

SEM-X-H81

Intel® H81 Express Chipset
Mini ITX Motherboard

User's Manual



2nd Ed – 02 September 2015

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.

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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. Getting Started

1.1 Safety Precautions

Warning!



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

Caution!



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

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

1.2 Packing List

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

- Driver/Utility CD X 1
- Serial ATA Signal Cable X 2
- Motherboard X 1
- IO Shield X 1

1.3 Document Amendment History

Revision	Date	By	Comment
1 st	August 2014	Avalue	Initial Release
2 nd	September 2015	Avalue	Update BIOS Setup

1.4 Manual Objectives

This manual describes in details Avalue Technology SEM-X-H81 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 SEM-X-H81 series or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

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 Specifications

System	
CPU	Intel® LGA1150 Socket Supports 4th Generation Core™ Refresh i7/ i5/ i3, Pentium® and Celeron® Processors (Max. TDP at 84W)
BIOS	AMI uEFI BIOS, 128Mbit SPI Flash ROM
System Chipset	Intel® H81 Express Chipset
I/O Chip	Nuvoton NCT5532D
System Memory	Two 240-pin DIMM Sockets Up to 16GB Dual Channel, DDR3 1066/1333 /1600MHz SDRAM
Watchdog Timer	- H/W Reset, 1sec. – 65535sec./min. 1sec. or 1min. step
H/W Status Monitor	- CPU & system temperature monitoring - Voltages monitoring
Expansion	1 x PCI-e x 16 Gen.3, 1 x Mini PCI-e full size
Display	
Chipset	Intel® 4th Generation CPU integrated
Resolution	- Multi-VGA output support : HDMI/DVI/RGB ports - Supports HDMI with max. resolution 4096 x 2160 @ 24 Hz / 1920 x 1080 @ 60 Hz - Supports DVI-D with max. resolution 1920 x 1200 @ 60 Hz - Supports VGA with max. resolution 1920 x 1200 @ 60 Hz - Dual independent displays support with HDMI/DVI and D-Sub
Ethernet	
Chipset	1 x Realtek RTL8111E PCI-Express Gigabit Ethernet
Ethernet Interface	10/100/1000 Gigabit Ethernet
Audio	
Chipset	Realtek ALC892 HD Audio Decoding Controller
Audio Interface	Line-out, Mic-In, Line-in, Rear R/L, S/PDIF
I/O	
Rear Side External I/O Connector	1 x PS2 Keyboard/Mouse with dual deck USB2.0 connector (PS2 Keyboard or Mouse selection by BIOS) 1 x RJ-45 with Dual deck USB2.0 connector 1 x Dual deck USB2.0 connector 1 x VGA 1 x HDMI 1 x DVI-D 1 x Line-out, 1 x Mic in, 1 x Line-in, Rear R/L, S/PDIF

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Internal I/O Connector	• 2 x SATA III connector, 2 x SATA II connector • 1 x 1 x 5 pin, pitch 2.54mm connector for USB 2.0 support USB 2.0 x 1 • 1 x 2 x 10 pin, pitch 2.0mm connector for USB 3.0 x 2 • 1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported • 1 x 1 x 3 pin, pitch 2.54mm System fan connector • 1 x Vertical type battery connector • 1 x 2 x 5 pin, pitch 2.54mm connector for front panel • 1 x 2 x 5 pin, pitch 2.54mm connector for front Audio • 1 x 2 x 5 pin, pitch 2.54mm connector for RS-232 pin 9 without power • 1 x 1 x 3 pin, pitch 2.54mm connector for S/PDIF • 1 x 1 x 2 pin, pitch 2.54mm connector for BIOS ME flash • 1 x 1 x 2 pin, pitch 2.54mm connector for COMS Clear • 1 x 1 x 4 pin, pitch 2.54mm connector for Speaker Buzzer • 1 x 2 x 10pin ATX power connector • 1 x 2 x 2 pin ATX 12V power connector
Mechanical & Environmental	
Power Requirement	• +12V / +5V / 5VSB /+3.3V
Power Type	• ATX mode
ACPI	• ATX Power Support S0, S3, S4, S5
Operating Temp.	• 0°C ~60°C
Storage Temp.	• -40°C ~75°C
Operating Humidity	• 0%~90% relative humidity, non-condensing
Size (L x W)	• 6.69" x 6.69" (170mm x 170mm)
Weight	• 0.88lbs 0.40 kg

Note:

The Launch PXE OpROM policy can't work at UEFI mode. But it can work normally under Legacy mode.

Random Vibration Test (Operation) Test PSD: 0.00202G²/Hz, 1.0 Grms

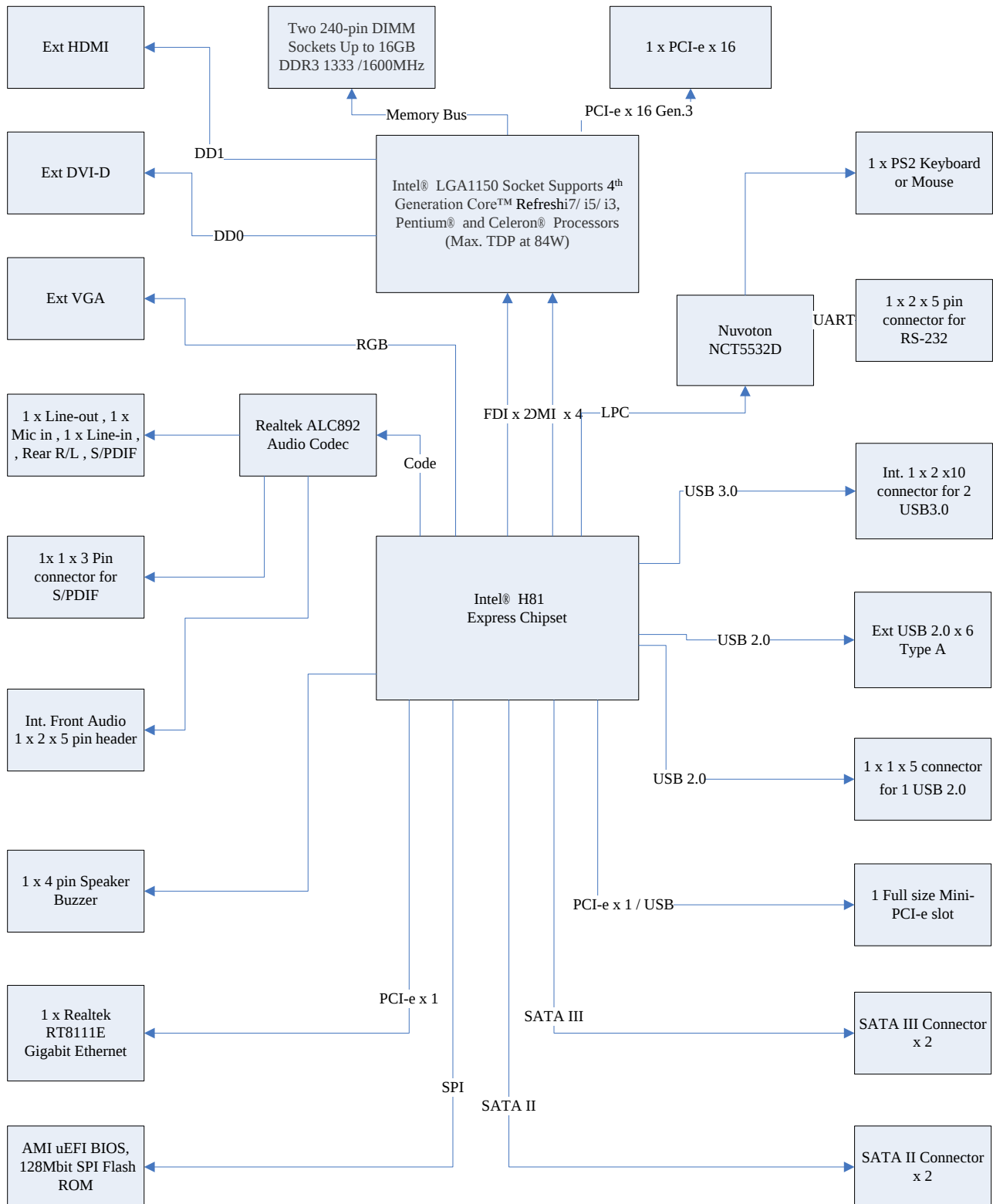
Random Vibration Test (Non-Operation) Test PSD: 0.01818G²/Hz 3 Grms

PS2 Keyboard or Mouse selection by BIOS

*Specifications are subject to change without notice.

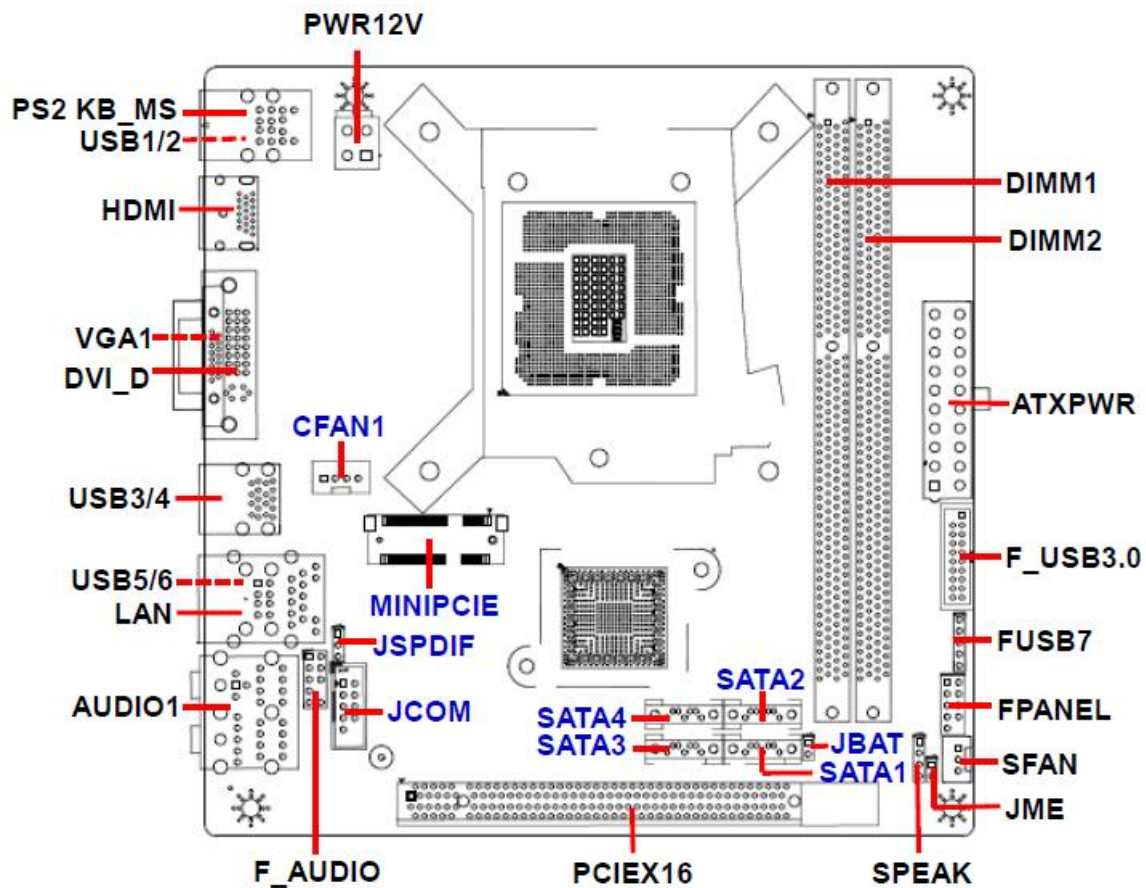
1.6 Architecture Overview—Block Diagram

The following block diagram shows the architecture and main components of SEM-X-H81.



2. Hardware Configuration

2.1 Product Overview



2.2 Installation Procedure

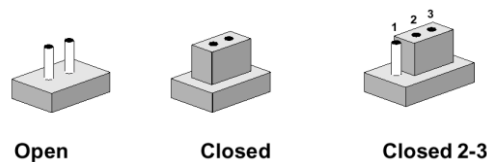
This chapter explains you the instructions of how to setup your system.

1. Turn off the power supply.
2. Insert the DIMM module (be careful with the orientation).
3. Insert all external cables for hard disk, floppy, keyboard, mouse, USB etc. except for flat panel. A CRT monitor must be connected in order to change BIOS settings to support flat panel.
4. Connect power supply to the board via the ATX Power.
5. Turn on the power.
6. Enter the BIOS setup by pressing the delete key during boot up. Use the "Save & Exit \ Restore Defaults" feature.

2.3 Jumper and Connector List

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

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



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
JBAT	Clear CMOS	1 x 2 header, pitch 2.54 mm
JME	ME update (For Flash BIOS use)	1 x 2 header, pitch 2.54 mm

Connectors

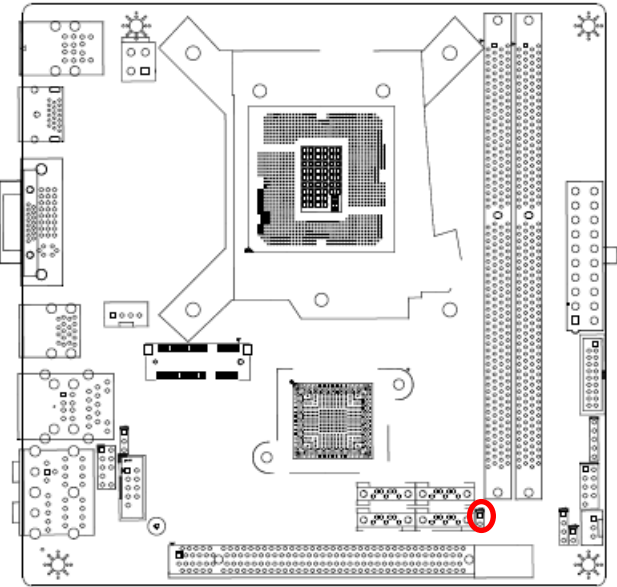
Label	Function	Note
FPANEL	Front Panel Switches	2 x 5 header, pitch 2.54 mm
PCIEX16	PCI-e x 16	
MINIPCI	Mini-PCI connector	
HDMI	HDMI connector	
PWR12V	ATX +12V Power connector	2 x 2 wafer, pitch 4.20 mm
ATXPWR	ATX Power connector	2 x 10 wafer, pitch 4.20 mm

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SPEAK	Speaker Headers	1 x 4 header, pitch 2.54 mm
JCOM	Serial port connector	2 x 5 header, pitch 2.54 mm
DVI_D	DVI connector	
SATA1~4	Serial ATA connector 1~4	
LAN	Gigabit LAN (RJ-45) connector	
USB1/2	USB connector 1/2	
USB3/4	USB connector 3/4	
USB5/6	USB connector 5/6	
FUSB7	USB Port Headers (USB 2.0)	1 x 5 header, pitch 2.54 mm
F_USB3.0	USB Port Headers (USB 3.0)	2 x 10 wafer, pitch 2.00 mm
SFAN	System Fan connector	1 x 3 header, pitch 2.54 mm
CFAN1	CPU Fan connector	1 x 4 header, pitch 2.54 mm
DIMM1~2	DDR3 SDRAM DIMM socket	
VGA1	VGA connector	
F_AUDIO	Front Panel Audio Connection Header	2 x 5 header, pitch 2.54 mm
AUDIO1	Audio connector	
JSPDIF	Sony/Philips Digital Interface	1 x 3 header, pitch 2.54 mm
PS2 KB_MS	Keyboard & Mouse	

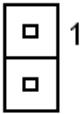
2.4 Setting Jumpers & Connectors

2.4.1 Clear CMOS (JBAT1)

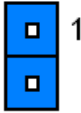


* Default

Normal*

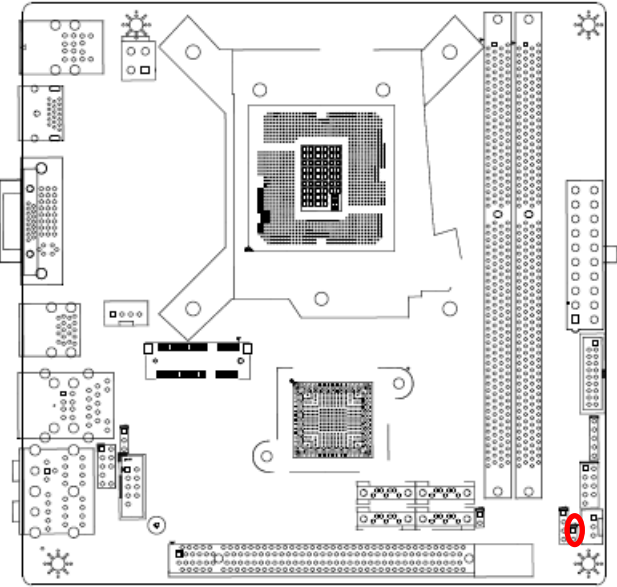


Clear CMOS



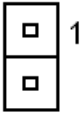
Pin	Define
Open	Normal
Short	Clear CMOS

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

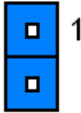


* Default

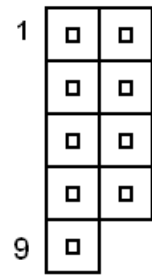
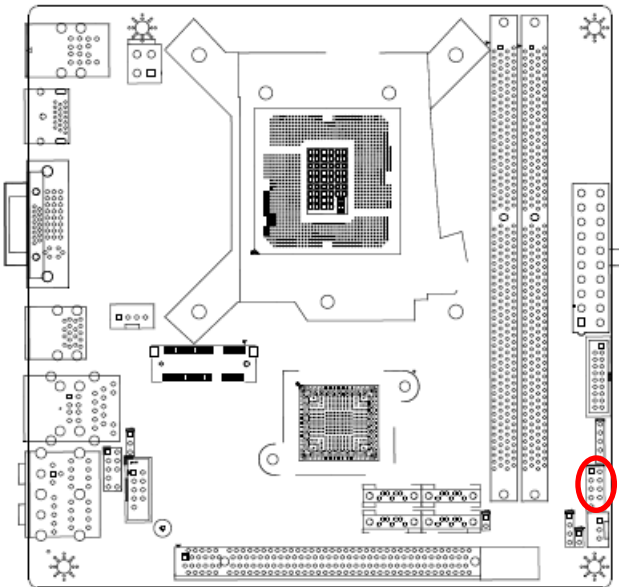
Open*



Short

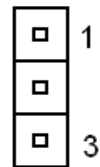
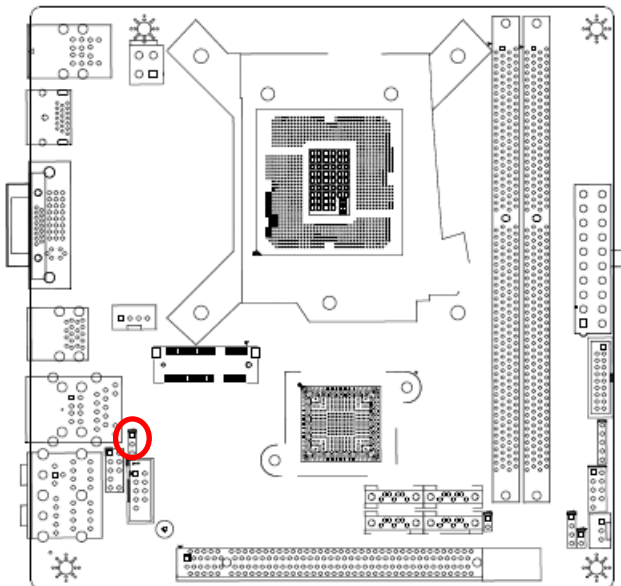


2.4.3 Front Panel Switches (FPANEL1)



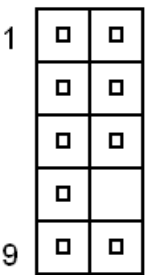
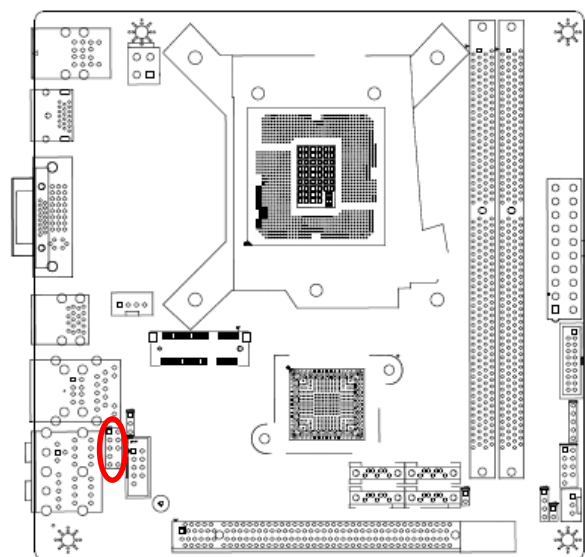
Signal	PIN	PIN	Signal
+HD_LED	1	2	+P_LED
-HD_LED	3	4	-P_LED
RST	5	6	PWR_ON
RST	7	8	-PWR_ON
NC	9		

2.4.4 Sony/Philips Digital Interface (JSPDIF)



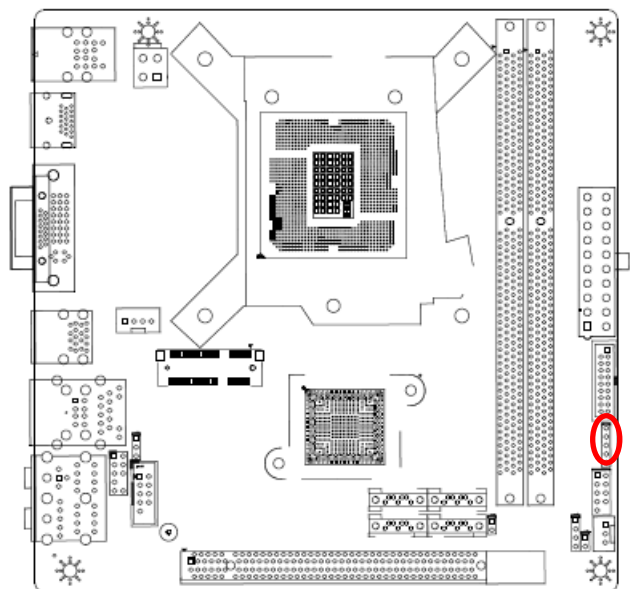
PIN	Signal
1	VCC
2	OUT
3	GND

2.4.5 Front Panel Audio Connection Header (F_AUDIO)



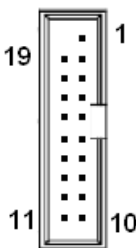
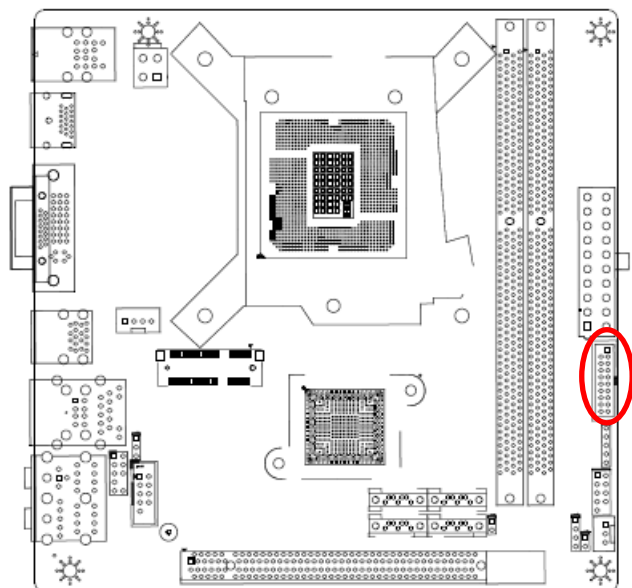
Signal	PIN	PIN	Signal
PORT1L	1	2	GND
PORT1R	3	4	PRESENCE#
PORT2R	5	6	SENSE1_RETURN
SENSE_SEND	7		
PORT2L	9	10	SENSE2_RETURN

2.4.6 USB Port Headers – USB2.0 (FUSB7)



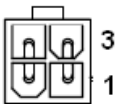
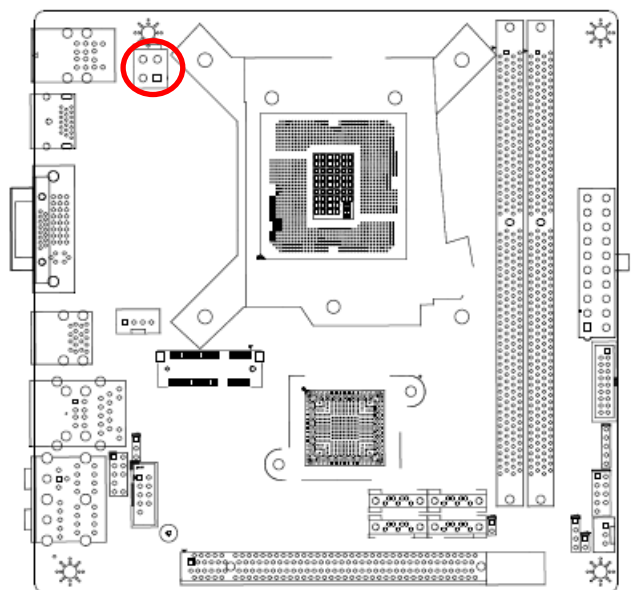
PIN	Signal
1	VCC
2	DATA -
3	DATA +
4	GND
5	NC

2.4.7 USB Port Headers – USB3.0 (F_USB3.0)



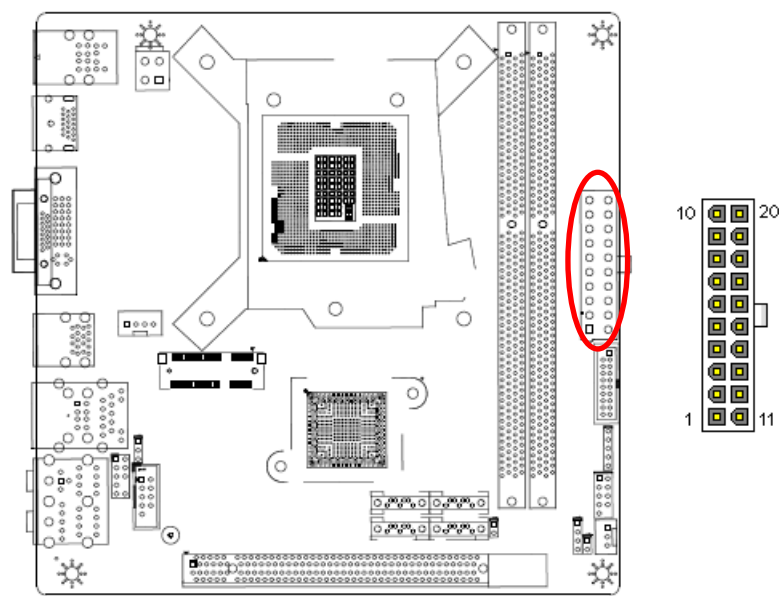
Signal	PIN	PIN	Signal
		1	VCC
VCC	19	2	SSRX-
SSRX-	18	3	SSRX+
SSRX+	17	4	GND
GND	16	5	SSTX-
SSTX-	15	6	SSTX+
SSTX+	14	7	GND
GND	13	8	D-
D-	12	9	D+
D+	11	10	ID

2.4.8 ATX +12V Power connector (PWR12V)



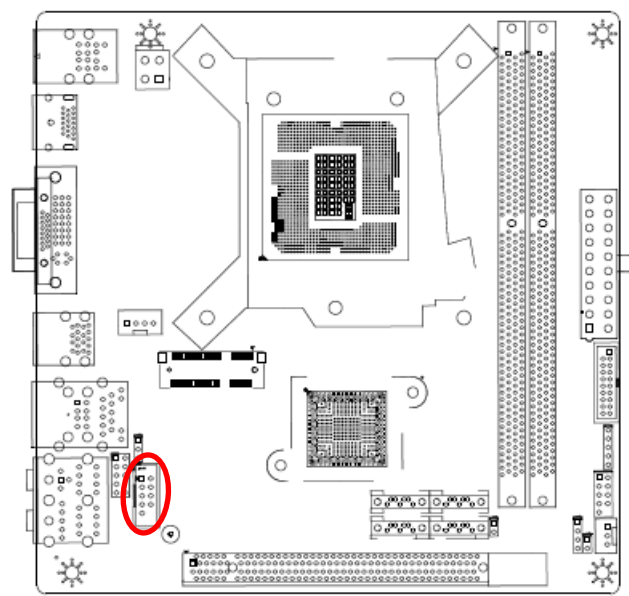
Signal	PIN	PIN	Signal
+12V	4	3	+12V
GND	2	1	GND

2.4.9 ATX Power connector (ATXPWR)



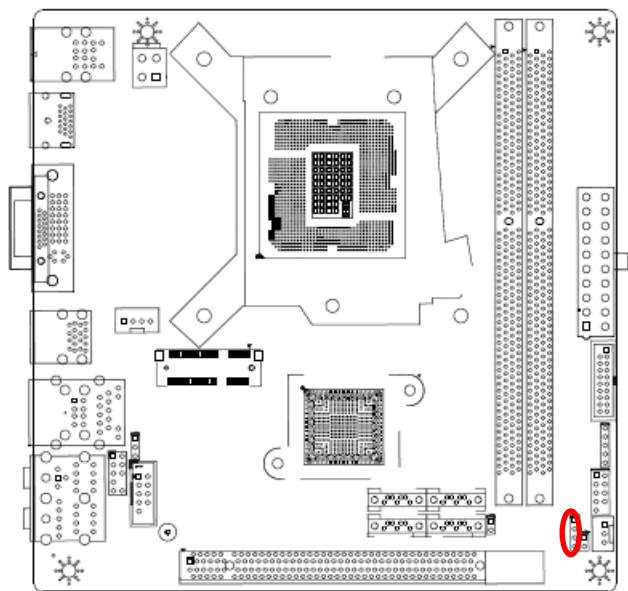
Signal	PIN	PIN	Signal
+12V	10	20	+5V
+5V	9	19	+5V
PWR_OK	8	18	+5V
COM	7	17	COM
+5V	6	16	COM
COM	5	15	COM
+5V	4	14	PS_ON#
COM	3	13	COM
+3.3V	2	12	-12V
+3.3V	1	11	+3.3V

2.4.10 Serial port connector (JCOM)



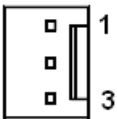
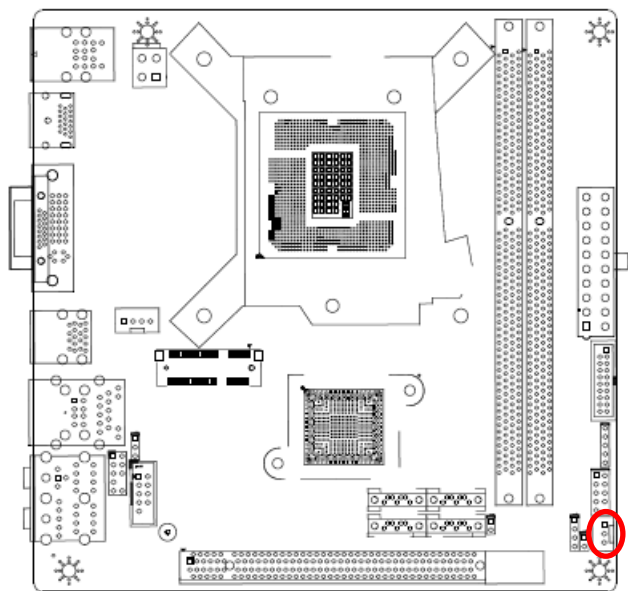
Signal	PIN	PIN	Signal
DCD	1	2	RXD
TXD	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9		

2.4.11 Speaker connector (SPEAK)



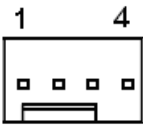
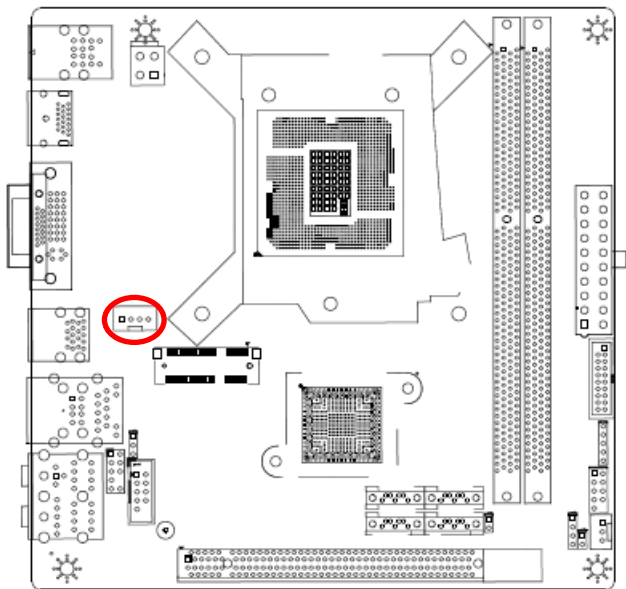
PIN	Signal
1	INTSPL+
2	NC
3	NC
4	INTSPR-

2.4.12 System Fan connector (SFAN)



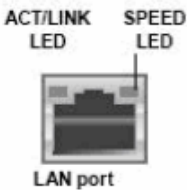
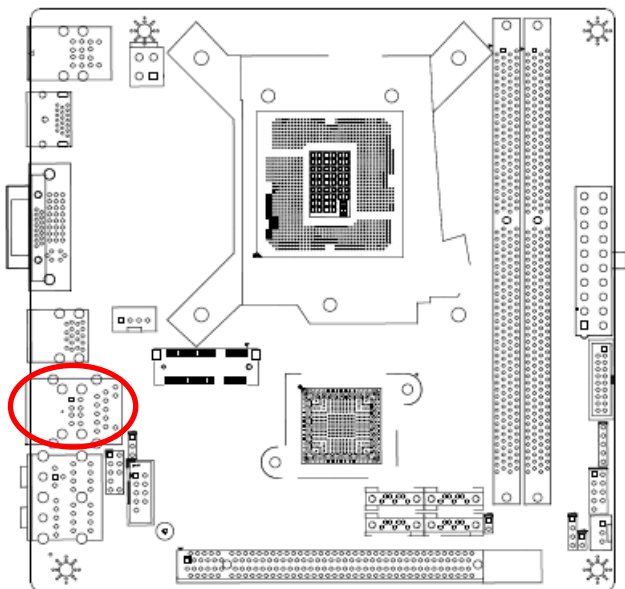
PIN	Signal
1	RPM
2	+12V
3	Ground

2.4.13 CPU Fan connector (CFAN1)



PIN	Signal
1	Ground
2	+12V
3	RPM
4	Control

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



Status	Description	Status	Description
OFF	No Light	OFF	10Mbps connection
Orange	Linked	Green	100Mbps connection
Blinking	Data activity	Green	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 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 immediately after switching the system on, or

By pressing the key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test).

Press DEL to enter setup, F11 to popup menu

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 DEL to enter setup, F11 to popup menu

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 the pervious page or 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
F7 key	Previous Values
F8 key	Fail-Safe Values
F9 key	Optimized Defaults
F10 key	Save and Exit

- **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 BIOS supports an override to the NVRAM settings which resets your system to its defaults.

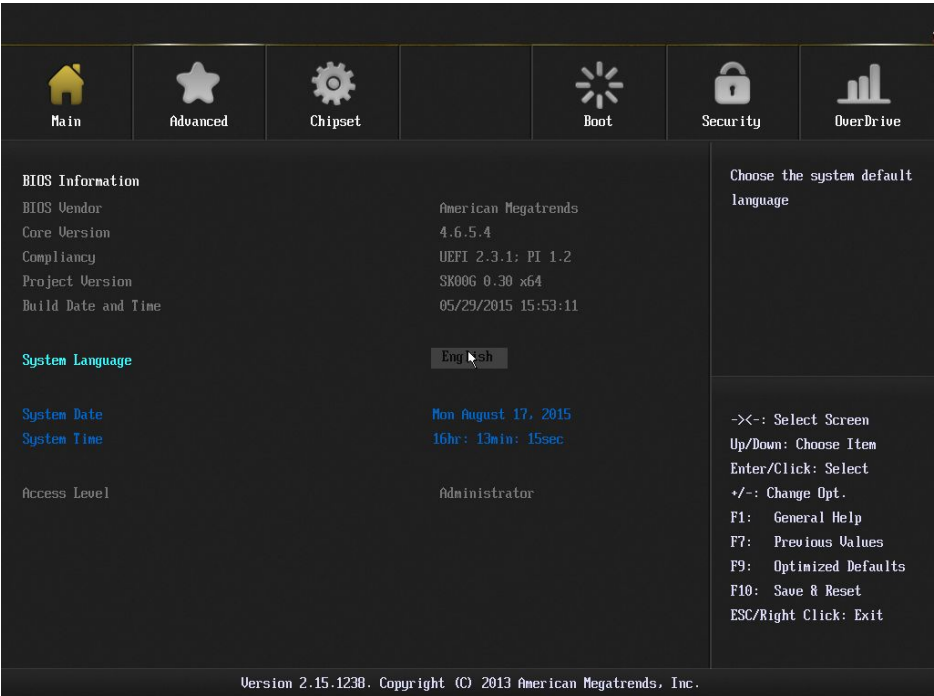
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your systems manufacturer to provide the absolute maximum performance and 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 BIOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

3.6.1 Main Menu

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



3.6.1.1 System Language

Use this option to select system language

3.6.1.2 System Date

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

3.6.1.3 System Time

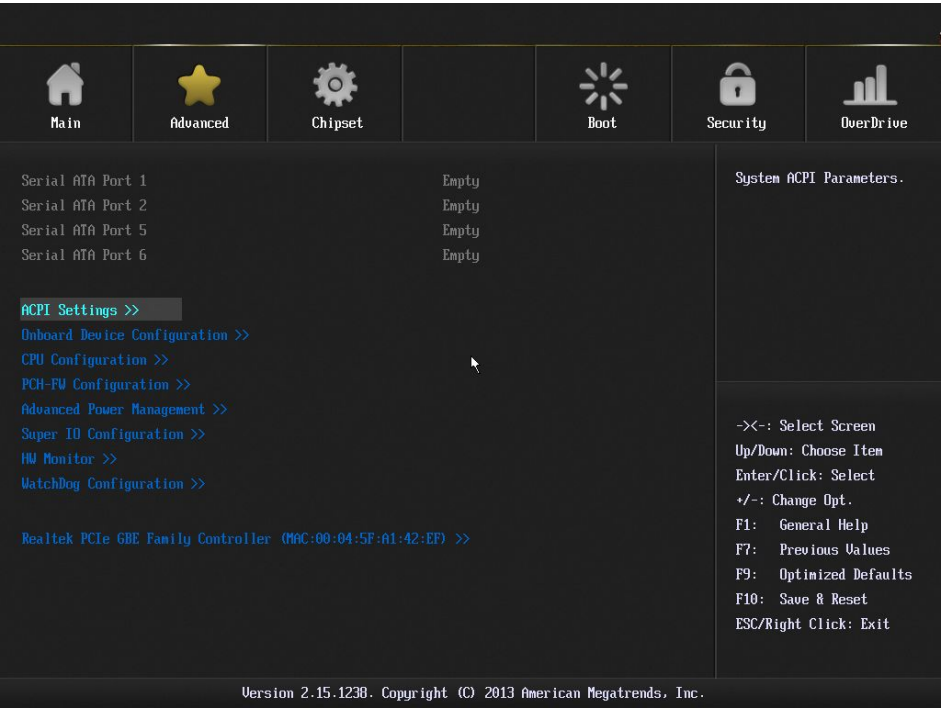
Use the system time option to set the system time. Manually enter the hours, minutes and seconds.



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

3.6.2 Advanced BIOS settings

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



3.6.2.1 ACPI Settings

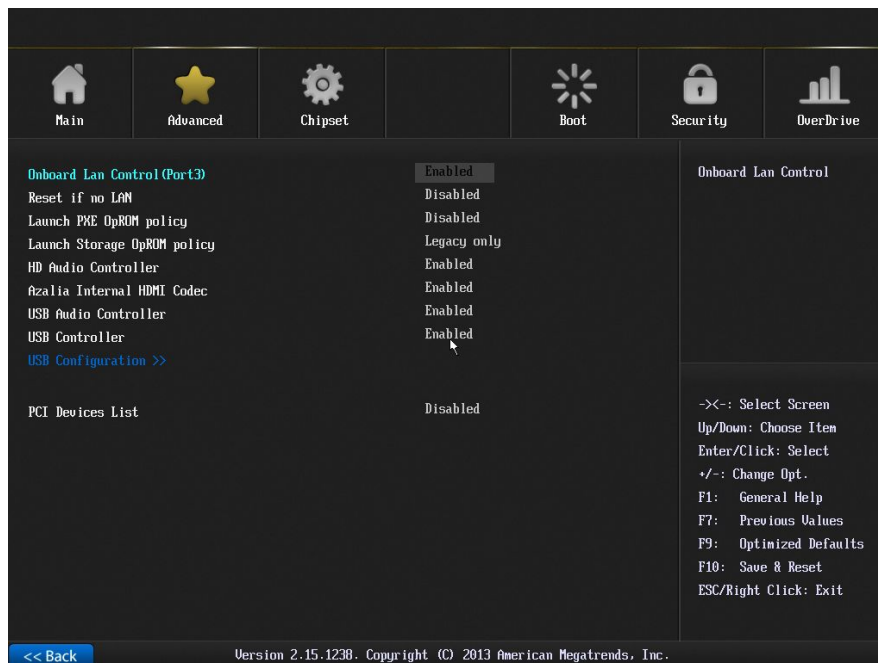


Item	Options	Description
Enable ACPI Auto	Disabled[Default]	Enable or Disable BIOS ACPI Auto

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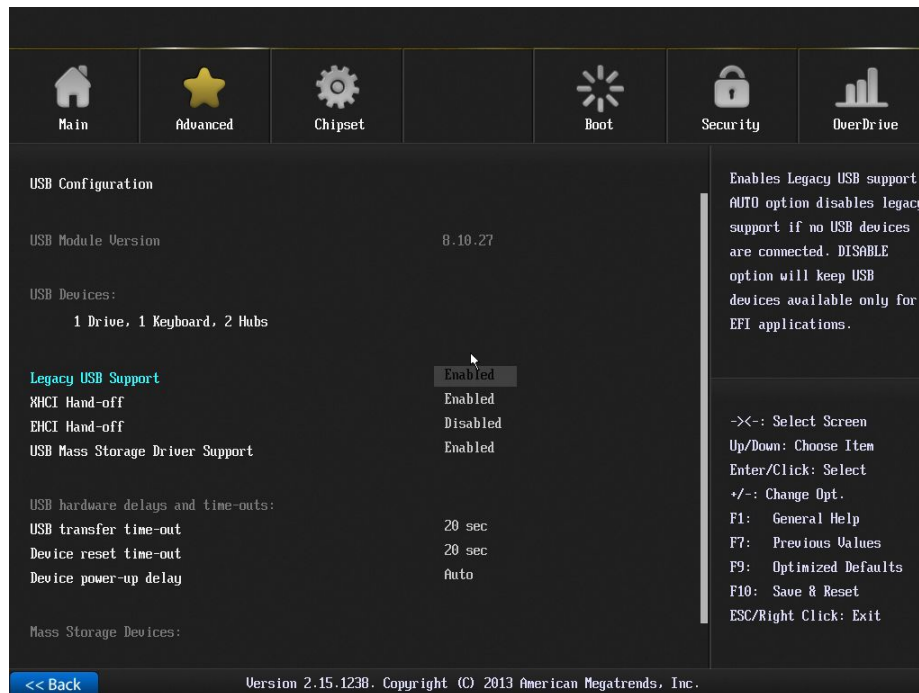
Configuration	Enabled	Configuration.
Enable Hibernation	Disabled Enabled[Default]	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
S3 Video Repost	Disabled[Default] Enabled	Enable or Disable S3 Video Repost.
ACPI Sleep State	Suspend Disabled S1 only(CPU Stop Clock)[Default] S3 only(Suspend to RAM)	Select ACPI sleep state the system will enter when the SUSPEND button is pressed.

3.6.2.2 Onboard Device Configuration



Item	Options	Description
Onboard Lan Control (Port3)	Disabled Enabled[Default]	Onboard Lan Control.
Reset if no LAN	Disabled[Default] Enabled	Reset if no LAN.
Launch PXE OpROM policy	Disabled[Default] Enabled	Control the execution of UEFI and Legacy PXE OpROM.
Launch Storage OpROM policy	Disabled Legacy only[Default]	Controls the execution of UEFI and Legacy Storage OpROM.
HD Audio Controller	Disabled Enabled[Default]	Control of the Azalia audio.
Azalia Internal HDMI Codec	Disabled Enabled[Default]	Azalia Internal HDMI Codec.
USB Audio Controller	Disabled Enabled[Default]	USB Audio Controller.
USB Controller	Disabled Enabled[Default]	Control of USB ports.
PCI Devices List	Disabled[Default] Enabled	PCI Device List.

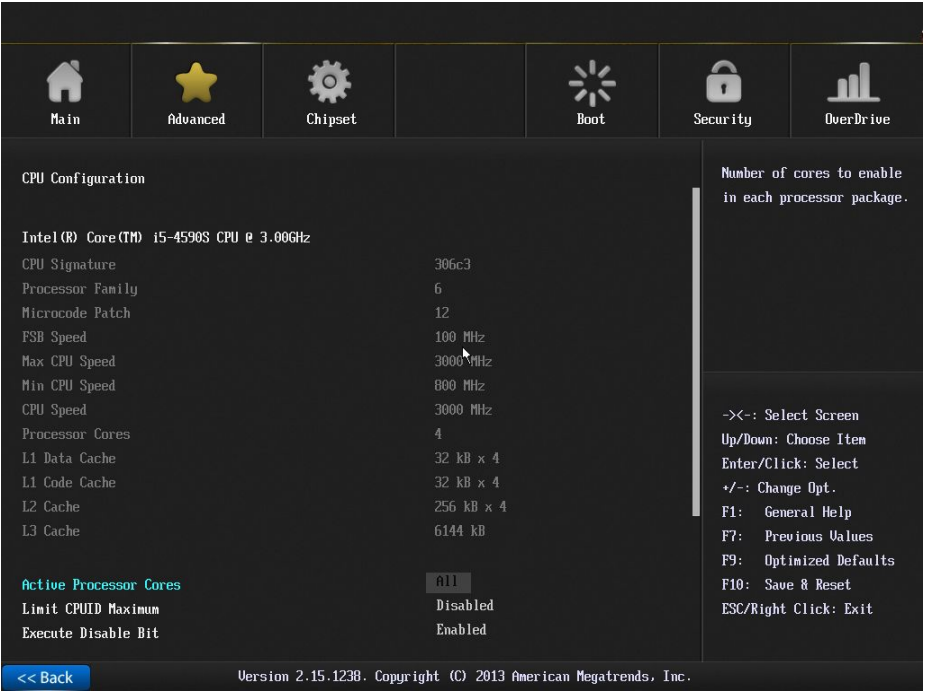
3.6.2.2.1 USB Configuration



Item	Options	Description
Legacy USB Support	Enabled[Default] Disabled Auto	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
XHCI Hand-off	Disabled Enabled[Default]	This is a workaround for OSES without XHCI hand-off support. The XHCI ownership change should be claimed by CHCI driver.
EHCI Hand-off	Disabled[Default] Enabled	This is a workaround for OSES without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.
USB Mass Storage Driver Support	Disabled Enabled[Default]	Enable/Disable USB Mass Storage Driver Support.
USB transfer time-out	1 sec 5 sec 10 sec 20 sec[Default]	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 sec 20 sec[Default] 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto[Default] Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

3.6.2.3 CPU Configuration

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

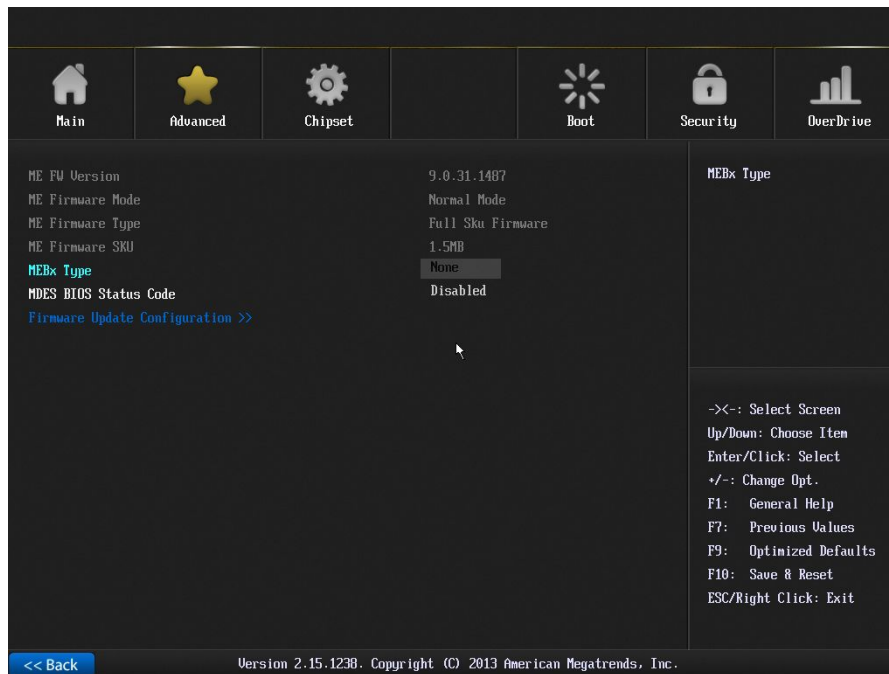


Item	Options	Description
Active Processor Cores	All[Default]	Number of cores to enable in each processor package.
	1	
	2	

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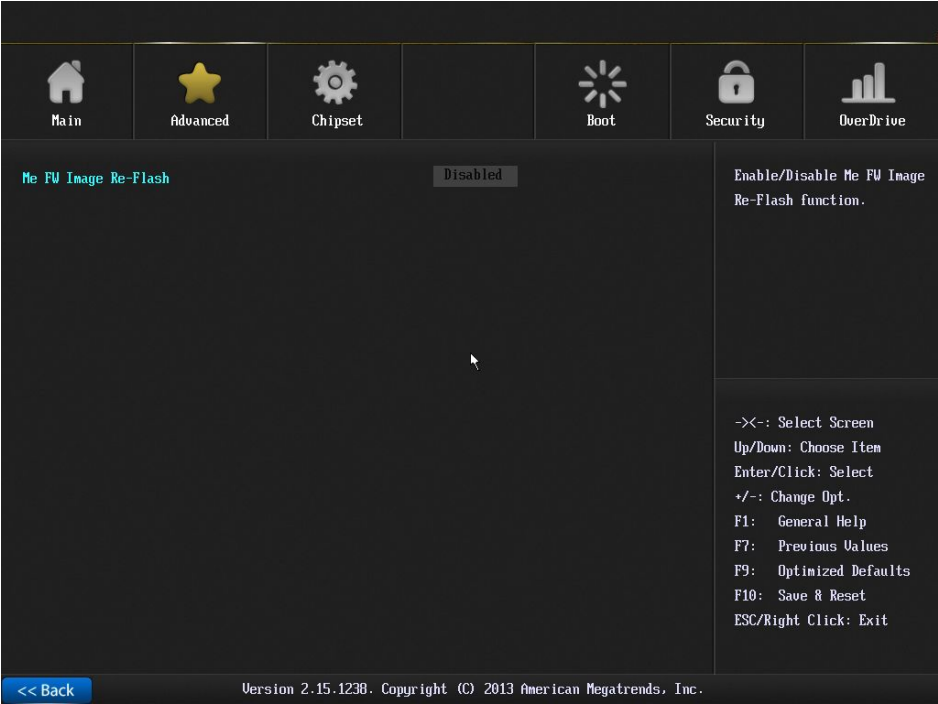
	3	
Limit CPUID Maximum	Disabled[Default] Enabled	Disabled for Windows XP.
Execute Disable Bit	Disabled Enabled[Default]	XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.)
Intel Virtualization Technology	Disabled Enabled[Default]	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Enhanced C1 state	Disabled Enabled[Default]	Enhanced C1 state.
CPU C3/6 Report	Disabled Enabled[Default]	Enable/Disable CPU C3/6 report to OS.
CPU C7 Report	Disabled CPU C7 CPU C7s[Default]	Enable/Disable CPU C7 report to OS.
C6 Latency	Short[Default] Long	Configure Short/Long latency for C6.
C7 Latency	Short Long[Default]	Configure Short/Long latency for C7.
LakeTiny Feature	Disabled[Default] Enabled	Enable/Disable LakeTiny for C state configuration.

3.6.2.4 PCH-FW Configuration



Item	Options	Description
MEBx Type	None[Default] MiniMEBx	MEBx Type.
MDES BIOS Status Code	Disabled[Default] Enabled	Enable/Disable MDES BIOS Status Code.
Firmware Update Configuration	Configure Management Engine Technology Parameters.	

3.6.2.4.1 Firmware Update Configuration



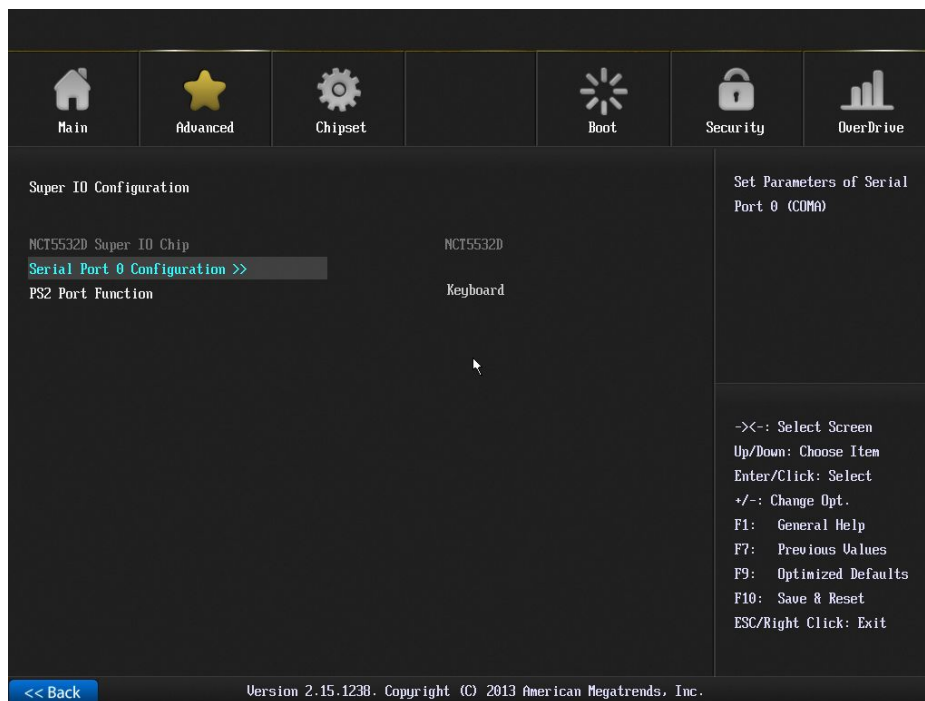
Item	Options	Description
Me FW Image Re-Flash	Disabled[Default] Enabled	Enable/Disable Me FW Image Re-Flash function.

3.6.2.5 Advanced Power Management



Item	Options	Description
Wake Up By PS/2 Keyboard	Disabled [Default] Any key Password	Wake Up system by PS/2 Keyboard, for S3S4S5.
Wake Up By PS/2 Mouse	Disabled [Default] Enabled	Wake Up system by PS/2 Mouse, for S3S4S5.
AC Power Loss	Power Off [Default] Power On Last State	AC Power Loss.
USB KB/MS Wake Up	Disabled Enabled [Default]	USB KB/MS WakeUp, for S3S4.
LAN Wakeup	Disabled Enabled [Default]	LAN Wakeup by PME.
Wakeup By RTC	Disabled [Default] Enabled	Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.

3.6.2.6 Super IO Configuration



Item	Options	Description
PS2 Port Function	Auto Mouse Keyboard [Default]	PS2 Port Swap.

PS2 Keyboard or Mouse selection by BIOS

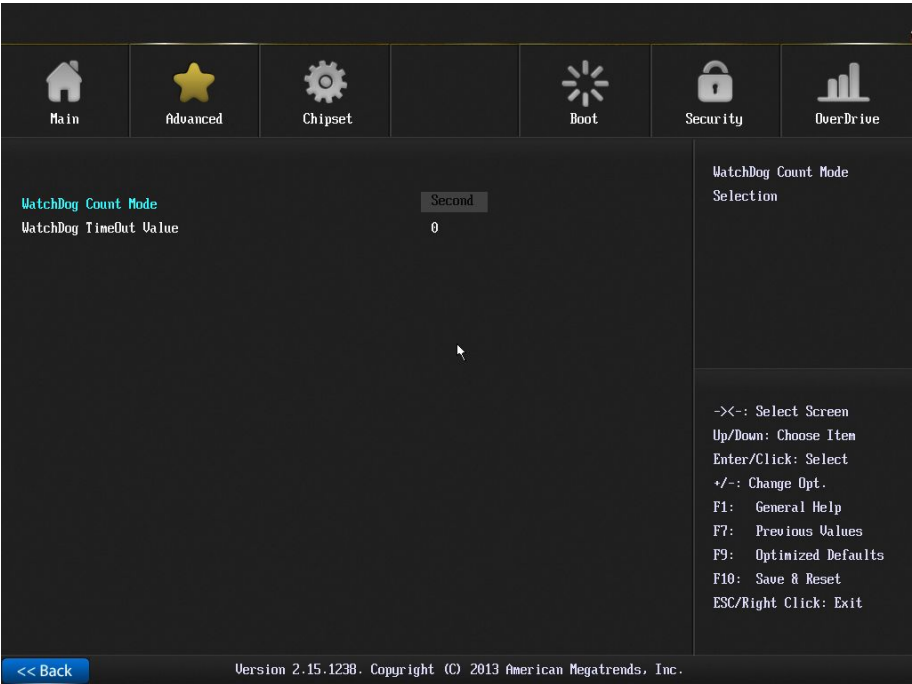
3.6.2.7 HW Monitor

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



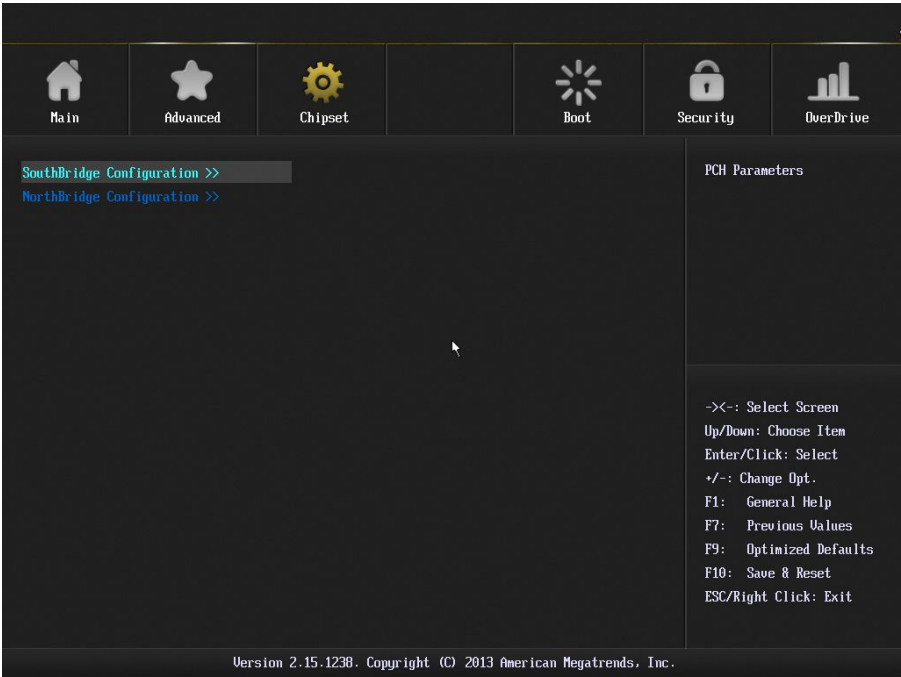
Item	Option	Description
CPU Smart Fan	Enable or Disable CPU Smart Fan. T1:30°C Duty:55T2:40°C Duty:70T3:50°C Duty:80T4:60°C Duty:90risis:70°C Duty:100	
PWM Output	0-100	Set CPU Fan Speed.

3.6.2.8 WatchDog Configuration



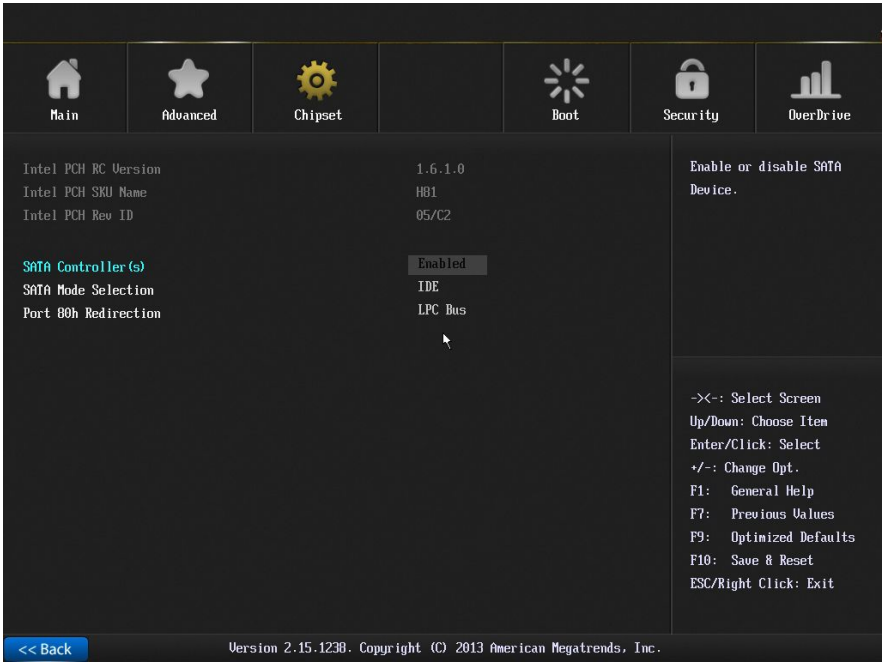
Item	Option	Description
Watchdog Count Mode	Second[Default] Minute	Watchdog Count Mode Selection.
Watchdog Timeout Value	0	Fill Watchdog Timeout Value, 0 means disabled.

3.6.3 Chipset



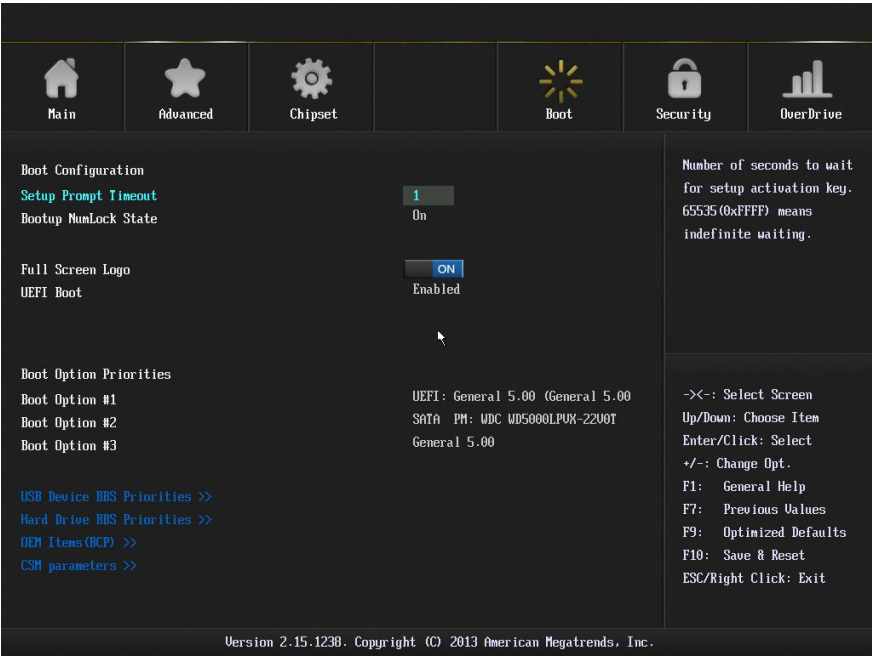
Item	Description
South Bridge Configuration	PCH Parameters.
North Bridge Configuration	System Agent (SA) Parameters.

3.6.3.1 South Bridge Configuration



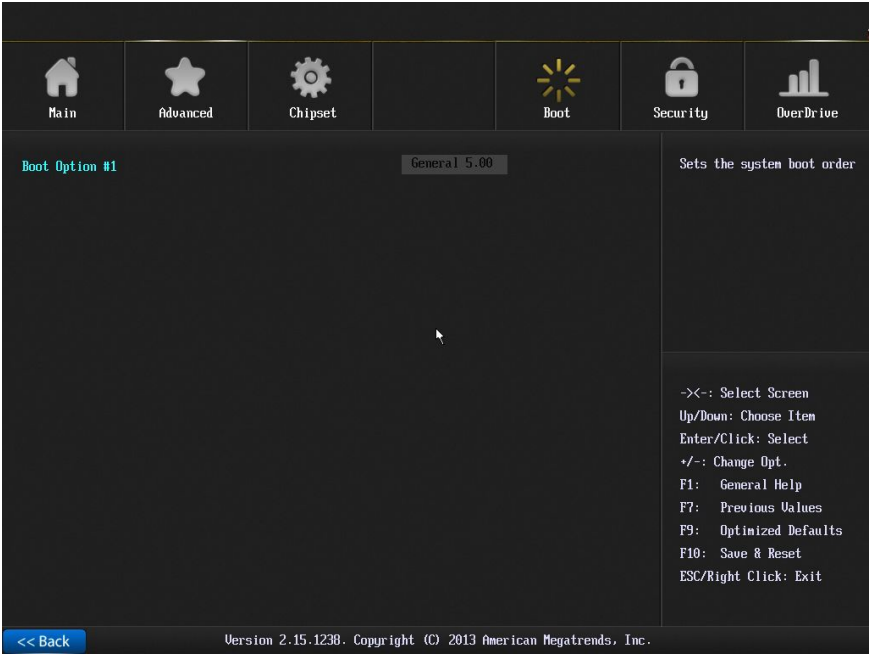
Item	Options	Description
SATA Controller(s)	Disabled Enabled[Default]	Enable or disable SATA Device.
SATA Mode Selection	IDE[Default] AHCI	Determines how SATA controller(s) operate.
Port 80h Redirection	LPC Bus[Default] PCIE Bus	Control where the Port 80h cycles are sent.

3.6.4 Boot settings



Item	Option	Description
Setup Prompt Timeout	1~65535	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On[Default] Off	Select the keyboard NumLock state.
Full Screen Logo	Disabled Enabled[Default]	Enables or disables Quiet Boot option.
UEFI Boot	Auto[Default] Enabled Disabled	Auto: If the 1 st boot HDD is GPT then enable UEFI boot options, otherwise disable. Enabled: Enable all UEFI boot options. Disabled: Disabled all UEFI boot options.

3.6.4.1 Boot



Item	Description
Boot Option #1	Set the system boot order.

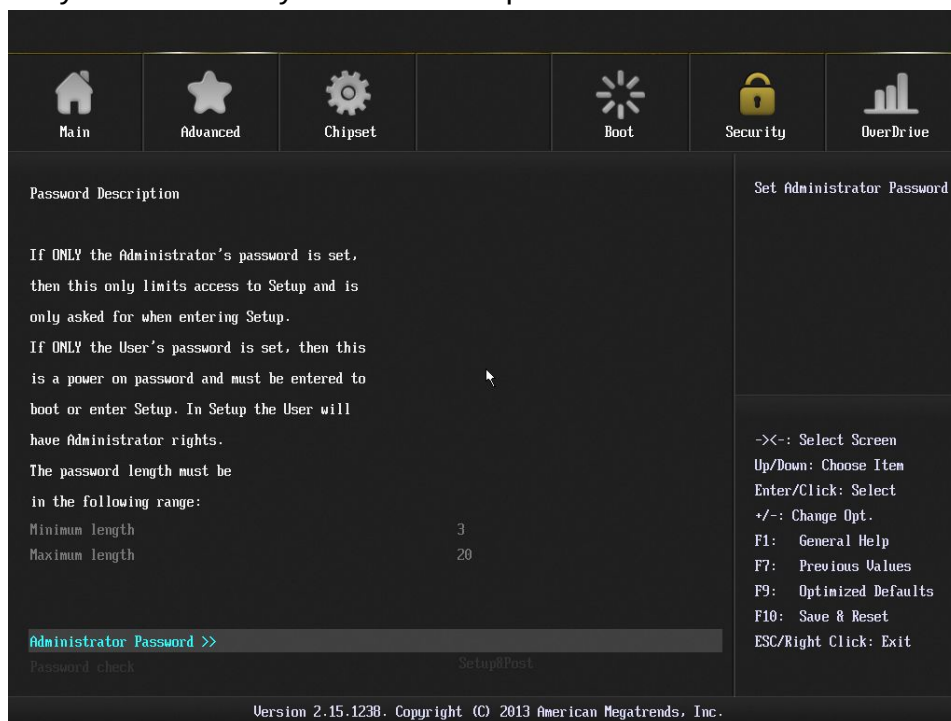
3.6.4.2 CSM parameters



Item	Options	Description
Launch CSM	Enabled[Default] Disabled	This option controls if CSM will be launched.
Boot option filter	UEFI and Legacy[Default] Legacy only UEFI only	This option control what devices system can boot to.
Launch PXE OpROM policy	Do not launch[Default] UEFI only Legacy only	The Launch PXE OpROM policy can't work at UEFI mode. But it can work normally under Legacy mode.
Launch Storage OpROM policy	Do not launch UEFI only Legacy only[Default]	Controls the execution of UEFI and Legacy Storage OpROM.
Launch Video OpROM policy	Do not launch UEFI only Legacy only[Default]	Controls the execution of UEFI and Legacy Video OpROM.
Other PCI device ROM priority	UEFI OpROM[Default] Legacy OpROM	For PCI devices other than Network, Mass storage or Video defines which OpROM to launch.

3.6.5 Security

Use the Security menu to set system and user password.



3.6.5.1 Administrator Password

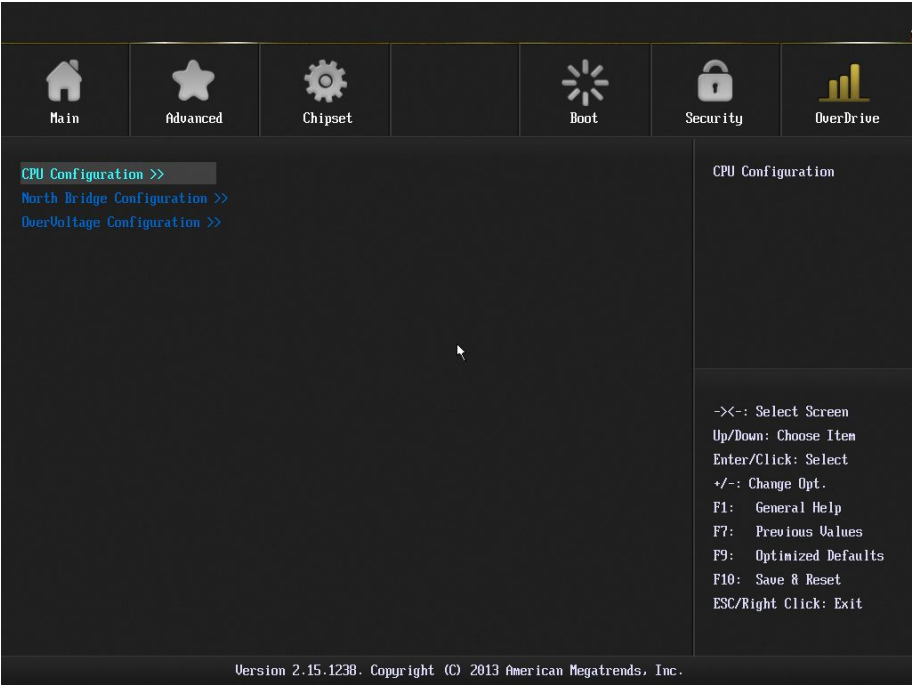
This setting specifies a password that must be entered to access the BIOS Setup Utility. If only the Administrator's password is set, then this only limits access to the BIOS setup program and is only asked for when entering the BIOS setup program. By default, no password is specified.

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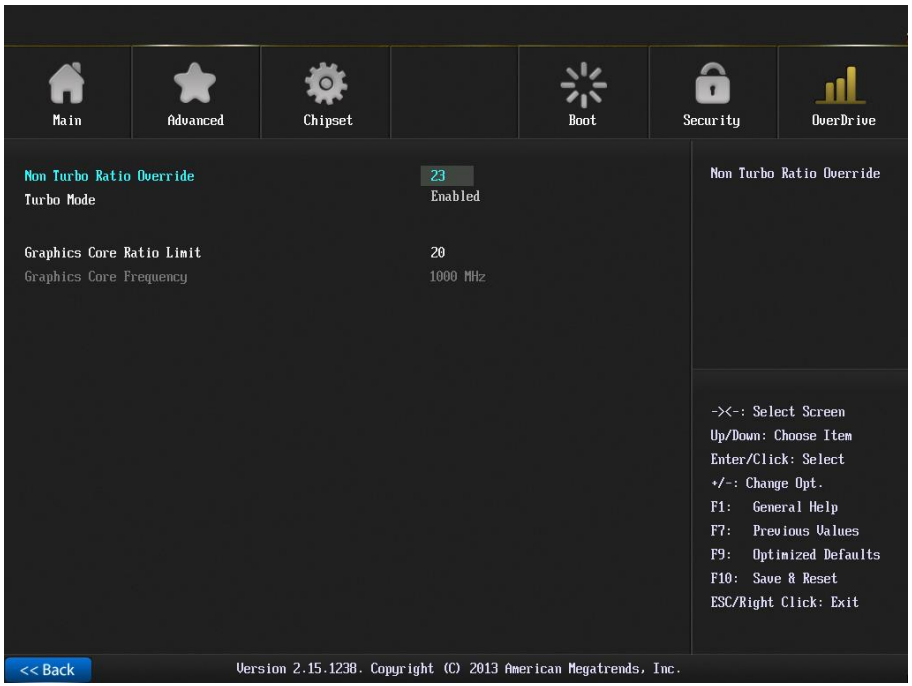
3.6.5.2 User Password

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

3.6.6 Performance

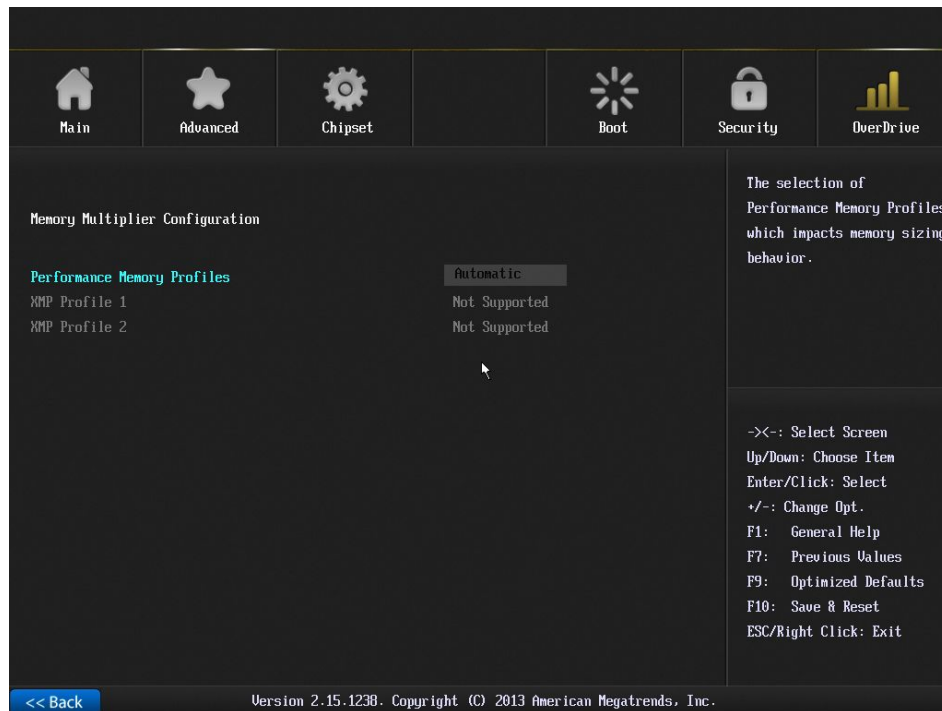


3.6.6.1 CPU Configuration



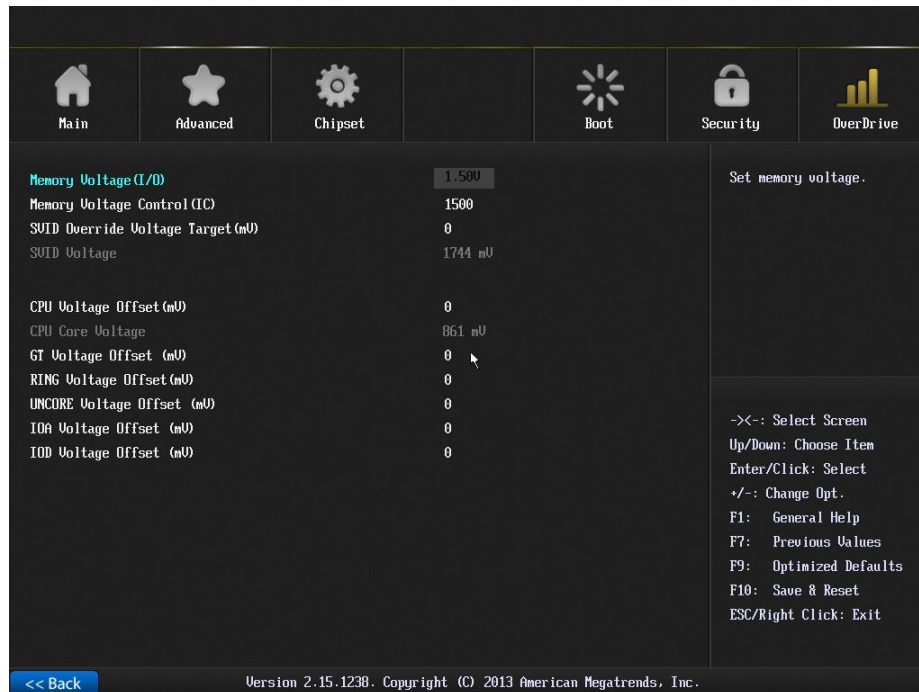
Item	Options	Description
Non Turbo Ratio Override	0-21[Default]	Non Turbo Ratio Override.
Package Current Lock	Disabled[Default] Enabled	Package Current Lock.
IA Core Current Max (1/8 Amp)	0	IA Core Current Max (1/8 Amp).
Enhanced Intel SpeedStep Technology	Disabled Enabled[Default]	Enhanced Intel SpeedStep Technology.
Turbo Mode	Disabled Enabled[Default]	Turbo Mode.
Package TDP Lock Enable	Disabled[Default] Enabled	Package TDP Lock Enable.
Power Limit 1 Value (Watt)	0	Power Limit 1 Value (Watt).
Power Limit 1 time (Second)	0-8[Default]	Power Limit 1 time (Second).
Power Limit 2 Switch	Disabled[Default] Enabled	Power Limit 2 Switch.
Power Limit 2 Value (Watt)	0	Power Limit 2 Value (Watt).
HardWare O.C	Disabled[Default] Enabled	HardWare O.C.
Graphics Core Ratio Limit	0-10[Default]	Graphics Core Ratio Limit.
Graphics Core Frequency	Graphics Core Frequency.	
Core Ratio Limit	0	Core Ratio Limit.

3.6.6.2 North Bridge Configuration



Item	Options	Description
Performance Memory Profiles	Automatic[Default] Manual XMP Profile 1 XMP Profile 2	The selection of Performance Memory Profiles which impacts memory sizing behavior.

3.6.6.3 OverVoltage Configuration



Item	Options	Description
Memory Voltage (I/O)	1.50V[Default] 1.55V 1.60V 1.65V	Set memory voltage.
Memory Voltage Control (IC)	0-1500[Default]	Set Memory voltage. The unit is mV.
SVID Override Voltage Target(mV)	0	SVID Override Voltage Target, up to 2500mV.
CPU Voltage Offset (mV)	0	CPU Voltage Offset, 0mV-998mV.
GT Voltage Offset (mV)	0	GT Voltage Offset, 0mV-998mV.
RING Voltage Offset (mV)	0	RING Voltage Offset, 0mV-998mV.
UNCORE Voltage Offset (mV)	0	UNCORE Voltage Offset , 0mV-998mV.
IOA Voltage Offset (mV)	0	IOA Voltage Offset, 0mV-998mV
IOD Voltage Offset (mV)	0	IOD Voltage Offset, 0mV-998mV

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, or link to **\\Driver_Chipset\\Intel\\SEMX-H81**.



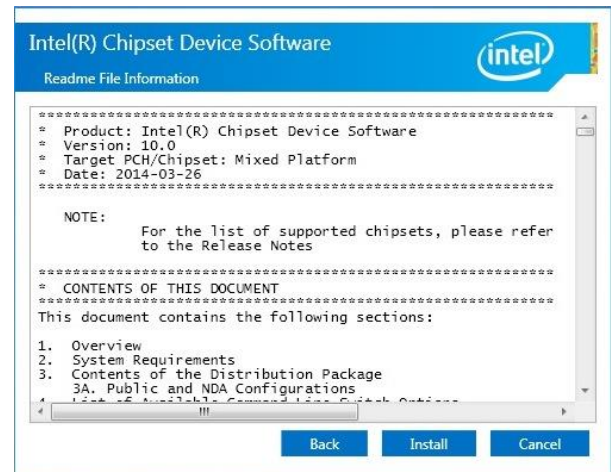
Note: The installation procedures and screen shots in this section are based on Windows 7 operating system.



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



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



Step 3. Select **Install**.



Step 4. Select **Finish** to complete Installation.

4.2 Install VGA Driver

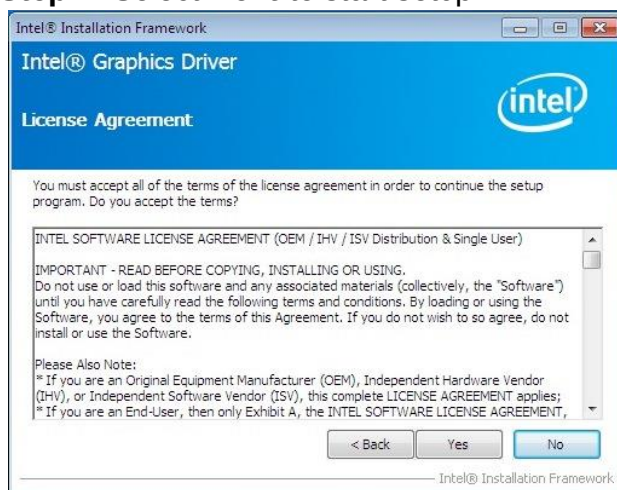
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\\VGA\SEMX-H81_VGA**.



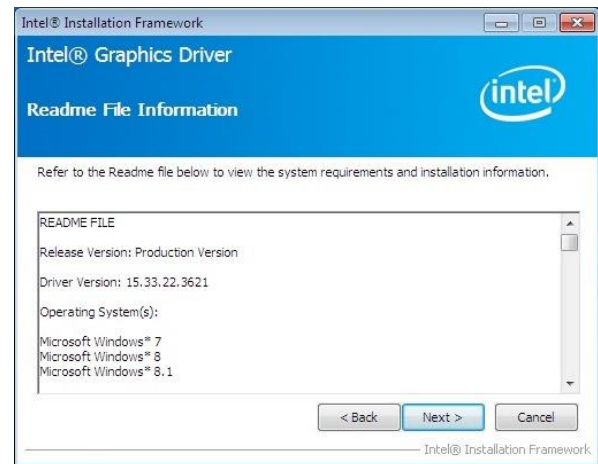
Note: The installation procedures and screen shots in this section are based on Windows 7 operating system.



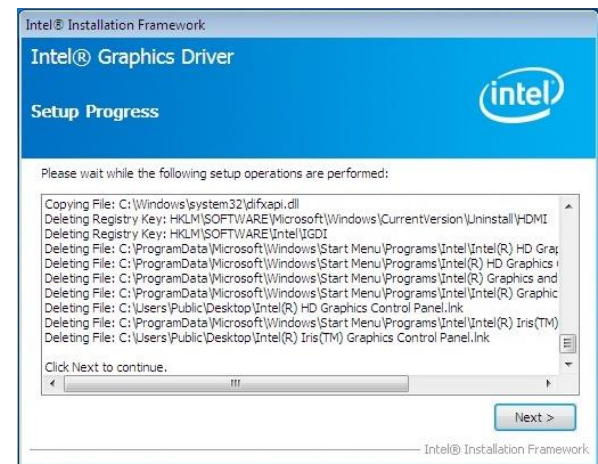
Step 1. Select Next to start setup.



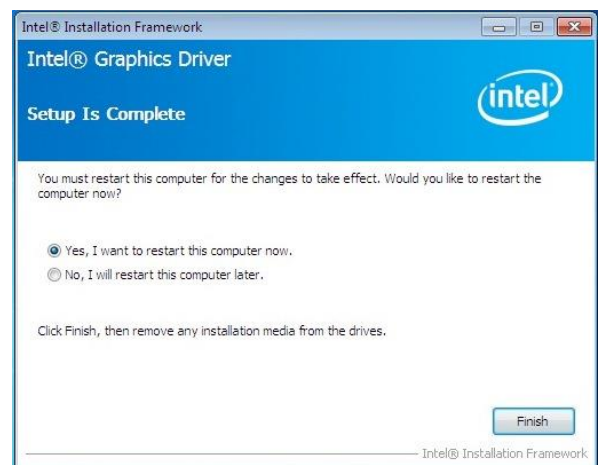
Step 2. Select Yes to the next step.



Step 3. Select Next to continue installation.



Step 4. Select Next.



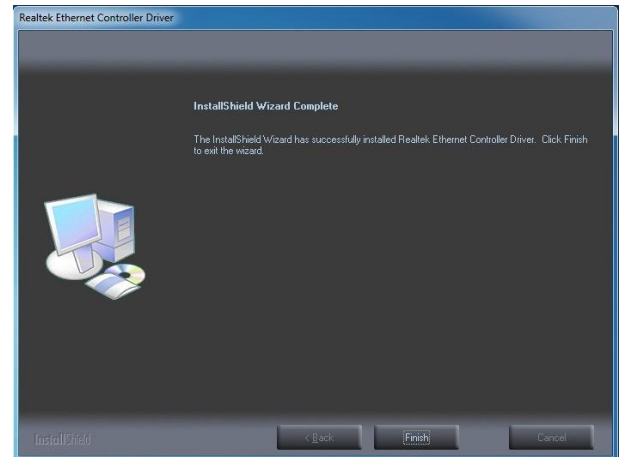
Step 5. Select Finish to complete Installation.

4.3 Install LAN Driver (For Realtek 8111E Gigabit Ethernet)

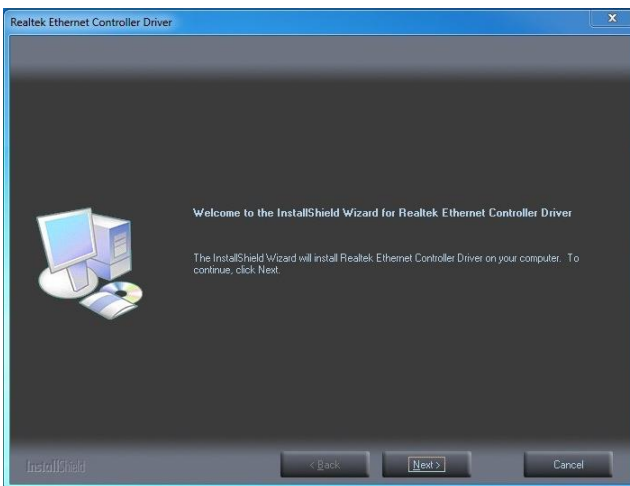
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\\Driver_Gigabit\\Realtek\\RTL8111E\\SEMX-H81_Gigabit**.



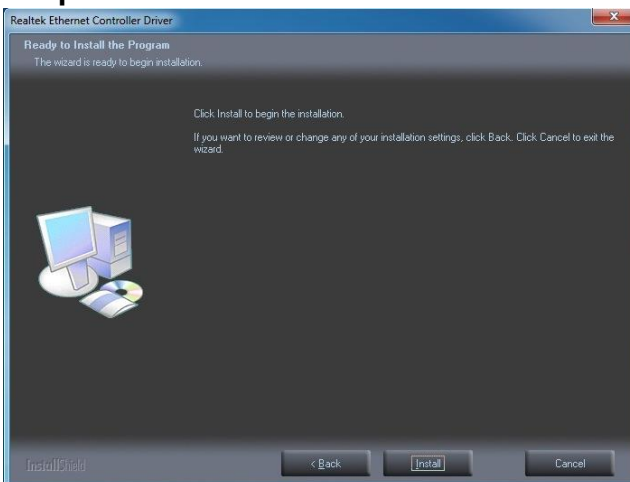
Note: The installation procedures and screen shots in this section are based on Windows 7 operation system.



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



Step 1. Click **Next** to Install.



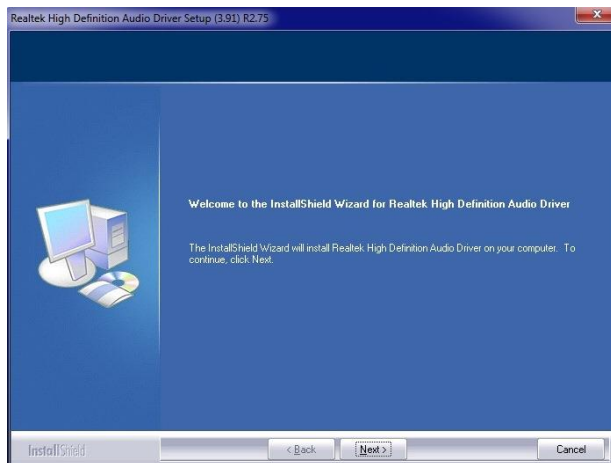
Step 2. Click **Install** to begin the installation.

4.4 Install Audio Driver (For Realtek ALC892 HD Audio)

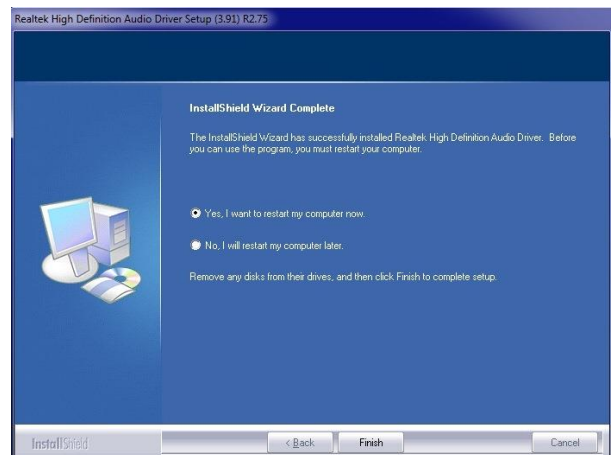
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\\Driver_Audio\\Realtek\\ALC892\\SEM-X-H81_Audio**.



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



Step1. Click **Next** to Install.



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

4.5 Install USB3.0 Driver

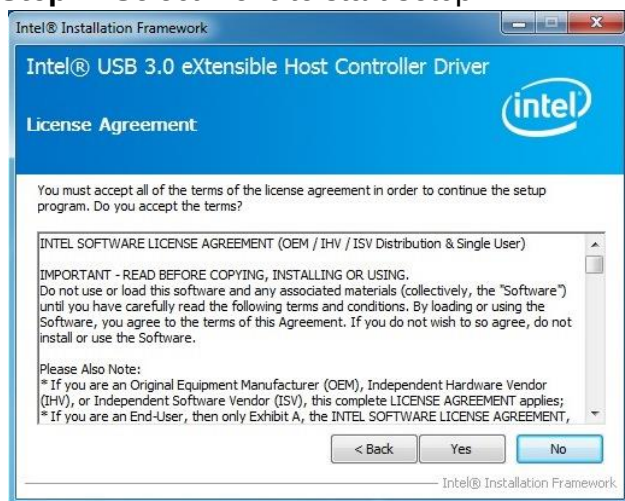
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\\Utility\\SEM-X-H81_USB3.0**.



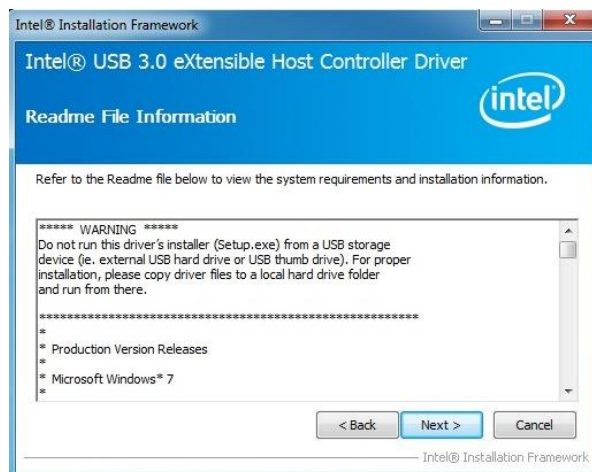
Note: The installation procedures and screen shots in this section are based on Windows 7 operating system.



Step 1. Select **Next** to start setup.



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



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



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



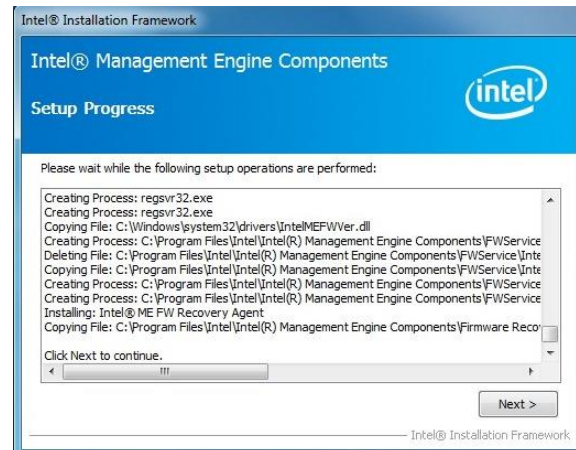
Step 5. Select **Finish** to complete Installation.

4.6 Install ME 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, or link to **\\Utility\\SEM-X-H81_ME**.



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



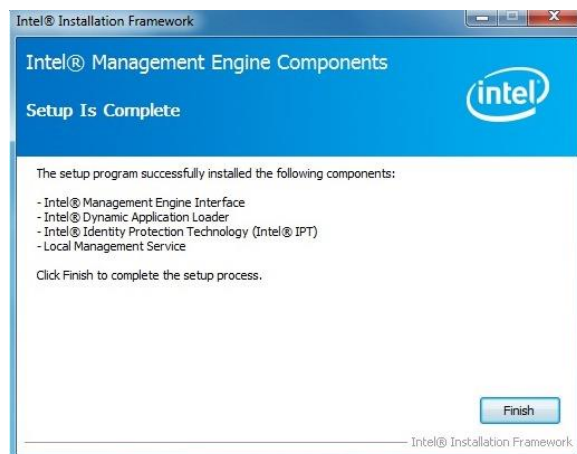
Step 3. Select **Next** to continue installation.



Step 1. Select **Next** to start setup.

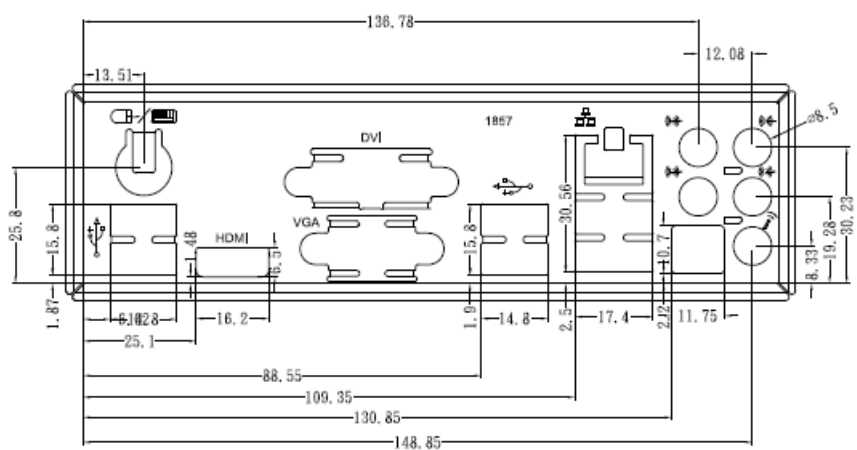
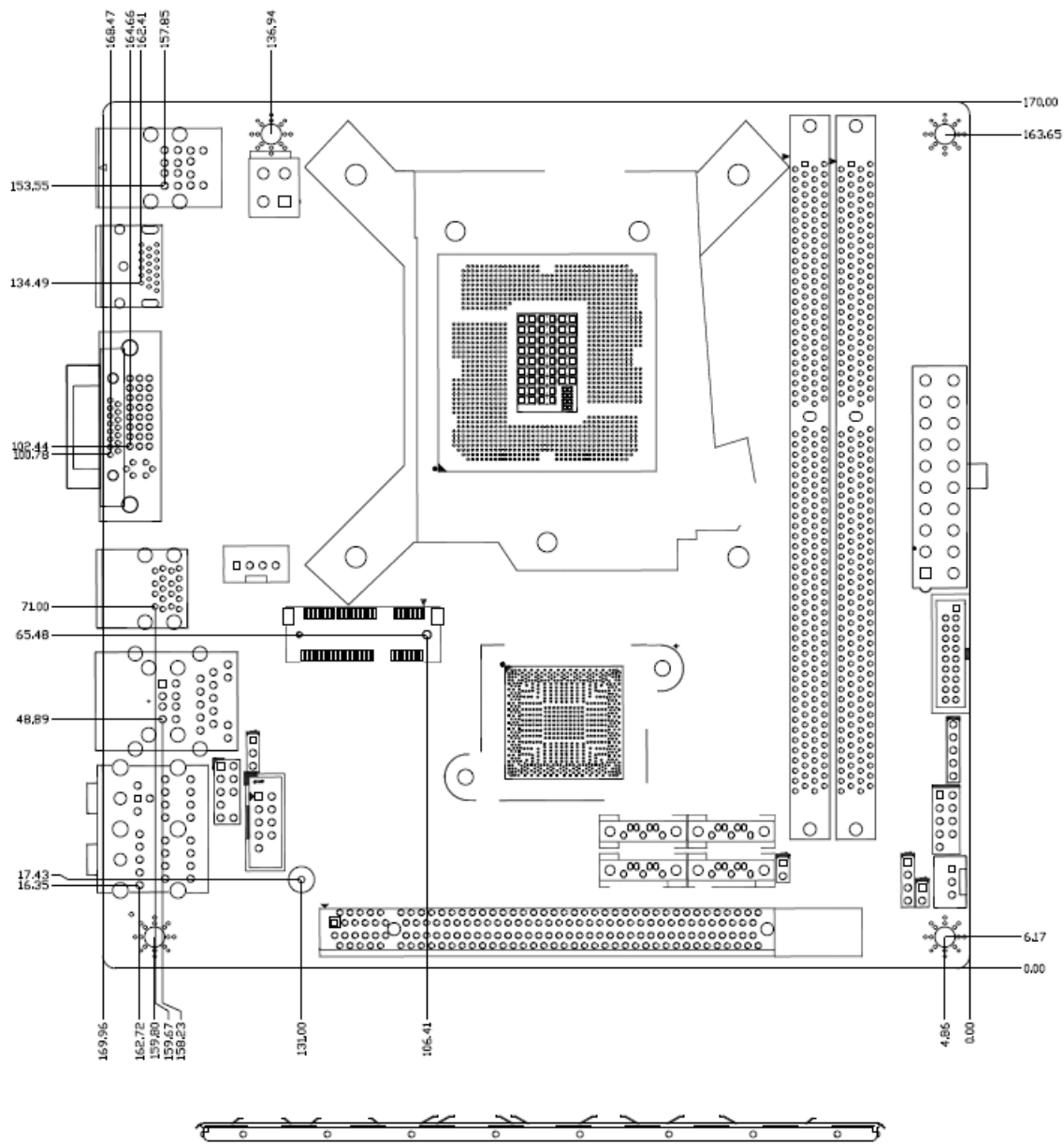


Step 2. Select **Yes** to the next step.



Step 4. Select **Finish** to complete Installation.

5. Mechanical Drawing



Unit: mm

