

EMX-CDD

**Intel® Atom™ D2550 Process + NM10 Chipset
Mini ITX Motherboard**

User's Manual



1st Ed – 30 September 2013

FCC Statement



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

- (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.
- (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

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

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

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

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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.

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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:

- Quick Installation Guide X 1
- Driver/Utility CD X 1
- Serial ATA Signal Cable X 1
- Serial ATA Power Cable X 1
- Screw X 2
- Motherboard X 1

1.3 Document Amendment History

Revision	Date	By	Comment
1st	September 2013	Avalue	Initial Release

1.4 Manual Objectives

This manual describes in details Avalue Technology EMX-CDD Single Board.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to set up EMX-CDD 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® Atom™ processor D2550 Processor
BIOS	AMI uEFI BIOS, 16Mbit SPI Flash ROM
System Chipset	Intel® NM10
I/O Chip	Winbond W83627UHG
System Memory	1 x 204-pin DDR3 1066/1333 MHz SODIMMs, up to 4GB
Watchdog Timer	- H/W Reset, 1sec. – 65535sec./min 1sec. or 1min. step
H/W Status Monitor	- CPU & system temperature monitoring - Voltages monitoring
Buzzer	Buzzer onboard
Expansion	1 x Mini PCI-e (Mini PCI-e and mSATA SSD is Switchable Through Jumper)
I/O	
Rear Side External I/O Connector	2 x RJ-45 1 x dual deck USB 2.0 connectors 1 x VGA 1 x HDMI 1 x Mic-In and 1 x Line-out 1 x DC Jack
Internal I/O Connector	- Storage: - 1 x mSATA connector (The mSATA and SATA II is Switchable Through Jumper) - 2 x SATA II connector - 2 x SATA power connectors - COM: - COM1~6: support RS-232 connector, Pin 9 without / +5V&+12V supported - GPIO: 8 bits 1 x LVDS 1 x Mini PCI-e slot 3 x 2 x 5 pin, pitch 2.54mm connector for USB 2.0 1 x 1 x 4 pin, pitch 2.50mm CPU fan connector with smart fan function supported 1 x horizontal type battery connector 1 x 2 x 8 pin, pitch 2.54mm connector for front panel 1 x 2 x 2 pin ATX power connector for DC 12V input 1 x 2 x 20 pin, pitch 1.25mm connector for LVDS

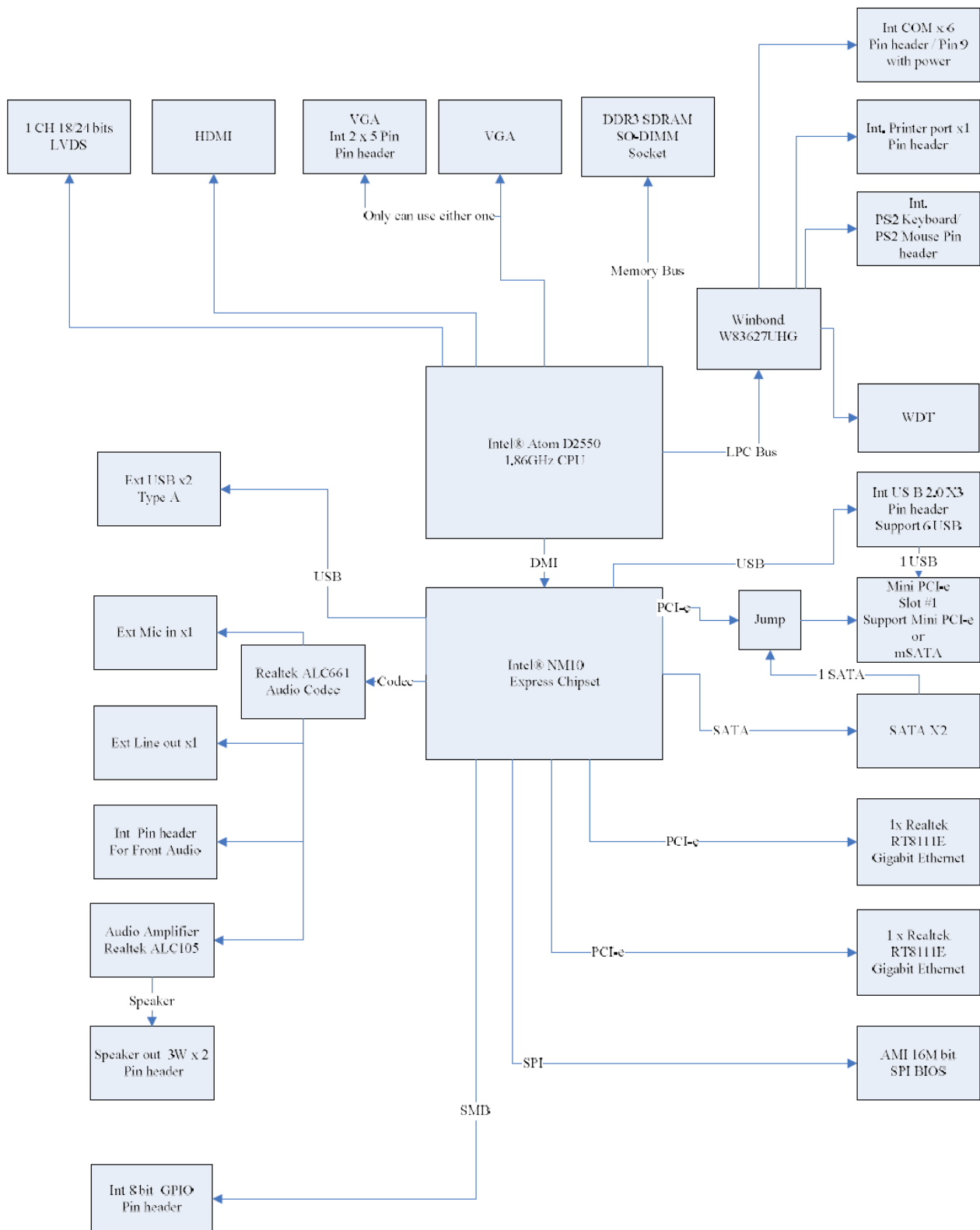
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	• 1 x 5 pin, pitch 2.54mm connector for Inverter • 1 x 2 x 5 pin, pitch 2.54mm connector for Audio • 1 x 3 pin, pitch 2.54mm connector for LVDS PWR selection • 1 x 2 x 12 pin, pitch 2.54mm connector for printer port • 1 x 2 x 5 pin, pitch 2.54mm connector for VGA • 1 x 2 x 5 pin, pitch 2.54mm connector for Keyboard & Mouse • 1 x 1 x 4 pin, pitch 2.00mm connector for Amplifier
Display	
Chipset	• Intel NM10 integrated
Resolution	• HDMI:1920 x 1200 • VGA:1920 x 1200
LVDS	• 1CH 18/24bits LVDS 1400 x 900
Audio	
Chipset	• Realtek ALC661 HD Audio Decoding Controller.
Audio Interface	• Mic-In, Line-In
Audio Amplifier	• Realtek ALC105 Stereo Class-D 3W x 2
Ethernet	
Chipset	• 2 x Realtek RTL8111E PCI-Express Gigabit Ethernet
Ethernet Interface	• 10/100/1000 Gigabit Ethernet
Mechanical & Environmental	
Power Requirement	• DC in +12V
Power Type	• Single power +12V Power input / ATX mode
ACPI	• Single power ATX Support S0,S1, S3, S4, S5 • ACPI 3.0 Compliant
Operating Temp.	• 0°C ~60°C
Storage Temp.	• -40°C ~75°C
Operating Humidity	• 0%~90% relative humidity, non-condensing
Size (L x W)	• 6.7" x 6.7" (170mm x 170mm)
Weight	• 0.40 kg

Note: The USB keyboard and USB mouse can't support wake up form S4 mode.

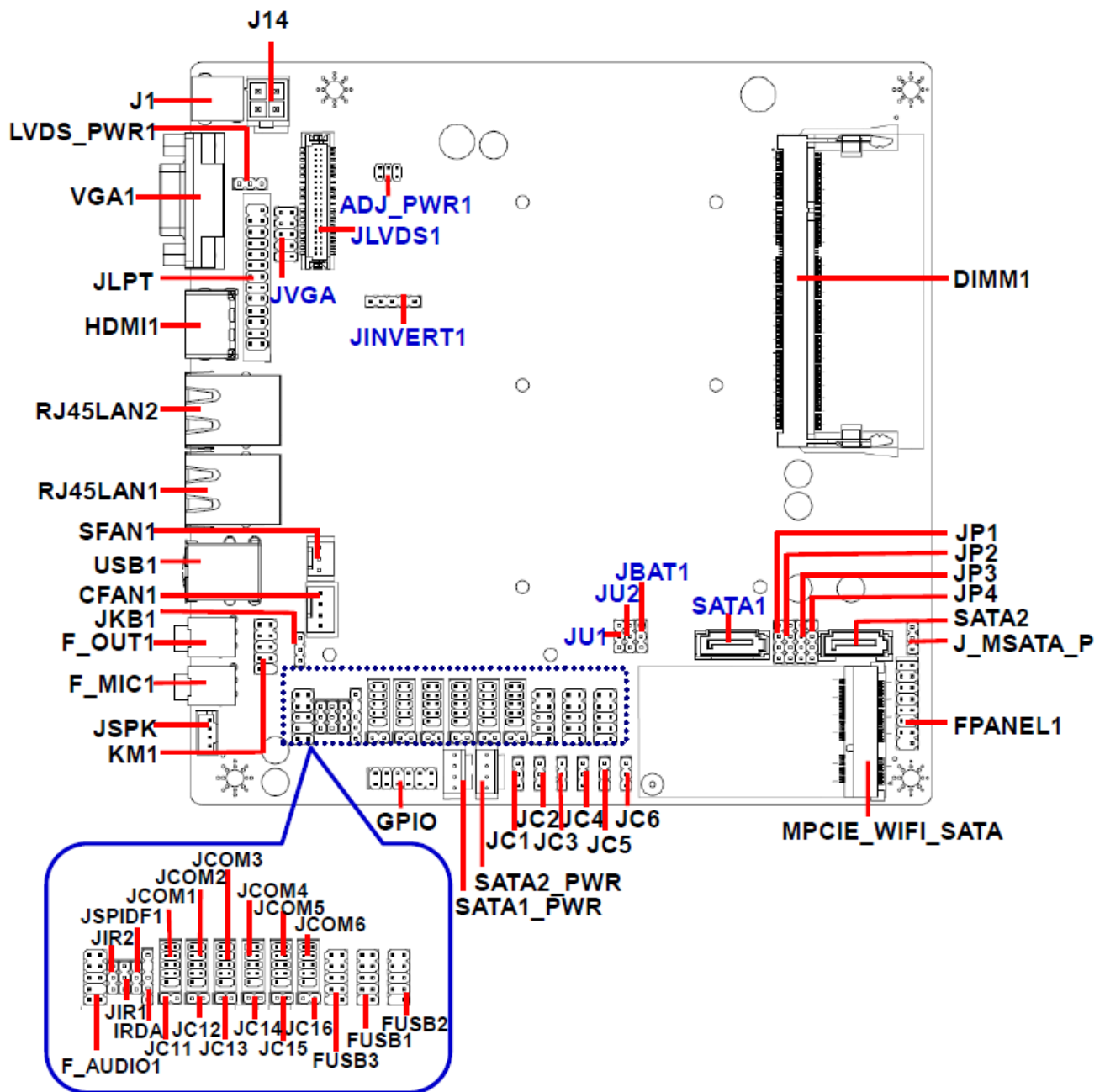
1.6 Architecture Overview—Block Diagram

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



2. Hardware Configuration

2.1 Product Overview



2.2 Installation Procedure

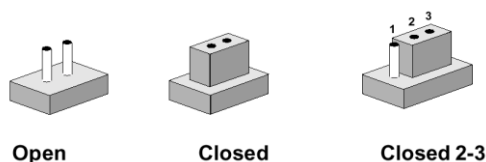
This chapter explains you the instructions of how to setup your system.

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 AC/DC Adapter.
5. Turn on the power.
6. Enter the BIOS setup by pressing the delete key during boot up. Use the "Save & Exit \ Restore Defaults" feature.
7. If TFT panel display is to be utilized, make sure the panel voltage is correctly set before connecting the display cable and turning on the power.

2.3 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.

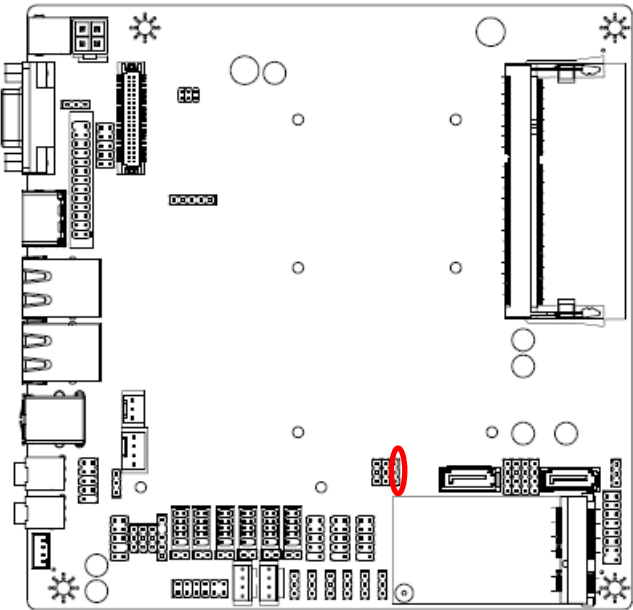
Jumpers

Label	Function	Note
LVDS_PWR1	Jumper for LVDS PWR selection	1 x 3 header, pitch 2.54 mm
JP1~4	Jumper for MPCIE_WIFI_SATA	1 x 4 header, pitch 2.54 mm
ADJ_PWR1	Jumper for inverter power	2 x 3 header, pitch 2.00 mm
JKB1	Keyboard power select jumper	1 x 3 header, pitch 2.54 mm
JIR1~2	Jumper for COM2, IR selection	1 x 3 header, pitch 2.54 mm
JC1~6	Jumper for Serial port 1~6 selection	1 x 3 header, pitch 2.54 mm
JC11~16	Serial port 1~6 – RI, USE JC1~6 PIN 9 selector	1 x 2 header, pitch 2.54 mm
JU1~2	Jumper for FUSB2, MINIPCI selection	1 x 3 header, pitch 2.54 mm
JBAT1	Clear CMOS	1 x 3 header, pitch 2.54 mm
J_MSATA_P	Jumper for MSATA PWR selection	1 x 3 header, pitch 2.54 mm

Connectors		
Label	Function	Note
FPANEL1	Front Panel Switches	2 x 8 header, pitch 2.54 mm
MPCIE_WIFI_SATA	PCIE signal selector	
HDMI1	HDMI connector	
J1	ATX power connector for DC 12V input	
JSPK	Speaker connector	1 x 4 wafer, pitch 2.00 mm
J14	DC power-in connector	2 x 2 header, pitch 4.20 mm
JCOM1~6	Serial port 1~6 connector	2 x 5 header, pitch 2.00 mm
GPIO	General Purpose I/O	2 x 6 header, pitch 2.54 mm
JLVDS1	LVDS connector	2 x 20 wafer, pitch 1.25 mm
SATA1~2	Serial ATA connector 1~2	
SATA1~2_PWR	SATA Power connector 1~2	1 x 4 header, pitch 2.54 mm
F_MIC1	Mic-in audio jack	3.5mm phone jack
F_OUT1	Line-out audio jack	3.5mm phone jack
RJ45LAN1~2	LAN port 1~2	
F_USB1~3	USB connector 1~3	2 x 5 header, pitch 2.54 mm
USB1	USB connector	
SFAN1	System Fan connector	1 x 3 wafer, pitch 2.54 mm
CFAN1	CPU Fan connector	1 x 4 wafer, pitch 2.50 mm
JLPT	Printer	2 x 12 header, pitch 2.54 mm
DIMM1	DDR3 SODIMM socket	
VGA1	VGA connector	
JVGA	VGA connector	2 x 5 header, pitch 2.54 mm
JINVERT1	Inverter connector	1 x 5 header, pitch 2.54 mm
KM1	Keyboard & Mouse connector	2 x 5 header, pitch 2.54 mm
F_AUDIO1	Front Panel Audio Connection Header	2 x 5 header, pitch 2.54 mm
JSPIDF1	Sony/Philips Digital Interface	1 x 5 header, pitch 2.54 mm
IRDA	IRDA connector (not supported)	1 x 5 header, pitch 2.00 mm

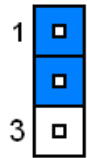
2.4 Setting Jumpers & Connectors

2.4.1 Clear CMOS (JBAT1)

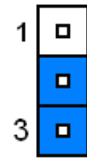


* Default

Normal*

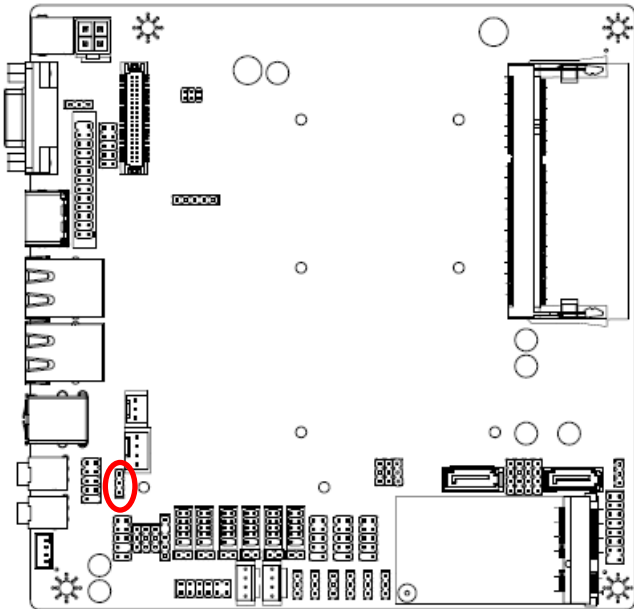


Clear CMOS



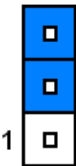
Pin	Define
1-2	Normal
2-3	Clear CMOS

2.4.2 Keyboard power select jumper (JKB1)

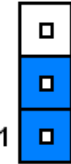


* Default

Disabled*

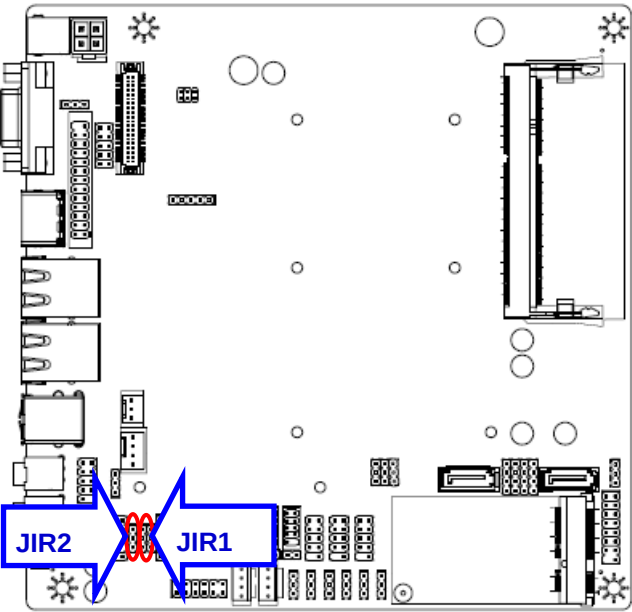


Enabled



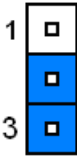
Pin	Define
1-2	Disabled
2-3	Enabled

2.4.3 Jumper for COM2, IR selection (JIR1~2)

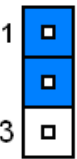


* Default

IR*



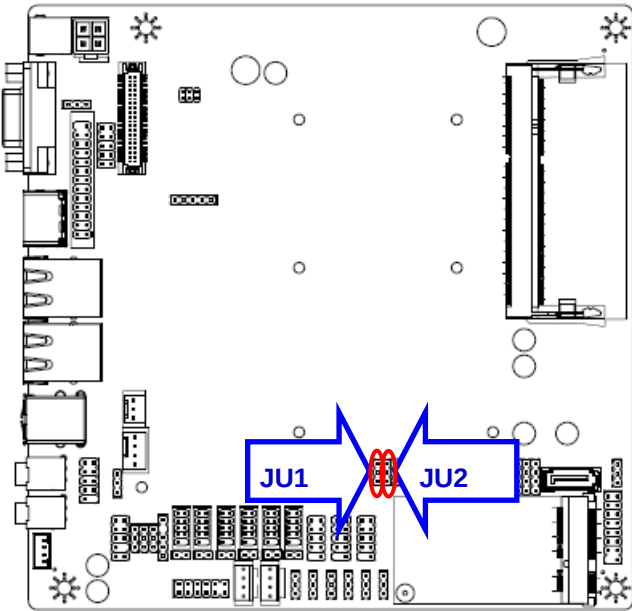
COM



Pin	Define
1-2	COM
2-3	IR

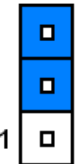
Note: IR is not functional.

2.4.4 Jumper for FUSB2, MINIPCIE selection (JU1~2)

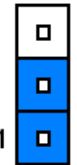


* Default

FUSB2*



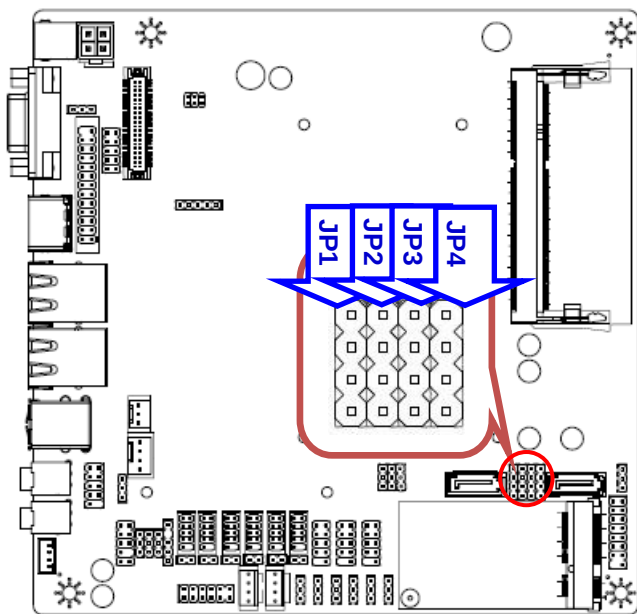
MINIPCIE



Pin	Define
1-2	FUSB2
2-3	MINIPCIE

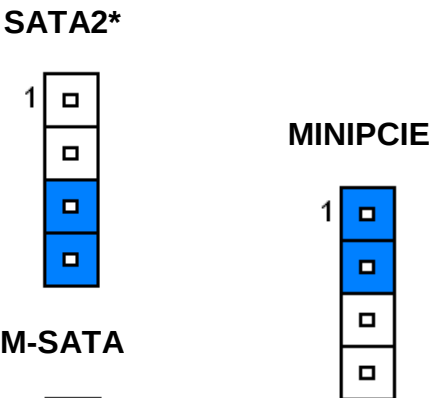
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2.4.5 Jumper for MPCIE_WIFI_SATA (JP1~4)



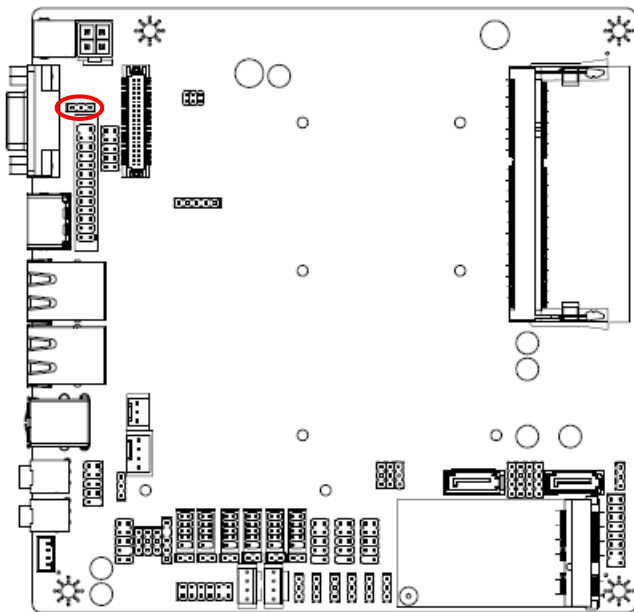
* Default

Note: SATA 2 bond together with M-SATA, it can only work either way at one time.

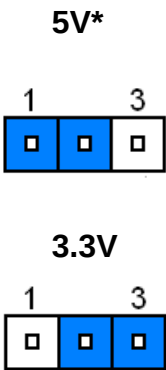


PIN	Define
1-2	MINIPCIE
2-3	M-SATA
3-4	SATA2

2.4.6 Jumper for LVDS power (LVDS_PWR1)

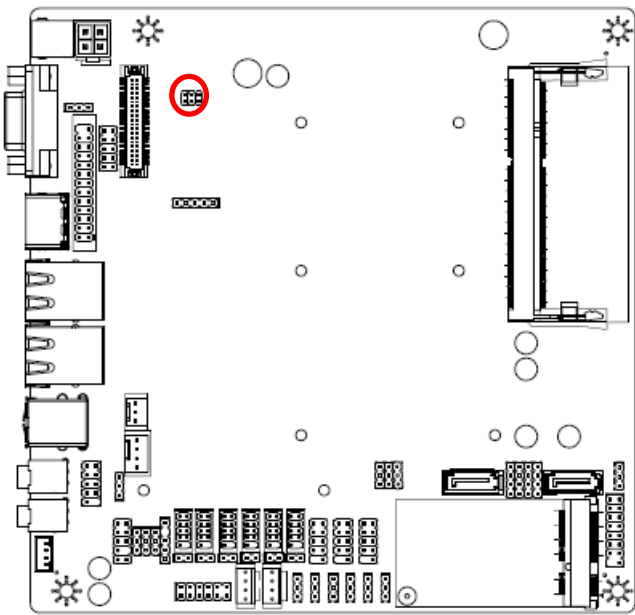


* Default



Pin	Define	Max current
1-2	5V	1A
2-3	3.3V	1A

2.4.7 Jumper for inverter power (ADJ_PWR1)



* Default

5V*

□	■	□
□	■	□
1		5

5V

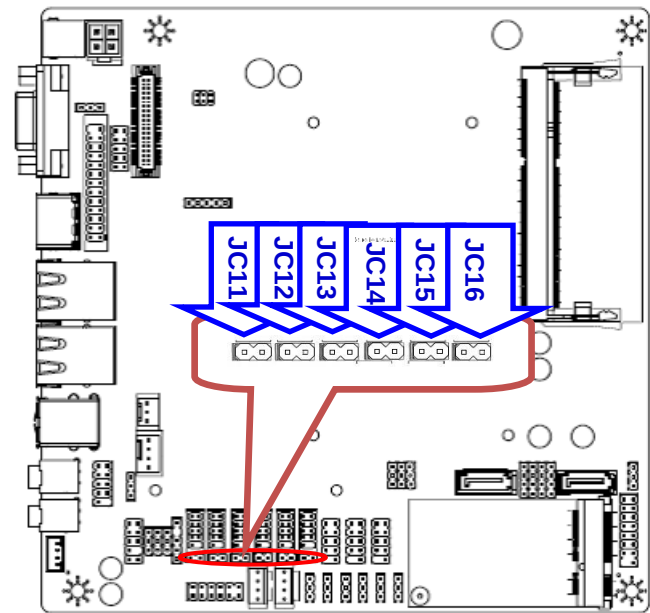
■	□	□
■	□	□
1		5

0

□	□	■
□	□	■
1		5

PIN	Define	Max current
1-2	5V	1A
3-4	5V	1A
5-6	0	1A

2.4.8 Serial port 1~6 – RI, USE JC1~6 PIN 9 selector (JC11~16)



* Default

RI*

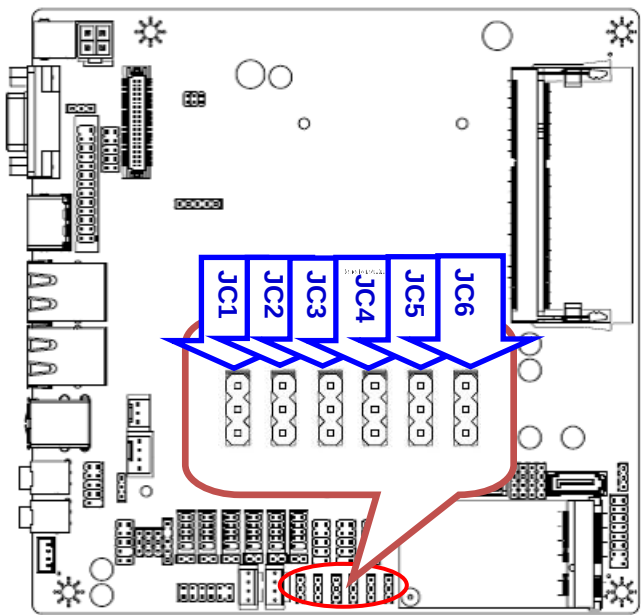
■	■
1	

USE JC1_JC6

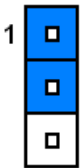
□	□
1	

PIN Option	Define
CLOSE	RI
OPEN	USE JC_JC6

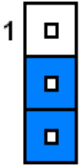
2.4.9 Jumper for Serial port 1~6 selection (JC1~6)



+5V

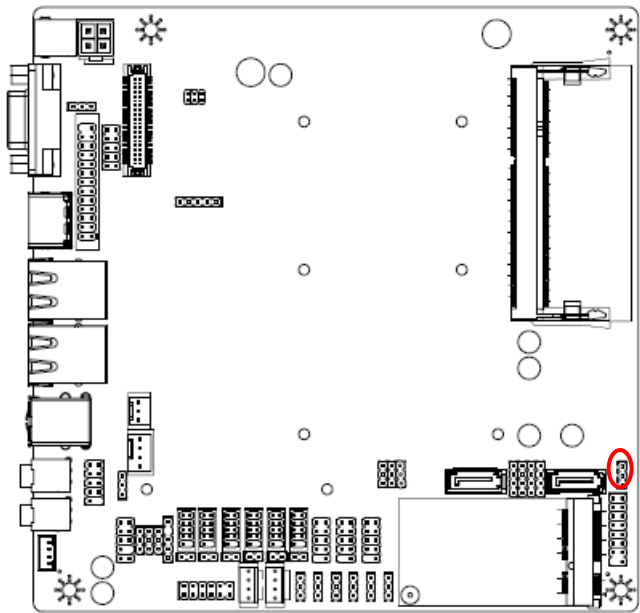


+12V

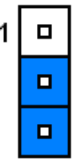


PIN	Define	Max current
1-2	+5V	1A
2-3	+12V	1A

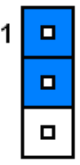
2.4.10 Jumper for MSATA PWR selection (J_MSATA_P)



M_PCIE*



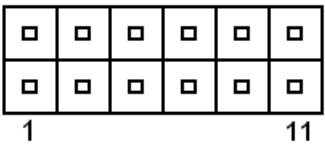
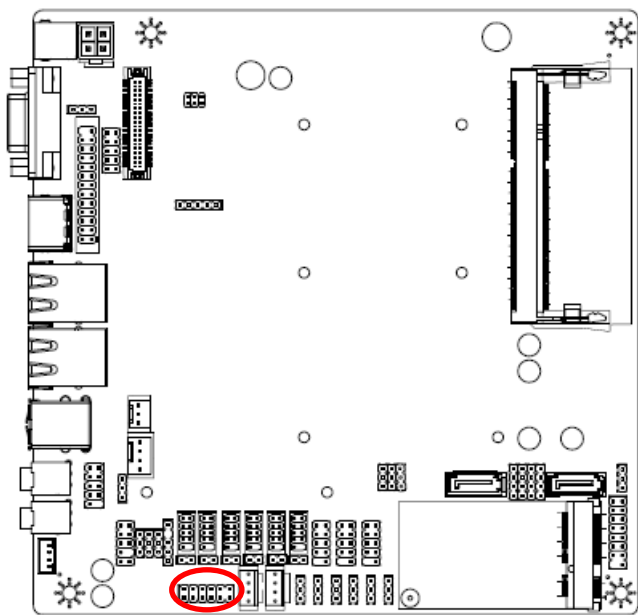
M_SATA



* Default

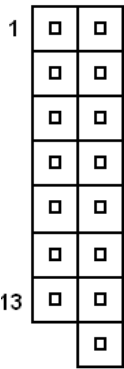
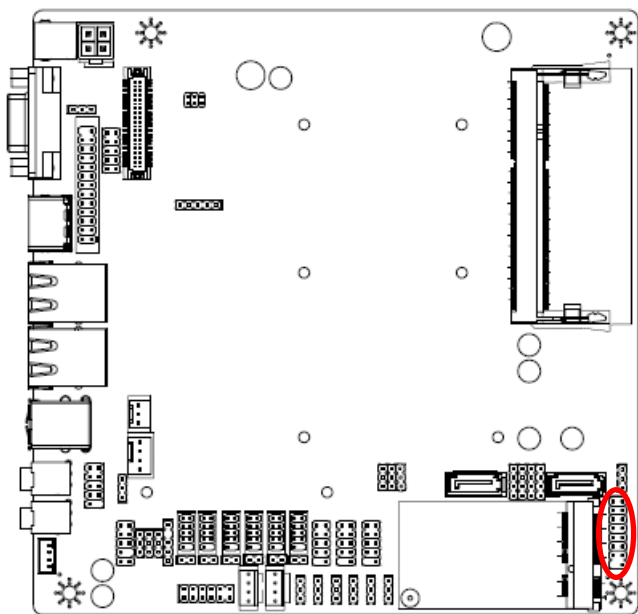
Pin	Define
1-2	M_SATA
2-3	M_PCIE

2.4.11 General Purpose I/O (GPIO)



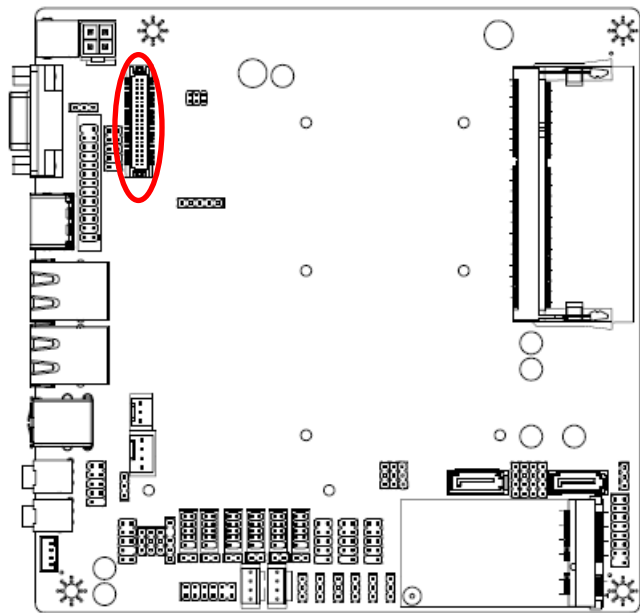
Signal	PIN	PIN	Signal
+5V	1	2	+12V
GPIO	3	4	GPIO
GPIO	5	6	GPIO
GPIO	7	8	GPIO
GPIO	9	10	GPIO
GND	11	12	GND

2.4.12 Front Panel Switches (FPANEL1)



Signal	PIN	PIN	Signal
5VSB	1	2	+HD_LED
+P_LED	3	4	-HD_LED
-P_LED	5	6	PS_ON
+SPEAK	7	8	-PS_ON
NC	9	10	RESET
NC	11	12	-RESET
-SPEAK	13	14	+SLPLED
		16	-SLPLED

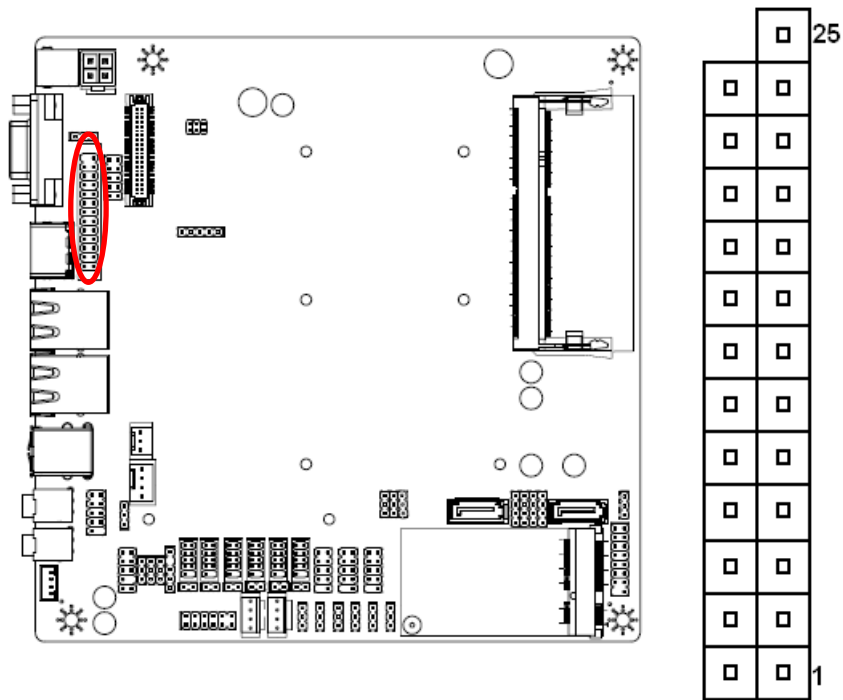
2.4.13 LVDS connector (JLVDS1)



Signal	PIN	PIN	Signal
VDDPAEA	2	1	VDDPAEA
GND	4	3	GND
VDDPAEA	6	5	VDDPAEA
NC	8	7	LVDS0_N0
NC	10	9	LVDS0_P0
GND	12	11	GND
NC	14	13	LVDS0_N1
NC	16	15	LVDS0_P1
GND	18	17	GND
NC	20	19	LVDS0_N2
NC	22	21	LVDS0_P2
GND	24	23	NC
NC	26	25	LVDS0_CLKN
NC	28	27	LVDS0_CLKP
GND	30	29	GND
LVDS_DDCPDATA	32	31	LVDS_DDCPCLK
GND	34	33	GND
NC	36	35	LVDS0_N3
NC	38	37	LVDS0_P3
LVDS_VCON	40	39	NC

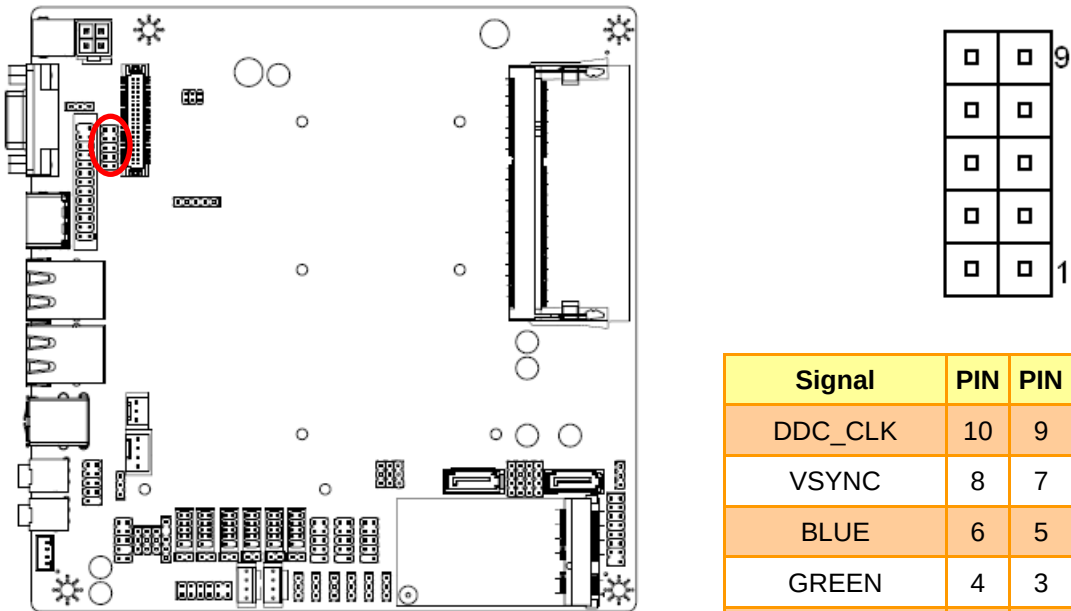
Note: Mapping connector DF13-40DS-1.25C
(1.0mm).

2.4.14 Printer (JLPT)



Signal	PIN	PIN	Signal
		25	SLCT
GND	24	23	PE
GND	22	21	BUSY
GND	20	19	ACK
GND	18	17	PD7
GND	16	15	PD6
GND	14	13	PD5
GND	12	11	PD4
GND	10	9	PD3
SLIN	8	7	PD2
INIT	6	5	PD1
ERR	4	3	PD0
AFD	2	1	STB

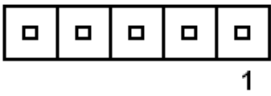
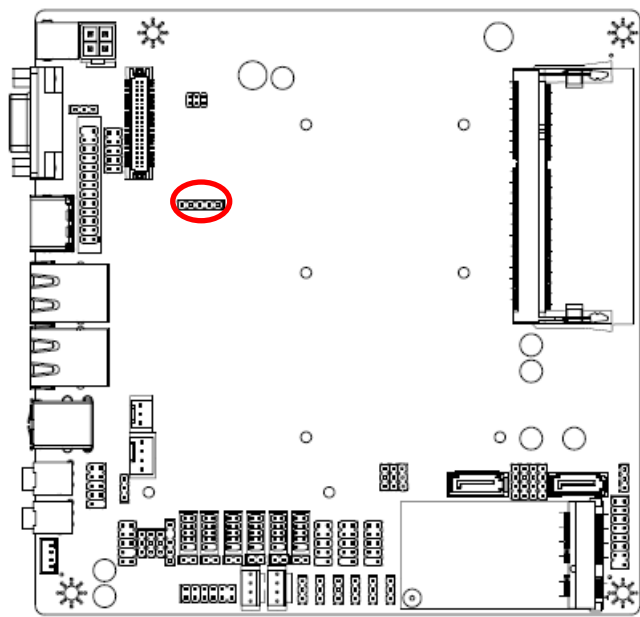
2.4.15 VGA connector (JVGA)



Signal	PIN	PIN	Signal
DDC_CLK	10	9	DDC_DATA
VSYNC	8	7	HSYNC
BLUE	6	5	GND
GREEN	4	3	GND
RED	2	1	GND

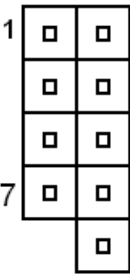
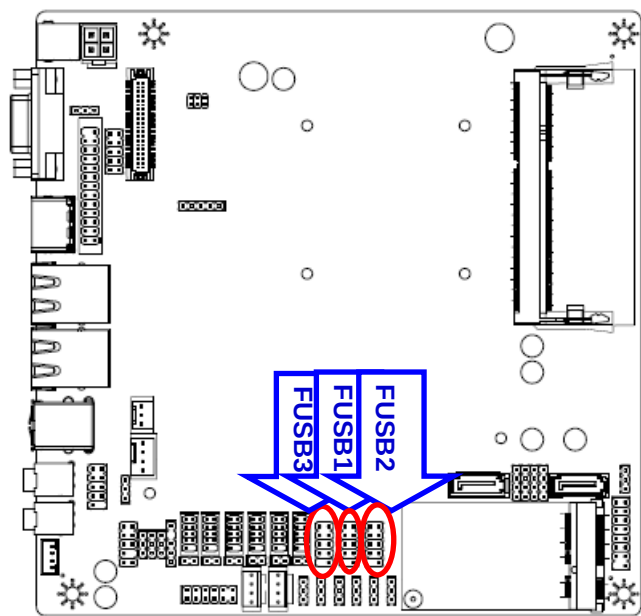
Note: It can only use either D-SUB connector or Pin Header.

2.4.16 Inverter connector (JINVERT1)



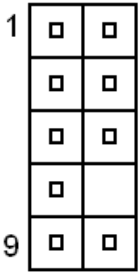
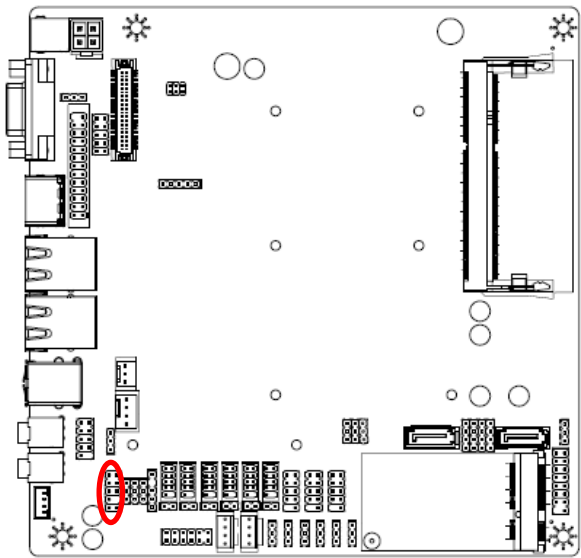
PIN	Signal	Max current
1	12V	1A
2	GND	
3	BLEN	
4	PWM	
5	5V	1A

2.4.17 USB Connector 1~3 - USB2.0 (FUSB1~3)



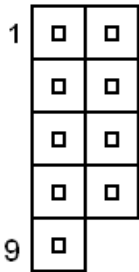
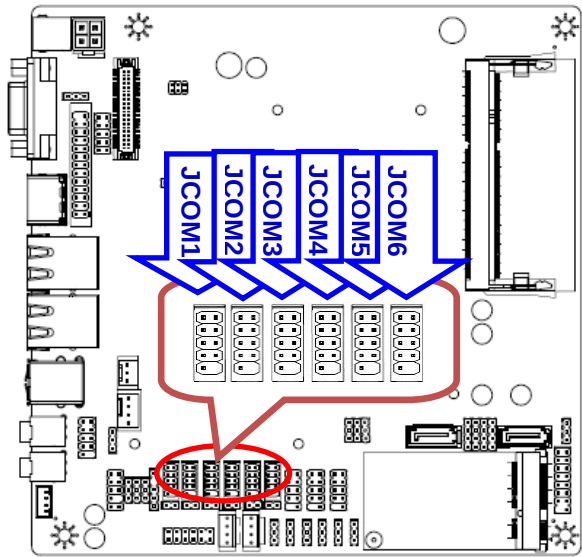
Signal	PIN	PIN	Signal
VCC	1	2	VCC
DATA-	3	4	DATA-
DATA+	5	6	DATA+
GND	7	8	GND
		10	GND

2.4.18 Front Panel Audio Connection Header (F_AUDIO1)



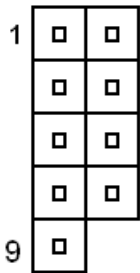
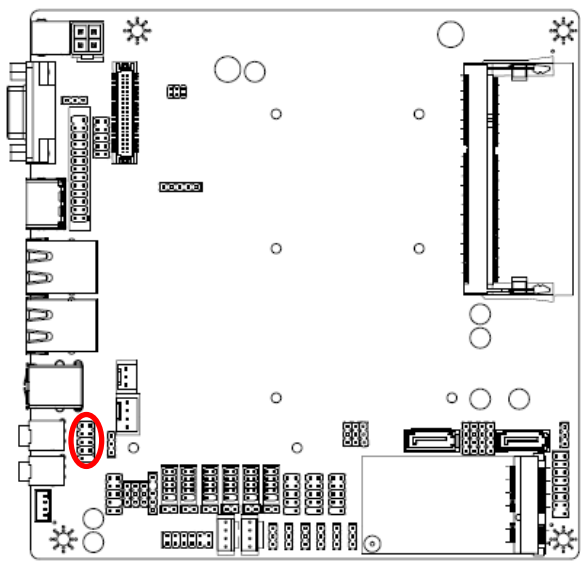
Signal	PIN	PIN	Signal
FROT1L	1	2	GND
PROT1R	3	4	PRESENCE#
PORT2R	5	6	SENSE1_RETURN
SENSE_SEND	7		
PORT2L	9	10	SENSE2_RETURN

2.4.19 Serial port 1~6 connector (JCOM1~6)



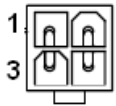
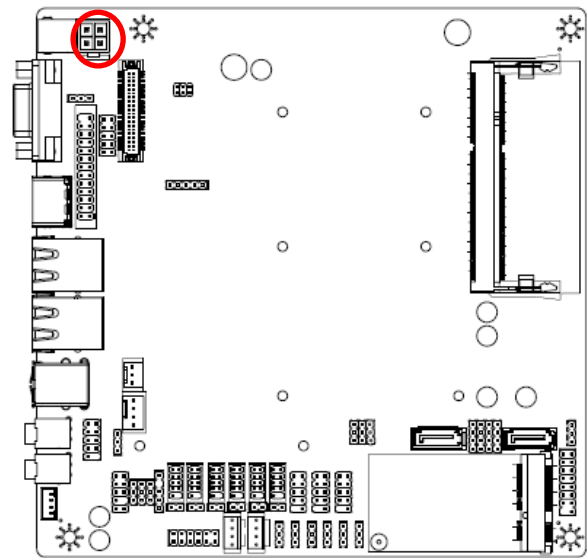
Signal	PIN	PIN	Signal
DCD	1	2	RXD
TXD	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9		

2.4.20 Keyboard & Mouse connector (KM1)



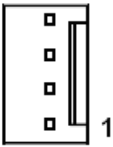
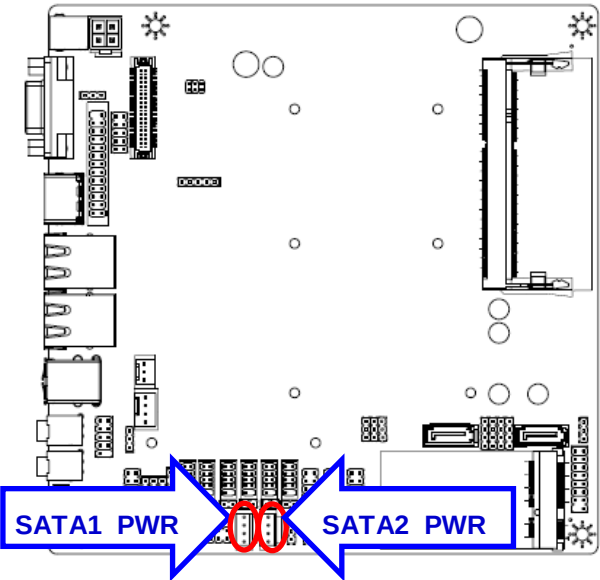
Signal	PIN	PIN	Signal
MDT	1	2	KB_DATA
MCK	3	4	KB_CLK
GND	5	6	GND
VCC	7	8	VCC
KEY	9		

2.4.21 DC power-in connector (J14)



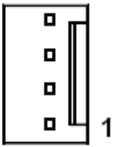
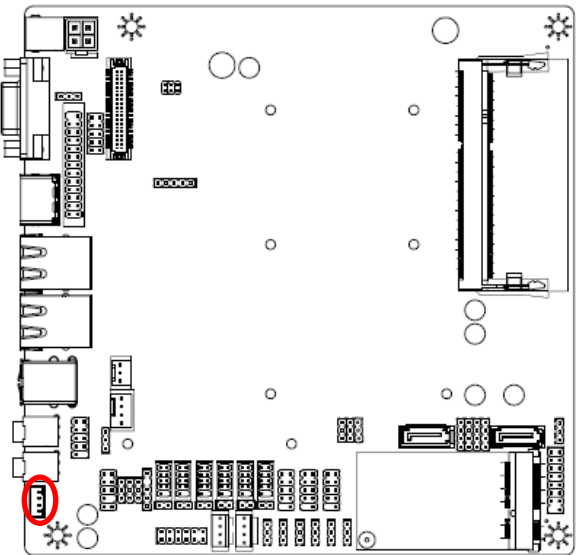
Signal	PIN	PIN	Signal
GND	1	2	GND
+12V	3	4	+12V

2.4.22 SATA Power connector 1~2 (SATA1~2_PWR)



PIN	Signal	Max current
4	5V	1A
3	GND	
2	GND	
1	12V	1A

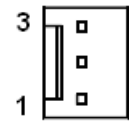
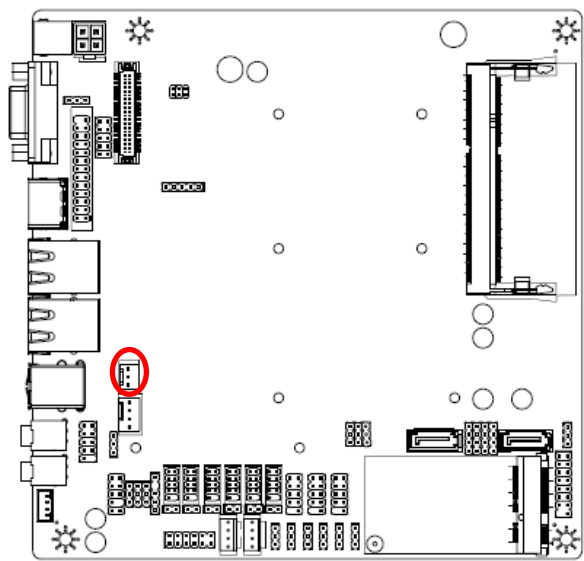
2.4.23 Speaker Headers (JSPK)



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

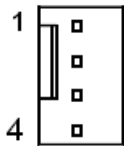
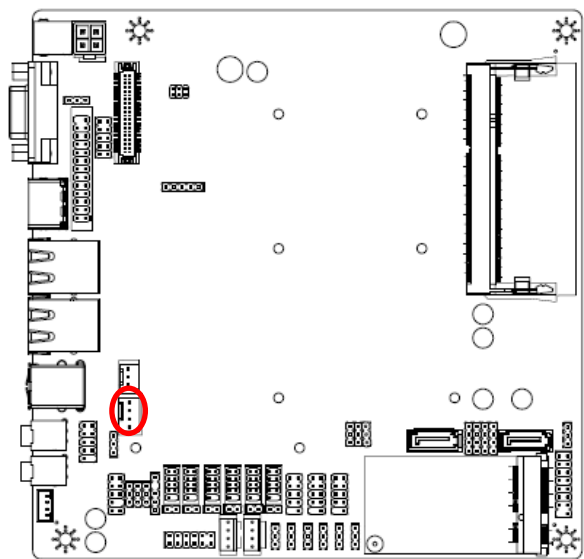
Note: Support 3W X 2 speaker.
Mapping Connector PHR-4

2.4.24 System Fan connector (SFAN1)



PIN	Signal
3	Ground
2	+12V
1	RPM

2.4.25 CPU Fan connector (CFAN1)



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

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.

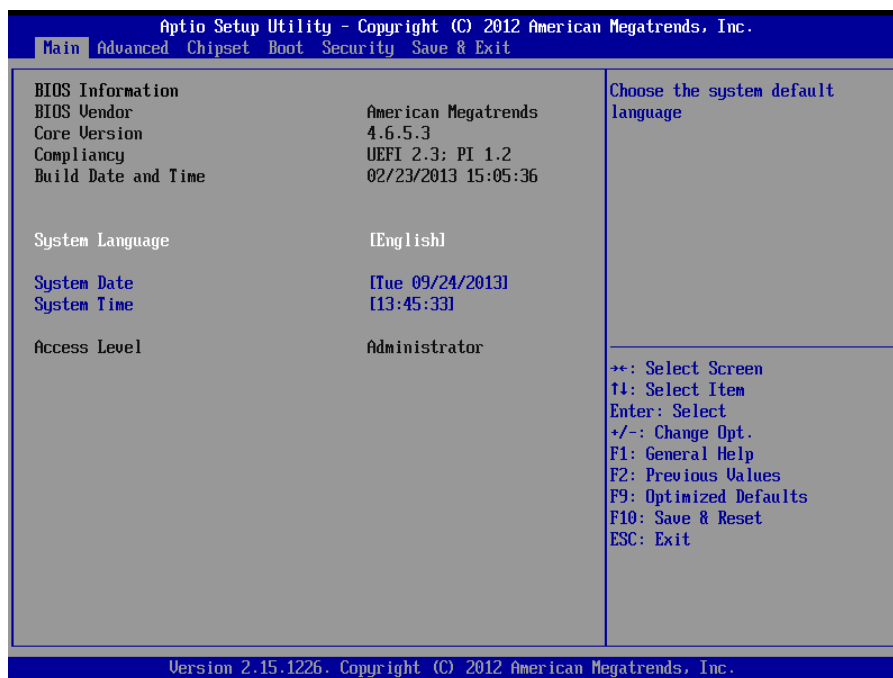
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your systems manufacturer to provide the absolute maximum performance and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

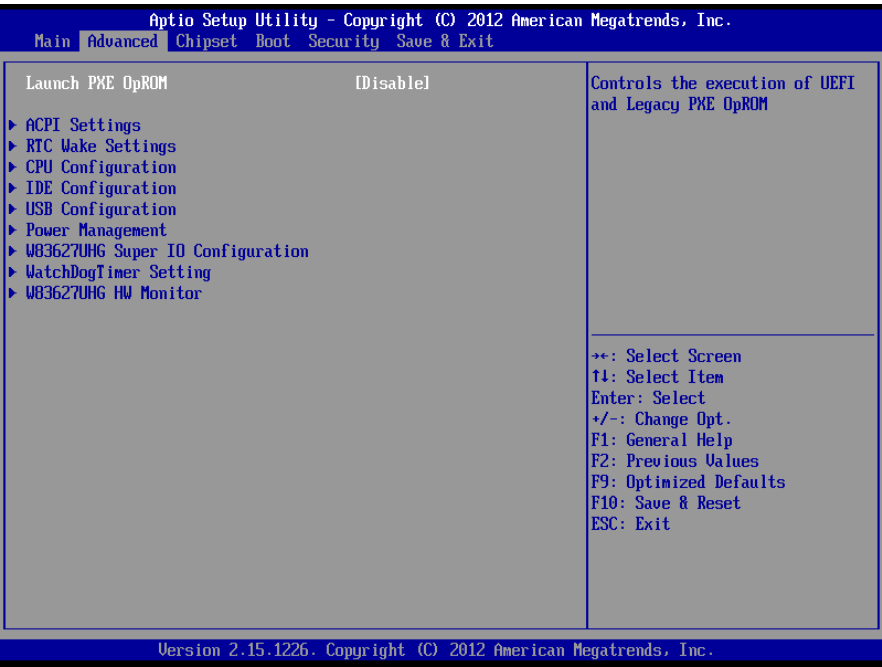
Use the system time option to set the system time. Manually enter the hours, minutes and seconds.



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.

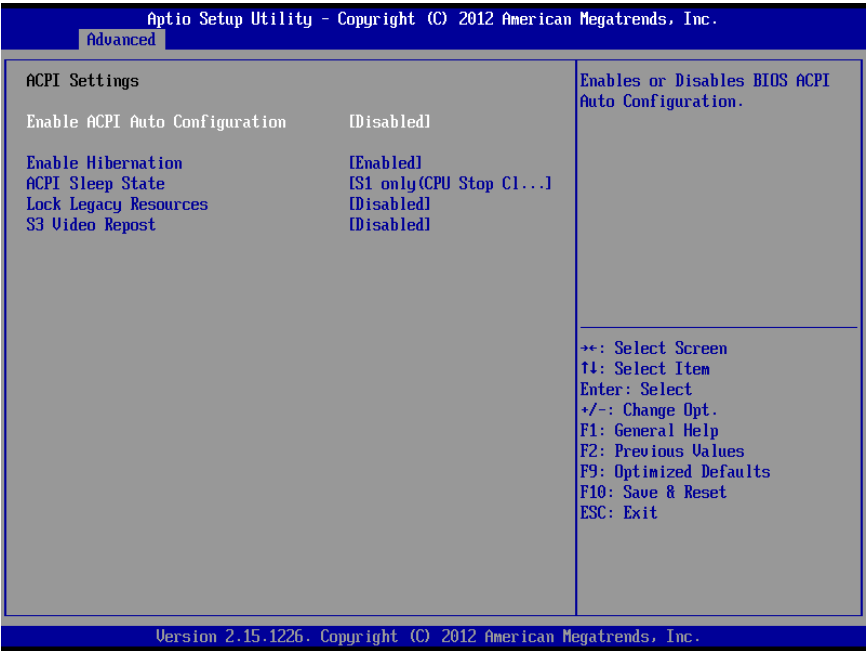
3.6.2 Advanced BIOS settings

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



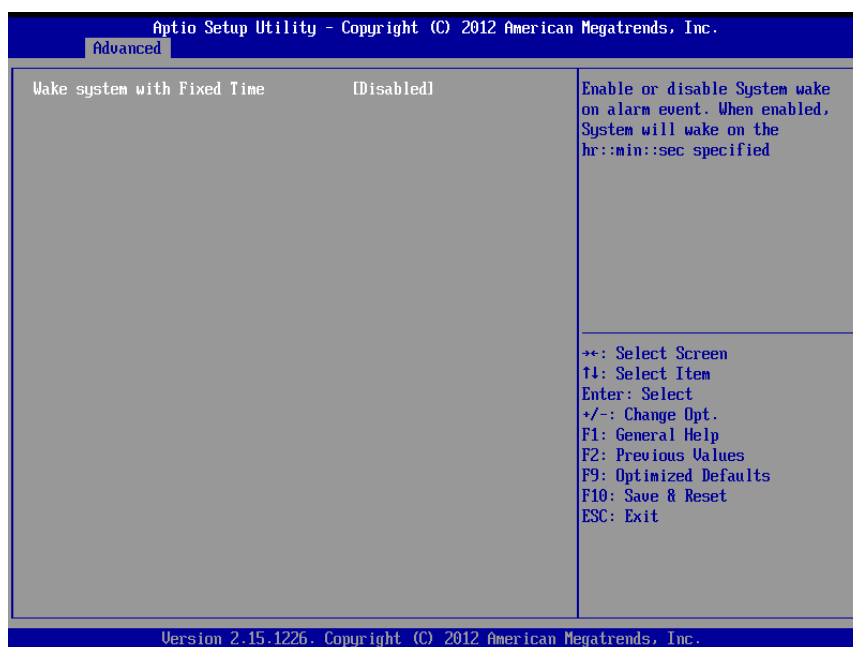
Item	Options	Description
Launch PXE OpROM	Disable[Default] Enable	Controls the execution of UEFI and Legacy PXE OpROM.

3.6.2.1 ACPI Settings



Item	Options	Description
Enable ACPI Auto Configuration	Disabled Enabled[Default]	Enable or Disable BIOS ACPI Auto Configuration.
Enable Hibernation	Disabled Enabled[Default]	Enable or Disable System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
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.
Lock Legacy Resources	Disabled Enabled[Default]	Enable or Disable Lock of Legacy Resources.
S3 Video Repost	Disabled[Default] Enabled	Enable or Disable S3 Video Repost.

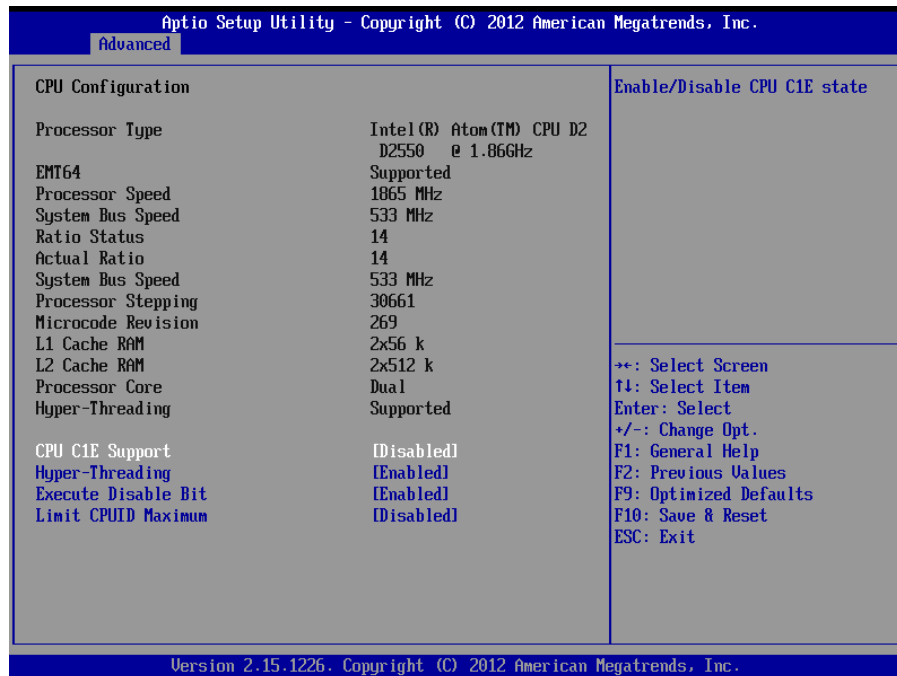
3.6.2.2 RTC Wake Settings



Item	Options	Description
Wake system with Fixed Time	Disabled[Default] Enabled	Enable or Disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.

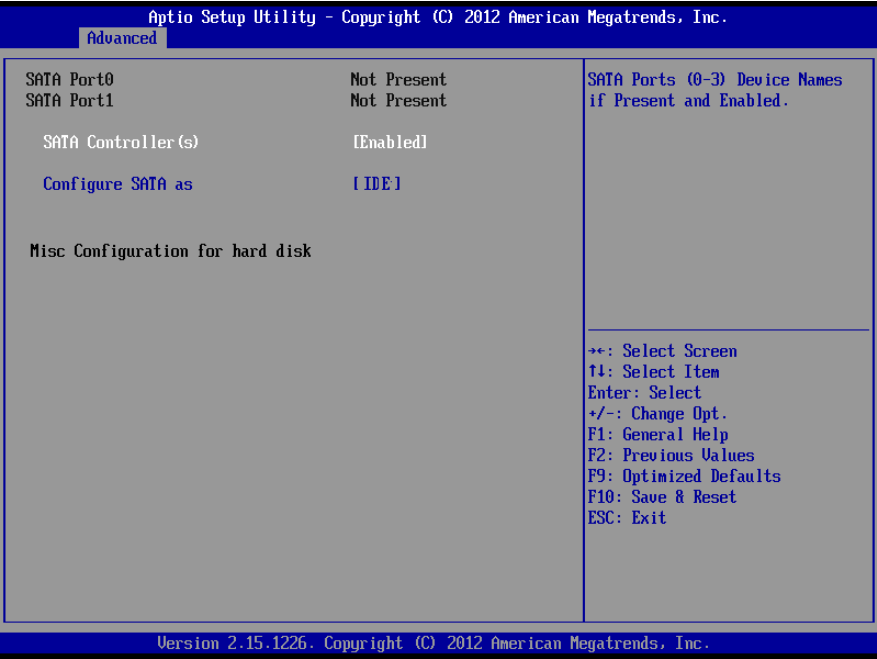
3.6.2.3 CPU Configuration

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



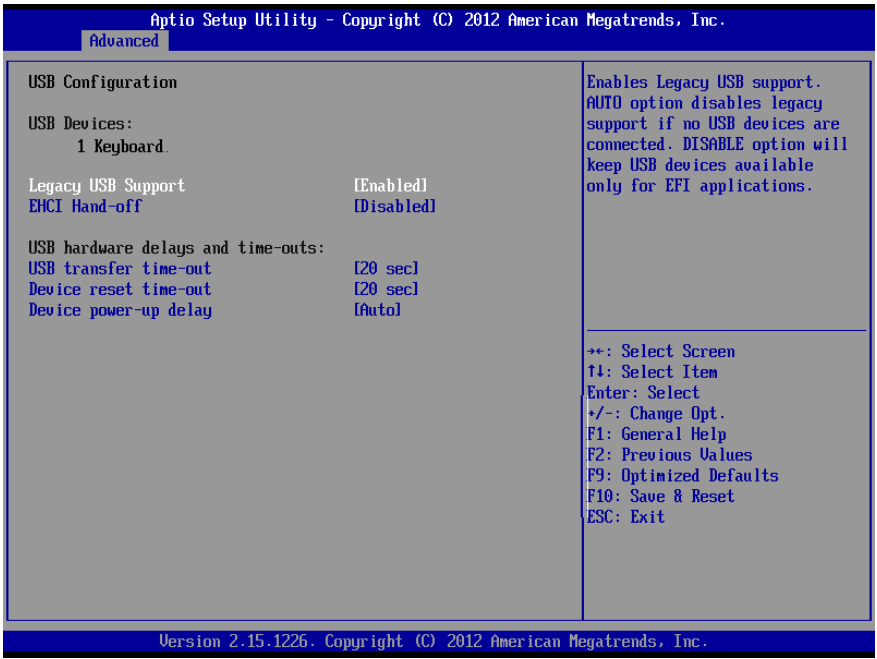
Item	Options	Description
CPU C1E Support	Disabled[Default] Enabled	Enable/Disable CPU C1E state.
Hyper-Threading	Disabled[Default] Enabled	Enable for Windows XP and Linux (OS optimized for Hyper – Threading Technology) and Disabled for other OS (OS not optimized for Hyper – Threading Technology).
Execute Disable Bit	Disabled[Default] Enabled	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.)
Limit CPUID Maximum	Disabled[Default] Enabled	Disabled for Windows XP.

3.6.2.4 IDE Configuration



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

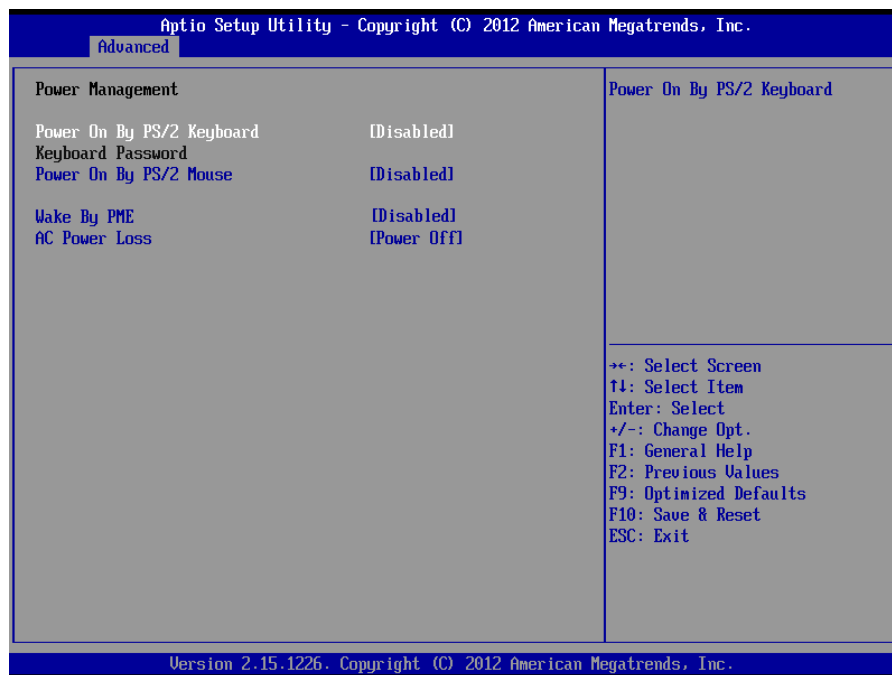
3.6.2.5 USB Configuration



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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.
EHCI Hand-off	Enabled Disabled[Default]	This is a workaround for OSES without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.
USB transfer time-out	1 sec 5 sec 10 sec 20 sec[Default]	This 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.

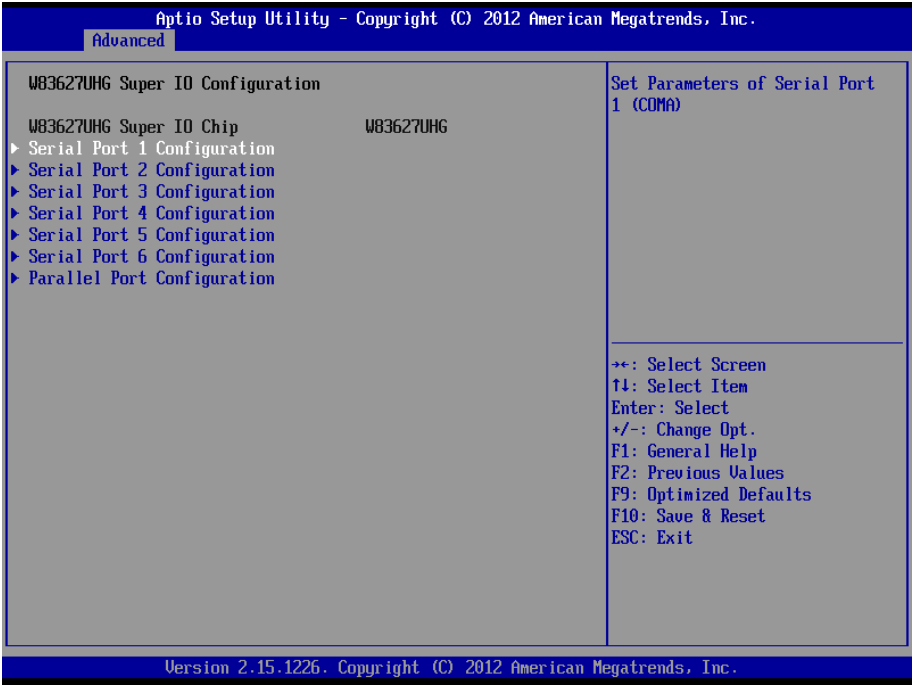
3.6.2.6 Power Management



Item	Options	Description
Power On By PS/2 Keyboard	Disabled [Default] Anykey Password	Power On By PS/2 Keyboard.
Power On By PS/2 Mouse	Enabled Disabled[Default]	Power On By PS/2 Mouse.
Wake By PME	Enabled Disabled[Default]	Wake By PME.
AC Power Loss	Power Off[Default] Power On Last State	AC Power Loss.

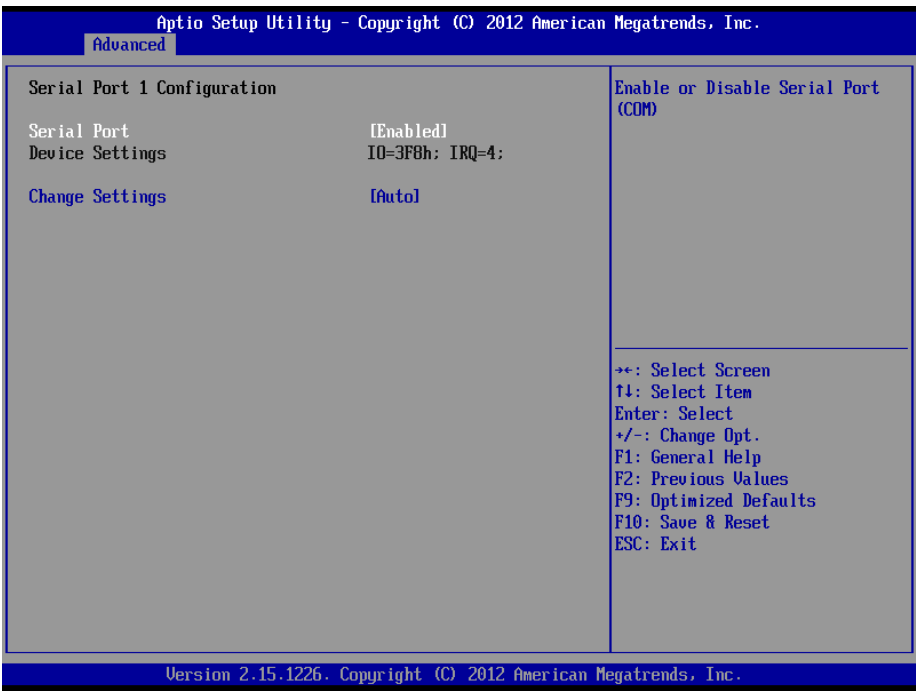
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3.6.2.7 W83627UHG Super IO Configuration



Item	Description
Serial Port 1/2/3/4/5/6 Configuration	Set Parameters of Serial Port 1/2/3/4/5/6 (COMA/B/C/D/E/F).
Parallel Port Configuration	Set Parameters of Parallel Port (LPT/LPTE).

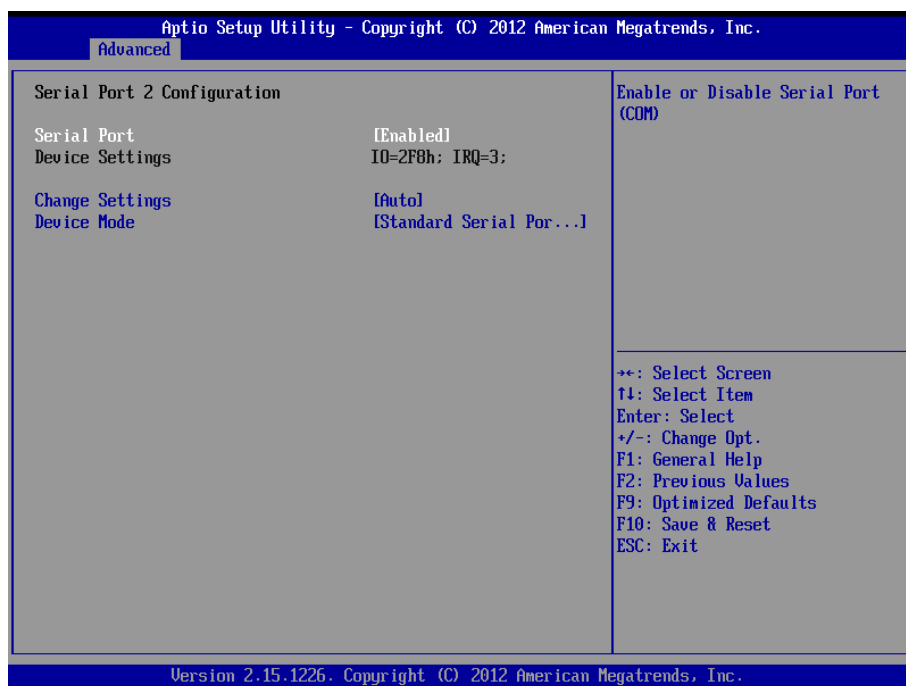
3.6.2.7.1 Serial Port 1 Configuration



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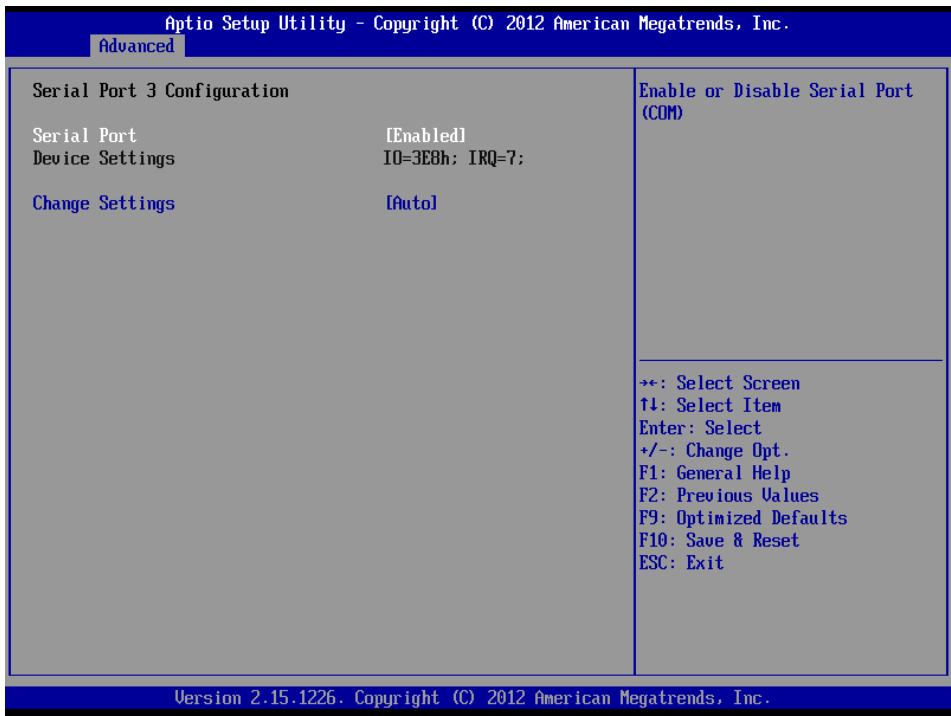
Item	Option	Description
Serial Port	Disabled Enabled[Default]	Enable or Disable Serial Port (COM).
Change Settings	Auto[Default] IO=3F8h; IRQ=4; IO=3F8h; IRQ=3,4,5,6,7,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,10,11,12;	Select an optimal setting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

3.6.2.7.2 Serial Port 2 Configuration



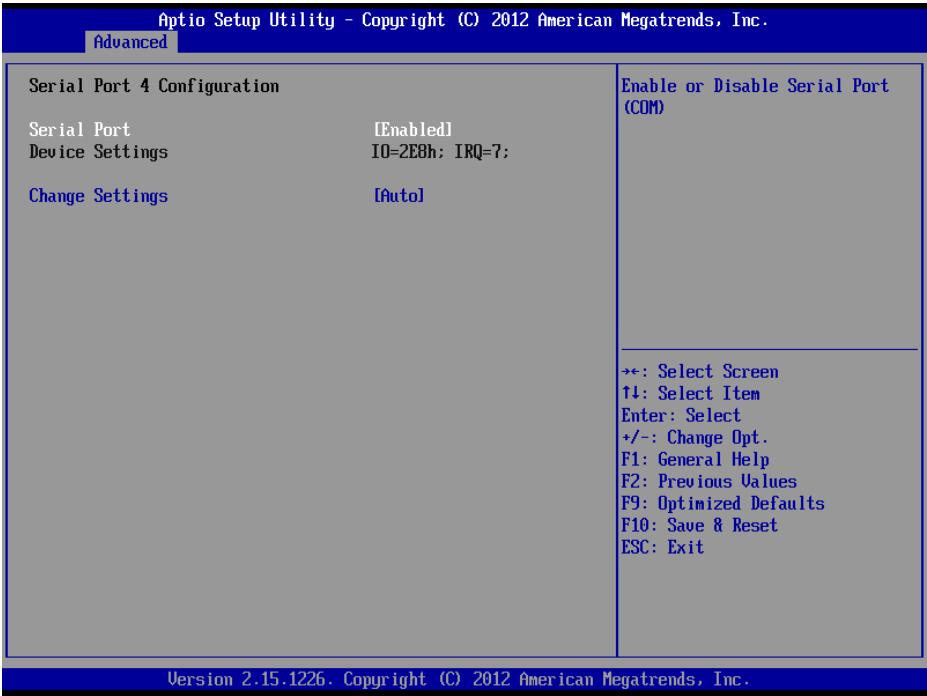
Item	Option	Description
Serial Port	Disabled Enabled[Default]	Enable or Disable Serial Port (COM).
Change Settings	Auto[Default] IO=2F8h; IRQ=3; IO=3F8h; IRQ=3,4,5,6,7,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,10,11,12;	Select an optimal setting for Super IO device.
Device Mode	Standard Serial Port Mode[Default] None use None use	Change the Serial Port mode. Select <High Speed> or <Normal mode> mode.

3.6.2.7.3 Serial Port 3 Configuration



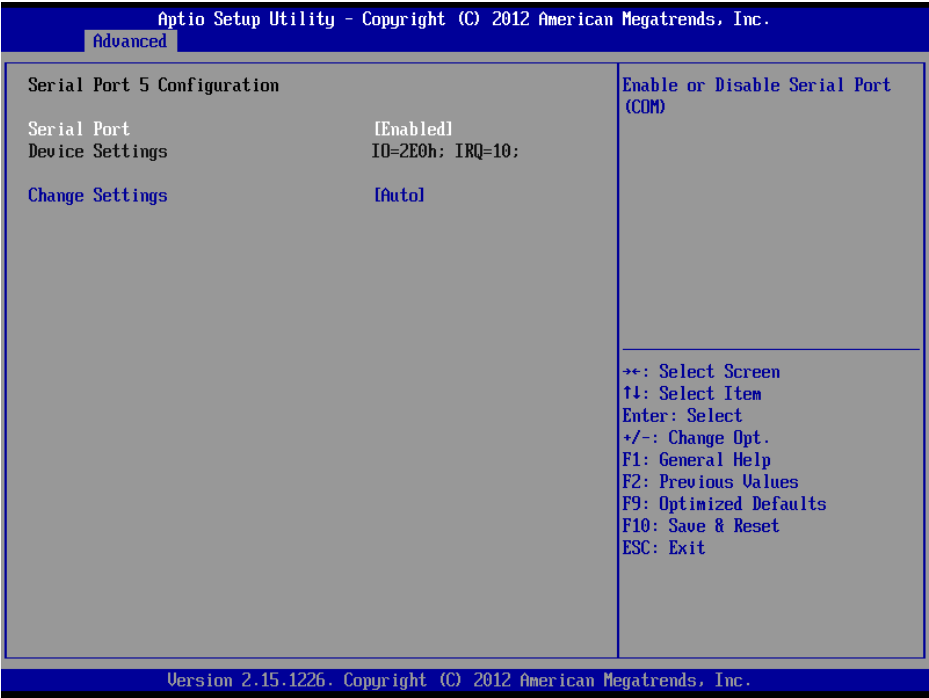
Item	Option	Description
Serial Port	Disabled Enabled[Default]	Enable or Disable Serial Port (COM).
Change Settings	Auto[Default] IO=3E8h; IRQ=7; IO=3F8h; IRQ=3,4,5,6,7,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,10,11,12; IO=2F0h; IRQ=3,4,5,6,7,10,11,12; IO=2E0h; IRQ=3,4,5,6,7,10,11,12;	Select an optimal setting for Super IO device.

3.6.2.7.4 Serial Port 4 Configuration



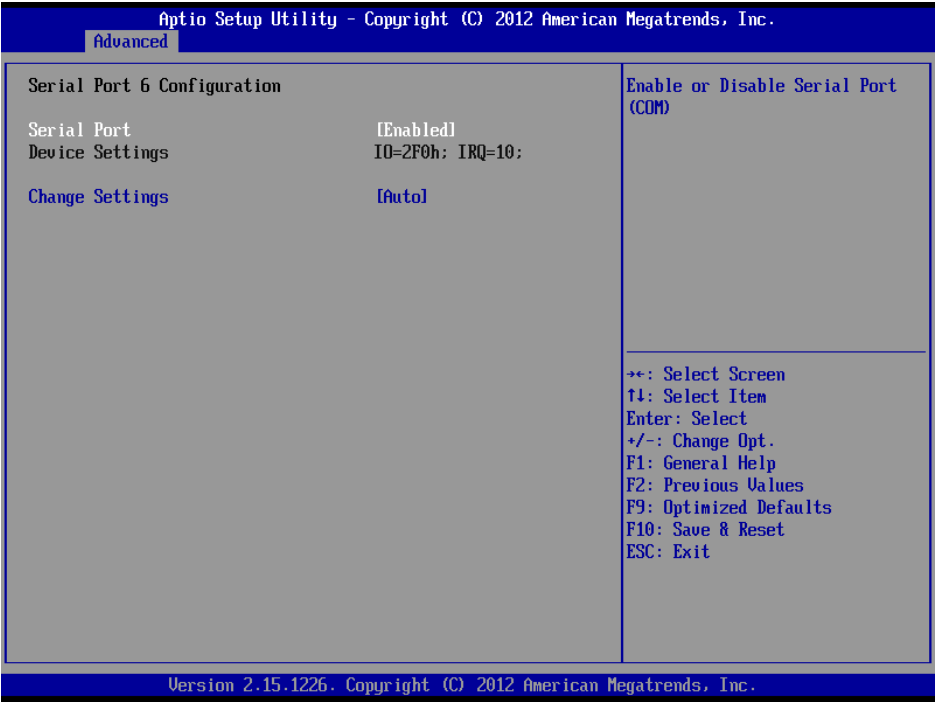
Item	Option	Description
Serial Port	Disabled Enabled[Default]	Enable or Disable Serial Port (COM).
Change Settings	Auto[Default] IO=2E8h; IRQ=7; IO=3F8h; IRQ=3,4,5,6,7,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,10,11,12; IO=2F0h; IRQ=3,4,5,6,7,10,11,12; IO=2E0h; IRQ=3,4,5,6,7,10,11,12;	Select an optimal setting for Super IO device.

3.6.2.7.5 Serial Port 5 Configuration



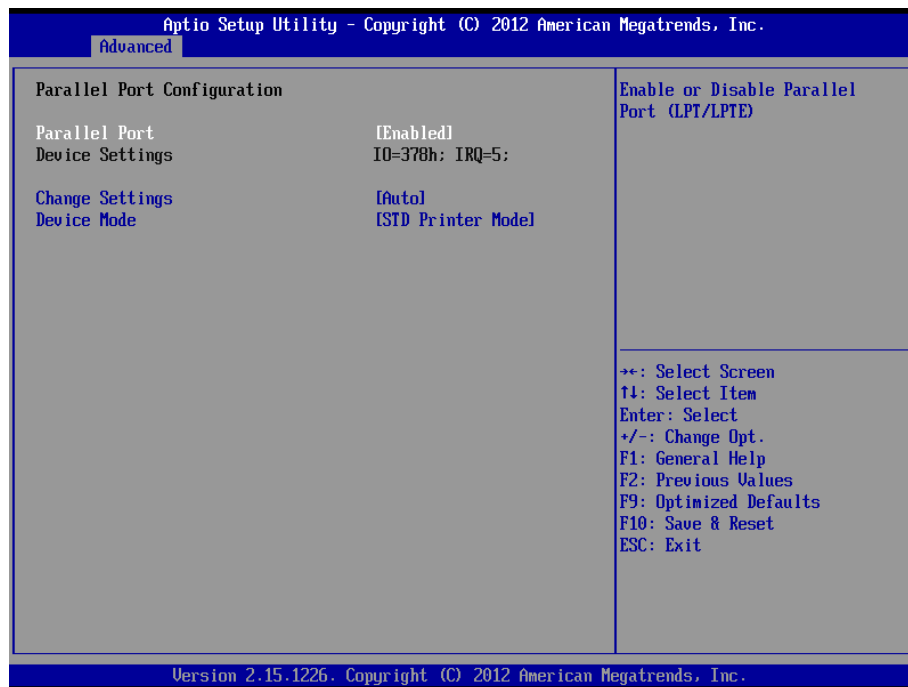
Item	Option	Description
Serial Port	Disabled Enabled[Default]	Enable or Disable Serial Port (COM).
Change Settings	Auto[Default] IO=2F0h; IRQ=7; IO=3F8h; IRQ=3,4,5,6,7,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,10,11,12; IO=2F0h; IRQ=3,4,5,6,7,10,11,12; IO=2E0h; IRQ=3,4,5,6,7,10,11,12;	Select an optimal setting for Super IO device.

3.6.2.7.6 Serial Port 6 Configuration



Item	Option	Description
Serial Port	Disabled Enabled[Default]	Enable or Disable Serial Port (COM).
Change Settings	Auto[Default] IO=2E0h; IRQ=7; 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; IO=2F0h; IRQ=3,4,5,6,7,10,11,12; IO=2E0h; IRQ=3,4,5,6,7,10,11,12;	Select an optimal setting for Super IO device.

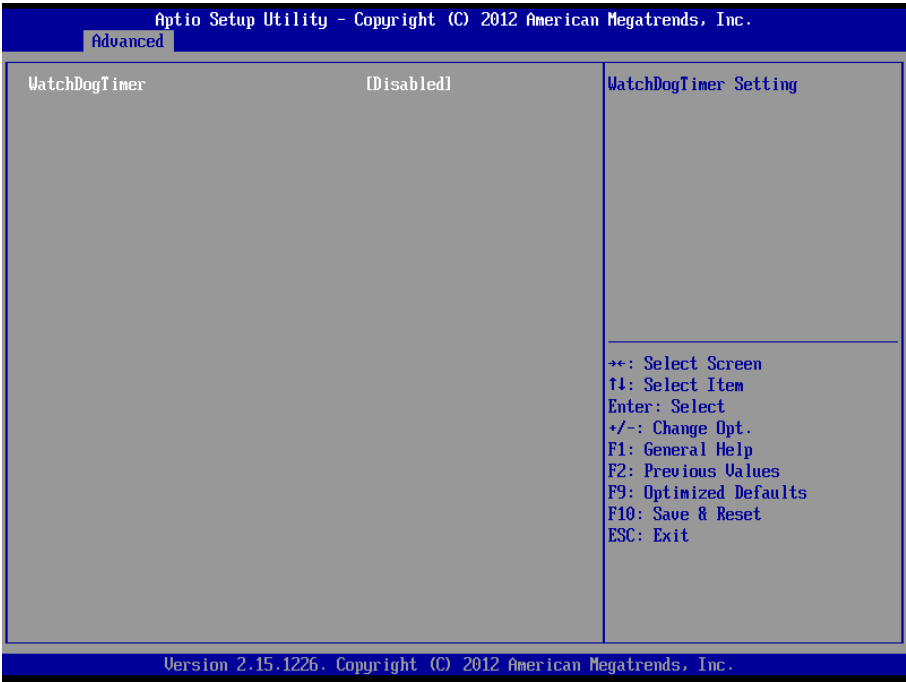
3.6.2.7.7 Parallel Port Configuration



Item	Option	Description
Parallel Port	Disabled Enabled[Default]	Enable or Disable Parallel Port (LPT/LPTE).
Change Settings	Auto[Default] IO=378h; IRQ=5; IO=378h; IRQ=5,6,7,11,12; None use None use	Select an optimal setting for Super IO device.
Device Mode	STD Printer Mode[Default] SPP Mode EPP -1.9 and SPP Mode EPP -1.7 and SPP Mode ECP Mode ECP and EPP 1.9 Mode ECP and EPP 1.7 Mode	Change the Serial Port mode. Select <High Speed> or <Normal mode> mode.

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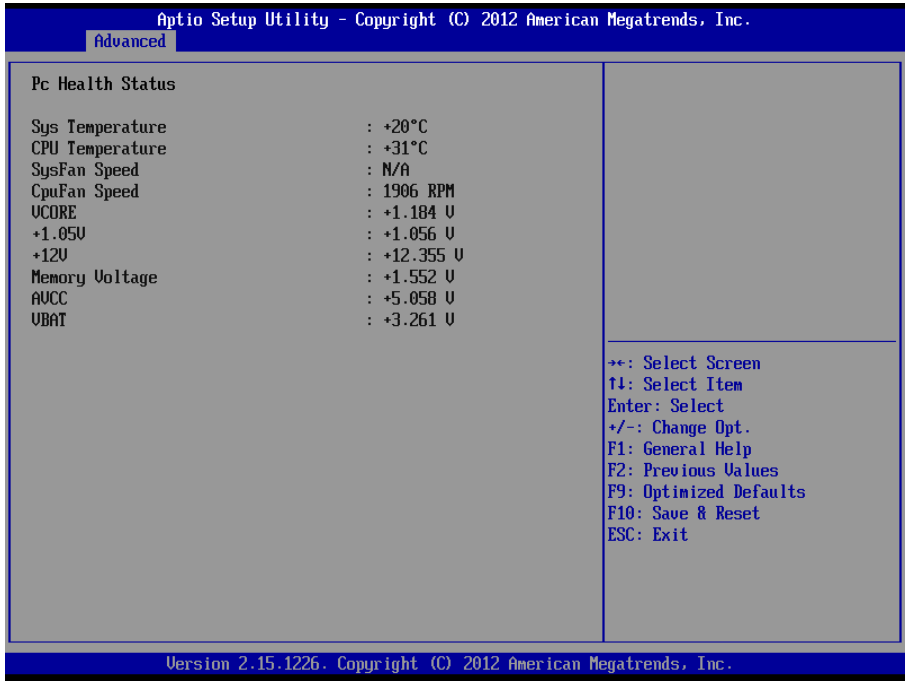
3.6.2.8 WatchDogTimer Settings



Item	Options	Description
WatchDogTimer	Disabled[Default] Enabled	WatchDogTimer Setting.

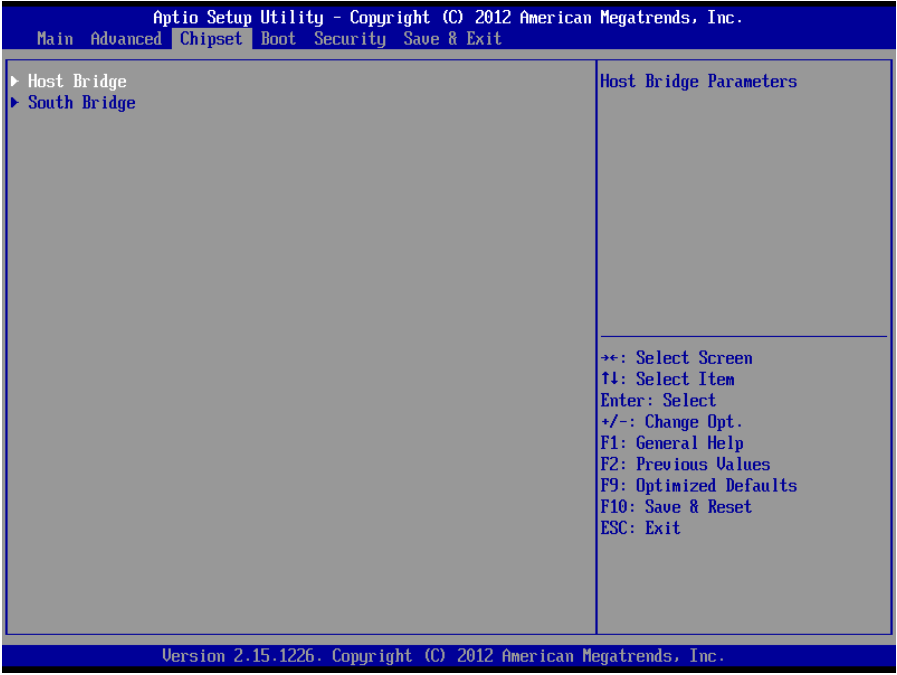
3.6.2.9 W83627UHG HW Monitor

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



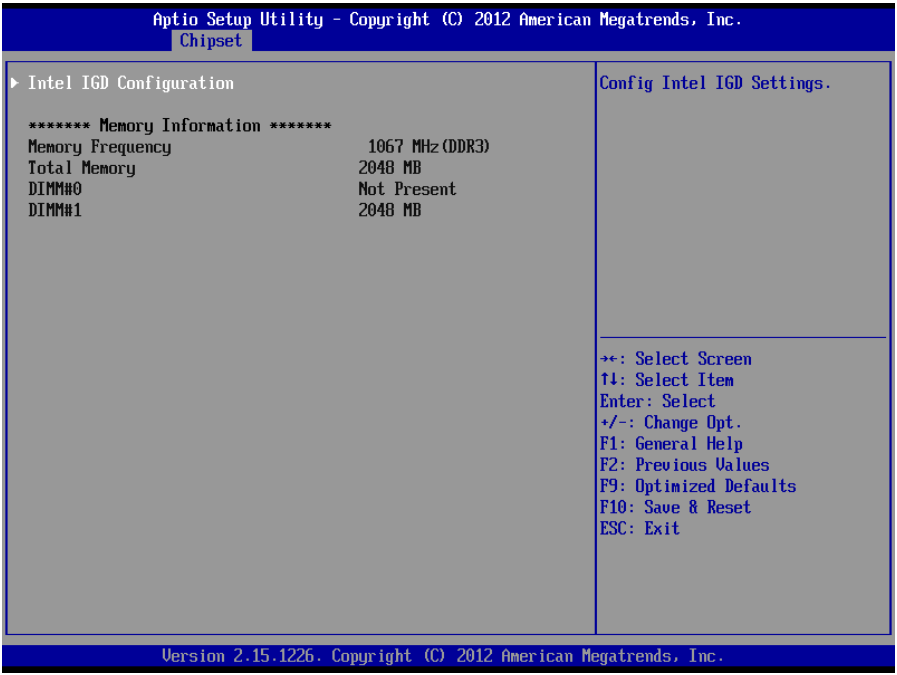
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3.6.3 Chipset



Item	Description
Host Bridge	Host Bridge Parameters.
South Bridge	South Bridge Parameters.

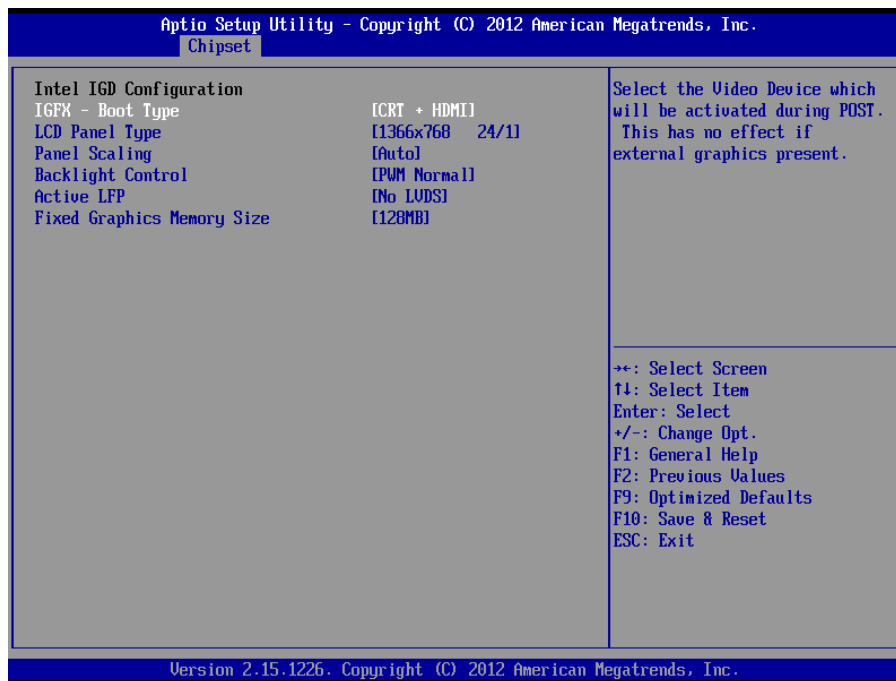
3.6.3.1 Host Bridge



Item	Options	Description
Intel IGD Configuration		Config Intel IGD Settings.

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3.6.3.1.1 Intel IGD Configuration

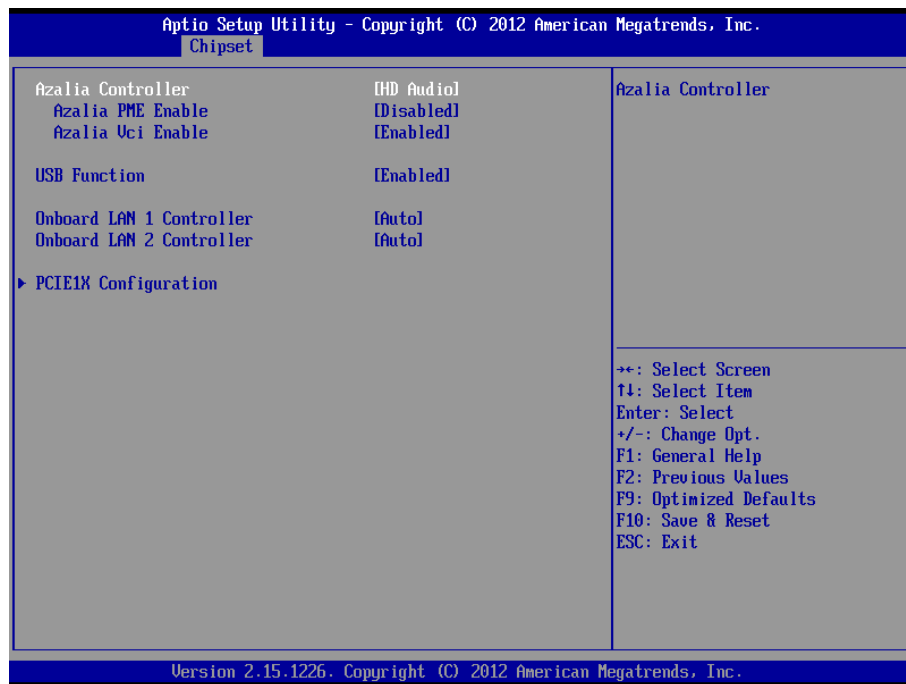


Item	Options	Description
IGFX – Boot Type	VBIOS Default[Default] CRT LVDS HDMI CRT+LVDS CRT+HDMI HDMI+LVDS	Select the Video Device which will be activated during POST. This has no effect if external graphics present.
LCD Panel Type	VBIOS Default[Default] 640x480 18/1 800x600 18/1 1024x768 18/1 None use 1366x768 24/1 1366x768 18/1 1024x600 18/1 1280x800 18/1	Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.
Panel Scaling	Auto[Default] Force Scaling Off Maintain Aspect Ratio	Select the LCD panel scaling option used by the Internal Graphics Device.
Backlight Control	PWM Inverted None use PWM Normal[Default] None use	Back Light Control Setting.
Active LFP	No LVDS[Default] LVDS None use	Select the Active LFP Configuration. No LVDS:VBIOS does not enable LVDS. Int-LVDS:VBIOS enables LVDS driver by Integrated encoder. SDVO LVDS:VBIOS enables LVDS driver by SDVO encoder. eDP

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		Port-A:LFP Driven by Int-Display Port encoder from Port-A. eDP Port-D:LFP Driven by Int-DisplayPort encoder from Port-D(through PCH).
Fixed Graphics Memory Size	128 MB[Default] 256 MB	Configure Fixed Graphics Memory Size.

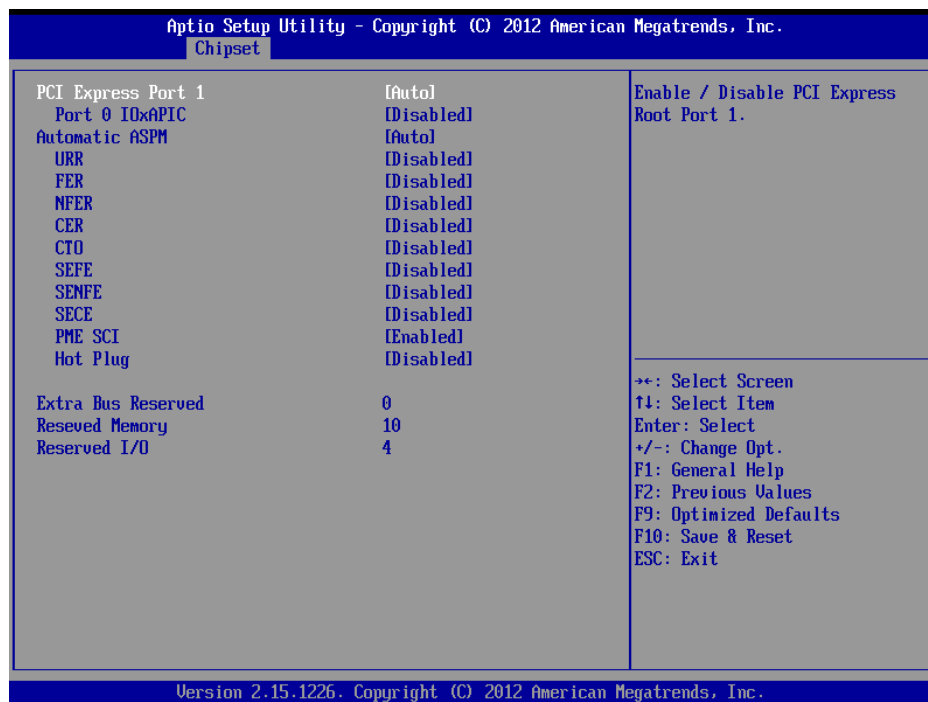
3.6.3.2 South Bridge



Item	Options	Description
Azalia Controller	Disabled HD Audio[Default]	Azalia Controller.
Azalia PME Enable	Disabled[Default] Enabled	Enable or Disable Power Management capability of Audio Controller.
Azalia Vci Enable	Disabled Enabled[Default]	Azalia supports 1 extended VC, which, when enabled, overrides ICH VCp settings.
USB Function	Disabled 1 USB Ports 2 USB Ports 3 USB Ports 4 USB Ports 5 USB Ports 6 USB Ports 7 USB Ports 8 USB Ports[Default]	Enable/Disable USB Function.
Onboard LAN 1/2 Conroller	Disabled Enabled Auto[Default]	Enable/Disable Onboard Lan Controller.
PCIE1X Configuration	PCI Express Root Port 1 Settings.	

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3.6.3.2.1 PCIE1X Configuration

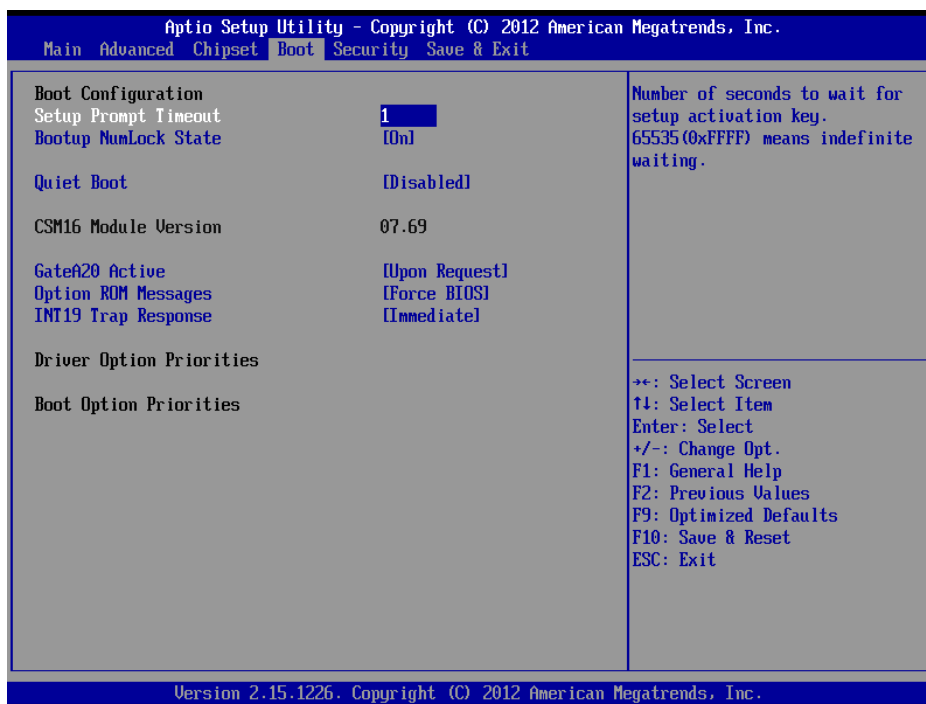


Item	Options	Description
PCI Express Port 1	Disabled Enabled Auto[Default]	Enable/Disable PCI Express Root Port 1.
Port 0 I/OxAPIC	VBIOS Default[Default] 640x480 18/1 800x600 18/1 1024x768 18/1 None use 1366x768 24/1 1366x768 18/1 1024x600 18/1 1280x800 18/1	Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.
Automatic ASPM	Manual Auto[Default]	Automatically enable ASPM based on reported capabilities and known issue.
URR	Disabled[Default] Enabled	PCI Express Unsupported Request Reporting Enable/Disable.
FER	Disabled[Default] Enabled	PCI Express Device Fatal Error Reporting Enable/Disable.
NFER	Disabled[Default] Enabled	PCI Express Device Non-Fatal Error Reporting Enable/Disable.
CER	Disabled[Default] Enabled	PCI Express Device Correctable Error Reporting Enable/Disable.
CTO	Disabled[Default] Enabled	PCI Express Completion Timer TO Enable/Disable.
SEFE	Disabled[Default] Enabled	Root PCI Express System Error on Fatal Error Enable/Disable.
SENF	Disabled[Default] Enabled	Root PCI Express System Error on Non-Fatal Error Enable/Disable.
SECE	Disabled[Default]	Root PCI Express System Error on

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	Enabled	Correctable Error Enable/Disable.
PME SCI	Disabled Enabled[Default]	PCI Express PME SCI Enable/Disable.
Hot Plug	Disabled[Default] Enabled	PCI Express Hot Plug Enable/Disable.
Extra Bus Reserved	0-7	Extra Bus Reserved (0-7) for bridges behind this Root Bridge.
Reserved Memory	1-20	Reserved Memory and Prefetchable Memory (1-20MB) Range for this Root Bridge.
Reserved I/O	4-20	Reserved I/O (4K/8K/12K/16K/20K) Range for this Bridge.

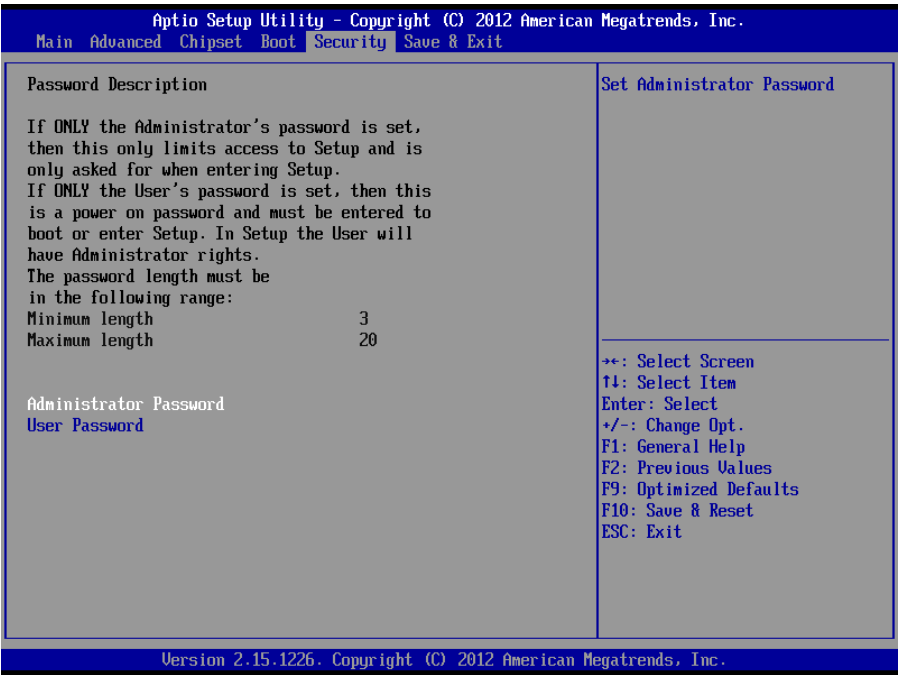
3.6.4 Boot settings



Item	Option	Description
Setup Prompt Timeout	1~65535	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On Off[Default]	Select the keyboard NumLock state.
Quiet Boot	Disabled[Default] Enabled	Enables or disables Quiet Boot option.
GateA20 Active	Upon Request[Default] Always	UPON REQUEST – GA20 can be disabled using BIOS services. ALWAYS – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.
Option ROM Messages	Force BIOS[Default] Keep Current	Set display mode for Option ROM.
INT19 Trap Response	Immediate Postponed[Default]	BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE – execute the trap right away; POSTPONED – execute the trap during legacy boot.

3.6.5 Security

Use the Security menu to set system and user password.



3.6.5.1 Administrator Password

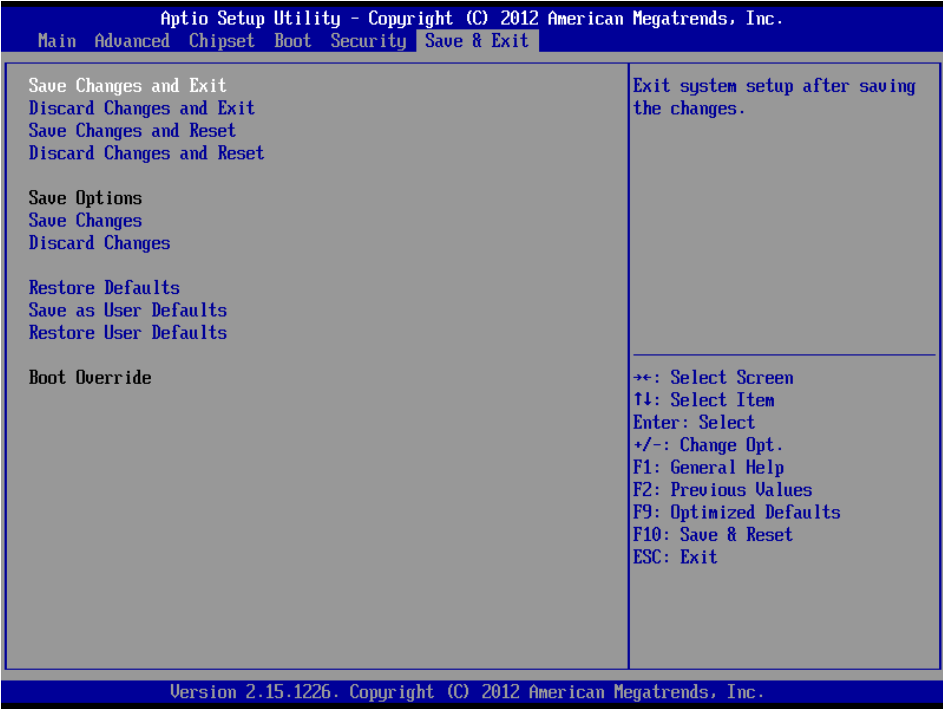
This setting specifies a password that must be entered to access the BIOS Setup Utility. If only the Administrator's password is set, then this only limits access to the BIOS setup program and is only asked for when entering the BIOS setup program. By default, no password is specified.

3.6.5.2 User Password

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

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3.6.6 Save & Exit



3.6.6.1 Save Changes and Exit

Exit system setup after saving the changes.

3.6.6.2 Discard Changes and Exit

Exit system setup without saving any changes.

3.6.6.3 *Save Changes and Reset*

Reset the system after saving the changes.

3.6.6.4 *Discard Changes and Reset*

Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The setup program then exits and reboots the controller.

3.6.6.5 *Save Changes*

Save Changes done so far to any of the setup options.

3.6.6.6 *Discard Changes*

Discard Changes done so far to any of the setup options.

3.6.6.7 *Restore Defaults*

This option restores all BIOS settings to the factory default. This option is useful if the controller exhibits unpredictable behavior due to an incorrect or inappropriate BIOS setting.

3.6.6.8 *Save as User Defaults*

This option saves a copy of the current BIOS settings as the User Defaults. This option is useful for preserving custom BIOS setup configurations.

3.6.6.9 *Restore User Defaults*

This option restores all BIOS settings to the user defaults. This option is useful for restoring previously preserved custom BIOS setup configurations.

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

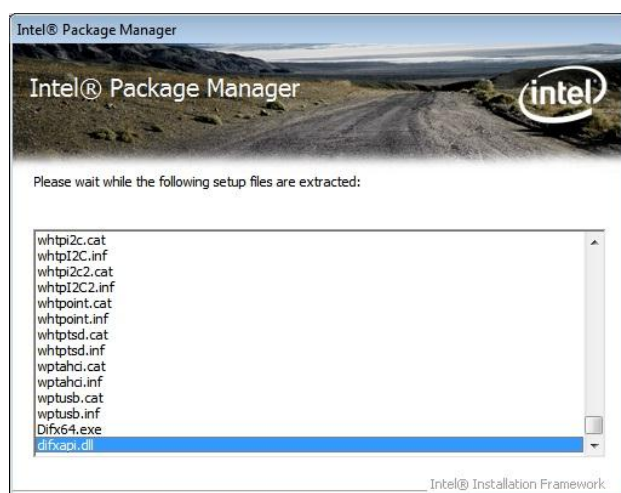
Insert the Supporting DVD-ROM to DVD-ROM drive, click on “start” icon and it should show the index page of Avalue’s products automatically. If not, locate the folder HTML and choose the product from the targeted folder.



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

Step 1. Locate

「\Driver_Chipset\Intel\EMX-CDD_Chipset」.



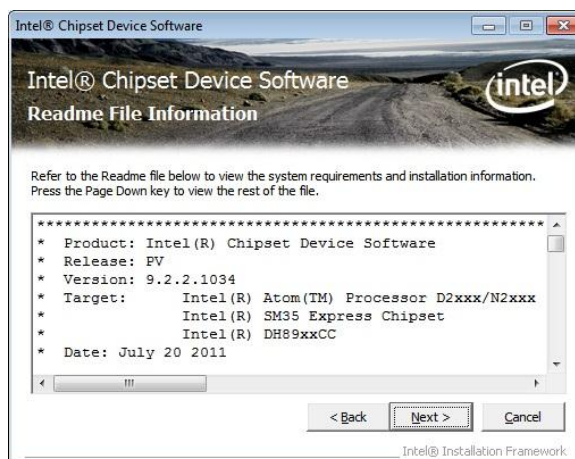
Step 2. Start setup.



Step 3. Select Next to continue installation.



Step 4. Select Yes to the next step.



Step 5. Select Next to continue installation.



Step 6. Installing.

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Step 7. Select **Next** to the next step.



Step 8. Select **Finish** to complete Installation.

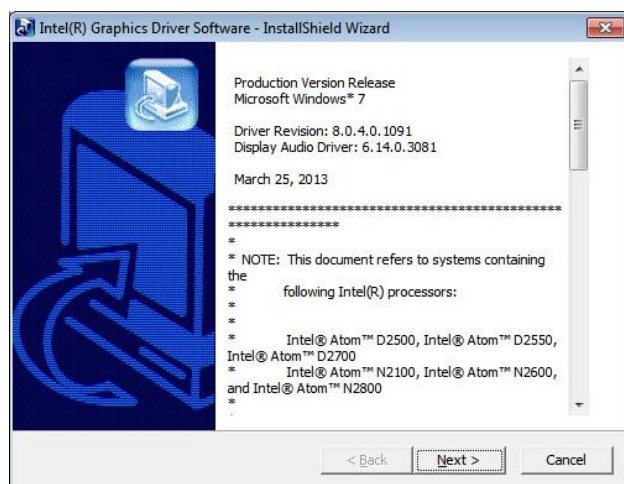
4.2 Install VGA Driver

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



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

Step 1. Locate 「\VGA\EMX-CDD_Video」.



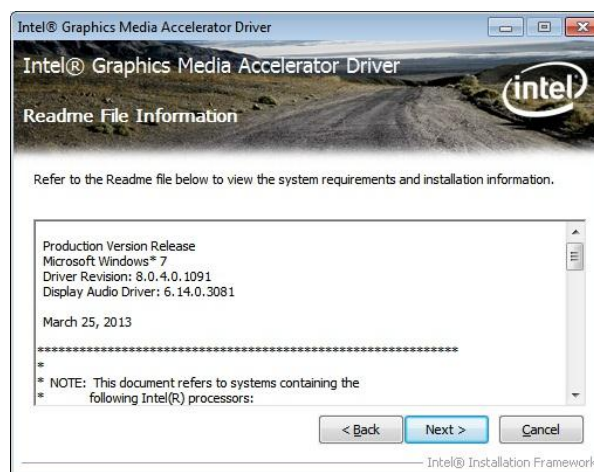
Step 2. Select **Next** to start setup.



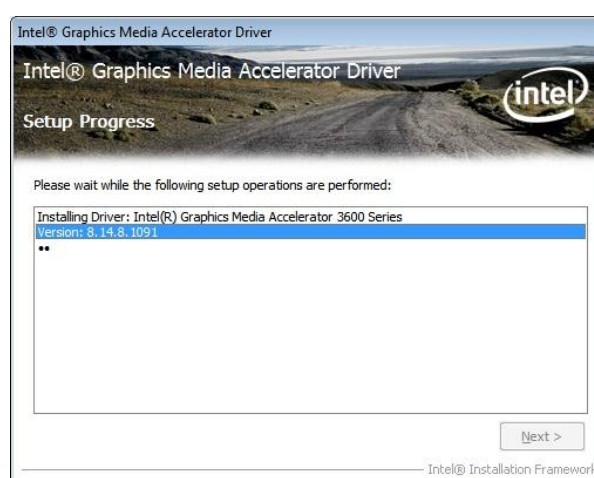
Step 3. Select **Next** to the next step.



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

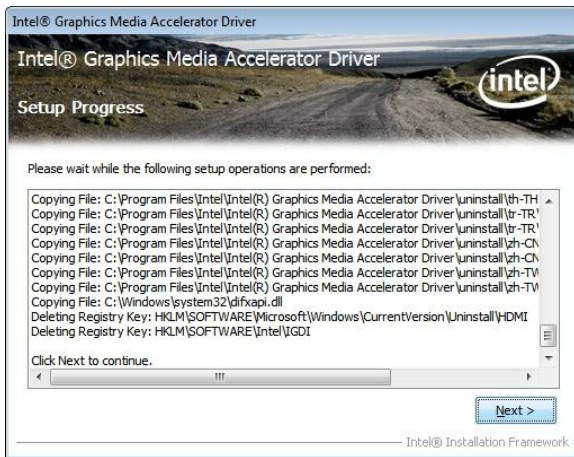


Step 5. Select **Next** to continue installation.



Step 6. Installing.

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Step 7. Select **Next** to the next step.



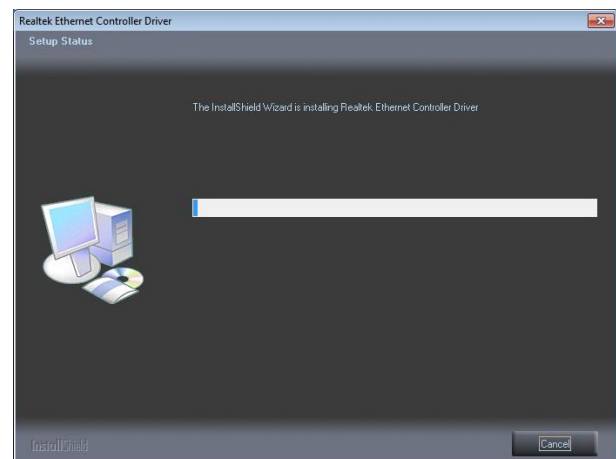
Step 8. Select **Finish** to complete Installation.

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

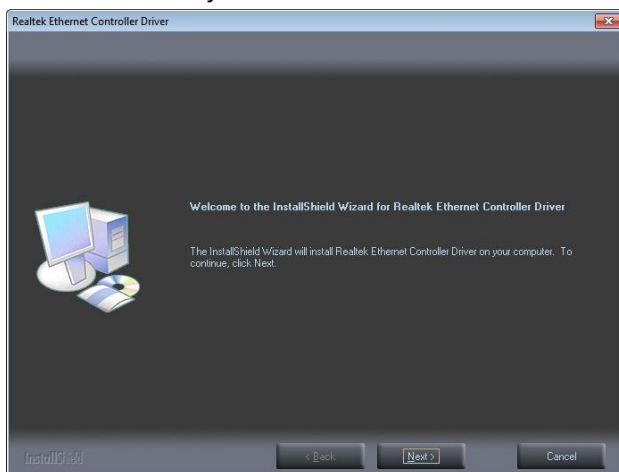
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to
 \Driver_Gigabit\Realtek\RTL8111E\EMX-CD
 D_LAN.



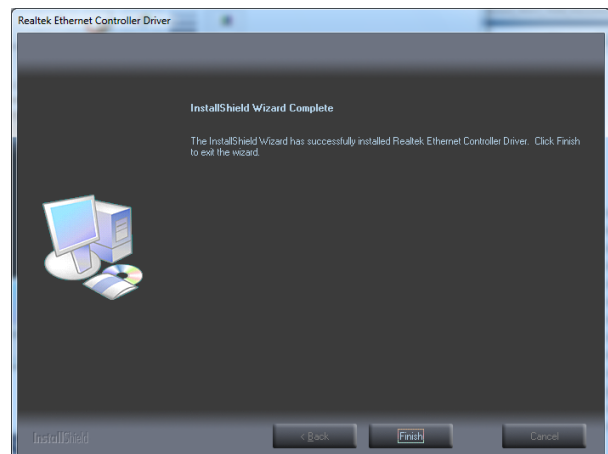
Note: The installation procedures and screen shots in this section are based on Windows 7 operation system.



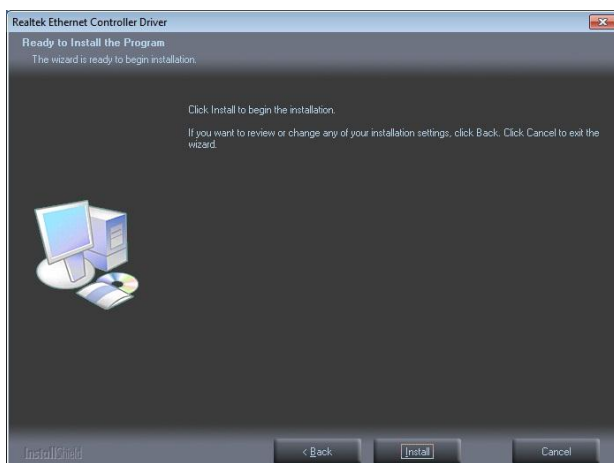
Step 3. Installing.



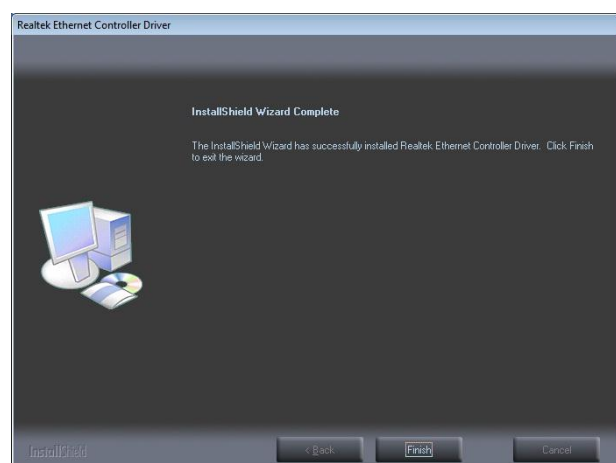
Step 1. Click Next to Install.



Step 4. Installing.



Step 2. Click Install to begin the installation.



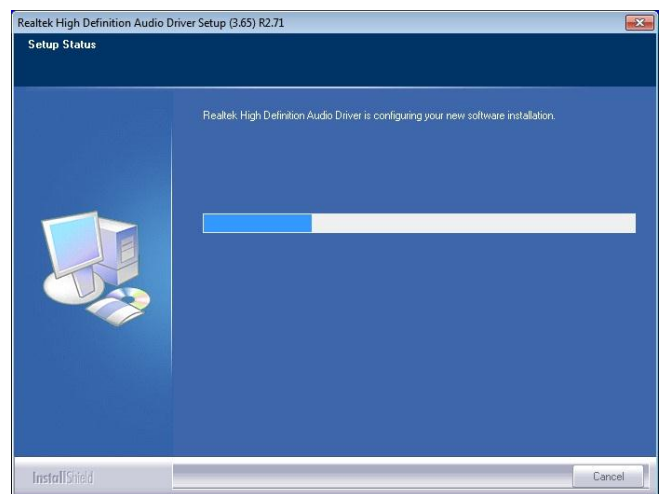
Step 5. Click Finish to complete setup.

4.4 Install Audio Driver (For Realtek ALC661 HD Audio)

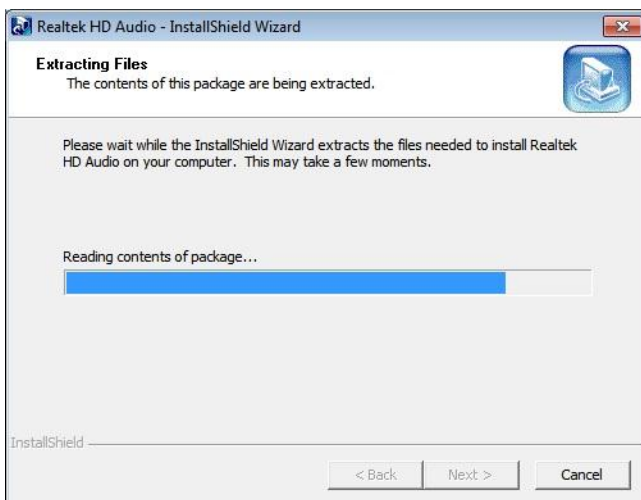
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to
\\Driver_Audio\\Realtek\\ALC661\\EMX-CDD_Audio.



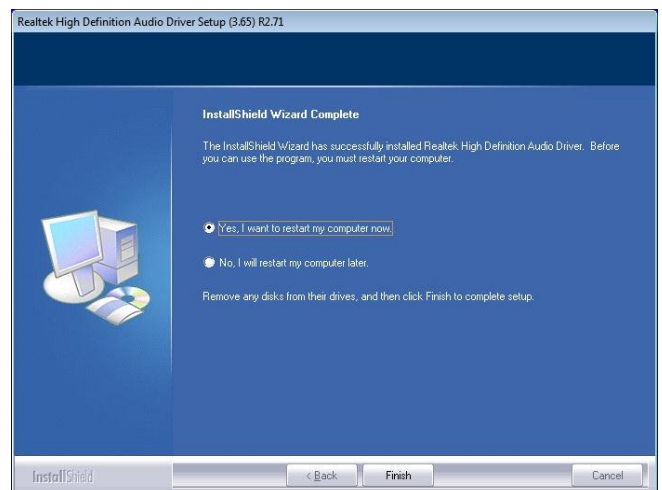
Note: The installation procedures and screen shots in this section are based on Windows 7 operation system. If the warning message appears while the installation process, click Continue to go on.



Step 3. Installing.



Step1. Click **Next** to Install.

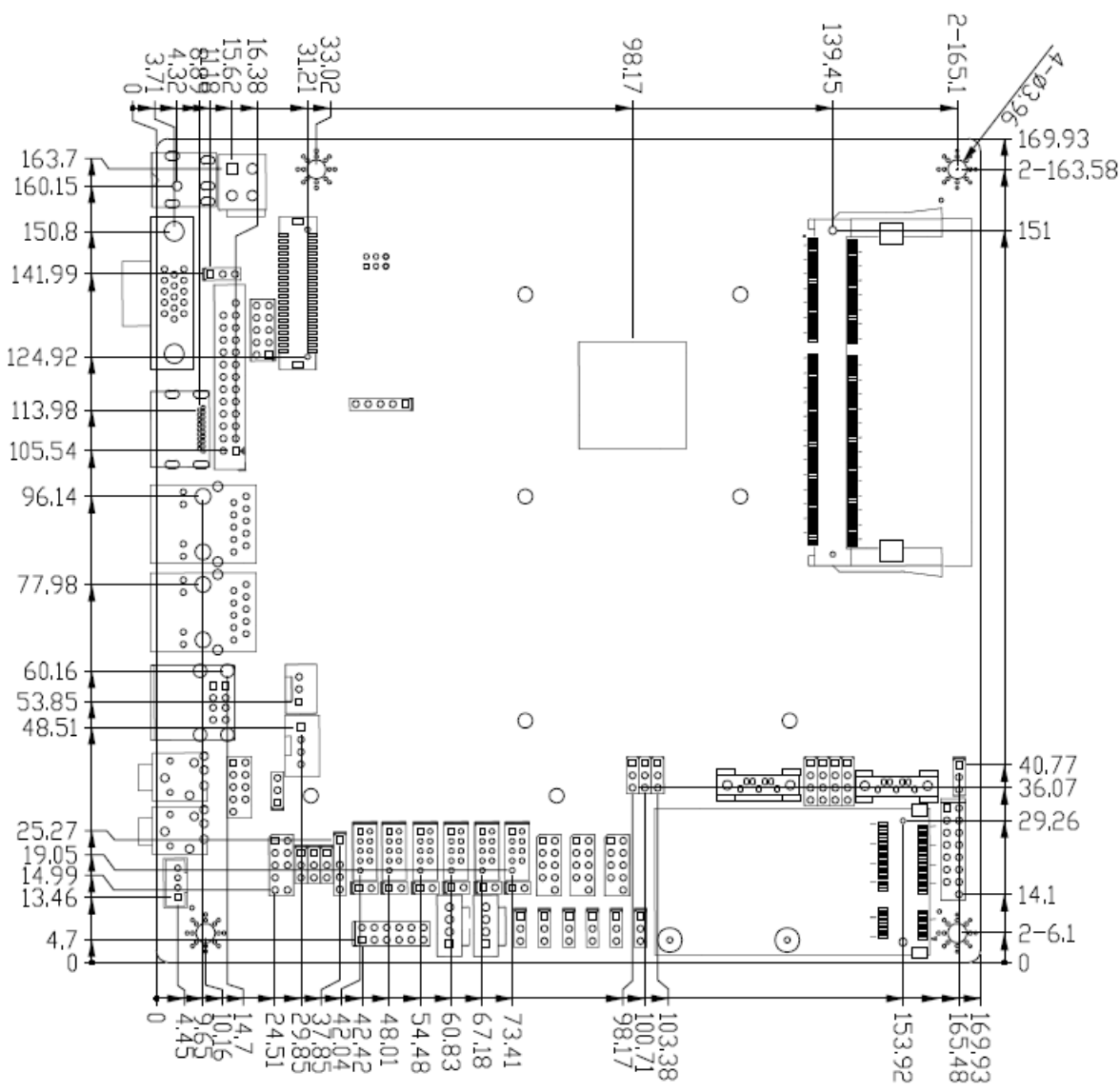


Step 4. Select **Yes** to complete Installation.

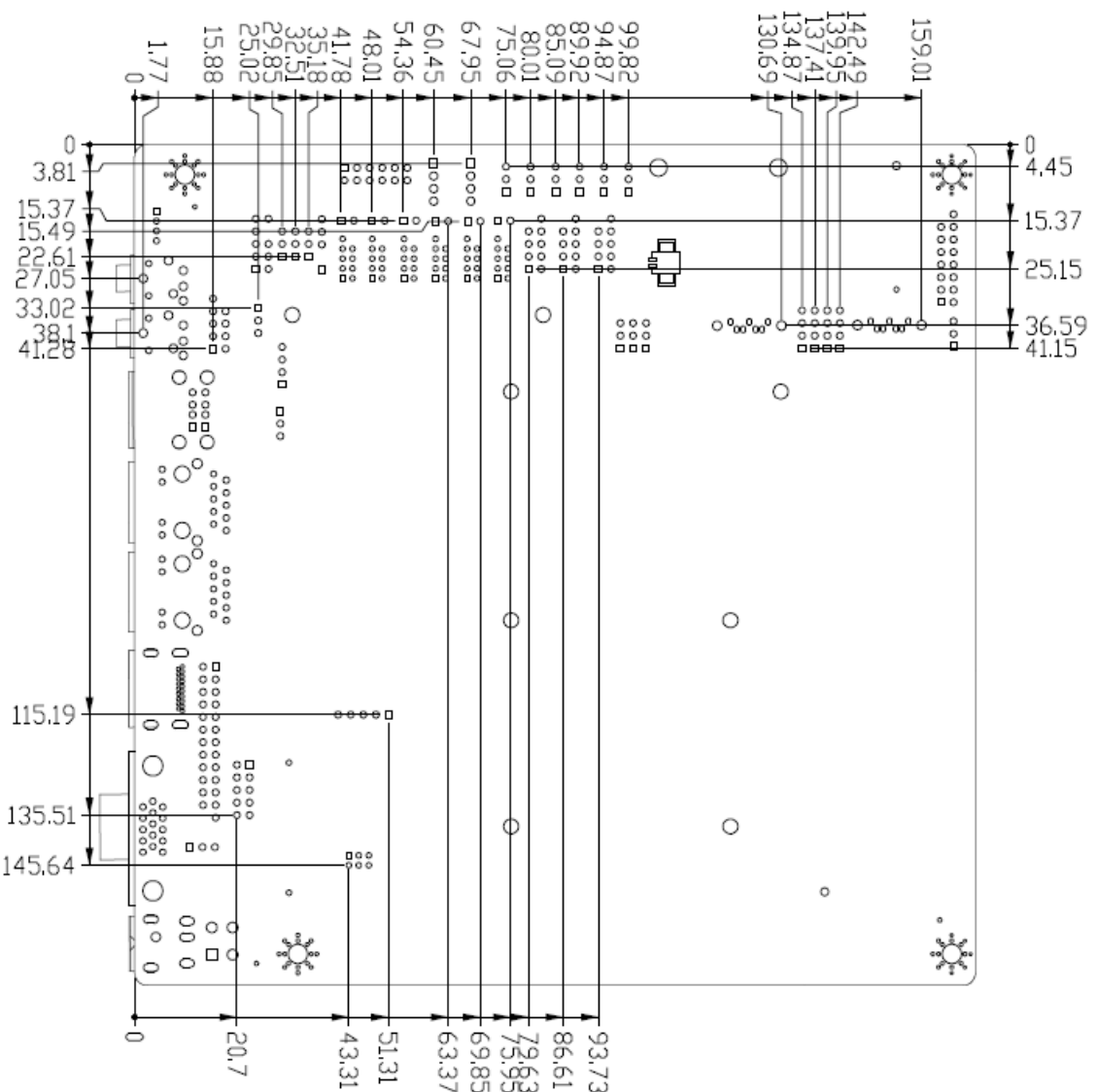


Step2. Click **Next** to continue installation.

5. Mechanical Drawing



Unit: mm



Unit: mm

