

# ERX-H110

Intel® Core™ Processors with Intel® H110 Micro ATX  
Motherboard

## User's Manual



1<sup>st</sup> Ed – 07 November 2016

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

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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 ERX-H110 motherboard
- 2 x SATA cables
- 1 x I/O Shield



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>	November 2016	Avalue	Initial Release

## 1.4 Manual Objectives

This manual describes in details Avalue Technology ERX-H110 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 ERX-H110 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® LGA1151 Socket Supports 6th Generation Core™ i7/ i5/ i3 & Pentium®/Celeron® Processors (Max. TDP at 95W)
<b>BIOS</b>	AMI uEFI BIOS, 128Mbit SPI Flash ROM
<b>System Chipset</b>	Intel® H110 Express Chipset
<b>I/O Chip</b>	Nuvoton® NCT5567D
<b>System Memory</b>	Two 288-pin DDR4 2133MHz DIMM socket, supports up to 32GB Max
<b>H/W Status Monitor</b>	CPU & system temperature monitoring Voltages monitoring
<b>Expansion</b>	1 x PCI-e x 16 (PCI express 3.0) 2 x PCI-e x 1 (PCI express 2.0) 4 x SATA III 1 x M.2 2242/2260/2280 Key M Slot(Support PCI-e x2 only)
<b>S3/S4</b>	Yes (S0/S3/S4/S5)
<b>Display</b>	
<b>Chipset</b>	Intel® H110 Express chipset
<b>Resolution</b>	DVI-D: 1920 x1080 @ 60Hz HDMI: 3840 x 2160 @ 30 Hz, 2560 x 1600@ 30 Hz (Note: This resolution is actual test result. Intel resolution: 4096x2160@24Hz)
<b>Multiple Display</b>	Dual Display
<b>Audio</b>	
<b>Audio Codec</b>	Realtek ALC662 HD Audio Decoding Controller
<b>Ethernet</b>	
<b>LAN Chip</b>	RTL8111GS PCI-e Gigabit Ethernet
<b>Ethernet Interface</b>	1 x RJ45
<b>Internal I/O Connectors</b>	
<b>Internal I/O Connector</b>	Storage: -4 x SATA III 1 x M.2 2242/2260/2280 Key M Slot(Support PCI-e x2 only) COM: 1 x 2 x 5 pin support RS232, Pin 9 without power 2 x USB 2.0 by pin header 2 x USB 3.0 by pin header 3 x 1 x 3 pin, pitch 2.54mm connector for USB 5VSB 1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported

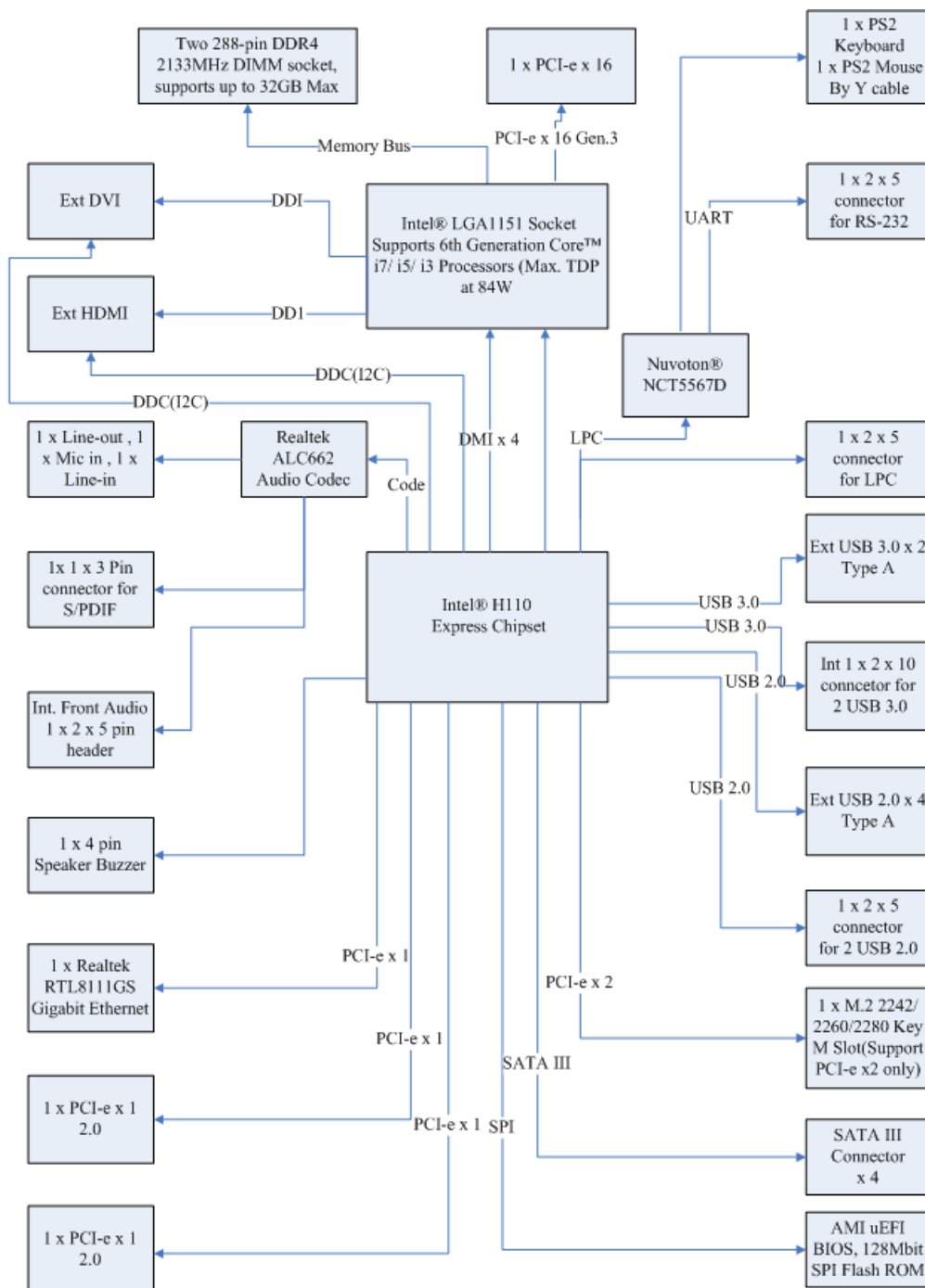
	1 x 1 x 4 pin, pitch 2.54mm System fan connector with smart fan function supported 1 x 2 x 5 pin, pitch 2.54mm connector for front panel 1 x 4 pin, pitch 2.54mm connector for Speaker Buzzer 1 x 2 x 5 pin, pitch 2.54mm connector for front Audio 1 x 1 x 3 pin, pitch 2.54mm connector for S/PDIF out 1 x 1 x 2pin, pitch 2.54mm connector for COMS Clear 1 x 1 x 2 pin, pitch 2.54mm connector for ME update 1 x horizontal type battery connector 1 x 2 x 5 pin, pitch 2.54mm connector for LPC 1 x 2 x 12 pin ATX power connector 1 x 2 x 4 pin ATX 12V power connector
<b>Rear I/O Connectors</b>	
<b>Rear Side External I/O Connector</b>	1 x HDMI 1 x DVI-D 2 x USB 3.0 PS/2 KB or MS + 2 x USB2.0 Type A connector 1 x Line-out, 1 x Mic-In, 1 x Line-in
<b>Mechanical &amp; Environmental</b>	
<b>Power Requirement</b>	+12V / +5V / 5VSB /+3.3V / -12V
<b>ACPI</b>	Single power ATX Support S0, S3, S4, S5
<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>	243.84mm x 190.00mm
<b>Weight</b>	0.60 kg



**Note:** Specifications are subject to change without notice.

## 1.6 Architecture Overview—Block Diagram

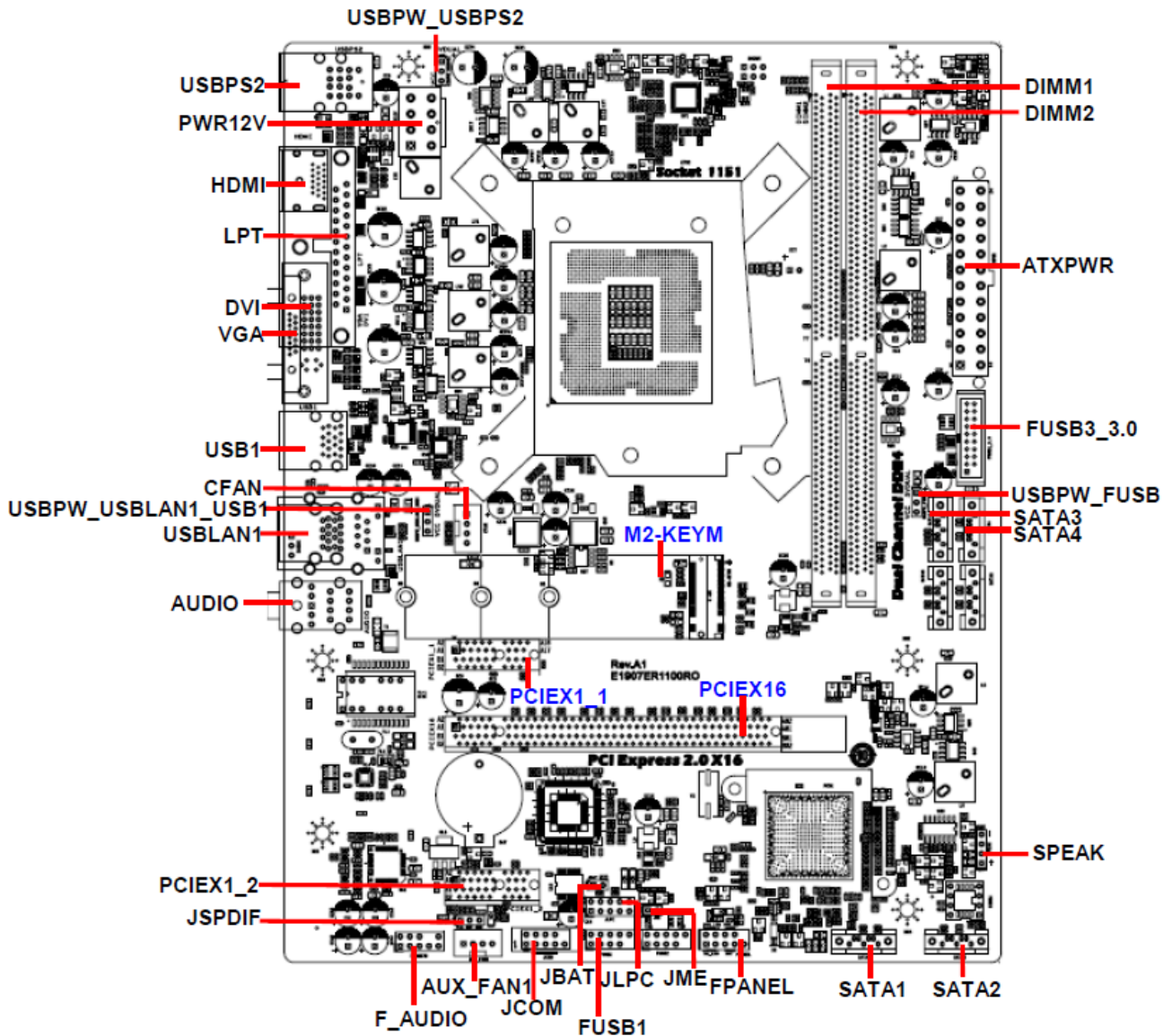
The following block diagram shows the architecture and main components of ERX-H110.



## 2. Hardware Configuration

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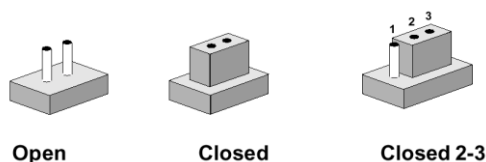
## 2.1 Product Overview



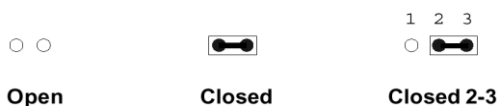
## 2.2 Jumper and Connector List

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>USBPW_USBLAN1_USB1</b>	USBLAN1 & USB1 Power Mode select	3 x 1 header, pitch 2.54mm
<b>USBPW_FUSB</b>	FUSB Power Mode select	3 x 1 header, pitch 2.54mm
<b>USBPW_USBPS2</b>	USBPS2 Power Mode select	3 x 1 header, pitch 2.54mm
<b>JBAT</b>	Clear CMOS	2 x 1 header, pitch 2.54mm
<b>JME</b>	ME update (For Flash BIOS use)	2 x 1 header, pitch 2.54 mm

### Connectors

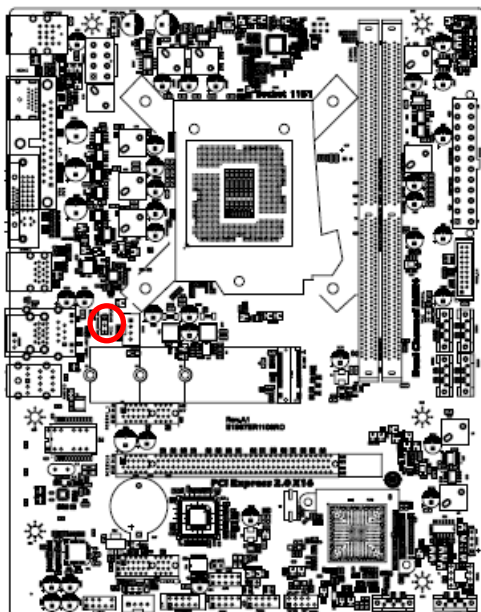
Label	Function	Note
<b>CFAN</b>	CPU fan connector	4 x 1 wafer, pitch 2.54mm
<b>AUXFAN1</b>	System fan connector	4 x 1 wafer, pitch 2.54mm
<b>FPANEL</b>	Front panel setting connector	5 x 2 header, pitch 2.54mm

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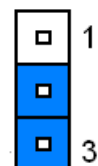
<b>DIMM1/2</b>	288-pin DDR4 DIMM socket	
<b>AUDIO</b>	Line out, Mic in, Line out	
<b>F_AUDIO</b>	Front Audio connector	5 x 2 header, pitch 2.54mm
<b>JCOM</b>	Serial Port connector	5 x 2 wafer, pitch 2.54mm
<b>SPEAK</b>	Speaker connector	1 x 4 wafer, pitch 2.54mm
<b>USBPS2</b>	PS/2 keyboard or mouse connector 2 x USB 2.0 connector	
<b>USBLAN1</b>	RJ-45 2 x USB 2.0 connector	
<b>USB1</b>	2 x USB 3.0 connector	5 x 2 header, pitch 2.54mm
<b>FUSB1</b>	USB 2.0 connector	5 x 2 header, pitch 2.54mm
<b>FUSB3_3.0</b>	USB 3.0 connector	10 x 2 wafer, pitch 2.00mm
<b>JSPDIF</b>	Sony/Philips Digital Interface	3 x 1 header, pitch 2.54mm
<b>JLPC</b>	LPC connector	5 x 2 header, pitch 2.54mm
<b>PCIE1_1</b>	PCI-e connector	
<b>PCIE1_2</b>	PCI-e connector	
<b>PCIEx16</b>	PCI-e x 16 connector	
<b>ATXPWR</b>	ATX Power connector	12 x 2 wafer, pitch 4.20mm
<b>PWR12V</b>	ATX 12V power connector	2 x 4 wafer, pitch 4.20mm
<b>SATA1~4</b>	Serial ATA III connector 1~4	
<b>HDMI</b>	HDMI connector	
<b>DVI</b>	DVI connector	
<b>VGA</b>	VGA connector	
<b>M2-KEYM</b>	M.2 2230 Type A Slot	

## 2.3 Setting Jumpers & Connectors

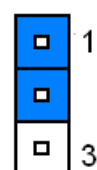
### 2.3.1 USBLAN1 & USB1 Power Mode select (USBPW\_USBLAN1\_USB1)



Do not wake on USBLAN1 & USB1

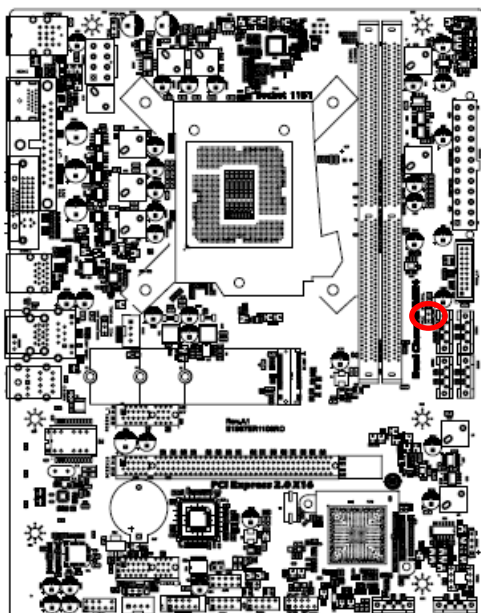


Wake on USBLAN1 & USB1\*

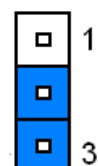


\* Default

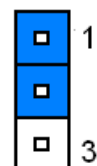
### 2.3.2 FUSB Power Mode select (USBPW\_FUSB)



Do not wake on FUSB

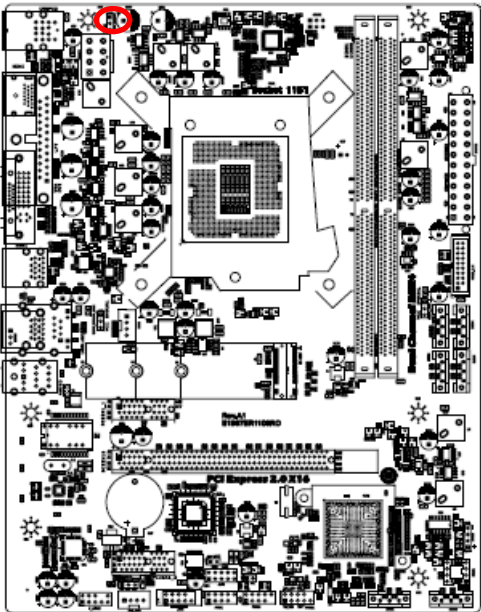


Wake on FUSB\*

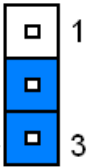


\* Default

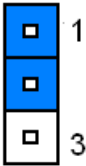
2.3.3 USBPS2 Power Mode select (USBPW\_USBPS2)



Do not wake on USBPS2

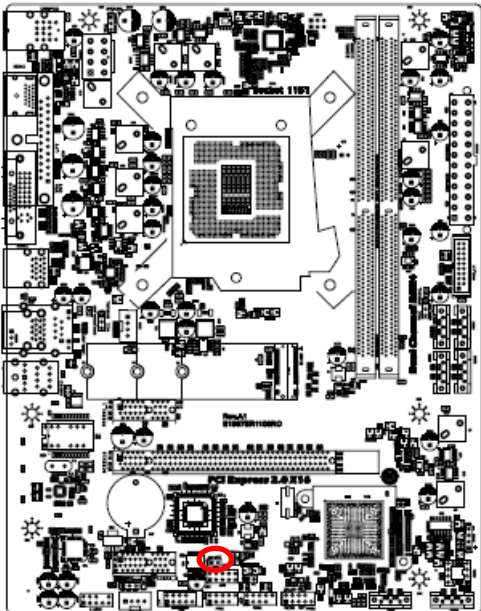


Wake on USBPS2\*

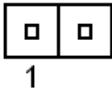


\* Default

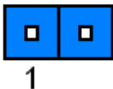
2.3.4 Clear CMOS (JBAT)



Normal\*

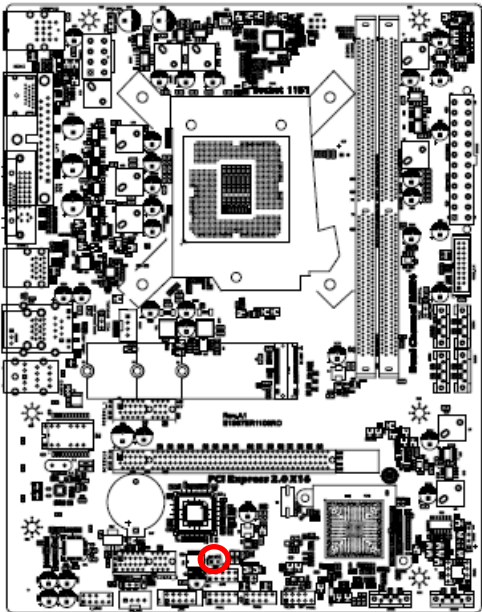


Clear CMOS

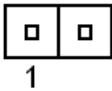


\* Default

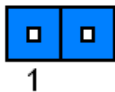
2.3.5 ME update (For Flash BIOS use) (JME)



Open\*

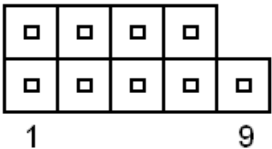
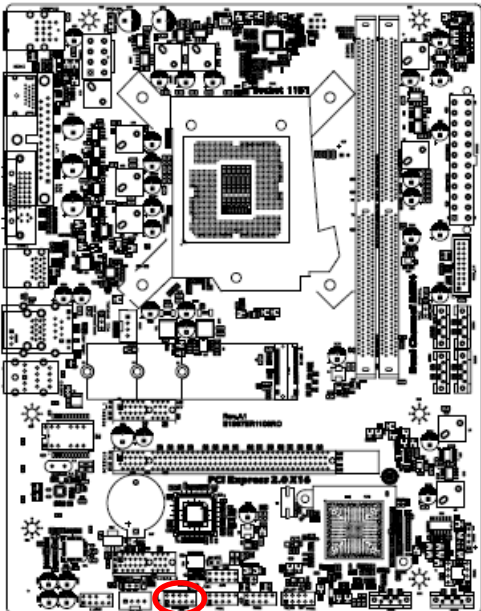


Short



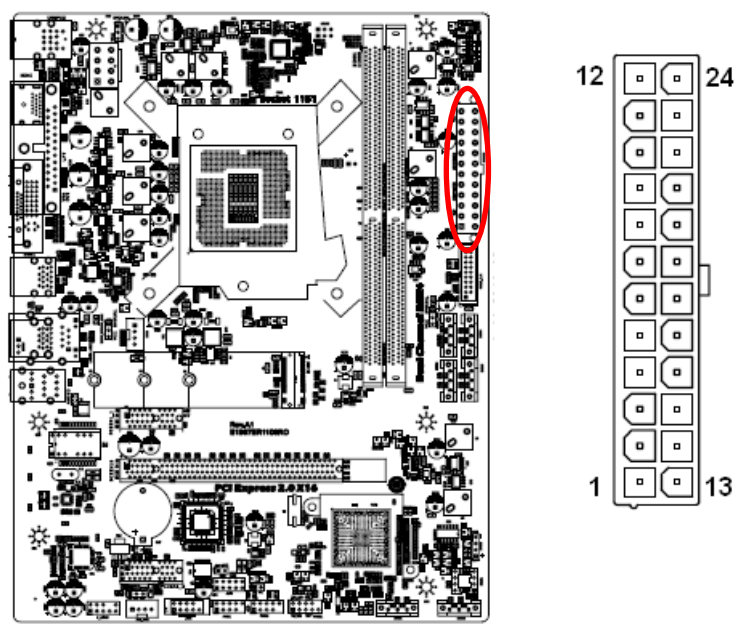
\* Default

2.3.6 Serial port connector (JCOM)



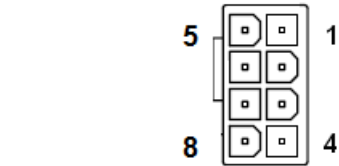
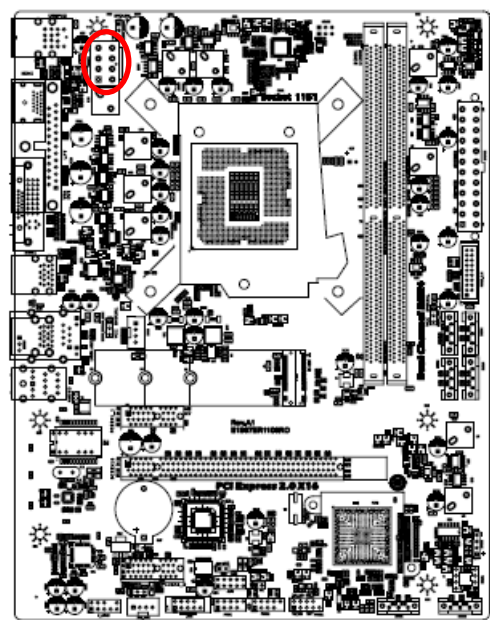
Signal	PIN	PIN	Signal
DCD	1	2	RXD
TXD	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9		

2.3.7 ATX Power connector (ATXPWR)



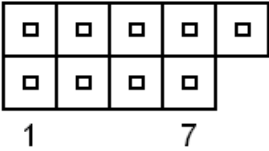
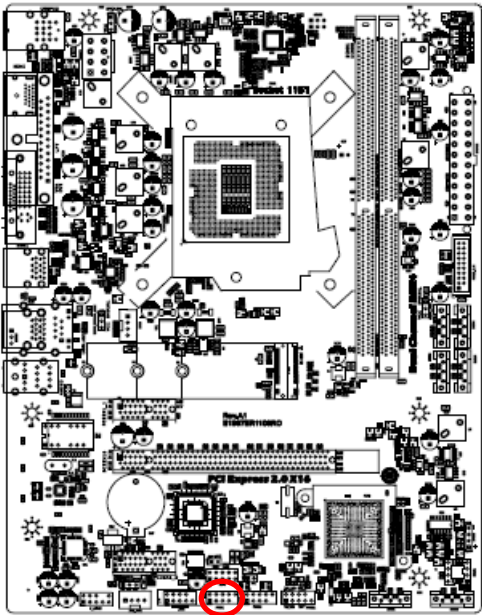
Signal	PIN	PIN	Signal
+3.3V	12	24	GND
+12V	11	23	+5V
+12V	10	22	+5V
5VSB	9	21	+5V
PWRGD	8	20	NC
GND	7	19	GND
+5V	6	18	GND
GND	5	17	GND
+5V	4	16	PS-ON
GND	3	15	GND
+3.3V	2	14	-12V
+3.3V	1	13	+3.3V

2.3.8 ATX 12V power connector (PWR12V)



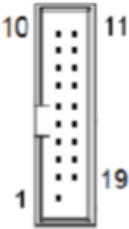
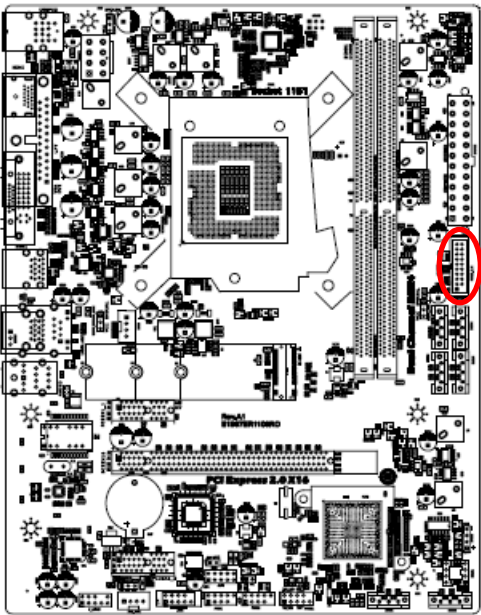
Signal	PIN	PIN	Signal
+12V	5	1	GND
+12V	6	2	GND
+12V	7	3	GND
+12V	8	4	GND

2.3.9 USB 2.0 connector (FUSB1)



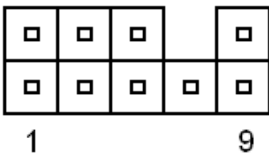
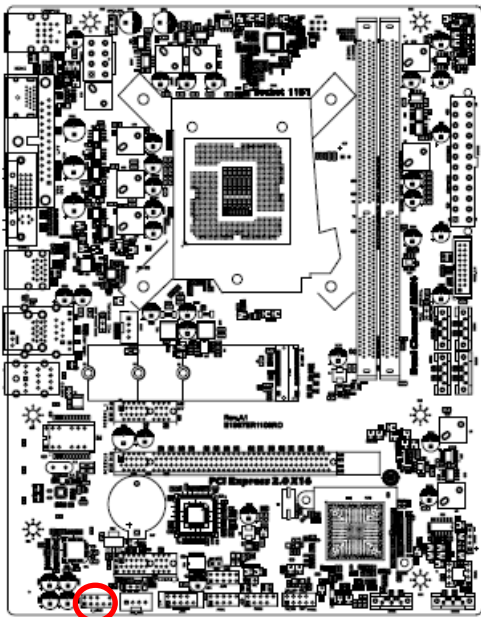
Signal	PIN	PIN	Signal
USBVCC_BC	1	2	USBVCC_BC
USB_R_DN12	3	4	USB_R_DN11
USB_R_DP12	5	6	USB_R_DP11
GND	7	8	GND
		10	NC

2.3.10 USB 3.0 connector (FUSB3\_3.0)



Signal	PIN	PIN	Signal
NC	10	11	USB_R_DP14
USB_R_DP13	9	12	USB_R_DN14
USB_R_DN13	8	13	GND
GND	7	14	SS_USB_TXP_C_6
SS_USB_TXP_C_5	6	15	SS_USB_TXN_C_6
SS_USB_TXN_C_5	5	16	GND
GND	4	17	SS_USB_RXP_C_6
SS_USB_RXP_C_5	3	18	SS_USB_RXN_C_6
SS_USB_RXN_C_5	2	19	USBVCC_DE
USBVCC_DE	1		

2.3.11 Front Audio connector (F\_AUDIO)

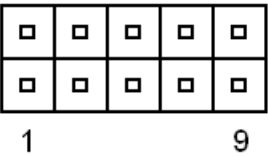
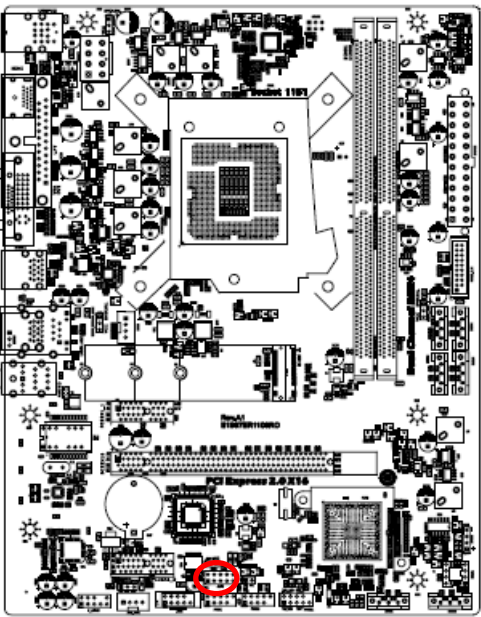


Signal	PIN	PIN	Signal
MIC2_L	1	2	GND
MIC2_R	3	4	ACZ_DET#_R
LINE2_RIN	5	6	MIC2_JD
GND	7		
LINE2_LIN	9	10	LINE2_JD

2.3.11.1 Signal Description –Front Audio connector (F\_AUDIO)

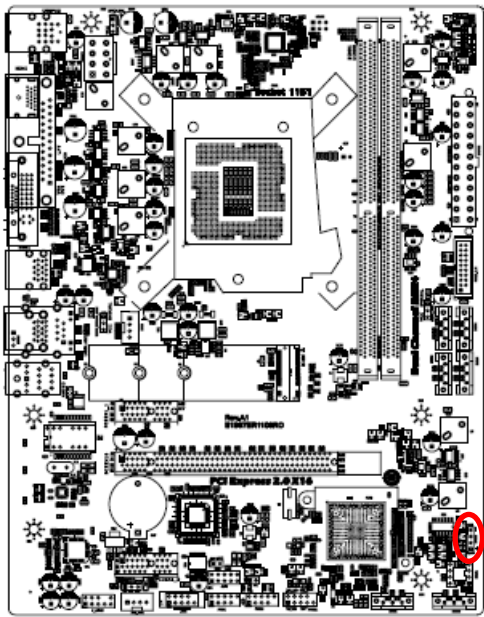
Signal	Signal Description
LINE2_JD	AUDIO IN (LINE_RIN/LIN)sense pin
MIC2_JD	MIC IN (MIC_RIN/LIN) sense pin

2.3.12 LPC connector (JLPC)



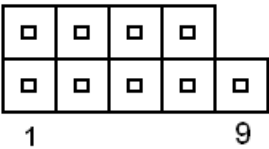
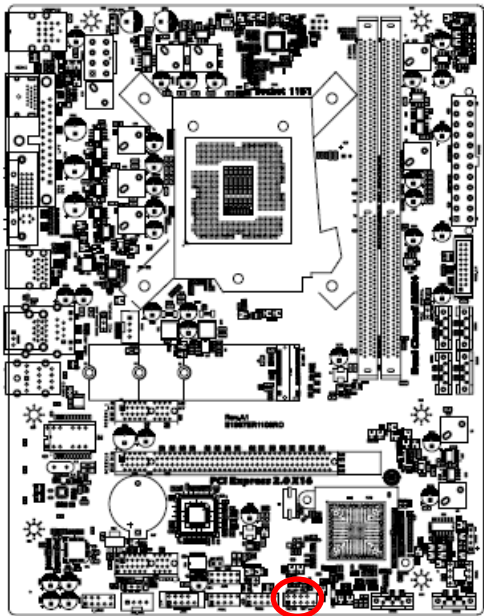
Signal	PIN	PIN	Signal
L_AD3	1	2	VCC3
L_AD2	3	4	PLTRST_BUF
L_AD1	5	6	L_FRAME_N
L_AD0	7	8	CLK_PCI_DUG
NC	9	10	

2.3.13 Speaker connector (SPEAK)



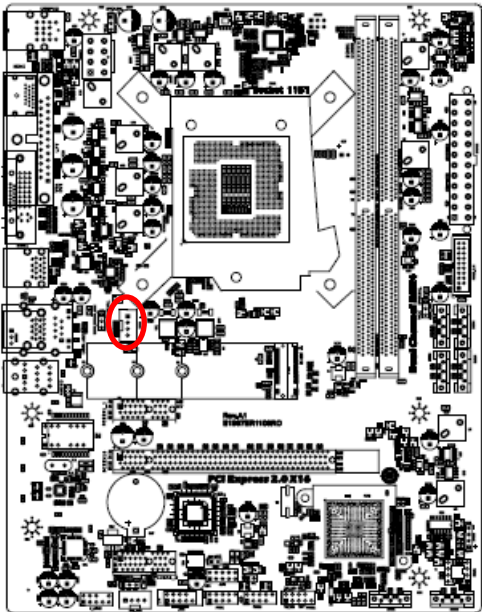
Signal	PIN
INTSPR-	4
NC	3
NC	2
INTSPL+	1

2.3.14 Front panel setting connector (FPANEL)



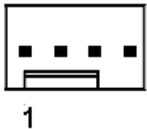
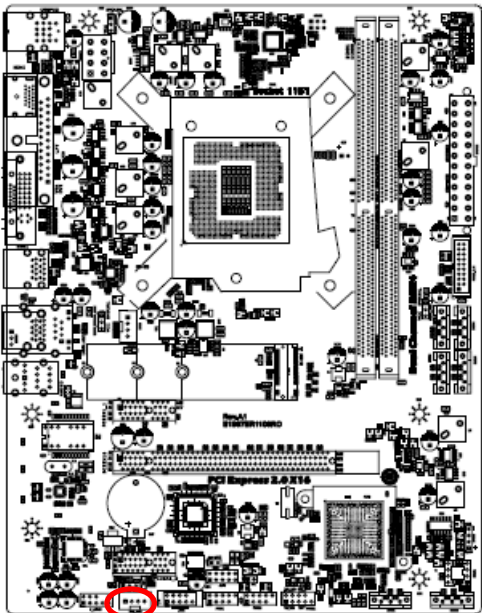
Signal	PIN	PIN	Signal
HDD_LED+	1	2	PWR_LED+
HDD_LED-	3	4	PWE_LED-
RSET_BTN#	5	6	PWRBTN#
GND	7	8	GND
NC	9		

2.3.15 CPU fan connector (CFAN1)



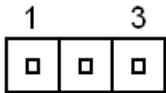
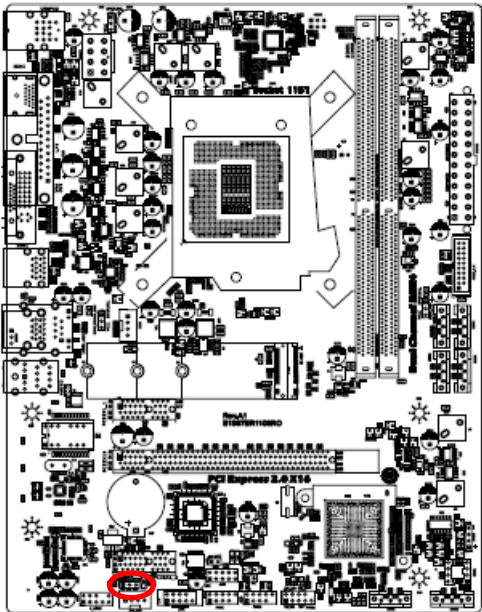
Signal	PIN
GND	1
+12V	2
CPUFANIN	3
CPUFANOUT	4

2.3.16 System fan connector (AUX\_FAN1)



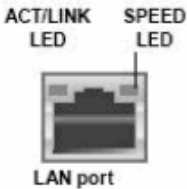
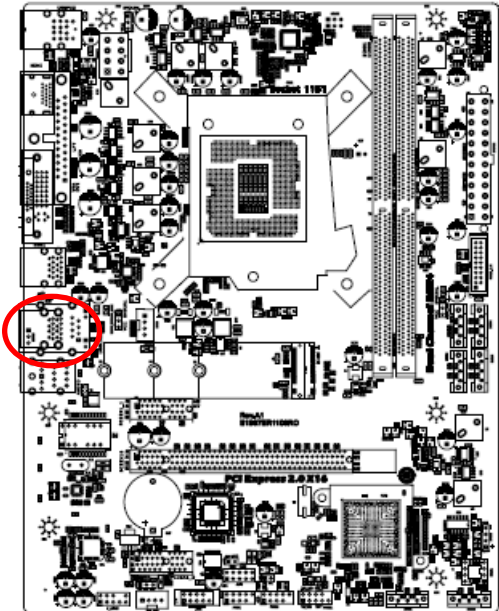
Signal	PIN
GND	1
+12V	2
SYSFANIN1	3
SYSFANOUT1	4

2.3.17 Sony/Philips Digital Interface (JSPDIF)



Signal	PIN
VCC	1
OUT	2
GND	3

2.3.18 Gigabit LAN (RJ-45) connector (LAN1)



ACT/LINK LED		SPEED LED	
Status	Description	Status	Description
OFF	No Light	OFF	10Mbps connection
Orange	Linked	Green	100Mbps connection
Blinking	Data activity	Orange	1Gbps connection

**Note:**

This port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications.

## 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 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 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 NVRAM Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
+ 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 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.

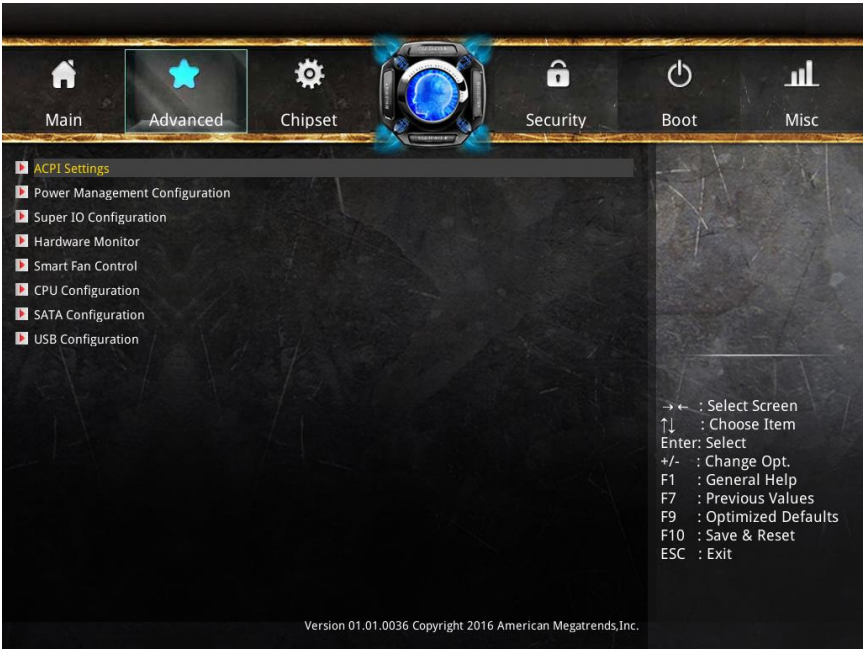


**Note:** The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.

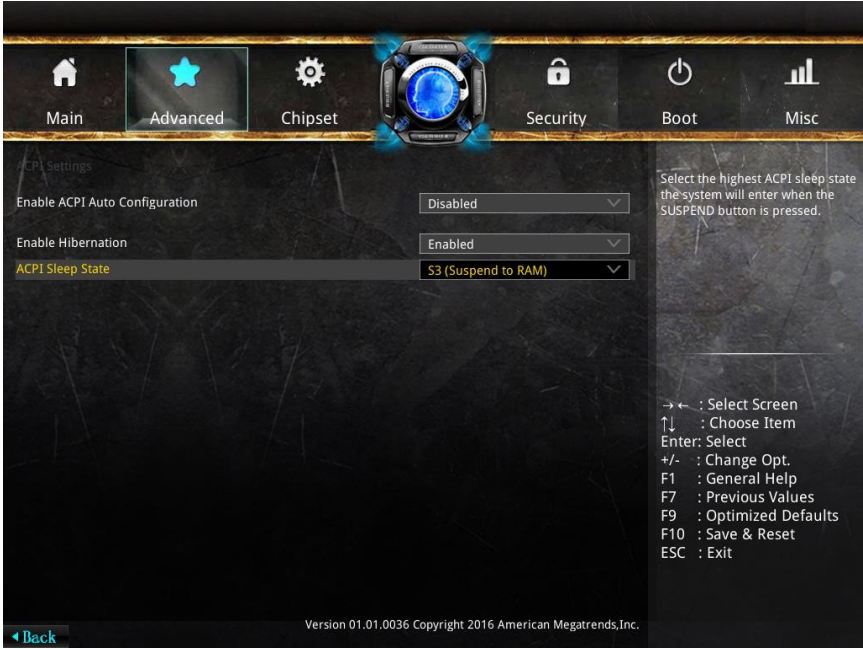
Visit the Avalue website ([www.avalue.com.tw](http://www.avalue.com.tw)) to download the latest product and BIOS information.

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 APCI Settings



Item	Options	Description
Enable ACPI Auto Configuration	Disabled[Default], Enabled	Enables or Disables BIOS ACPI Auto Configuration.
Enable Hibernation	Disabled Enabled[Default],	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with

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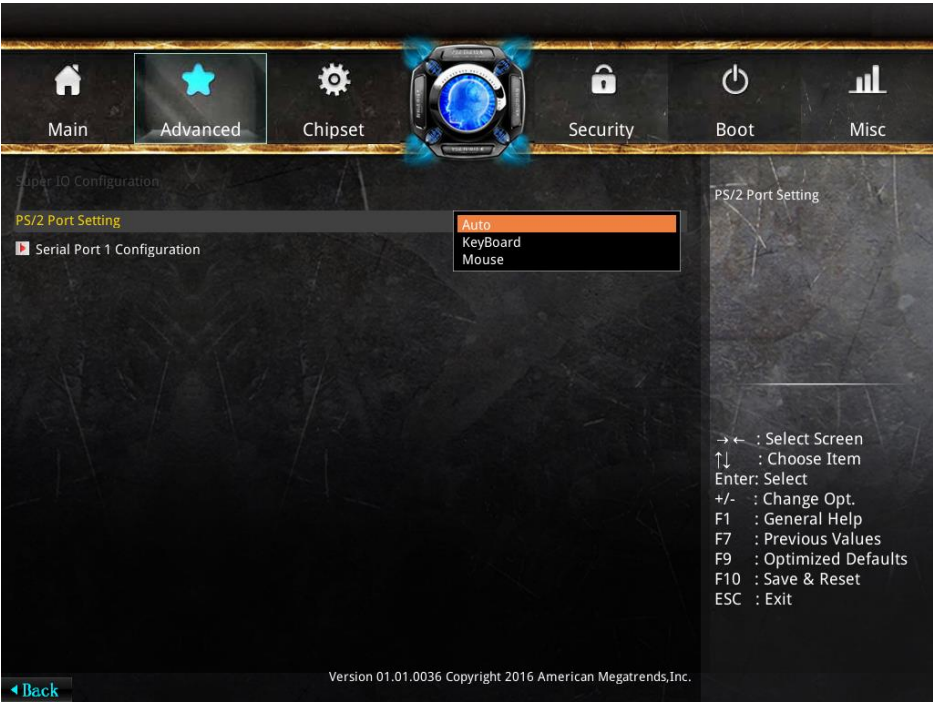
		some OS.
<b>ACPI Sleep State</b>	Suspend Disabled, S3 (Suspend to RAM)[ <b>Default</b> ]	Select the highest ACPI sleep state the system will enter when the SUSPEDN button is pressed.

### 3.6.2.2 Power Management Configuration



Item	Options	Description
<b>EUP Function</b>	Enabled Disabled[ <b>Default</b> ],	Enable or Disable EUP Power Management.
<b>USB KB/MS Wakeup Function</b>	Enabled[ <b>Default</b> ] Disabled,	Wakeup System by USB KB and MS.
<b>Wake By Lan</b>	Disabled Enabled[ <b>Default</b> ]	Wake By Lan.
<b>Power On By PS/2 Keyboard</b>	Disabled[ <b>Default</b> ] AnyKey Password	Power On By PS/2 Keyboard.
<b>Power On By PS/2 Mouse</b>	Disabled[ <b>Default</b> ] Enabled	Power On By PS/2 Mouse.
<b>AC Power Loss</b>	Power On Power Off[ <b>Default</b> ] Last State	AC Power Loss.
<b>Wake system from S5</b>	Disabled[ <b>Default</b> ] Fixed Time Dynamic Time	Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.

3.6.2.3 Super IO Configuration



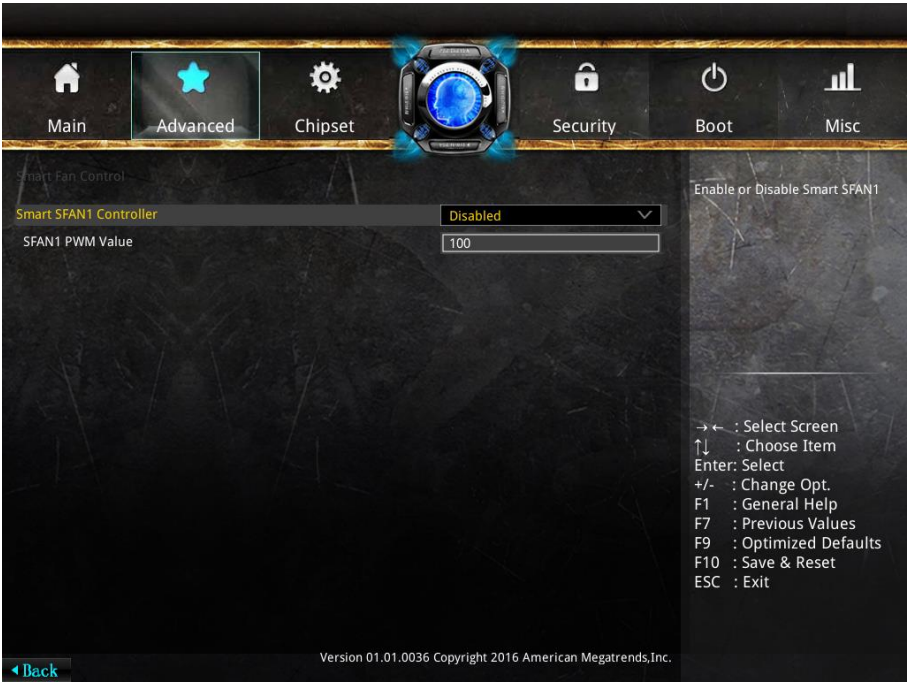
Item	Option	Description
PS/2 Port Setting	Auto[Default], KeyBoard Mouse	PS/2 Port Setting.

3.6.2.4 Hardware Monitor



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3.6.2.5 Smart Fan Control



Item	Options	Description
Smart SFAN1 Controller	Enabled[Default], Disabled	Enable or Disable Smart CFAN1.
SFAN1 PWM Value	100	Set SFAN1 PWM Value.

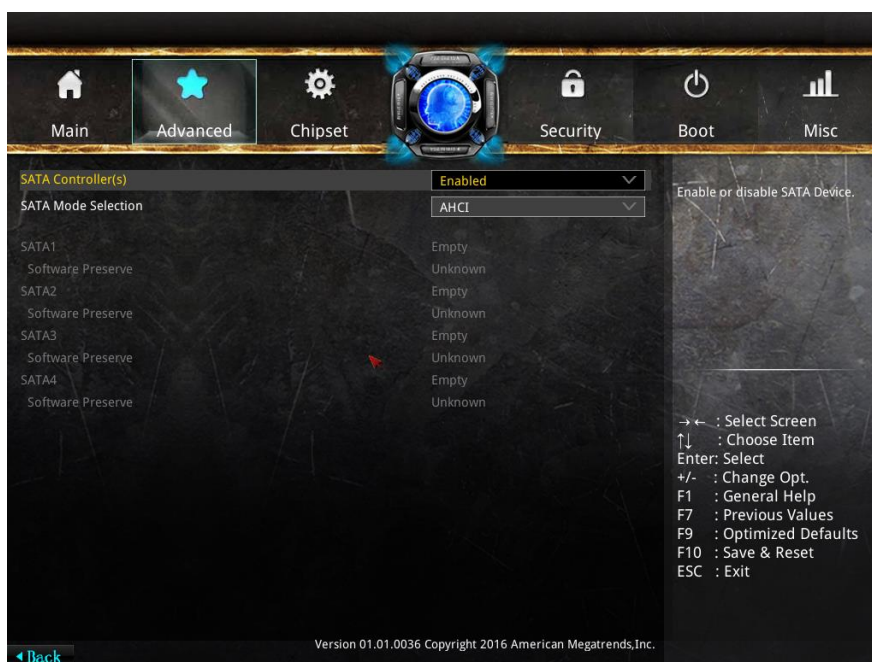
3.6.2.6 CPU Configuration

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



Item	Options	Description
<b>Hyper-threading</b>	Disabled Enabled[Default]	Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.
<b>Active Processor Cores</b>	All[Default] 1 2 3	Number of cores to enable in each processor package.
<b>Intel Virtualization Technology</b>	Disabled Enabled[Default]	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
<b>Intel® Speed Shift Technology</b>	Disabled Enabled[Default]	Enable/Disable Intel® Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.
<b>CPU C states</b>	Disabled[Default] Enabled	Enable or disable CPU states.

### 3.6.2.7 SATA Configuration



Item	Options	Description
<b>SATA Controller(s)</b>	Disabled, Enabled[Default]	Enable or disable SATA Device.
<b>SATA Mode Selection</b>	AHCI[Default] RAID	Determines how SATA controller(s) operate.

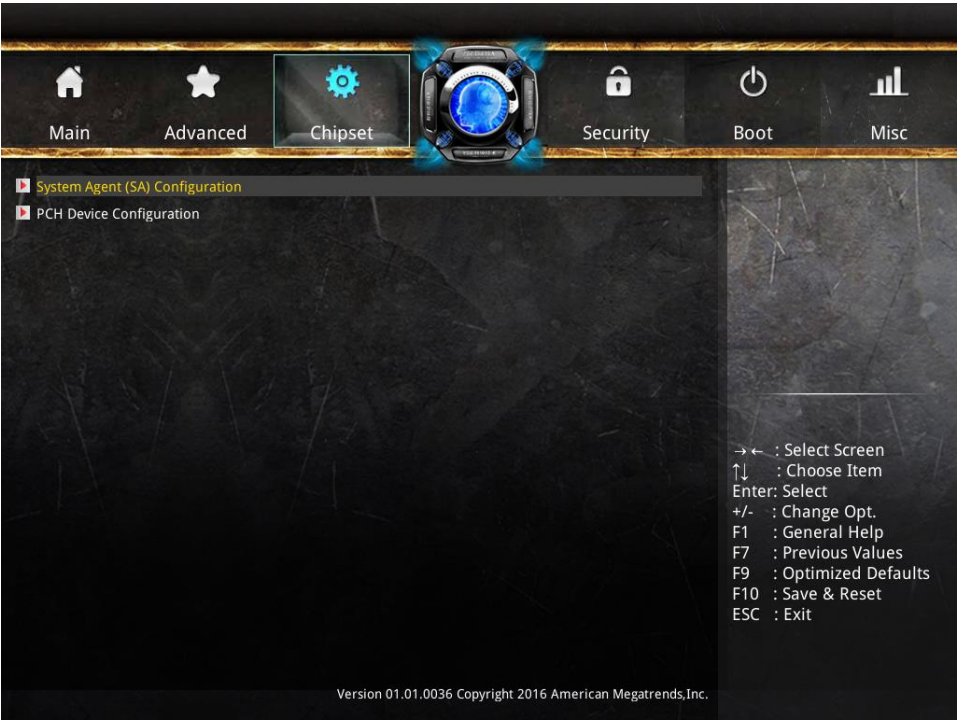
## 3.6.2.8 USB Configuration

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>	Disabled Enabled[Default]	Enable/Disable USB Mass Storage Driver Support.
<b>Port 60/64 Emulation</b>	Enabled[Default] Disabled	Enables I/O port 60h/64h emulation support. This should be enabled for the completer USB keyboard legacy support for non-USB aware OSes.
<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 form Hub descriptor.

3.6.3 Chipset



3.6.3.1 System Agent (SA) Configuration



Item	Option	Description
Primary Display	Auto[Default]	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.
	IGFX	
	PEG	

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	PCIE	
<b>Internal Graphics</b>	Auto[ <b>Default</b> ] Disabled Enabled	Keep IGFX enabled based on the setup options.
<b>GTT Size</b>	2MB 4MB 8MB[ <b>Default</b> ]	Select the GTT Size.
<b>DVMT Pre-Allocated</b>	32M 64M 128M 256M 512M[ <b>Default</b> ] 1024M	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.
<b>DVMT Total Gfx Mem</b>	128M 256M Max[ <b>Default</b> ]	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.
<b>VT-d</b>	Enabled Disabled[ <b>Default</b> ]	VT-d capability.

### 3.6.3.2 PCH Device Configuration



Item	Option	Description
<b>HD Audio</b>	Disabled Enabled Auto[ <b>Default</b> ]	Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled Auto = HDA will be enabled if present, disabled otherwise.
<b>Onboard LAN Controller</b>	Disabled Enabled[ <b>Default</b> ]	Enabled or Disabled Onboard LAN Controller.
<b>PXE Boot Rom</b>	Disabled[ <b>Default</b> ]	Controls the execution of UEFI and Legacy PXE

	Enabled	OpROM.
<b>USB Controller</b>	Disabled Enabled[ <b>Default</b> ]	Selectively Enable/Disable the corresponding USB port from reporting a Device Connection to the controller.

### 3.6.4 Security



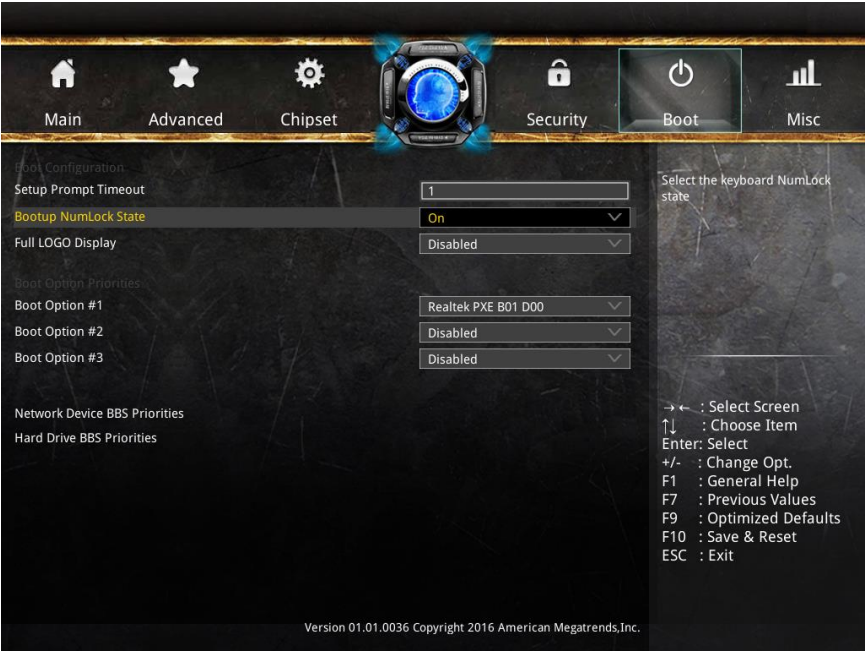
- **Administrator Password**

Set setup Administrator Password

- **User Password**

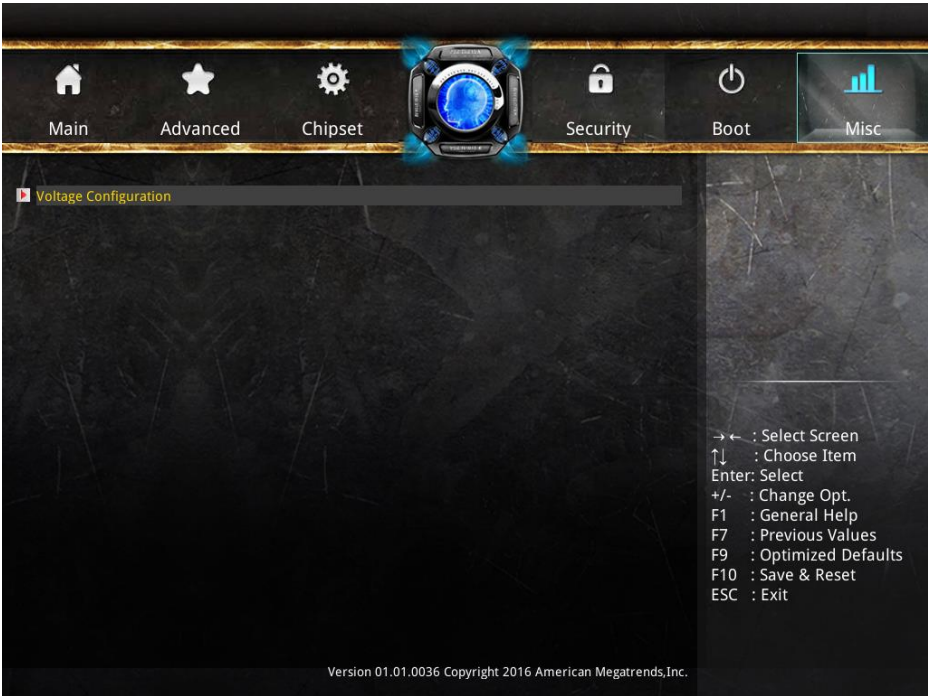
Set User Password

3.6.5 Boot

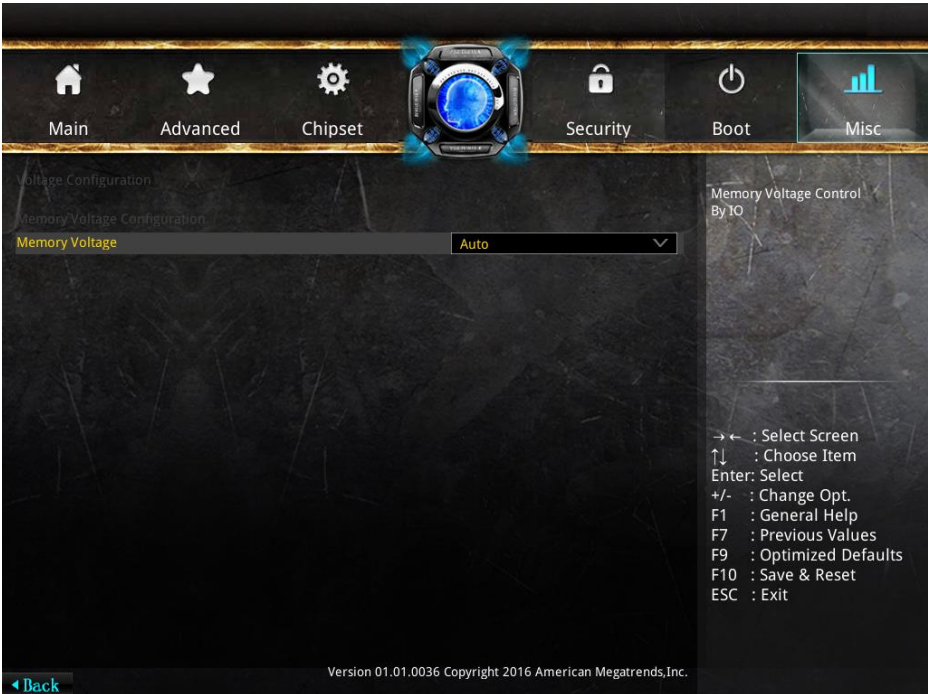


Item	Option	Description
Setup Prompt Timeout	1~ 65535	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On[Default] Off	Select the Keyboard NumLock state
Full LOGO Display	Disabled[Default] Enabled	Enable or disables Quiet Boot option.
Boot Option #1/2/3	Set the system boot order.	

3.6.6 Misc



3.6.6.1 Voltage Configuration



Item	Option	Description
Memory Voltage	Auto[Default]	Memory Voltage Control By IO.
	+0.05v	
	+0.10v	

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	+0.15v +0.20v +0.25v +0.30v +0.35v	
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## 4. Drivers Installation

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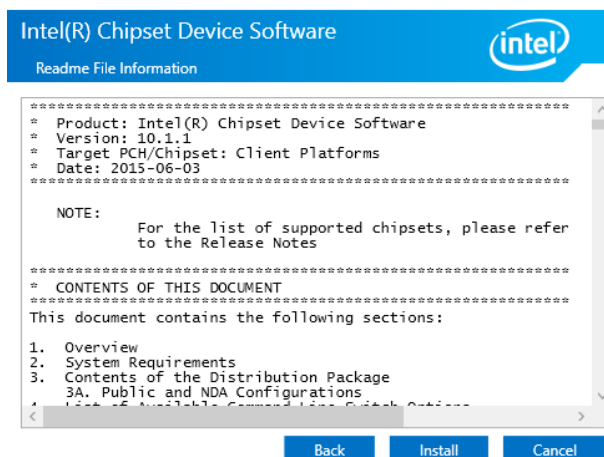
**Note:** Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

## 4.1 Install Chipset Driver

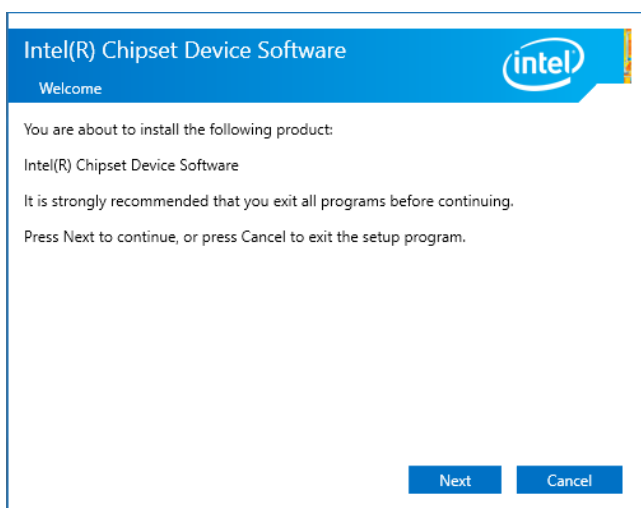
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



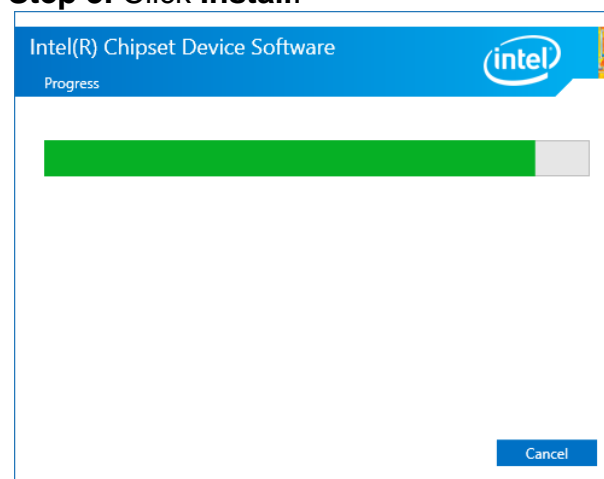
**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



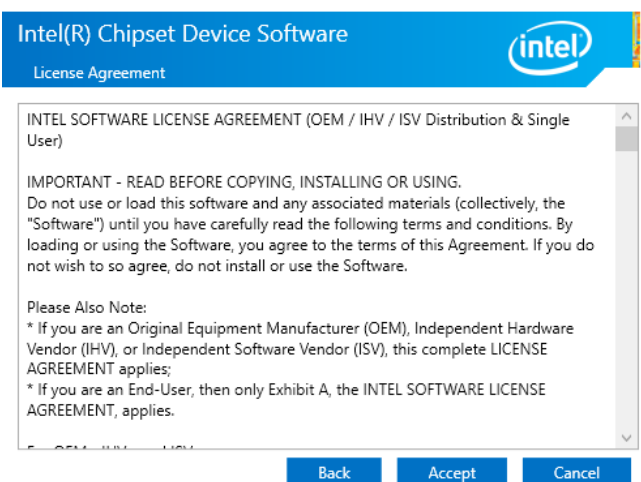
**Step 3. Click Install.**



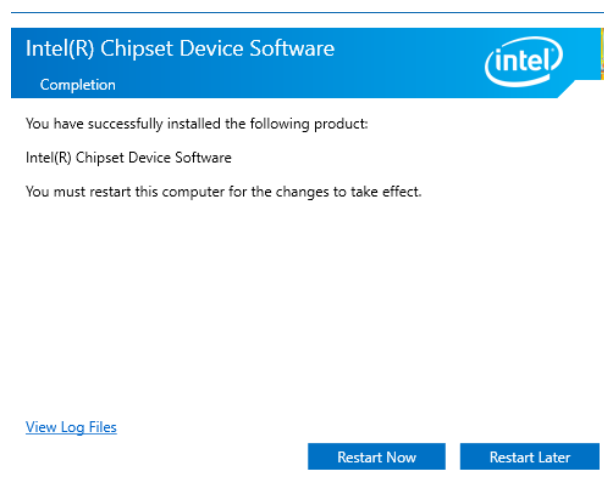
**Step1. Click Next.**



**Step 4. Installing.**



**Step 2. Click Accept.**



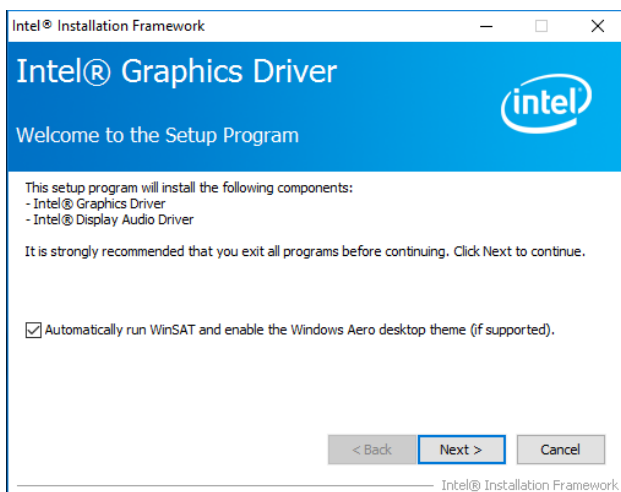
**Step 5. Complete setup.**

## 4.2 Install VGA Driver

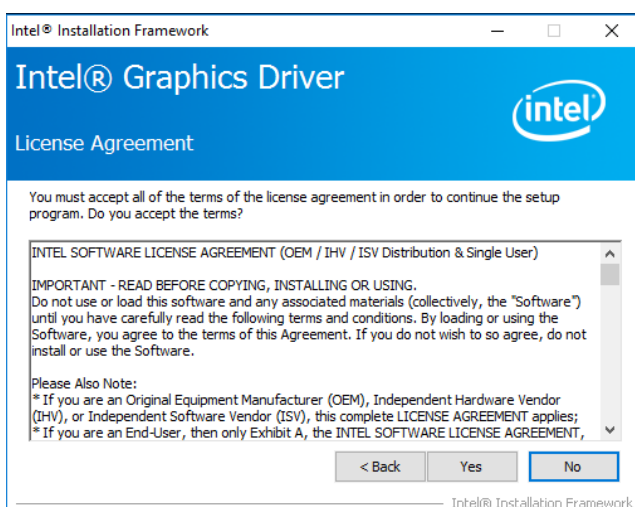
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



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

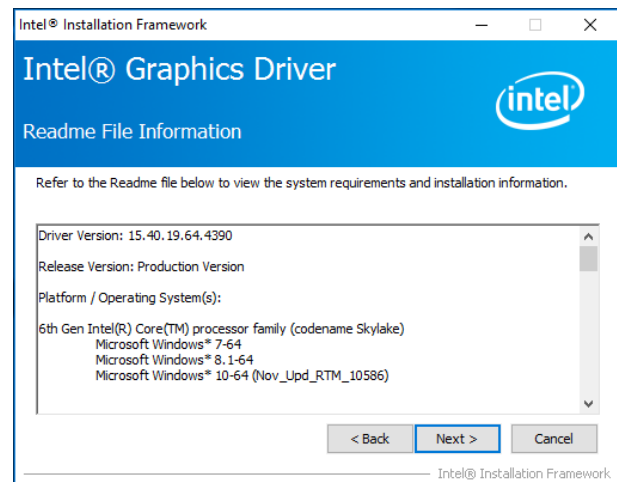


**Step 1. Click Next** to continue installation.

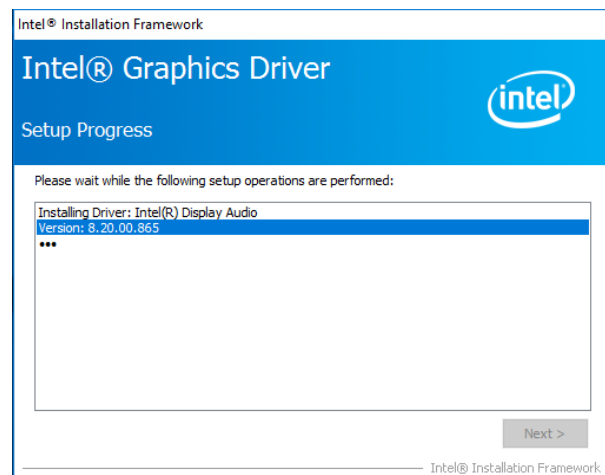


**Step 2.**

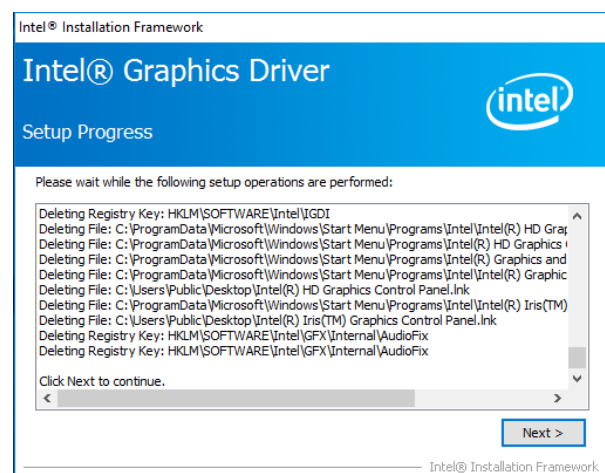
Click **Yes** to accept license agreement.



**Step 3. Click Next.**

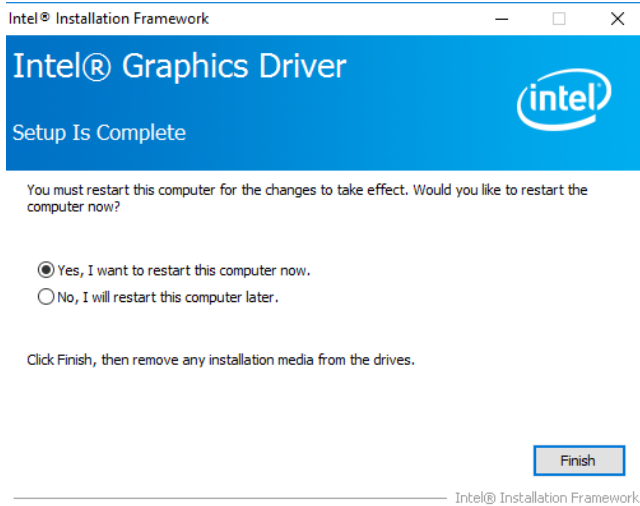


**Step 4. Installing.**



**Step 5. Click Next.**

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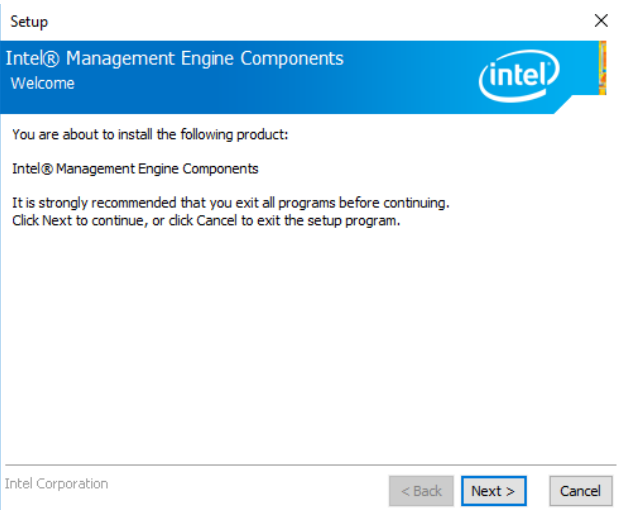
**Step 6.** Click **Finish** to complete setup.

4.3 Install ME Driver

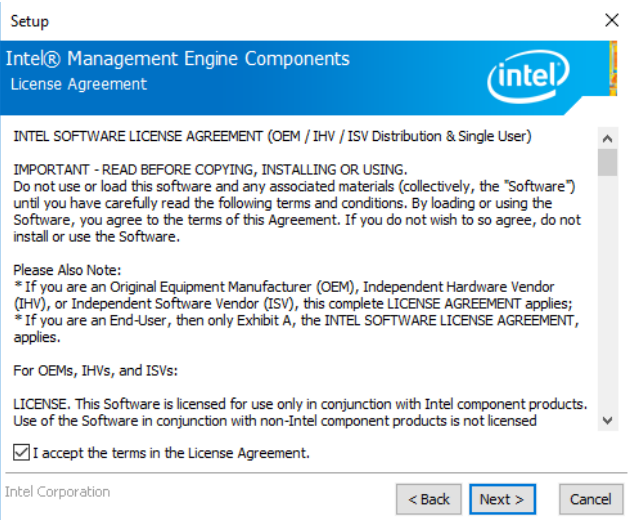
Insert the Supporting CD-ROM to CD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



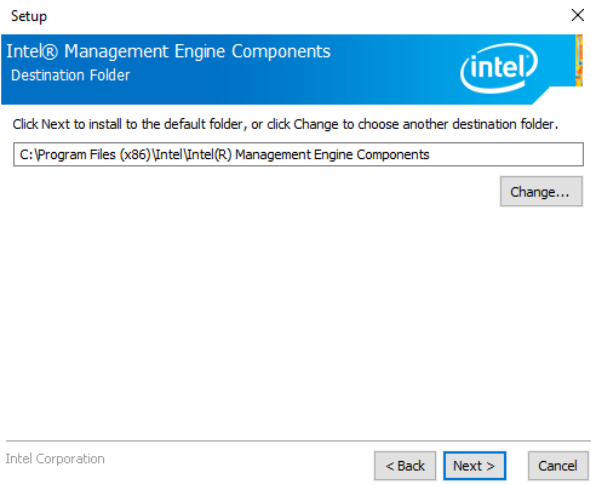
**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system.



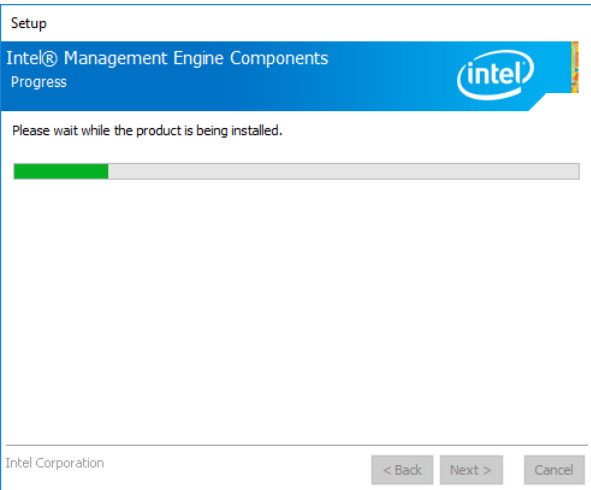
**Step 1. Click Next** to continue setup.



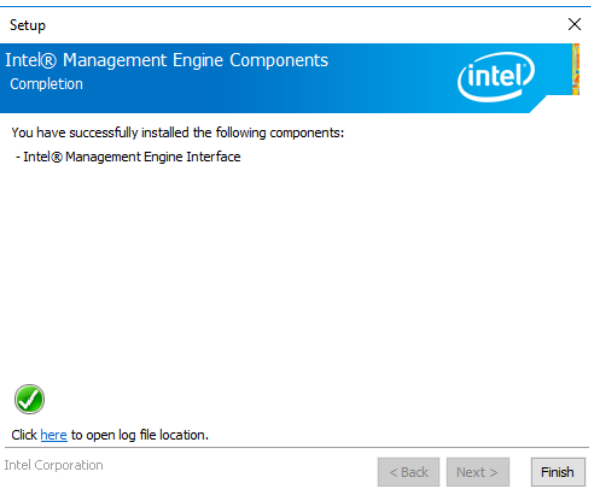
**Step 2. Click Next.**



**Step 3. Click Next**



**Step 4. Installing.**



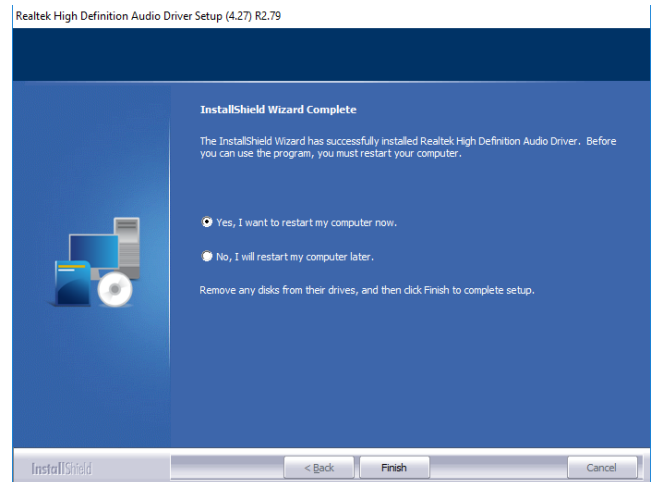
**Step 5. Click Finish** to complete the setup

### 4.4 Install Audio Driver (For Realtek ALC892 HD Audio)

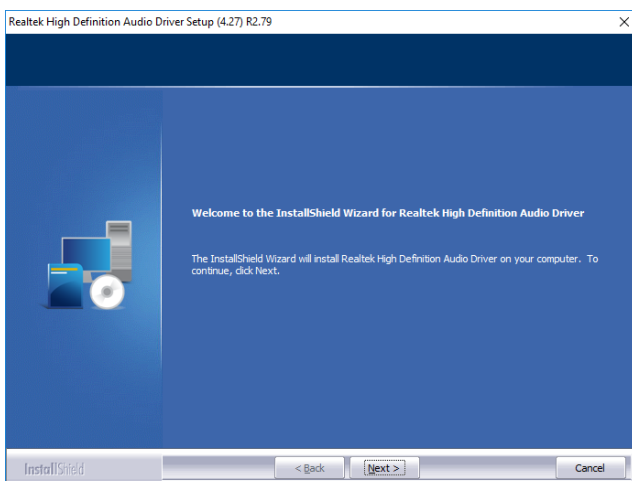
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



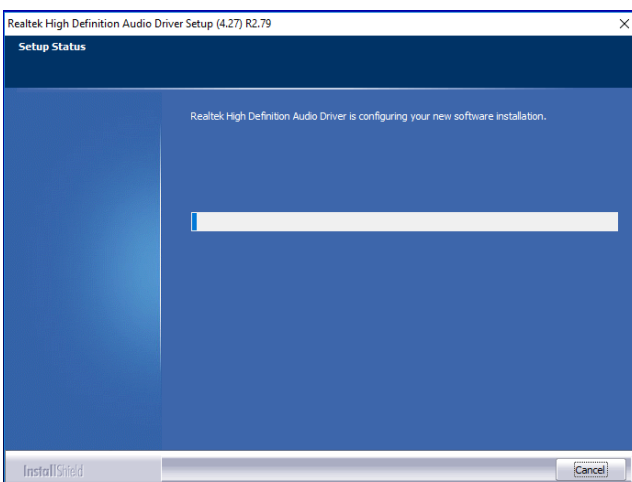
**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



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



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



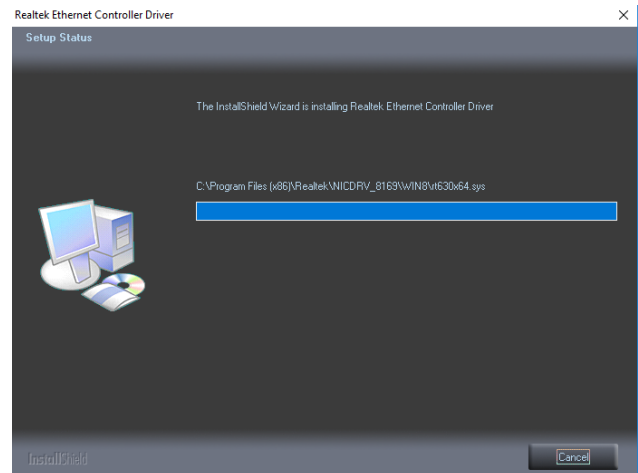
**Step2.** Installing.

## 4.5 Install LAN Driver

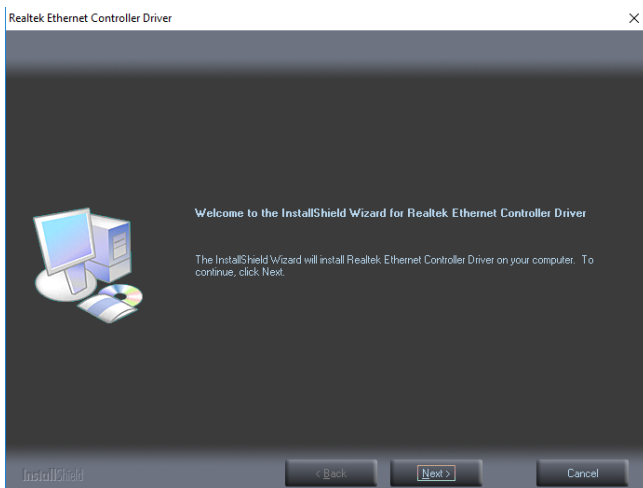
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



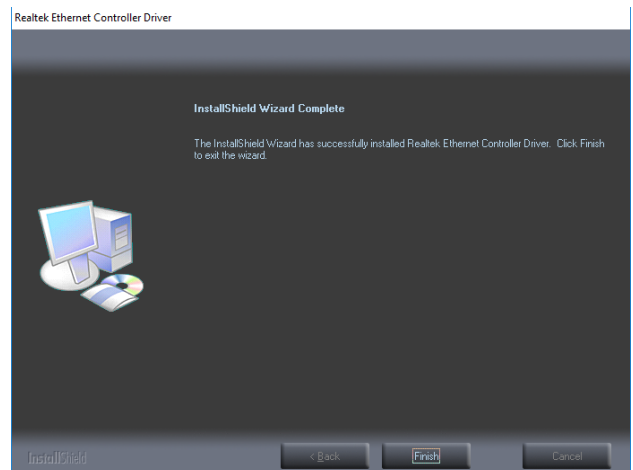
**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system.



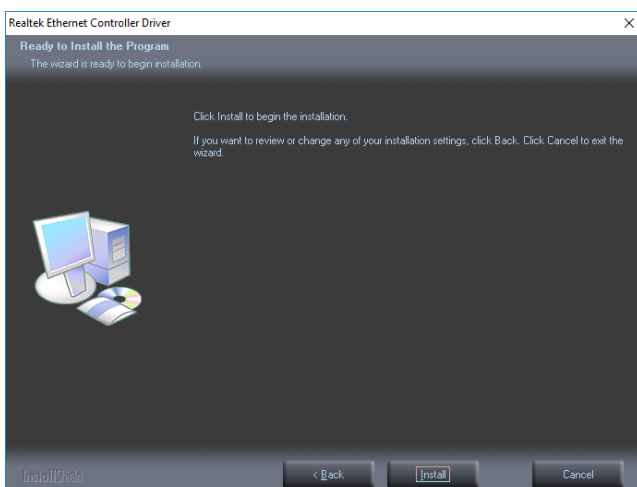
**Step 3. Installing.**



**Step 1. Click Next.**



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



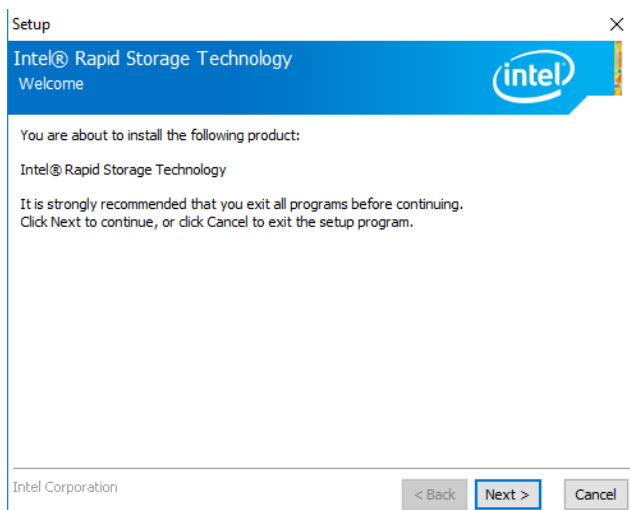
**Step 2. Click Install.**

## 4.6 Install RST Driver

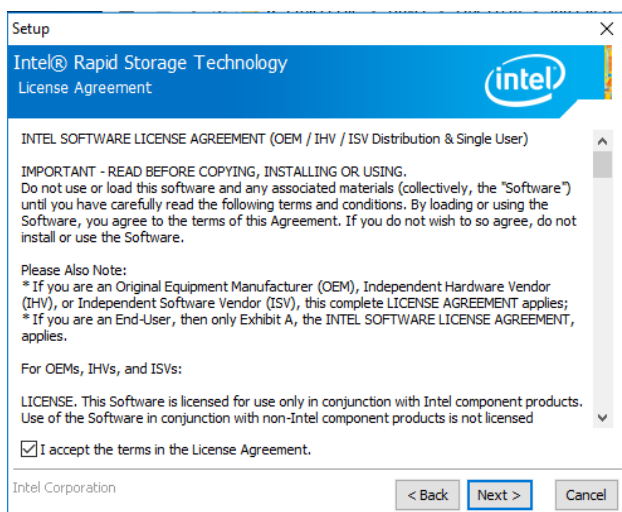
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left.



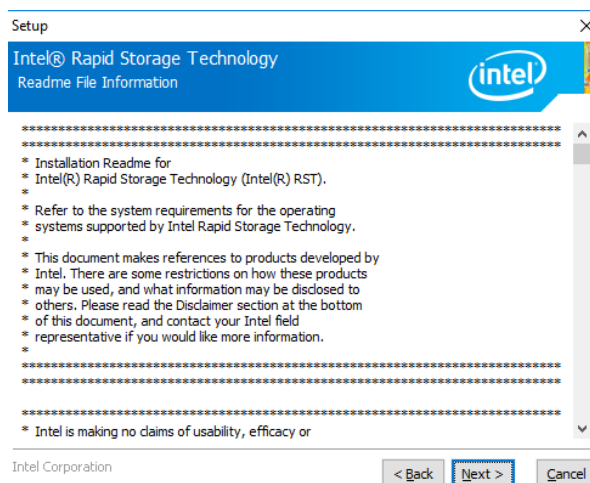
**Note:** The installation procedures and screen shots in this section are based on Windows 10 operation system.



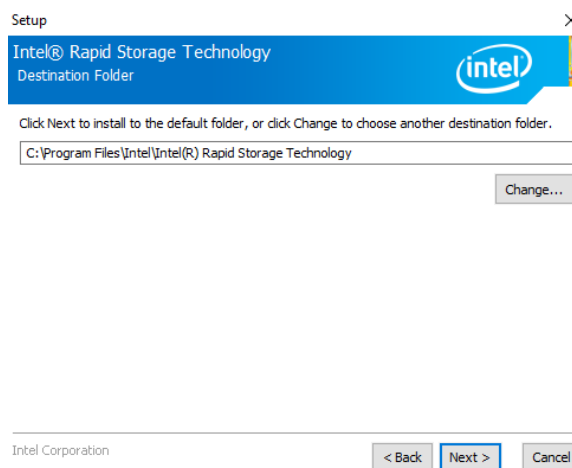
**Step 1. Click Next** to continue installation.



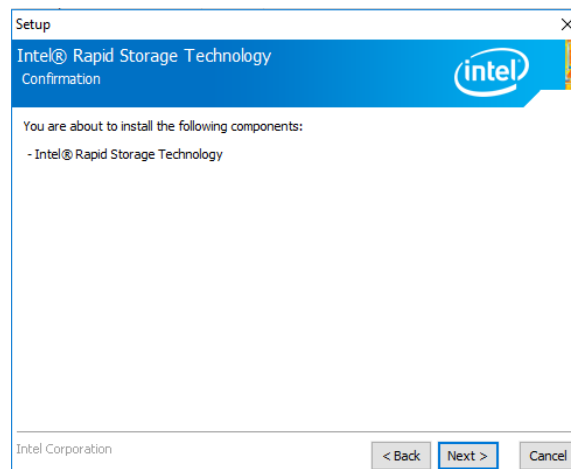
**Step 2. Click Next.**



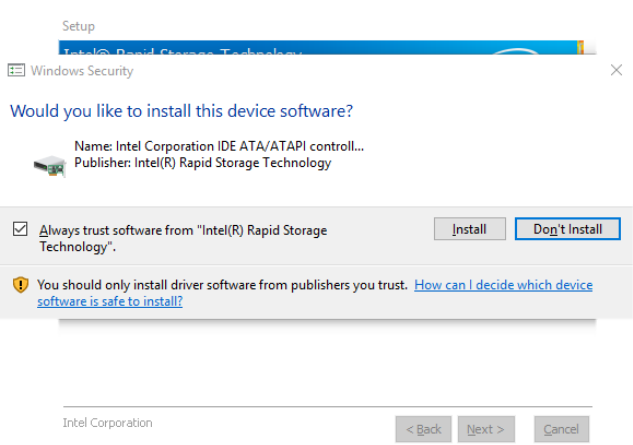
**Step 3. Click Next.**



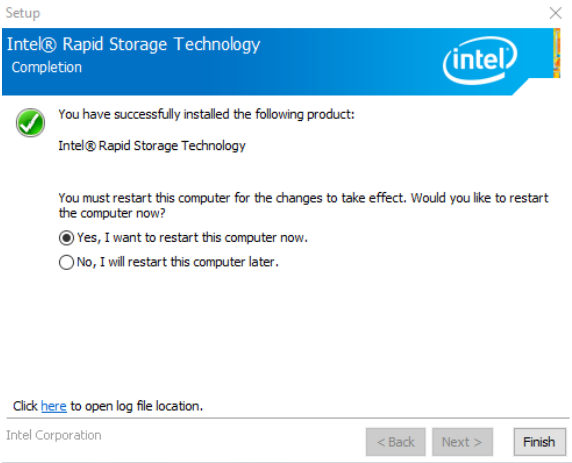
**Step 4. Click Next.**



**Step 5. Click Next.**



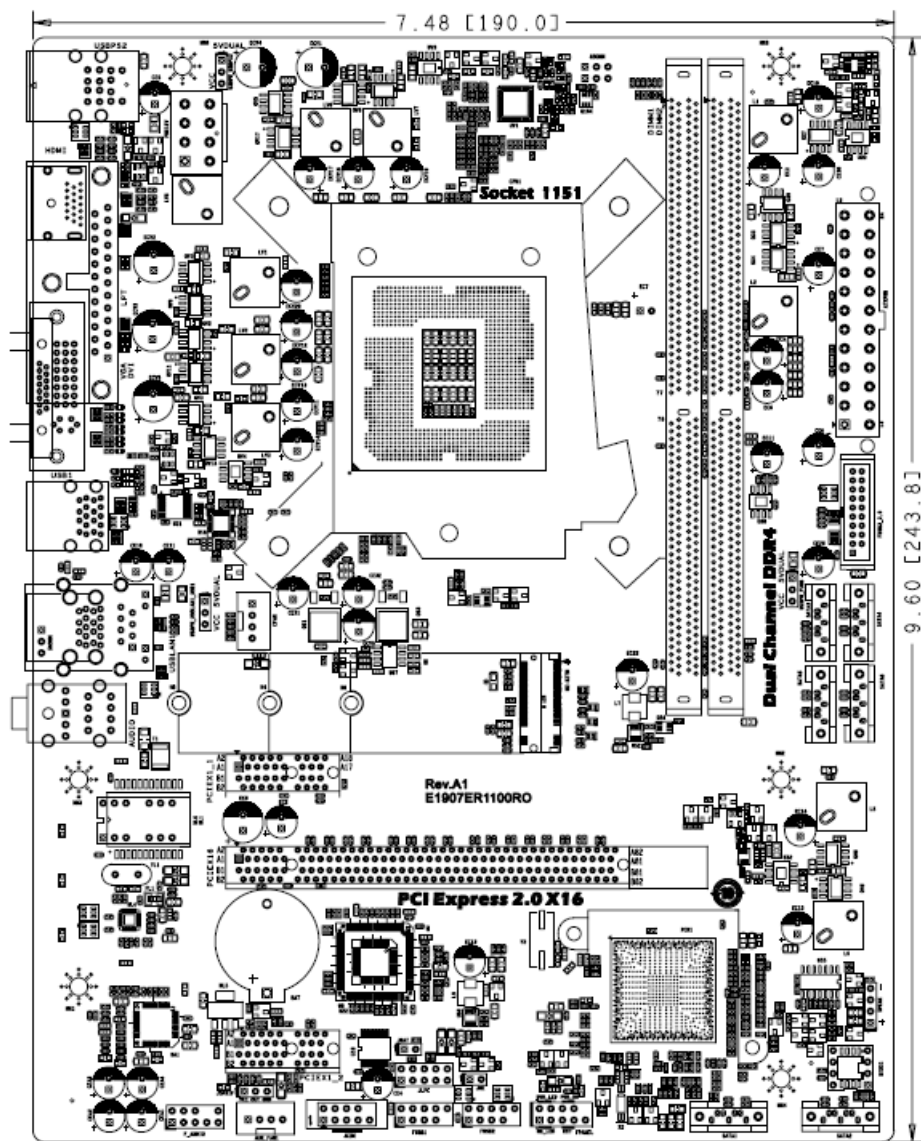
**Step 6. Click Install.**



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

# 5. Mechanical Drawing





Unit: mm

