ECM-KA

AMD G-Series SoC Platform
3.5” Micro Module

User’s manual

2nd Ed – 29 October 2013

Part No. E2047391601R

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.

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2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
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4. Carefully pack the defective product, a complete Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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1. Getting Started

1.1 Safety Precautions

Warning!

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

Caution!

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

1.2 Packing List

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

- 1 x 3.5" ECM-KA Micro Module
- 1 x Quick Installation Guide for ECM-KA
- 1 x AUX-032 daughter board W/Audio/4USB
- 1 x DVD-ROM contains the followings:
  - User's Manual (this manual in PDF file)
  - Ethernet driver and utilities
  - VGA drivers and utilities
  - Audio drivers and utilities
- 1 x Cable set contains the followings:
  - 1 x Audio cable (12pin,2.0 pitch)
  - 1 x USB 2.0 cable (10P/2.0mm-10P/2.0mm)
  - 1 x Serial ATA cable (7-pin, standard)
  - 1 x Wire SATA power cable (15-pin,4P/2.5mm)
  - 1 x Flat cable 9P(M)-PHD 10P/2.0mm)
- 3M foam (VHB-4622 10mm*20mm*1.1mm)

1.3 Document Amendment History

Revision	Date	Comment
1st	September 2013	Initial Release
2nd	October 2013	Update Drivers Installation

1.4 Manual Objectives

This manual describes in detail the Avalue Technology ECM-KA 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 interface with ECM-KA 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.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors concerning this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

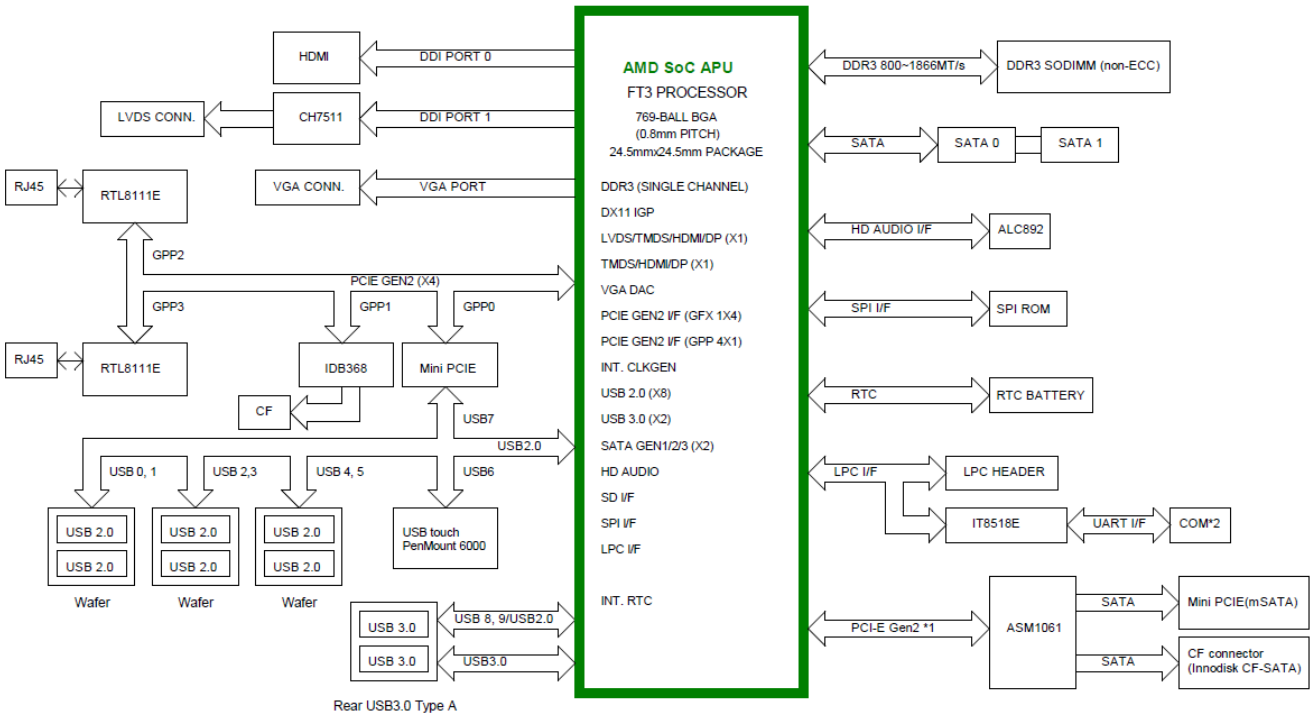
1.5 System Specifications

System	
CPU	On board AMD Embedded G-Series BGA SoC
BIOS	AMI uEFI BIOS, 32Mbit SPI Flash ROM
System Chipset	AMD SoC APU integrated chips
I/O Chip	ITE8518VG
System Memory	1 x 204-pin s DDR3 SODIMM up to 8GB DDR3 1600 SDRAM
SSD	1 x CompactFlash Type I/II socket (support InnoDisk CF-SATA)
Watchdog Timer	H/W Reset, 1sec. – 65535sec.
H/W Status Monitor	CPU & system temperature monitoring Voltages monitoring
Expansion	1 x mini-PCIe (mSATA supported)
Display	
Chipset	AMD SoC APU integrated Graphics
Resolution	CRT Mode: 1920 x 1200 @ 60Hz HDMI Mode: 1920 x 1080 @ 60Hz LCD/ Simultaneous Mode: 1920 x 1080 @ 60Hz (Through eDP)
Multiple Display	CRT ＋ LVDS, HDMI ＋ LVDS, CRT ＋ HDMI
LCD Interface	Dual-channel 18/ 24-bit LVDS
Ethernet	
Chipset	2 x RTL8111E Gigabit Ethernet
Ethernet Interface	10/100/1000 Base-Tx compatible
Audio	
Chipset	Realtek ALC892 support 5.1 －CH Audio
Audio Interface	Mic-In, Line-In and Line-Out
I/O	
MIO	2 x SATA III 2 x serial (COM2 with 5x2 pitch 2.0mm wafer connector, One COM can be set as RS-232/422/485(4-wire)selectable by BIOS 1 x K/B & Mouse
USB	2x USB 3.0, 6xUSB 2.0
DIO	4-bit GPI,4-bit GPO
Built-in Touch screen (optional)	
Chipset	PenMount 6000
Touch screen interface	With 9-pin 2.0mm Box Header (can be selected to support 4/5/8 wire touch screen)

Mechanical & Environmental	
Power Requirement	+12V~+26V
Power Type	AT/ATX
ACPI	Single power ATX Support S0,S3,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)	5.7" x 4" (146mm x 101mm)
Weight	0.44lbs (0.2kg)

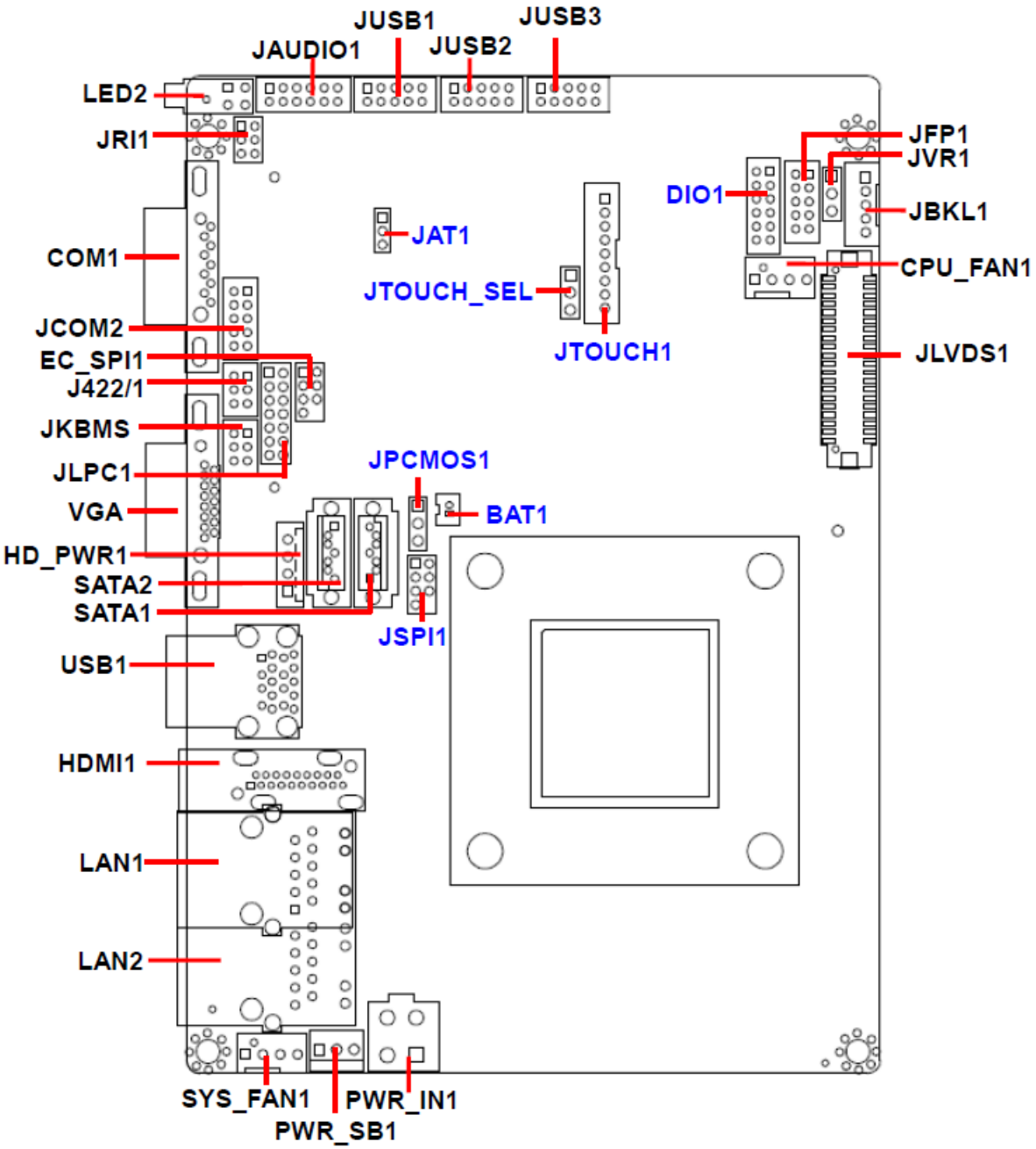
1.6 Architecture Overview – Block Diagram

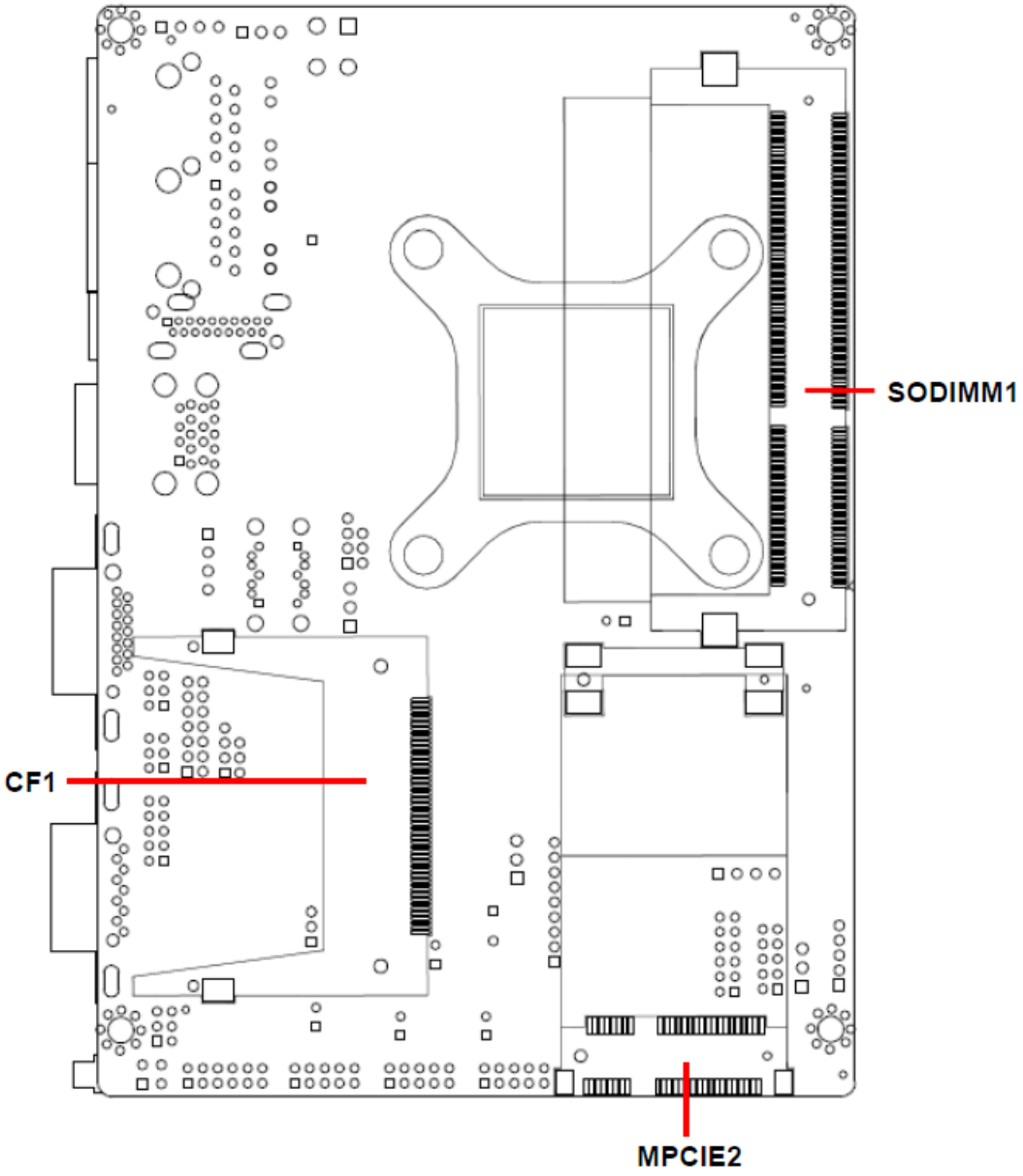
The following block diagram shows the architecture and main components of ECM-KA.



2. Hardware Configuration

2.1 Product Overview




SODIMM1
CF1
MPCIE2

2.2 Installation Procedure

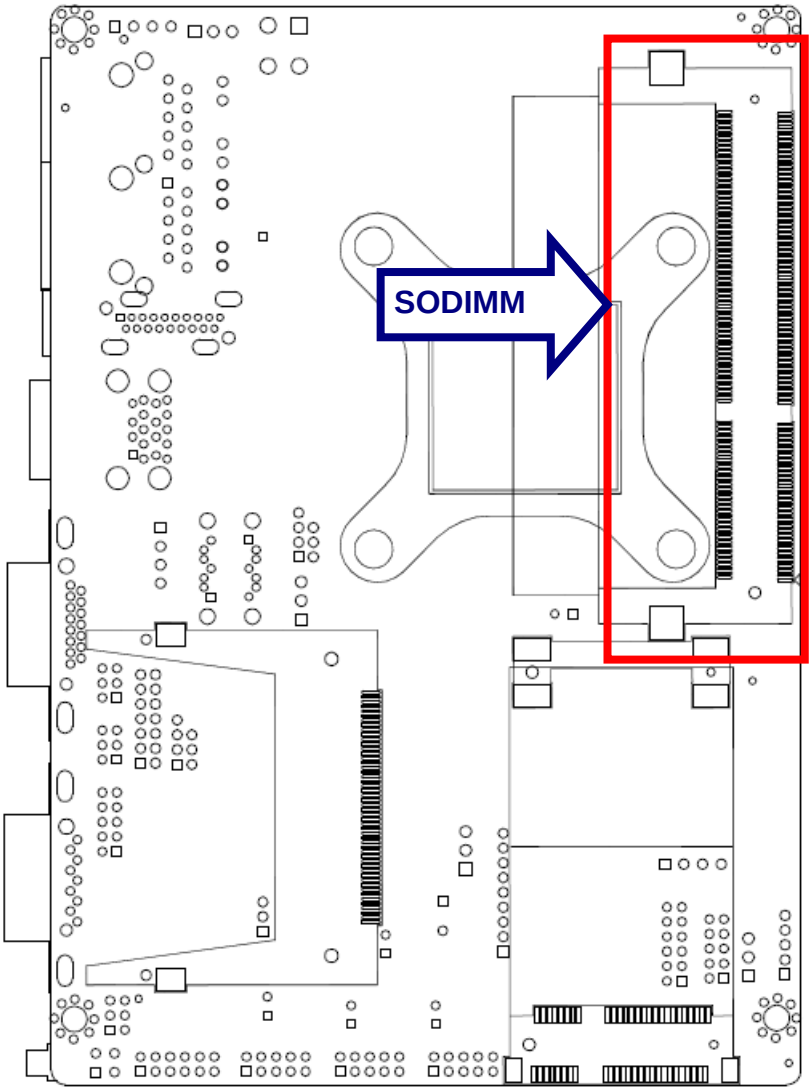
This chapter explains you the instructions of how to setup your system.

1. Turn off the power supply.
2. Insert the SODIMM 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 CMOS settings to support flat panel.
4. Connect power supply to the board via the ATXPWR.
5. Turn on the power.
6. Enter the BIOS setup by pressing the delete key during boot up. Use the "LOAD BIOS DEFAULTS" feature. The ***Integrated Peripheral Setup*** and the ***Standard CMOS Setup*** Window must be entered and configured correctly to match the particular system configuration.
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.

Note: Make sure the heat sink and the CPU top surface are in total contact to avoid CPU overheating problem that would cause the system to hang or unstable

2.2.1 Main Memory

ECM-KA provides one 204-pin DDR3L SODIMM socket, supports up to 8GB DDR3L 1600 SDRAM.

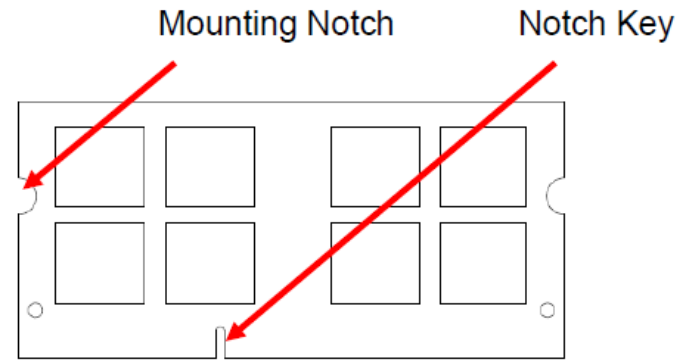


(Rear side)

Make sure to unplug the power supply before adding or removing SODIMMs or other system components. Failure to do so may cause severe damage to both the board and the components.

- Locate the SODIMM socket on the board.
- Hold two edges of the SODIMM module carefully. Keep away of touching its connectors.
- Align the notch key on the module with the rib on the slot.
- Firmly press the modules into the socket automatically snaps into the mounting notch. Do not force the SODIMM module in with extra force as the SODIMM module only fit

in one direction.



204-pin DDR3 SODIMM

- To remove the SODIMM modules, push the two ejector tabs on the slot outward simultaneously, and then pull out the SODIMM module.

Note:

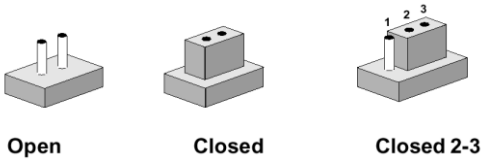
(1) Please do not change any DDR3 SDRAM parameter in BIOS setup to increase your system's performance without acquiring technical information in advance.

(2) Static electricity can damage the electronic components of the computer or optional boards. Before starting these procedures, ensure that you are discharged of static electricity by touching a grounded metal object briefly.

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
JPCMOS1	Clear CMOS	3 x 1 header, pitch 2.54 mm
JTOUCH_SEL	Touch connector select jumper (option)	3 x 1 header, pitch 2.54 mm
JVR1	LCD backlight brightness adjustment	3 x 1 header, pitch 2.54 mm
JRI1	COM 1 pin 9 signal select	3 x 2 header, pitch 2.00 mm
JAT1	AT/ ATX Input power select	3 x 1 header, pitch 2.00 mm

Connectors

Label	Function	Note
JTOUCH1	Touch connector (option)	9 x 1 wafer, pitch 2.00 mm
BAT1	Battery connector	2 x 1 wafer, pitch 1.25 mm
CPU_FAN1	CPU fan connector	4 x 1 wafer, pitch 2.54 mm

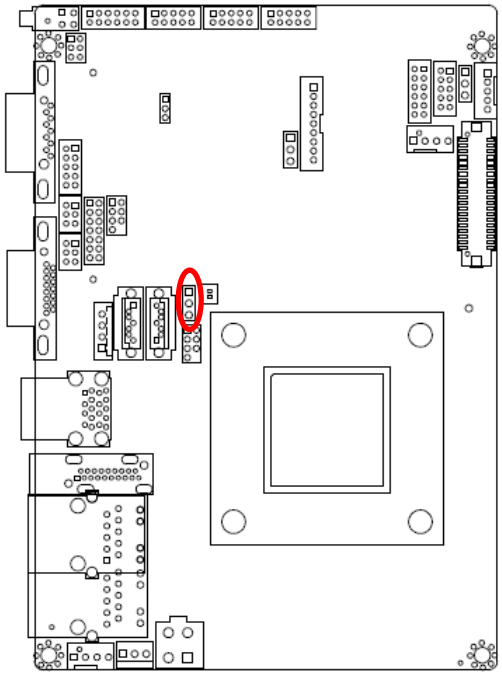
HDMI1	HDMI connector	
J422/1	COM 1 RS-422-485 mode	2 x 3 wafer, pitch 2.00 mm
JAUDIO1	Audio connector	2 x 6 wafer, pitch 2.00 mm
JBKL1	LCD inverter connector	5 x 1 wafer, pitch 2.00 mm
COM1	Serial port 1 connector	D-sub 9-pin, male
JCOM2	Serial port 2 connector	2 x 5 wafer, pitch 2.00 mm
DIO1	General purpose I/O connector	2 x 6 wafer, pitch 2.00 mm
JFP1	Miscellaneous setting connector	2 x 5 wafer, pitch 2.00 mm
JLPC1	Low pin count connector	7 x 2 header, pitch 2.00 mm
JLVDS1	LVDS connector	20 x 2 header, pitch 1.25 mm
JSPI1	SPI connector	4 x 2 header, pitch 2.00 mm
JUSB1	On-board box header for USB2.0	2 x 5 wafer, pitch 2.00 mm
JUSB2	On-board box header for USB2.0	2 x 5 wafer, pitch 2.00 mm
JUSB3	On-board box header for USB2.0	2 x 5 wafer, pitch 2.00 mm
HD_PWR1	HDD power connector	1 x 4 wafer, pitch 2.50 mm
LAN1/2	RJ-45 Ethernet connector	
LED2	LED connector	
PWR_SB1	5VSB connector in ATX	3 x 1 wafer, pitch 2.54 mm
PWR_IN1	Power connector	2 x 2 wafer, pitch 4.20 mm
JKBMS	PS/2 keyboard & mouse connector	2 x 3 wafer, pitch 2.00 mm
EC_SPI1	EC_Program	4 x 2 header, pitch 2.00 mm
SATA1/2	Serial ATA connector 1/2	
SYS_FAN1	System fan connector	4 x 1 wafer, pitch 2.54 mm
VGA	VGA connector	D-sub 15-pin, female
MPCIE2	Mini-PCI connector	
SODIMM1	DDR3 SODIMM connector	
CF1	CF card slot	
USB1	On-board connector for USB3.0 x 2	

Note:

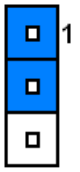
1. USB 3.0 ports would not be activated unless USB 3.0 driver is loaded in Windows.
2. In order to facilitate USB 3.0 ports, no matter in a system or single board, please attach either PS2 keyboard/mouse or USB 2.0 keyboard/mouse to on-board USB 2.0 pin header in advance in order to install chip driver (USB 3.0 driver is included) in Windows.

2.4 Setting Jumpers & Connectors

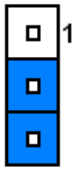
2.4.1 Clear CMOS (JPCMOS1)



Normal*

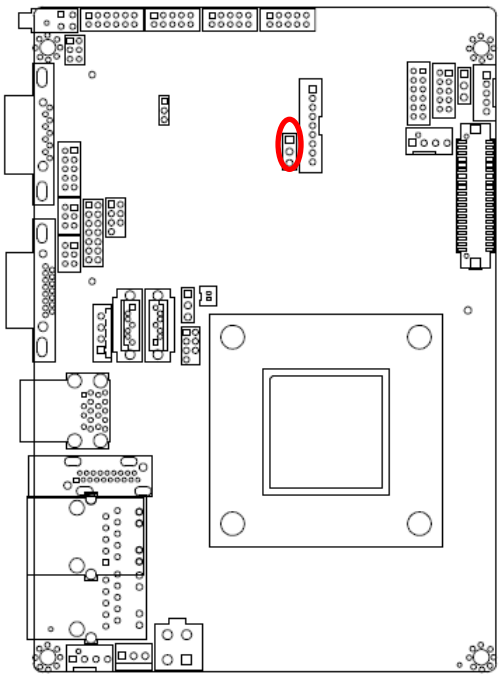


CMOS Clear

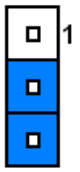


*** Default**

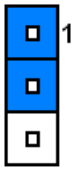
2.4.2 Touch connector select jumper (JTOUCH_SEL) (option)



5W*

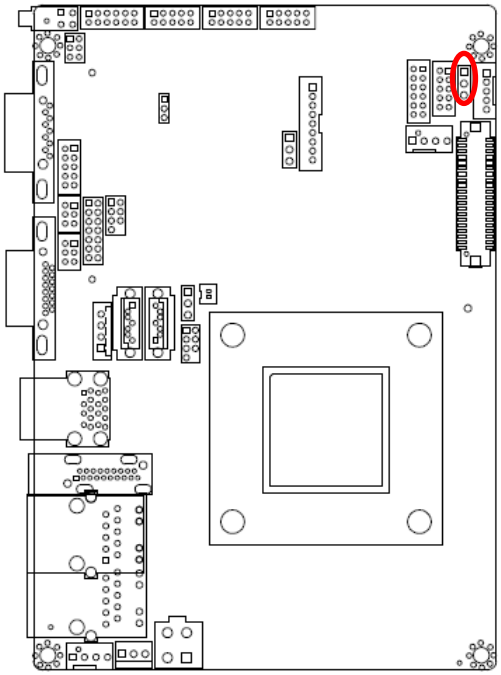


4/8W

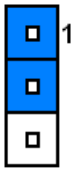


*** Default**

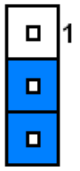
2.4.3 LCD backlight brightness adjustment (JVR1)



PWM mode*

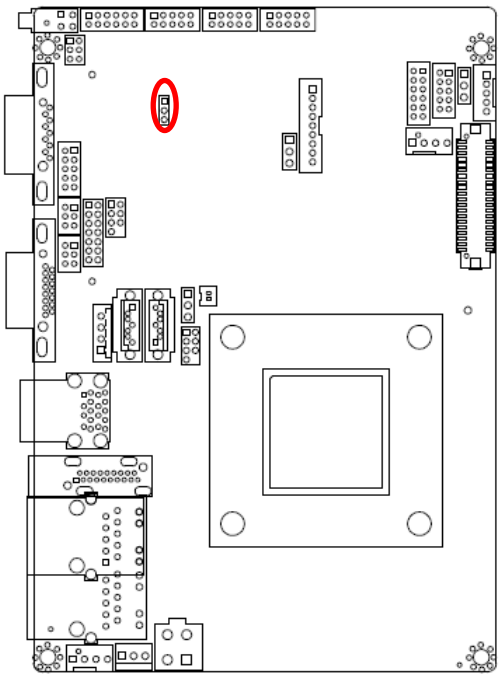


DC mode

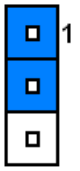


*** Default**

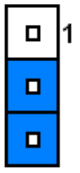
2.4.4 AT/ ATX Input power select (JAT1)



AT*

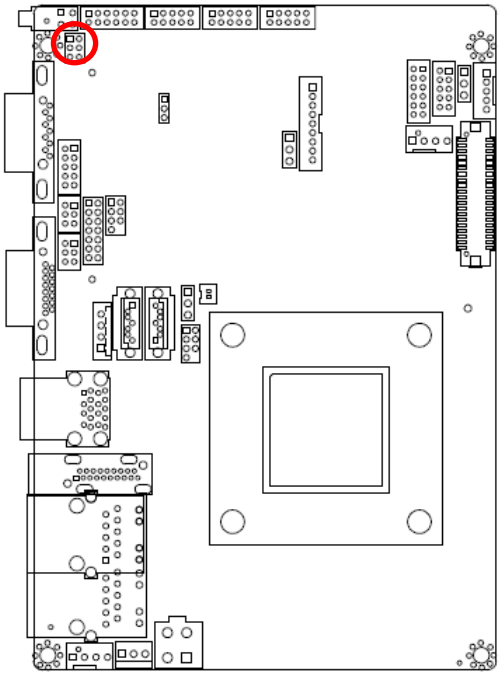


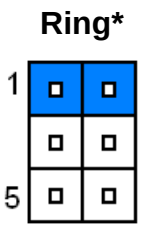
ATX

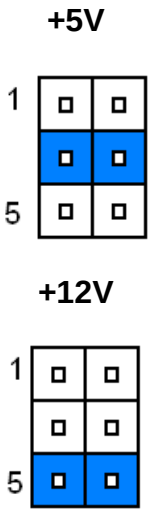


*** Default**

2.4.5 COM 1 pin 9 signal select (JRI1)

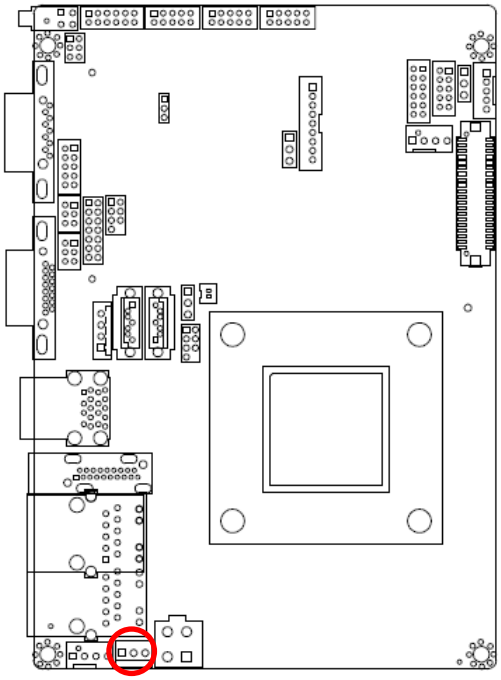


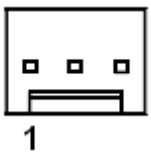




*** Default**

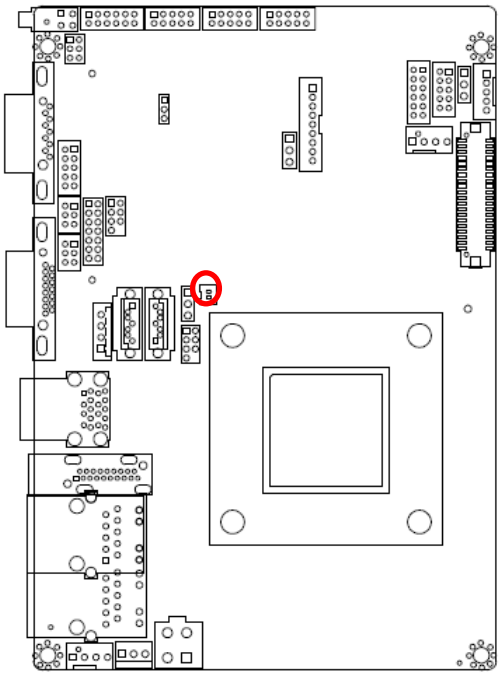
2.4.6 5VSB connector in ATX (PWR_SB1)





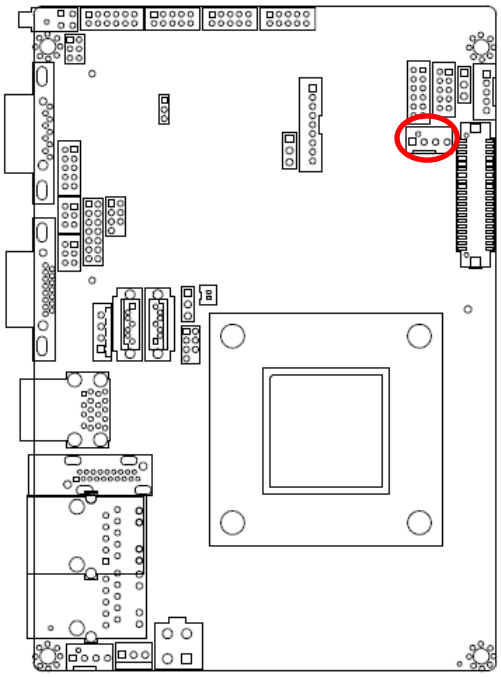
Signal	PIN
PS_ON#	1
GND	2
+V5A_ATX_SB	3

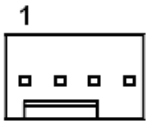
2.4.7 Battery connector (BAT1)



Signal	PIN
GND	2
+3.3V	1

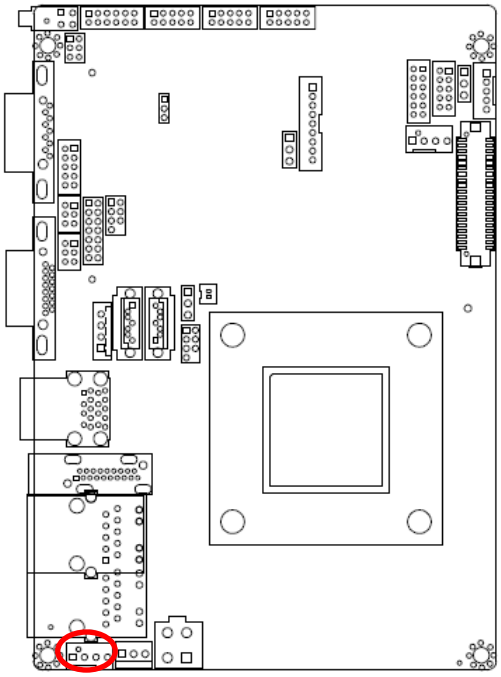
2.4.8 CPU fan connector (CPU_FAN1)

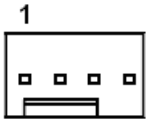




Signal	PIN
GND	1
+12V	2
EC_TACH0	3
FAN_PWM0	4

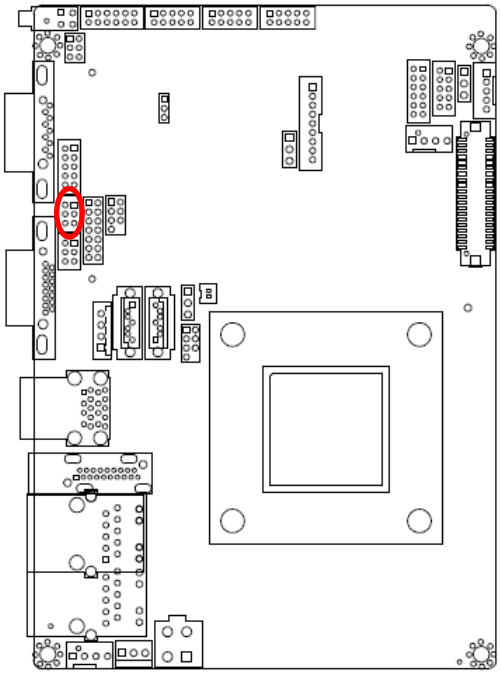
2.4.9 System fan connector (SYS_FAN1)

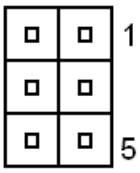




Signal	PIN
GND	1
+12V	2
EC_TACH1	3
FAN_PWM1	4

2.4.10 COM 1 RS-422-485 mode (J422/1)



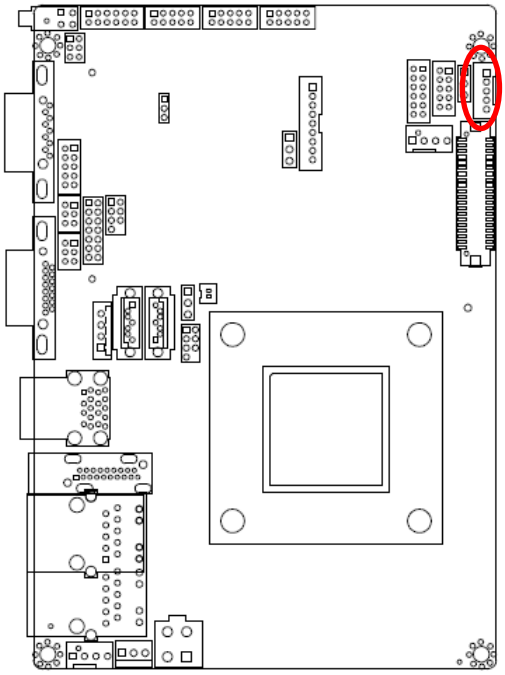


Signal	PIN	PIN	Signal
485TX.RX-/422TX-	2	1	422RX+
485TX.RX+/422TX+	4	3	422RX-
5V	6	5	GND

Note:

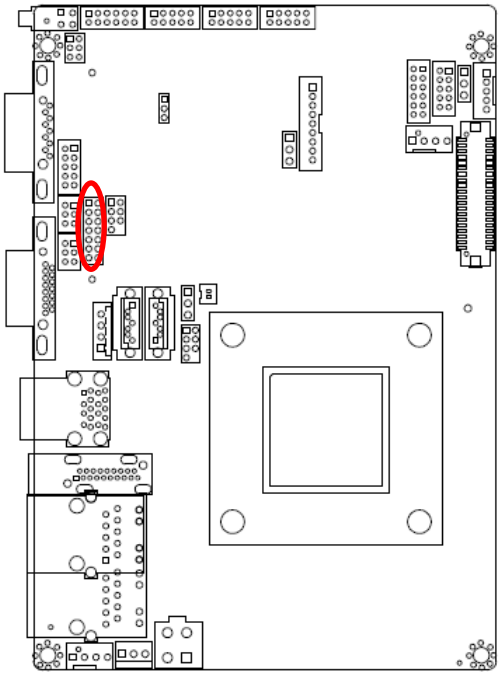
J422/485 is available after modify the mode of COM1 in BIOS setting

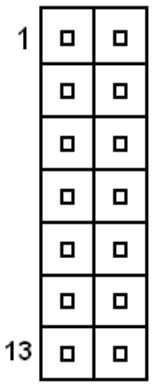
2.4.11 LCD inverter connector (JBKL1)



Signal	PIN
+12V	1
GND	2
BKLEN	3
BRIADJ	4
+5V	5

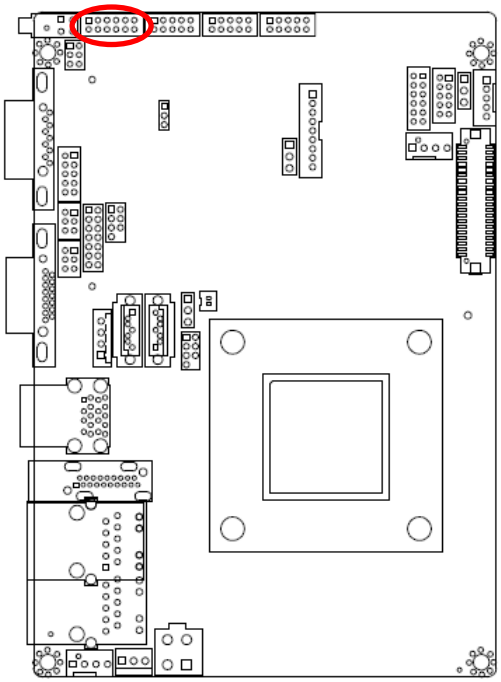
2.4.12 Low pin count connector (JLPC1)

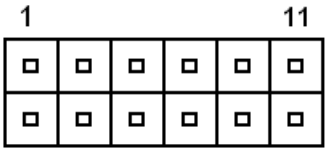




Signal	PIN	PIN	Signal
LPC_AD0	1	2	+3.3V
LPC_AD1	3	4	LPC_RST#
LPC_AD2	5	6	LPC_FRAME#
LPC_AD3	7	8	LPC_CLK1
SERIRQ	9	10	GND
+V5S	11	12	GND
+V5A	13	14	LDRQ0#

2.4.13 Audio connector (JAUDIO1)



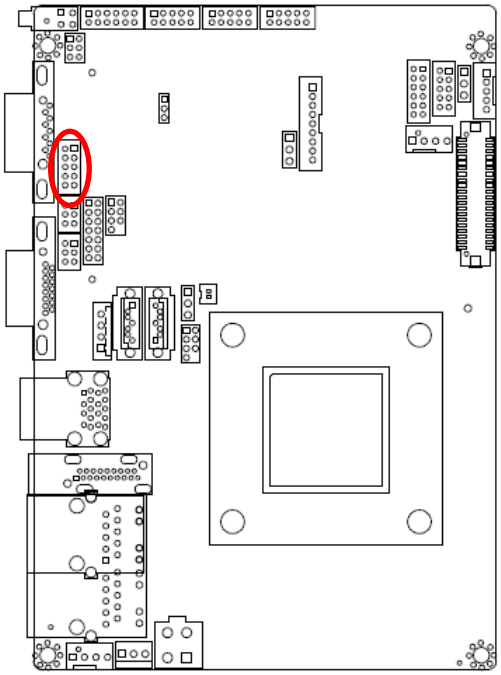


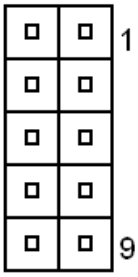
Signal	PIN	PIN	Signal
FRONT-L-OUT	1	2	FRONT-R-OUT
GND	3	4	GND
LINE1-L-IN	5	6	LINE1-R-IN
MIC1-L-IN	7	8	MIC1-R-IN
LINE1-JD	9	10	FRONT-JD
GND	11	12	MIC1-JD

2.4.13.1 Signal Description – Audio connector (JAUDIO1)

Signal	Signal Description
LINE1_JD	AUDIO IN (LINE_RIN/LIN)sense pin
FRONT_JD	AUDIO Out(ROUT/LOUT) sense pin
MIC1_JD	MIC IN (MIC_RIN/LIN) sense pin

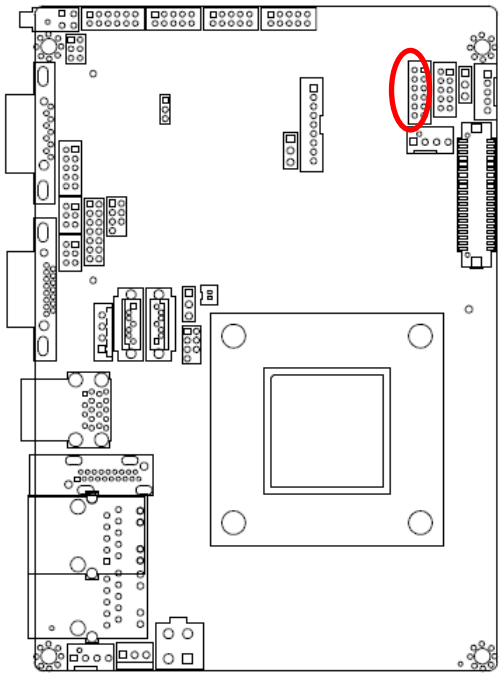
2.4.14 Serial port 2 connector (JCOM2)

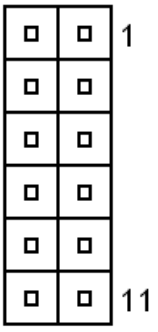




Signal	PIN	PIN	Signal
RXDD2	2	1	DCD2
DTR2	4	3	TXDD2
DSR2	6	5	GND
CTS2	8	7	RTS2
NC	10	9	RI2

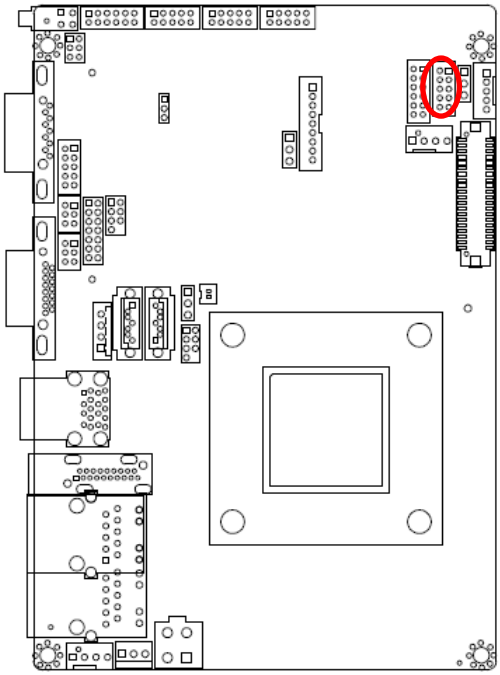
2.4.15 General purpose I/O connector (DIO1)

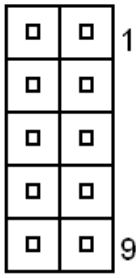




Signal	PIN	PIN	Signal
DO0	2	1	DI0
DO1	4	3	DI1
DO2	6	5	DI2
DO3	8	7	DI3
SMB_CLK_9555	10	9	SMB_DATA_9555
GND	12	11	+V5S_DIO

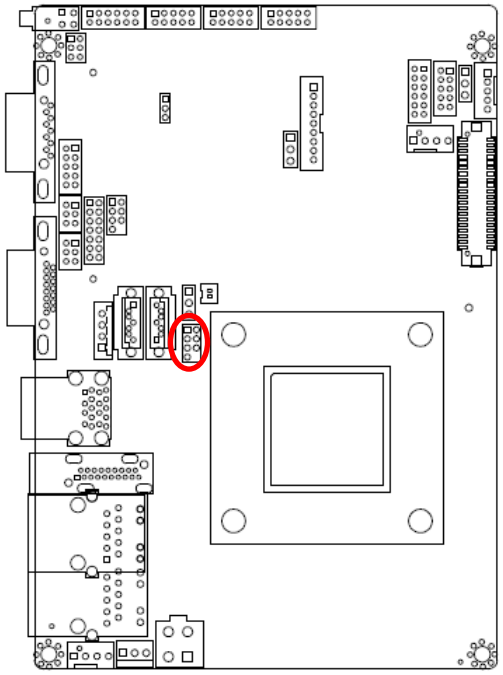
2.4.16 Miscellaneous setting connector (JFP1)

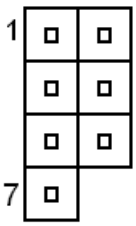




Signal	PIN
PWBT	1
	2
RST#	3
	4
PWR-LED-	5
PWR-LED+	6
HDD-LED+	7
HDD-LED-	8
COPEN#	9
	10

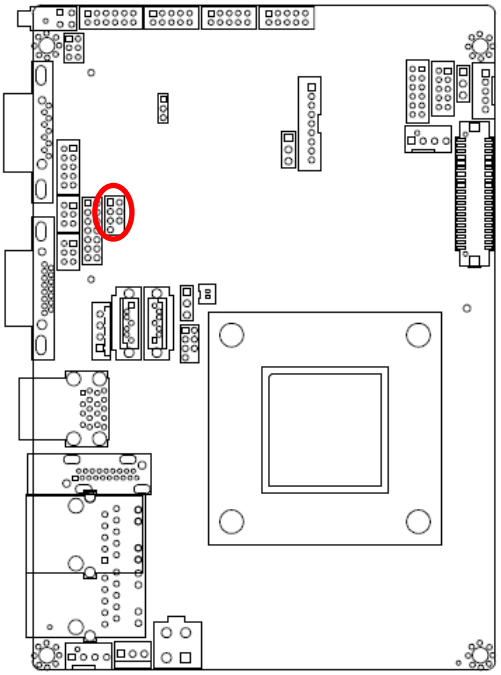
2.4.17 SPI connector (JSPI1)

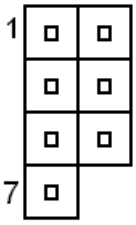




Signal	PIN	PIN	Signal
+3.3V	1	2	GND
SPI_CS#	3	4	SPI_CLK
SPI_DI	5	6	SPI_DO
SPI_HOLD#	7		

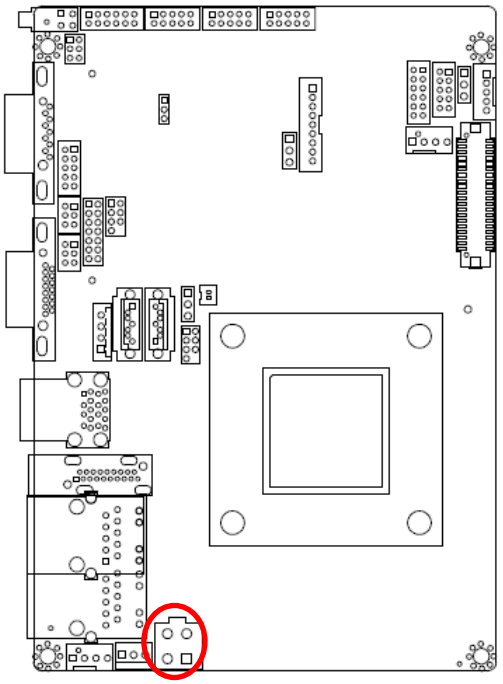
2.4.18 EC_Program (EC_SPI1)

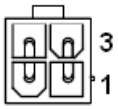




Signal	PIN	PIN	Signal
+VSPI_EC	1	2	GND
EC_FSCE#	3	4	EC_FSCK
EC_FMISO	5	6	EC_FMOSI
EC_HOLD#	7		

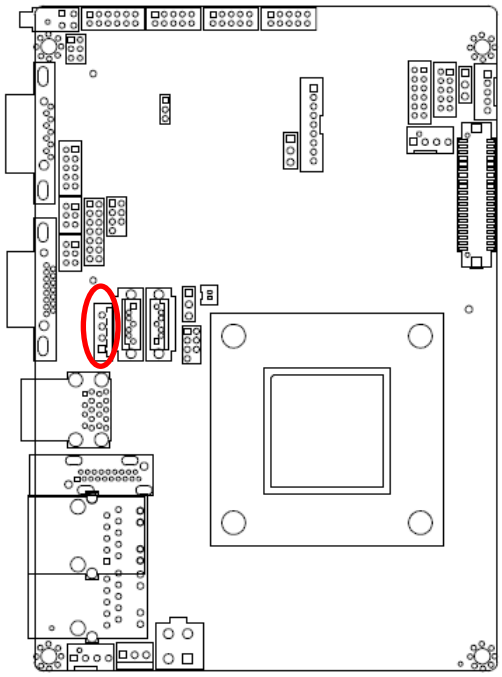
2.4.19 Power connector (PWR_IN1)





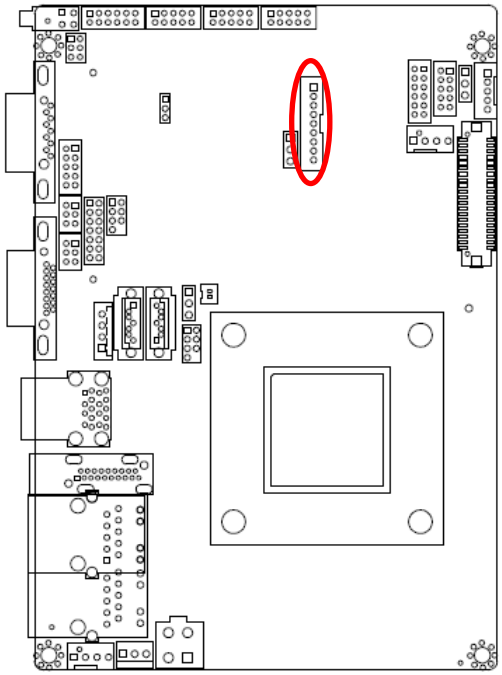
Signal	PIN	PIN	Signal
+V_DCIN	4	3	+V_DCIN
GND	2	1	GND

2.4.20 HDD power connector (HD_PWR1)



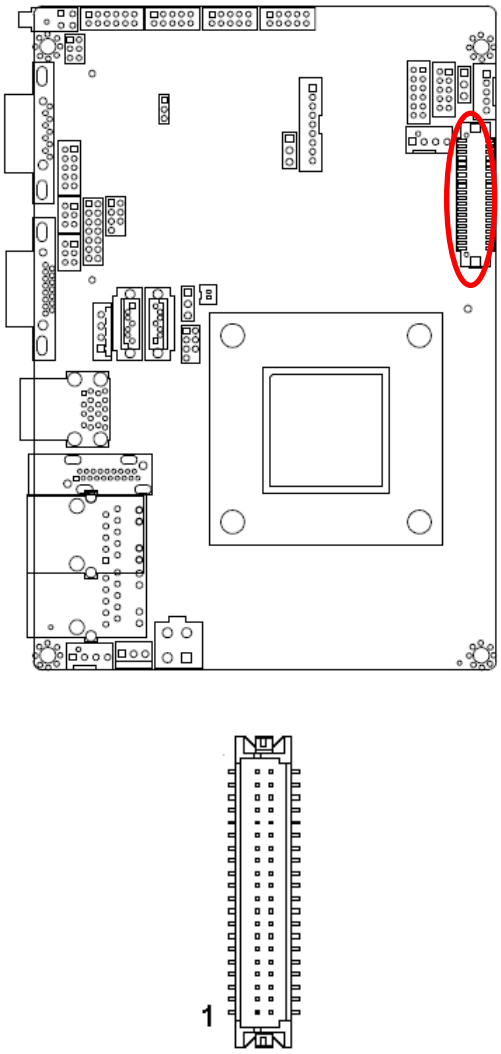
Signal	PIN
+5V	4
+5V	3
GND	2
GND	1

2.4.21 Touch connector (JTOUCH1) (option)



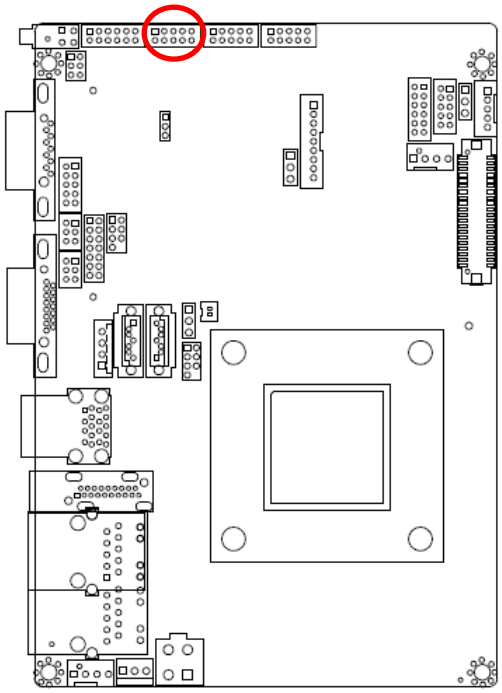
PIN	Signal	4-WIRE	5-WIRE	8-WIRE
1	X+	NC	NC	Right Sense
2	X-	NC	NC	Left Sense
3	Y+	NC	NC	Bottom Sense
4	SENSE	NC	Sense	Top Sense
5	X+	Right	LR	Right Excite
6	X-	Left	LL	Left Excite
7	Y+	Bottom	UR	Bottom Excite
8	Y-	Top	UL	Top Excite
9	GND	GND	GND	GND

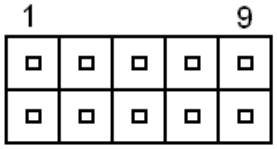
2.4.22 LVDS connector (JLVDS1)



Signal	PIN	PIN	Signal
+12V	39	40	+12V
GND	37	38	GND
LVDS_CLK2_N	35	36	LVDS_CLK1_N
LVDS_CLK2_P	33	34	LVDS_CLK1_P
GND	31	32	GND
LVDS_DATA7_N	29	30	LVDS_DATA6_N
LVDS_DATA7_P	27	28	LVDS_DATA6_P
GND	25	26	GND
LVDS_DATA5_N	23	24	LVDS_DATA4_N
LVDS_DATA5_P	21	22	LVDS_DATA4_P
GND	19	20	GND
LVDS_DATA3_N	17	18	LVDS_DATA2_N
LVDS_DATA3_P	15	16	LVDS_DATA2_P
GND	13	14	GND
LVDS_DATA1_N	11	12	LVDS_DATA0_N
LVDS_DATA1_P	9	10	LVDS_DATA0_P
GND	7	8	GND
NC	5	6	NC
+3.3V	3	4	+5V
+3.3V	1	2	+5V

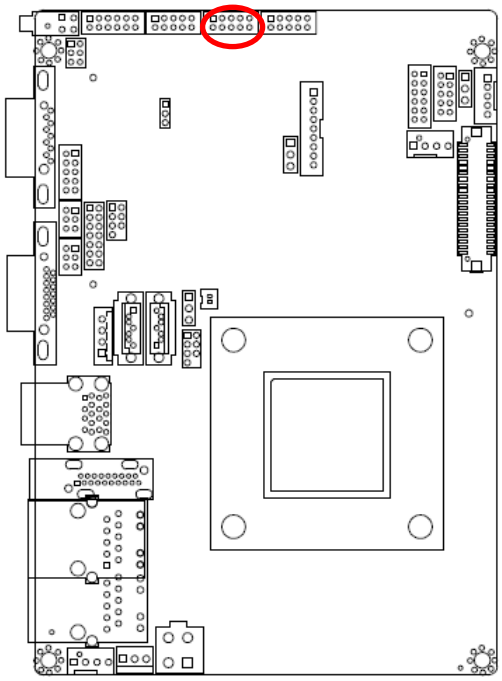
2.4.23 On-board box header for USB2.0 (JUSB1)

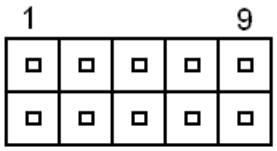




Signal	PIN	PIN	Signal
+5V	1	2	+5V
USB_PN_Z_1	3	4	USB_PN_Z_0
USB_PP_Z_1	5	6	USB_PP_Z_0
GND	7	8	GND
GND	9	10	GND

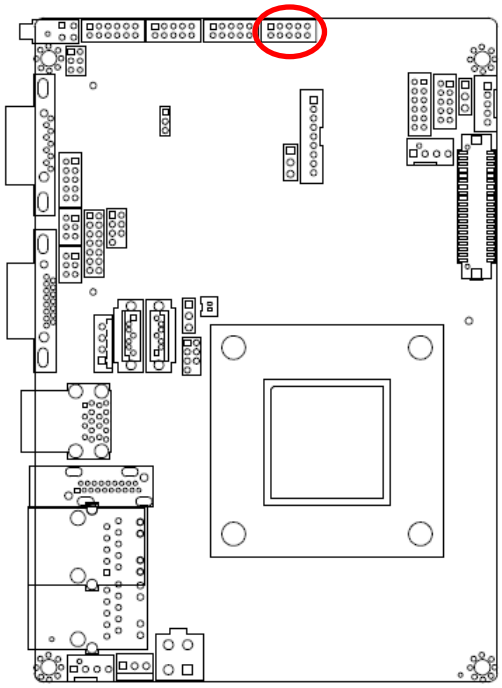
2.4.24 On-board box header for USB2.0 (JUSB2)

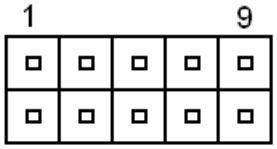




Signal	PIN	PIN	Signal
+5V	1	2	+5V
USB_PN_Z_2	3	4	USB_PN_Z_3
USB_PP_Z_2	5	6	USB_PP_Z_3
GND	7	8	GND
GND	9	10	GND

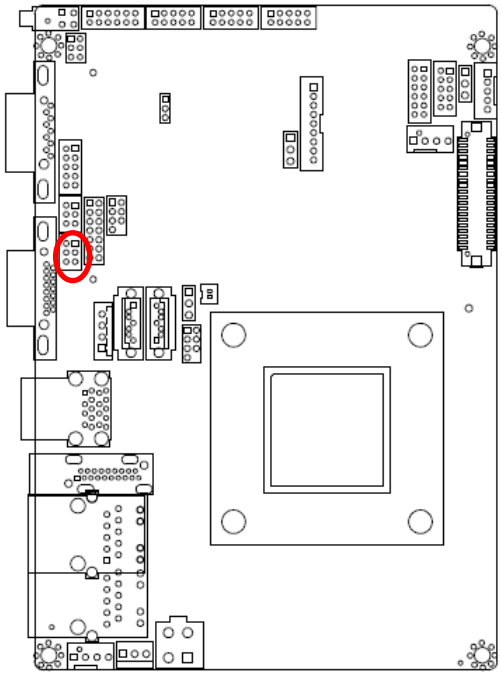
2.4.25 On-board box header for USB2.0 (JUSB3)

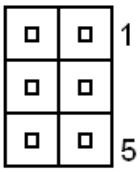




Signal	PIN	PIN	Signal
+5V	1	2	+5V
USB_PN_Z_4	3	4	USB_PN_Z_5
USB_PP_Z_4	5	6	USB_PP_Z_5
GND	7	8	GND
GND	9	10	GND

2.4.26 PS/2 keyboard & mouse connector (JKBMS)





Signal	PIN	PIN	Signal
KBDT	2	1	KBCK
GND	4	3	KBVCC
MSDT	6	5	MSCK

3. BIOS Setup

3.1 Introduction

The BIOS setup program allows users to modify the basic system configuration. In this following chapter will describe how to access the BIOS setup program and the configuration options that may be changed.

3.2 Starting Setup

The AMI BIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the NVRAM and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:
By pressing <Del> or <ESC> immediately after switching the system on, or
By pressing the <Del> or <ESC> key when the following message appears briefly at the left-top of the screen during the POST (Power On Self Test).

Press <DEL> or <ESC> to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to.

Press F1 to Continue, DEL to enter SETUP

3.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Button	Description
↑	Move to previous item
↓	Move to next item
←	Move to the item in the left hand
→	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into NVRAM Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Previous Values.
F3 key	Optimized defaults
F4 key	Save & Exit Setup

- **Navigating Through The Menu Bar**

  Use the left and right arrow keys to choose the menu you want to be in.

Note: Some of the navigation keys differ from one screen to another.

- **To Display a Sub Menu**

  Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A "➢" pointer marks all sub menus.

3.4 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

3.5 In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMI BIOS supports an override to the NVRAM settings which resets your system to its defaults.

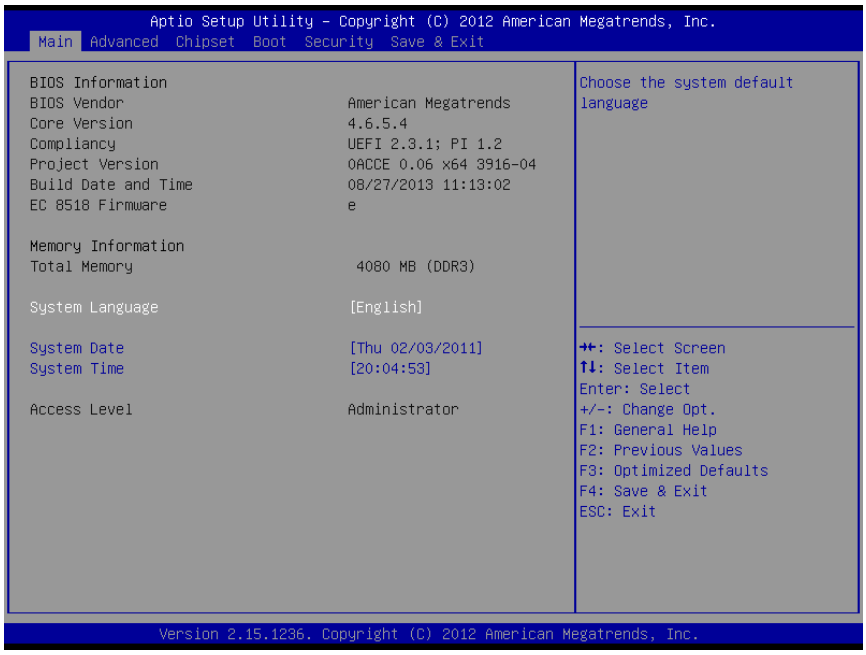
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

3.6 BIOS setup

Once you enter the Aptio Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

3.6.1 Main Menu

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



3.6.1.1 System Language

This option allows choosing the system default language.

3.6.1.2 System Date

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

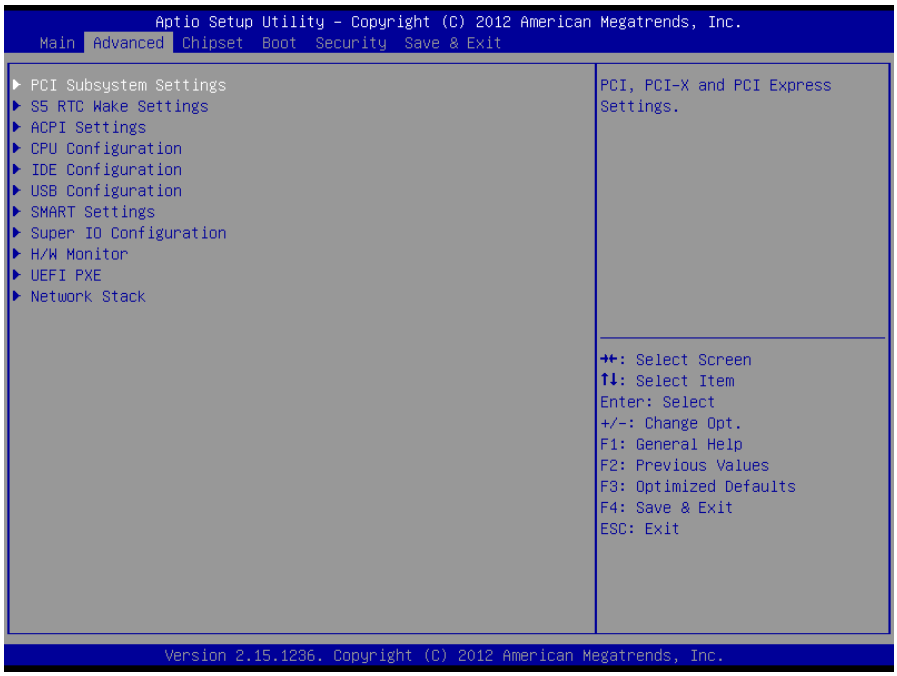
3.6.1.3 System Time

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

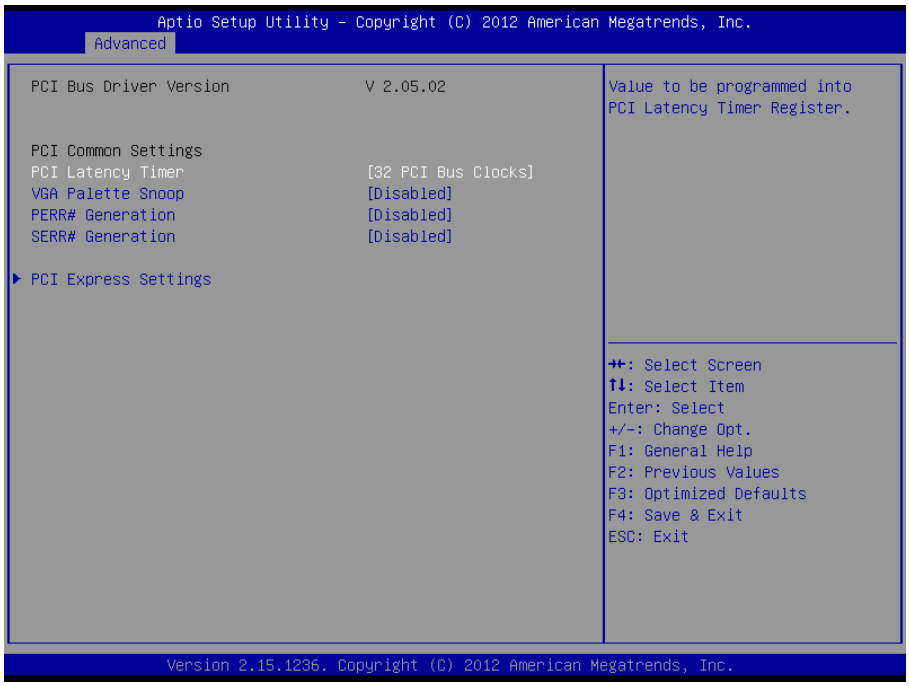
Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.
Visit the Avalue website (www.avalue.com.tw) to download the latest product and BIOS information.

3.6.2 Advanced Menu

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



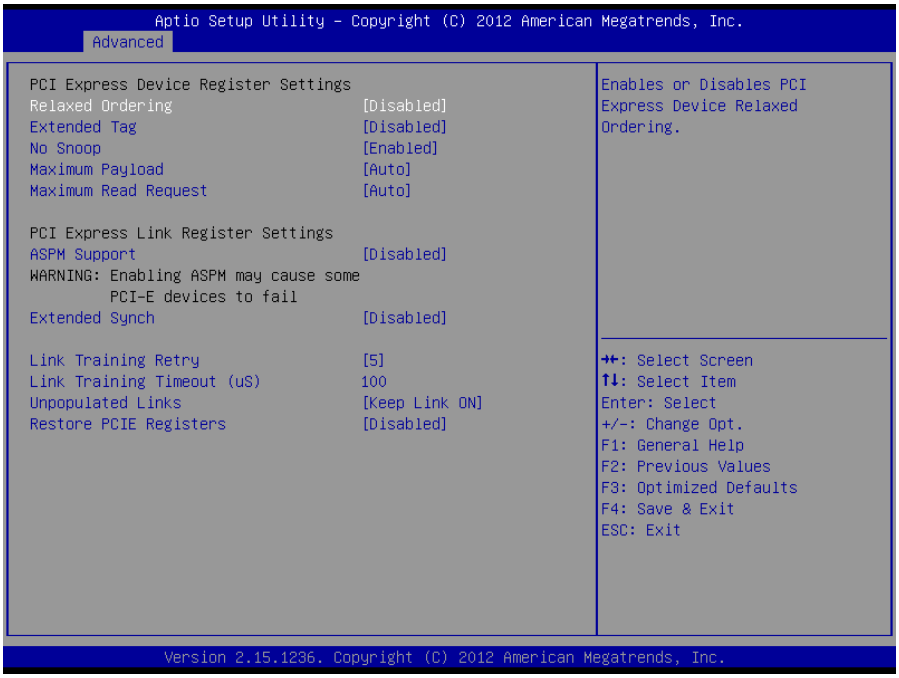
3.6.2.1 PCI Subsystem Settings



Item	Options	Description
PCI Latency Timer	32 PCI Bus Clocks**[Default]**, 64 PCI Bus Clocks	Value to be programmed into PCI Latency Timer Register.

	96 PCI Bus Clocks 128 PCI Bus Clocks 160 PCI Bus Clocks 192 PCI Bus Clocks 224 PCI Bus Clocks 248 PCI Bus Clocks	
VGA Palette Snoop	Disabled**[Default]**, Enabled	Enables or Disables VGA Registers Snooping.
PERR# Generation	Disabled**[Default]**, Enabled	Enable or Disable PCI Device to Generate PERR#.
SERR# Generation	Disabled**[Default]**, Enabled	Enable or Disable PCI Device to Generate SERR#.
PCI Express Settings	Change PCI Express Devices Settings.	

3.6.2.1.1 PCI Express Settings



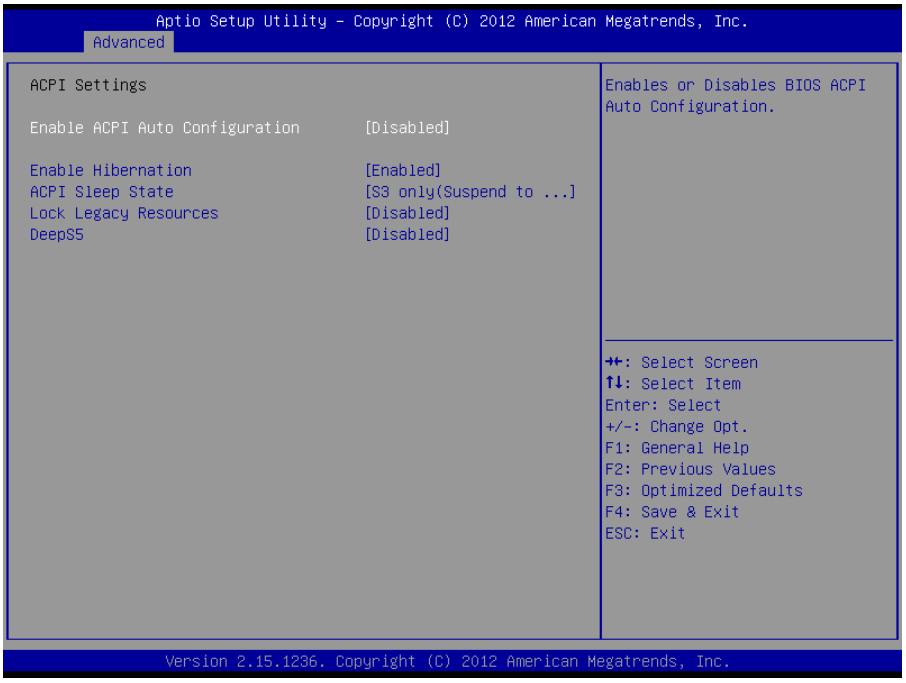
Item	Options	Description
Relaxed Ordering	Disabled**[Default]**, Enabled	Enables or Disables PCI Express Device Relaxed Ordering.
Extended Tag	Disabled**[Default]**, Enabled	If ENABLED allows Device to use 8-bit Tag field as a requester.
No Snoop	Disabled, Enabled**[Default]**	Enables or Disables PCI Express Device No Snoop option.

Maximum Payload	Auto**[Default]** 128 Bytes 256 Bytes 512 Bytes 1024 Bytes 2048 Bytes 4096 Bytes	Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.
Maximum Read Request	Auto**[Default]** 128 Bytes 256 Bytes 512 Bytes 1024 Bytes 2048 Bytes 4096 Bytes	Set Maximum Read Request Size of PCI Express Device or allow System BIOS to select the value.
ASPM Support	Disabled**[Default]** Auto Force L0s	Set ASPM Level: Force L0s – Force all links L0s State : AUTO – BIOS auto configure : DISABLE – Disables ASPM.
Extended Synch	Disabled**[Default]** Enabled	If ENABLED allows generation of Extended Synchronization patterns.
Link Training Retry	Disabled 2 3 5**[Default]**	Defines number of Retry Attempts software will take to retrain the link if previous training attempt was unsuccessful.
Link Training Timeout (uS)	10-10000 100**[Default]**	Defines number of Microseconds software will wait before polling 'Link Training' bit in Link Status register. Value range from 10 to 10000 uS.
Unpopulated Links	Keep Link ON**[Default]** Disabled	In order to save power, software will disable unpopulated PCI Express links, if this option set to 'Disable Link'.
Restore PCIE Registers	Disabled**[Default]**, Enabled	On non-PCI Express aware OS's (Pre Windows Vista) some devices may not be correctly reinitialized after S3. Enabling this restors PCI Express device configurations on S3 resume. Warning: Enabling this may cause issues with other hardware after S3 resume.

3.6.2.2 S5 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.

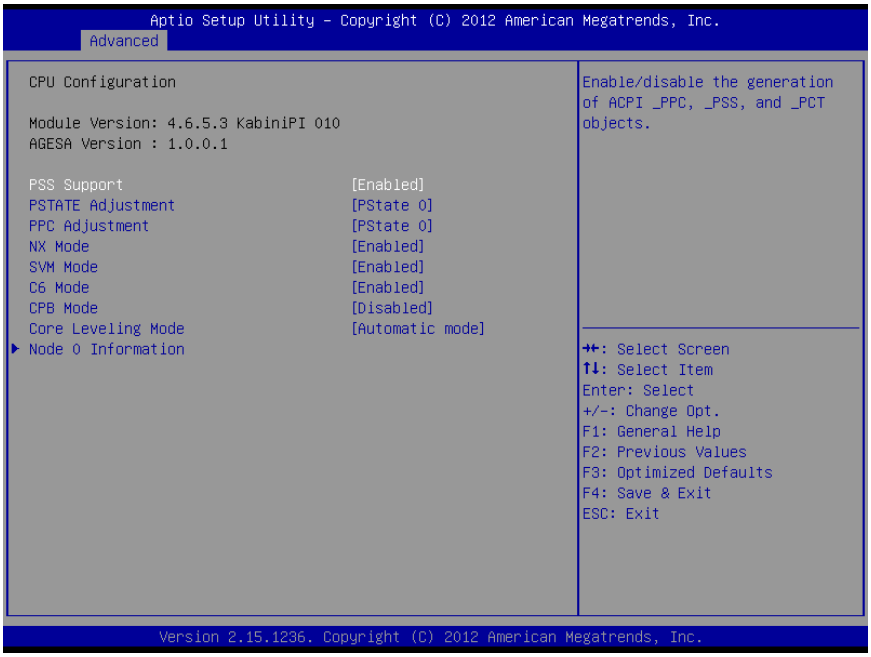
3.6.2.3 APCI Settings



Item	Options	Description
Enable ACPI Auto Configuration	Disabled**[Default]**, Enabled	Enables or Disables BIOS ACPI Auto Configuration.
Enable Hibernation	Disabled, Enabled**[Default]**	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
APCI Sleep State	Suspend Disabled S3 only(Suspend to RAM)**[Default]**	Select ACPI sleep state the system will enter when the SUSPEND button is pressed.
Lock Legacy Resources	Disabled**[Default]**, Enabled	Enables or Disables Lock of Legacy Resources.
DeepS5	Disabled**[Default]** Enabled	Enter DeepS5.

3.6.2.4 CPU Configuration

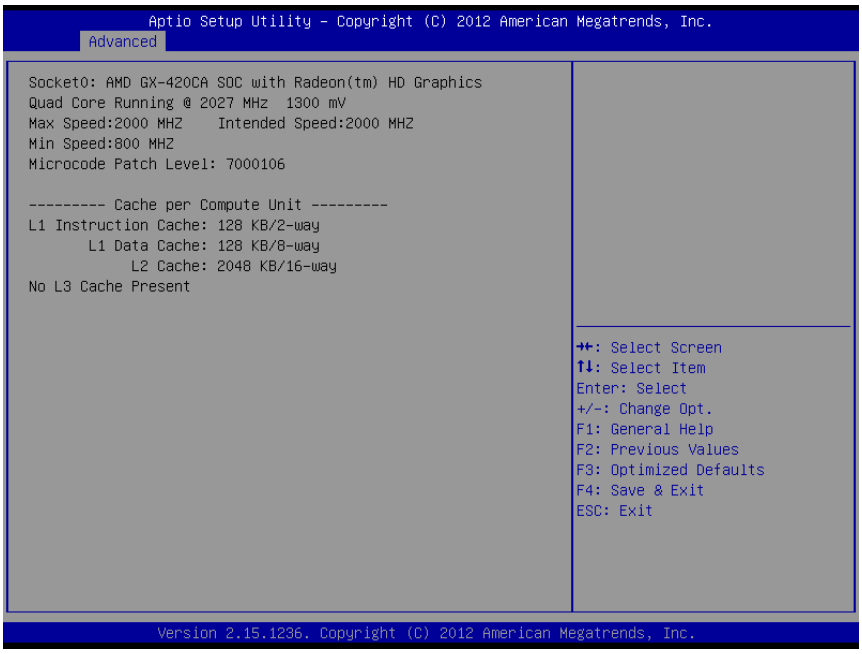
Use the CPU configuration menu to view detailed CPU specification and configure the CPU.



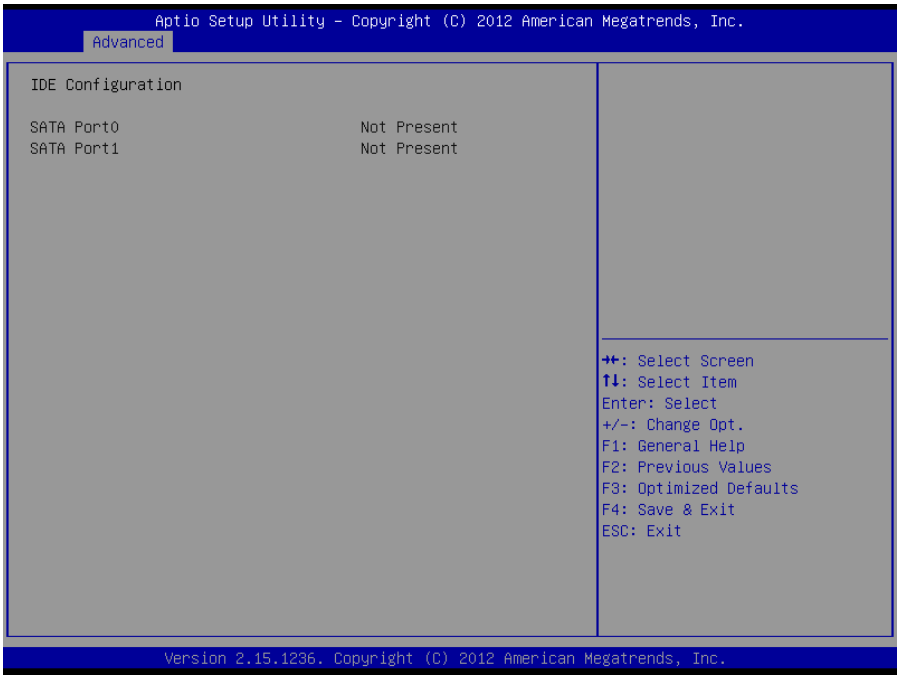
Item	Options	Description
PSS Support	Disabled, Enabled**[Default]**	Enable/disable the generation of ACPI_PPC, _PSS, and _PCT objects.
PSTATE Adjustment	PState 0**[Default]** PState 1 PState 2 PState 3 PState 4 PState 5 PState 6 PState 7	Provide to adjust startup P-state level.

PPC Adjustment	PState 0**[Default]** PState 1 PState 2 PState 3 PState 4 PState 5 PState 6 PState 7	Provide to adjust _PPC object.
NX Mode	Disabled, Enabled**[Default]**	Enable/disable No-execute page protection Function.
SVM Mode	Disabled, Enabled**[Default]**	Enable/disable CPU Virtualization.
C6 Mode	Disabled, Enabled**[Default]**	Enable/disable C6.
CPB Mode	Auto Disabled**[Default]**	Enable/disable CPB.
Core Leveling Mode	Automatic mode**[Default]** Three cores per processor Two cores per processor One core per processor	Change the number of cores in the system.
Node 0 Information	View Memory Information related to Node 0.	

3.6.2.4.1 Node 0 Information

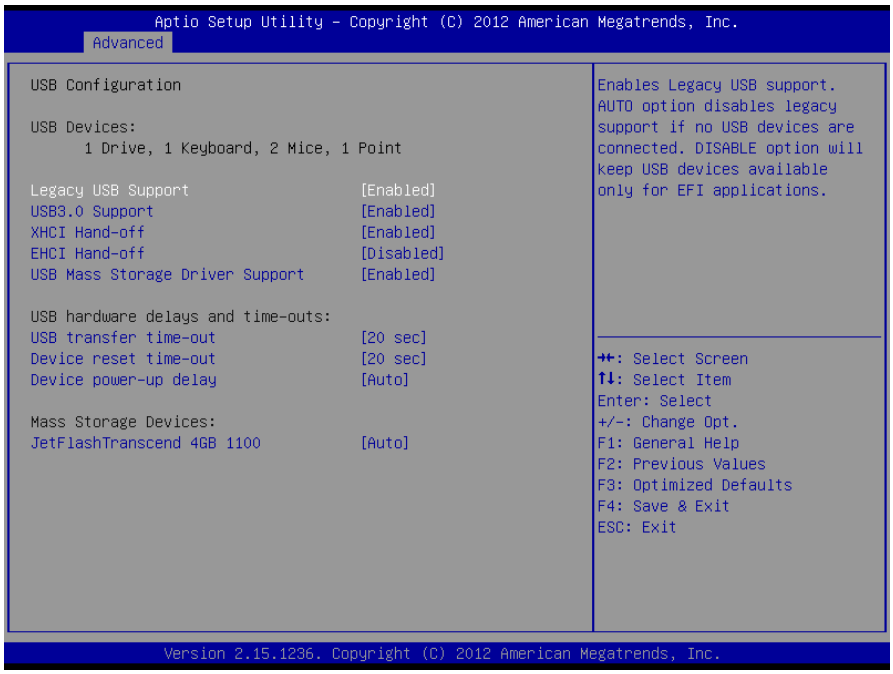


3.6.2.5 IDE Configuration



3.6.2.6 USB Configuration

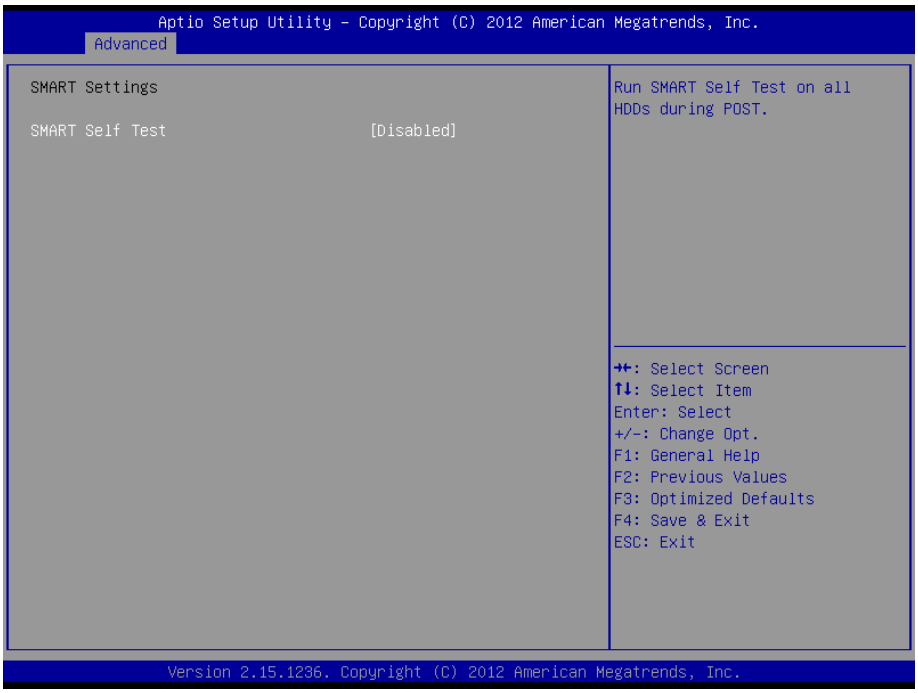
The USB Configuration menu helps read USB information and configures USB settings.



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.
USB3.0 Support	Enabled**[Default]** Disabled	Enable/Disable USB3.0 (XHCI) Controller support.

XHCI Hand-off	Enabled**[Default]** Disabled	This is a workaround for OSew without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
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 Mass Storage Driver Support	Enabled**[Default]** Disabled	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 100ms, for a Hub port the delay is taken form Hub descriptor.
JetFlashTranscend 4GB 1100	Auto**[Default]** Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.

3.6.2.7 SMART Settings



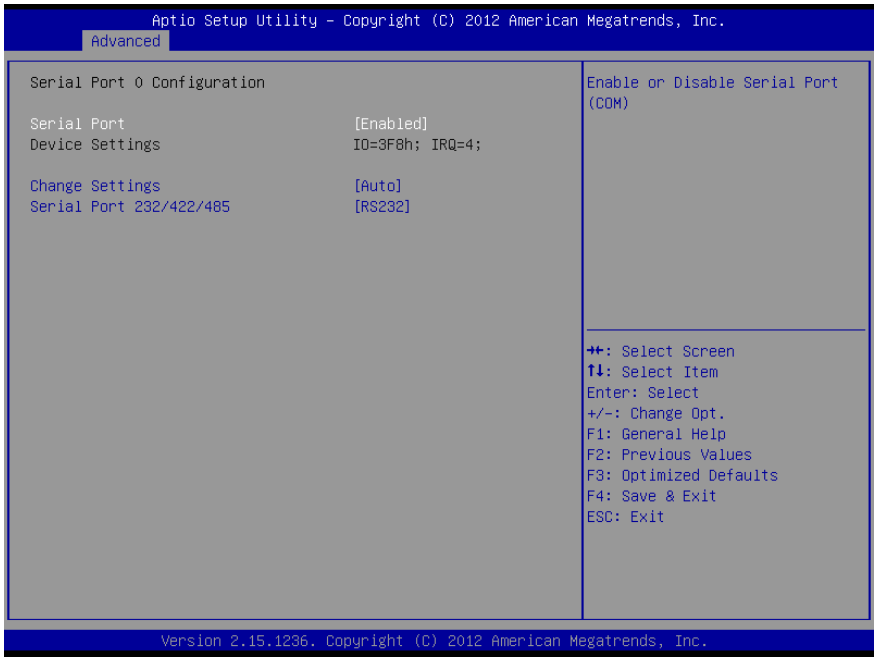
Item	Options	Description
SMART Self Test	Disabled, Enabled**[Default]**	Run SMART Self Test on all HDDs during POST.

3.6.2.8 Super IO Configuration

You can use this item to set up or change the Super IO configuration for serial ports. Please refer to 3.6.2.9.1 and 3.6.2.9.2 for more information.

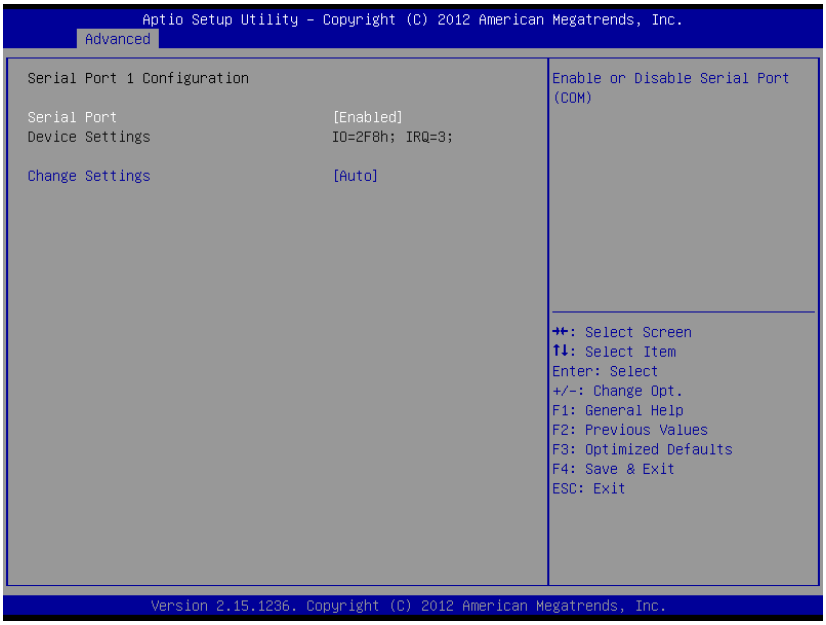
Item	Option	Description
Serial Port 0 Configuration	Set Parameters of Serial Port 0 (COMA).	
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMB).	
Watch Dog	Disabled**[Default]** 30 sec 40 sec 50 sec 1 min 2 min 10 min 30 min	Select WatchDog.
PWRON After PWR-Fall	Off**[Default]** On	Select PWRON After PWR-Fail.

3.6.2.8.1 Serial Port 0 Configuration



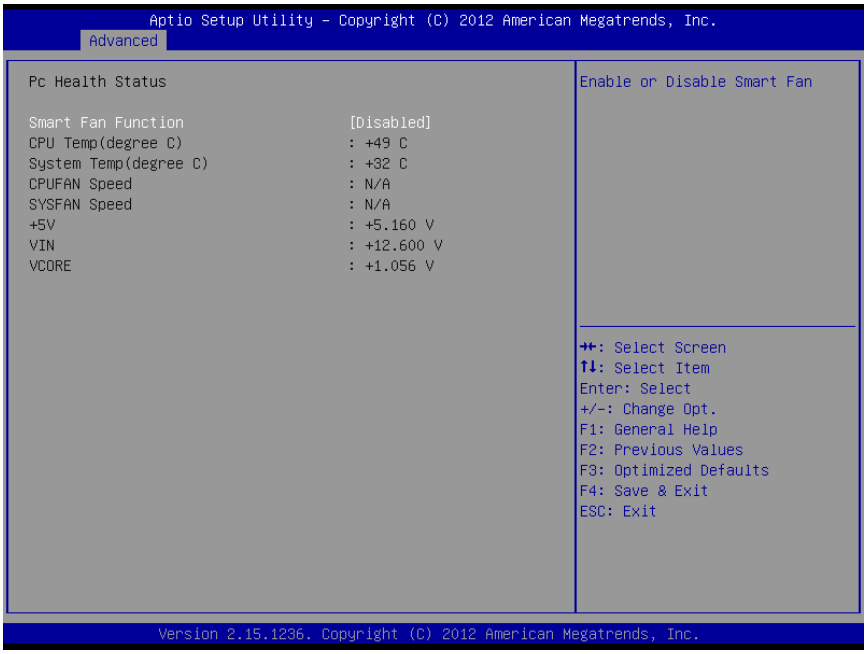
Item	Option	Description
Serial Port	Enabled**[Default]** Disabled	Enable or Disable Serial Port (COM).
Change Settings	Auto**[Default]** IO=3F8h; IRQ=4, IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12 IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12 IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12 IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12	Select an optimal setting for Super IO device.
Serial Port 232/422/485	RS232**[Default]**, RS422, RS485	Change the Serial Port mode. Select < RS232> or < RS485>< RS422> mode.

3.6.2.8.2 Serial Port 1 Configuration



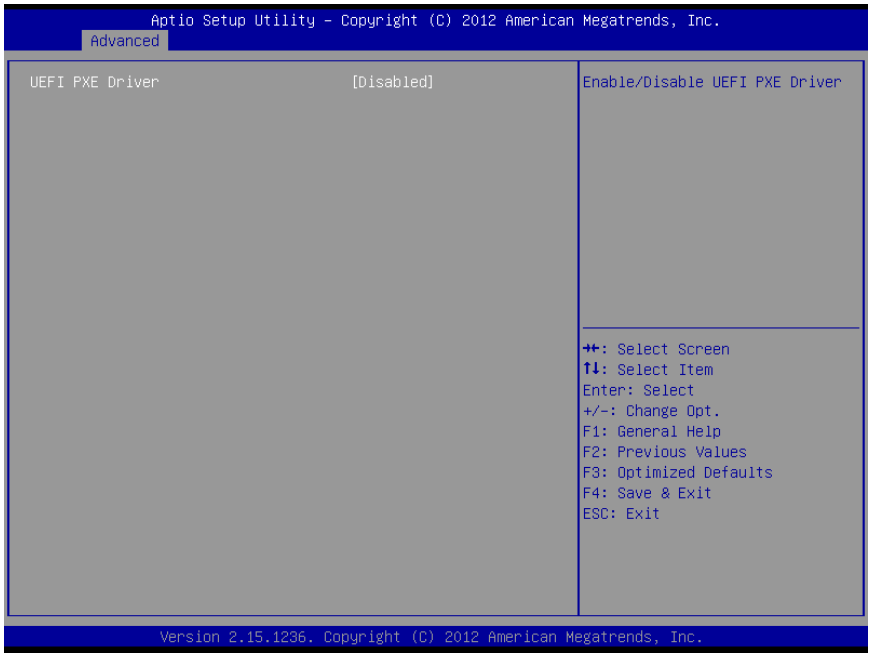
Item	Option	Description
Serial Port	Enabled**[Default]** Disabled	Enable or Disable Serial Port (COM).
Change Settings	Auto**[Default]** IO=2F8h; IRQ=3 IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12 IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12 IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12 IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12	Select an optimal setting for Super IO device.

3.6.2.9 H/W Monitor



Item	Description
Smart Fan Function	Enable or Disable Smart Fan.

3.6.2.10 UEFI PXE

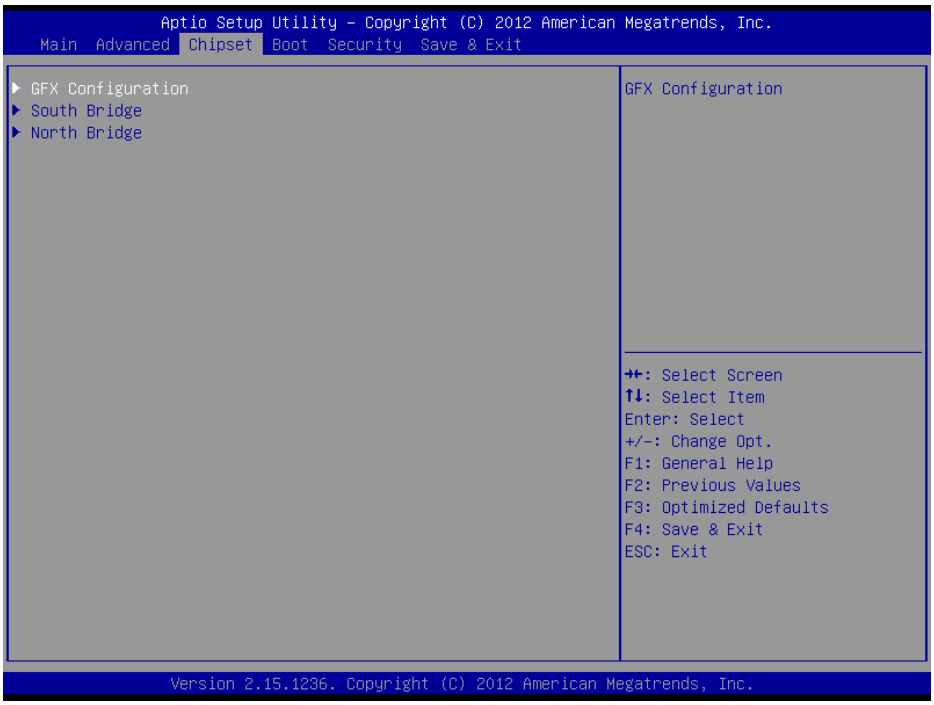


Item	Options	Description
UEFI PXE Driver	Enabled Disabled**[Default]**	Enable/Disable UEFI PXE Driver.

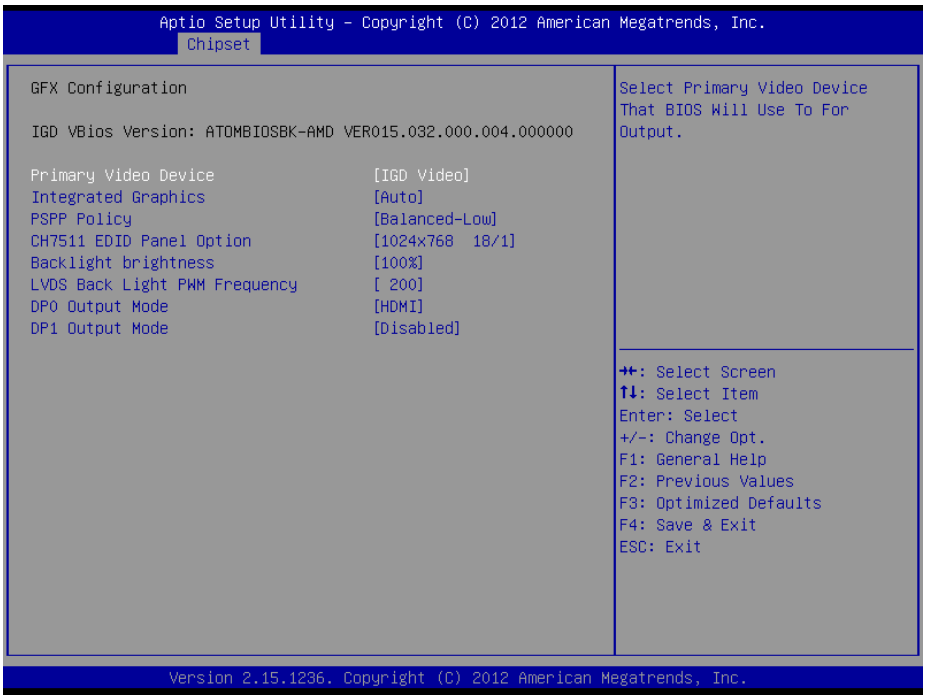
3.6.2.11 Network Stack

Item	Options	Description
Network Stack	Enabled Disabled**[Default]**	Enable/Disable UEFI network stack.

3.6.3 Chipset



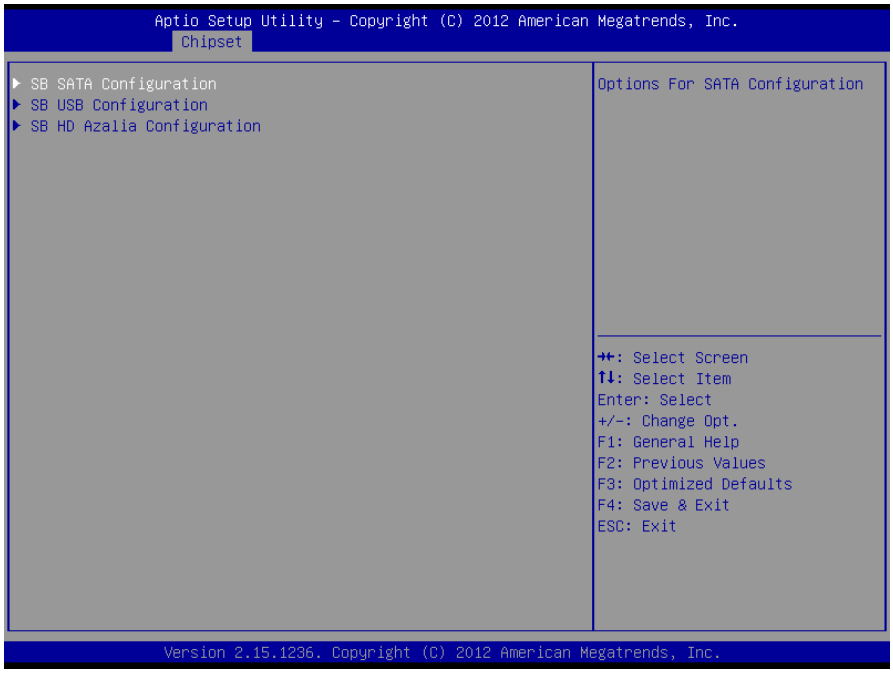
3.6.3.1 GFX Configuration



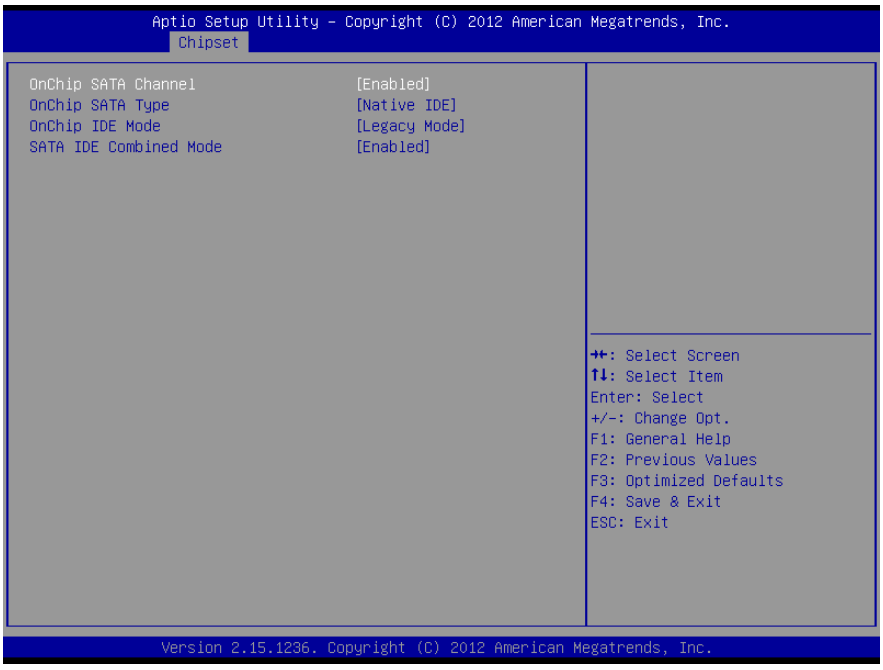
Item	Option	Description
Primary Video Device	IGD Video**[Default]** NB PCIe Slot Video	Select Primary Video Device That BIOS Will Use To For Output.

Integrated Graphics	Auto**[Default]** Disabled Force	Enable Integrate Graphics Controller.
PSPP Policy	Disabled Performance Balanced-High Balanced-Low**[Default]** Power Saving	PCIe Speed Power Policy.
CH7511 EDID Panel Option	1024x768 24/1 800x600 18/1 1024x768 18/1 **[Default]** 1366x768 18/1 1024x600 18/1 1280x800 18/1 1920x1200 24/2 640x480 18/1 800x480 18/1 1920x1080 18/2 1280x1024 24/2 1440x900 18/2 1600x1200 24/2 1366x768 24/1 1920x1080 24/2 1680x1050 24/2	Port1-EDP to LVDS(Chrotel 7511) Panel EDID Option.
Backlight brightness	0% 25% 50% 75% 100%**[Default]**	Select back light duty.
LVDS Back Light PWM Frequency	200**[Default]** 300 400 500 700 1K 2K 3K 5K 10K 20K	Select LVDS back light PWM Frequency.
DP0 Output Mode	HDMI**[Default]** Disabled	NB PCIE Connect Type (Display Device).
DP1 Output Mode	LVDS Disabled **[Default]**	NB PCIE Connect Type (Display Device).

3.6.3.2 South Bridge



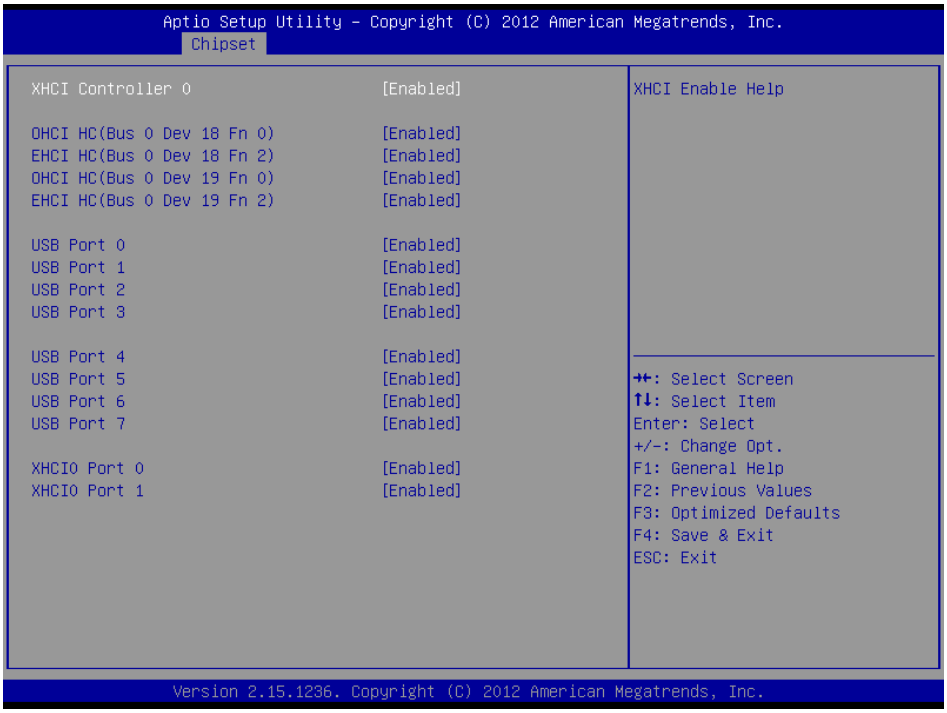
3.6.3.2.1 SB SATA Configuration



Item	Option	Description
OnChip SATA Channel1	Enabled**[Default]** Disabled	OnChip SATA Channel1.
OnChip SATA Type	Native IDE**[Default]** AHCI Legacy IDE	Native IDE /n RAID /n Legacy IDE -> AHCI /n HyperFlash.
OnChip IDE Mode	Legacy Mode	OnChip IDE Mode.

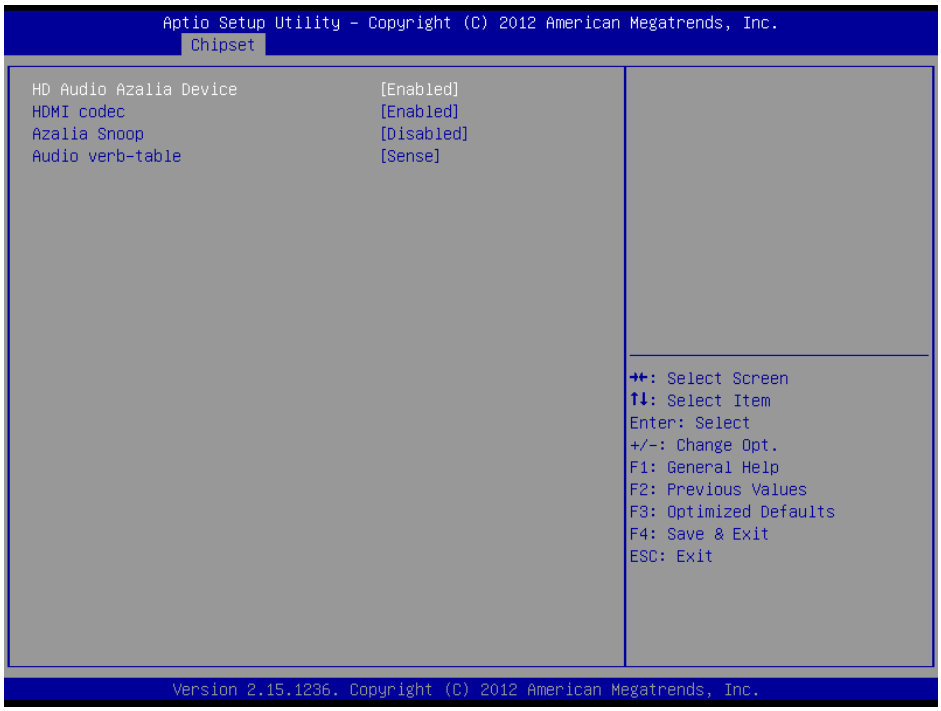
	Native Mode	
SATA IDE Combined Mode	Enabled**[Default]** Disabled	SATA IDE Combined Mode.

3.6.3.2.2 SB USB Configuration



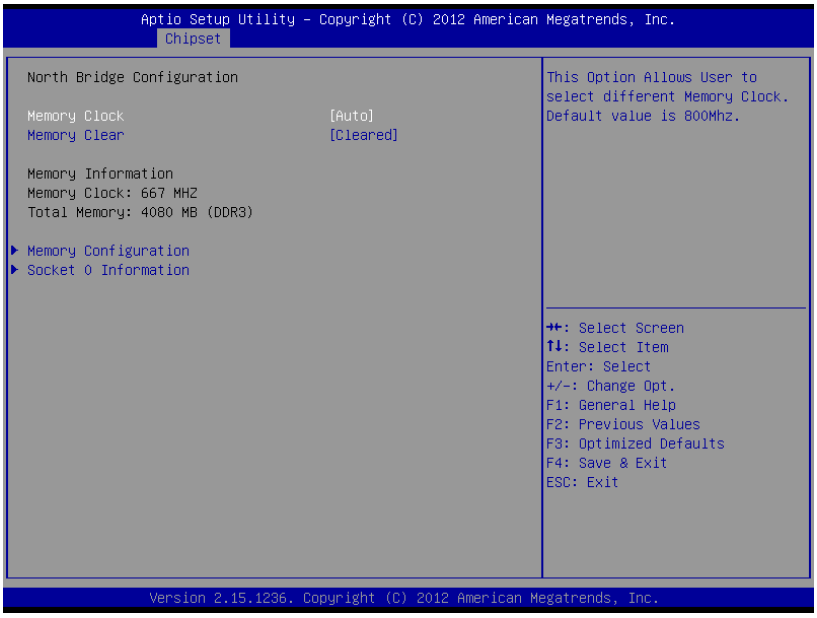
Item	Option	Description
XHCI Controller 0	Enabled**[Default]** Disabled	XHCI Enable Help.
OHCI HC(Bus 0 Dev 18 Fn 0)	Enabled**[Default]** Disabled	OHCI HC(Bus 0 Dev 18 Fn 0).
EHCI HC(Bus 0 Dev 18 Fn 2)	Enabled**[Default]** Disabled	EHCI HC(Bus 0 Dev 18 Fn 2).
OHCI HC(Bus 0 Dev 19 Fn 0)	Enabled**[Default]** Disabled	OHCI HC(Bus 0 Dev 19 Fn 0).
EHCI HC(Bus 0 Dev 19 Fn 2)	Enabled**[Default]** Disabled	EHCI HC(Bus 0 Dev 19 Fn 2).
USB Port 0~7	Enabled**[Default]** Disabled	USB Port 0~7.
XHCIO Port 0~1	Enabled**[Default]** Disabled	XHCIO Port 0~1.

3.6.3.2.3 SB HD Azalia Configuration



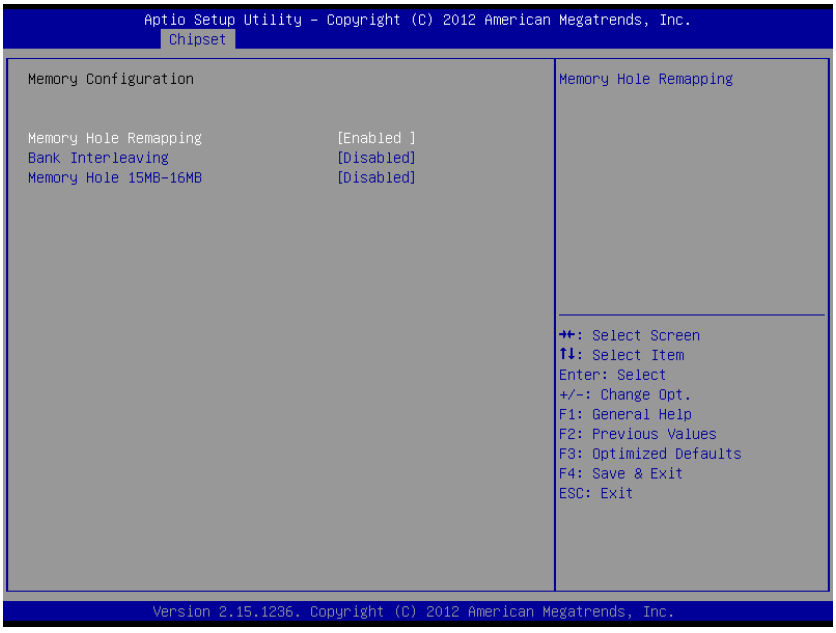
Item	Option	Description
HD Audio Azalia Device	Auto Enabled**[Default]** Disabled	HD Audio Azalia Device.
HDMI codec	Enabled**[Default]** Disabled	HDMI codec.
Azalia Snoop	Enabled Disabled**[Default]**	Azalia Snoop.
Audio verb-table	Sense**[Default]** Non-Sense	Audio verb-table option.

3.6.3.3 North Bridge



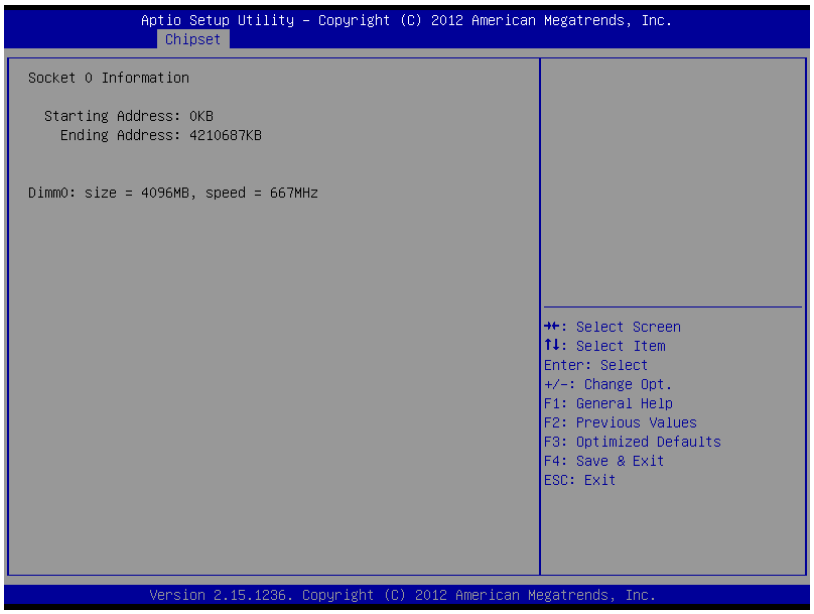
Item	Option	Description
Memory Clock	Auto**[Default]** 800Mhz 1066Mhz 1333Mhz 1600Mhz 1866Mhz	This Option Allows User to select different Memory Clock. Default value is 800Mhz.
Memory Clear	Not Cleared Cleared**[Default]**	Memory Clear functionality control.

3.6.3.3.1 Memory Configuration

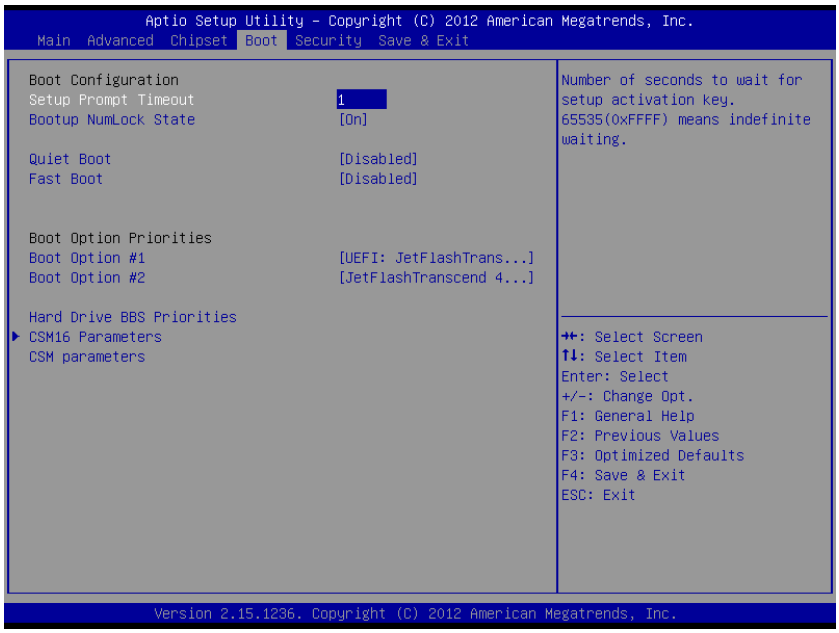


Item	Option	Description
Memory Hole Remapping	Enabled**[Default]** Disabled	Memory Hole Remapping.
Bank Interleaving	Enabled Disabled**[Default]**	Bank Interleaving.
Memory Hole 15MB-16MB	Enabled Disabled**[Default]**	Memory Hole 15MB-16MB for some ISA expansion cards.

3.6.3.3.2 Socket 0 Information

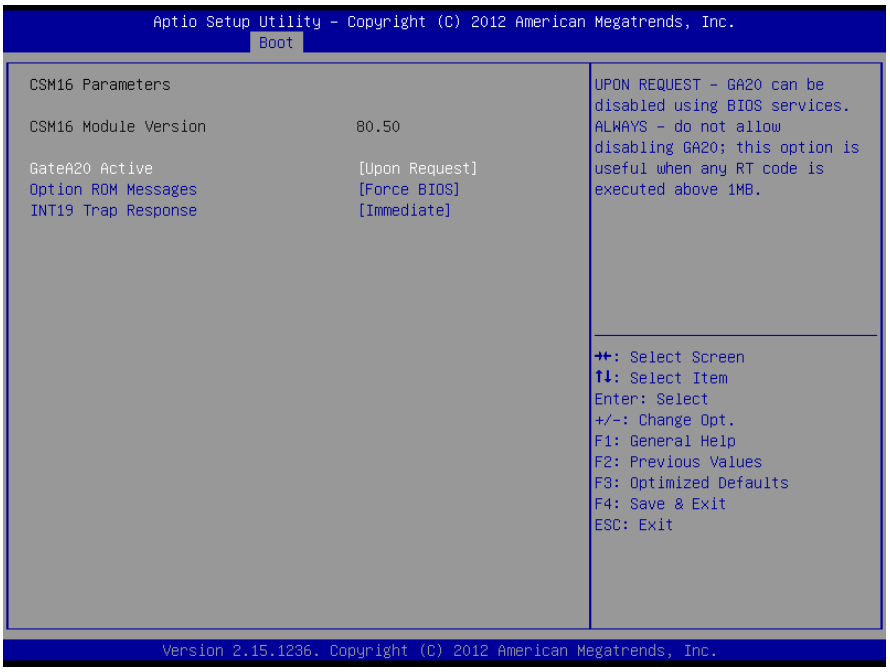


3.6.4 Boot



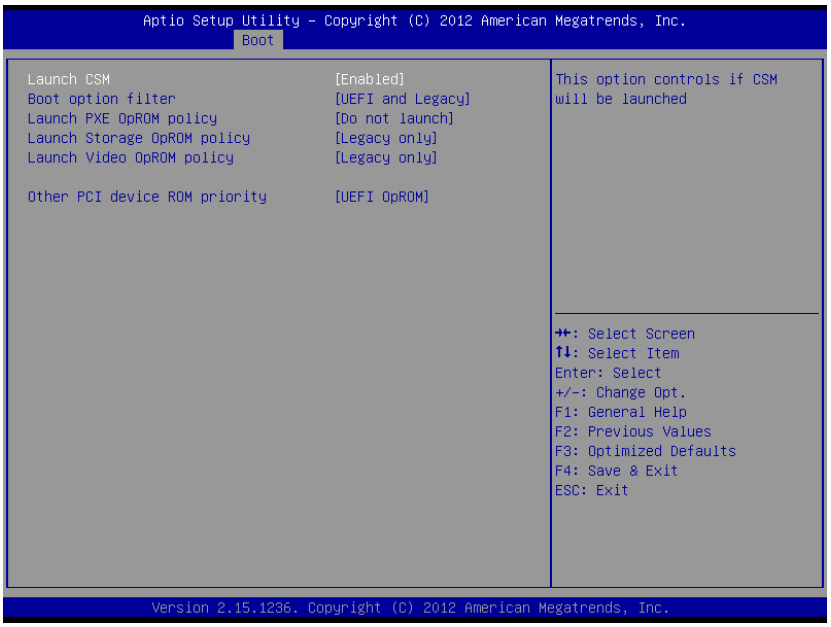
Item	Option	Description
Setup Prompt Timeout	1~ 65535	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On**[Default]** Off	Select the Keyboard NumLock state
Quiet Boot	Disabled**[Default]** Enabled	Enables or disables Quiet Boot option
Fast Boot	Disabled**[Default]** Enabled	Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.
Boot Option #1/2	Set the system boot order.	
CSM16 Parameters	CSM16 configuration: Enable/Disable, Option ROM execution settings, etc.	
CSM parameters	OpROM execution, boot options filter,etc.	

3.6.4.1 CSM16 Parameters



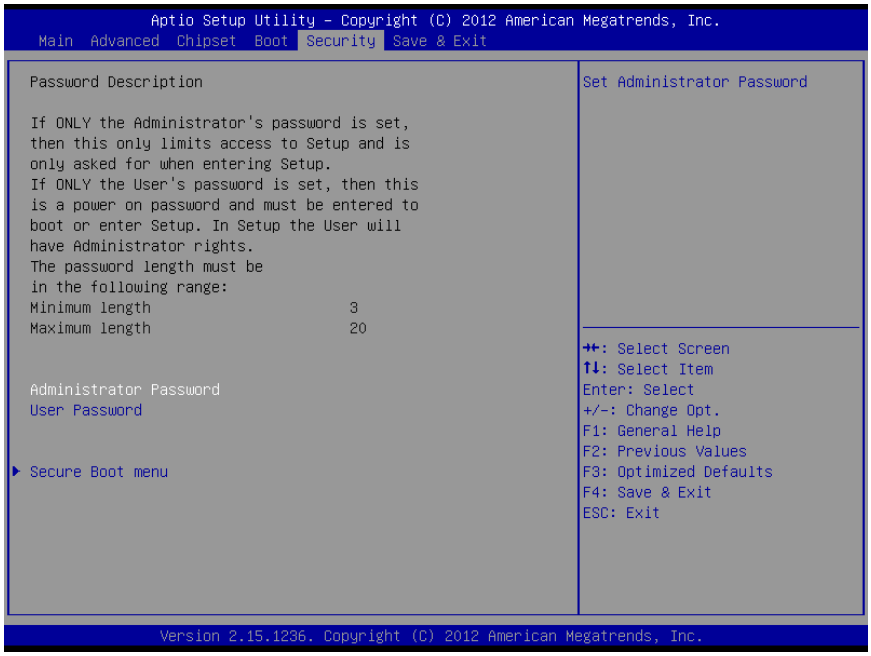
Item	Option	Description
GateA20 Active	Upon Request**[Default]** Always	UPON REQUEST – GA20 can be disabled using BIOS services. ALWAYS – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.
Option ROM Messages	Force BIOS**[Default]** Keep Current	Set display mode for Option ROM.
INT19 Trap Response	Immediate**[Default]** Postponed	BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE – execute the trap right away; POSTPONED – execute the trap during legacy boot.

3.6.4.2 CSM Parameters



Item	Option	Description
Launch CSM	Disabled Enabled**[Default]**	This option controls if CSM will be alaunched.
Boot option filter	UEFI and Legacy**[Default]** Legacy only UEFI only	This option controls what devices system can boot to.
Launch PXE OpROM policy	Do not launch**[Default]** UEFI only Legacy only	Controls the execution of UEFI and Legacy PXE OpROM.
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



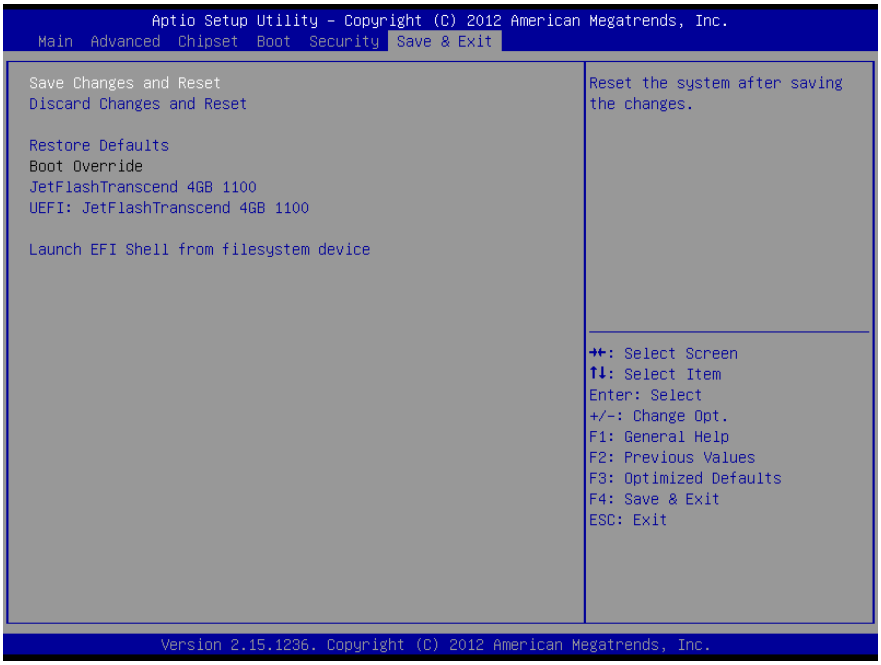
- **Administrator Password**

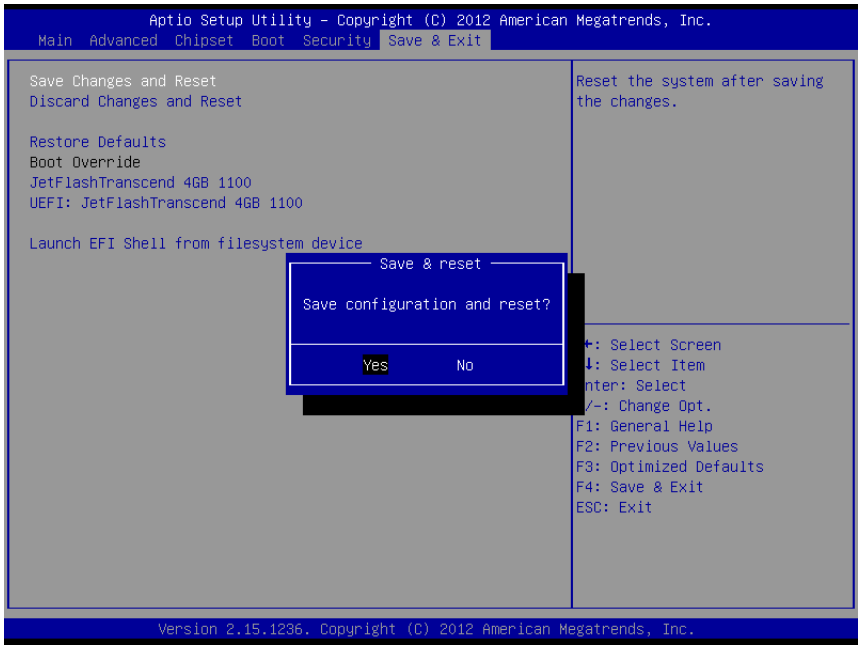
Set setup Administrator Password

- **User Password**

Set User Password

3.6.6 Save and exit





3.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

3.6.6.2 Discard Changes and Reset

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.

3.6.6.3 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.

3.6.6.4 Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.

4. Drivers Installation

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

USB 3.0 ports would not be activated unless USB 3.0 driver is loaded in Windows.

In order to facilitate USB 3.0 ports, no matter in a system or single board, please attach either PS2 keyboard/mouse or USB 2.0 keyboard/mouse to on-board USB 2.0 pin header in advance in order to install chip driver (USB 3.0 driver is included) in Windows.

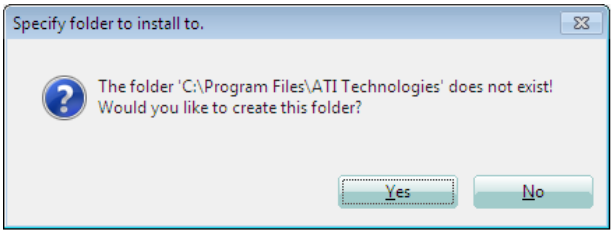
4.1 Install VGA/Chipset Driver

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 **\VGA\ECM-KA_VGA**.

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

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

Step 2. Click **Next** to continue installation.

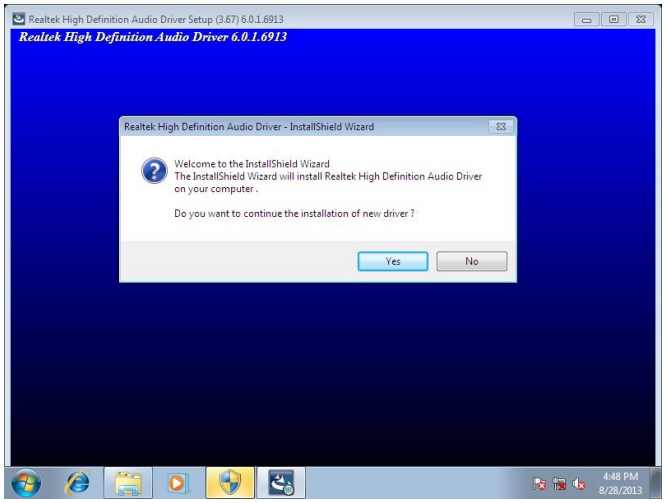


Step 3. Click **Yes** to complete setup.

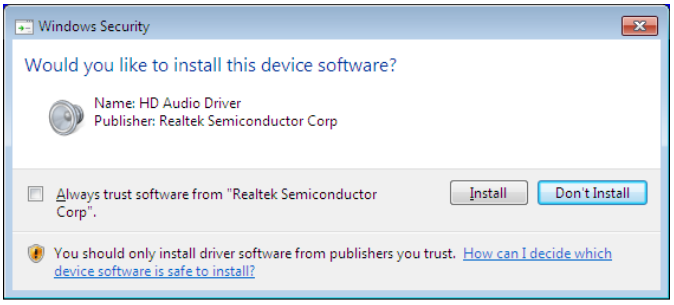
4.2 Install Audio Driver (For Realtek ALC892)

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

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



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

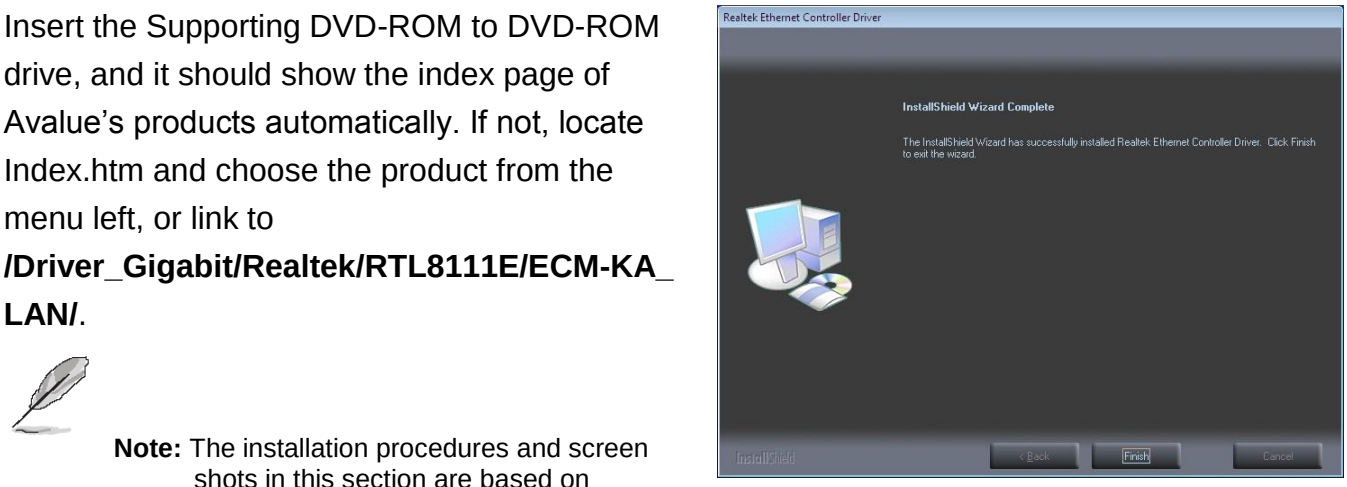


Step 2. Click **Install** to complete the setup.

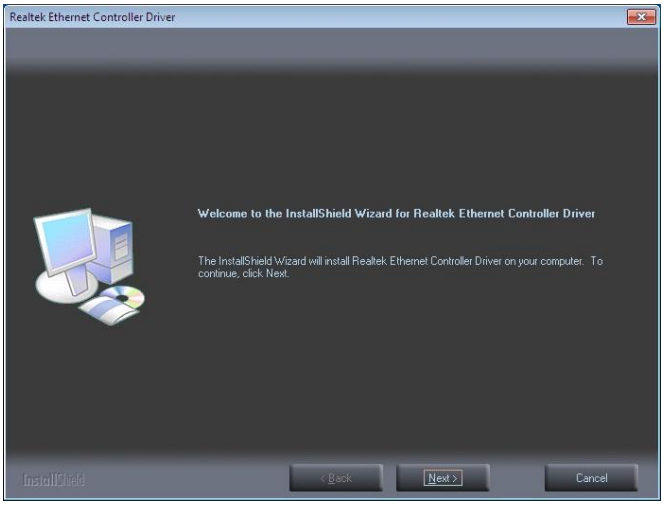
4.3 Install Ethernet Driver (For Realtek 8111E)

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/ECM-KA_LAN/**.

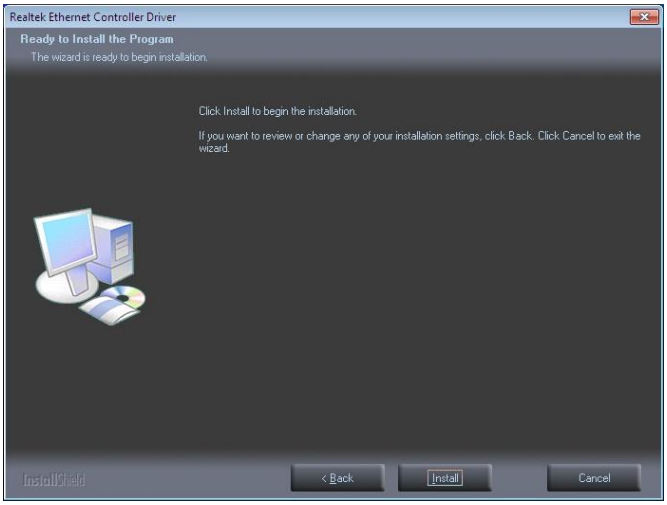
Note: The installation procedures and screen shots in this section are based on Windows 7 operation system.



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

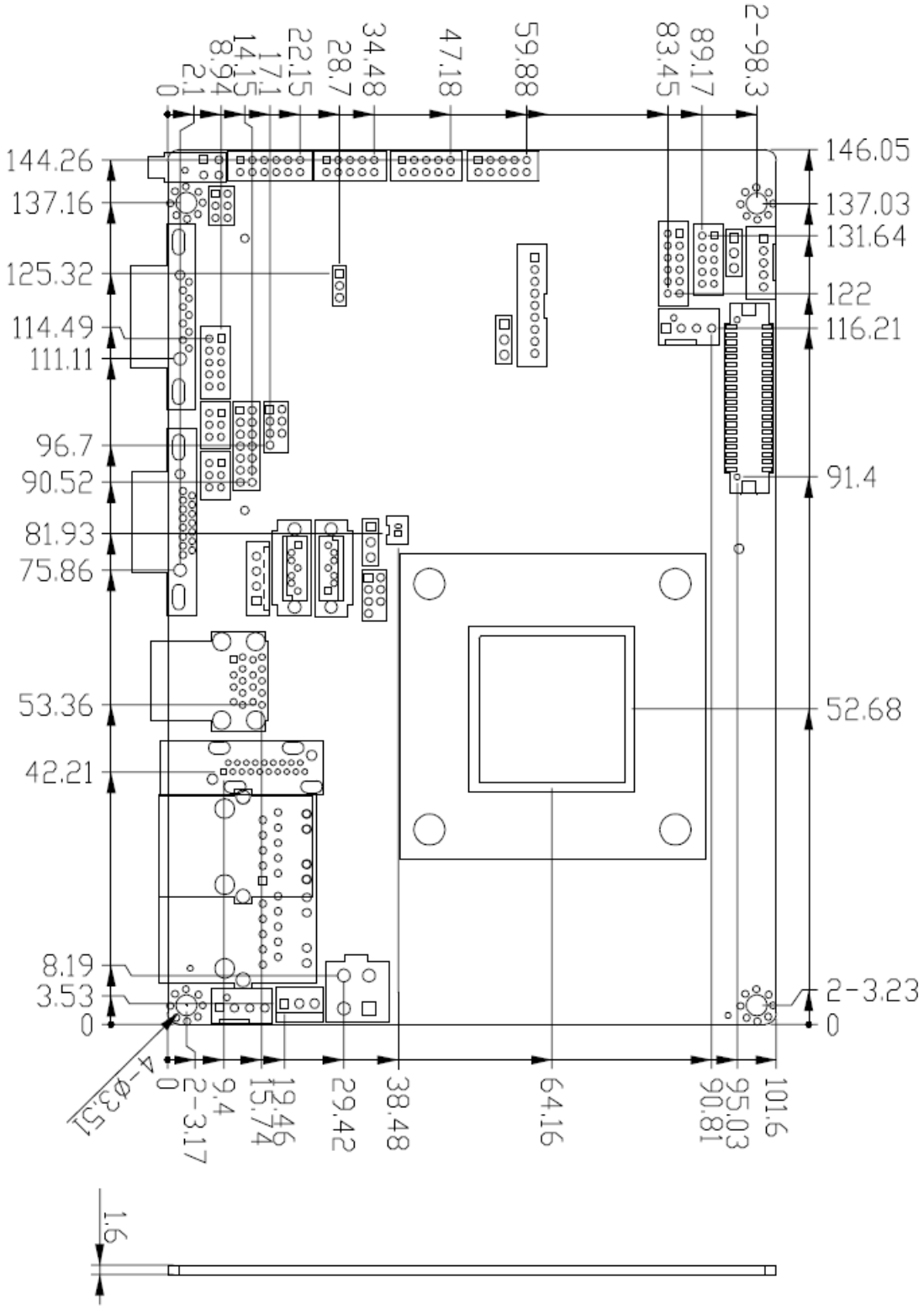


Step 1. Click **Next**.

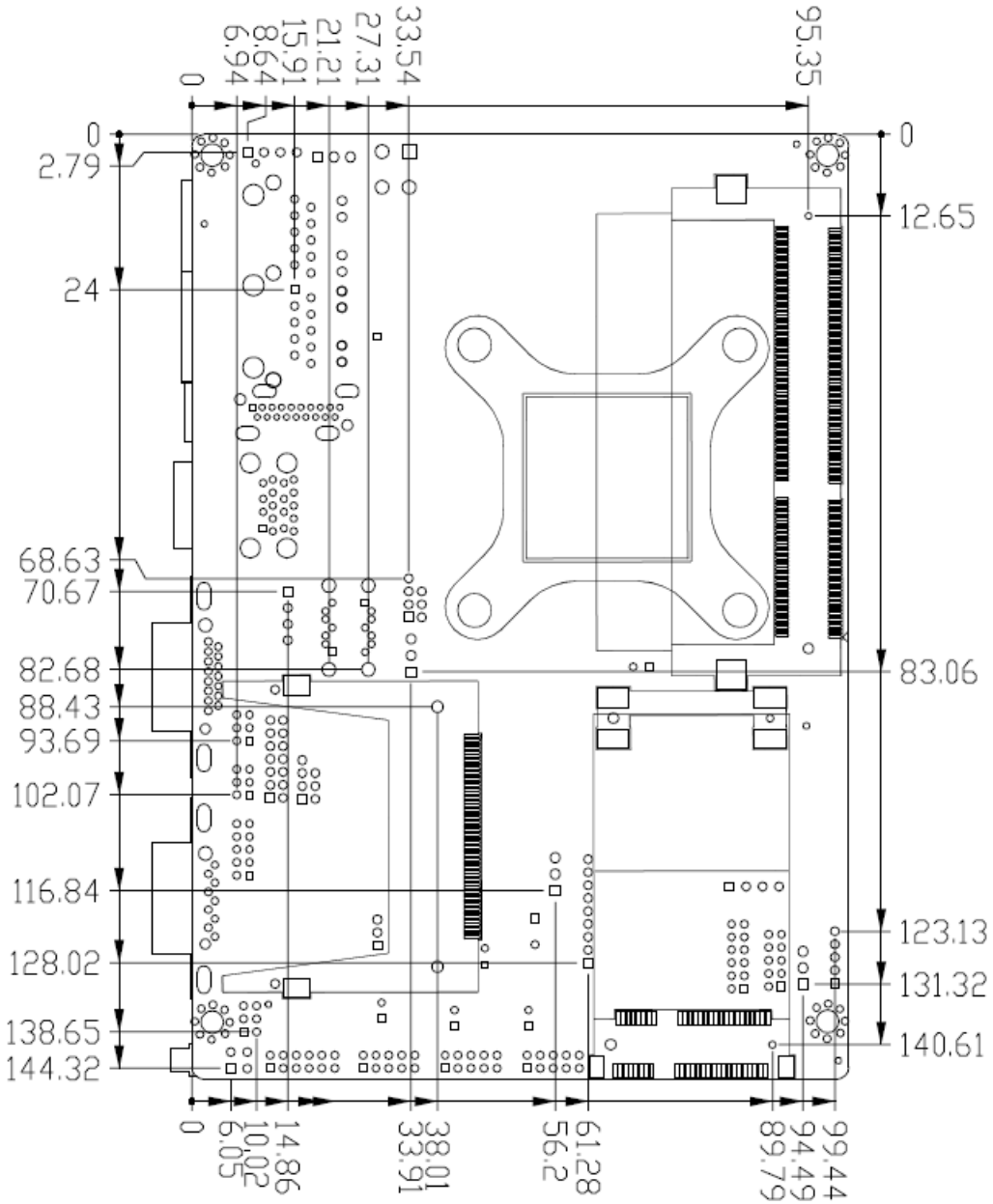


Step 2. Click **Install** to proceed.

5. Mechanical Drawing


0
2.1
8.94
14.15
17.1
22.15
28.7
34.48
47.18
59.88
83.45
89.17
2-98.3
144.26
137.16
125.32
114.49
111.11
96.7
90.52
81.93
75.86
53.36
42.21
8.19
3.53
0
146.05
137.03
131.64
122
116.21
91.4
52.68
2-3.23
0
4-Ø3.5
0
2-3.17
9.4
15.74
12.46
29.42
38.48
64.16
90.81
95.03
101.6
1.6

Unit: mm


0
6.94
8.64
15.91
21.21
27.31
33.54
95.35
0
2.79
24
68.63
70.67
82.68
88.43
93.69
102.07
116.84
128.02
138.65
144.32
0
12.65
83.06
123.13
131.32
140.61
0
6.05
10.02
14.86
33.91
38.01
56.2
61.28
89.79
94.49
99.44

Unit: mm