

# EMX-BSWB

Intel® Celeron® Processor N3160  
Thin Mini ITX Motherboard

## User's Manual



3<sup>rd</sup> Ed – 16 June 2020

## 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 UNDESIRE 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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2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
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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.

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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.

## 1.2 Packing List

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

- 1 x EMX-BSWB motherboard
- 2 x SATA cables
- 1 x I/O Shield
- 2 x SATA power cables



If any of the above items is damaged or missing, contact your retailer.



### 1.3 Document Amendment History

Revision	Date	By	Comment
1 <sup>st</sup>	January 2017	Avalue	Initial Release
2 <sup>nd</sup>	April 2019	Avalue	Update Jumper and Connector List
3 <sup>rd</sup>	June 2020	Avalue	Update System Specifications

### 1.4 Manual Objectives

This manual describes in details Avalue Technology EMX-BSWB 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 EMX-BSWB 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	
<b>CPU</b>	Intel® Celeron® Processor N3160 (2M Cache, up to 2.24 GHz)
<b>BIOS</b>	AMI uEFI BIOS, 64 Mbit SPI Flash ROM
<b>I/O Chip</b>	NuvoTon NCT5567D
<b>System Memory</b>	2 x 204-pin DDR3L1600 MTs SODIMMs, up to 8GB
<b>Watchdog Timer</b>	H/W Reset, 1sec. – 65535sec./ step
<b>H/W Status Monitor</b>	System temperature monitoring Voltages monitoring Fan status with auto Throttling control
<b>Expansion</b>	1 x full size Mini PCI-e support mSATA only (SATA III and mSATA Switchable Through jumper) 1 x half size Mini PCI-e support WiFi module
<b>S3/S4</b>	Yes (S0/S3/S4/S5)
I/O	
<b>USB</b>	2 x USB 3.0, 5 x USB 2.0
Display	
<b>Chipset</b>	Intel® Atom™/ Celeron® SoC integrated Graphics
<b>Resolution</b>	HDMI : 3840 x 2160 @ 30Hz 2CH LVDS: 1920 x 1200 @ 60Hz eDP to LVDS Converter (Parade PS8625) VGA : 2560 x 1600 @ 60 Hz HDMI + LVDS + VGA
<b>Multiple Display</b>	Triple Display
Audio	
<b>AC97 Codec</b>	RealTek ALC662 HD Audio Decoding Controller
<b>Audio Amp</b>	RealTek ALC105 Stereo Class-D 3W x 2
Ethernet	
<b>LAN Chip</b>	1 x RealTek RTL8111F PCI-Express Gigabit Ethernet
<b>Ethernet Interface</b>	10/100/1000 Gigabit Ethernet
Internal I/O Connectors	
<b>External I/O Connector</b>	Storage: 1 x full size Mini PCI-e support mSATA and Mini PCI-e only 1 x half size Mini PCI-e support WiFi Module 1 x 3 x 4 pin pitch 2.54mm connector for SATA/ mSATA solution (SATA III and mSATA Switchable Through jumper)

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	<p>1 x 1 x 4 pin, pitch 2.54mm SATA power connectors</p> <p>1 x 1 x 4 pin, pitch 2.00mm SATA power connectors</p> <p>COM:</p> <p>1 x 2 x 5 pin, pitch 2.54mm connector for COM1 support RS-232 connector, Pin 9 without power</p> <p>1 x 1 x 5 pin, pitch 2.54mm connector for 1 USB 2.0</p> <p>1 x 2 x 5 pin, pitch 2.54mm connector for 2 USB2.0</p> <p>1 x horizontal type battery connector</p> <p>1 x 2 x 5 pin, pitch 2.54mm connector for front panel</p> <p>1 x 2 x 15 pin, pitch 2.00mm connector for LVDS</p> <p>1 x 1 x 6 pin, pitch 2.00mm Wafer connector for inverter</p> <p>1 x 2 x 3 pin, pitch 2.00mm connector for LVDS 6/8bit dual or single channel or VESA or JEIDA selection.</p> <p>1 x 5 pin, pitch 2.00mm connector for LCD power voltage setting ( 3.3V/ 5V/ 12V)</p> <p>1 x 2 x 5 pin, pitch 2.54mm connector for front Audio</p> <p>1 x 4 pin, pitch wafer 2.00mm wafer connector for 3W x 2 Speaker</p> <p>1 x 3 pin, pitch 2.54mm connector for CIR</p> <p>1 x 2 pin, pitch 2.54mm connector for CMOS clear</p> <p>1 x 2 pin pitch 2.54mm connector for flash BIOS ME</p> <p>1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported</p> <p>1 x 1 x 3 pin pitch 2.54mm system Fan</p> <p>1 x 2 x 2 pin, pitch 4.20mm connector for power input connector</p> <p>1 x 1 x 12 pin pitch 2.00mm connector for VGA port</p> <p>Fanless Operating</p>
<b>Rear I/O Connectors</b>	
<b>USB</b>	2 x USB 3.0, 2 x USB 2.0
<b>LAN</b>	1 x RealTek RTL8111F Gigabit Ethernet
<b>Rear Side External I/O Connector</b>	<p>1 x RJ-45</p> <p>2 x USB 3.0 connectors</p> <p>2 x USB 2.0 connectors</p> <p>1 x VGA</p> <p>1 x HDMI 1.4b</p> <p>1 x Mic-In and 1 x Line-out</p> <p>1 x DC Jack connector type</p> <p>S/ PDIF</p>
<b>Mechanical &amp; Environmental</b>	
<b>Power Requirement</b>	DC in +12V
<b>ACPI</b>	<p>Single power ATX Support S0, S3, S4, S5</p> <p>ACPI 3.0 Compliant</p>

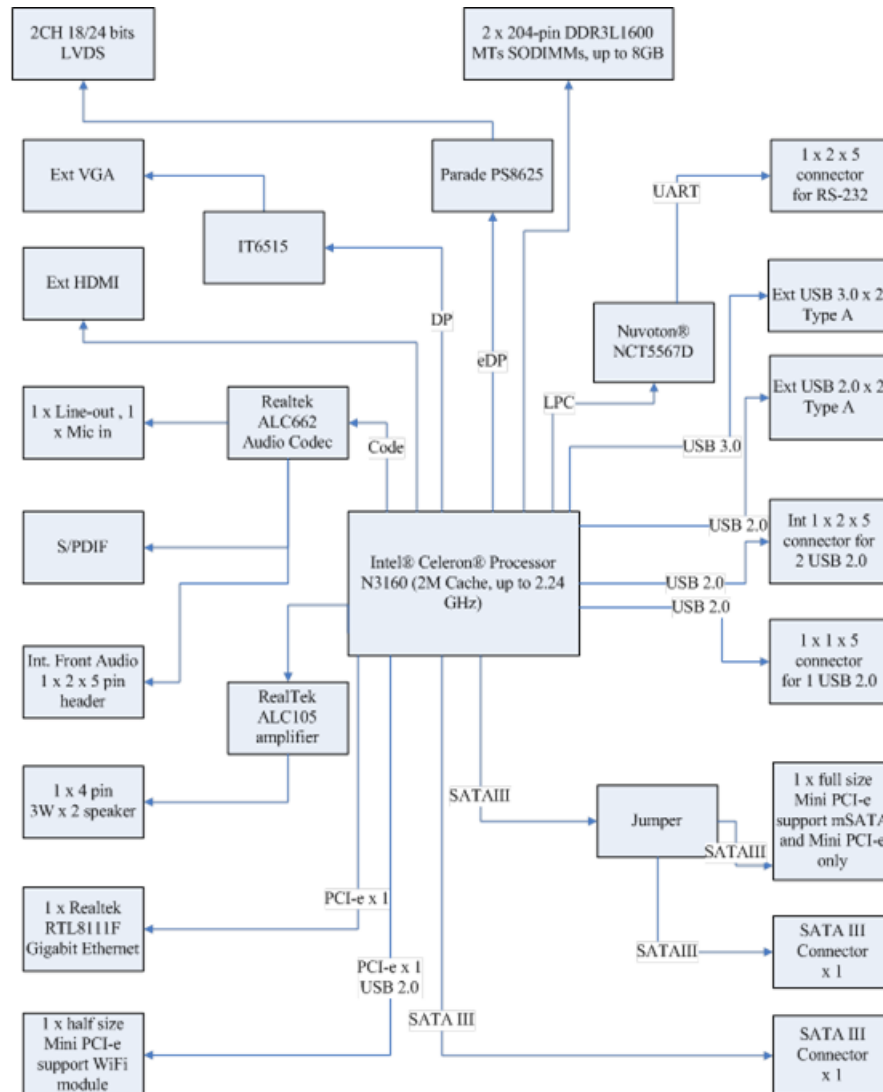
<b>Power Type</b>	ATX mode
<b>Operating Temp.</b>	0 ~ 60°C (32~140°F)
<b>Storage Temp.</b>	-40 ~ +75°C
<b>Operating Humidity</b>	0%~90% relative humidity, non-condensing
<b>Size (L x W)</b>	6.7" x 6.7" (170mm x 170mm)
<b>Weight</b>	0.40 kg
<b>OS Support</b>	MS Win 7,Win 8.1,Win 10 (listed in accordance with Intel document)

**Note:**

Specifications are subject to change without notice.

## 1.6 Architecture Overview—Block Diagram

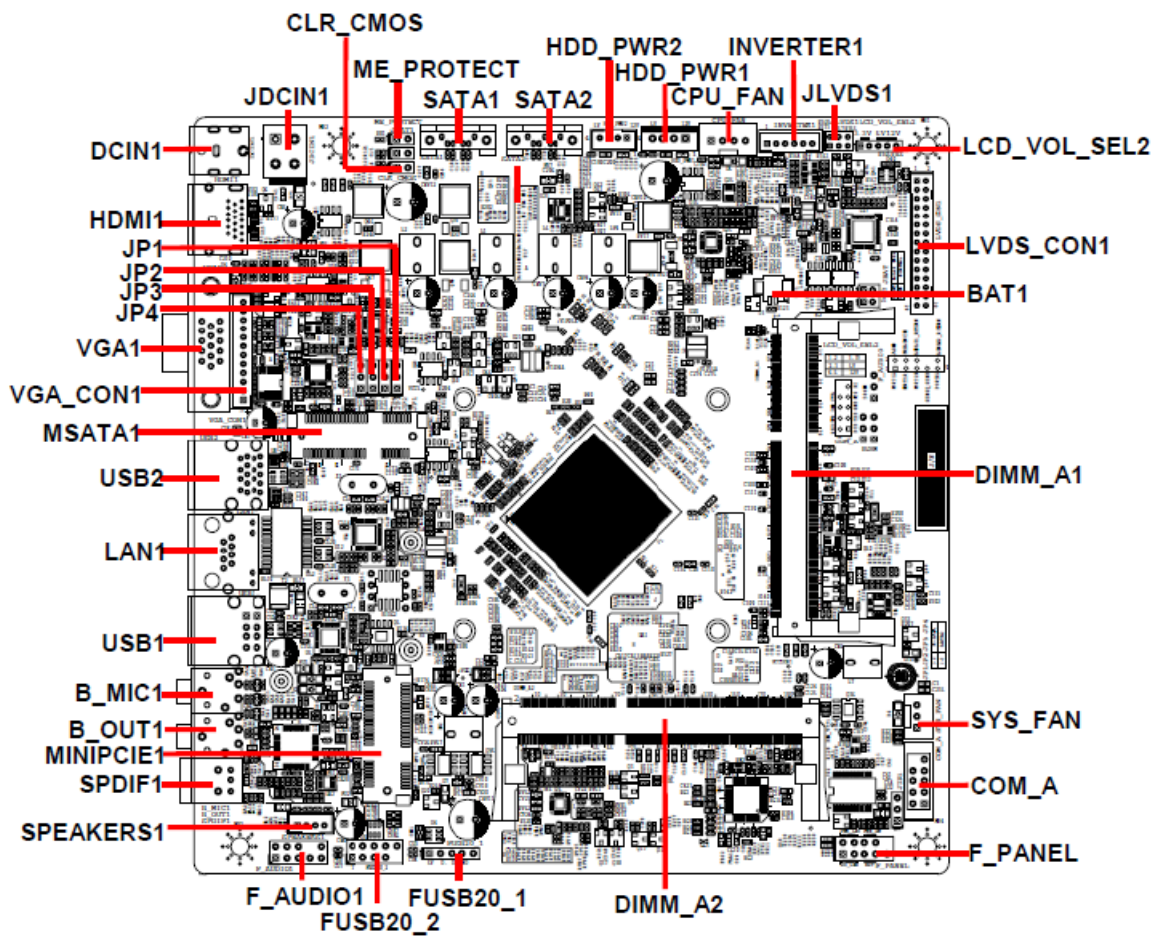
The following block diagram shows the architecture and main components of EMX-BSWB.



## 2. Hardware Configuration

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## 2.1 Product Overview

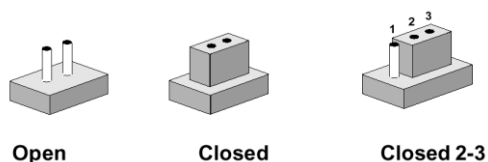




## 2.2 Jumper and Connector List

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.



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



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
<b>JP1/2/3/4</b>	SATA1/MSATA slot selector	3 x 4 header, pitch 2.54mm
<b>JLVDS1</b>	LVDS 6/8bit and Dual or single LVDS selection	2 x 3 header, pitch 2.00mm
<b>LCD_VOL_SEL2</b>	LCD power voltage setting	1 x 5 header, pitch 2.00mm
<b>CLR_CMOS</b>	Clear CMOS	1 x 2 header, pitch 2.54mm

### Connectors

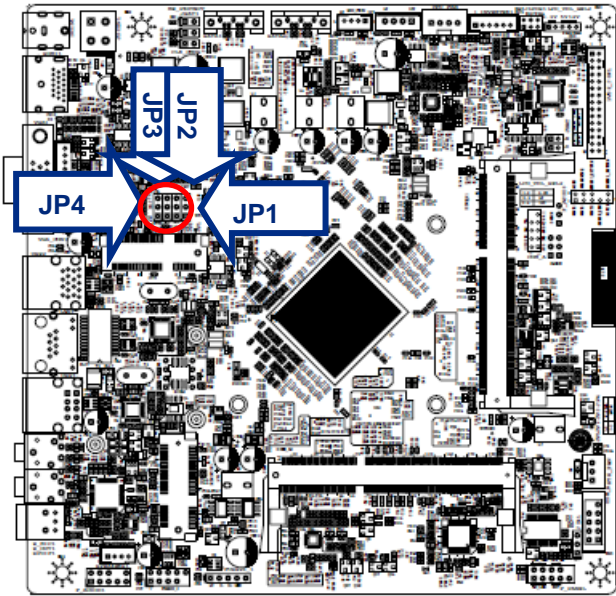
Label	Function	Note
<b>CPU_FAN</b>	CPU fan connector	4 x 1 wafer, pitch 2.54mm
<b>SYS_FAN</b>	System fan connector	3 x 1 wafer, pitch 2.54mm
<b>ME_PROTECT</b>	Flash BIOS ME connector	1 x 2 header, pitch 2.54mm
<b>INVERTER1</b>	Inverter connector	1 x 6 wafer, pitch 2.00mm

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<b>DIMMA1/A2</b>	204-pin DDR3L SODIMM socket	
<b>F_AUDIO1</b>	Front Audio connector	6 x 2 header, pitch 2.54mm
<b>F_PANEL</b>	Front Panel connector	2 x 5 header, pitch 2.54mm
<b>COM_A</b>	Serial Port 1 connector	5 x 2 header, pitch 2.54mm
<b>SPEAKERS1</b>	Speaker connector	1 x 4 wafer, pitch 2.00mm
<b>LVDS_CON1</b>	LVDS Connector	2 x 15 header, pitch 2.00mm
<b>USB1</b>	2 x USB 2.0 connector	
<b>USB2</b>	2 x USB 3.0 connector	
<b>FUSB20_1</b>	USB 2.0 connector	1 x 5 header, pitch 2.54mm
<b>FUSB20_2</b>	USB 2.0 connector	2 x 5 header, pitch 2.54mm
<b>SPDIF1</b>	Sony/Philips Digital Interface	
<b>LAN1</b>	RJ-45 Ethernet	
<b>BAT1</b>	Battery connector	2 x 1 wafer, pitch 1.25mm
<b>MSATA1</b>	Full size mPCIe Slot	
<b>MINIPCI1</b>	Mini-PCIe connector	
<b>DCIN1</b>	DC Power-in connector	
<b>JDCIN1</b>	Power input connector	2 x 2 wafer, pitch 4.20mm
<b>SATA1/2</b>	Serial ATA connector 1/2	
<b>HDD_PWR1</b>	SATA Power connector 1	4 x 1 wafer, pitch 2.54mm
<b>HDD_PWR2</b>	SATA Power connector 2	4 x 1 wafer, pitch 2.00mm
<b>HDMI1</b>	HDMI connector	
<b>B_OUT1</b>	Line-out audio jack	
<b>B_MIC1</b>	Mic-in audio jack	
<b>VGA1</b>	VGA connector	
<b>VGA_CON1</b>	VGA port connector	1 x 12 header, pitch 2.00mm

2.3 Setting Jumpers & Connectors

2.3.1 SATA/MSATA slot selector (JP1/2/3/4)



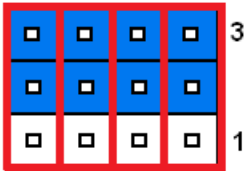
\* Default

Note:

SATA1/MSATA1 shared SATA signal can not be used simultaneously.

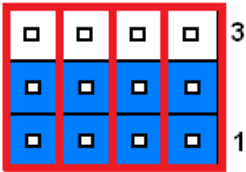
SATA1 Connector \*

(SATA1 Connector enabled, MSATA1 slot Disabled)

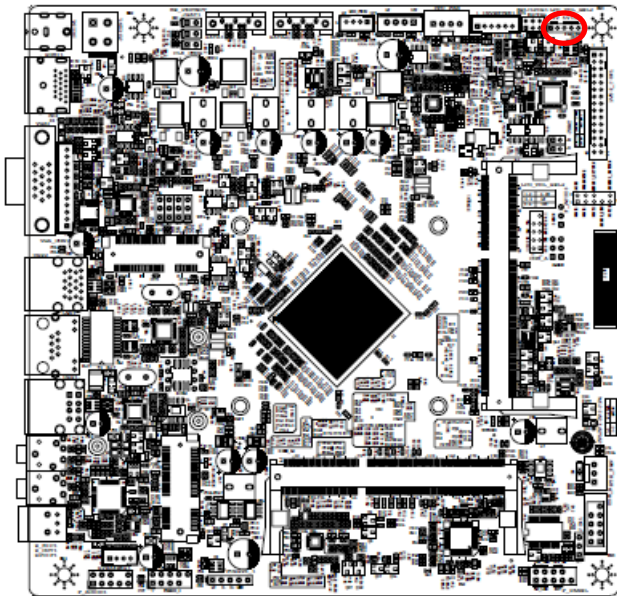


MSATA1 mPCIe slot

(MSATA1 slot enabled, SATA1 Connector (Disabled))



2.3.2 LCD power voltage setting (LCD\_VOL\_SEL2)

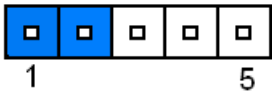


\* Default

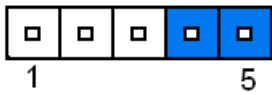
+5V\*



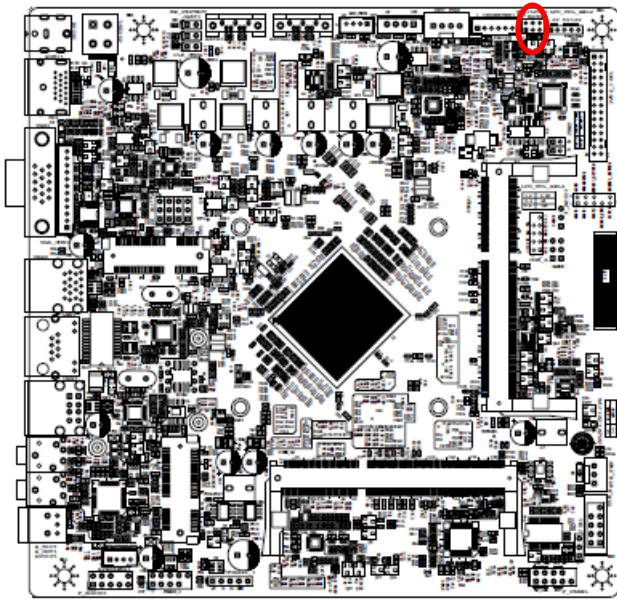
+3.3V



+12V



2.3.3 LVDS 6/8bit and Dual or single LVDS selection (JLVDS1)

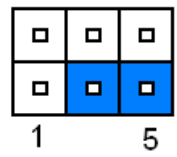


\* Default

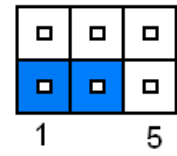
**Note:**

Pin 1 & 3 & 5 for 6bit or 8bit VESA or JEIDA selection.  
Pin 2 & 4 & 6 for dual or single channel LVDS selection.

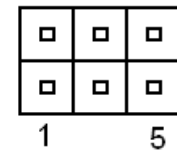
**8bit VESA\***



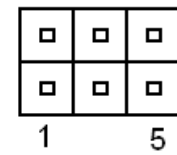
**8bit JEIDA**



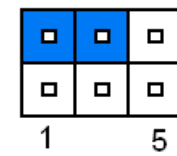
**NC 6bit**



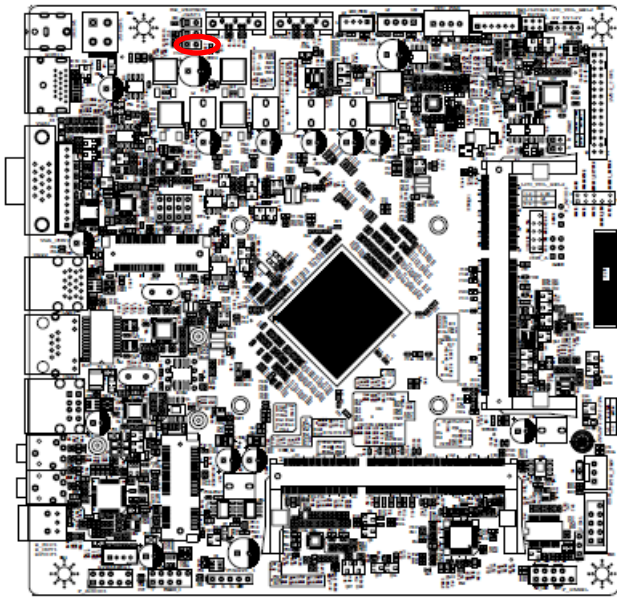
**Pin 2 & 4 NC for dual channel LVDS**



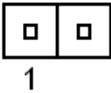
**Pin 2 & 4 Close for single channel LVDS**



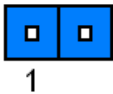
2.3.4 Clear CMOS (CLR\_CMOS)



Protect\*

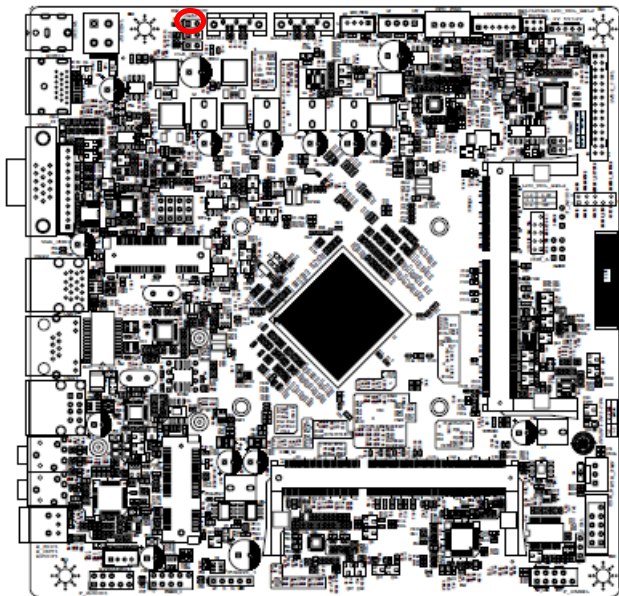


Clear CMOS

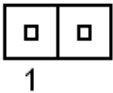


\* Default

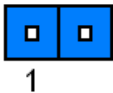
2.3.5 Flash BIOS ME connector (ME\_PROTECT)



Protect\*

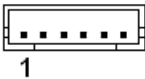
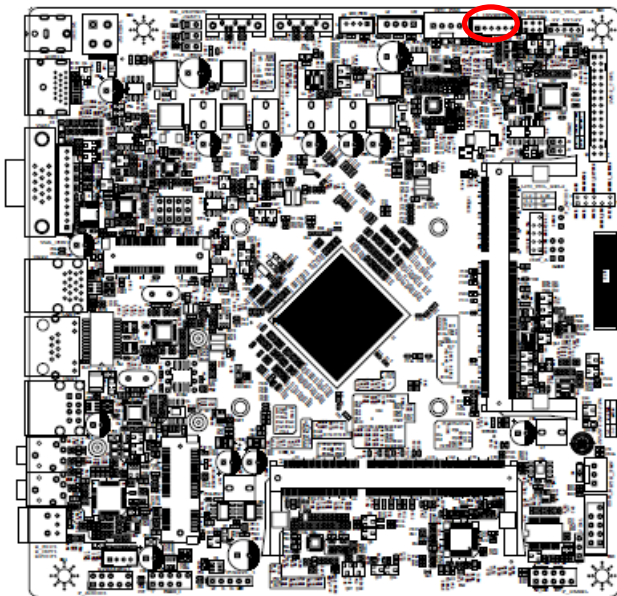


Flash BISO ME



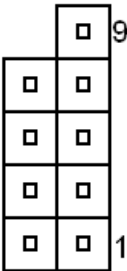
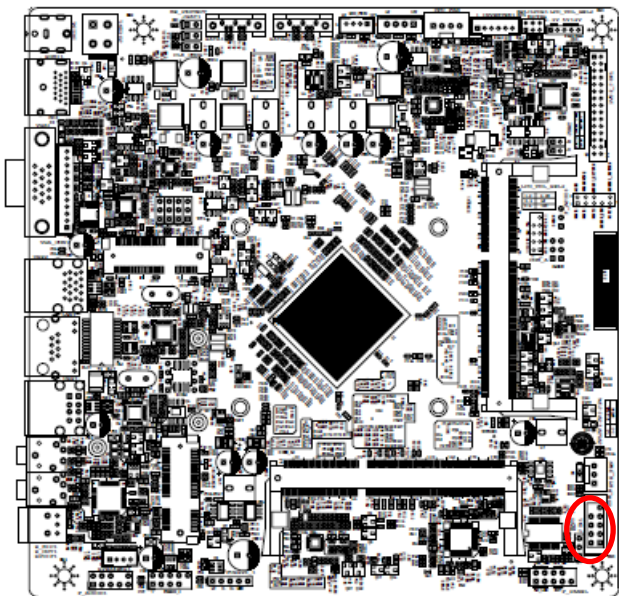


2.3.6 Inverter connector (INVERTER1)



PIN	Signal
1	+12V
2	+12V
3	BLK_ON
4	Brightness
5	GND
6	GND

2.3.7 Serial port 1 connector (COM\_A)

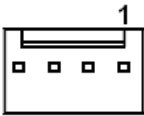
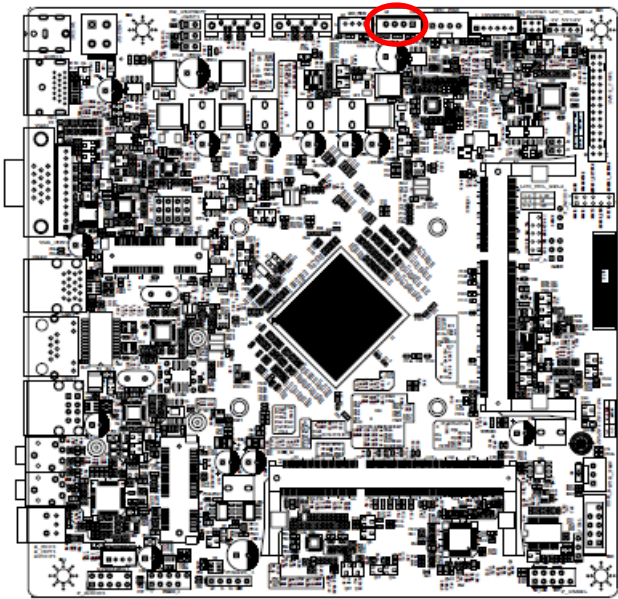


Signal	PIN	PIN	Signal
NC	10	9	NRI#
NCTS#	8	7	NRTS#
NDSR#	6	5	GND
NDTR#	4	3	NTXD
NRXD	2	1	NDCD#

Note:

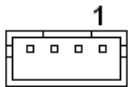
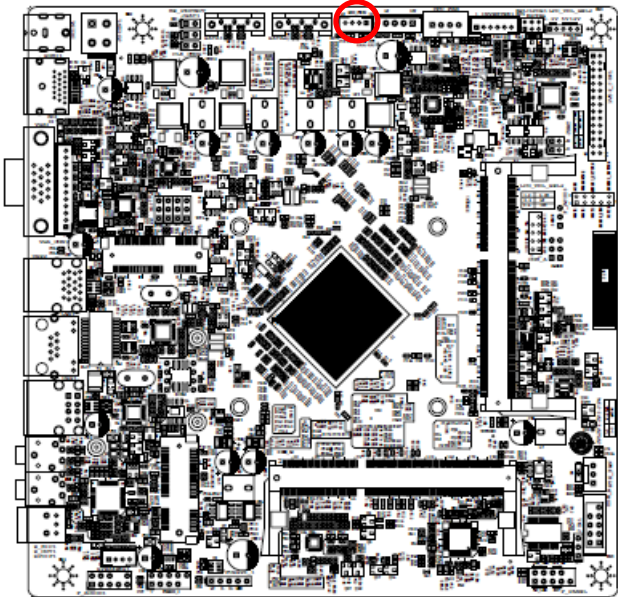
Pin 9 without Power.

2.3.8 SATA Power connector 1 (HDD\_PWR1)



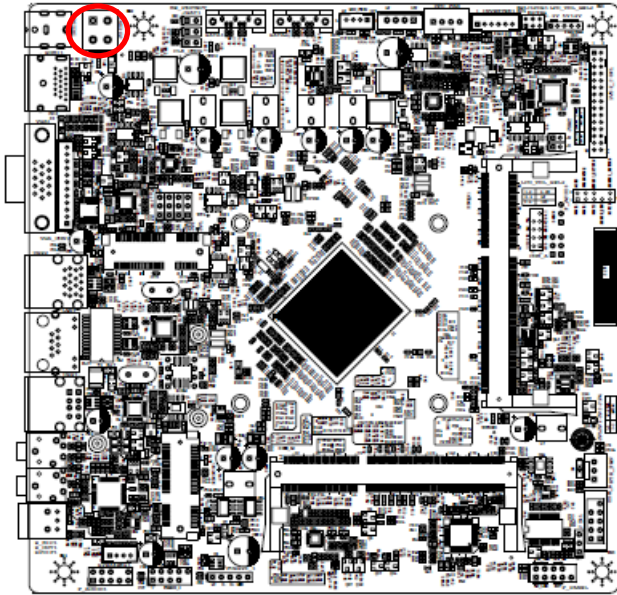
PIN	Signal
1	+V5S_SATA
2	GND
3	GND
4	+V12S_SATA

2.3.9 SATA Power connector 2 (HDD\_PWR2)



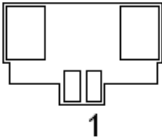
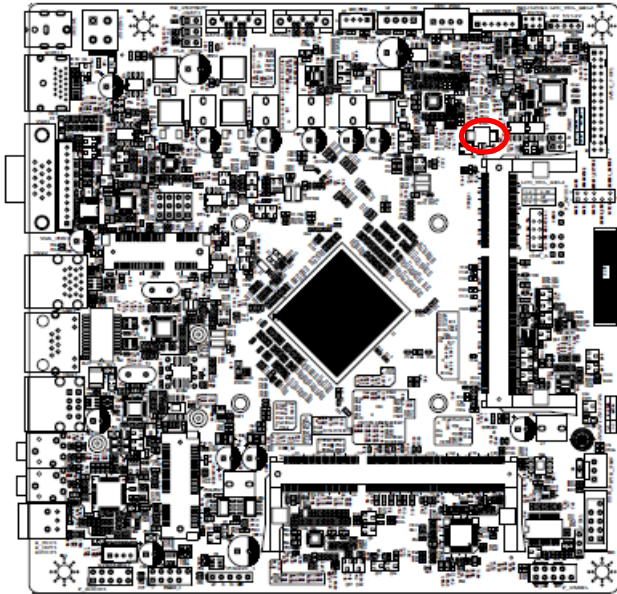
PIN	Signal
1	+V5S_SATA
2	GND
3	GND
4	+V12S_SATA

2.3.10 Power input connector (JDCIN1)



Signal	PIN	PIN	Signal
GND	1	2	GND
+VIN_12V	3	4	+VIN_12V

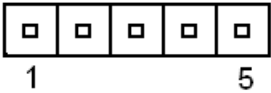
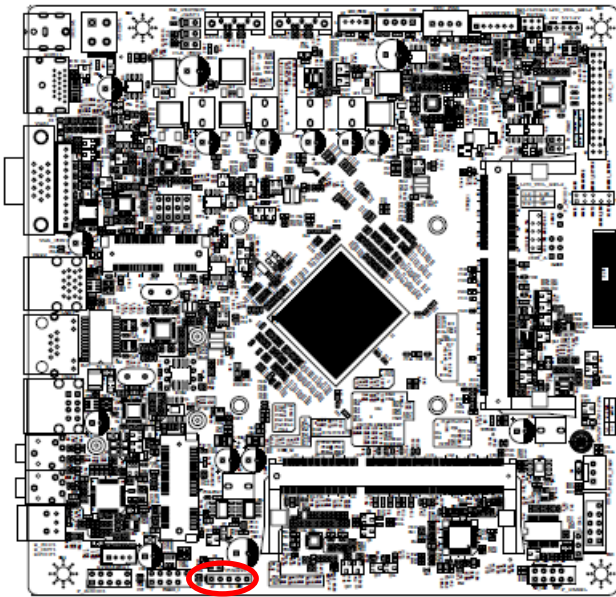
2.3.11 Battery connector (BAT1)



PIN	Signal
1	+3V
2	GND

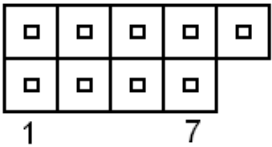
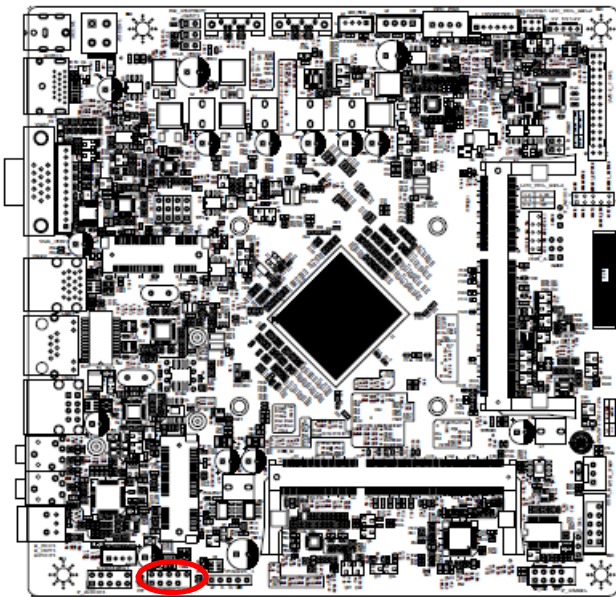


2.3.12 USB 2.0 connector (FUSB20\_1)



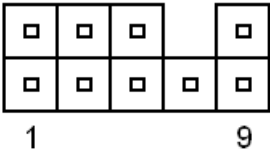
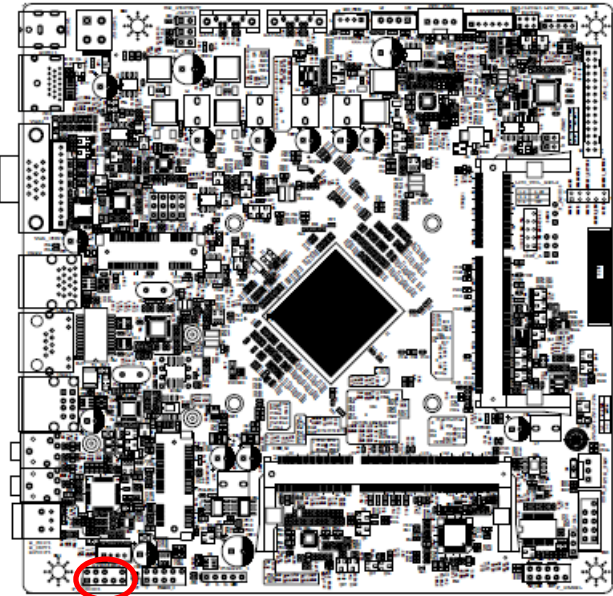
PIN	Signal
1	+V5A_USB
2	USB_DN4
3	USB_DP4
4	GND
5	NC

2.3.13 USB 2.0 connector (FUSB20\_2)



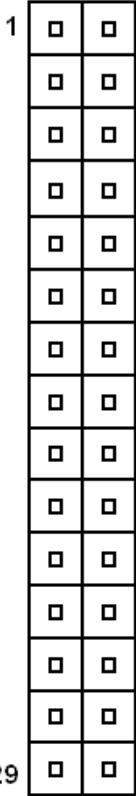
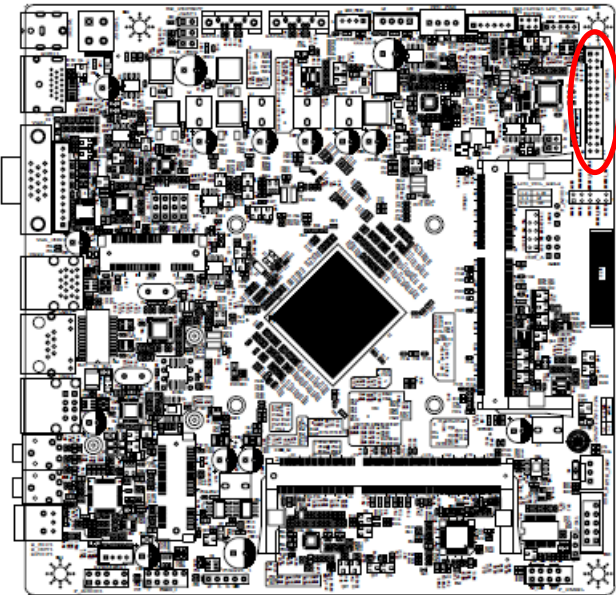
Signal	PIN	PIN	Signal
+V5A_USB	1	2	+V5A_USB
USB_DN3	3	4	USB_DN4
USB_DP3	5	6	USB_DP4
GND	7	8	GND
		10	NC

2.3.14 Front Audio connector (F\_AUDIO1)



Signal	PIN	PIN	Signal
MIC2_L	1	2	GND
MIC2_R	3	4	AUD_FRONT_DET
LINE2_R	5	6	MIC2_JD
SENSE_B	7		
LINE2_L	9	10	LINE2_JD

2.3.15 LVDS connector (LVDS\_CON1)

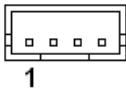
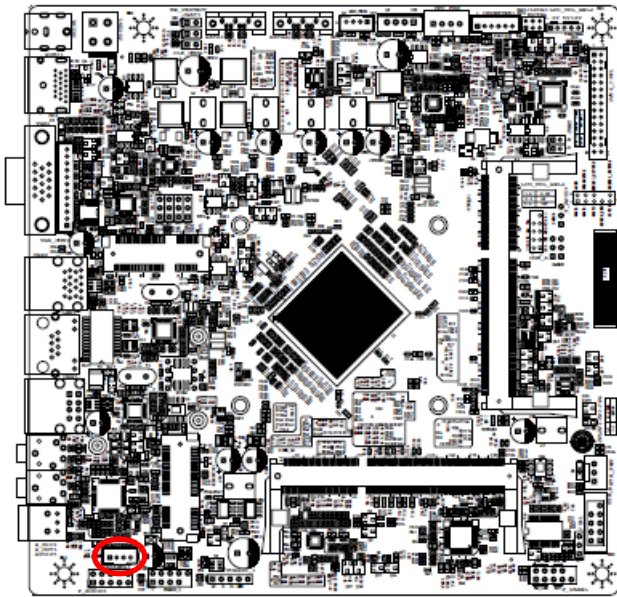


Signal	PIN	PIN	Signal
LCDVDD	1	2	LCDVDD
LCDVDD	3	4	GND
GND	5	6	GND
LVDSA_DATA0N	7	8	LVDSA_DATA0P
LVDSA_DATA1N	9	10	LVDSA_DATA1P
LVDSA_DATA2N	11	12	LVDSA_DATA2P
GND	13	14	GND
LVDSA_CLKN	15	16	LVDSA_CLKP
LVDSA_DATA3N	17	18	LVDSA_DATA3P
LVDSB_TX0N	19	20	LVDSB_TX0P
LVDSB_TX1N	21	22	LVDSB_TX1P
LVDSB_TX2N	23	24	LVDSB_TX2P
GND	25	26	GND
LVDSB_CLKN	27	28	LVDSB_CLKP
LVDSB_TX3N	29	30	LVDSB_TX3P

Note:

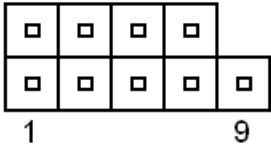
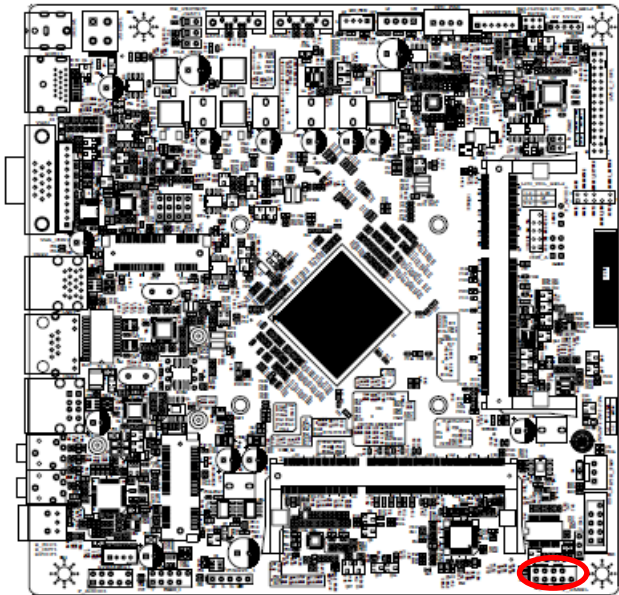
- 1. Mapping connector 1 x 2 x 15 pin, pitch 2.0mm connector.
- 2. The VCC voltage can be change by JPWR\_LVDS1 jumper. (Page.20).

2.3.16 Speaker connector (SPEAKERS1)



PIN	Signal
1	LSPK+
2	LSPK-
3	RSPK+
4	RSPK-

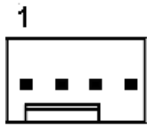
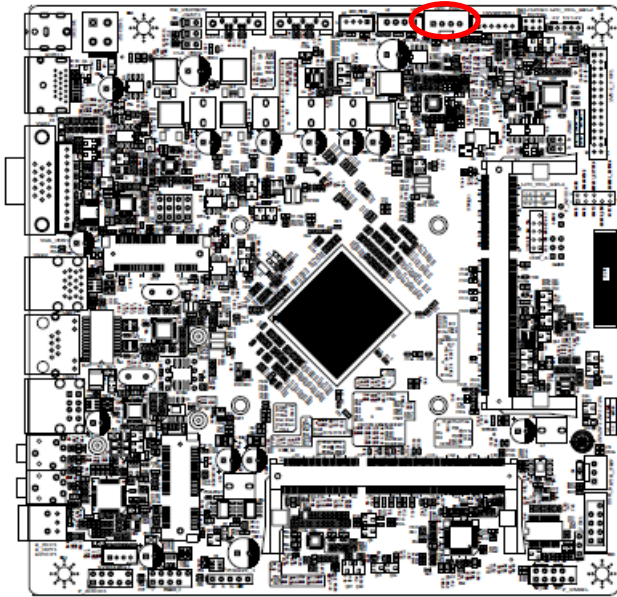
2.3.17 Front Panel connector (F\_PANEL)



Signal	PIN	PIN	Signal
+HD_LED	1	2	+PWR_LED
-HD_LED	3	4	-PWE_LED
+Reset	5	6	+PWR_BNT
-Reset	7	8	-PWR_BNT
NC	9		

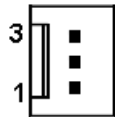
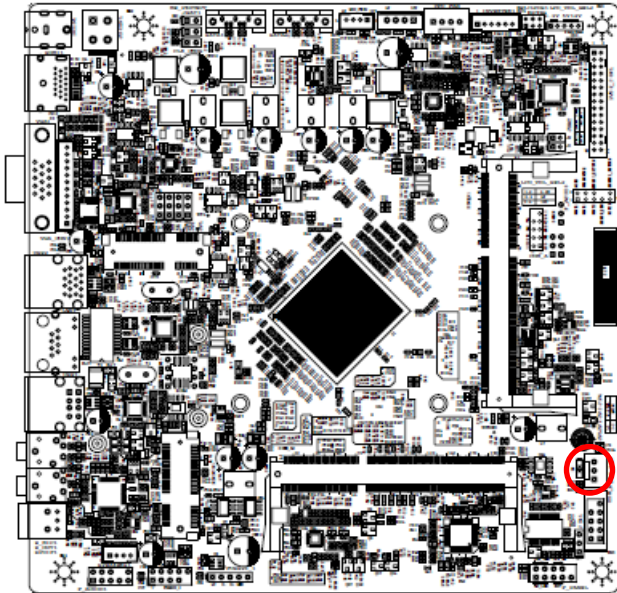


2.3.18 CPU fan connector (CPU\_FAN)



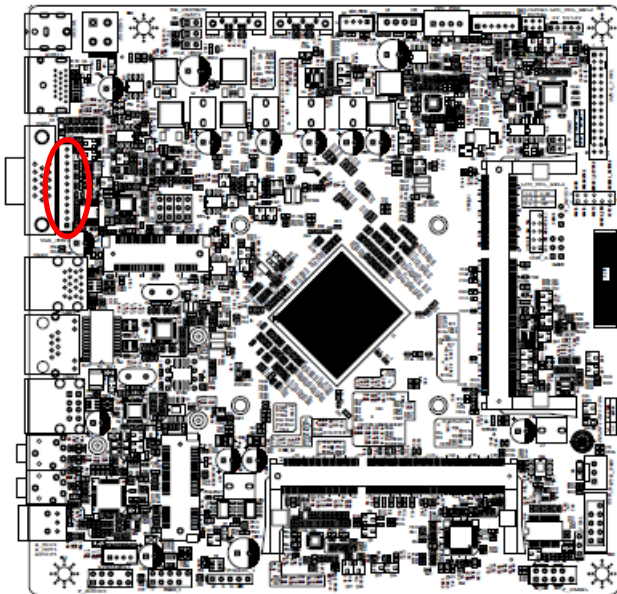
Signal	PIN
GND	1
+12V	2
CPU_FANIN	3
CPU_FANOUT	4

2.3.19 System fan connector (SYS\_FAN)



PIN	Signal
1	GND
2	+12V
3	SYS_FANIN

2.3.20 VGA port connector (VGA\_CON1)



PIN	Signal
12	5V_DDCA_CLK
11	5V_DDCA_DAT
10	GND
9	VGA_B
8	GND
7	VGA_G
6	GND
5	VGA_R
4	GND
3	5V-HSYNC_R
2	5V_VSYBC_R
1	GND

## 3. BIOS Setup

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### 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 NVRAM 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> or <F2> immediately after switching the system on, or

By pressing the <Del> or <F2> key when the following message appears briefly at the left-top of the screen during the POST (Power On Self Test).

**Press <Del> or <F2> 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
Enter	Select
+/-	Value
Esc	Exit
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit Setup
<K>	Scroll help area upwards
<M>	Scroll help area downwards

- **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 <Enter> key.

### 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 NVRAM settings which resets your system to its defaults.

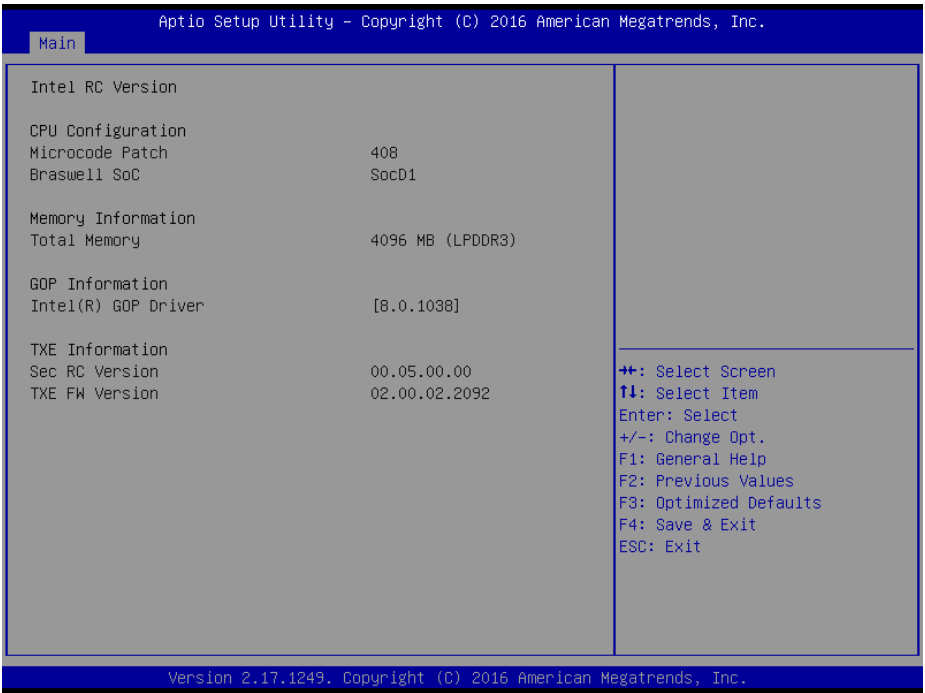
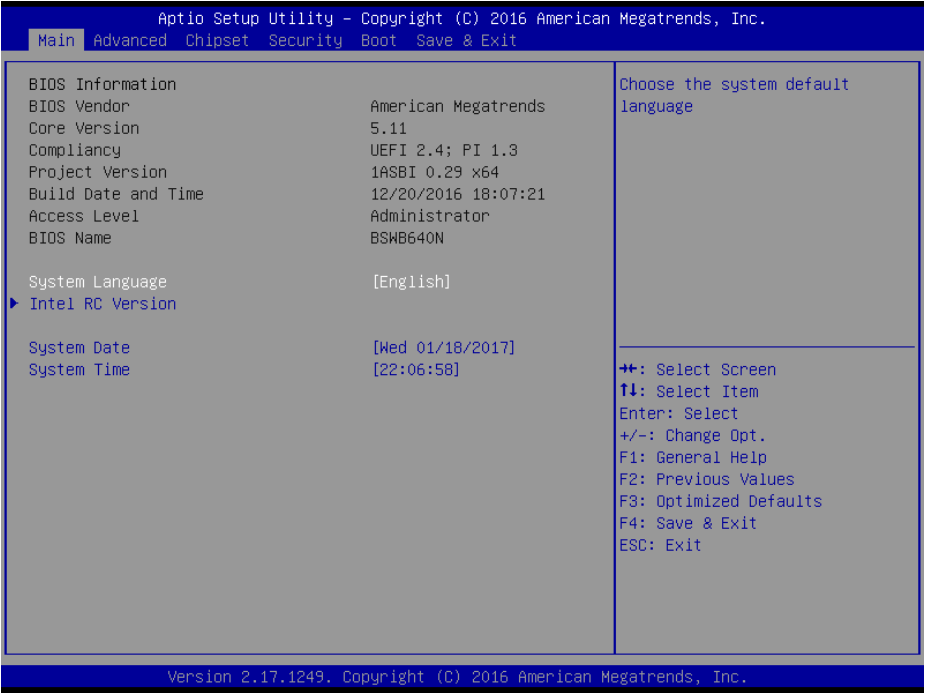
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance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

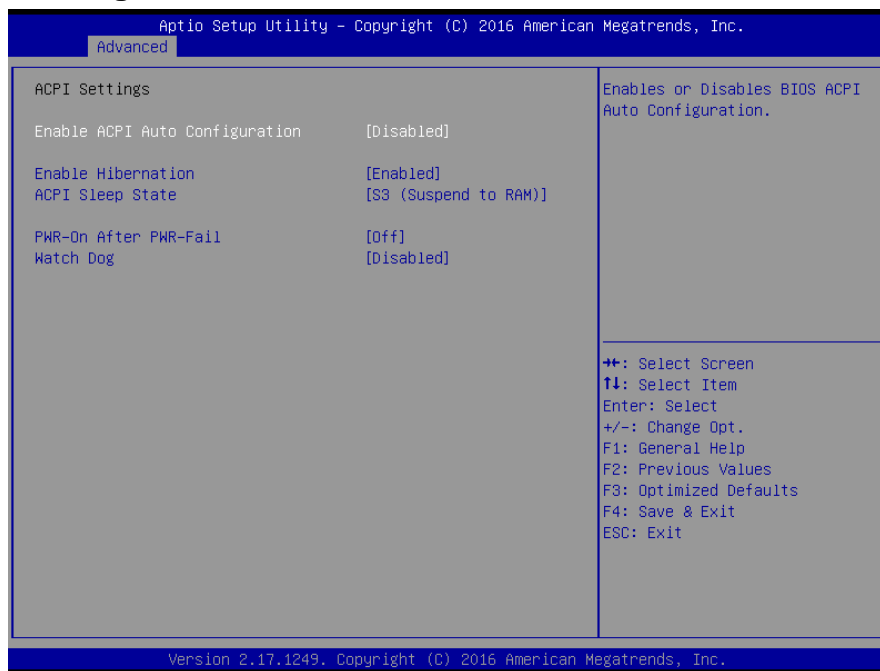
Visit the Avalue website ([www.avalue.com.tw](http://www.avalue.com.tw)) to download the latest product and BIOS information.

## 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.

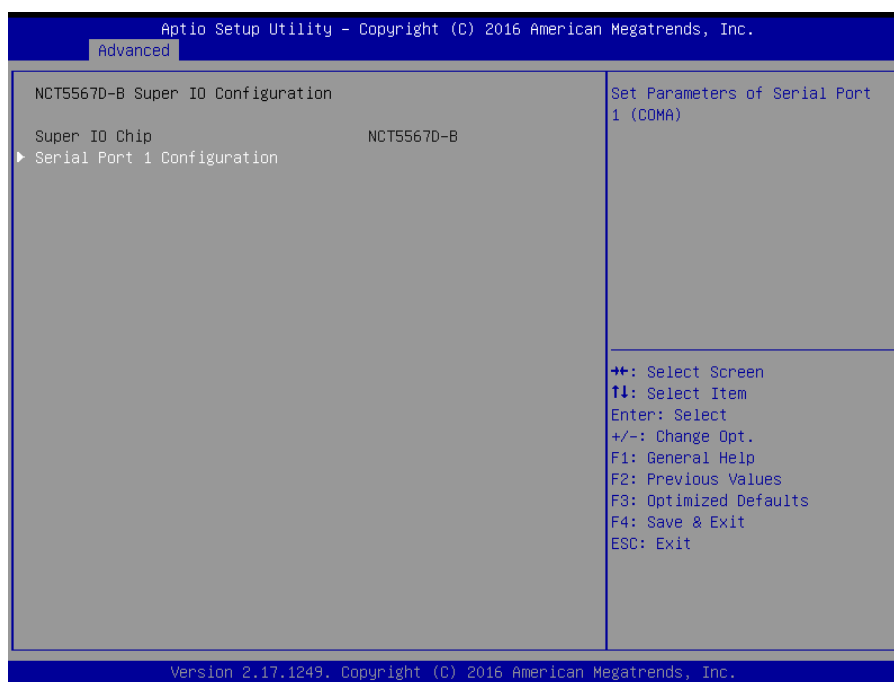


## 3.6.2.1 ACPI Settings



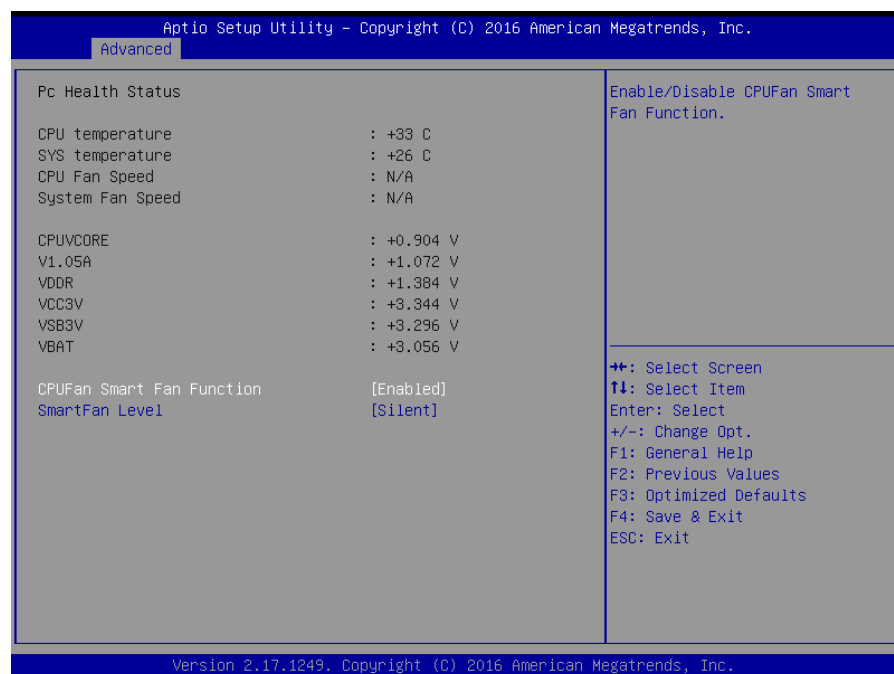
Item	Options	Description
<b>Enable ACPI Auto Configuration</b>	Disabled <b>[Default]</b> , Enabled	Enables or Disables BIOS ACPI Auto Configuration.
<b>Enable Hibernation</b>	Disabled Enabled <b>[Default]</b> ,	Enables or Disables System ability to Hibernates (OS/S4 Sleep State). This option may be not effective with some OS.
<b>ACPI Sleep State</b>	Suspend Disabled, S3 (Suspend to RAM) <b>[Default]</b>	Select the highest ACPI sleep state the system will enter when the SUSPEDN button is pressed.
<b>PWR-On After PWR-Fail</b>	<b>Off[Default]</b> On Last state	AC loss resume.
<b>Watch Dog</b>	Disabled <b>[Default]</b> , 30 sec 40 sec 50 sec 1 min 2 min 10 min 30 min	Select WatchDog.

### 3.6.2.2 NCT5567D-B Super IO Configuration



Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).

### 3.6.2.3 Hardware Monitor

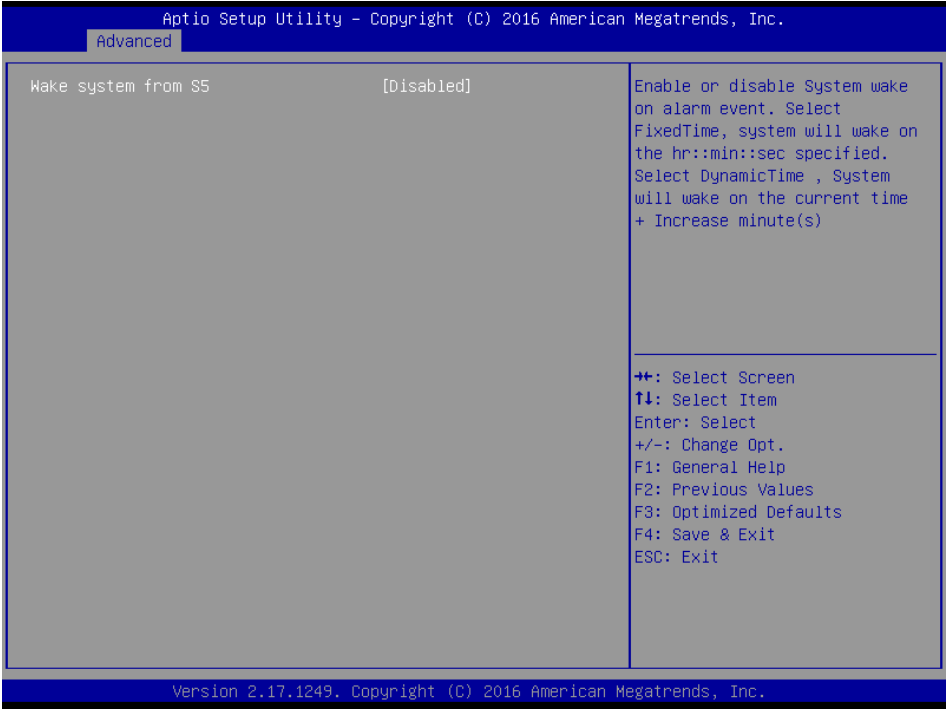


Item	Options	Description
CPUFan Smart Fan Function	Disabled Enabled[Default]	Enable/Disable CPUFan Smart Fan Function.

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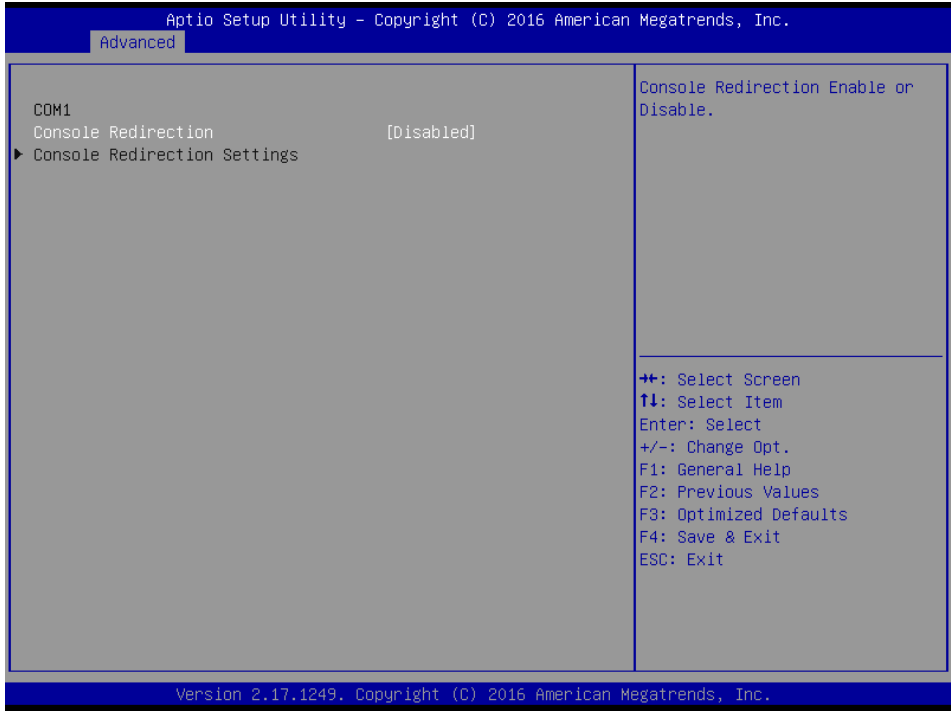
SmartFan Level	Silent <b>[Default]</b> Standard Performance	Select SmartFan Level. Silent: Low fan speed; Less noise. Standard: Standard fan speed. Performance: High fan speed; More noise.
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3.6.2.4 S5 RTC Wake Settings



Item	Options	Description
Wake system from S5	Disabled <b>[Default]</b> , Fixed Time Dynamic Time	Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr::min::sec specified. Select Dynamic Time, System will wake on the current time + Increase minute(s).

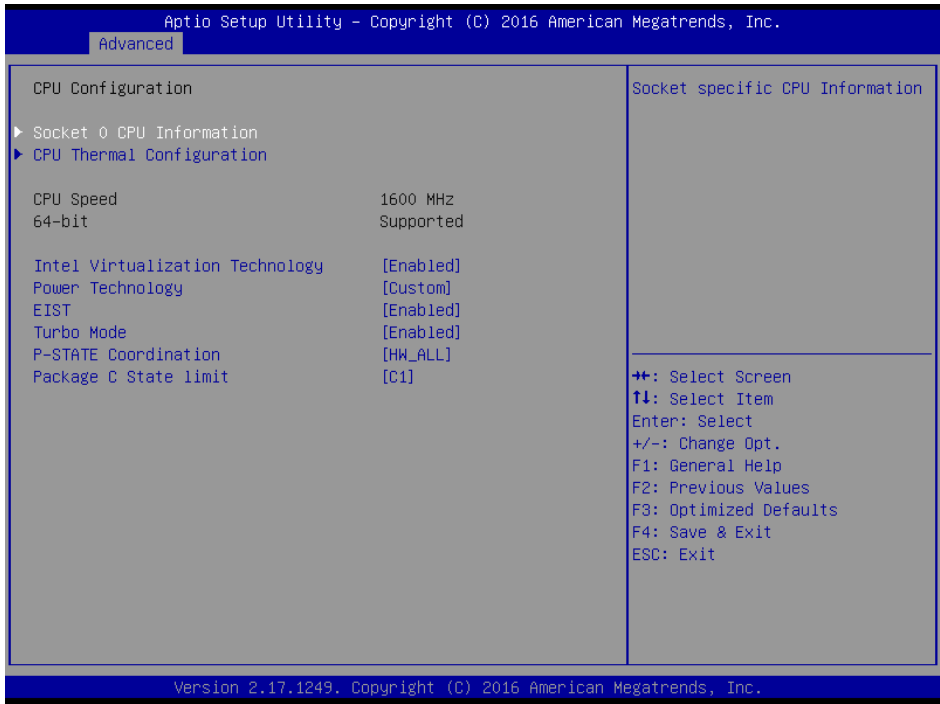
3.6.2.5 Serial Port Console Redirection



Item	Options	Description
Console Redirection	Disabled[Default], Enabled	Console Redirection Enable or Disable.

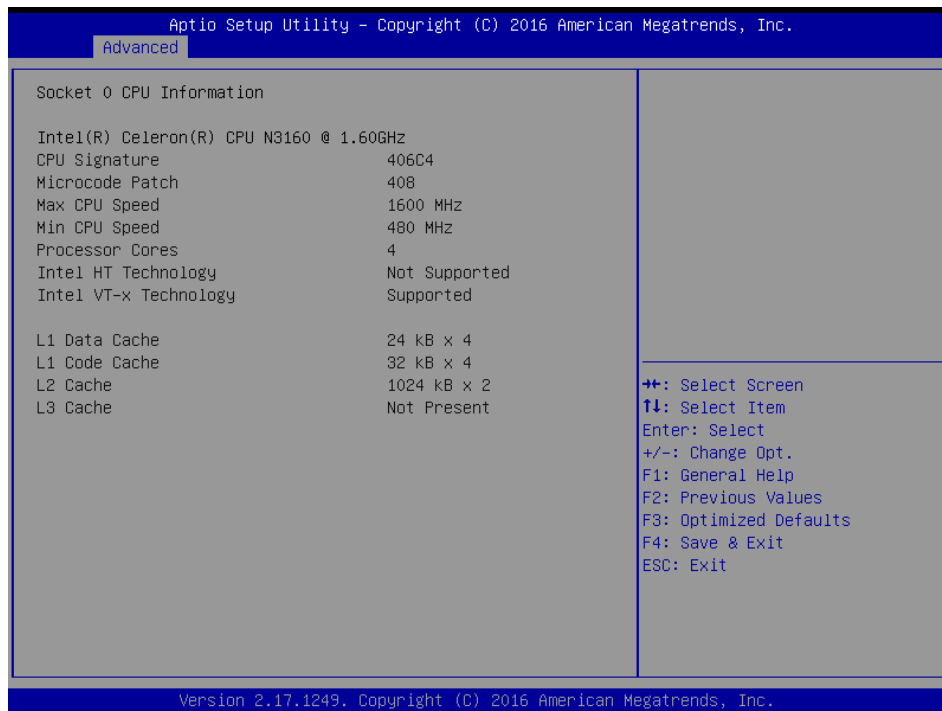
3.6.2.6 CPU Configuration

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



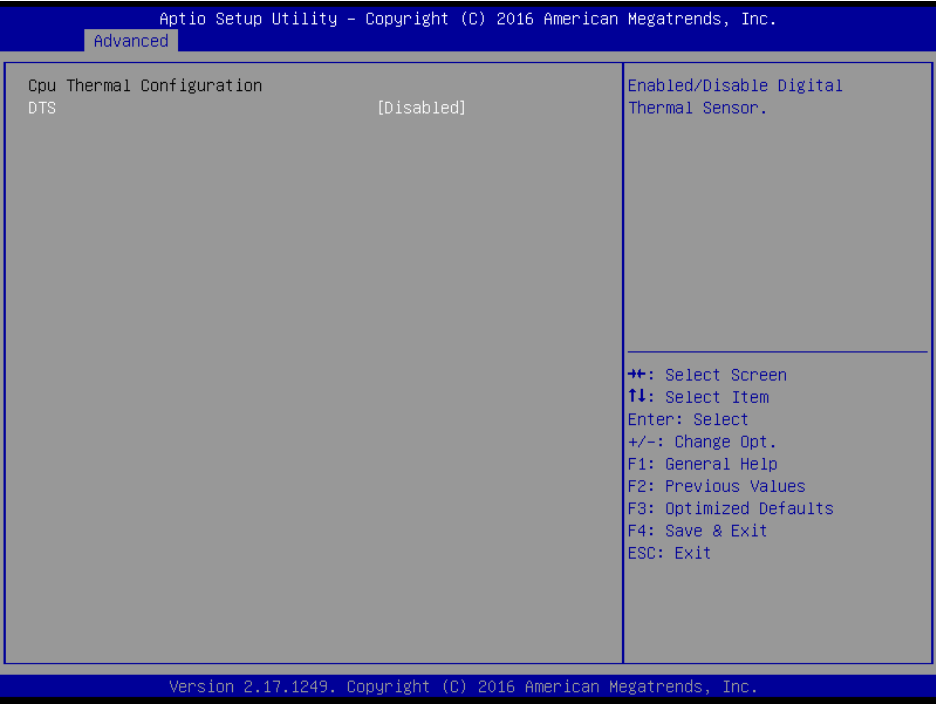
Item	Options	Description
Intel Virtualization Technology	Disabled, Enabled[Default]	When enabled, a VMM can utilize the additional hardware capabilities provided by Virtualization Technology.
Power Technology	Disabled, Energy Efficient Custom[Default]	Enable the power management features.
EIST	Disabled, Enabled[Default]	Enable/Disable Intel SpeedStep.
Turbo Mode	Disabled, Enabled[Default]	Turbo Mode.
P-STATE Coordination	HW_ALL[Default] SW_ALL SW_ANY	Change P-STATE Coordination type.
Package C State limit	C1[Default]/3/6/7	Package C State limit.

## 3.6.2.6.1 Socket 0 CPU Information



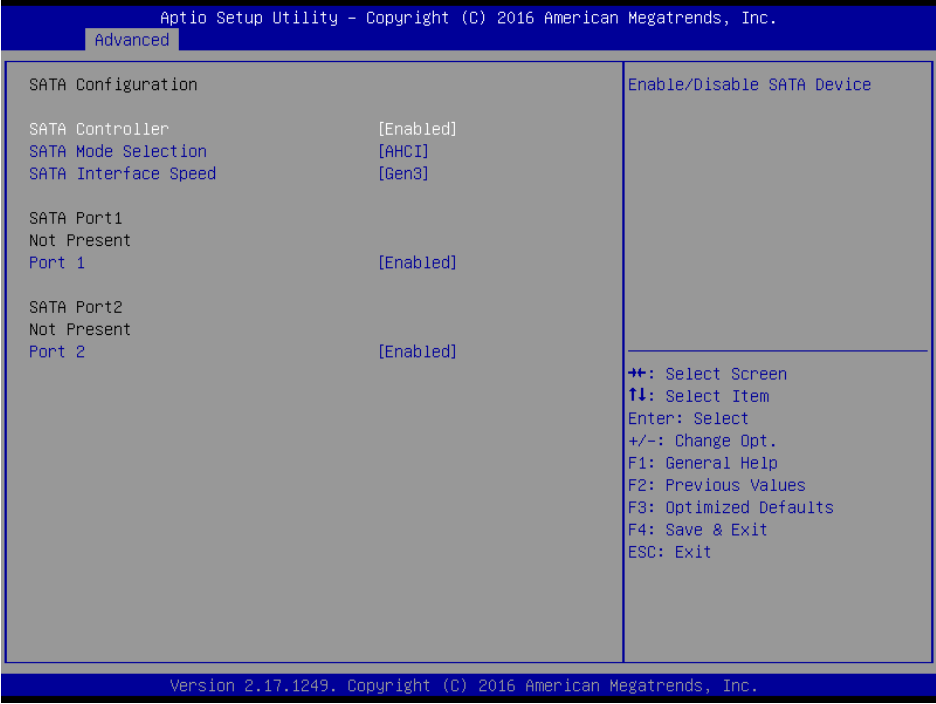


3.6.2.6.2 CPU Thermal Configuration



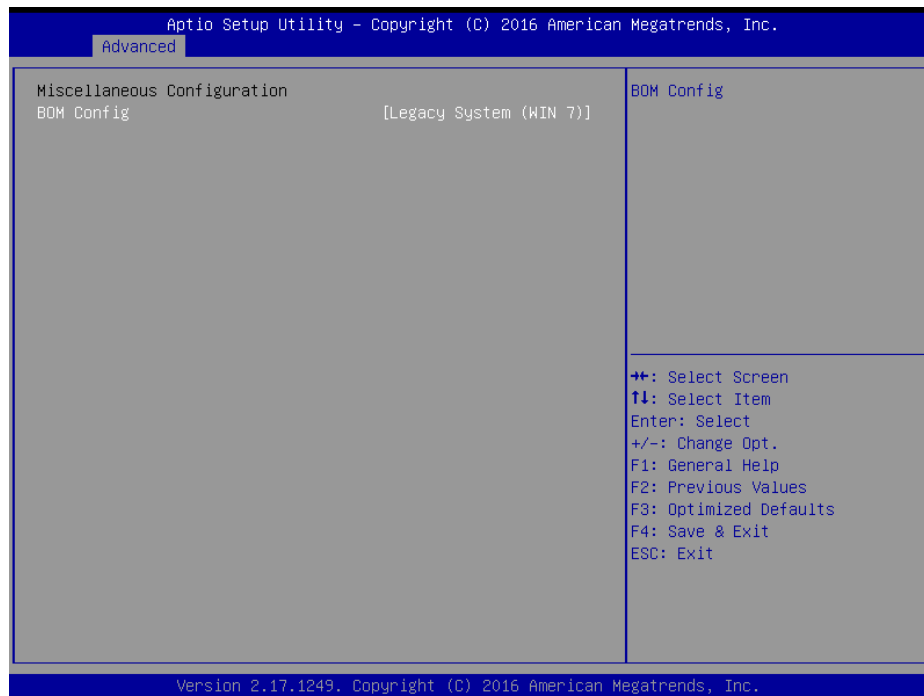
Item	Options	Description
DTS	Enabled Disabled[Default],	Enabled/Disable Digital Thermal Sensor.

3.6.2.7 SATA Configuration



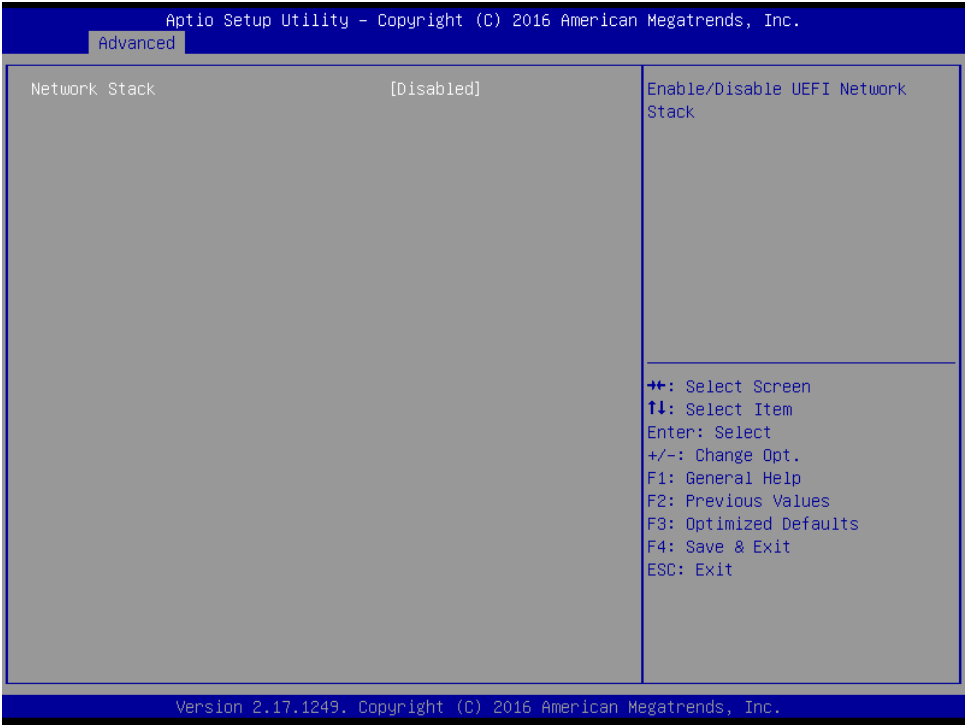
Item	Options	Description
<b>SATA Controller</b>	Disabled, Enabled[ <b>Default</b> ]	Enable/Disable SATA Device.
<b>SATA Mode Selection</b>	AHCI[ <b>Default</b> ]	Determines how SATA controller operate.
<b>SATA Interface Speed</b>	Gen1 Gen2 Gen3[ <b>Default</b> ]	Select SATA Interface Speed, CHV A1 always with Gen 1 Speed.
<b>Port1/2</b>	Disabled, Enabled[ <b>Default</b> ]	Enable/Disable SATA Port.

## 3.6.2.8 Miscellaneous Configuration



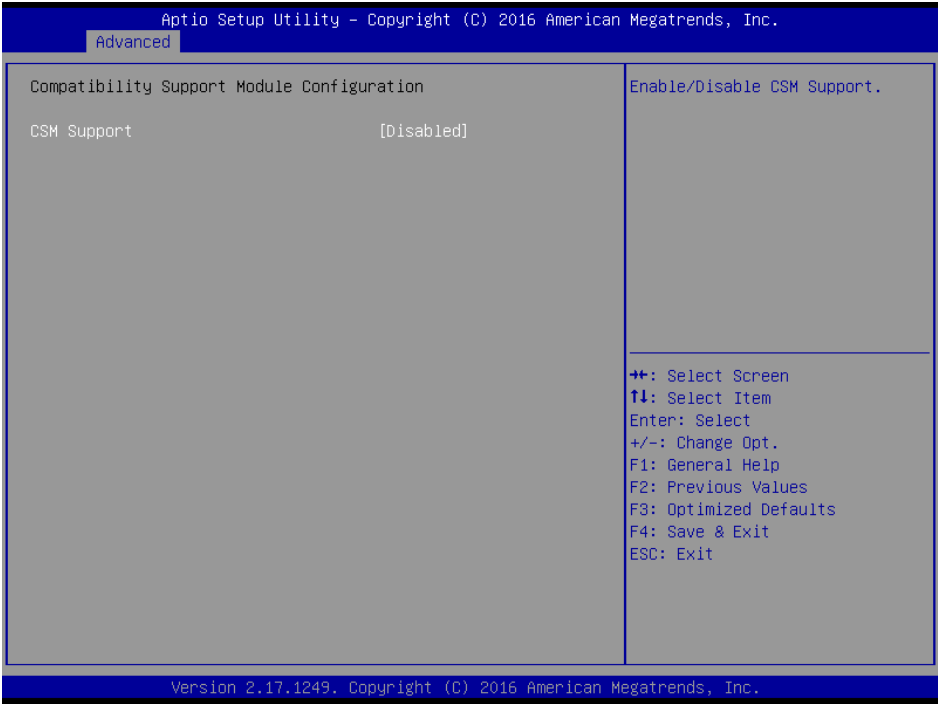
Item	Options	Description
<b>BOM Config</b>	WIN 8/WIN 10 Legacy System (WIN 7)[ <b>Default</b> ] Yocto Linux	BOM Config.

3.6.2.9 Network Stack Configuration



Item	Options	Description
Network Stack	Enabled Disabled <b>[Default]</b>	Enable/Disable UEFI Network Stack.

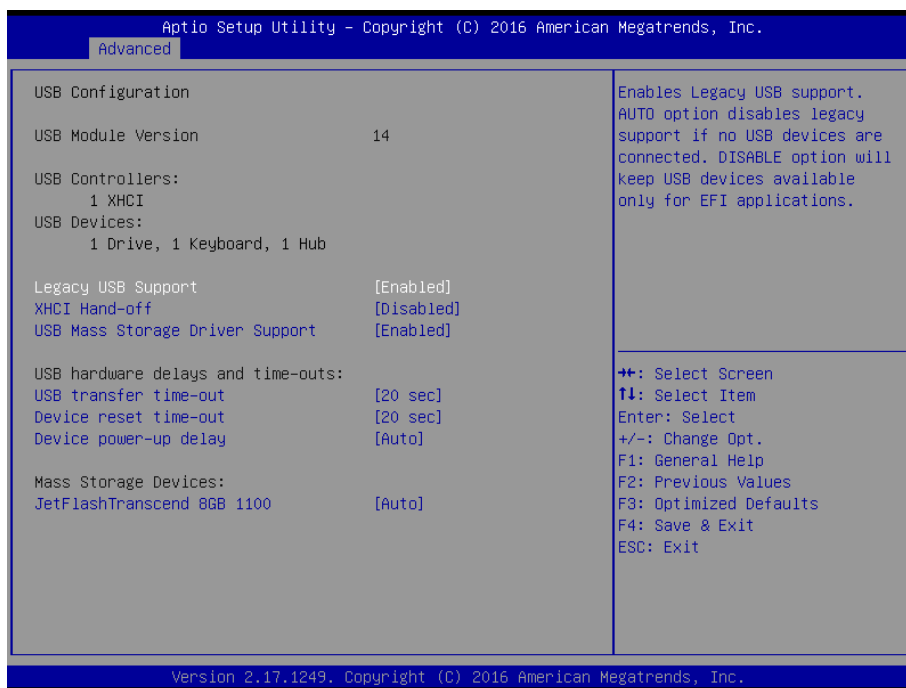
3.6.2.10 CSM Configuration



Item	Options	Description
<b>CSM Support</b>	Enabled[Default] Disabled,	Enable/Disable CSM Support.

## 3.6.2.11 USB Configuration

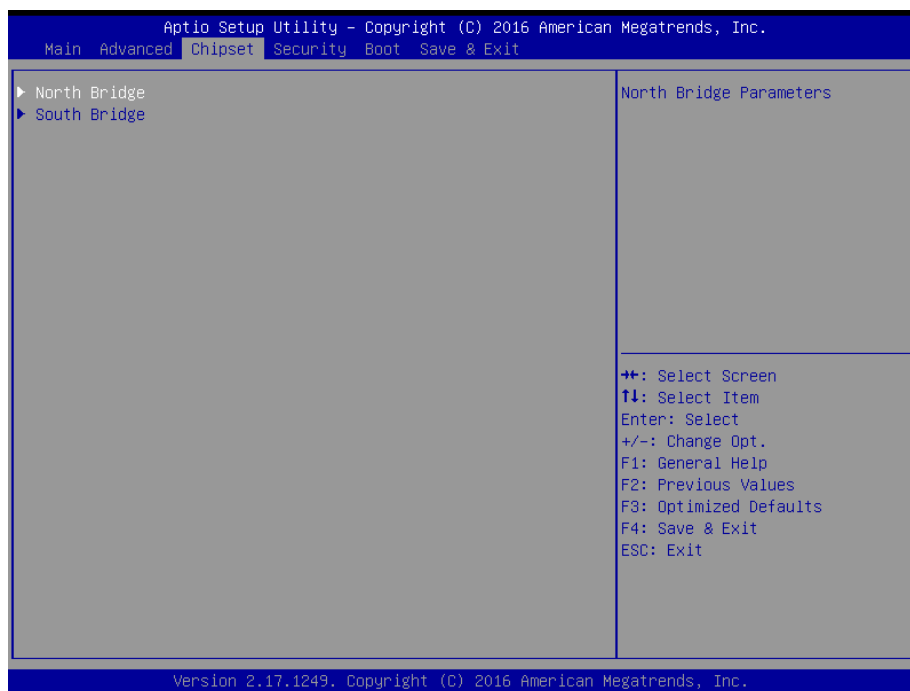
The USB Configuration menu helps read USB information and configures USB settings.



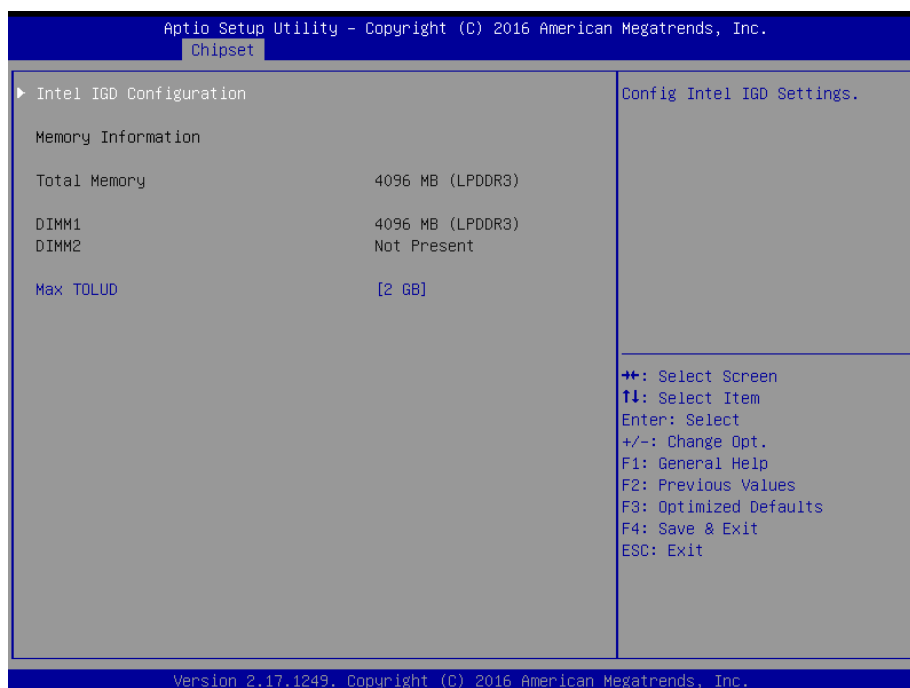
Item	Options	Description
<b>Legacy USB Support</b>	Enabled[Default] Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
<b>XHCI Hand-off</b>	Enabled Disabled[Default]	This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

<b>Mass Storage Devices</b>	<b>Auto[Default]</b> 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.
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### 3.6.3 Chipset

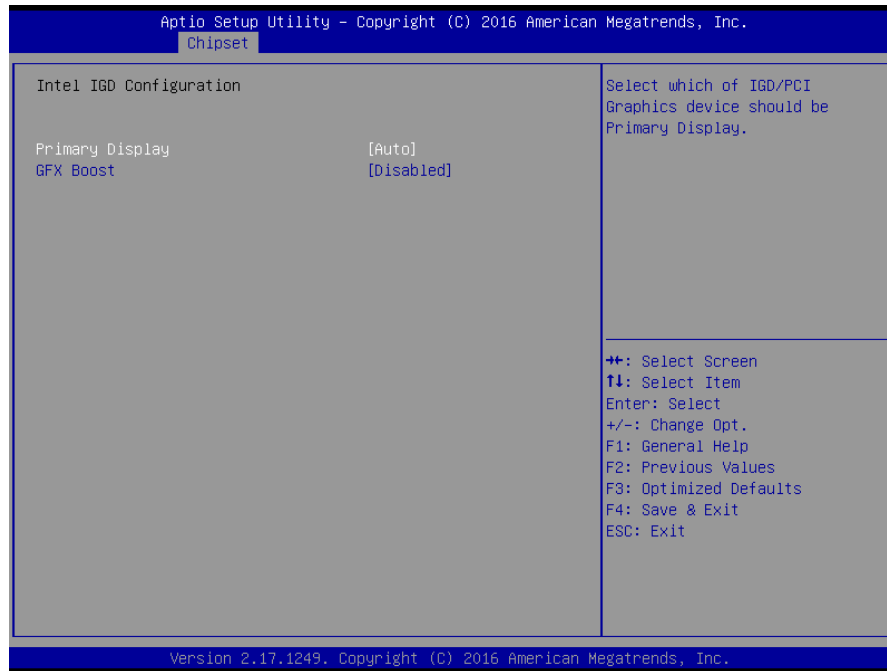


#### 3.6.3.1 North Bridge



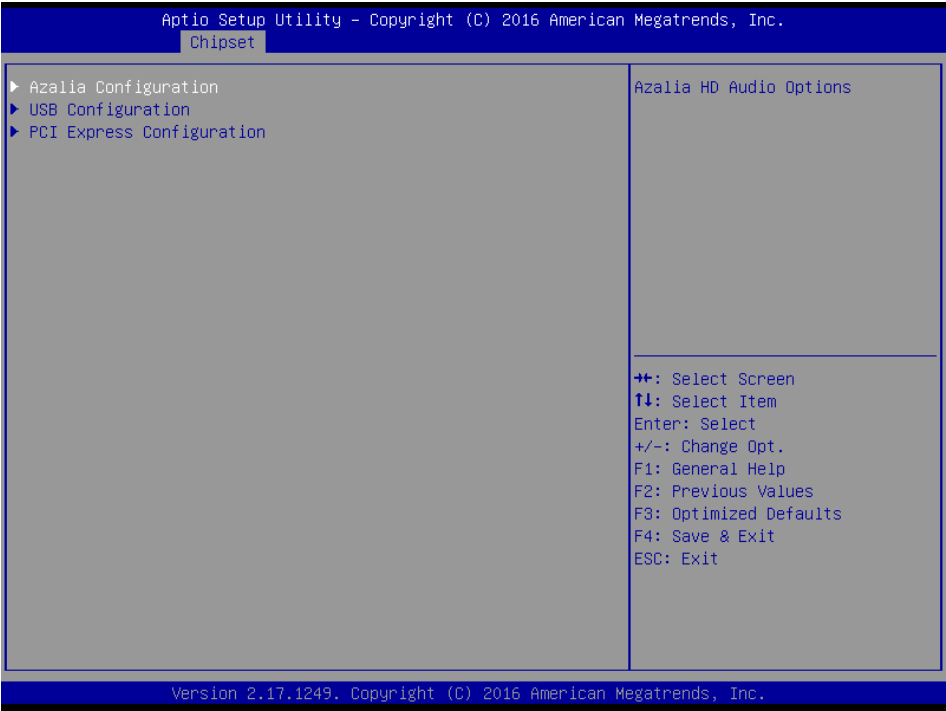
Item	Option	Description
<b>Max TOLUD</b>	2 GB[Default] 2.25 GB 2.5 GB 2.75 GB	Maximum Value of TOLUD.

## 3.6.3.1.1 Intel IGD Configuration

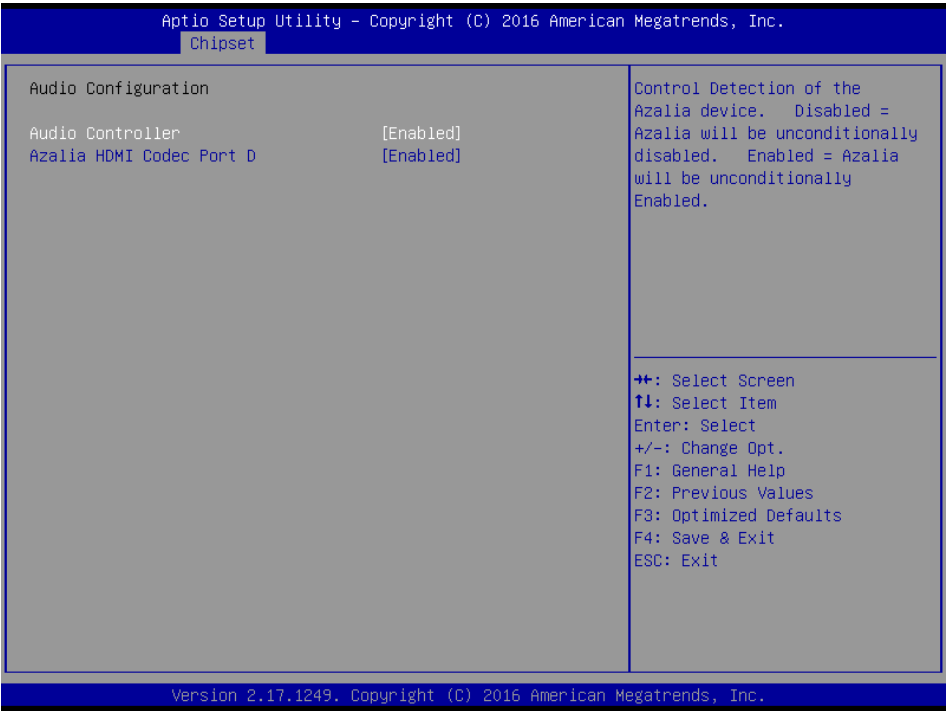


Item	Option	Description
<b>Primary Display</b>	Auto[Default] IGD PCIe	Select which of IGD/PCI Graphics device should be Primary Display.
<b>GFX Boost</b>	Enabled, Disabled[Default]	Enable/Disable GFX Boost.

3.6.3.2 South Bridge



3.6.3.2.1 Azalia Configuration



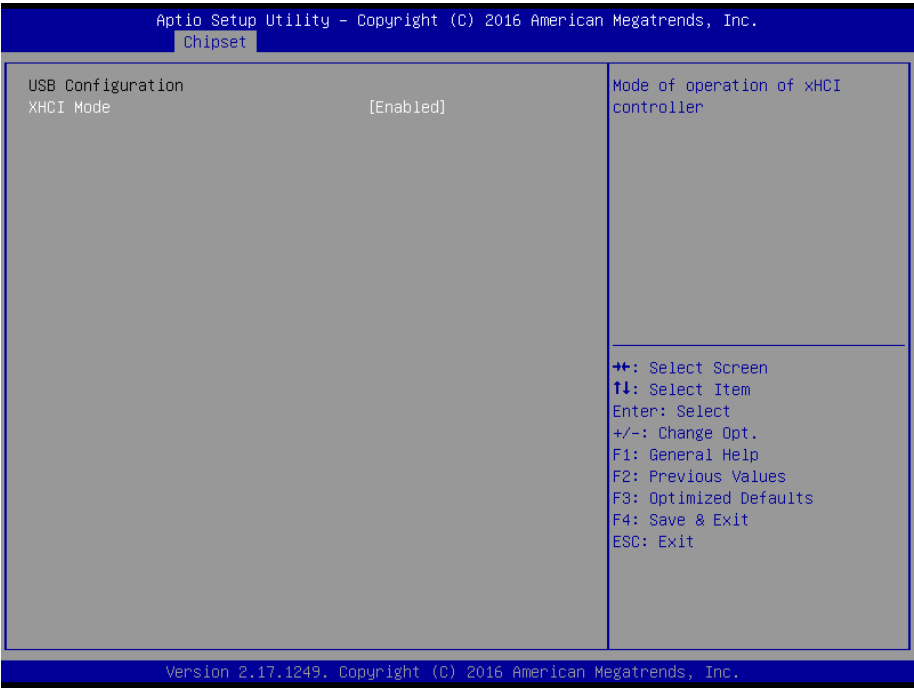
Item	Option	Description
Audio Controller	Enabled[Default], Disabled	Control Detection of the Azalia device. Disabled = Azalia will be unconditionally disabled. Enabled = Azalia will be unconditionally Enabled.



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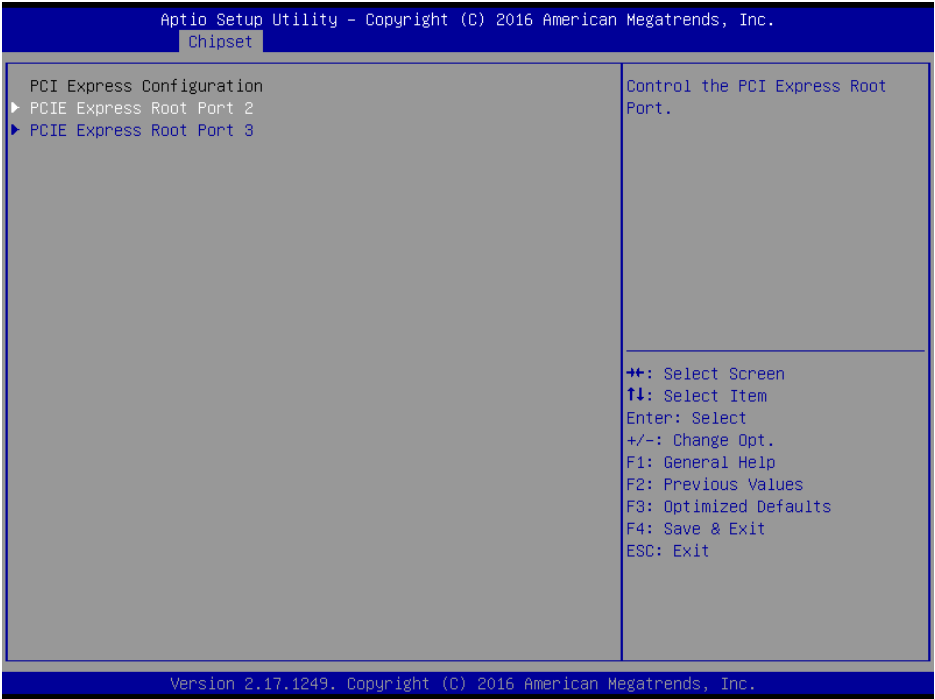
Azalia HDMI Codec Port D	Enabled[Default], Disabled	Enable/Disable HDMI Port codec for Azalia.
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3.6.3.2.2 USB Configuration

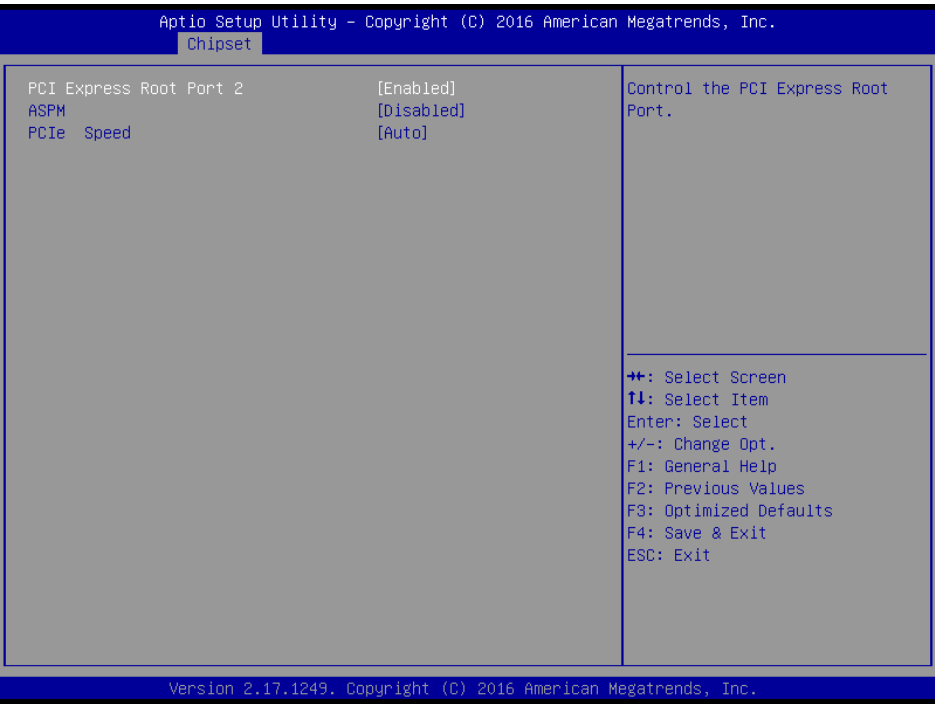


Item	Option	Description
XHCI Mode	Enabled[Default], Disabled	Mode of operation of xHCI controller.

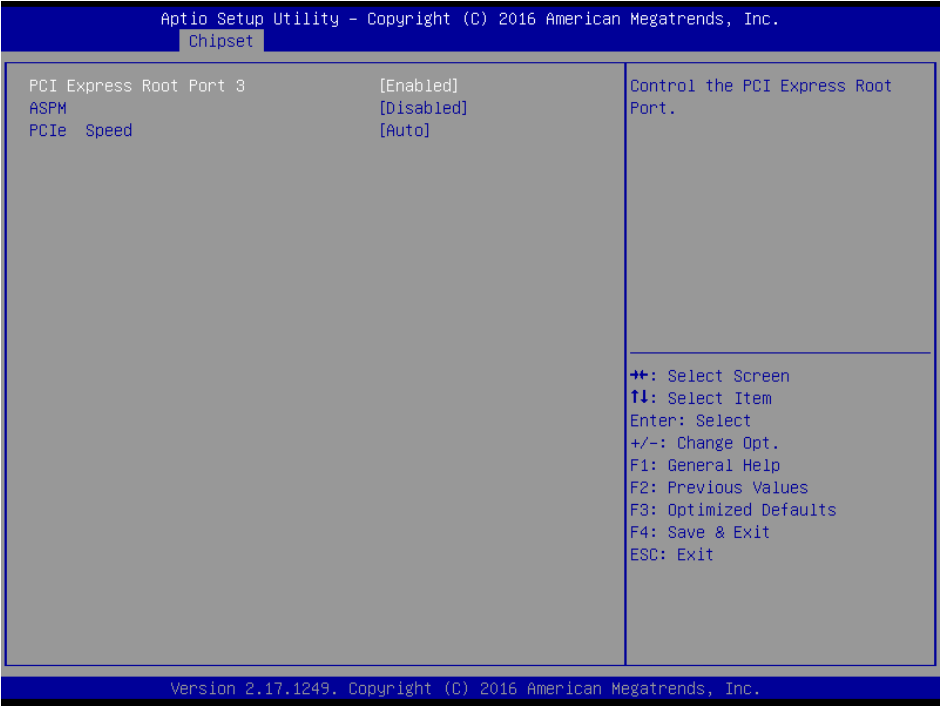
3.6.3.2.3 PCI Express Configuration



3.6.3.2.3.1 PCIE Express Root Port2

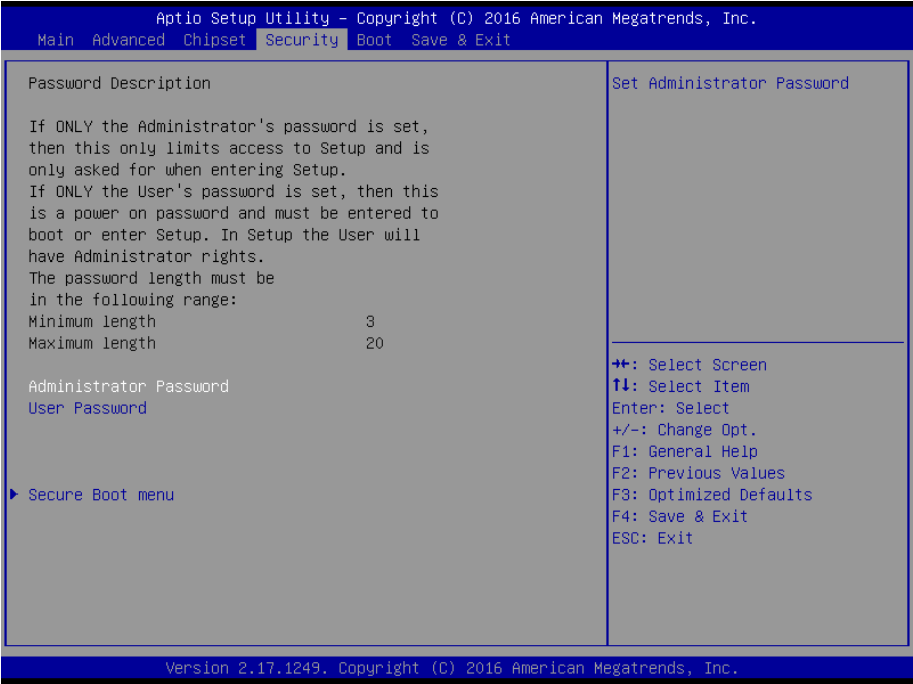


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Item	Option	Description
PCI Express Root Port 2/3	Enabled[Default], Disabled	Control the PCI Express Root Port.
ASPM	Auto Disabled[Default] L0s L1 L0sL1	PCI Express Active State Power Management settings.
PCIe Speed	Auto[Default] Gen 2 Gen 1	Configure PCIe Speed. CHV A1 always with Gen 1 Speed.

3.6.4 Security



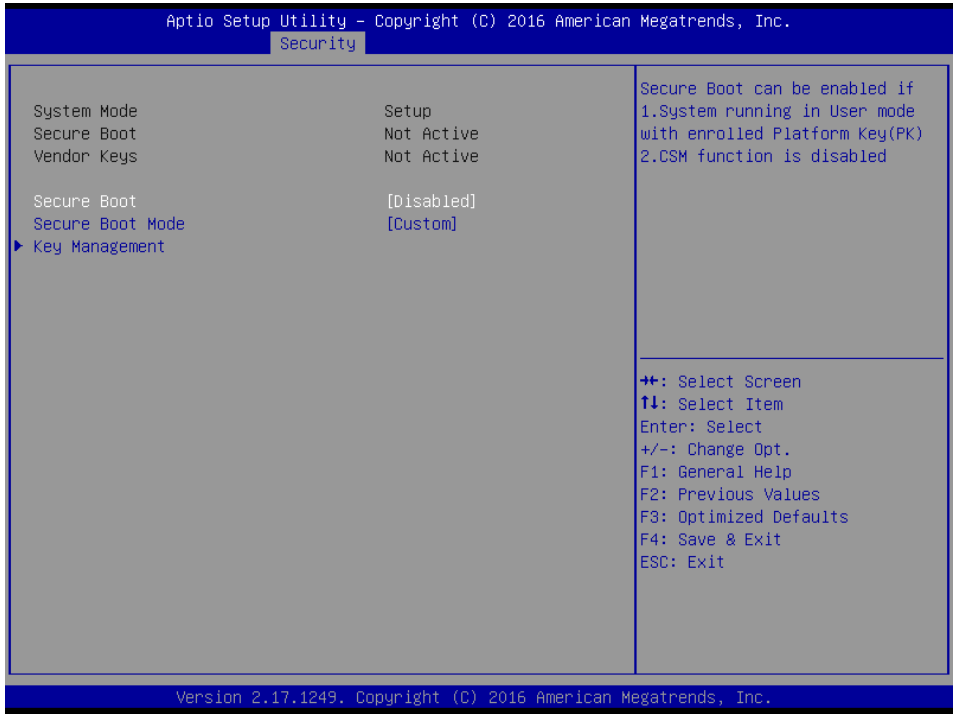
- Administrator Password

Set setup Administrator Password

- User Password

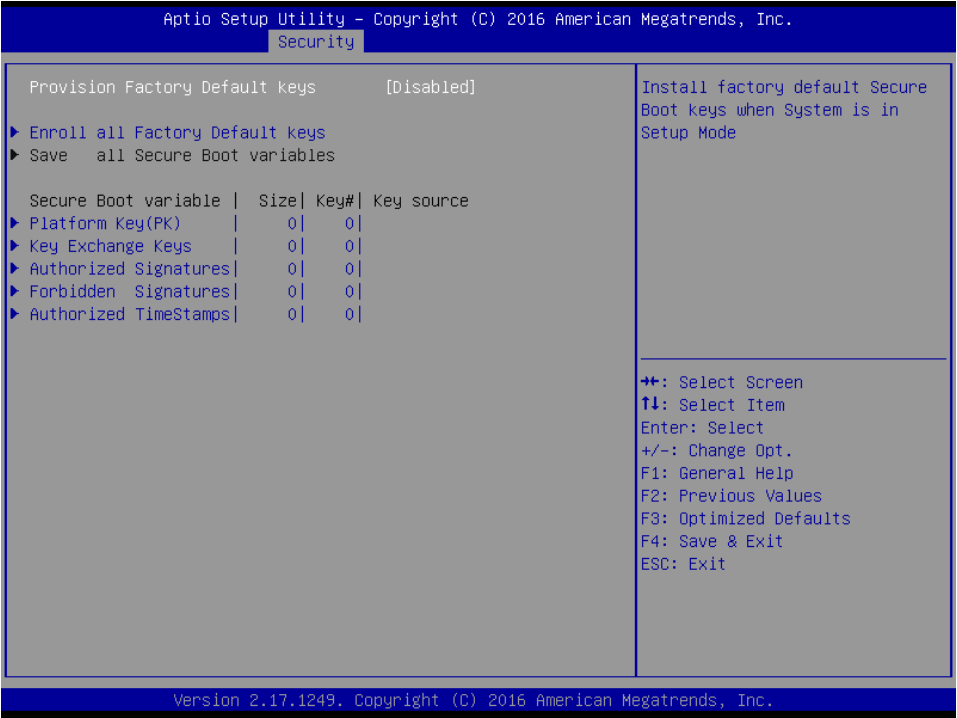
Set User Password

3.6.4.1 Secure Boot menu



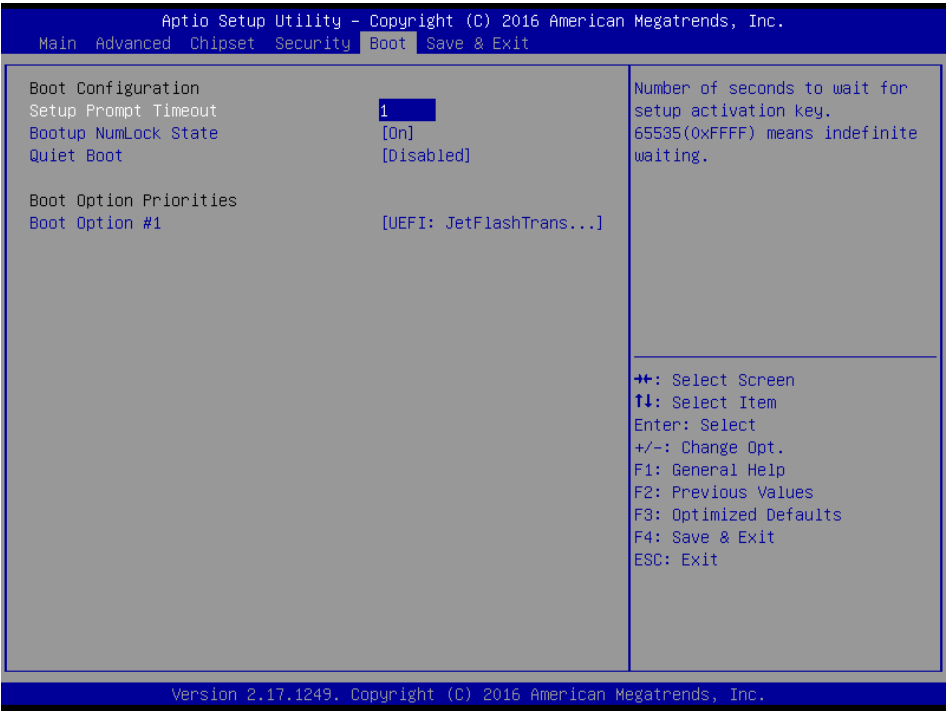
Item	Option	Description
Secure Boot	Disabled[Default] Enabled	Secure Boot can be enabled if 1.System running in User mode with enrolled Platform Key(PK) 2.CSM function is disabled.
Secure Boot Mode	Standard Custom[Default]	Secure Boot mode selector. 'Custom' Mode enables users to change Image Execution policy and manage Secure Boot Keys.

3.6.4.1.1 Key Management



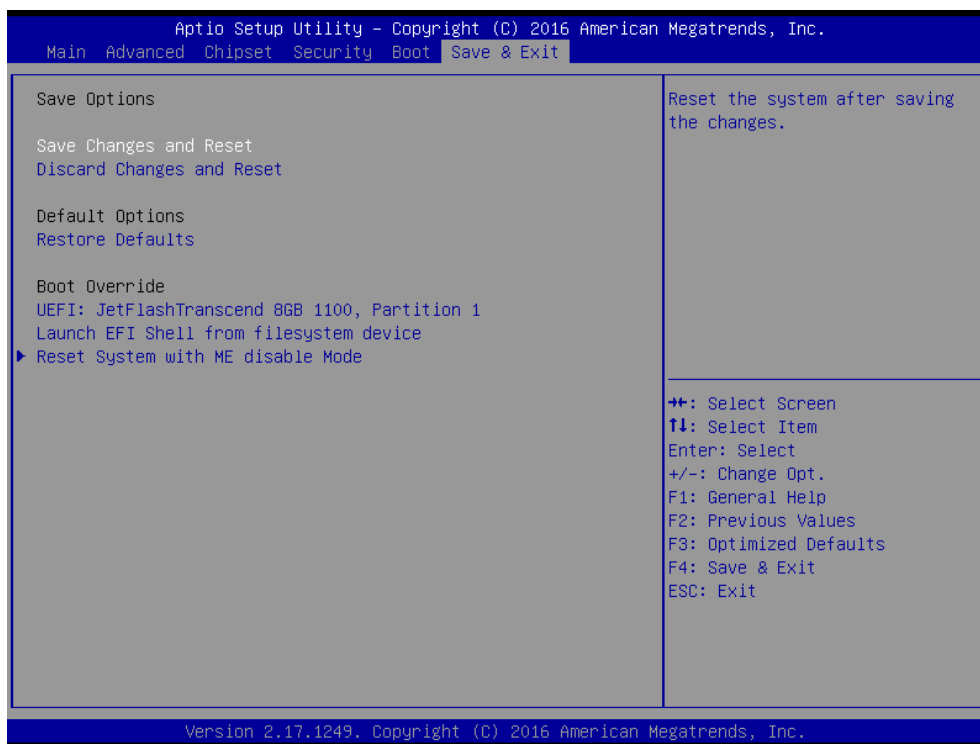
Item	Option	Description
Provision Factory Default Keys	Enabled, Disabled[Default]	Install Factory default Secure Boot Keys when System is in Setup Mode.

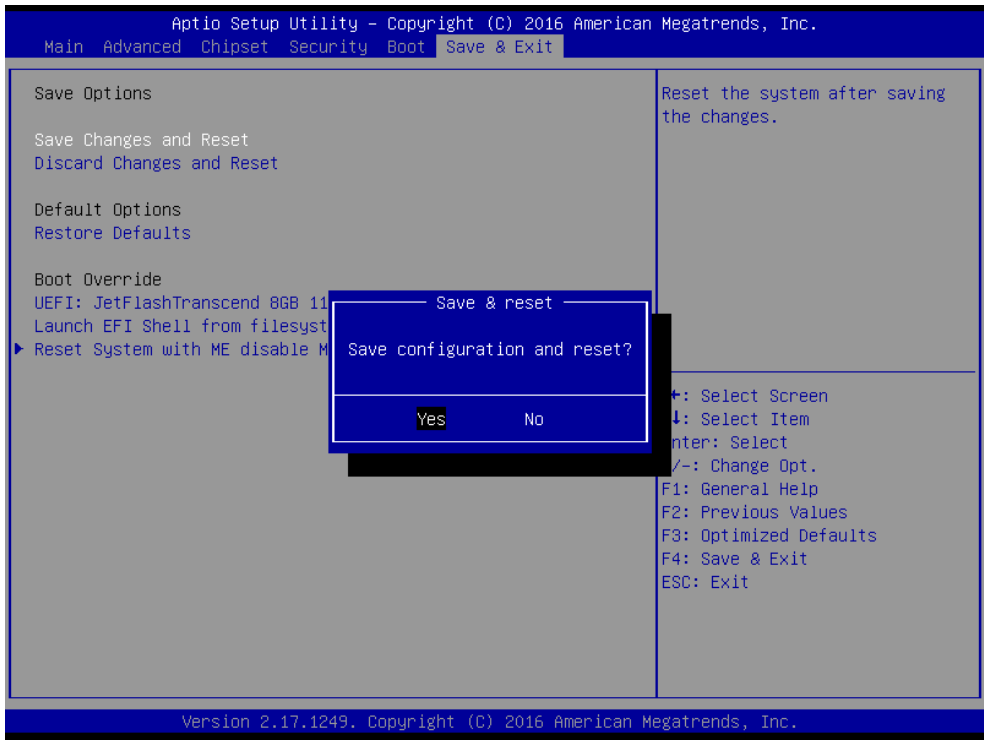
3.6.5 Boot



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[Default] Off	Select the Keyboard NumLock state
Quiet Boot	Disabled[Default] Enabled	Enables or disables Quiet Boot option
Boot Option #1	Set the system boot order.	

## 3.6.6 Save and exit





**3.6.6.1 Save Changes and Reset**

Reset the system after saving the changes.

**3.6.6.2 Discard Changes and Reset**

Reset system setup without saving any changes.

**3.6.6.3 Restore Defaults**

Restore/Load Default values for all the setup options.

**3.6.6.4 Launch EFI Shell from filesystem device**

Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices.



## 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

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.



**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



**Step 3. Click Install.**



**Step1. Click Next.**



**Step 4. Click Finish** to complete setup.



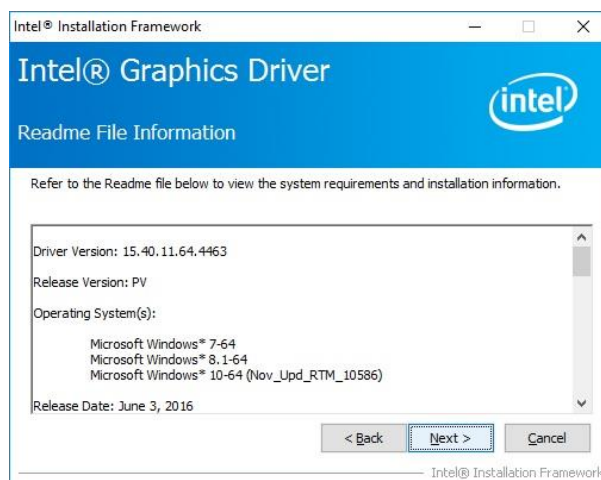
**Step 2. Click Accept.**

## 4.2 Install VGA Driver

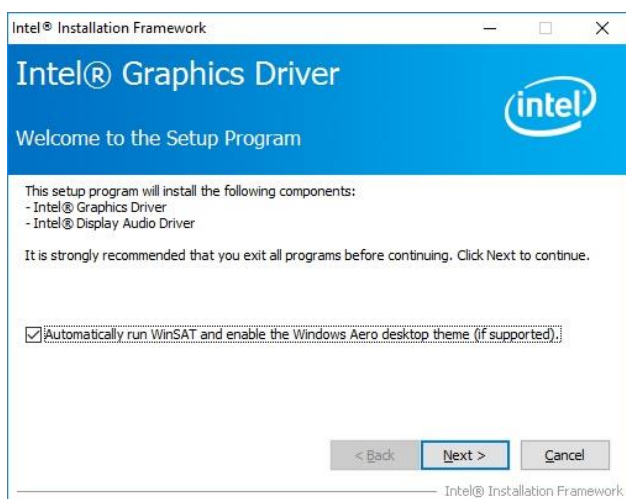
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



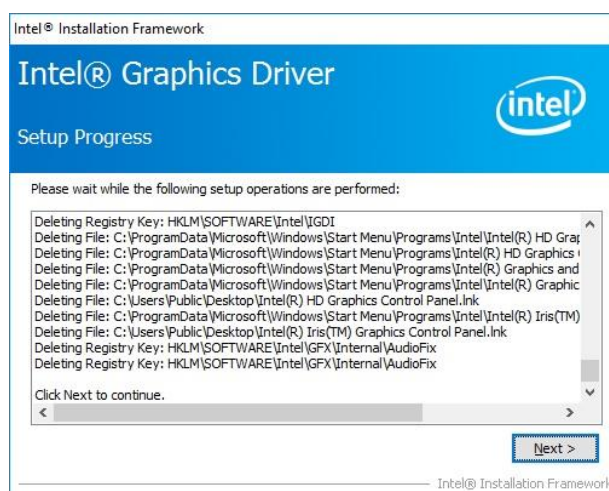
**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system.



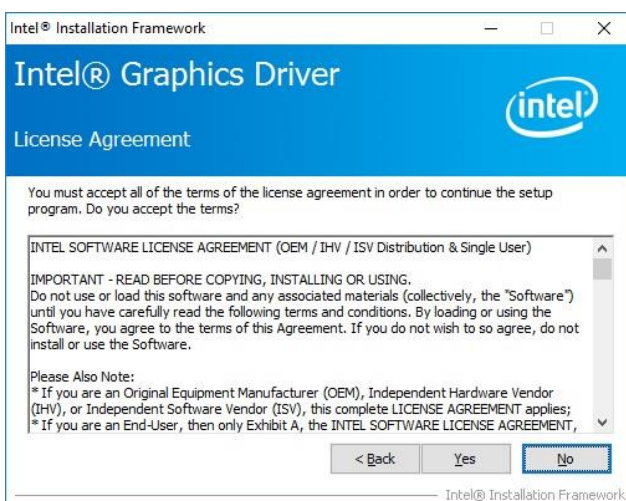
**Step 3. Click Next.**



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



**Step 4. Click Next.**



**Step 2.**

Click **Yes** to accept license agreement.



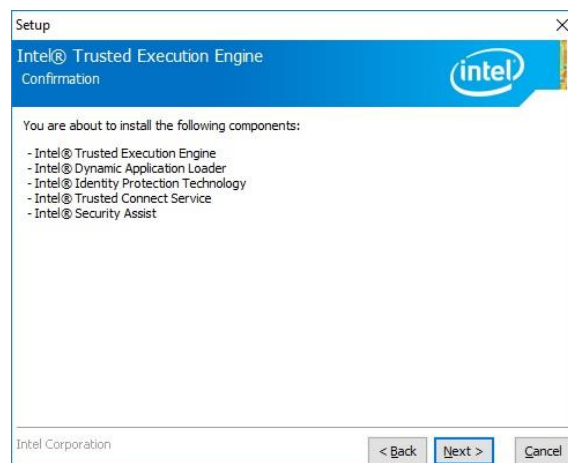
**Step 5. Click Finish** to complete setup.

## 4.3 Install TXE Driver

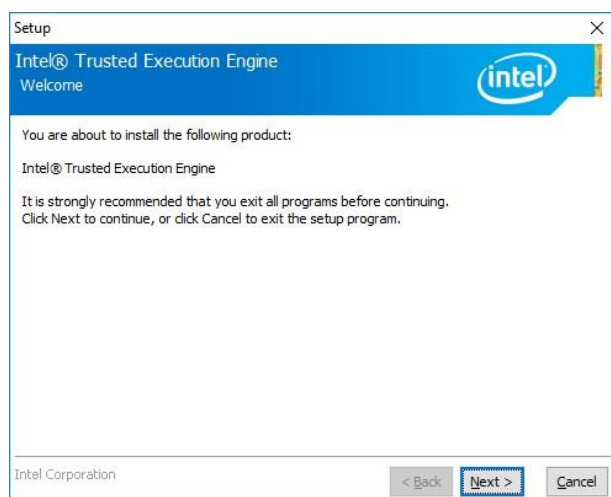
Insert the Supporting CD-ROM to CD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



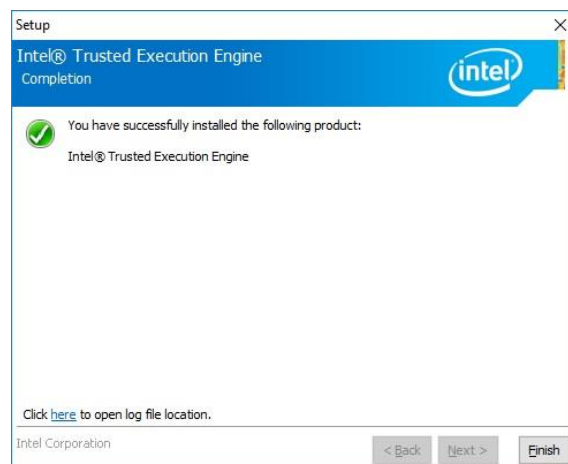
**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system.



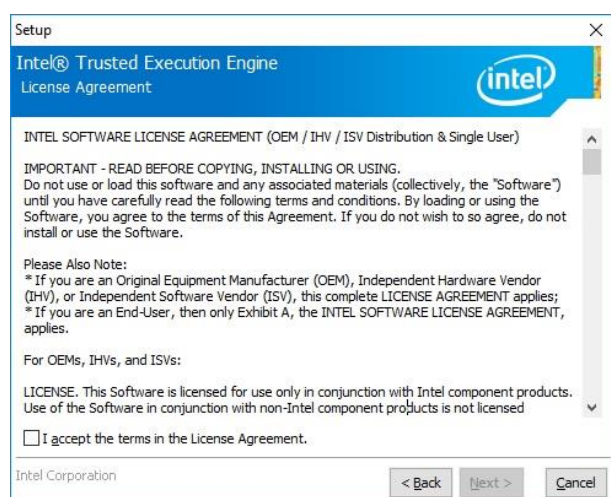
**Step 3. Click Next**



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



**Step 4. Click Finish** to complete the setup



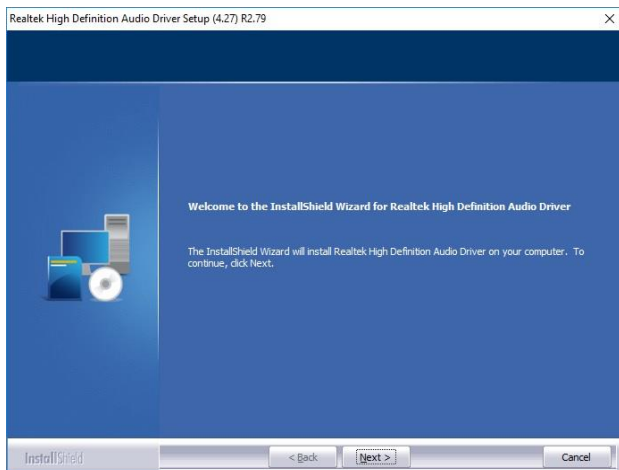
**Step 2. Click Next.**

### 4.4 Install Audio Driver (For Realtek ALC662 HD Audio)

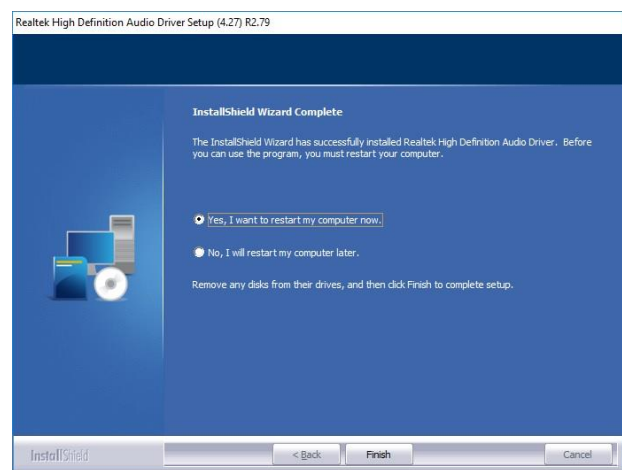
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



**Step1.** Click **Next** to Install.



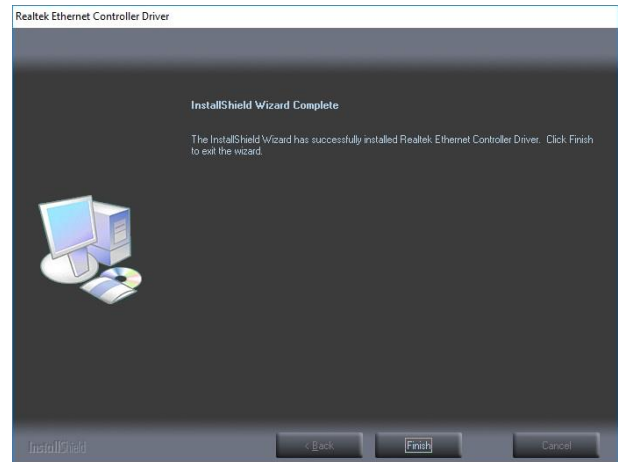
**Step 2.** Select **Finish** to complete Installation.

## 4.5 Install LAN Driver (For Realtek RTL8111F)

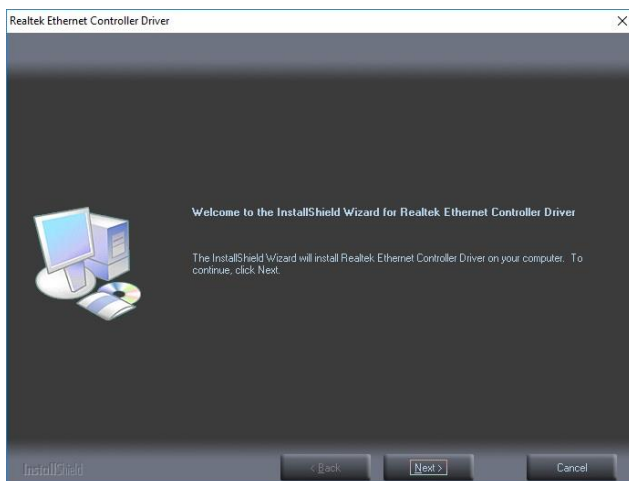
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



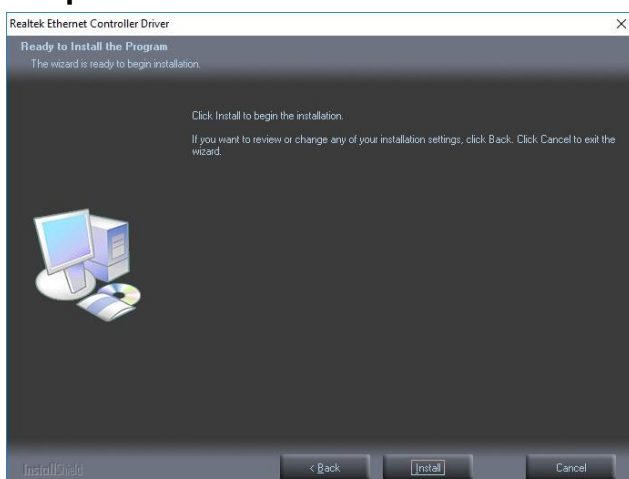
**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system.



**Step 3.** Click **Finish** to complete setup.



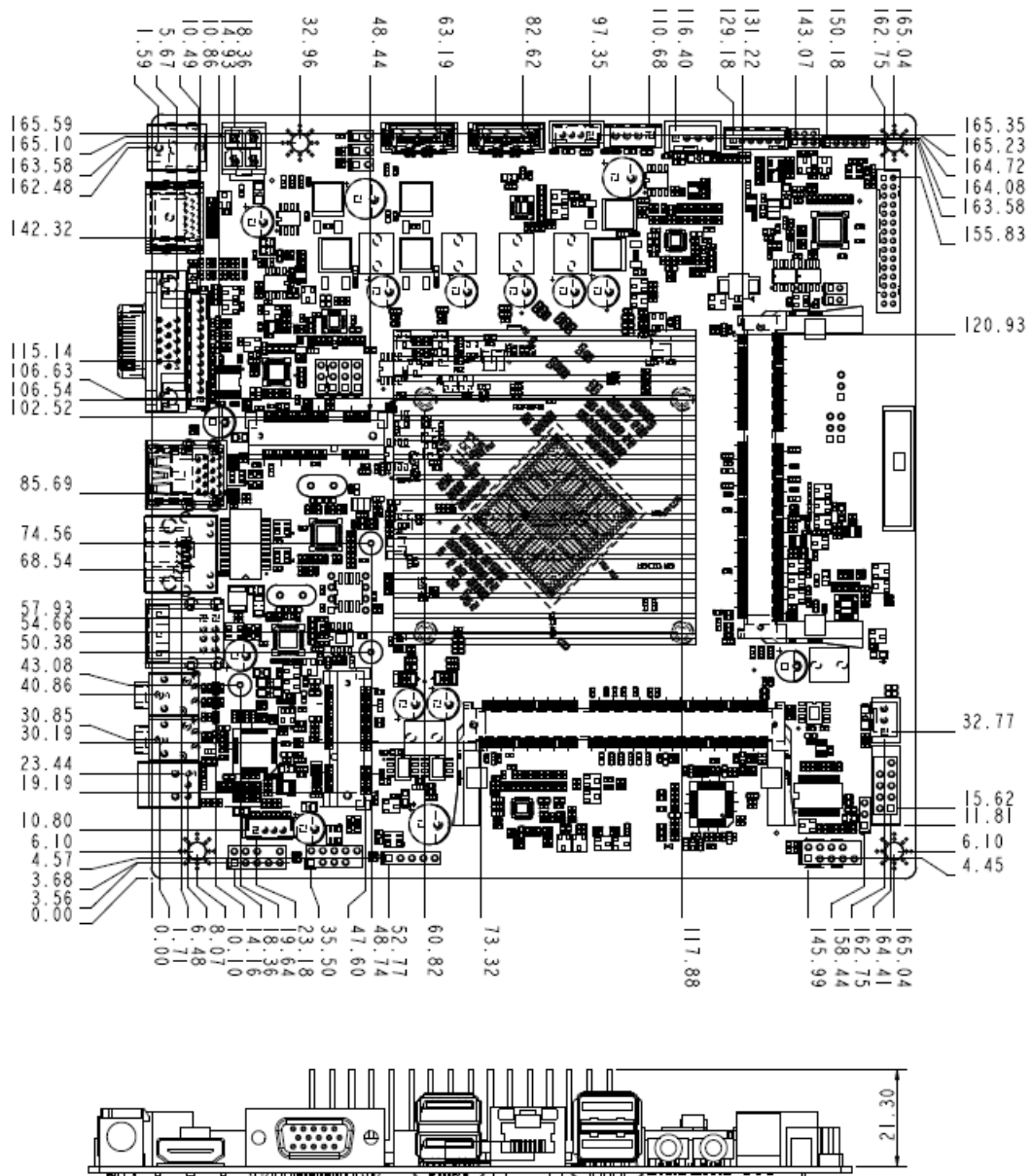
**Step 1.** Click **Next** to continue installation.



**Step 2.** Click **Install**.

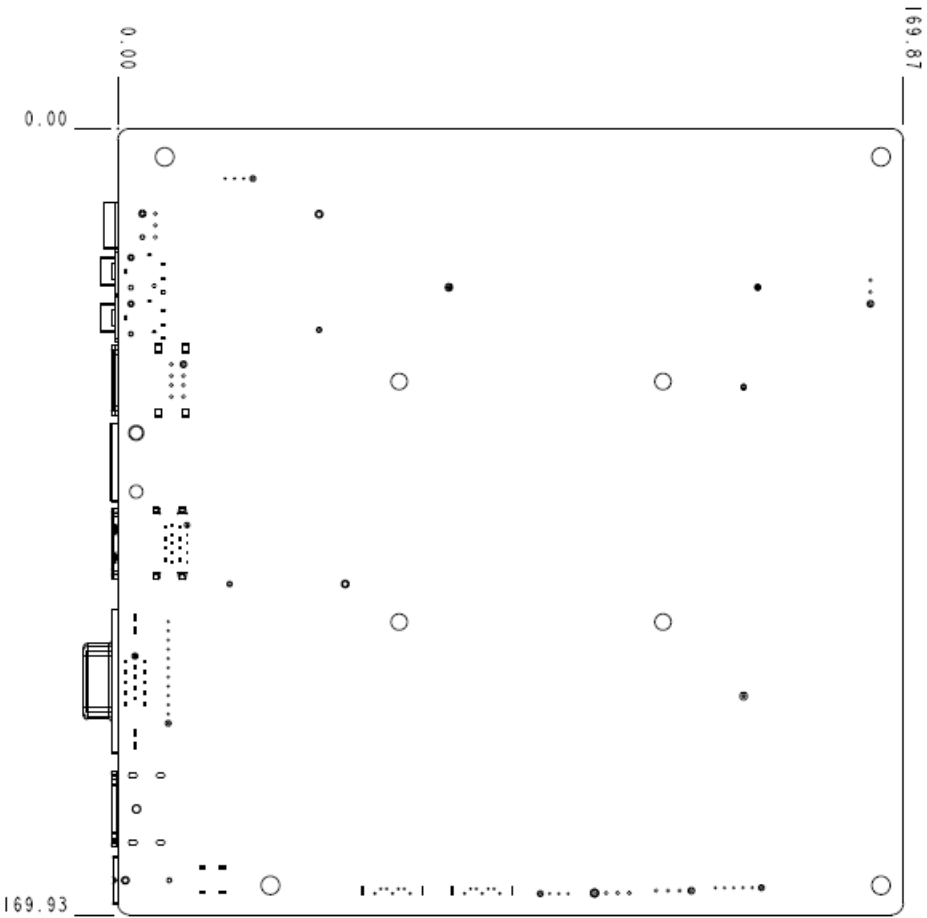
# 5. Mechanical Drawing





Unit: mm





Unit: mm

