serial port 2 in RS-422-485 mode (RS1)

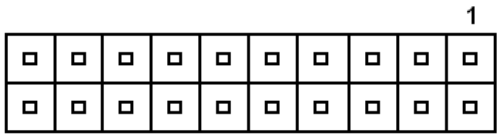




Signal	PIN	PIN	Signal
485_422TX-	1	2	422RX-
485_422TX+	3	4	422RX+
+5V	5	6	GND

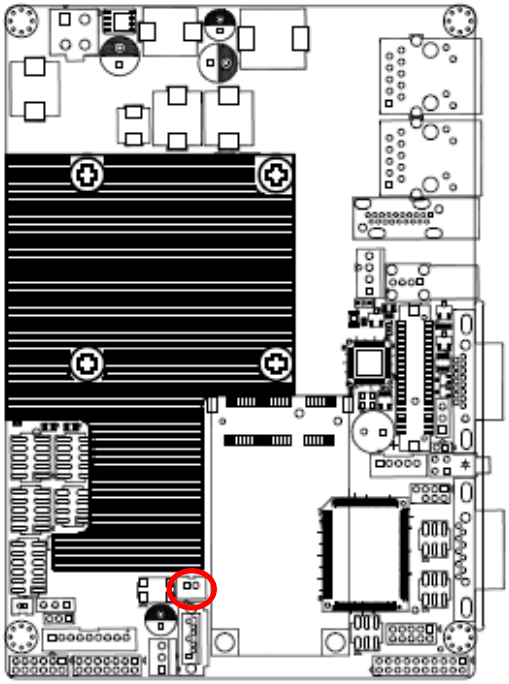
2.3.19 General purpose I/O connector (DIO1)

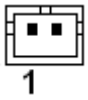




Signal	PIN	PIN	Signal
DI0	1	2	DO0
DI1	3	4	DO1
DI2	5	6	DO2
DI3	7	8	DO3
DI4	9	10	DO4
DI5	11	12	DO5
DI6	13	14	DO6
DI7	15	16	DO7
SMB_CLK	17	18	SMB_DATA
GND	19	20	+5V

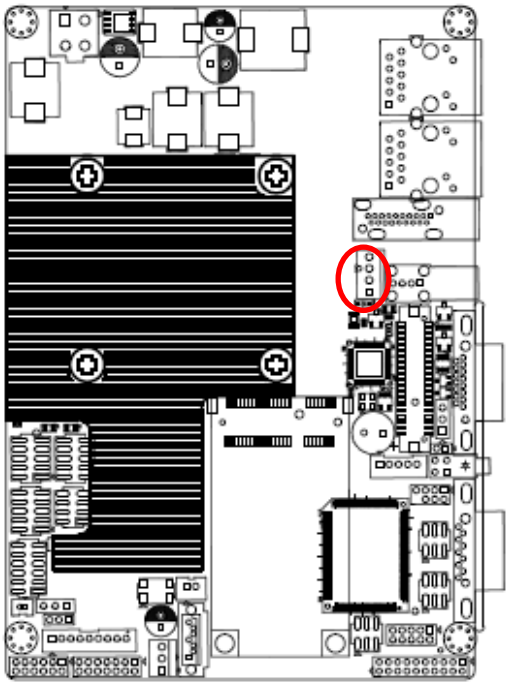
2.3.20 SATA power connector (SPWR1)





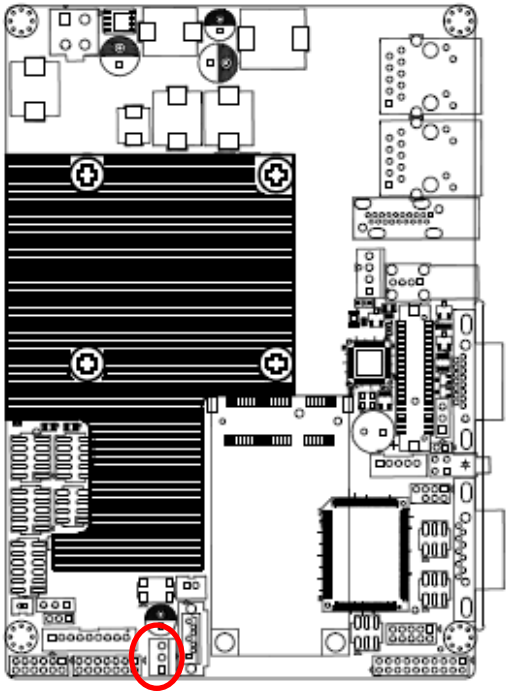
Signal	PIN
GND	1
+5V	2

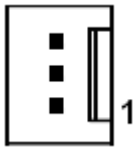
2.3.21 CPU fan connector (FAN1)



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

2.3.22 System fan connector (FAN2)





Signal	PIN
SYS_FANIN	3
+12V	2
GND	1

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.

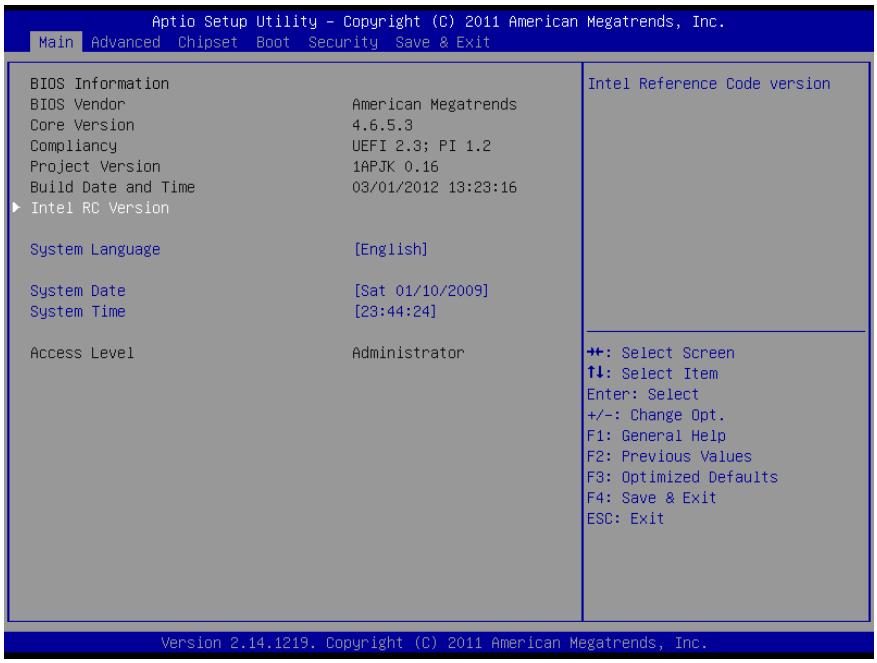
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your systems manufacturer to provide the absolute maximum performance and 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

Use this option to select system language

3.6.1.2 System Date

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

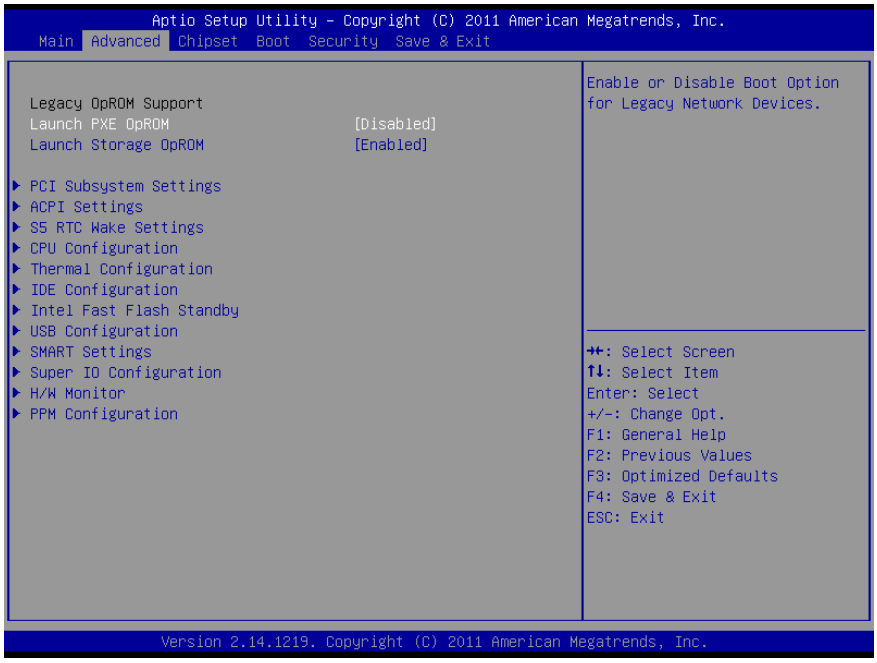
3.6.1.3 System Time

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

Note: BIOS setup screens shown in this chapter are for reference 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.

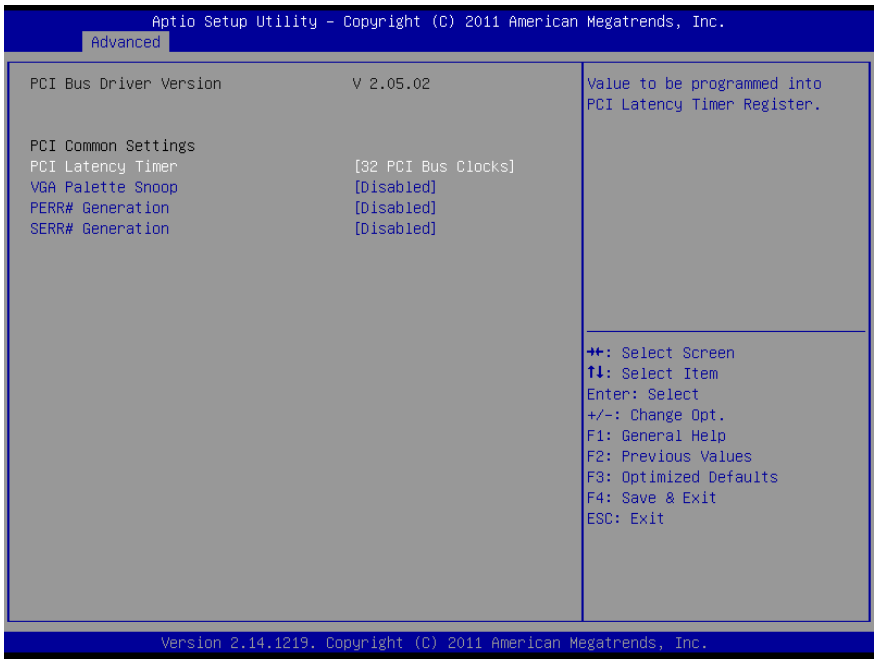
3.6.2 Advanced BIOS settings

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



Item	Options	Description
Launch PXE OpROM	Disabled, Enabled	Enable or disable Boot Option for Legacy Network Devices
Launch Storage OpROM	Disabled, Enabled	Enable or disable Boot Option for Legacy Mass storage devices With Option ROM.

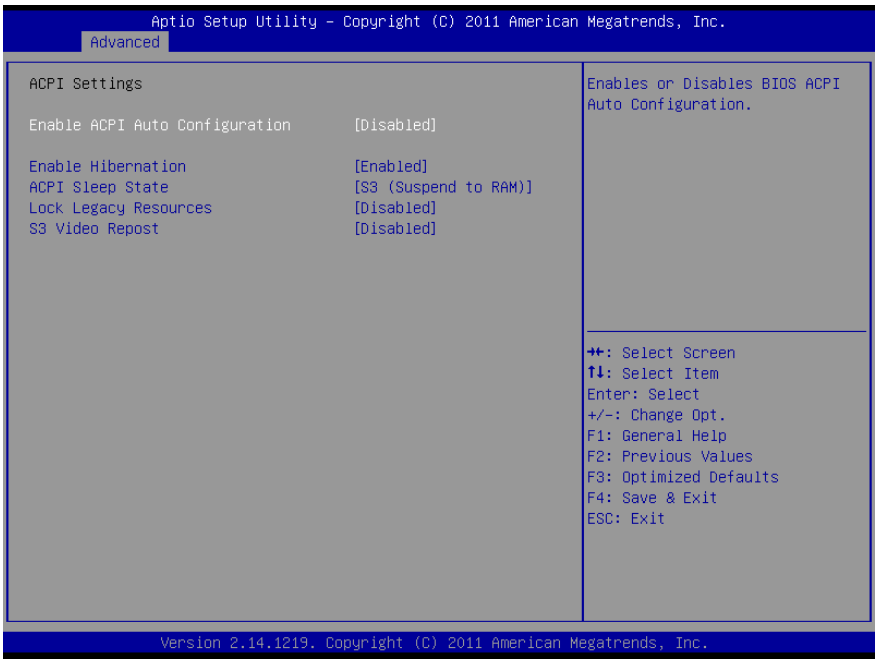
3.6.2.1 PCI Subsystem Settings



Item	Options	Description
PCI Latency Timer	32 PCI Bus Clocks 64 PCI Bus Clocks 96 PCI Bus Clocks 128 PCI Bus Clocks 160 PCI Bus Clocks 192 PCI Bus Clocks 224 PCI Bus Clocks 248 PCI Bus Clocks	Value to be programmed into PCI Latency Timer Register.
VGA Palette Snoop	Enabled Disabled	Enables or Disables VGA Palette registers Snooping.
PERR# Generation	Enabled Disabled	Enables or Disables PCI Device to Generate PERR#
SERR# Generation	Enabled Disabled	Enables or Disables PCI Device to Generate SERR#

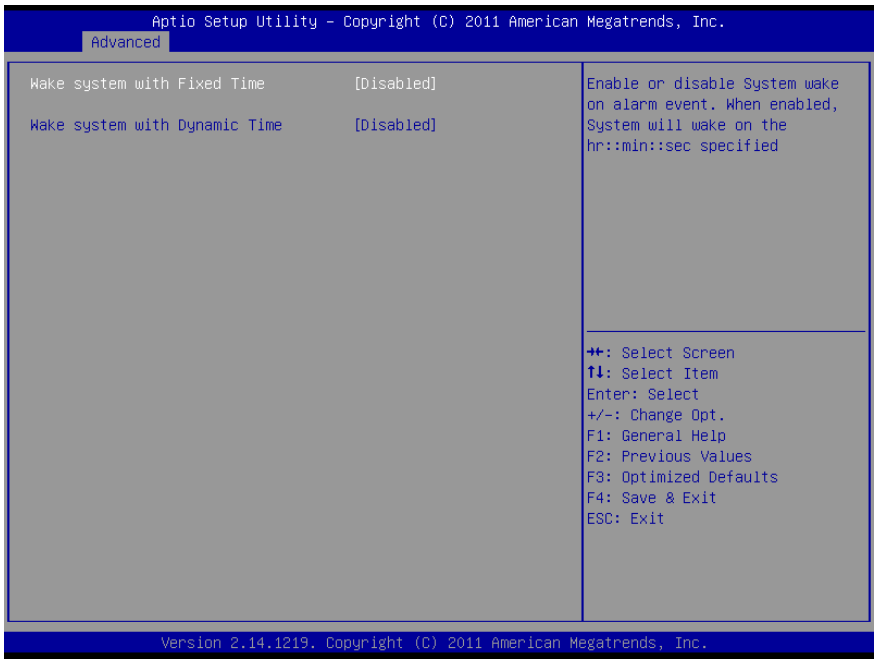
3.6.2.2 ACPI Settings

You can use this item to set up ACPI Configuration.



Item	Options	Description
Enable ACPI Auto Configuration	Disabled, Enabled	Enables or Disables BIOS ACPI Auto Configuration.
Enable Hibernation	Disabled, Enabled	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	Suspend Disabled, S3 (Suspend to RAM)	Select the highest ACPI sleep state the system will enter, when the SUSPEND button is pressed.
Lock Legacy Resources	Disabled, Enabled	Enables or Disables Lock of Legacy Resources.
S3 video Repost	Disabled, Enabled	Enable or Disable S3 video repost

3.6.2.3 S5 RTC Wake settings



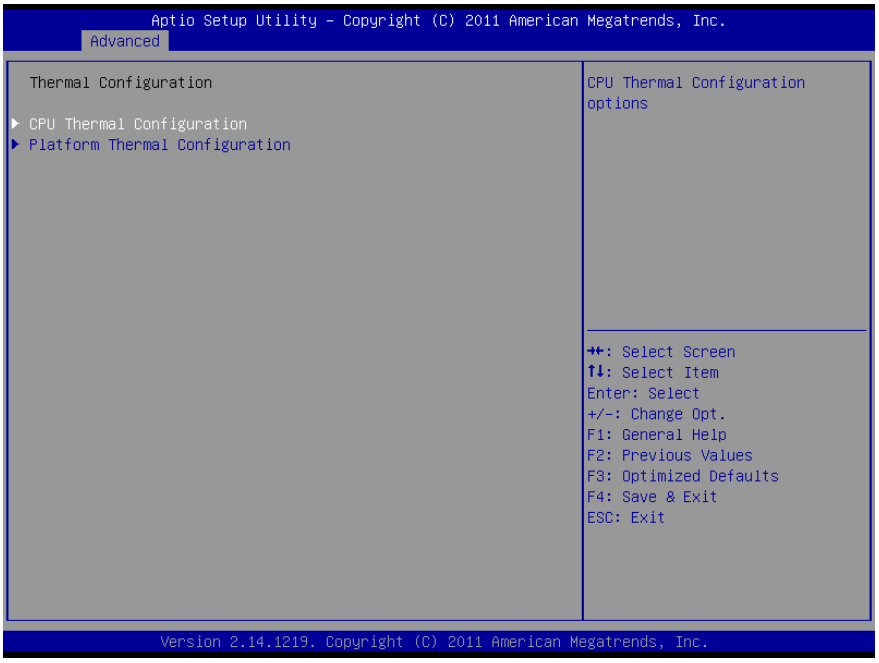
Item	Options	Description
Wake system with Fixed Time	Disabled, Enabled	Enables or Disables wake on alarm event. When enabled, System will wake on the hr::min::sec specified.
Wake system with Dynamic Time	Disabled, Enabled	Enables or Disables wake on alarm event. When enabled, System will wake on the current time + Increase minutes (s)

3.6.2.4 CPU Configuration

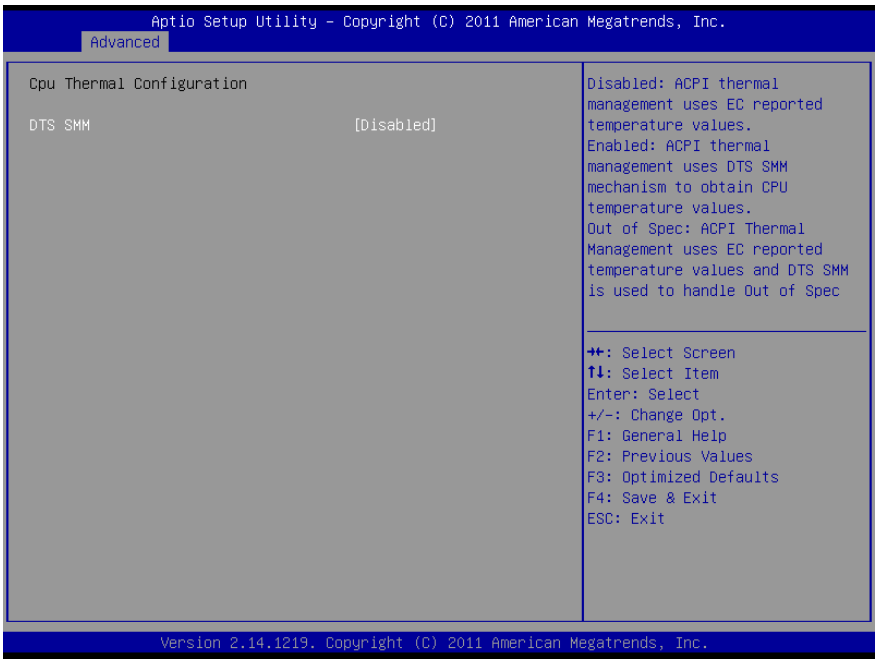
Use the CPU configuration menu to view detailed CPU specification and configure the CPU.

Item	Options	Description
Hyper-Threading	Disabled, Enabled	This item allows you to enable or disable Intel® Hyper Threading technology.
Core-Multi Processing	Disabled, Enabled	Enable or Disable Core-Multi Processing mode
Execute Disable Bit	Disabled, Enabled	This item allows you to enable or disable the No-Execution page protection technology.
Limit CPUID Maximum	Disabled, Enabled	This item allows you to limit CPUID maximum Value.

3.6.2.5 Thermal Configuration

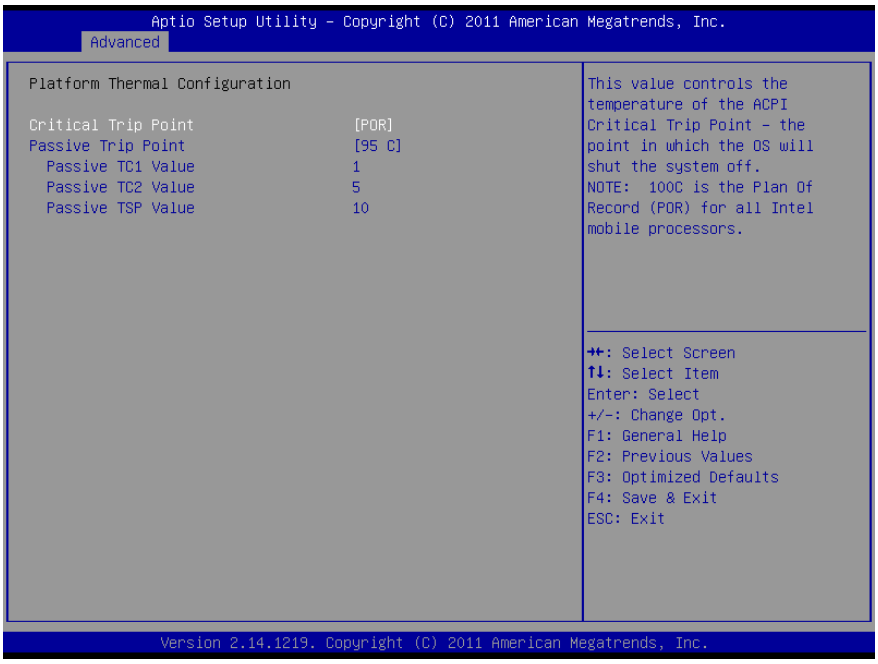


3.6.2.5.1 CPU Thermal Configuration



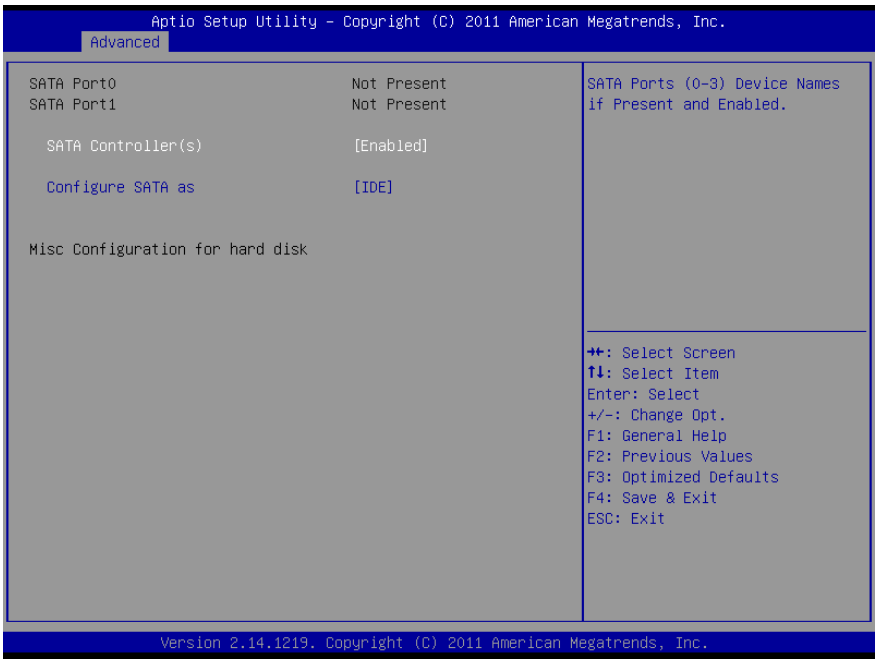
Item	Options	Description
DTS SMM	Enabled Disabled Critical Temp reporting (Out of Spec)	Disabled: ACPI thermal management uses EC reported temperature values. Enabled: ACPI thermal management uses DTS SMM mechanism to obtain CPU temperature values. Out of spec: ACPI thermal management uses EC reported temperature values and DTS SMM is used to handle Out of spec condition.

3.6.2.5.2 Platform Thermal Configuration



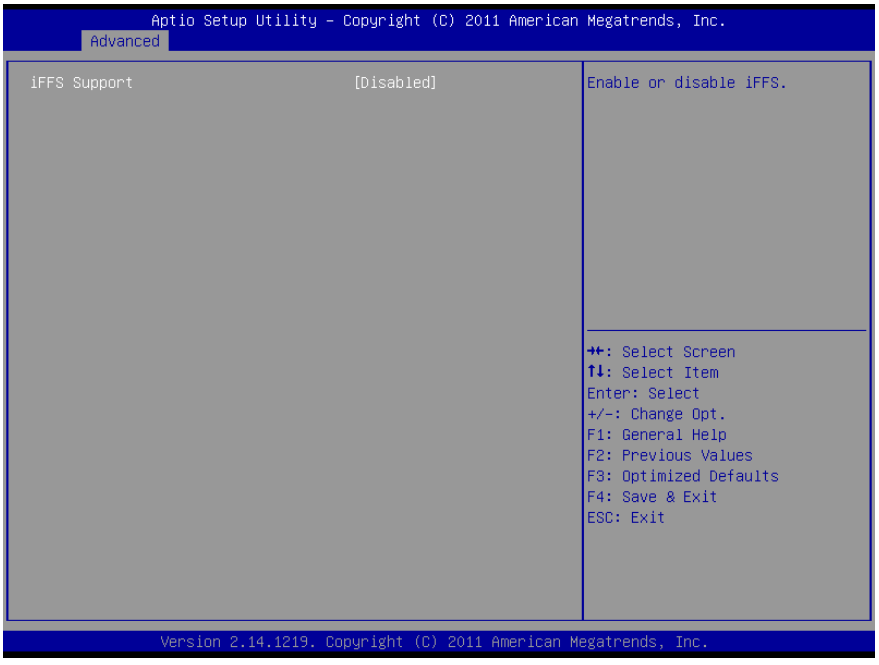
Item	Options	Description
Critical Trip Point	POR 15C 23C 31C 39C 47C 55C 63C 71C 79C 87C 95C 103C 111C 119C 127C	This value controls the temperature of the ACPI Critical Trip Point – the point in which the OS will shut the sytem off. NOTE: 100C is the Plan Of Record (POR) for all Intel mobile
Passive Trip Point		This value controls the temperature of the ACPI Passive Trip Point - the point in which the OS will begin throttling the processor.
Passive TC1 Value	1 – 16	This value sets the TC1 -2 value for the ACPI passive cooling Formula. Range 1 - 16
Passive TC2 Value		
Passive TSP Value	2 - 32	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

3.6.2.6 IDE Configuration



Item	Options	Description
SATA Controller(s)	Enabled Disabled	SATA Ports (0-3) Device Names if Present and Enabled.
Configure SATA as	IDE AHCI	Select a configuration for SATA Controller

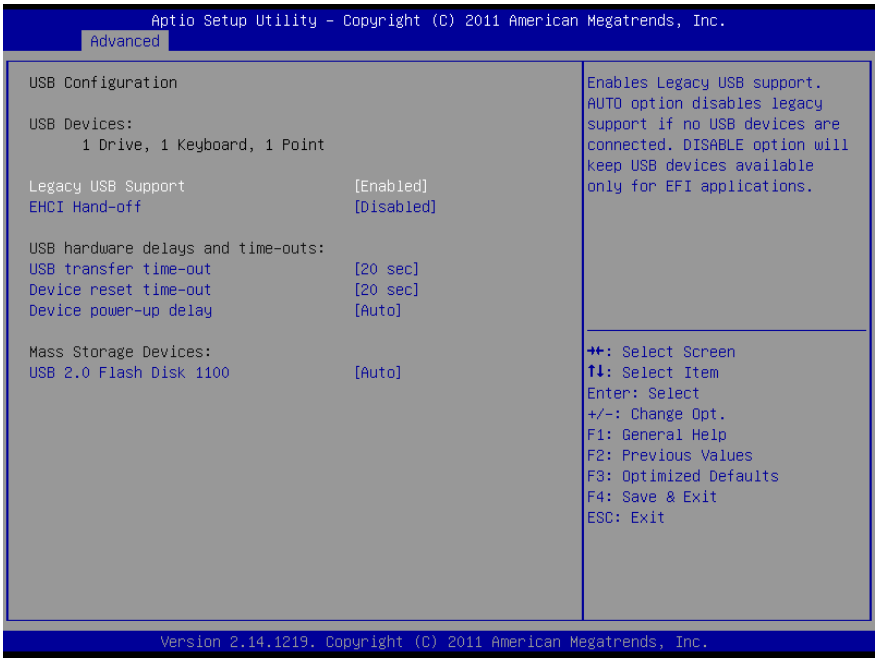
3.6.2.7 Intel Fast Flash Standby



Item	Options	Description
iFFS Support	Enabled Disabled	Enable or Disable iFFS

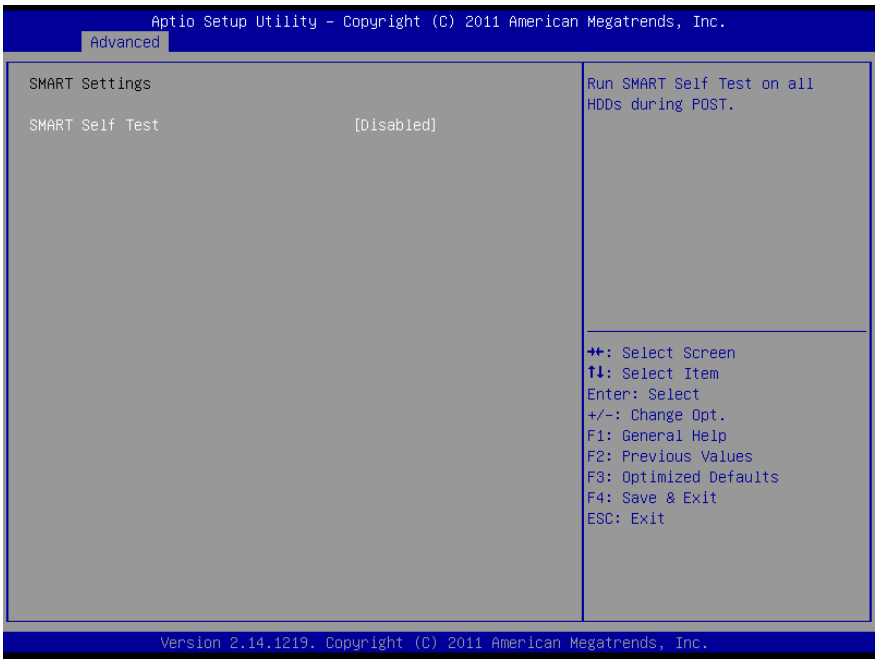
3.6.2.8 USB Configuration

The USB configuration menu is used to read USB configuration information and configure USB.



Item	Options	Description
Legacy USB support	Enabled Disabled Auto	Enables Legacy USB support. AUTO disables legacy support if no USB devices are connected. DISABLE will keep USB devices available only for EFI applications.
ECHI 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	1sec / 5sec 10sec / 20sec	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10sec / 20sec 30sec / 40sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto 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 from Hub descriptor.
Device power-up delay in seconds	1~40	Delay range is 1~40 seconds, in one second increments.
USB 2.0 Flash Disk 1100	Auto Floppy Forced FDD Hard-disk CD-ROM	Mass storage device emulation type. "AUTO" enumerates devices according to their media format. Optical drives are emulated as "CDROM", drives with no media will be emulated according to a drive type.

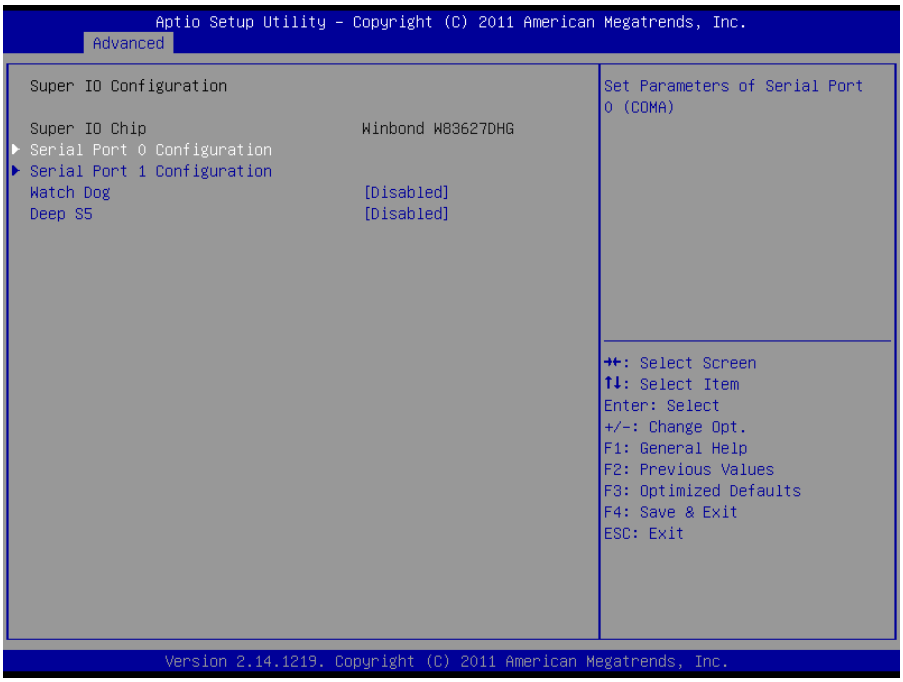
3.6.2.9 Smart settings



Item	Options	Description
SMART Self Test	Enabled Disabled	Run SMART Self test on all HDDs during POST

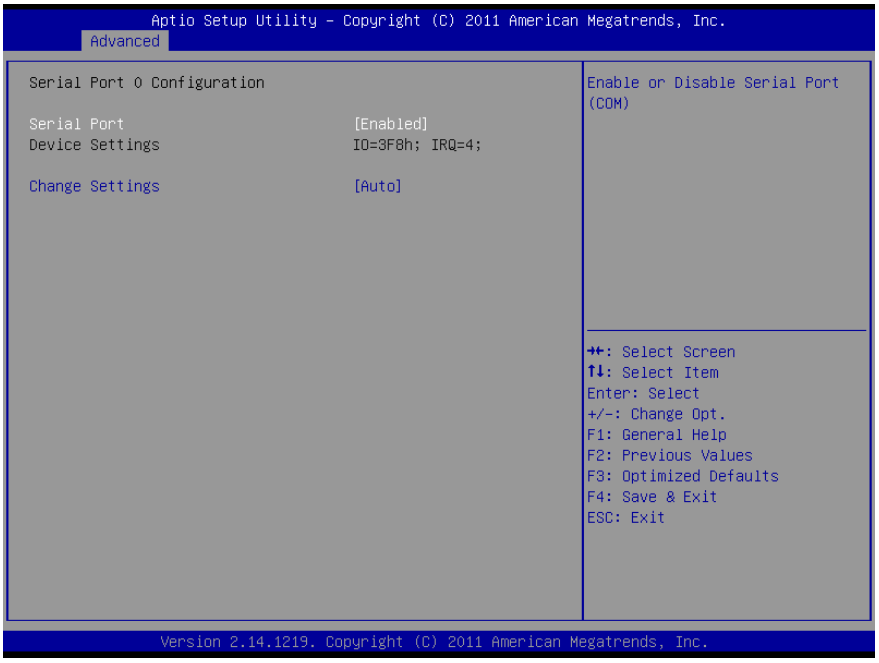
3.6.2.10 Super IO Configuration

You can use this item to set up or change the Super IO configuration for FDD controllers, parallel ports and serial ports. Please refer to 3.6.2.9.1 and 3.6.2.9.2 for more information.



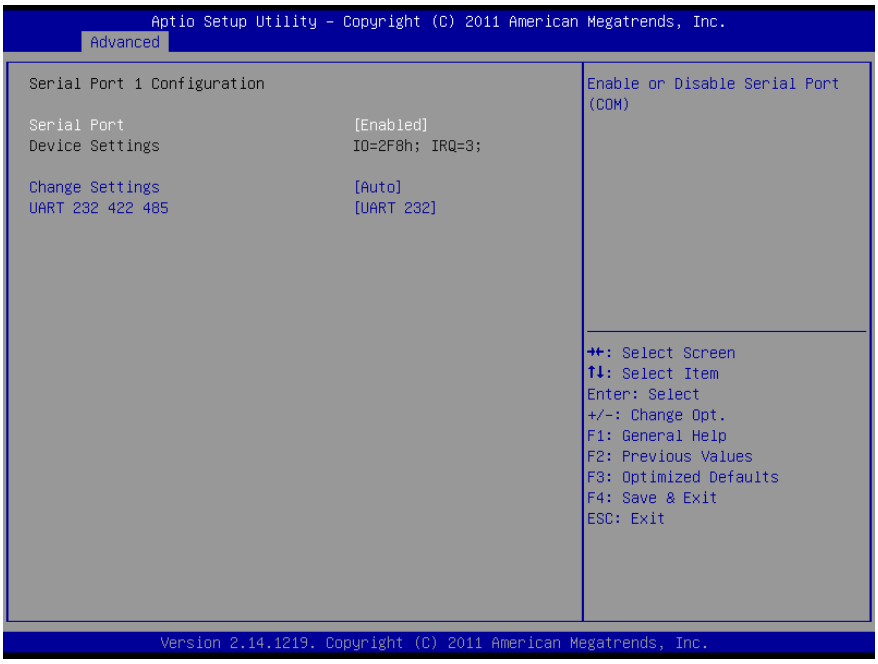
Item	Option	Description
Watch Dog	Disabled 30sec 40sec 50sec 60sec 2min 10min 30min	Set SIO watch dog timer.
Deep S5	Enabled Disabled	Deep S5 for power saving

3.6.2.10.1 Serial Port 0 Configuration



Item	Option	Description
Serial Port	Enabled, Disabled	Use the Serial port option to enable or disable the serial port.
Change Settings	Auto IO=3F8h; IRQ=4, IO=3F8h; IRQ=3,4,5,6,7,10,11,12 IO=2F8h; IRQ=3,4,5,6,7,10,11,12 IO=3E8h; IRQ=3,4,5,6,7,10,11,12 IO=2E8h; IRQ=3,4,5,6,7,10,11,12	Use the change Settings option to change the serial port IO port address and interrupt address.

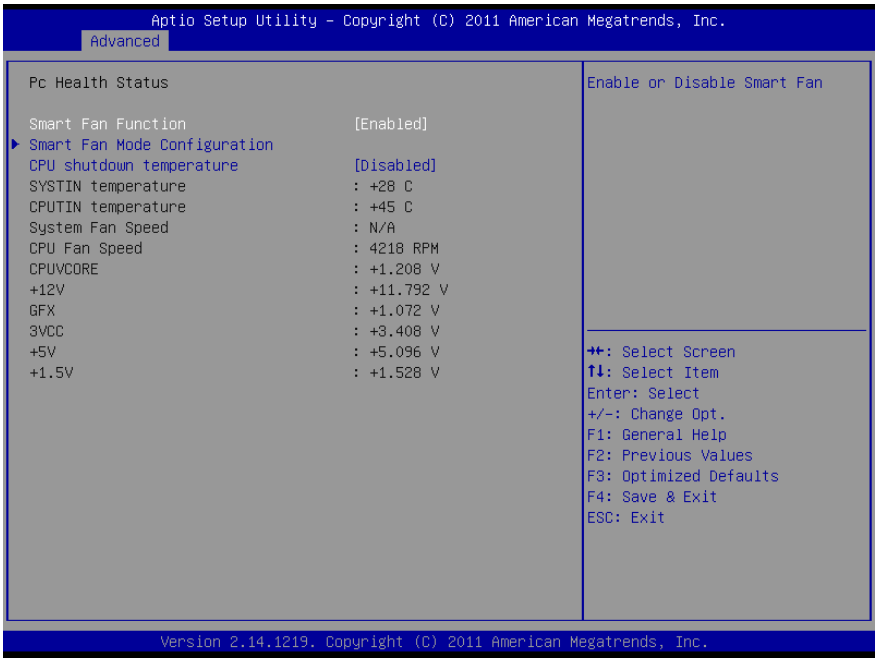
3.6.2.10.2 Serial Port 1 Configuration



Item	Option	Description
Serial Port	Enabled, Disabled	Use the Serial port option to enable or disable the serial port.
Change Settings	Auto IO=2F8h; IRQ=3, IO=3F8h; IRQ=3,4,5,6,7,10,11,12 IO=2F8h; IRQ=3,4,5,6,7,10,11,12 IO=3E8h; IRQ=3,4,5,6,7,10,11,12 IO=2E8h; IRQ=3,4,5,6,7,10,11,12	Use the change Settings option to change the serial port IO port address and interrupt address.
UART 232 422 485	UART 232, UART 422, UART 485	Change the Serial Port mode. Select <RS232> or <RS422><RS485> mode

3.6.2.11 H/W Monitor

The H/W Monitor shows the operating temperature, fan speeds and system voltages.



Item	Option	Description
Smart Fan Function	Enabled, Disabled	Enables or Disables Smart Fan
CPU shutdown temperature	Disabled 70C 80C 90C	SIO ov# to shutdown system

Temperature

- SYSTIN temperature
- CPUTIN temperature

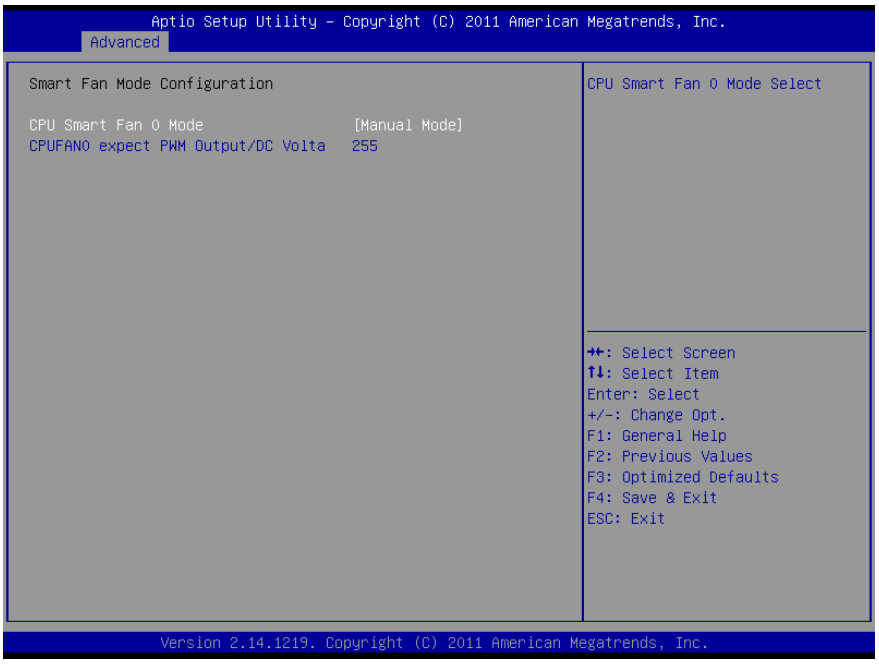
Fan speed

- System Fan speed
- CPU Fan Speed

Voltage

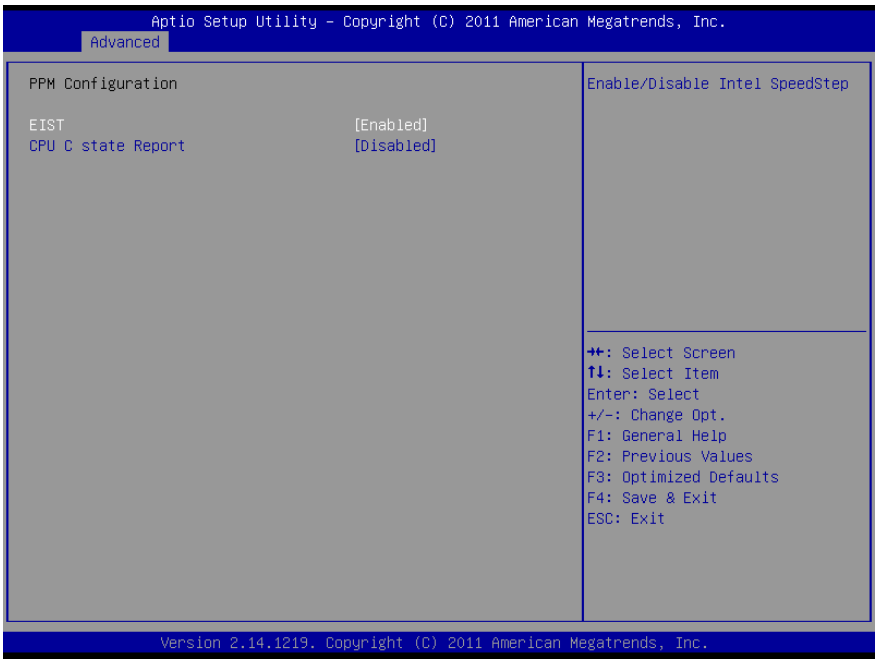
- CPUVCORE
- +12V
- GFX
- 3VCC
- +5V
- +1.5V

3.6.2.11.1 Smart Fan Mode Configuration



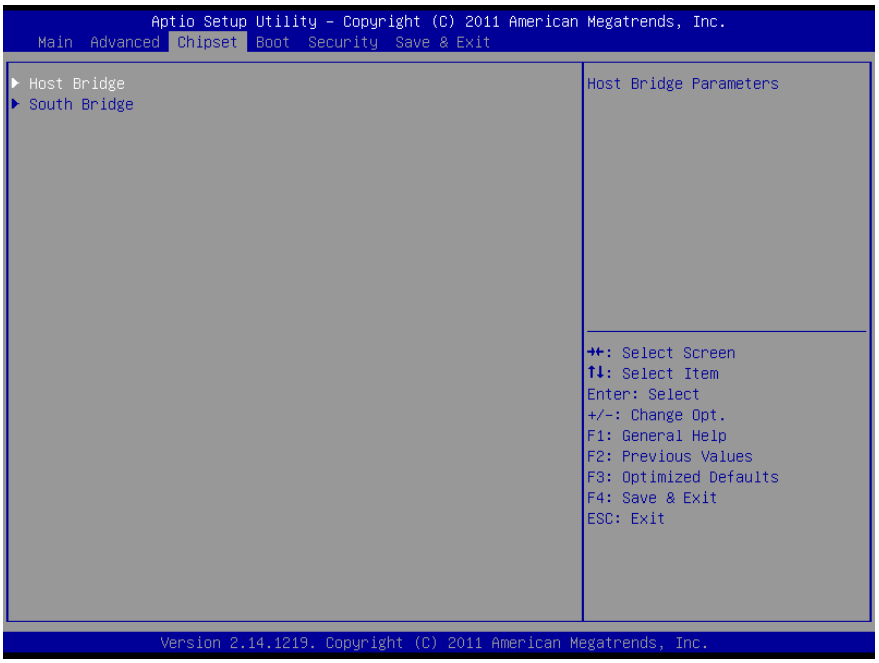
Item	Option	Description
CPU Smart Fan 0 Mode	Enabled, Disabled	CPU Smart Fan 0 Mode Select
CPUFAN0 expect PWM Output/DC Voltage Output	0 - 255	Input expect PWM Output Value (Range: 0 – 255)

3.6.2.12 PPM configuration

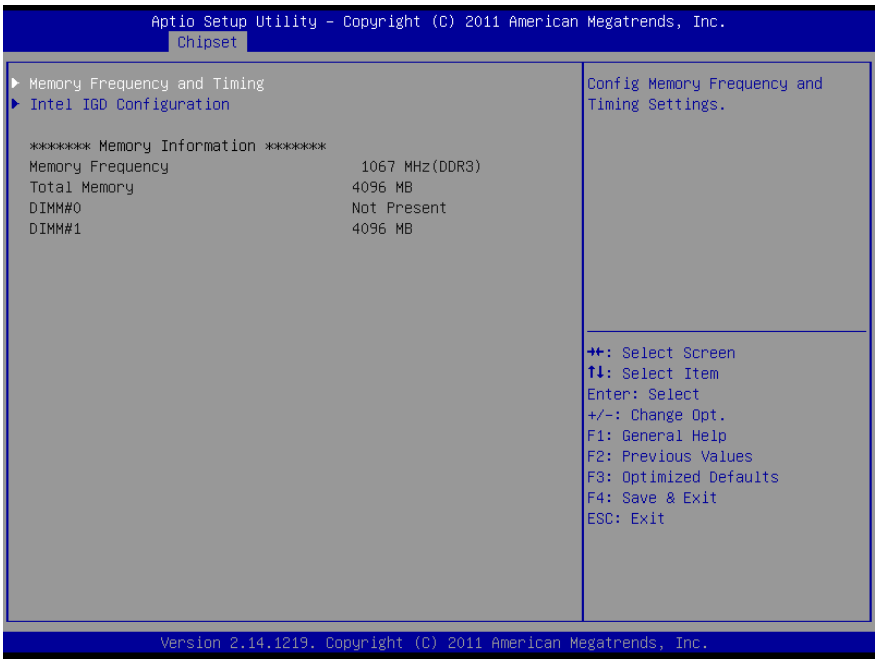


Item	Option	Description
EIST	Enabled, Disabled	Enable/Disable Intel SpeedStep.
CPU C state Report	Enabled, Disabled	Enable/Disable CPU C State report to OS.

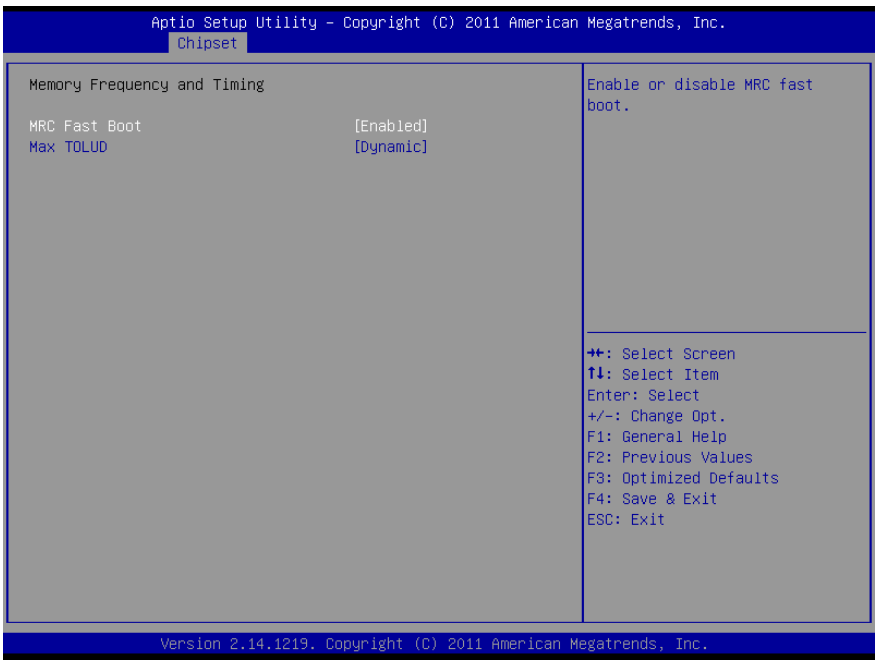
3.6.3 Advanced Chipset Features



3.6.3.1 Host bridge

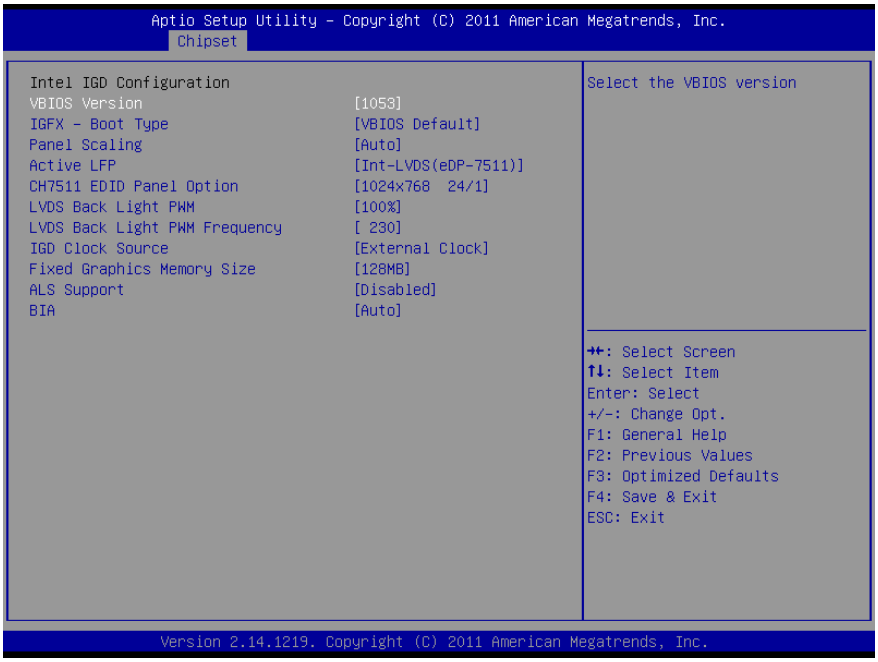


3.6.3.1.1 Memory Frequency and Timing



Item	Option	Description
MRC Fast Boot	Enabled, Disabled	Enable or Disable MRC fast boot
Max TOLUD	Dynamic 1GB 1.25 GB 1.5 GB 1.75 GB 2 GB 2.25 GB 2.5 GB 2.75 GB 3 GB 3.25 GB	Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length

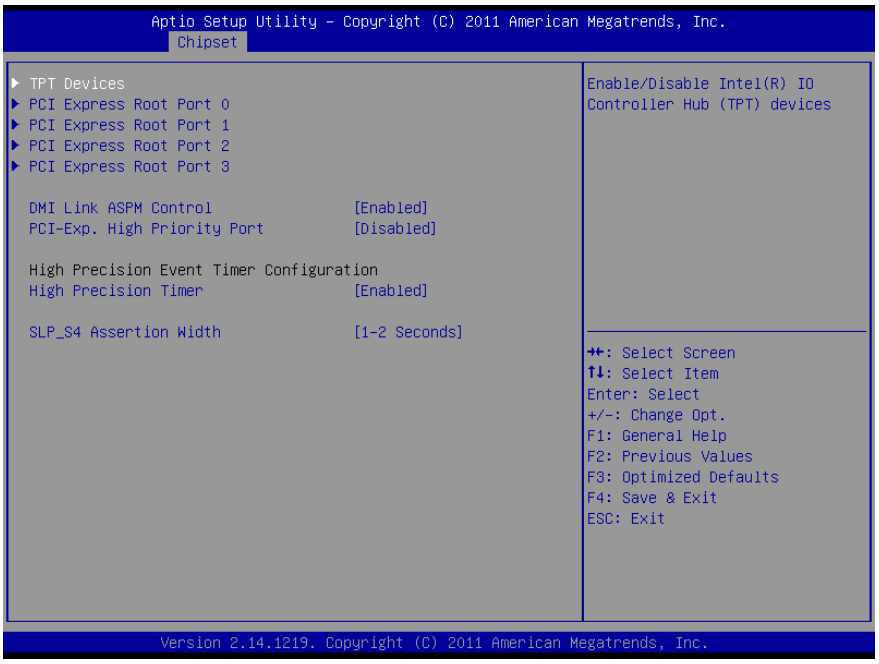
3.6.3.1.2 Intel IGD Configuration



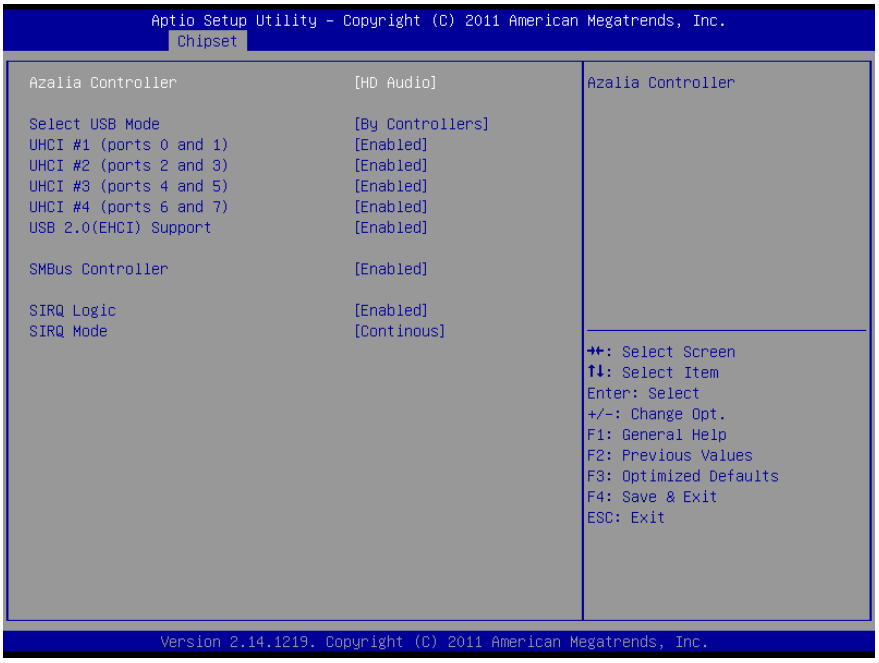
Item	Option	Description
VBIOS Version	1053 1059	Select the VBIOS version
IGFX - Boot Type	CRT, CRT+LVDS, CRT+HDMI(Twin), LVDS, LVDS+CRT, HDMI, HDMI+LVDS	Select the Video Device which will be activated during POST. This has no effect if external graphics present.
Panel Scaling	Auto Force Scaling Off Maintain Aspect Ratio	Select the LCD panel scaling option used by the Internal Graphics Device.

Active LFP	No LVDS Int-LVDS (eDP-7511)	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 800x600 24/1 1024x768 18/1 1024x576 18/1 1024x600 18/1 1280x800 18/1 1920x1200 18/2 640x480 24/1 800x480 24/1 1280x768 24/1 1280x1024 24/2 1440x900 24/2 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% 75% 100%	Select LVDS backlight PWM duty
LVDS Back Light PWM Frequency	175 230 350 700 1k / 2k / 3k / 5k 10k / 20k / 30k / 50k / 100k	Select LVDS backlight PWM frequency
IGD Clock Source	External clock Internal clock	IGD clock selection
Fixed Graphics Memory Size	128MB 256MB	Configure Fixed Graphics memory Size
ALS Support	Enabled Disabled	Valid only for ACPI. Legacy=ALS Support through the IGD INT10 function. ACPI=ALS support through an ACPI ALS driver
BIA	Auto Disabled Level1/2/3/4/5	Auto: GMCH Use VBT Default; Level n: Enabled with Selected Aggressiveness Level.

3.6.3.2 South bridge



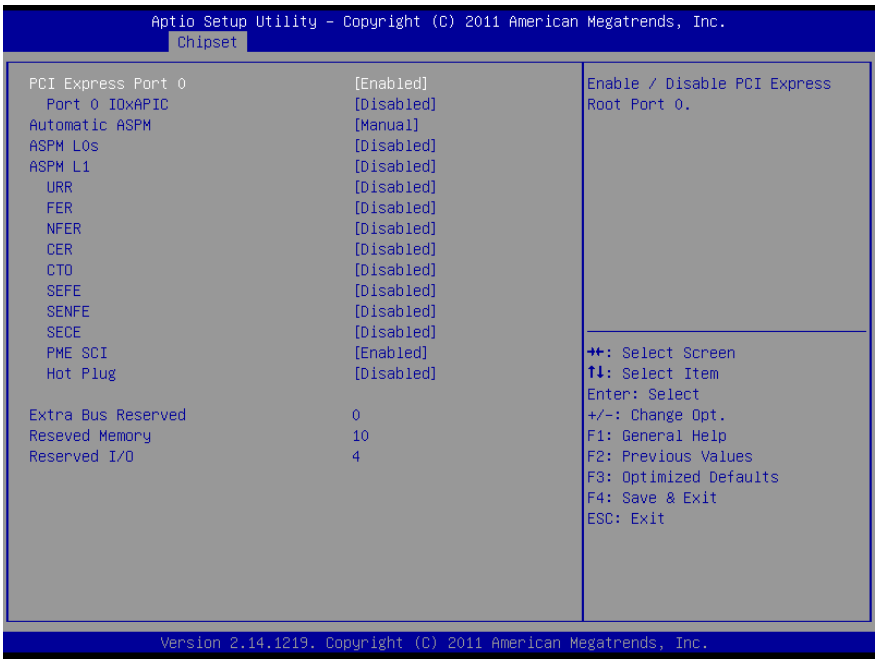
3.6.3.2.1 TCP devices



Item	Option	Description
Azalia Controller	Disabled HD Audio	Azalia controller
Select USB Mode	By Ports By controllers	Select USB mode to connect USB ports

UHCI #1 (ports 0 and 1)	Enabled Disabled	Control the USB UHCI (USB1.1) functions. Disable from highest to lowest controller.
UHCI #2 (ports 2 and 3)	Enabled Disabled	
UHCI #3 (ports 4 and 5)	Enabled Disabled	
UHCI #4 (ports 6 and 7)	Enabled Disabled	
USB 2.0(EHCI) Support	Enabled Disabled	Enable or Disable USB 2.0 (EHCI) Support.
SMBus Controller	Enabled Disabled	Enable or Disable OnChip SMBus Controller.
SIRQ Logic	Enabled Disabled	Enable or Disable SIRQ logic
SIRQ Mode	Quiet Continuous	Set SIRQ mode.

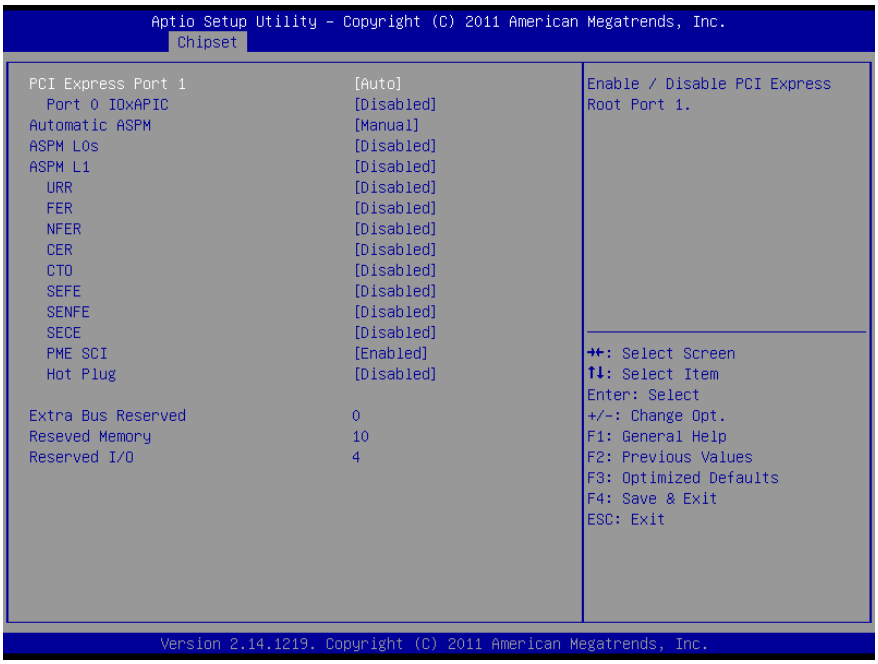
3.6.3.2.2 PCI Express Root Port 0

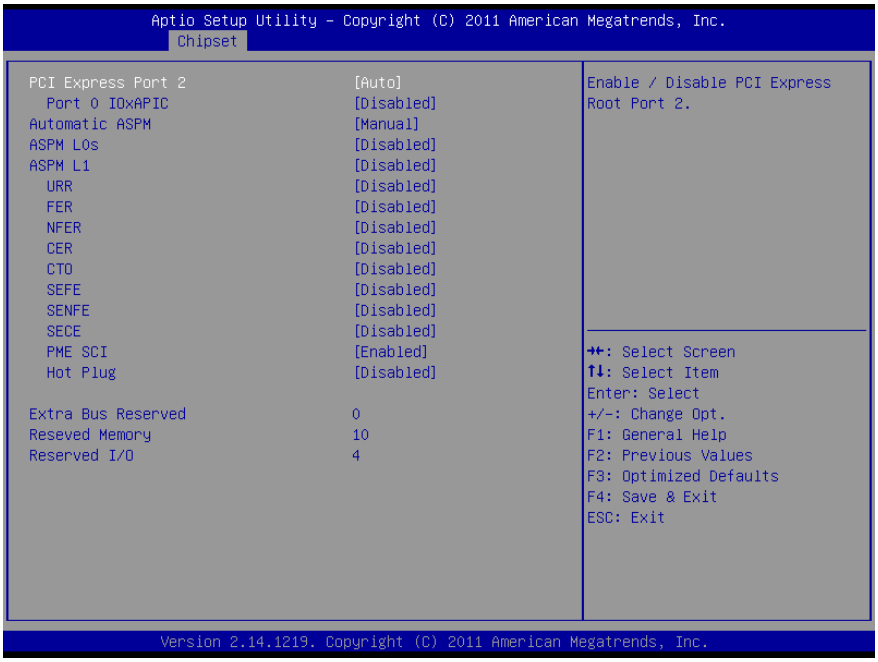


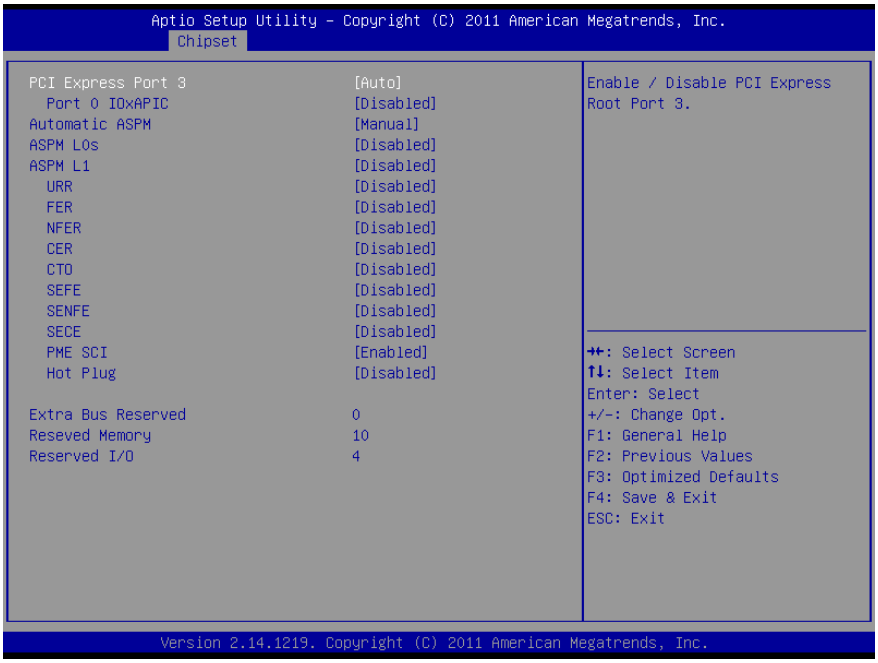
Item	Option	Description
PCI Express Port 0	Enabled Disabled	Enable / Disable PCI Express Root Port 0.
Port 0 IOxAPIC	Enabled Disabled	Enable / Disable PCI Express Root Port 0 I/O APIC
Automatic ASPM	Manual Auto	Automatically enable ASPM based on reported capabilities and known issues
ASPM L0s	Disabled Root Port Only End point Port Only Both Root And Endports	Enable PCIe ASPM L0s
ASPM L1	Enabled Disabled	Enable PCIe ASPM L1s

URR	Enabled Disabled	PCI Express Unsupported Request Reporting Enable/Disable.
FER	Enabled Disabled	PCI Express Device Fatal Error Reporting Enable/Disable
NFER	Enabled Disabled	PCI Express Device Non-Fatal Error Reporting Enable/Disable.
CER	Enabled Disabled	PCI Express Device correctable Error Reporting Enable/Disable
CTO	Enabled Disabled	PCI Express Completion Timer TO Enable/Disable
SEFE	Enabled Disabled	Root PCI Express System Error on Fatal Error Enable/Disable
SENFE	Enabled Disabled	Root PCI Express System Error on Non-Fatal Error Enable/Disable
SECE	Enabled Disabled	Root PCI Express Error on correctable Error Enable/Disable
PME SCI	Enabled Disabled	PCI Express PME SCI Enable/Disable.
Hot Plug	Enabled Disabled	PCI Express Hot Plug Enable/Disable
Extra Bus Reserved	0 - 7	Extra Bus Reserved (0 -7)for bridges behind this Root Bridge.
Reserved Memory	1 – 20MB	Reserved memory and Prefetchable Memory (1-20MB) Range for this Root Bridge.
Reserved I/O	4K/8K/12K/16K/20K	Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge.

3.6.3.2.3 PCI Express Root Port 1/2/3



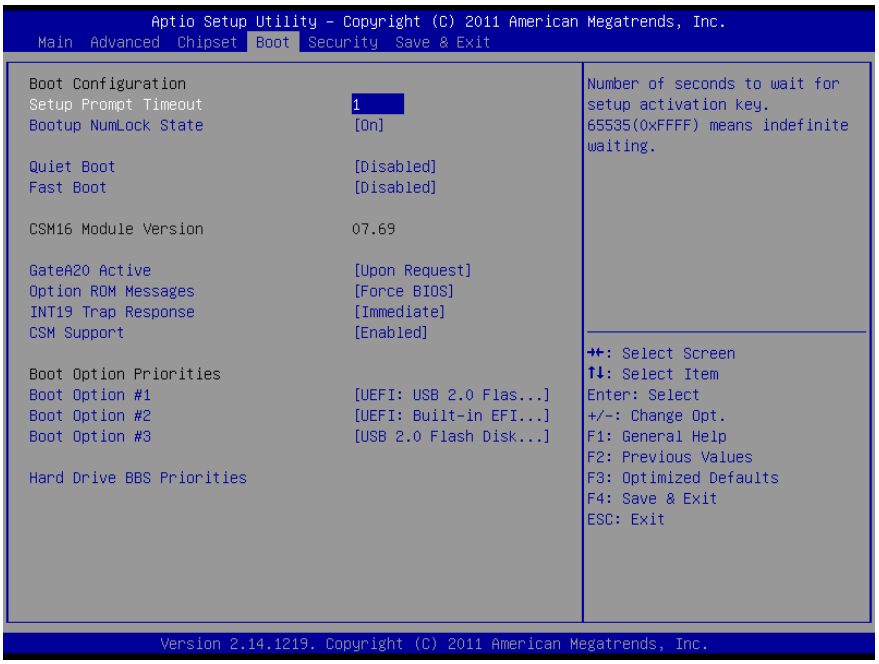




Item	Option	Description
PCI Express Port 0	Auto Enabled Disabled	Enable / Disable PCI Express Root Port 0.
Port 0 IOxAPIC	Enabled Disabled	Enable / Disable PCI Express Root Port 0 I/O APIC
Automatic ASPM	Manual Auto	Automatically enable ASPM based on reported capabilities and known issues
ASPM L0s	Disabled Root Port Only End point Port Only Both Root And Endports	Enable PCIe ASPM L0s
ASPM L1	Enabled Disabled	Enable PCIe ASPM L1s

URR	Enabled Disabled	PCI Express Unsupported Request Reporting Enable/Disable.
FER	Enabled Disabled	PCI Express Device Fatal Error Reporting Enable/Disable
NFER	Enabled Disabled	PCI Express Device Non-Fatal Error Reporting Enable/Disable.
CER	Enabled Disabled	PCI Express Device correctable Error Reporting Enable/Disable
CTO	Enabled Disabled	PCI Express Completion Timer TO Enable/Disable
SEFE	Enabled Disabled	Root PCI Express System Error on Fatal Error Enable/Disable
SENFE	Enabled Disabled	Root PCI Express System Error on Non-Fatal Error Enable/Disable
SECE	Enabled Disabled	Root PCI Express Error on correctable Error Enable/Disable
PME SCI	Enabled Disabled	PCI Express PME SCI Enable/Disable.
Hot Plug	Enabled Disabled	PCI Express Hot Plug Enable/Disable
Extra Bus Reserved	0 - 7	Extra Bus Reserved (0 -7)for bridges behind this Root Bridge.
Reserved Memory	1 – 20MB	Reserved memory and Prefetchable Memory (1-20MB) Range for this Root Bridge.
Reserved I/O	4K/8K/12K/16K/20K	Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge.

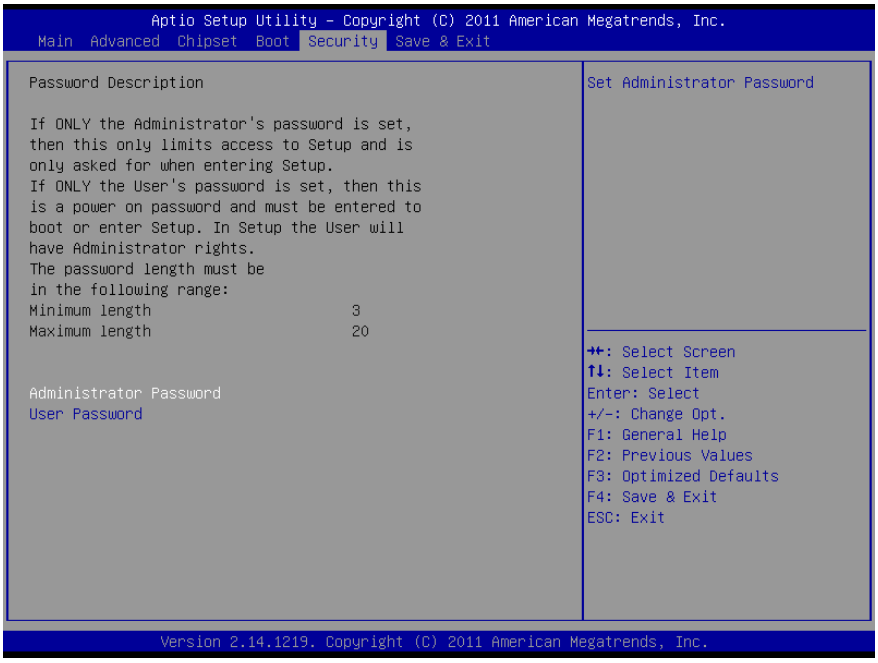
3.6.4 Boot settings



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	Select the keyboard NumLock state
Quiet Boot	Enabled Disabled	Enables or Disables Quiet Boot Option
Fast Boot	Enabled Disabled	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 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 Keep current	Set display mode for Option ROM
Interrupt 19 Capture	Enabled Disabled	Enabled: allows Option ROMs to trap Int 19
CSM Support	Disabled Enabled Auto	Enable/Disable CSM Support. If Auto is selected, based on OS, CSM will be enabled/disabled automatically.
Boot Option #1/2/3	Sets the system boot order	

3.6.5 Security

Use the Security menu to set system and user password.



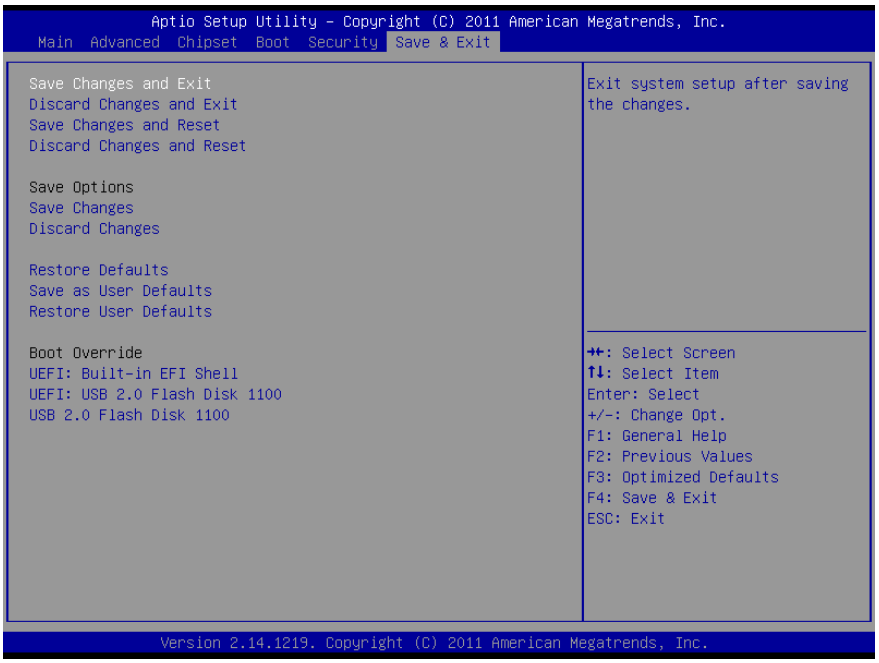
3.6.5.1 Administrator Password

This setting specifies a password that must be entered to access the BIOS Setup Utility. If only the Administrator's password is set, then this only limits access to the BIOS setup program and is only asked for when entering the BIOS setup program. By default, no password is specified.

3.6.5.2 User Password

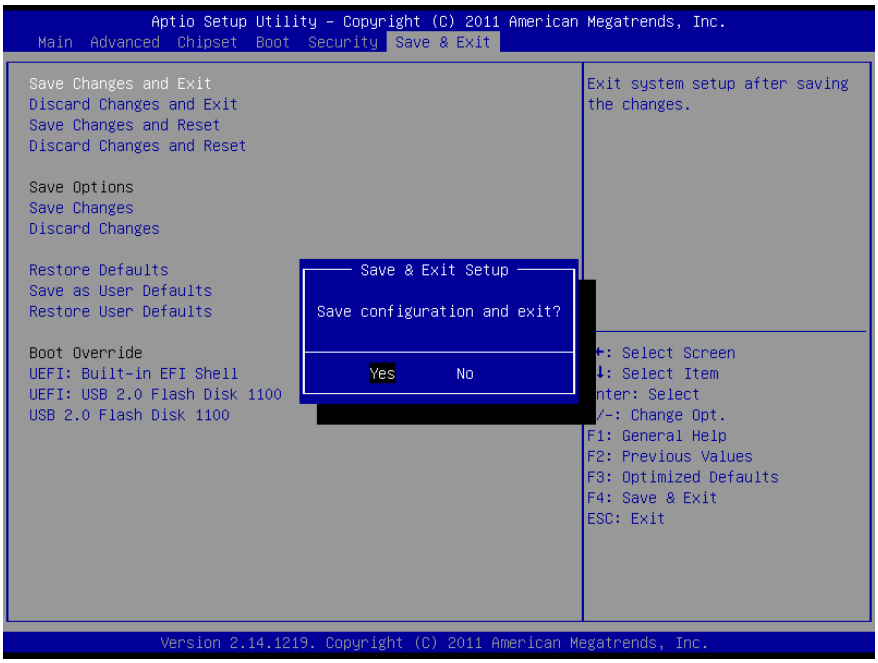
This setting specifies a password that must be entered to access the BIOS Setup Utility or to boot the system. If only the User's password is set, then this is a power on password and must be entered to boot or enter the BIOS setup program. In the BIOS setup program, the User will have Administrator rights. By default, no password is specified.

3.6.6 Save & Exit



3.6.6.1 Save Changes and Exit

Use the save changes and reset option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.



3.6.6.2 Discard Changes and Exit

Use the Discard changes and Exit option to exit the system without saving the changes made to the BIOS configuration setup program.

3.6.6.3 Save Changes and Reset

Any changes made to BIOS settings are stored in NVRAM. The setup program then exits and reboots the controller.

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

Changes made to BIOS settings during this session are committed to NVRAM. The setup program remains active, allowing further changes.

3.6.6.6 Discard Changes

Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The BIOS setup continues to be active.

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.

3.6.6.10 Boot override

This option lists all possible bootable devices and allows the user to override the **Boot Option Priorities** list for the current boot. If no changes have been made to the BIOS setup options, the system will continue booting to the selected device without first rebooting. If BIOS setup options have been changed and saved, a reboot will be required and the boot override selection will not be valid.

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 & VGA Driver (Cedarview)

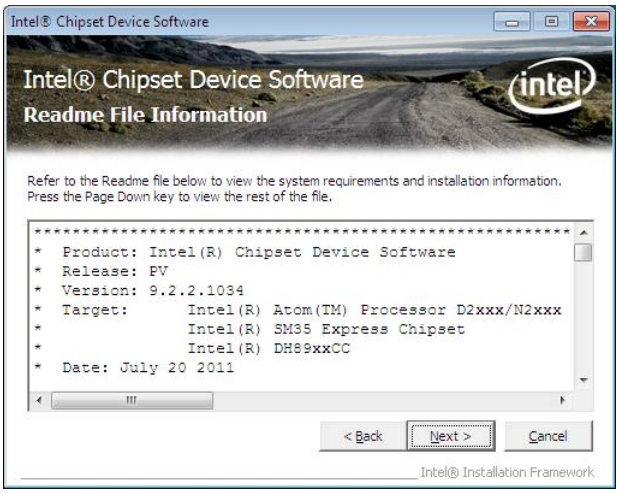
Insert the Supporting DVD-ROM to DVD-ROM drive, click on "start" icon and it should show the index page of Avalue's products automatically. If not, locate the folder HTML and choose the product from the targeted folder.

Note: The installation procedures and screen shots in this section are based on W7 operating system.

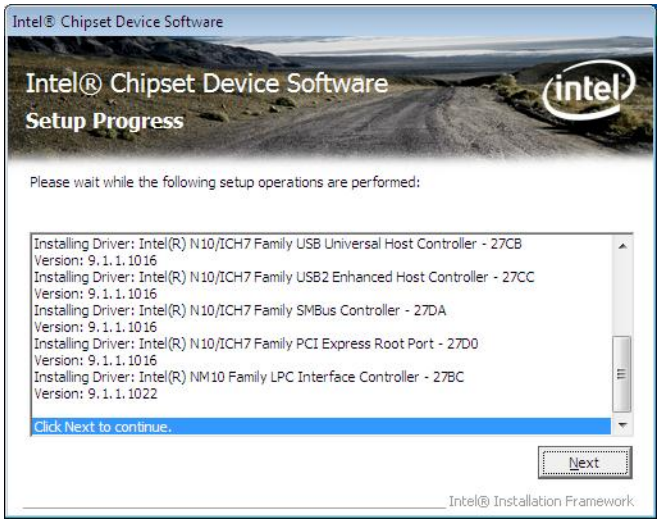
Step 1. Locate 「\Chipset\Cedarview\W7setup.exe」.

Step 2. Select **Next** to start setup.

Step 3. Select **Yes** to the next step.



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



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

Step 6. Select **Finish** to complete installation

4.2 Install Audio Driver (For Realtek ALC892)

Insert the Supporting DVD-ROM to DVD-ROM drive, click on "start" icon and it should show the index page of Avalue's products automatically. If not, locate the folder HTML and choose the product from the targeted folder.

Note: The installation procedures and screen shots in this section are based on W7 operating system.

Step 1. Locate 「\Audio\Realtek \ALC892\W7setup.exe」.

Step 2. Select **Next** to the next step.

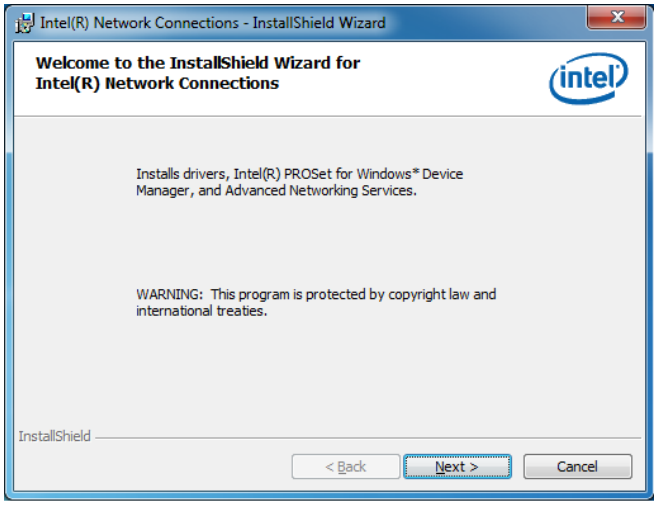
Step 3. Select **Finish** to complete installation.

4.3 Install Ethernet Driver (For Realtek 82574L)

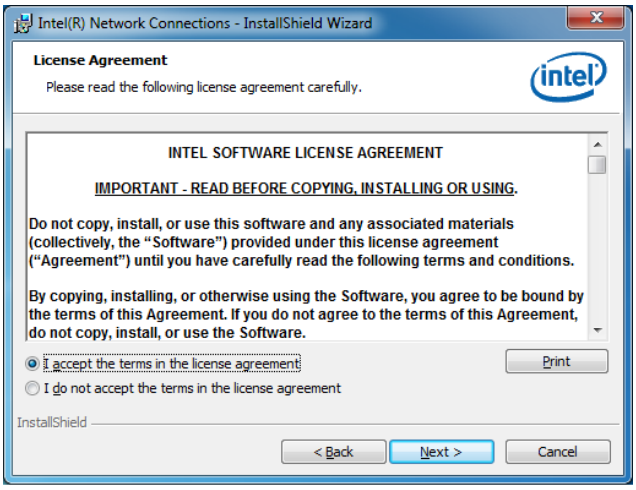
Insert the Supporting DVD-ROM to DVD-ROM drive, click on "start" icon and it should show the index page of Avalue's products automatically. If not, locate the folder HTML and choose the product from the targeted folder.

Note: The installation procedures and screen shots in this section are based on W7 operating system.

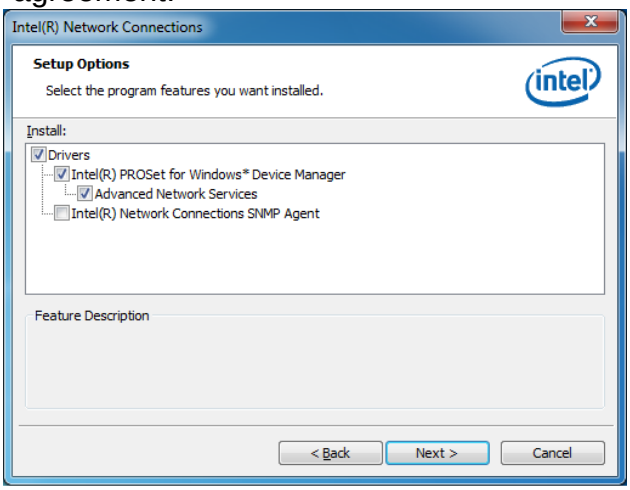
Step 1. Locate 「Realtek\82574L\Win7」



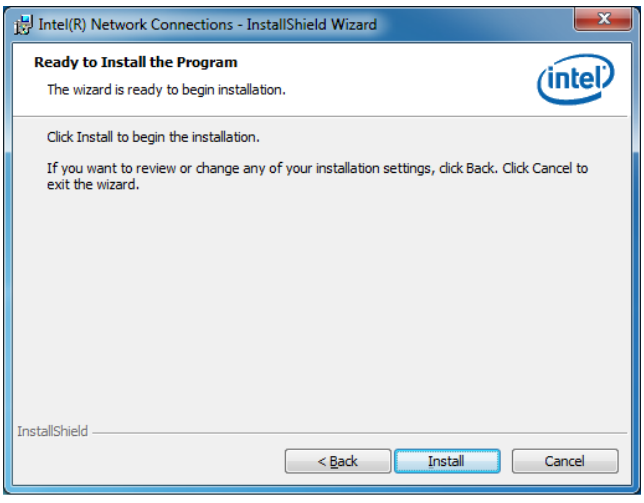
Step 2. Click **Next**.



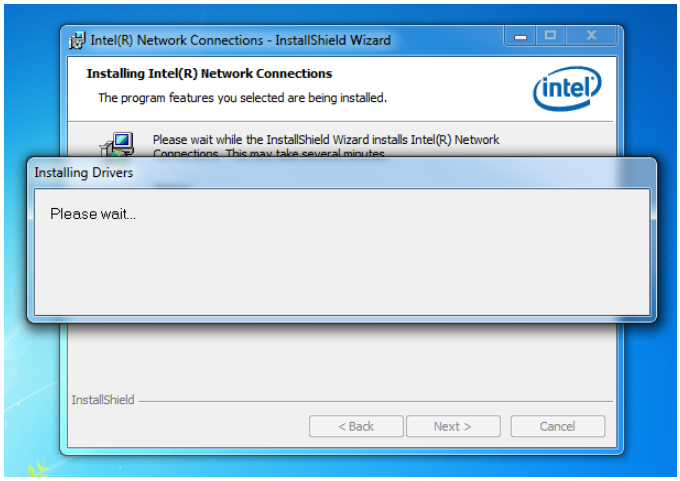
Step 3. Click **Next** to accept licence agreement.



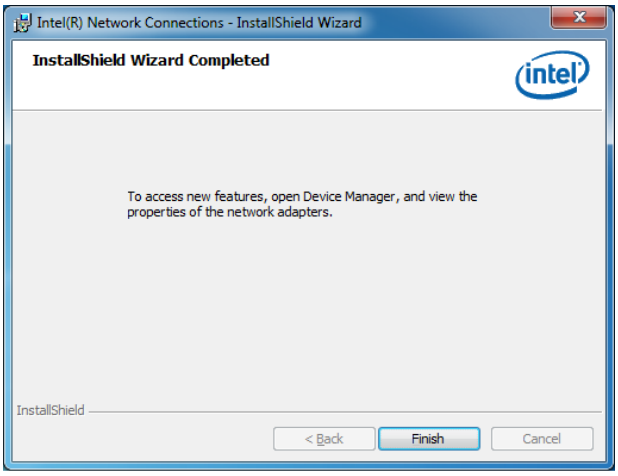
Step 4. Click **Next** after selecting programs to install.



Step 5. Click **Install** to begin installation

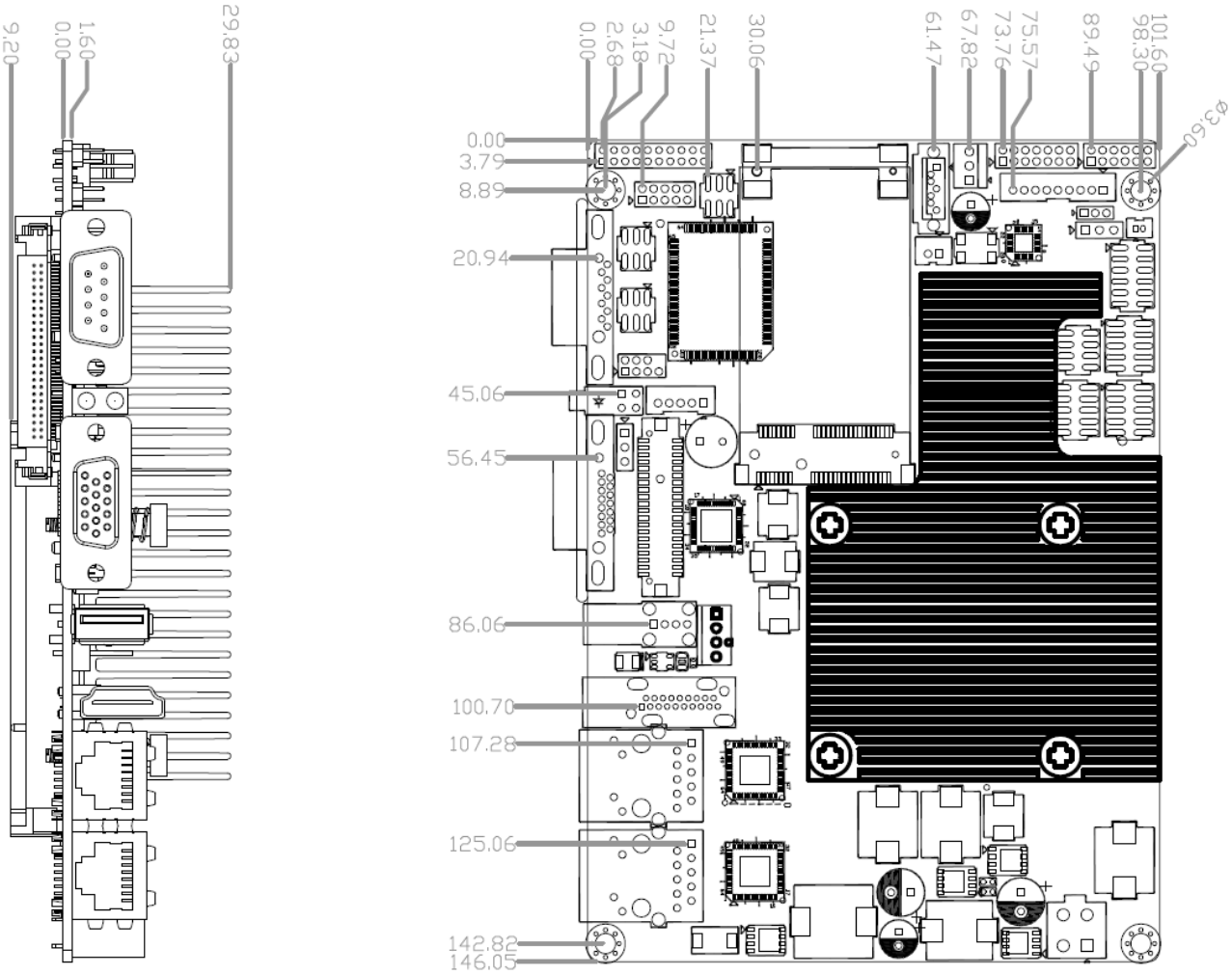


Step 6. Wait while installing.

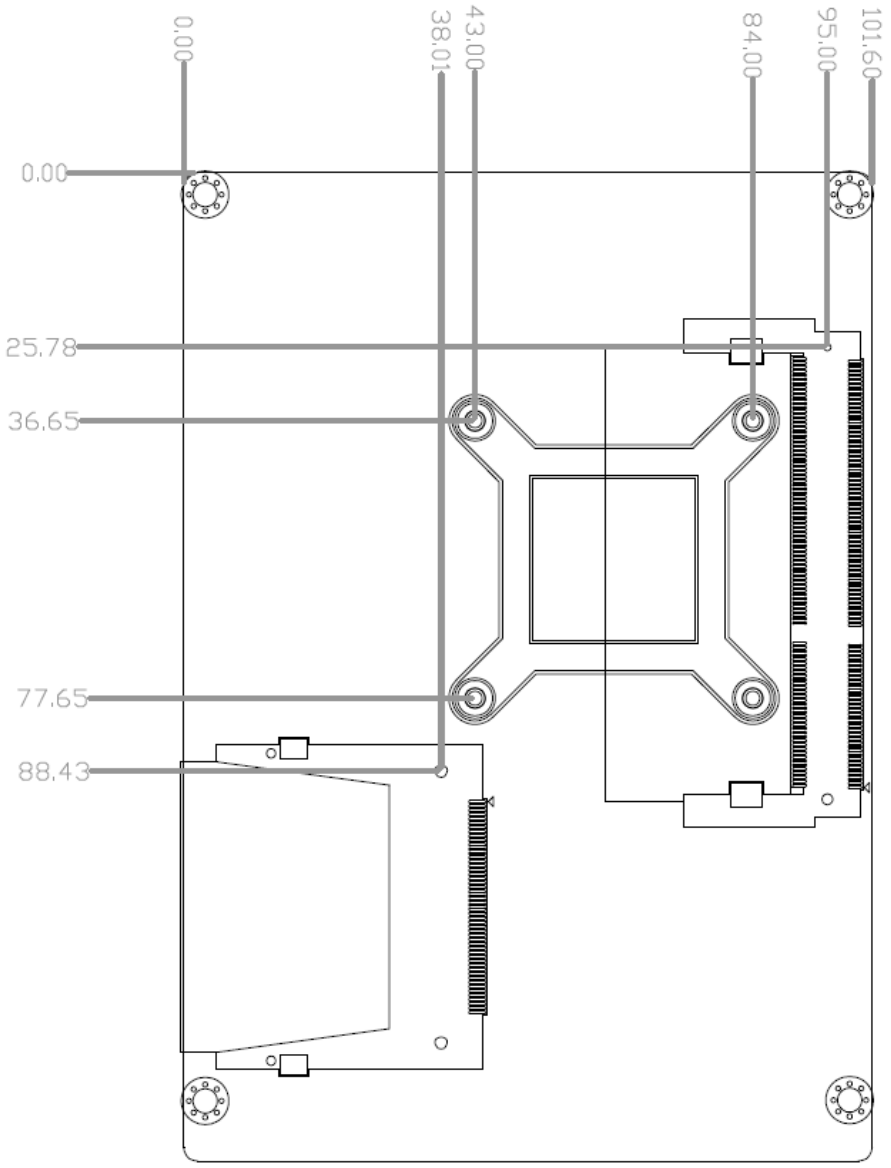


Step 7. Click **Finish** to complete installation

5. Mechanical Drawing


9.20
0.00
1.60
29.83
0.00
2.68
3.18
9.72
21.37
30.06
61.47
67.82
73.76
75.57
89.49
98.30
101.60
3.79
8.89
20.94
45.06
56.45
86.06
100.70
107.28
125.06
142.82
146.05

Unit: mm



Unit: mm