SEAX-H81

Intel® H81 Express Chipset
ATX Motherboard

User's Manual

1st Ed – 11 August 2014

Part No. E2047SA8100R

FCC Statement

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

Notice

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

Copyright Notice

Trademark Acknowledgement

Brand and product names are trademarks or registered trademarks of their respective owners.

Disclaimer

Avalue Technology Inc. reserves the right to make changes, without notice, to any product, including circuits and/or software described or contained in this manual in order to improve design and/or performance. Avalue Technology assumes no responsibility or liability for the use of the described product(s), conveys no license or title under any patent, copyright, or masks work rights to these products, and makes no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless

otherwise specified. Applications that are described in this manual are for illustration purposes only. Avalue Technology Inc. makes no representation or warranty that such application will be suitable for the specified use without further testing or modification.

Life Support Policy

Avalue Technology's PRODUCTS ARE NOT FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE PRIOR WRITTEN APPROVAL OF Avalue Technology Inc.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into body, or (b) support or sustain life and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

A Message to the Customer

Avalue Customer Services

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

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

Technical Support

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

To receive the latest version of the user's manual; please visit our Web site at:

http://www.avalue.com.tw/

Content

1. Getting Started

1.1 Safety Precautions

Warning!

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

Caution!

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

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
1st	August 2014	Avalue	Initial Release

1.4 Manual Objectives

This manual describes in details Avalue Technology SEAX-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 SEAX-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, 64Mbit SPI Flash ROM
System Chipset	Intel® H81 Express Chipset
I/O Chip	• Nuvoton NCT6779
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, 3 x PCI Express x 1, 3 x PCI
Display	
Chipset	• Intel® H81 integrated
Resolution	• Dual display supported Supports HDMI with max. resolution 4096 x 2160 @ 24 Hz / 1920 x 1080 @ 60 Hz Supports VGA with max. resolution 1920 x 1200 @ 60 Hz
Ethernet	
Chipset	• 1 x Realtek RTL8111E PCI-Express Gigabit Ethernet
Ethernet Interface	• 10/100/1000 Gigabit Ethernet
Audio	
Chipset	• Realtek ALC662 HD Audio Decoding Controller
Audio Interface	• Line-out, Mic-In, Line-in
I/O	
Rear Side External I/O Connector	• 1 x RS-232 DP9 connector, Pin 9 without power • 1 x RJ-45 with dual deck USB2.0 connector • 1 x Dual deck USB 2.0 connector • 1 x VGA • 1 x HDMI • 1 x Keyboard PS2 and 1 x Mouse PS2 • 1 x Line-out, 1 x Mic in, 1 x Line-in • 1 x Parallel port
Internal I/O Connector	• 2 x SATA III connector, 2 x SATA II connector • 1 x 2 x 5 pin, pitch 2.54mm connector for RS-232, Pin 9 without power

	• 1 x 2 x 5 pin, pitch 2.54mm connector for 8 bit GPIO • 2 x 2 x 5 pin, pitch 2.54mm connector for USB 2.0 • 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 horizontal 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 LPC • 1 x 1 x 3 pin, pitch 2.54mm connector for SPDIF • 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 1 x 3 pin, pitch 2.54mm connector for Keyboard/Mouse Disable/Enable • 1 x 2 x 12 pin ATX power connector • 1 x 2 x 4 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)	• 11.61" x 7.87" (295 mmx 200 mm)
Weight	• 0.50 kg

Note:

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

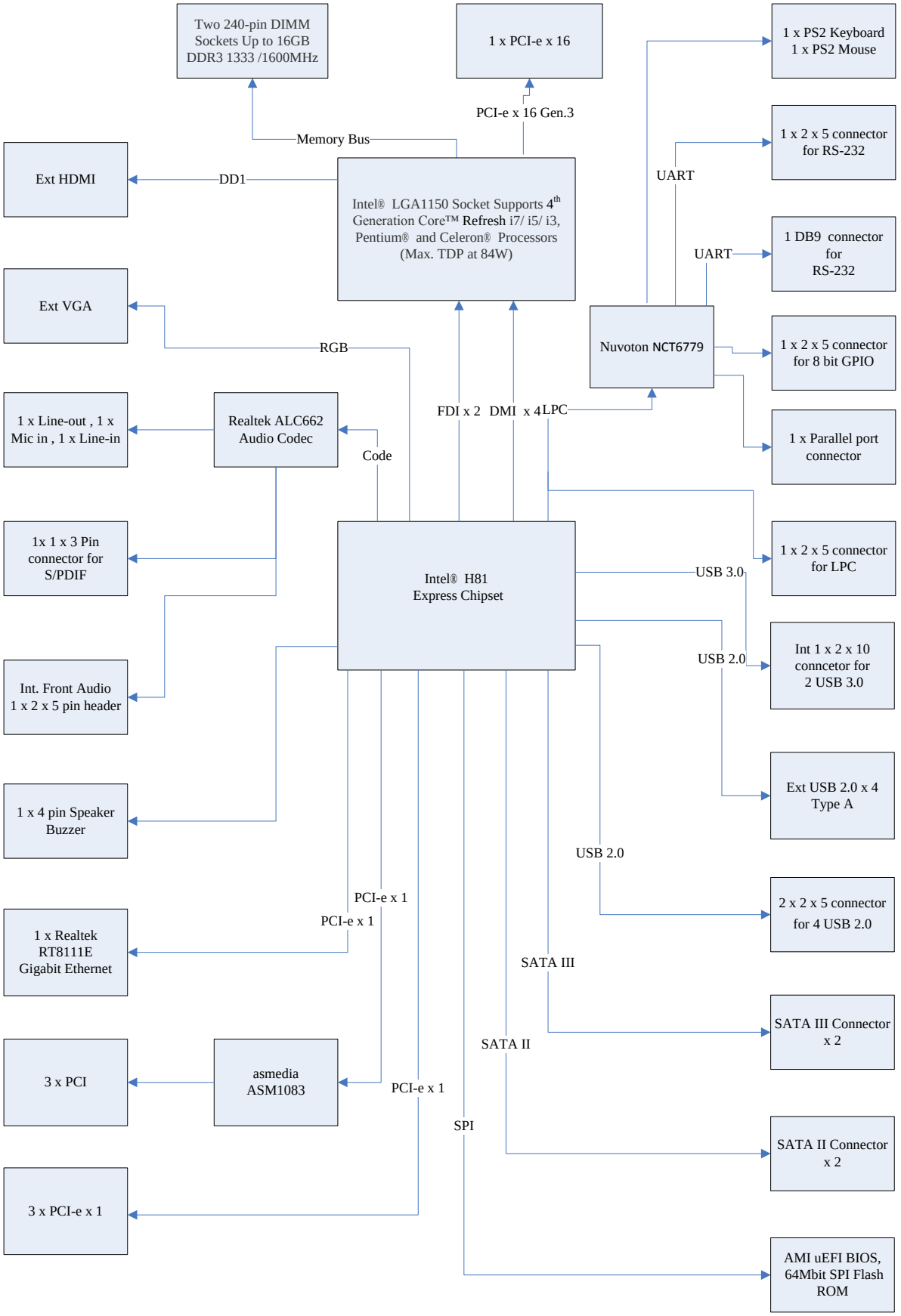
Random Vibration Test (Operation) Test PSD: 0.00202G²/Hz, 1.0 Grms

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

Note: Specifications are subject to change without notice.

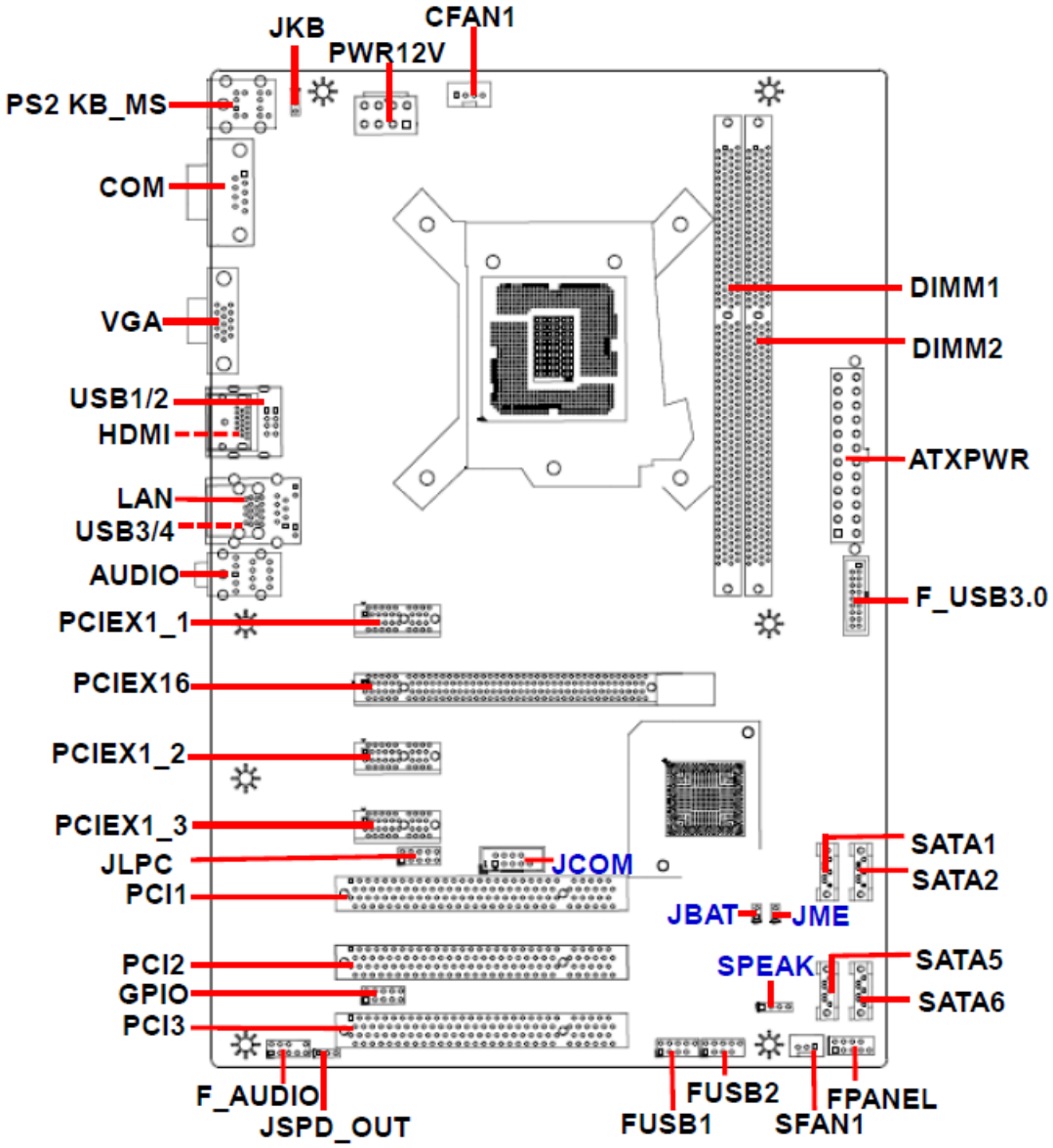
1.6 Architecture Overview—Block Diagram

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



2. Hardware Configuration

2.1 Product Overview



2.2 Installation Procedure

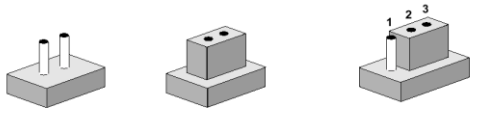
This chapter explains you the instructions of how to setup your system.

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.



Open Closed Closed 2-3

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

Open Closed Closed 2-3

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

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

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

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

Jumpers

Label	Function	Note
JKB	Keyboard power select jumper	1 x 3 header, pitch 2.54 mm
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

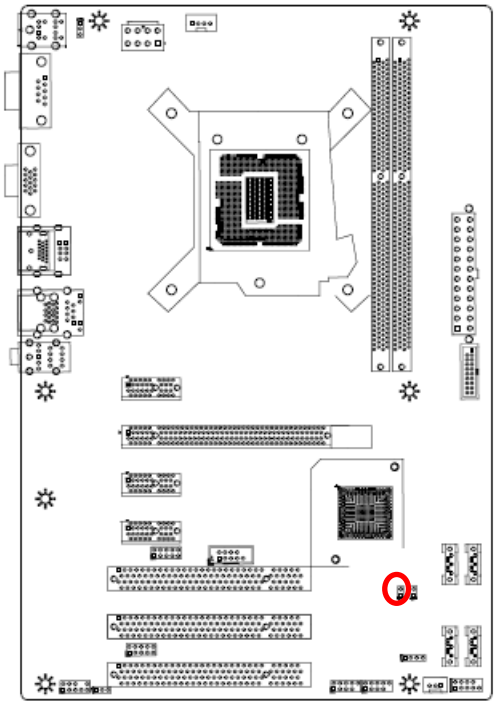
Connectors

Label	Function	Note
FPANEL	Front Panel Switches	2 x 5 header, pitch 2.54 mm
PCIEX16	PCI-e x 16	
PCIE1_1	PCI Express x 1 connector 1	
PCIE1_2	PCI Express x 1 connector 2	
PCIE1_3	PCI Express x 1 connector 3	

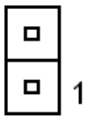
PCI1/2/3	PCI slot 1/2/3	
GPIO	General purpose I/O connector	2 x 5 header, pitch 2.54 mm
HDMI	HDMI connector	
PWR12V	ATX +12V Power connector	2 x 4 wafer, pitch 4.20 mm
ATXPWR	ATX Power connector	2 x 10 wafer, pitch 4.20 mm
SPEAK	Speaker Headers	1 x 4 header, pitch 2.54 mm
COM	DE-9 male Serial port connector	
JCOM	Serial port connector	2 x 5 header, pitch 2.54 mm
SATA1/2/5/6	Serial ATA connector 1/2/5/6	
LAN	RJ-45 Ethernet	
USB1/2	USB connector 1/2	
USB3/4	USB connector 3/4	
FUSB1/2	USB Port Headers (USB 2.0)	2 x 2 x 5 header, pitch 2.54 mm
F_USB3.0	USB Port Headers (USB 3.0)	2 x 10 wafer, pitch 2.00 mm
SFAN1	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	
VGA	VGA connector	
F_AUDIO	Front Panel Audio Connection Header	2 x 5 header, pitch 2.54 mm
AUDIO	Audio connector	
JSPD_OUT	Sony/Philips Digital Interface	1 x 3 header, pitch 2.54 mm
PS2 KB_MS	Keyboard & Mouse	
JLPC	LPC connector	2 x 5 header, pitch 2.54 mm

2.4 Setting Jumpers & Connectors

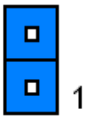
2.4.1 Clear CMOS (JBAT1)



Normal*



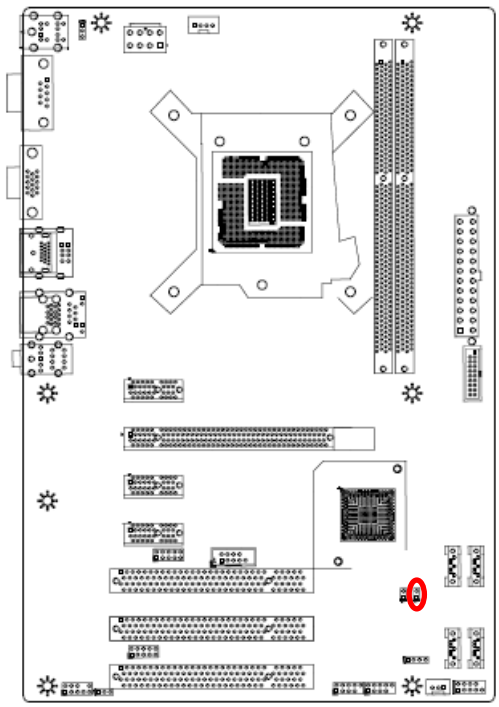
Clear CMOS



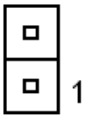
Pin	Define
Open	Normal
Short	Clear CMOS

*** Default**

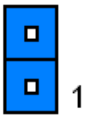
2.4.2 ME update (For Flash BIOS use) (JME)



Open*

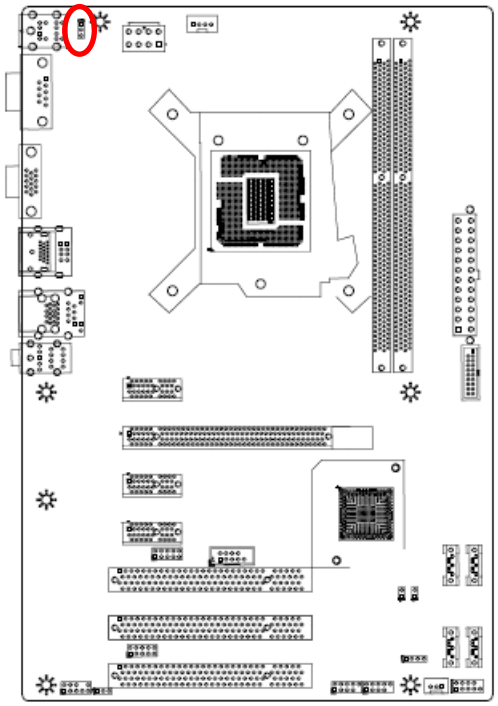


Short

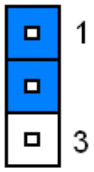


*** Default**

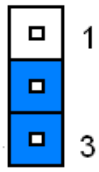
2.4.3 Keyboard power select jumper (JKB)



Disabled*



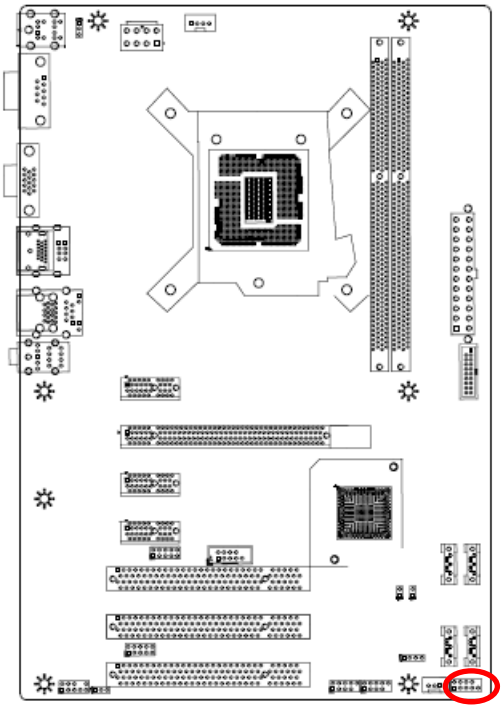
Enabled

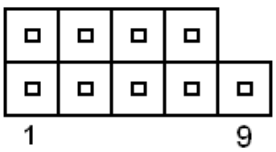


Pin	Define
1-2	Disabled
2-3	Enabled

*** Default**

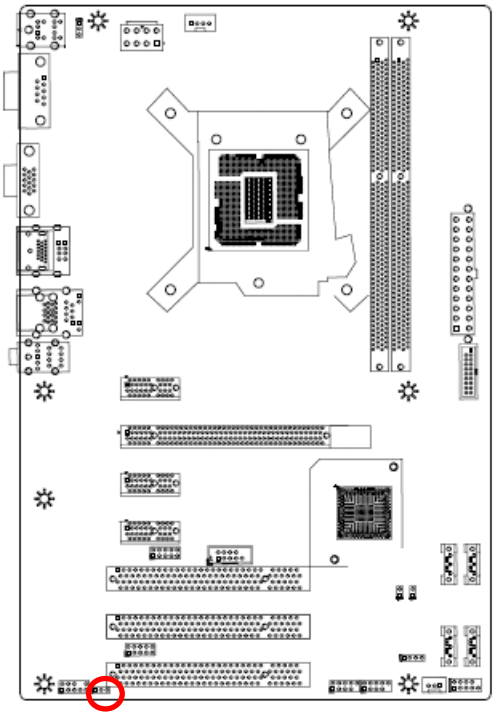
2.4.4 Front Panel Switches (FPANEL)

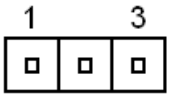




Signal	PIN	PIN	Signal
+HD_LED	1	2	+P_LED
-HD_LED	3	4	-P_LED
RST	5	6	PWR_ON
RST	7	8	-PWR_ON
NC	9		

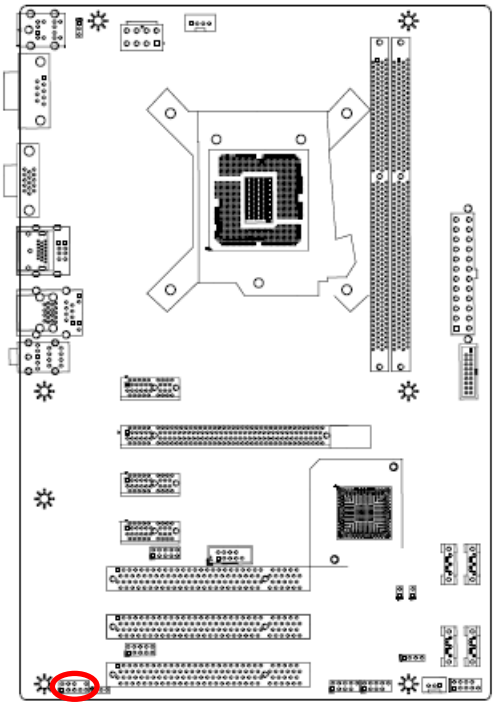
2.4.5 Sony/Philips Digital Interface (JSPD_OUT)

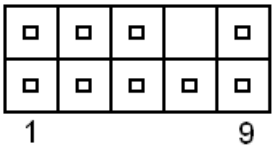




PIN	Signal
1	VCC
2	OUT
3	GND

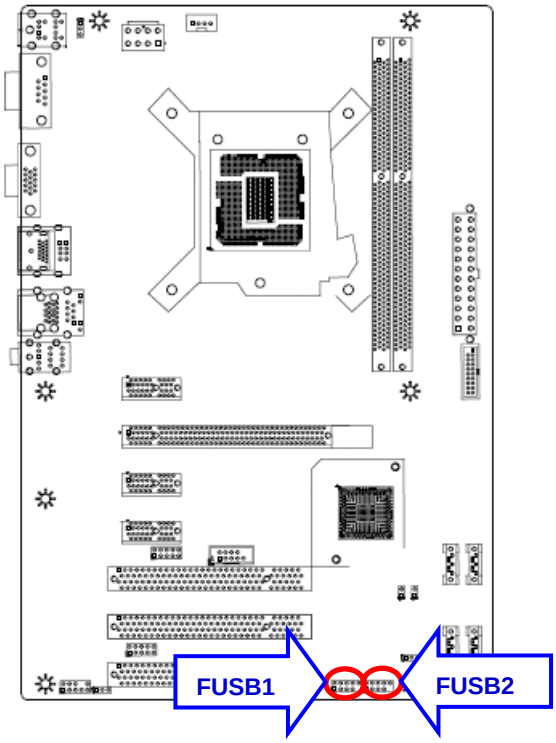
2.4.6 Front Panel Audio Connection Header (F_AUDIO)

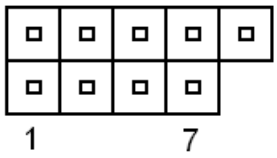




Signal	PIN	PIN	Signal
PORT1L	1	2	GND
PORT1R	3	4	PRESENCE#
PORT2R	5	6	SENSE1_RETURN
SENSE_SEND	7		
PORT2L	9	10	SENSE2_RETURN

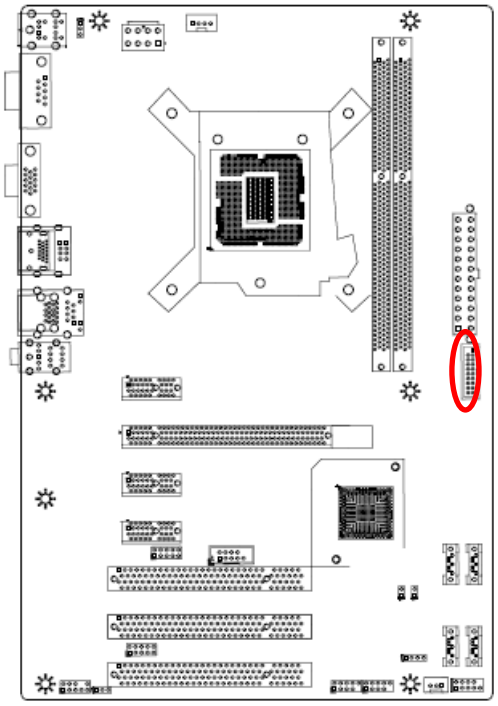
2.4.7 USB Port Headers - USB2.0 (FUSB1/2)

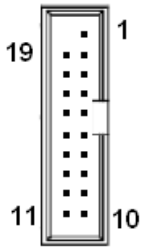




Signal	PIN	PIN	Signal
VCC	1	2	VCC
DATA -	3	4	DATA -
DATA +	5	6	DATA +
GND	7	8	GND
		10	NC

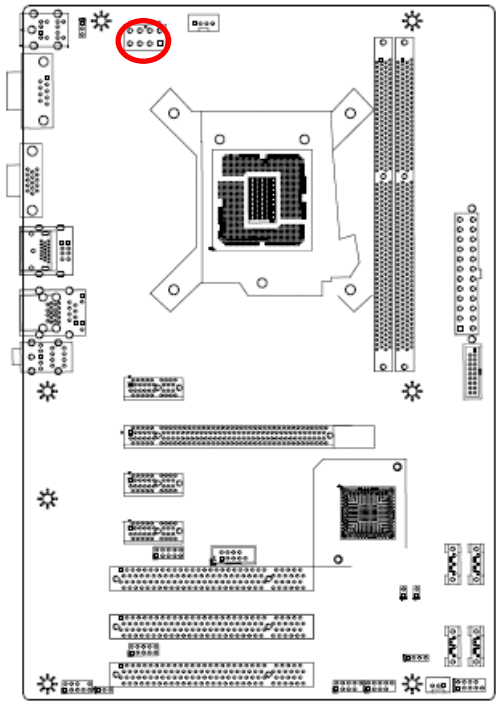
2.4.8 USB Port Headers – USB3.0 (FUSB3.0)

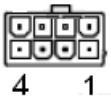




Signal	PIN	PIN	Signal
		1	VCC
VCC	19	2	SSRX-
SSRX-	18	3	SSRX+
SSRX+	17	4	GND
GND	16	5	SSTX-
SSTX-	15	6	SSTX+
SSTX+	14	7	GND
GND	13	8	D-
D-	12	9	D+
D+	11	10	ID

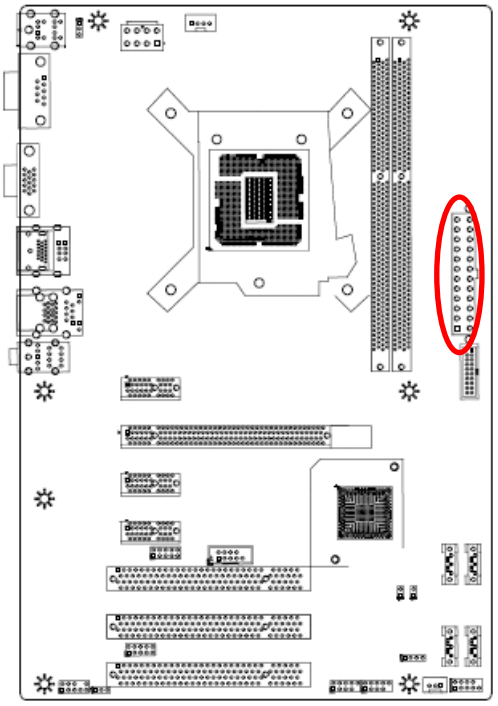
2.4.9 ATX +12V Power connector (PWR12V)

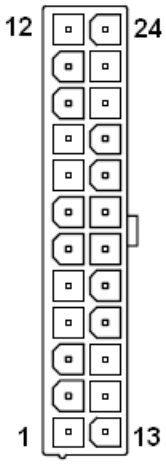




Signal	PIN	PIN	Signal
GND	1	5	+12V
GND	2	6	+12V
GND	3	7	+12V
GND	4	8	+12V

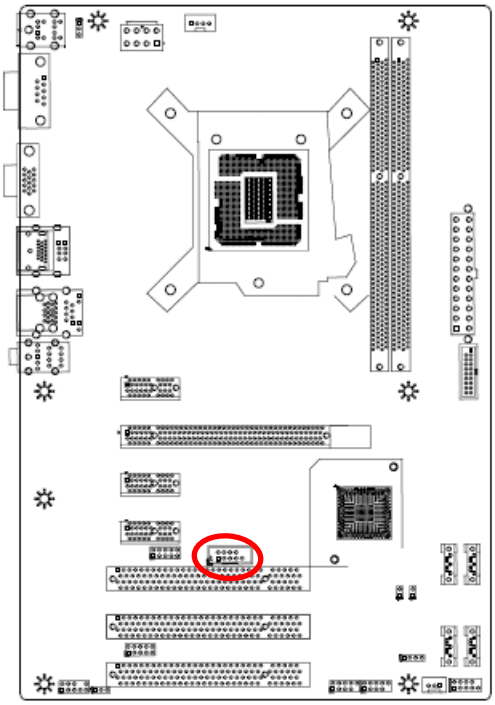
2.4.10 ATX Power connector (ATXPWR)

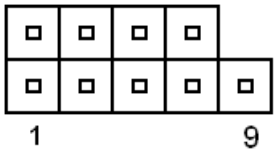




Signal	PIN	PIN	Signal
+3.3V	12	24	GND
+12V	11	23	+5V
+12V	10	22	+5V
5VSB	9	21	+5V
PWRGD	8	20	NC
GND	7	19	GND
+5V	6	18	GND
GND	5	17	GND
+5V	4	16	PS-ON
GND	3	15	GND
+3.3V	2	14	-12V
+3.3V	1	13	+3.3V

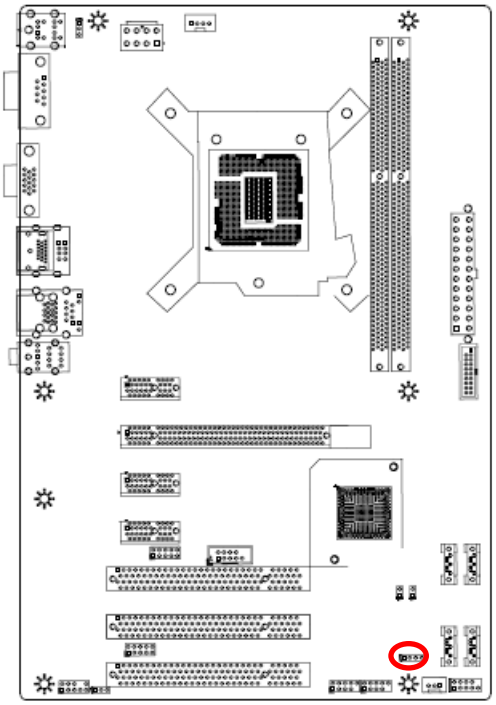
2.4.11 Serial port connector (JCOM)

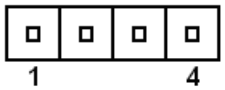




Signal	PIN	PIN	Signal
NDCDB	1	2	NSINB
NSOUTB	3	4	NDTRB
GND	5	6	NDSRB
NRTSB	7	8	NCTSB
NRIB	9		

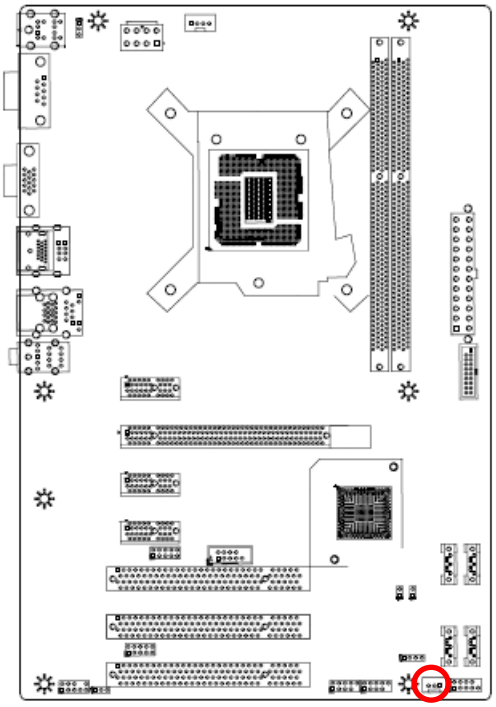
2.4.12 Speaker connector (SPEAK)

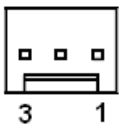




PIN	Signal
1	INTSPL+
2	NC
3	NC
4	INTSPR-

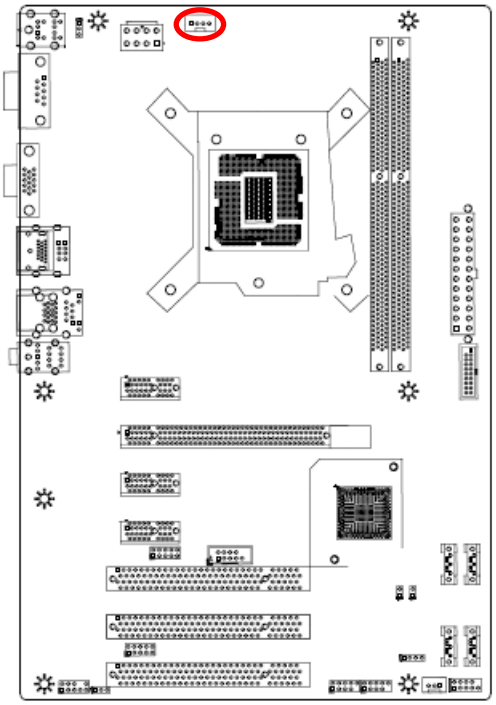
2.4.13 System Fan connector (SFAN1)

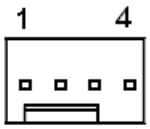




PIN	Signal
1	RPM
2	+12V
3	Ground

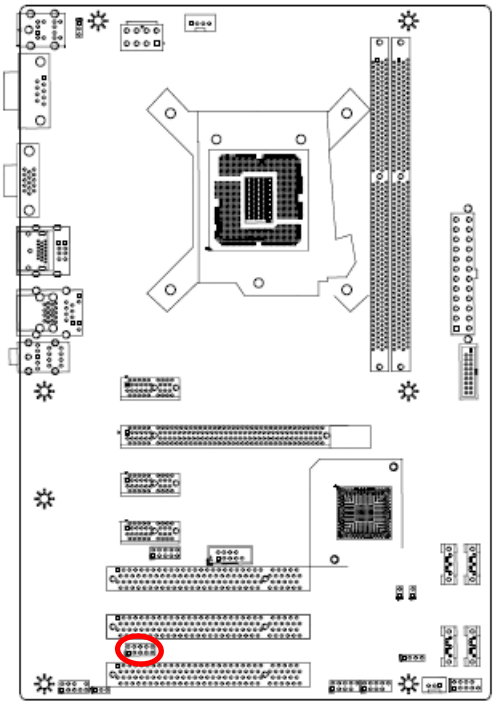
2.4.14 CPU Fan connector (CFAN1)

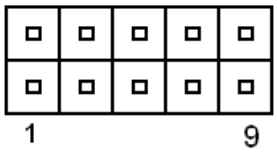




PIN	Signal
1	Ground
2	+12V
3	RPM
4	Control

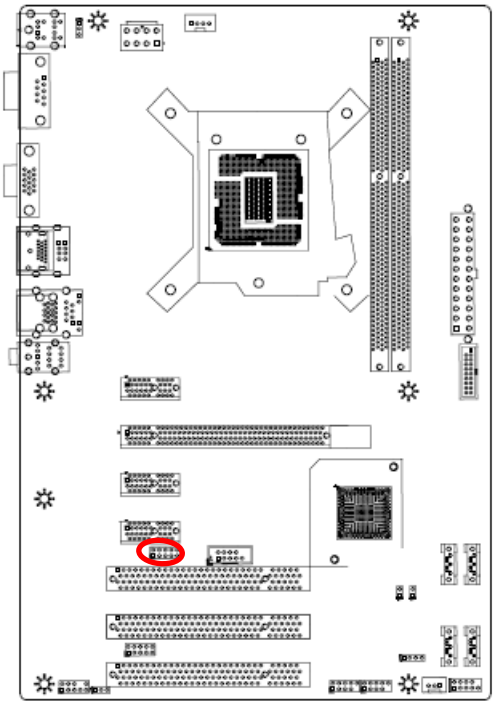
2.4.15 General purpose I/O connector (GPIO)

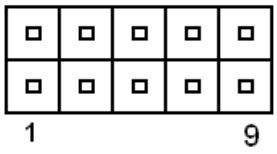




Signal	PIN	PIN	Signal
VCC3	1	2	GND
6779_GPI0	3	4	6779_GPO4
6779_GPI1	5	6	6779_GPO5
6779_GPI2	7	8	6779_GPO6
6779_GPI3	9	10	6779_GPO7

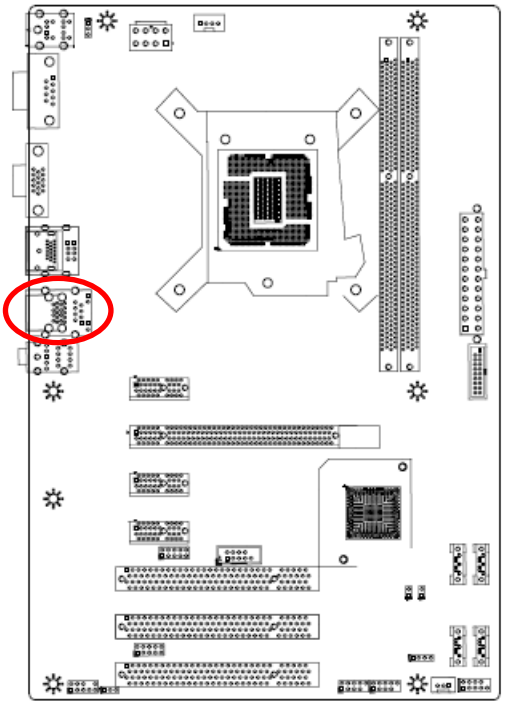
2.4.16 LPC connector (JLPC)

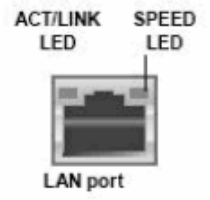




Signal	PIN	PIN	Signal
L_AD3	1	2	VCC3
L_AD2	3	4	PLTRST_BUF
L_AD1	5	6	L_FRAME_N
L_AD0	7	8	CLK_PCI_DUG
NC	9		

2.4.17 Gigabit LAN (RJ-45) connector (LAN)





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 <Del> immediately after switching the system on, or
By pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test).

Press DEL to enter setup, 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.

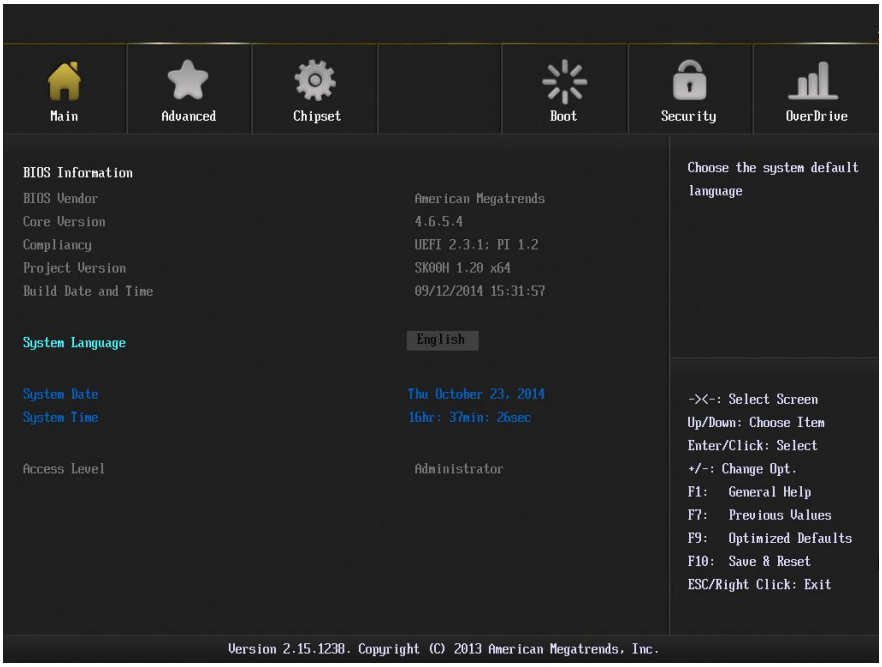
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your systems manufacturer to provide the absolute maximum performance and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

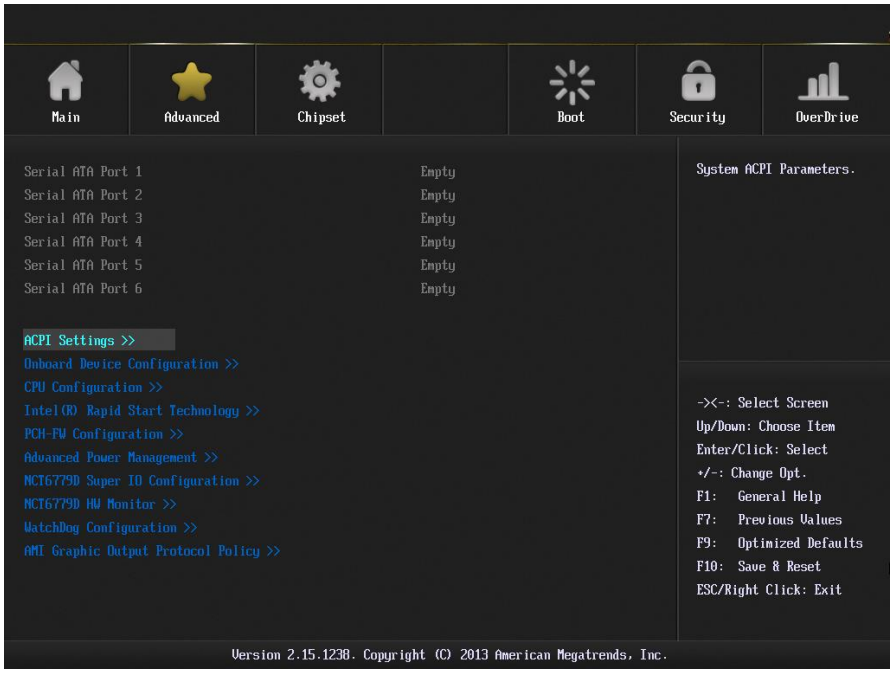
3.6.1.3 System Time

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

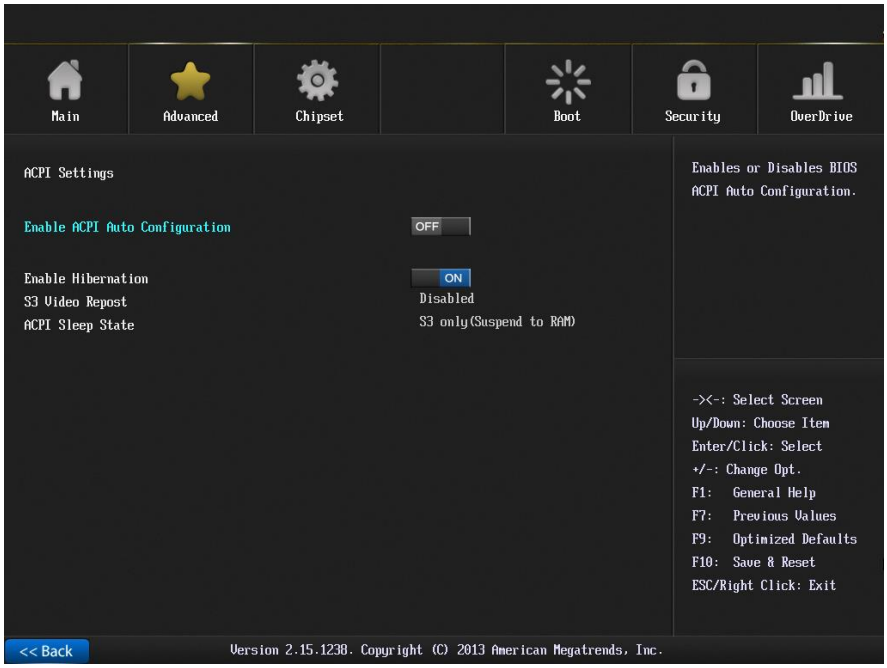
Note: BIOS setup screens shown in this chapter are for reference only, and may not exactly match what you see on your screen. Visit the Avalue website (www.avalue.com.tw) to download the latest product and BIOS information.

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.



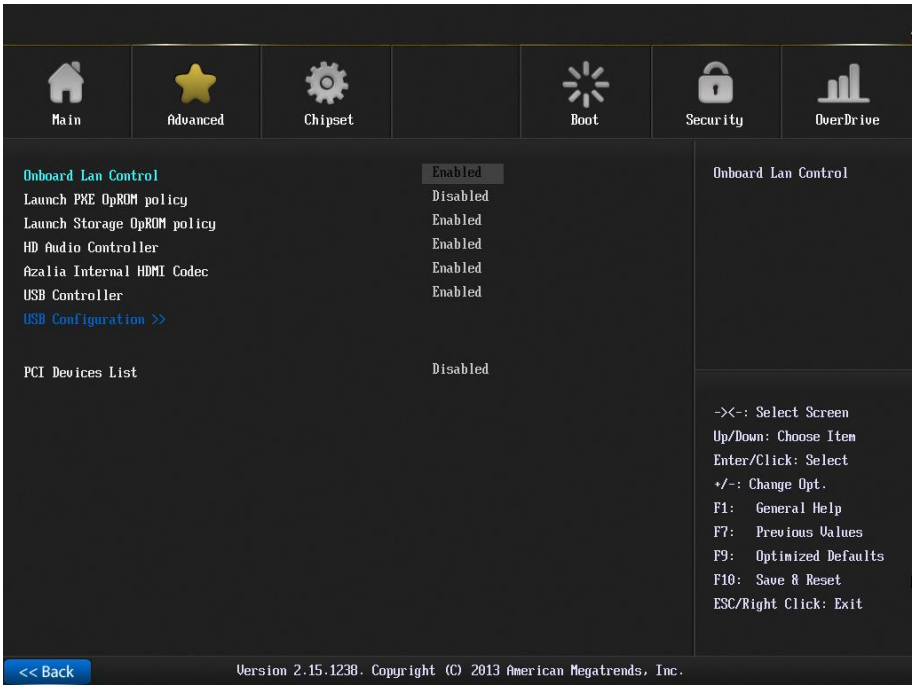
3.6.2.1 ACPI Settings



Item	Options	Description
Enable ACPI Auto Configuration	Disabled**[Default]** Enabled	Enable or Disable BIOS ACPI Auto Configuration.
Enable Hibernation	Disabled	Enables or Disables System ability to

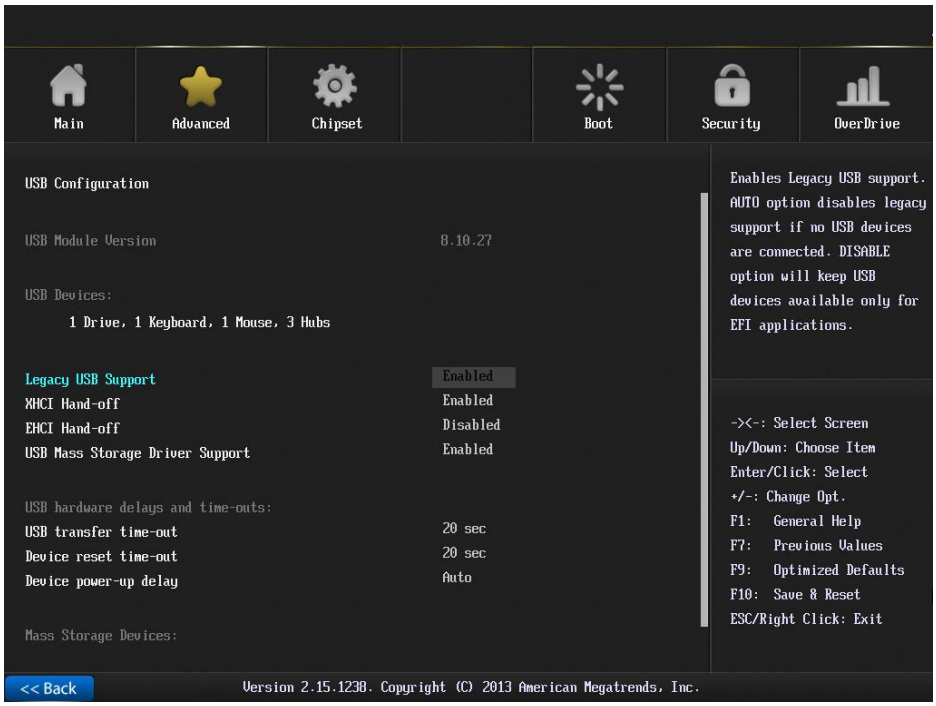
	Enabled**[Default]**	Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
S3 Video Repost	Disabled**[Default]** Enabled	Enable or Disable S3 Video Repost.
ACPI Sleep State	Suspend Disabled S1 only(CPU Stop Clock) S3 only(Suspend to RAM) **[Default]**	Select ACPI sleep state the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

3.6.2.2 Onboard Device Configuration



Item	Options	Description
Onboard Lan Control	Disabled Enabled**[Default]**	Onboard Lan Control.
Launch PXE OpROM policy	Disabled**[Default]** Enabled	Control the execution of UEFI and Legacy PXE OpROM.
Launch Storage OpROM policy	Disabled Enabled**[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 Controller	Disabled Enabled**[Default]**	Control of USB ports.
PCI Devices List	Disabled**[Default]** Enabled	PCI Device List.

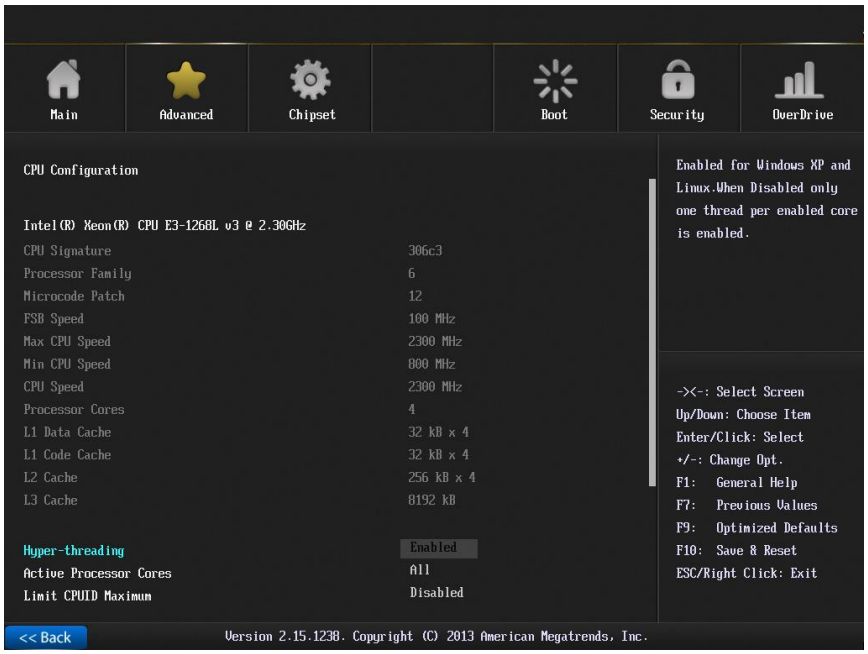
3.6.2.2.1 USB Configuration



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

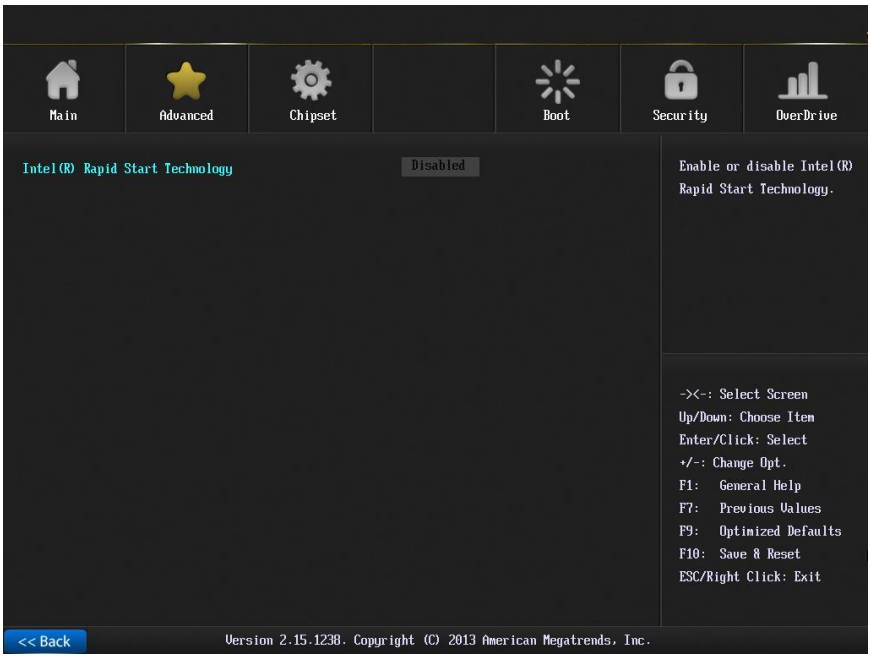
Use the CPU configuration menu to view detailed CPU specification and configure the CPU.



Item	Options	Description
Hyper-threading	Disabled Enabled**[Default]**	Enabled for Windows XP and Linux. When Disabled only one thread per enabled core is enabled.
Active Processor Cores	All**[Default]** 1 2 3	Number of cores to enable in each processor package.
Limit CPUID Maximum	Disabled**[Default]** Enabled	Disabled for Windows XP.

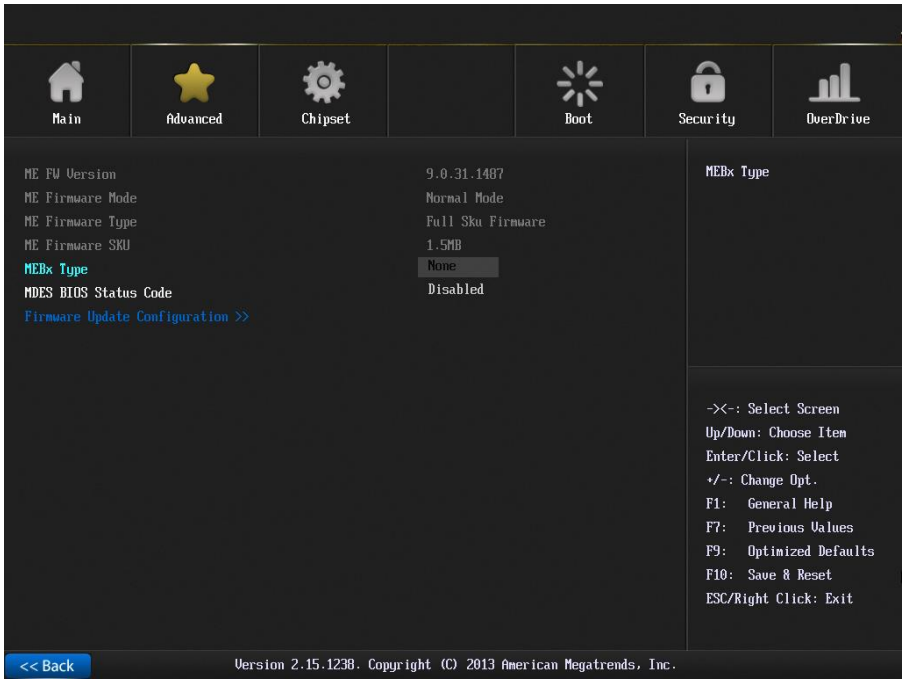
Execute Disable Bit	Disabled Enabled**[Default]**	XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3.)
Intel Virtualization Technology	Disabled Enabled**[Default]**	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.

3.6.2.4 Intel® Rapid Start Technology



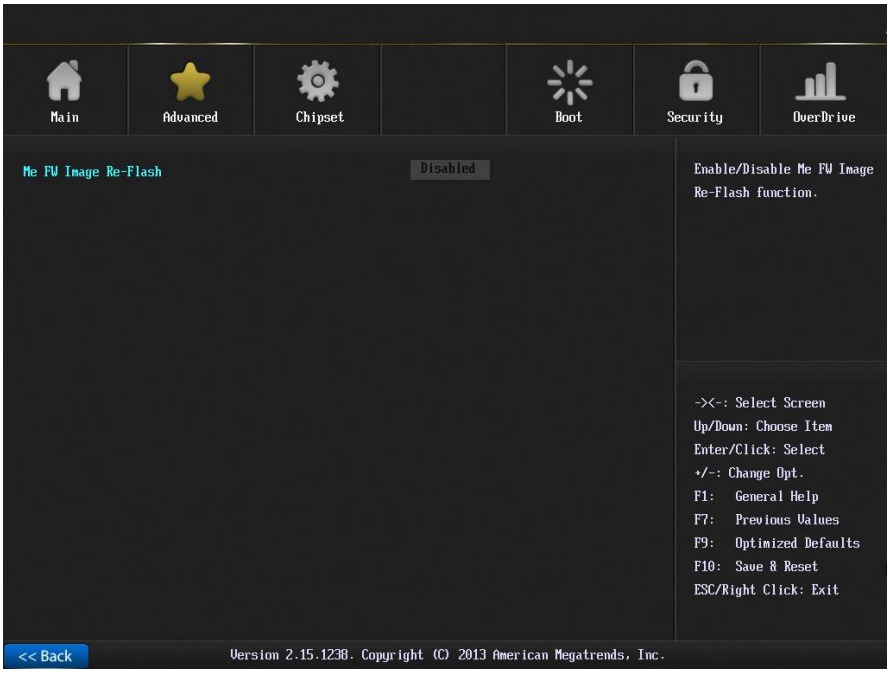
Item	Options	Description
Intel® Rapid Start Technology	Disabled**[Default]** Enabled	Enable or disable Intel® Rapid Start Technology.

3.6.2.5 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.	

3.6.2.5.1 Firmware Update Configuration

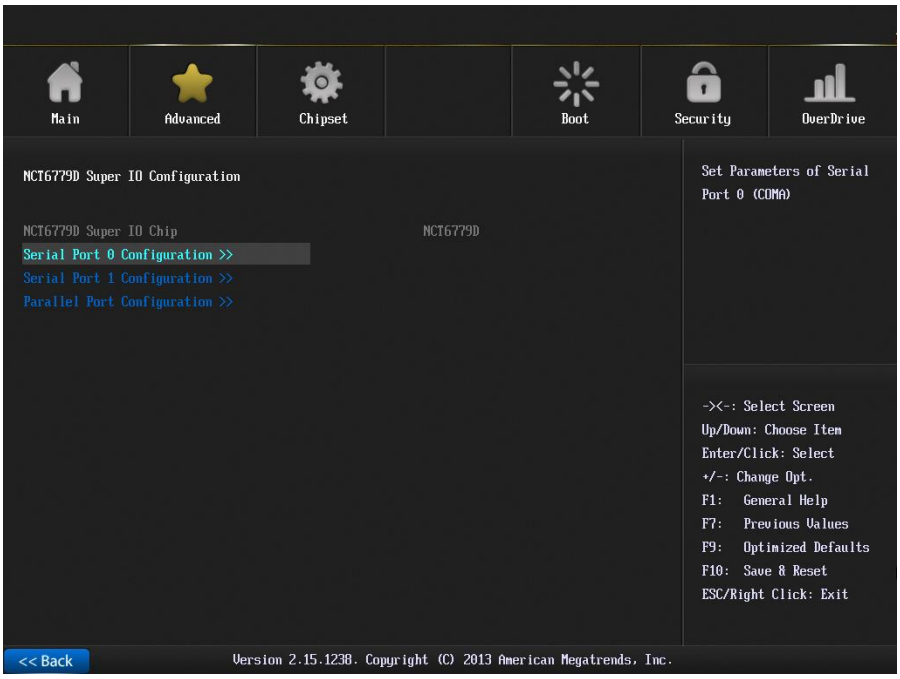


Item	Options	Description
Me FW Image Re-Flash	Disabled**[Default]** Enabled	Enable/Disable Me FW Image Re-Flash function.

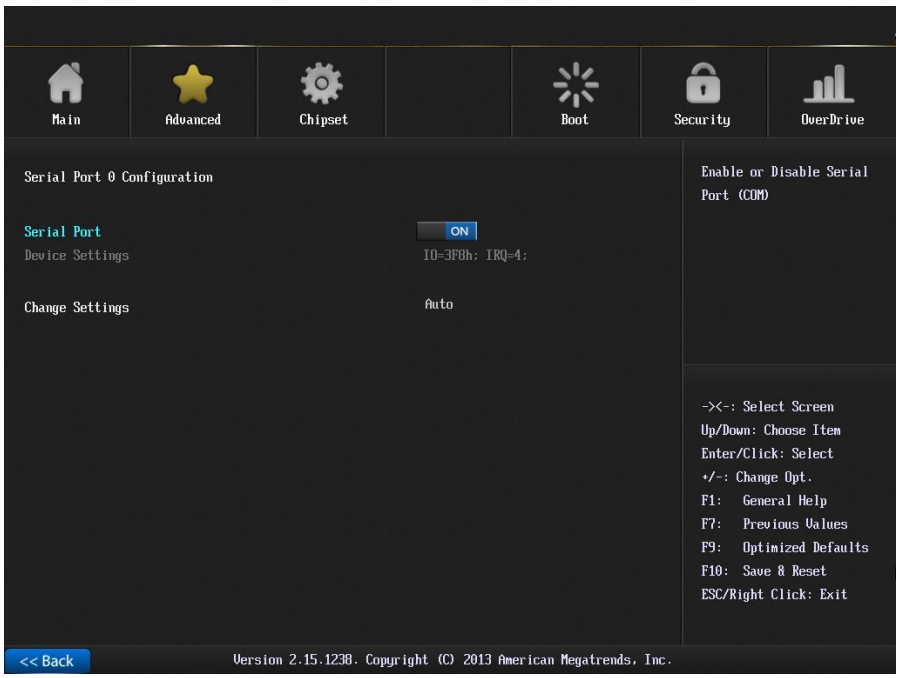
3.6.2.6 Advanced Power Management

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.

3.6.2.7 NCT6779D Super IO Configuration

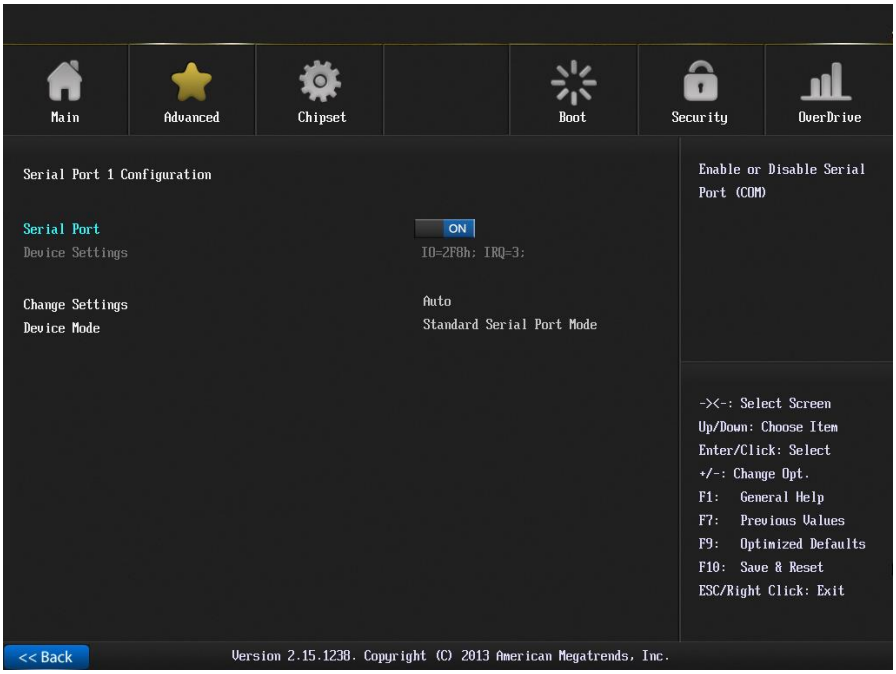


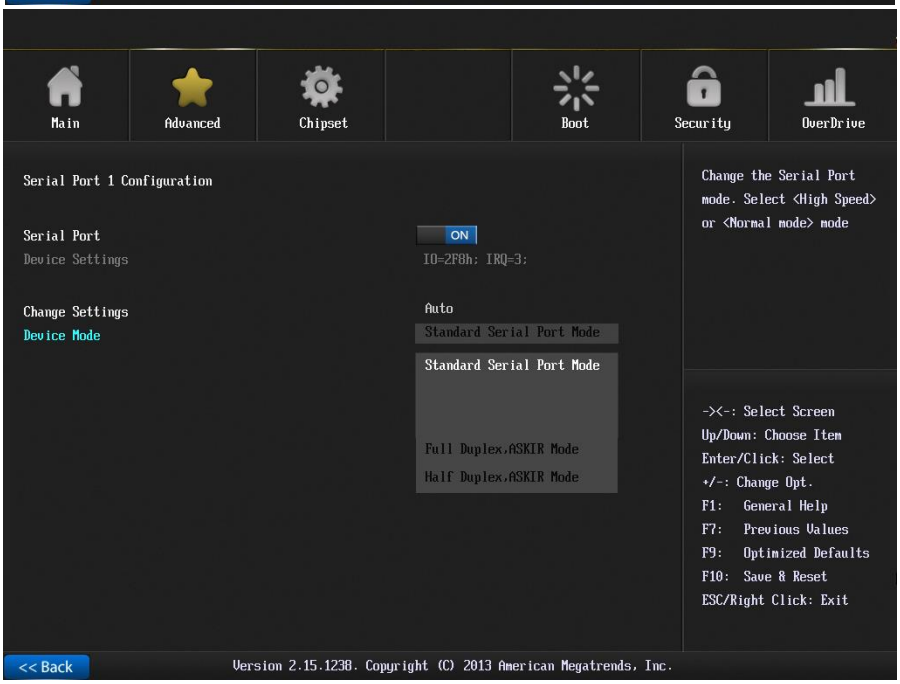
3.6.2.7.1 Serial Port 0 Configuration



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

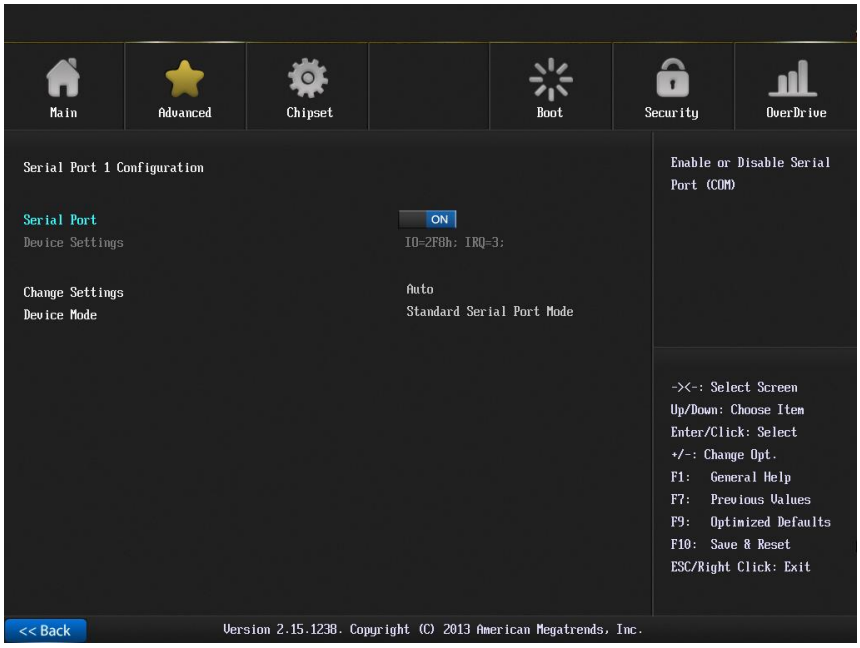
3.6.2.7.2 Serial Port 1 Configuration

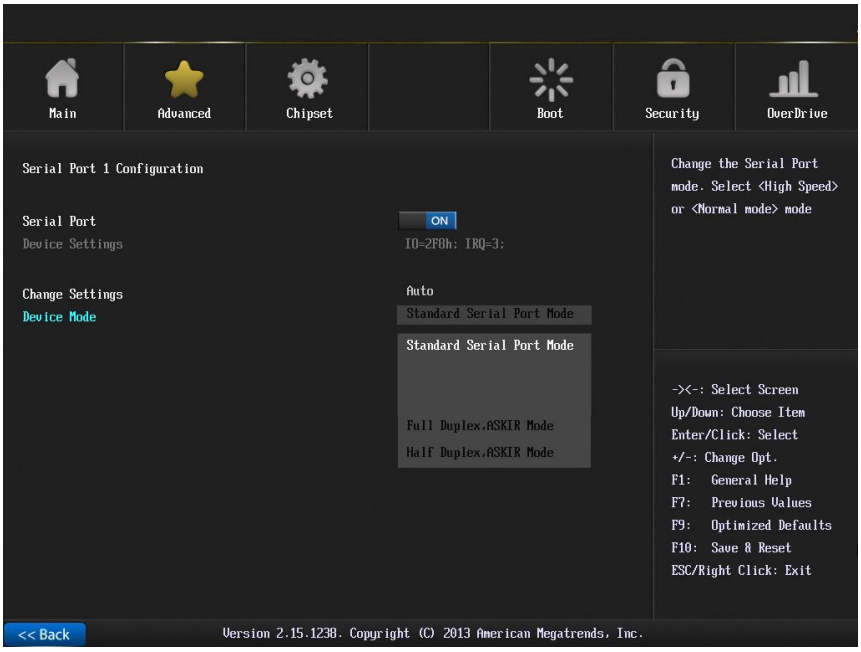




Item	Options	Description
Serial Port	Enabled**[Default]**, Disabled	Enable or Disable Serial Port (COM).
Change Settings	Auto**[Default]** IO=2F8h; IRQ=3; IO=3F8h; IRQ=3,4,5,6,7,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,10,11,12;	Select an optimal setting for Super IO device.
Device Mode	Standard Serial Port Mode**[Default]** Full Duplex, ASKIR Mode Half Duplex, ASKIR Mode	Change the Serial Port mode. Select <High Speed> or <Normal mode> mode.

3.6.2.7.3 Parallel Port Configuration





Item	Options	Description
Parallel Port	Enabled**[Default]**, Disabled	Enable or Disable Parallel Port (LPT/LPTE).
Change Settings	Auto**[Default]** IO=378h; IRQ=5; IO=378h; IRQ=5,6,7,10,11,12; IO=278h; IRQ=5,6,7,10,11,12; IO=3BCh; IRQ=5,6,7,10,11,12;	Select an optimal setting for Super IO device.
Device Mode	STD Printer Mode**[Default]** SPP Mode EPP-1.9 and SPP Mode	Change the Printer Port mode.

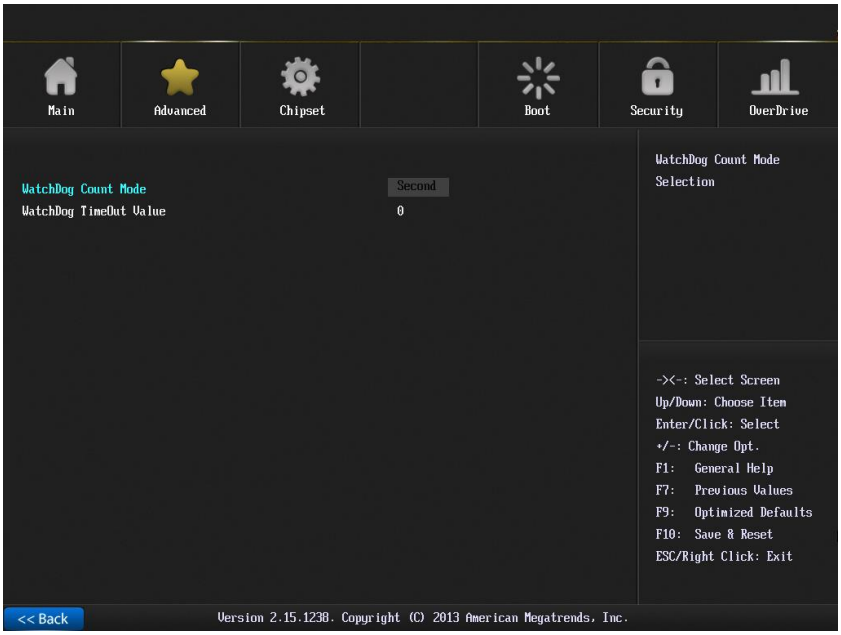
	EPP-1.7 and SPP Mode ECP Mode ECP and EPP 1.9 Mode ECP and EPP 1.7 Mode	

3.6.2.8 HW Monitor

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

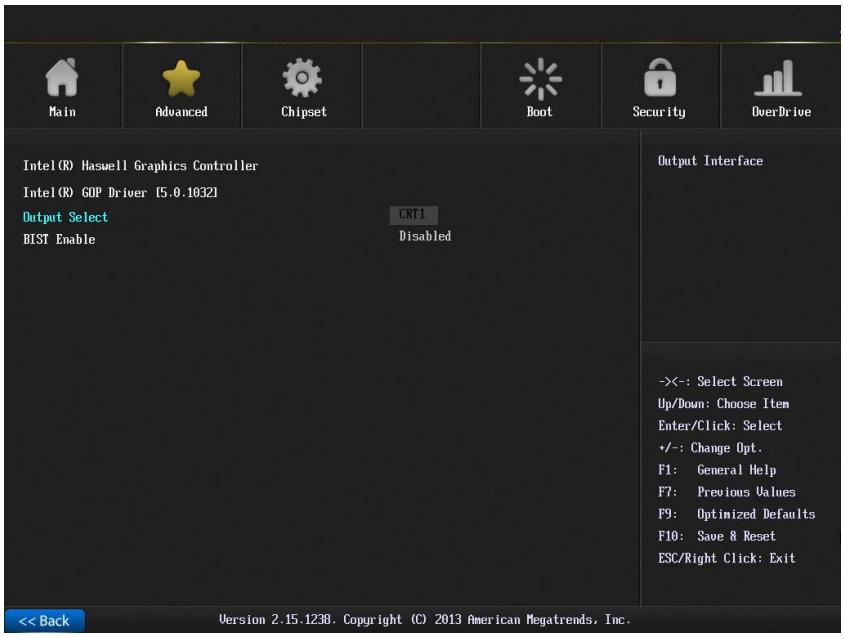
Item	Option	Description
CPU Smart Fan	Enable or Disable CPU Smart Fan. T1:30°C Duty:55T2:40°C Duty:70T3:50°C Duty:80T4:60°C Duty:90risis:70°C Duty:100	
PWM Output	0-100	Set CPU Fan Speed.

3.6.2.9 WatchDog Configuration



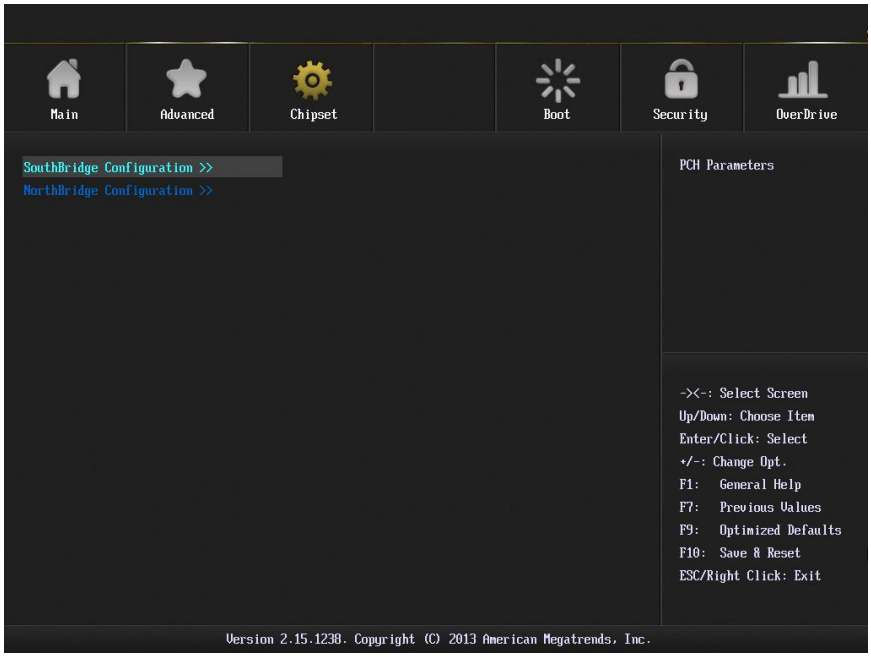
Item	Option	Description
Watchdog Count Mode	Second**[Default]** Minute	Watchdog Count Mode Selection.
Watchdog Timeout Value	0	Fill Watchdog Timeout Value, 0 means disabled.

3.6.2.10 AMI Graphic Output Protocol Policy



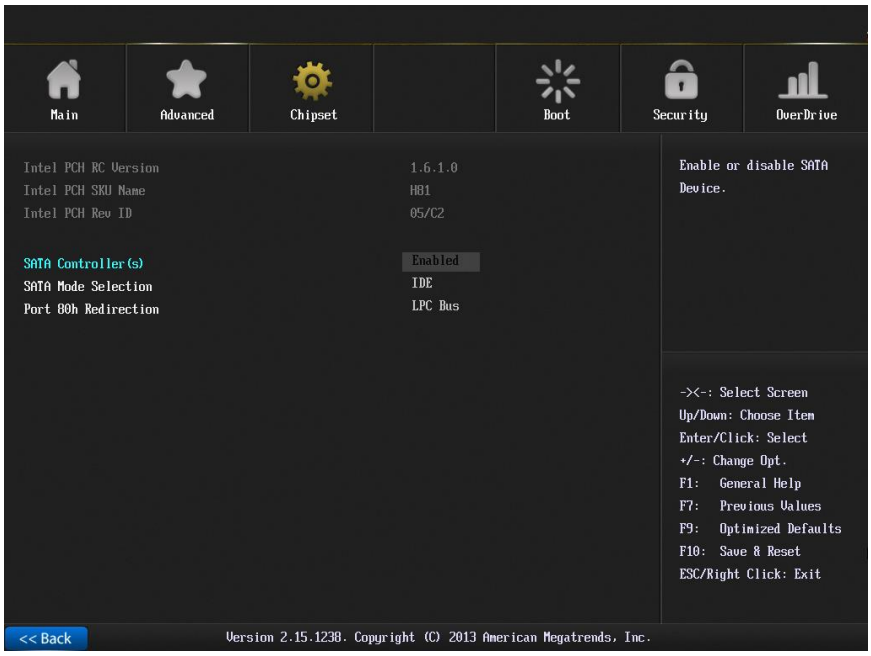
Item	Option	Description
Output Select	Unknown Device	Output Interface.
BIST Enable	Disabled**[Default]** Enabled	Starts or stops the BIST on the integrated display panel.

3.6.3 Chipset



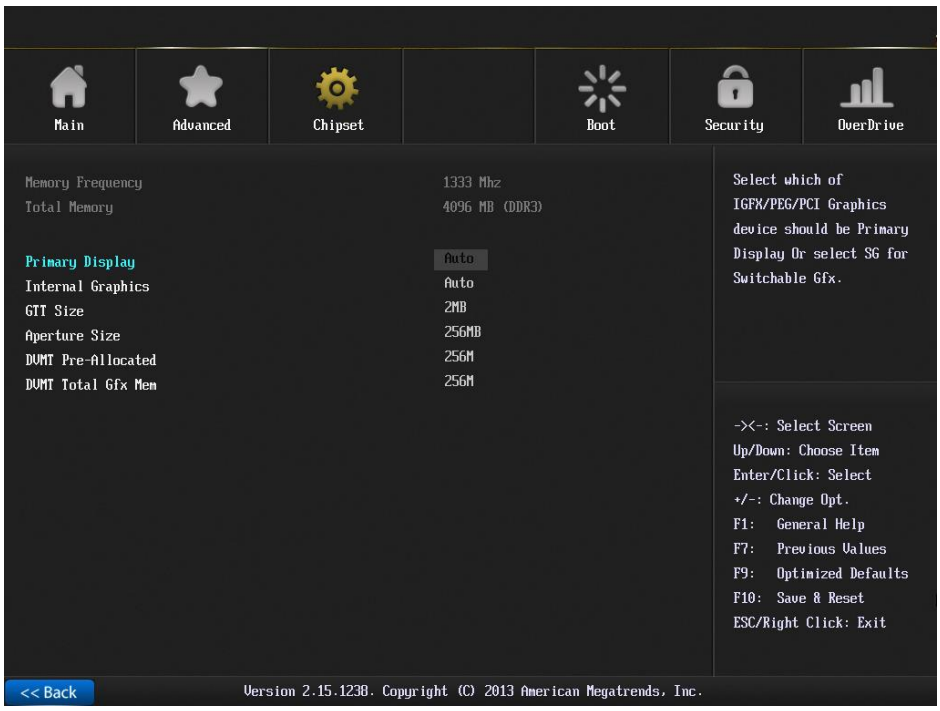
Item	Description
South Bridge Configuration	PCH Parameters.
North Bridge Configuration	System Agent (SA) Parameters.

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 RAID	Determines how SATA controller(s) operate.
Port 80h Redirection	LPC Bus**[Default]** PCIE Bus	Control where the Port 80h cycles are sent.

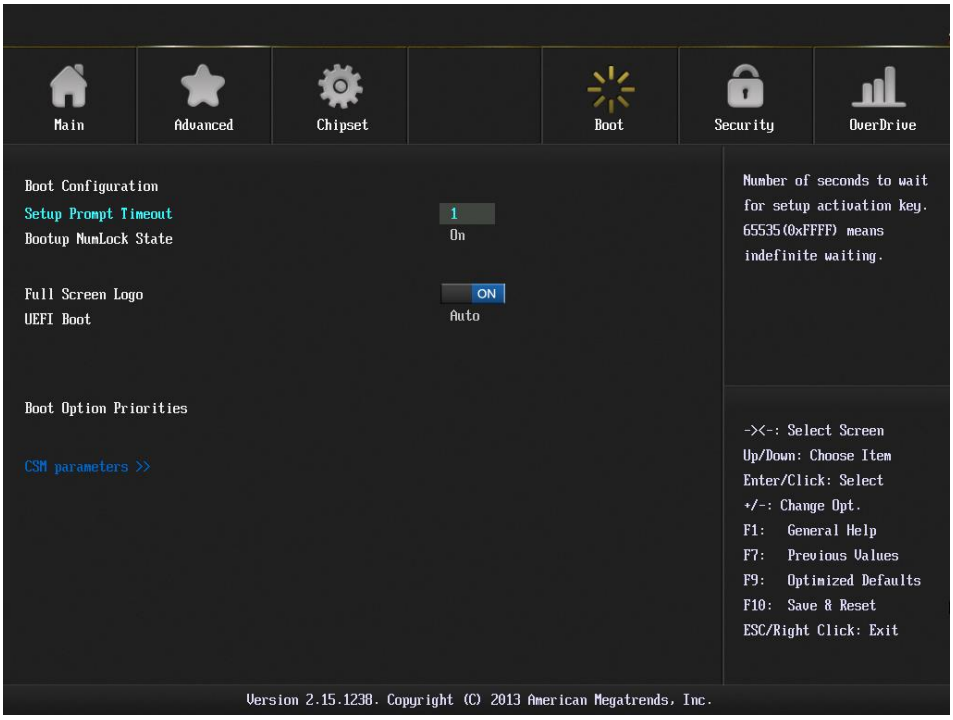
3.6.3.2 North Bridge Configuration



Item	Options	Description
Primary Display	Auto**[Default]** IGFX PEG PCIE	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.
Internal Graphics	Auto**[Default]** Disabled Enabled	Keep IGD enabled based on the setup options.
GTT Size	1MB 2MB**[Default]**	Select the GTT Size.
Aperture Size	128MB 256MB**[Default]** 512MB	Select the Aperture Size.
DVMT Pre-Allocated	[32M] [64M][96M] [128M] [160M] [192M] [224M] [256M] **[Default]** [288M] [320M] [352M] [384M] [416M]	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

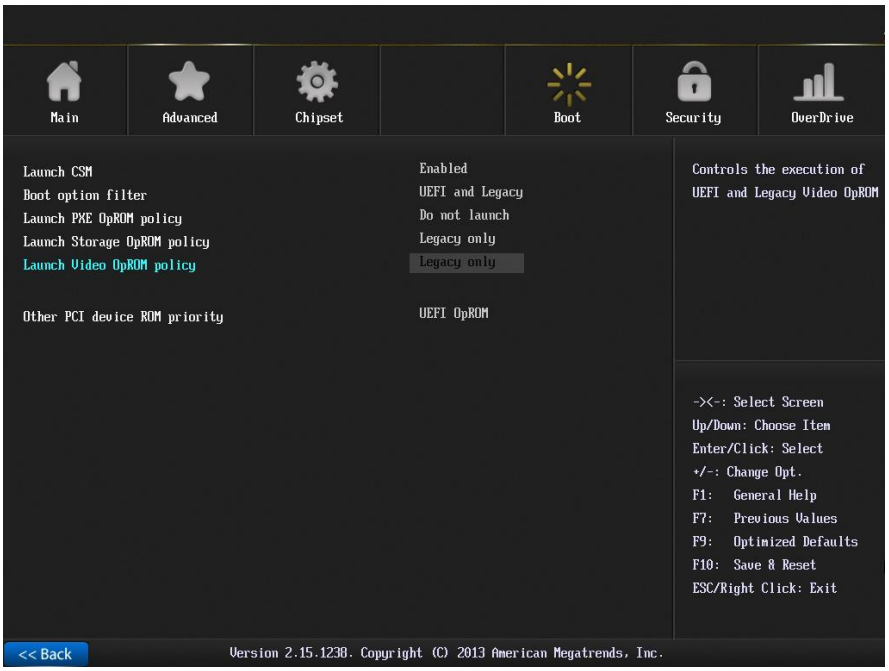
	[448M] [480M] [512M] [1024M]	
DVMT Total Gfx Mem	[128M] [256M]**[Default]** [MAX]	Select DVMT 5.0 Total Graphics Memory size used by the Internal Graphics Device.

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 1st boot HDD is GPT then enable UEFI boot options, otherwise disable. Enabled: Enable all UEFI boot options. Disabled: Disabled all UEFI boot options.

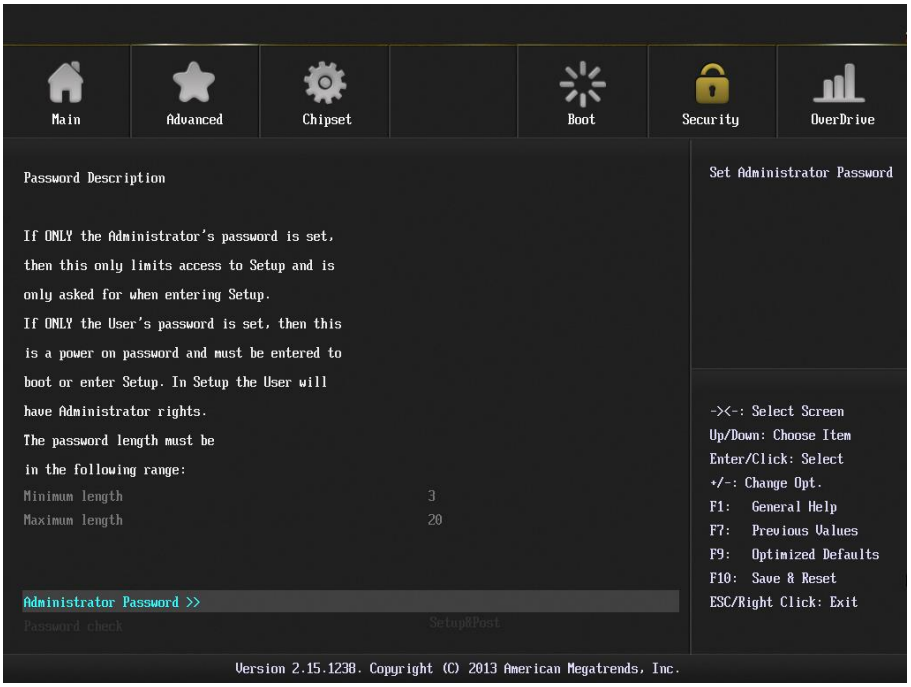
3.6.4.1 CSM parameters



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

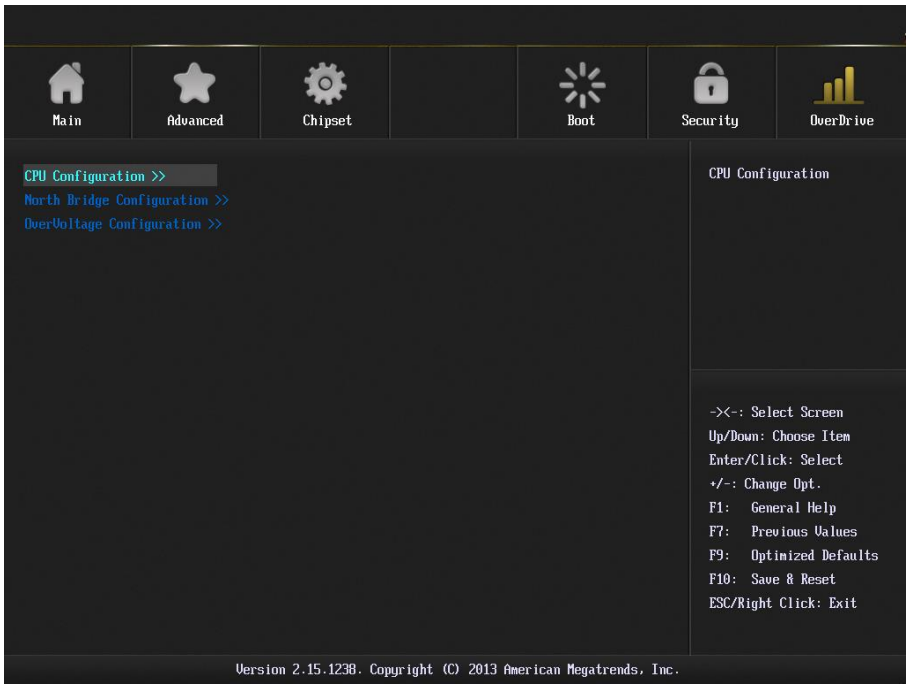
Use the Security menu to set system and user password.



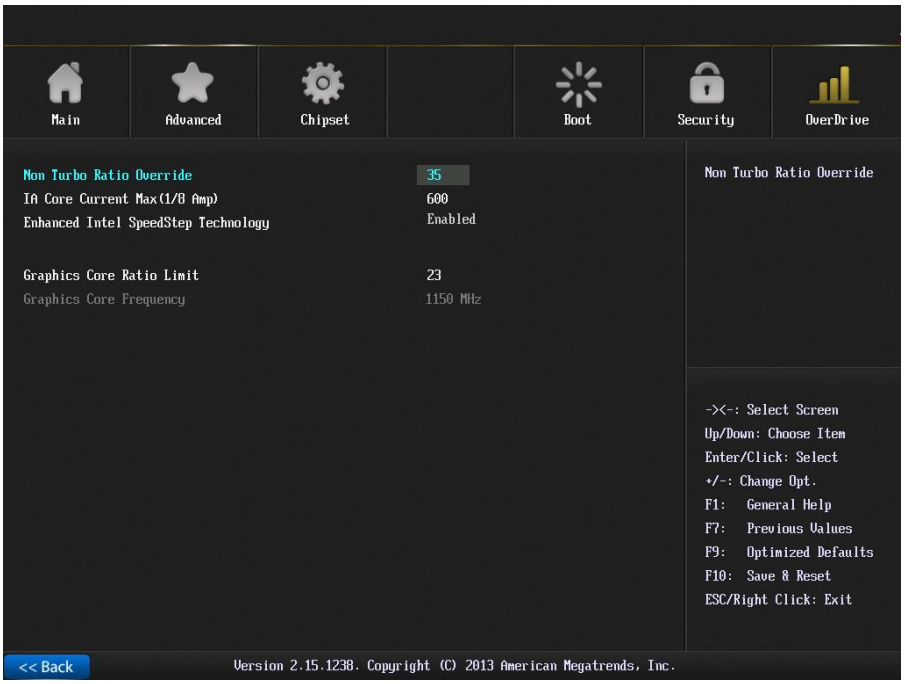
3.6.5.1 Administrator Password

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.

3.6.6 Performance



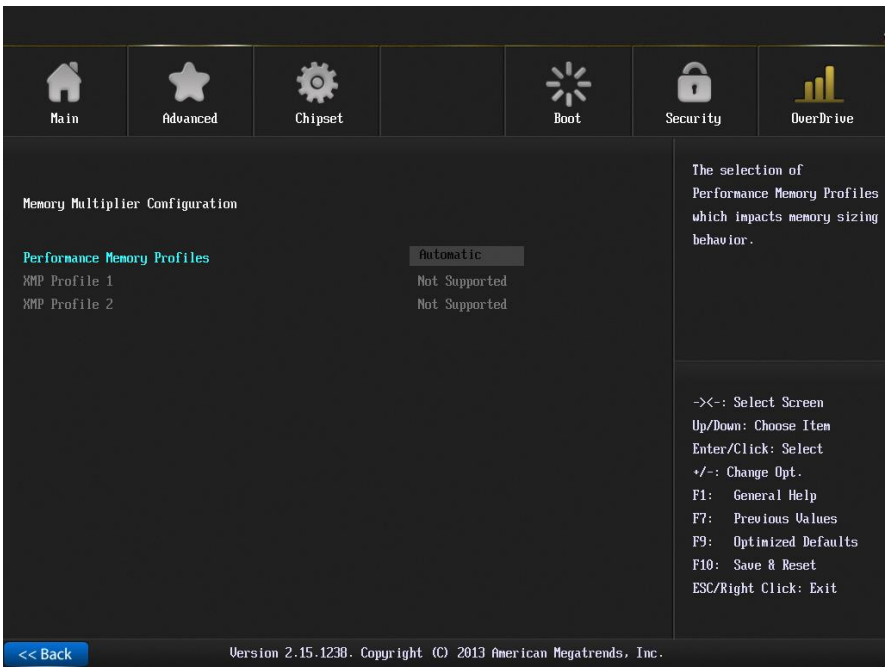
3.6.6.1 CPU Configuration



Item	Options	Description
Non Turbo Ratio Override	0-21**[Default]**	Non Turbo Ratio Override.
IA Core Current Max (1/8 Amp)	0	IA Core Current Max (1/8 Amp).

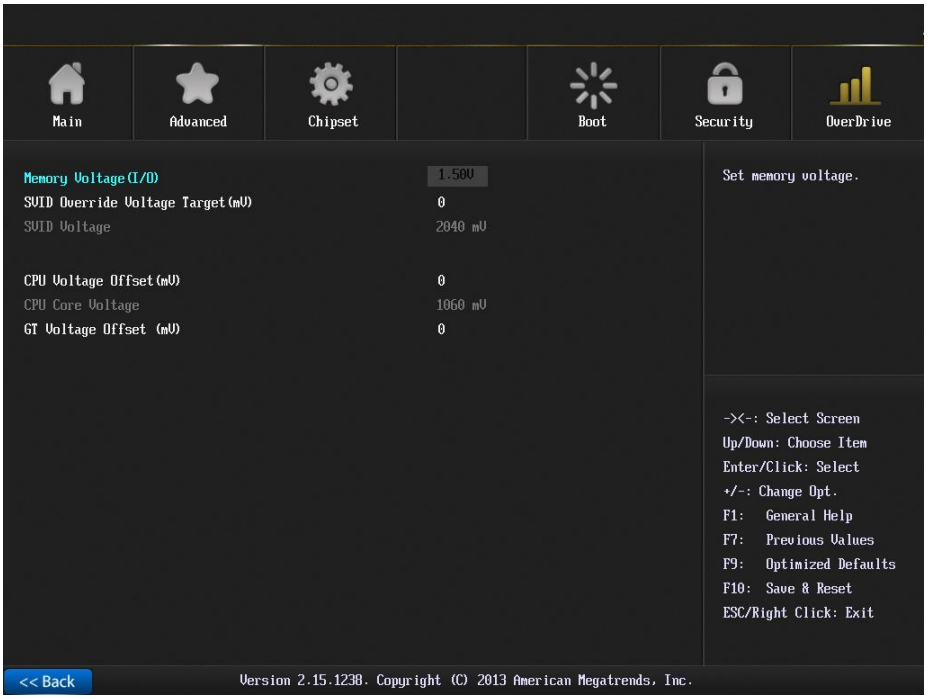
Enhanced Intel SpeedStep Technology	Disabled Enabled**[Default]**	Enhanced Intel SpeedStep Technology.
Graphics Core Ratio Limit	0-10**[Default]**	Graphics Core Ratio Limit.

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.
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.

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.

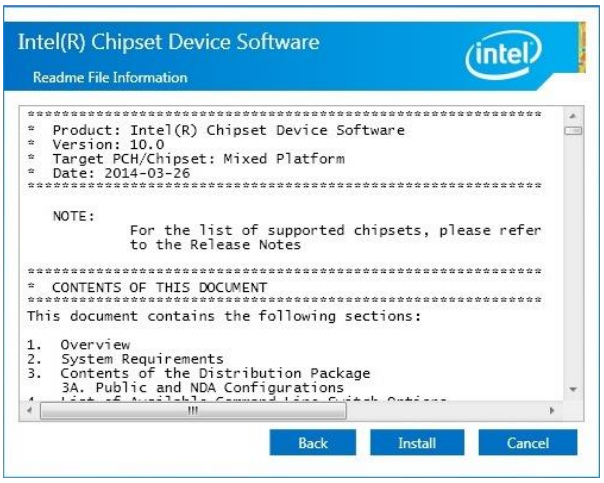
4.1 Install Chipset Driver

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\SEAX-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.

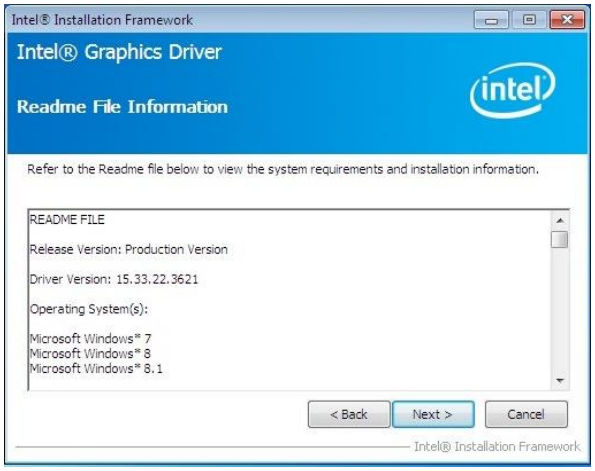
4.2 Install VGA Driver

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\SEAX-H81_VGA**.

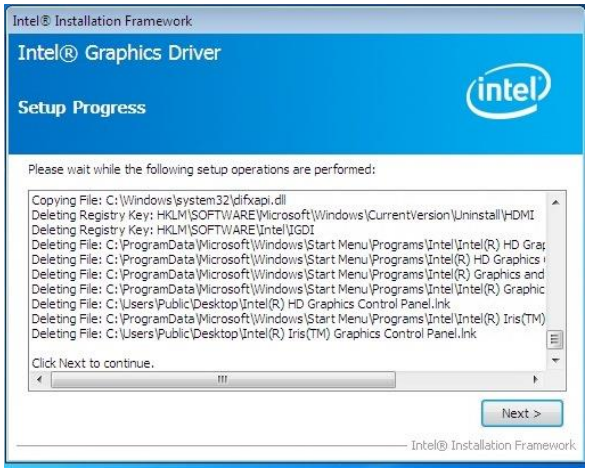
Note: The installation procedures and screen shots in this section are based on Windows 7 operating system.

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

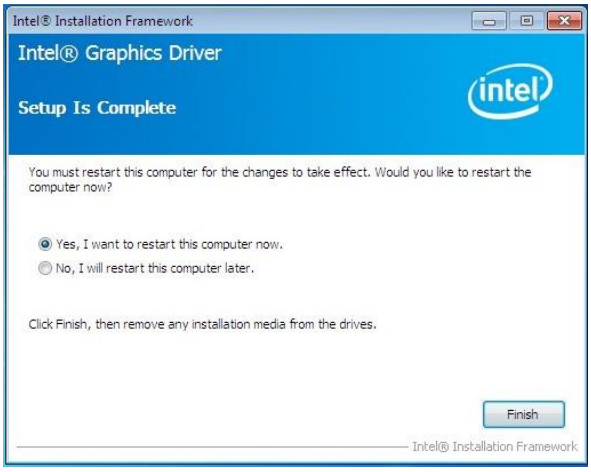
Step 2. Select **Yes** to the next step.



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



Step 4. Select **Next**.

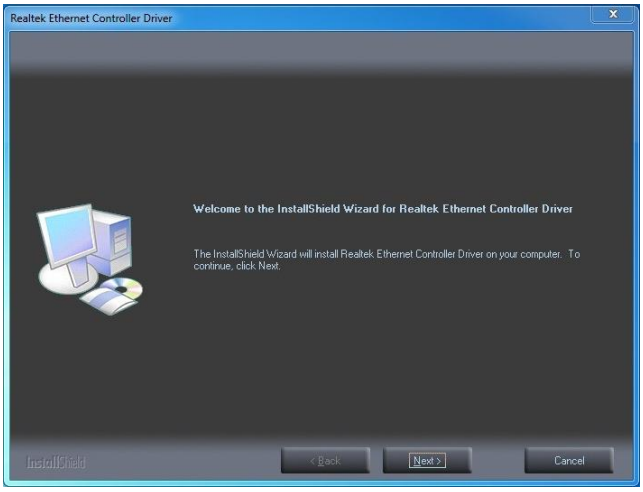


Step 5. Select **Finish** to complete Installation.

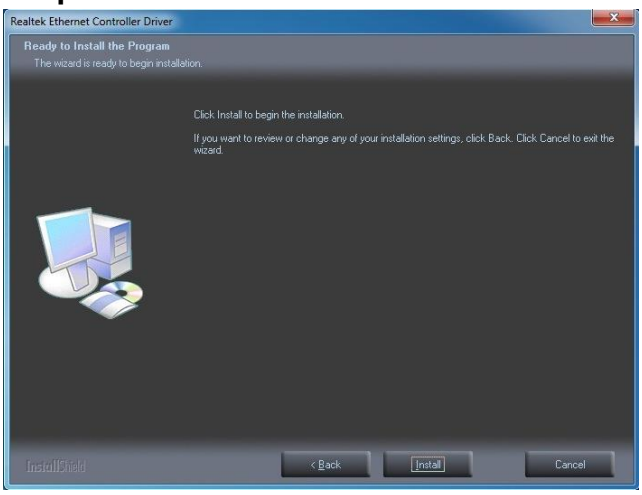
4.3 Install LAN Driver (For Realtek 8111E Gigabit Ethernet)

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\SEAX-H81_LAN**.

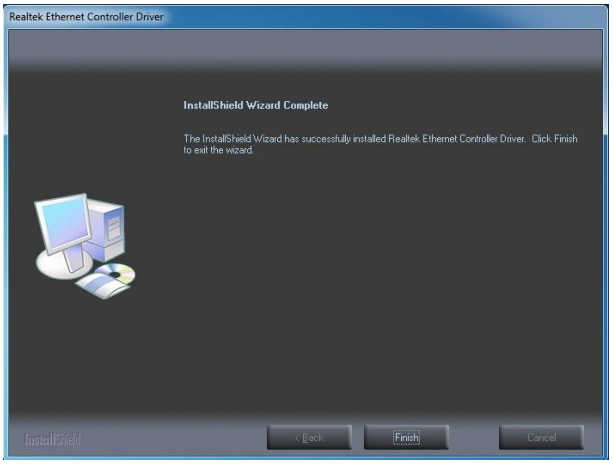
Note: The installation procedures and screen shots in this section are based on Windows 7 operation system.



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



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

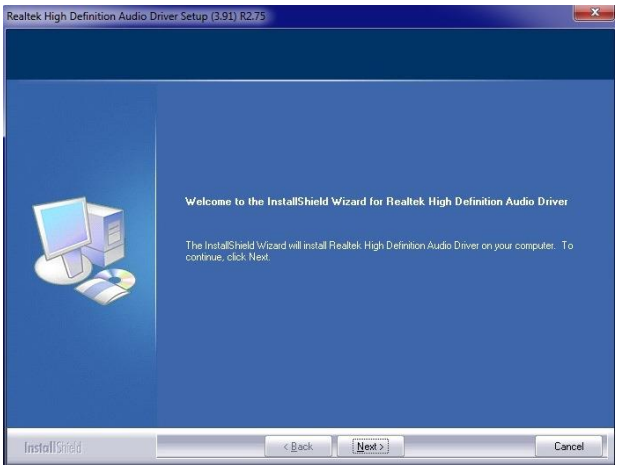


Step 3. Click **Finish** to complete setup.

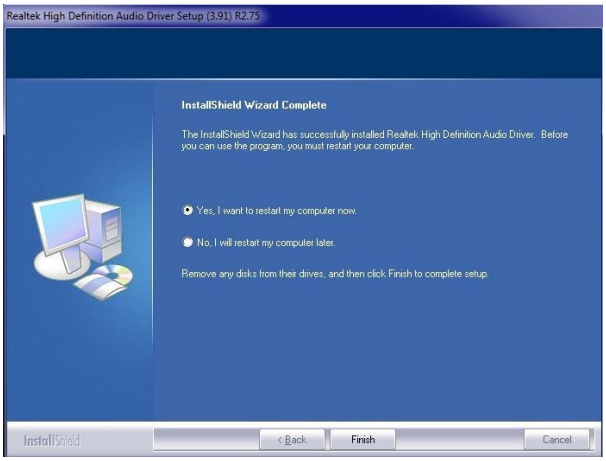
4.4 Install Audio Driver (For Realtek ALC662 HD Audio)

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, or link to **\Driver_Audio\Realtek\ALC662\SEAX-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\SEAX-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.

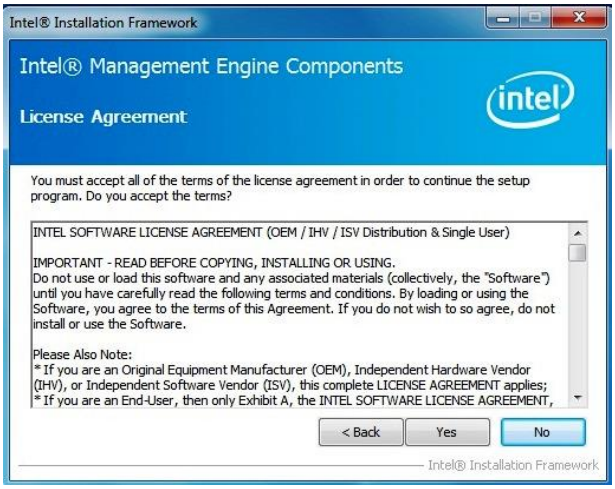
Step 5. Select **Finish** to complete Installation.

4.6 Install ME Driver

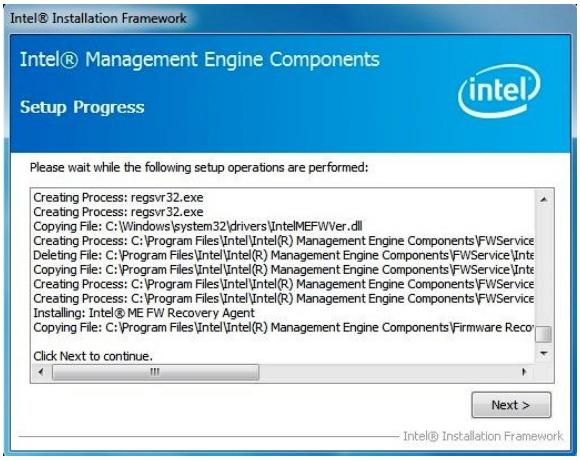
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **\Utility\SEAX-H81_ME**.

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

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



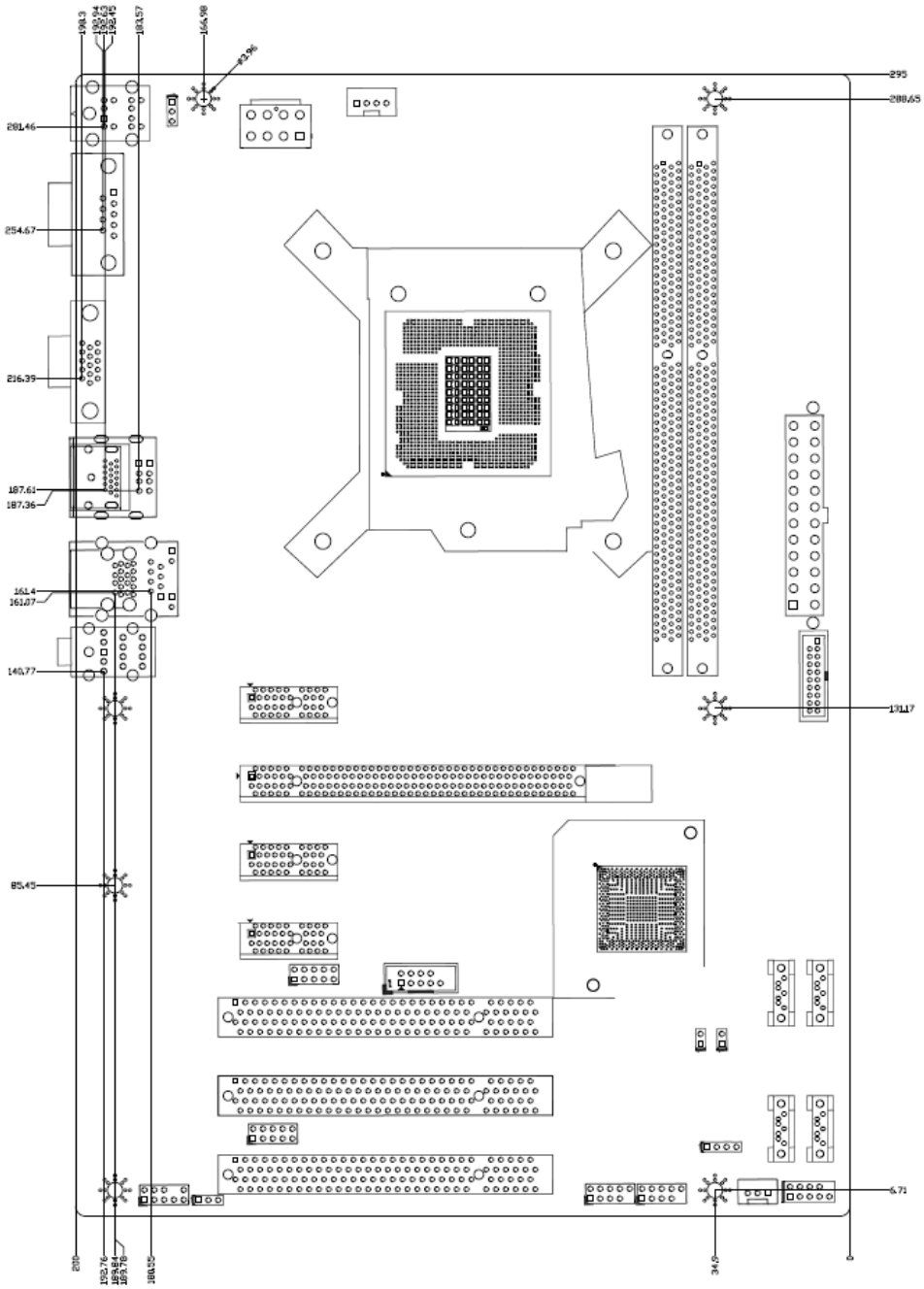
Step 2. Select **Yes** to the next step.



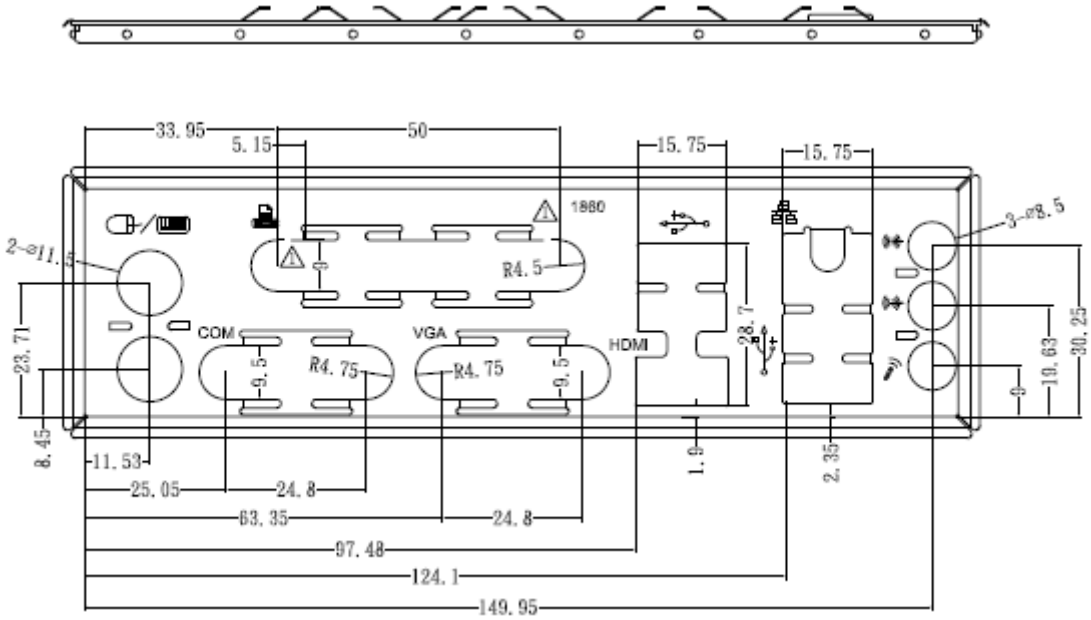
Step 3. Select **Next** to continue installation.

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

5. Mechanical Drawing



Unit: mm


33.95
5.15
50
15.75
15.75
1880
R4.5
2-⌀11.5
3-⌀8.5
COM
VGA
HDMI
R4.75
R4.75
9.5
9.5
23.71
28.7
19.63
30.25
8.45
11.53
25.05
24.8
63.35
24.8
97.48
124.1
149.95
1.9
2.35

Unit: mm