

# EMX-VX11P

Onboard ZX-C Series Processor with VX11PH(PCH) Mini ITX  
Motherboard

## User's Manual



5<sup>th</sup> Ed – 01 September 2022

## 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.

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## Notice

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

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# 1. Getting Started

## 1.1 Safety Precautions

### Warning!



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

### Caution!



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

## 1.2 Packing List

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

- 1 x EMX-VX11P motherboard
- 1 x SATA power cable



If any of the above items is damaged or missing, contact your retailer.



### 1.3 Document Amendment History

Revision	Date	By	Comment
1 <sup>st</sup>	November 2019	Avalue	Initial Release
2 <sup>nd</sup>	February 2020	Avalue	Update System Specifications
3 <sup>rd</sup>	July 2020	Avalue	Update Setting Jumpers & Connectors
4 <sup>th</sup>	April 2021	Avalue	Update Setting Jumpers & Connectors
5 <sup>th</sup>	September 2022	Avalue	Update Setting Jumpers & Connectors

### 1.4 Manual Objectives

This manual describes in details Avalue Technology EMX-VX11P 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-VX11P or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

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

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

## 1.5 System Specifications

System	
<b>CPU</b>	Onboard ZX-C+ Series CPU (Max TDP 18W)
<b>BIOS</b>	AMI uEFI BIOS, 64 Mbit SPI Flash ROM
<b>System Chipset</b>	VX11PH (PCH) (TDP 8.8W) Co-lay VX11H (PCH) (TDP 5.8W) (GPU and power consumption difference)
<b>I/O Chip</b>	EC IT8528E
<b>System Memory</b>	1 x 204-pin DDR3 1333 MHz SO-DIMM supports up to 8GB
<b>Watchdog Timer</b>	H/W Reset, 1sec. – 65535sec./min.1sec. or 1min. step
<b>H/W Status Monitor</b>	CPU temperature monitoring Voltages monitoring CPU fan speed control
<b>Expansion</b>	1 x M.2 Type A 2230 support WiFi module ( 1 x PCI-e x 1 & USB 2.0 Signal) (1 x PCI-e x 1 share with Gold Finger or IET) by BOM optional M.2 Default disabled, no function. 1 x Full size Mini PCI-e (support mSATA/PCI-e x1/USB 2.0 Signal/SIM) Default: Gold Finger supports 1 x USB2.0 1 x SATA 2 x PCI-e x1 OR by BOM optional IET Support 1 x LPC 2 x PCI-e x1 2 x USB2.0
<b>S3/S4</b>	Yes (S0/S3/S4/S5)
I/O Specification	
<b>USB</b>	3 x USB 3.0, 4 x USB 2.0
<b>GPIO</b>	16-bits GPIO
Display Specification	
<b>Chipset</b>	VX11PH or VX11H Graphics
<b>Resolution</b>	1 x HDMI: 2K 2560 x 1440 1 x VGA: 2048 x 1536 @ 60Hz
<b>Multiple Display</b>	2
<b>HDMI</b>	1 x HDMI
<b>VGA</b>	1 x VGA
<b>LCD Interface</b>	1 x Dual channel 24-bits LVDS (Chrontel CH7511B eDP to LVDS)

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	*F/W must be fine-tune by Avalue
<b>Audio Specification</b>	
<b>AC97 Codec</b>	Realtek ALC662 HD Audio Decoding Controller
<b>Audio Amp</b>	Realtek ALC105 Stereo Class-D 3W x 2
<b>Ethernet Specification</b>	
<b>LAN Chip</b>	2 x Intel® I210AT PCI-e Gigabit Ethernet
<b>Ethernet Interface</b>	Gigabit Ethernet
<b>Internal I/O Connectors</b>	
<b>Fan</b>	1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported
<b>System1 SMBUS</b>	1 x 1 x 5 pin, pitch 2.00mm, +3.3V Level
<b>Buzzer</b>	Onboard
<b>CMOS Battery</b>	1 x horizontal type battery connector (Battery cable 170mm length)
<b>Power ON</b>	1 x 2 x 5 pin, pitch 2.54mm connector for front panel 1
<b>Audio</b>	1 x 2 x 5 pin, pitch 2.54mm connector for front Audio
<b>External I/O Connector</b>	<p>Storage:</p> <p>1 x Full size Mini PCI-e (support mSATA/PCI-e x1/USB 2.0 Signal/SIM)</p> <p>1 x M.2 Type A 2230 support WiFi module (1 x PCI-e x 1 &amp; USB 2.0 Signal) by BOM optional</p> <p>M.2 Default disabled, no function.</p> <p>1 x SATA II</p> <p>1 x SATA power connectors</p> <p>COM:</p> <p>COM 1 &amp; COM2:</p> <p>Support 422/485 selected by BIOS selection</p> <p>2 x 2 x 3 pin, pitch 2.00mm connector, support RS422/485 connector, Pin 5 with +5V</p> <p>COM 1~2</p> <p>2 x 2 x 5 pin, pitch 2.00mm connector for COM1~2: support RS-232 connector, Pin 9 with / +5V &amp; +12V Supported</p> <p>COM 3~6</p> <p>1 x 2 x 20 pin, pitch 2.00mm connector for COM 3~6 support RS-232 connector</p> <p>COM 5~6</p> <p>2 x 2 x 5 pin, pitch 2.54mm connector for 4 USB 2.0</p> <p>+ 1 x 1 x 5, pitch 2.54mm connector for 1 USB 2.0 Type A Vertical connector</p> <p>1 x 2 x 10 pin, pitch 2.00mm connector for GPIO: 16 bits &amp; +3.3S Level SMBus</p> <p>1 x 2 x 4 pin, pitch 2.00mm connector for PS2 KB/MS</p> <p>1 x 2 x 4 pin, pitch 2.00mm connector for BIOS SPI</p> <p>1 x 2 x 3 pin, pitch 2.00mm connector for EC SPI</p> <p>1 x 2 x 5 pin, pitch 2.0mm connector for LPC debug.</p>

	1 x horizontal type battery connector (Battery cable 170mm length) 1 x 2 x 5 pin, pitch 2.54mm connector for front panel 1 1 x 2 x 5 pin, pitch 2.54mm connector for front panel 2 2 x 2 x 20 pin, pitch 1.25mm connector for LVDS (must be using WF40H6-7GAA178 connector) 2 x 1 x 5 pin, pitch 2.00mm Wafer connector for LCD inverter backlight connector (5V/12V) 2 x 1 x 3 pin, pitch 2.54mm connector LCD backlight brightness adjustment (PWM/DC) 1 x 2 x 5 pin, pitch 2.54mm connector for front Audio 1 x 4 pin, pitch wafer 2.00mm connector for 3W x 2 Speaker 1 x 3 pin, pitch 2.00mm connector for CMOS clear 1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported 2 x 1 x 4 pin, pitch 2.00mm connector for LAN Activity Indicator LED 1 x 2 x 2 pin, pitch 4.20mm connector for power input connector 1 x 1 x 3 pin, pitch 2.54mm connector for AT/ATX mode Fanless Operating 1 x 1 x 3 pin, pitch 2.54mm connector for SPDIF
<b>Rear I/O Connectors</b>	
<b>USB</b>	3 x USB3.0 + 1 x USB 2.0
<b>LAN</b>	2 x Intel® I210AT PCI-e Gigabit Ethernet
<b>HDMI</b>	1 x HDMI
<b>VGA</b>	1 x VGA
<b>Rear Side External I/O Connector</b>	2 x RJ-45 3 x USB 3.0 + 1 x USB 2.0 1 x HDMI 1 x VGA 1 x Mic-In and 1 x Line-out 1 x DC Jack lockable connector type
<b>Mechanical &amp; Environmental</b>	
<b>Power Requirement</b>	DC in +12V~24V
<b>ACPI</b>	Single power ATX Support S0, S3, S4, S5 ACPI 5.0 Compliant
<b>Power Type</b>	AT / ATX mode Switchable Through Jumper
<b>Operating Temp.</b>	0~60°C (32~140°F), with 0.5 m/s Air flow
<b>Storage Temp.</b>	-40~ +75°C
<b>Operating Humidity</b>	40°C @ 95% Relative Humidity, Non-condensing
<b>Size (L x W)</b>	6.7" x 6.7" (170mm x 170mm)
<b>Weight</b>	0.40 kg



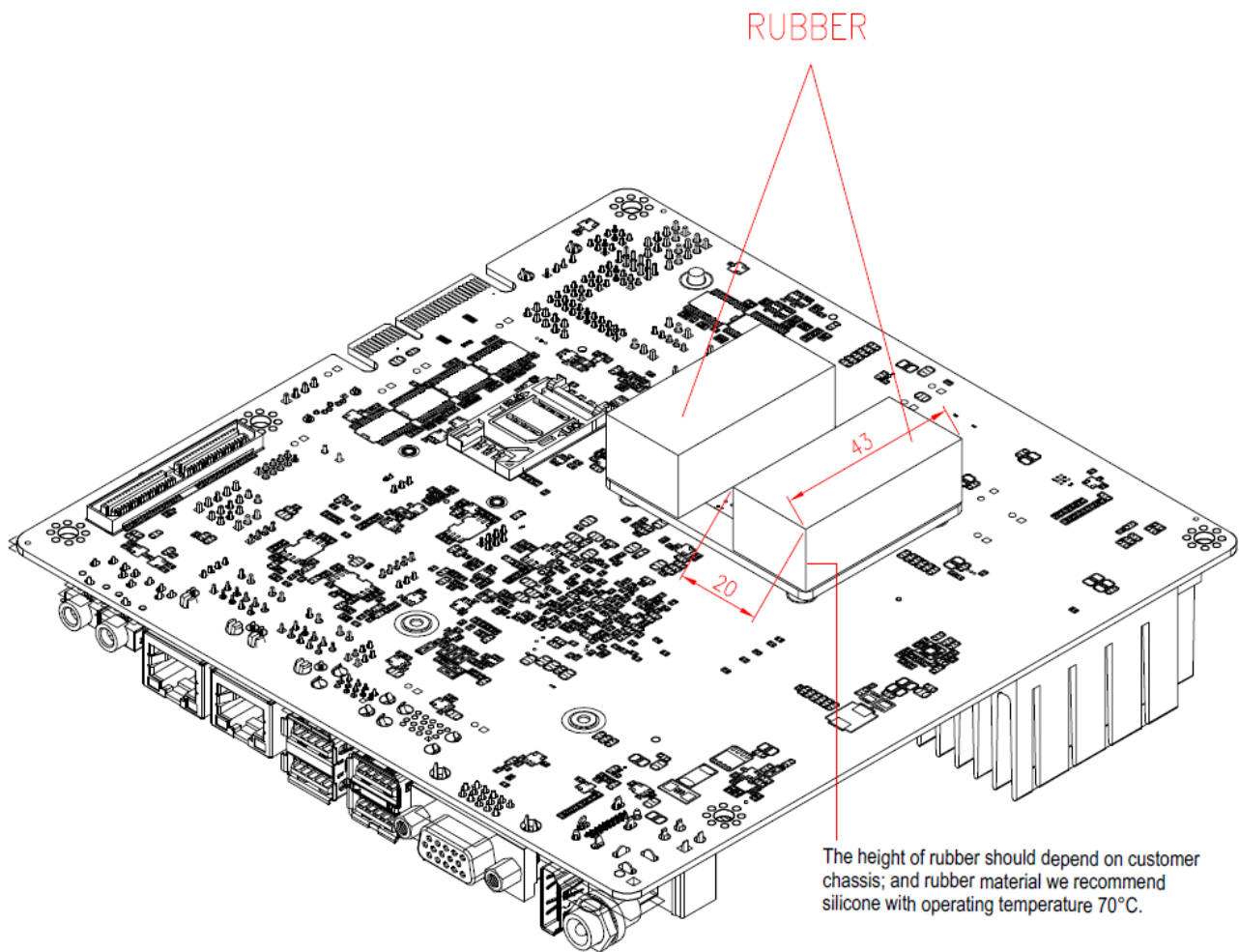
#### Note:

1. Golden finger, M.2 and IET function:
  - a. 1 x M.2 Type A 2230 support WiFi module ( 1 x PCIe x 1 & USB 2.0 Signal) (1 x PCI-e x 1 share with Gold Finger or IET) by BOM optional
  - M.2, IET connector default disabled, no function.
  - b. M.2 & mini-PCIE cannot work simultaneously.
  - If working simultaneously, one of them would shows ! , which needs to be removed and reset.
2. EMX-VX11P limitation:
  - a. USB3.0 Port Performance around 3000Mb/S.
  - b. Chipset supports 4kx2k resolution, but by measurement can only show 1920 x 1080 resolution.
  - c. LVDS supports only three resolution: 1024x768, 1280x1024, 1920x1080
3. It is suggested to use Transcend DRAM for EMX-VX11P
4. NeoKylin:
  - a. NeoKylin Ubuntu 16.04 does not support ACPI S3 WakeUp. Basically this model does not support Ubuntu version, driver need chipset vendor further development.
  - b. NeoKylin 7.0, 64 bit, kernel 3.10.0-862.9.1nd7.zx.4.X86\_64 , for LVDS Panel display, please contact FAE for driver and installation guidance.
  - c. Please also note, it is NeoKylin 7.0 a known limitation that using USB 3.0 with mSATA cannot be installed on this mainboard.
5. Driver:
  - a. Using VGA Driver 10.18.16.0308 , VGA and HDMI would be “Extend display” automatically after installation, user need to adjust it by control panel.
  - b. If user would like to design panel PC using EMX-VX11P board, we suggest to use VGA driver:  
VX11\_Win10x64 Graphics Driver 32-01-09 (Logo)  
Please contact Avalue team.
  - c. For using INTEL AC7260 wifi module, user need to install Driver: 20.90.0, please contract Avalue team.  
If using Intel website driver 21.10.1, the installation may not be completed.
6. If user need SMBUS, please contact Avalue team for NRE charge quotation.
7. Audio-out volume resulted from Realtek driver, and different under Win7 Win10 driver as below:  
AMP Speaker 3W/4Ω , Correct Vrms around 3.46v
  - a. Win7+Audio Driver measure 2.6V
  - b. Win7 no Audio Driver measure 3.3V
  - c. Win10+Audio Driver measure 3.3V

PS: Win7+Audio measure 2.6V, which is already loud, if using Win7+Audio Driver or Win10+Audio Driver for 3.3V, there may be concern to broken the speaker.
8. EMX-VX11P standard package does not include heatsink; heatsink is optional for selling. Customer can design own suitable heatsink or cooling solution.

And we suggest to add rubber (for example as photo below) on the bottom of board for system/panel PC design, to avoid board bend.

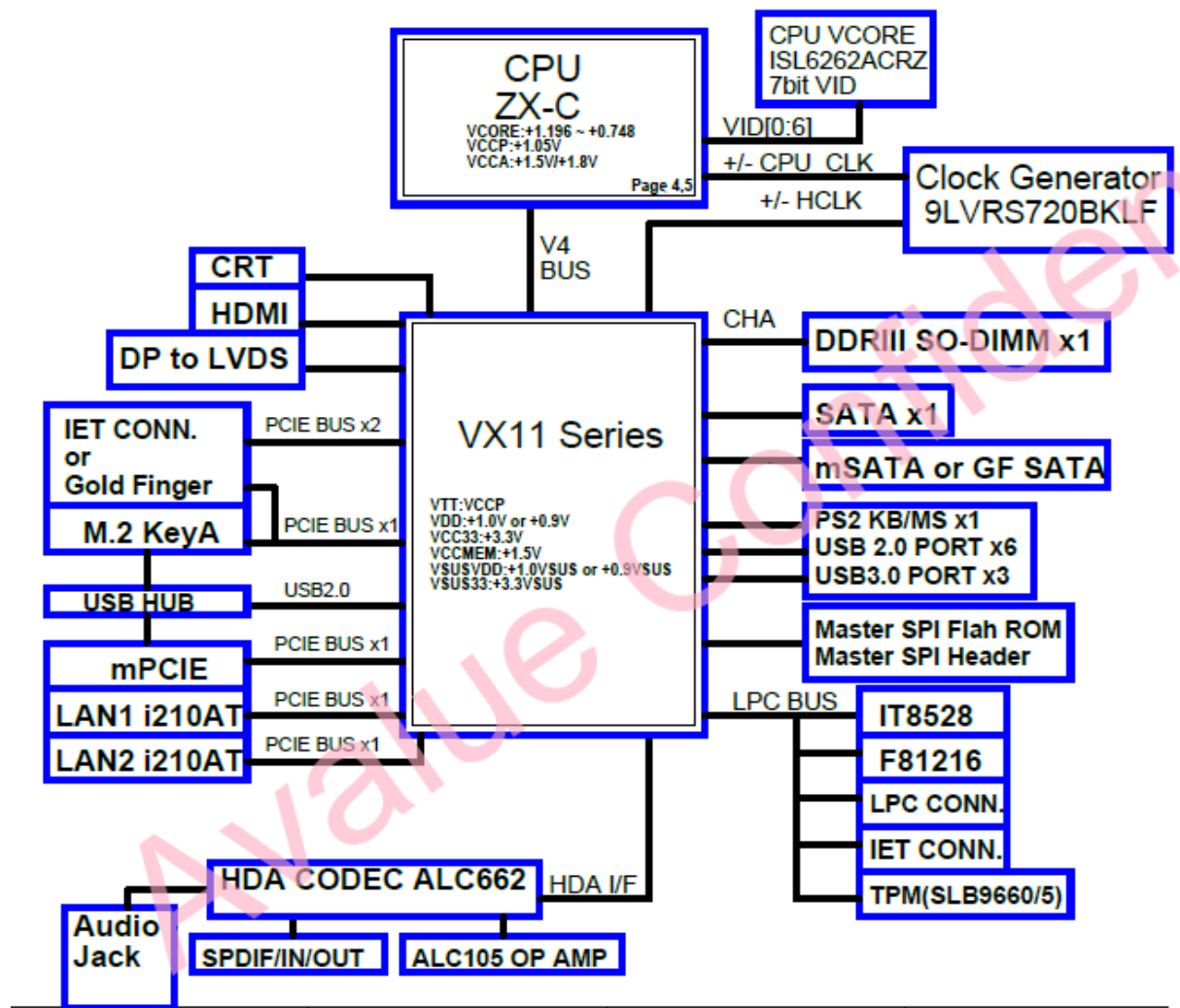
C4580/C4701 Processor operation is only guaranteed for a junction temperature of 90°C.



## 1.6 Architecture Overview—Block Diagram

The following block diagram shows the architecture and main components of EMX-VX11P.

### EMX-VX11 Block Diagram

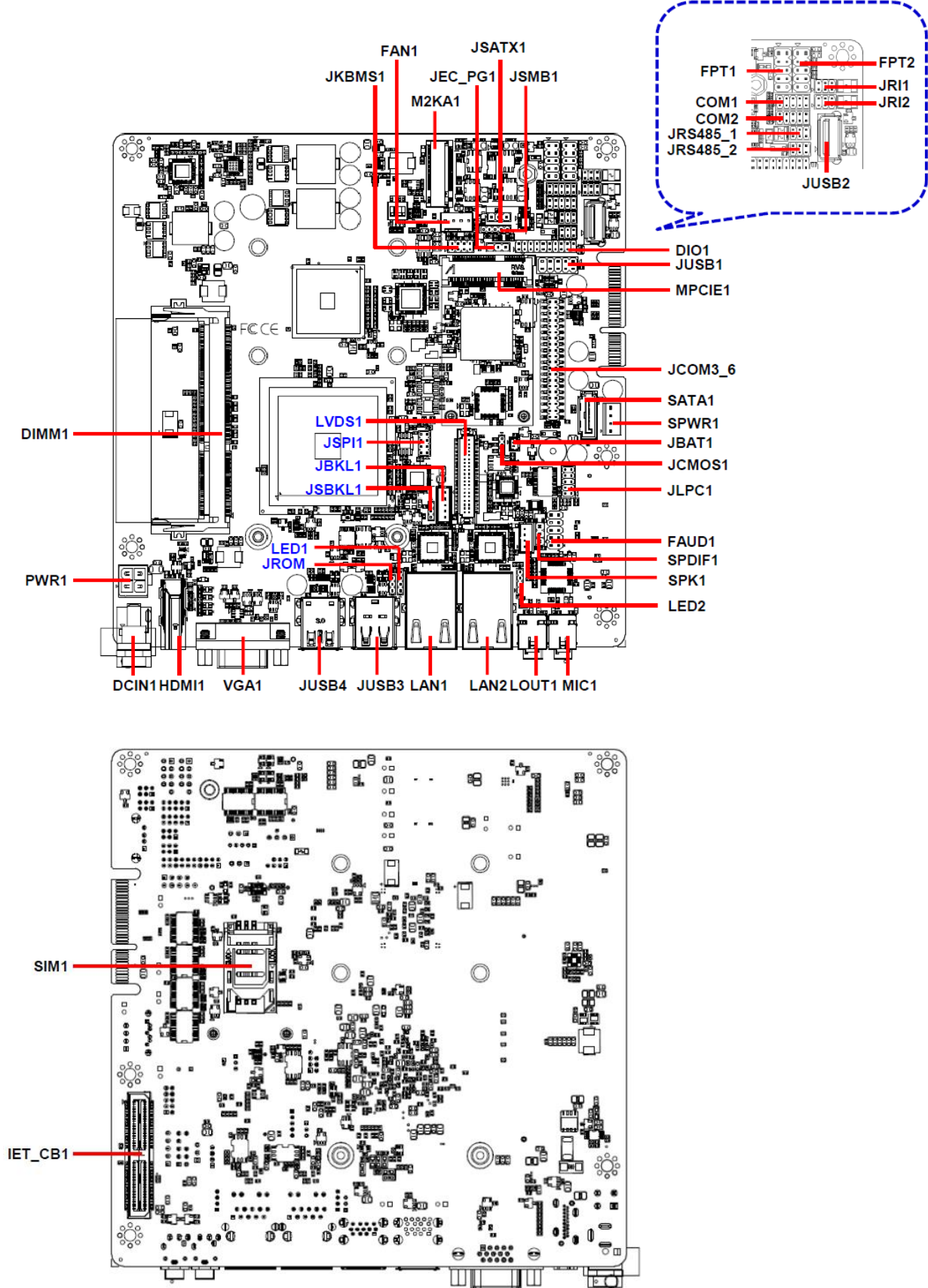




## 2. Hardware Configuration

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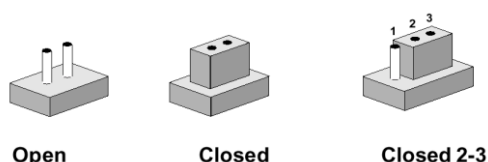
2.1 Product Overview



## 2.2 Jumper and Connector List

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

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



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



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

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

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

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

### Jumpers

Label	Function	Note
JRI1/2	Serial port 1/2 pin9 signal select	3 x 2 header, pitch 2.00mm
JSBKL1	LVDS Back Light power selection	3 x 1 header, pitch 2.00mm
JSATX1	AT/ATX Power Mode Select	3 x 1 header, pitch 2.54mm
JCMOS1	Clear CMOS	3 x 1 header, pitch 2.00mm

### Connectors

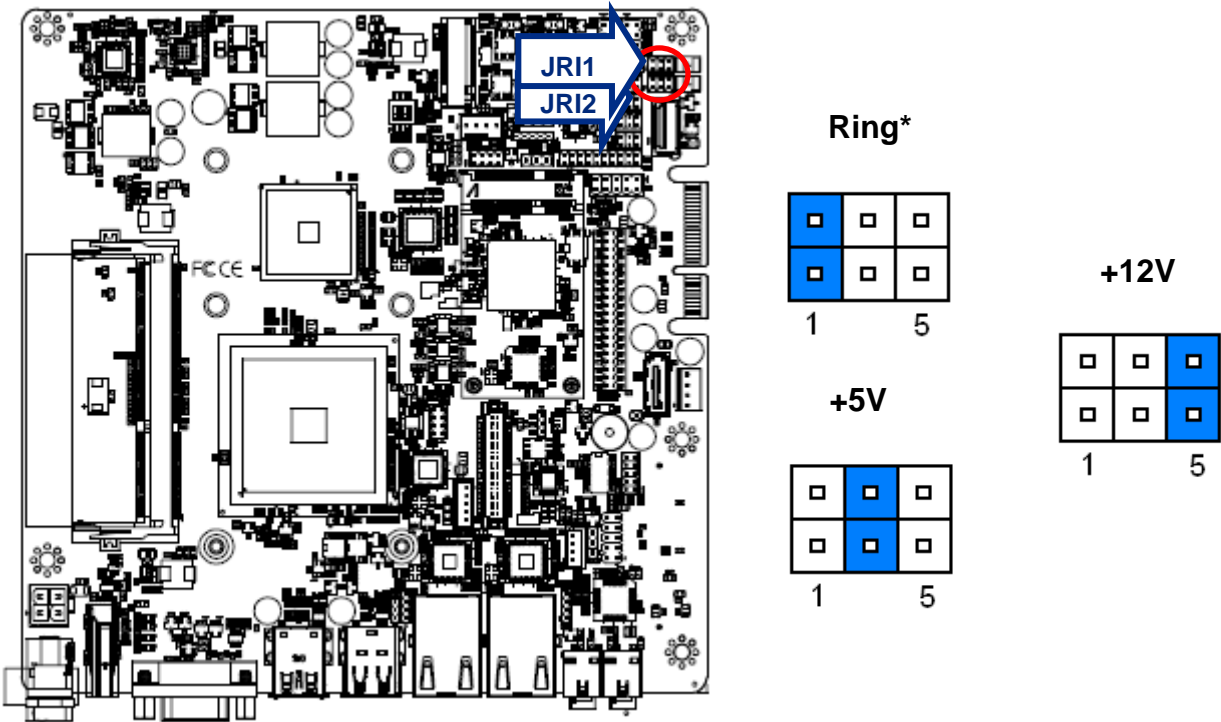
Label	Function	Note
FPT1	Miscellaneous setting connector 1	5 x 2 header, pitch 2.54mm
FPT2	Miscellaneous setting connector 2	5 x 2 header, pitch 2.54mm
DIMM1	206-pin DDR4 SO-DIMM socket	
FAUD1	Front Audio connector	5 x 2 header, pitch 2.54mm
VGA	VGA connector	

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<b>JBKL1</b>	LCD Inverter connector	5 x 1 wafer, pitch 2.00mm
<b>JSPI1</b>	SPI connector	4 x 2 header, pitch 2.00mm
<b>JEC_PG1</b>	EC Debug	3 x 1 header, pitch 2.54mm
<b>COM1</b>	Serial Port 1 connector	5 x 2 header, pitch 2.00mm
<b>COM2</b>	Serial Port 2 connector	5 x 2 header, pitch 2.00mm
<b>COM3-6</b>	Serial Port 3/4/5/6 connector	20 x 2 header, pitch 2.00mm
<b>DIO1</b>	General purpose I/O connector	10 x 2 header, pitch 2.00mm
<b>SPK1</b>	Speaker connector	4 x 1 wafer, pitch 2.00mm
<b>LVDS1</b>	LVDS Connector	20 x 2 wafer, pitch 1.25mm
<b>JUSB2</b>	USB connector	
<b>JUSB3/4</b>	USB connector 3/4	
<b>SPDIF1</b>	Sony/Philips Digital Interface	3 x 1 header, pitch 2.54mm
<b>LAN1/2</b>	RJ-45 Ethernet 1/2	
<b>MPCIE</b>	PCIe connector	
<b>LED1</b>	LED indicator connector 1	4 x 1 header, pitch 2.00mm
<b>LED2</b>	LED indicator connector 2	4 x 1 header, pitch 2.00mm
<b>JBAT1</b>	Battery connector	2 x 1 wafer, pitch 1.25mm
<b>M2KA1</b>	M.2 2230 Type A Slot (default no function)	
<b>JUSB</b>	USB connector	5 x 2 header, pitch 2.54mm
<b>JRS485_1/2</b>	Serial Port 1/2 RS485/422 Mode connector	3 x 2 header, pitch 2.00mm
<b>JLPC1</b>	LPC connector	5 x 2 header, pitch 2.00mm
<b>IET-CB1</b>	IET Module connector (default no function)	
<b>JSMB1</b>	SMBus connector	5 x 1 header, pitch 2.00mm
<b>JKBMS1</b>	PS2 keyboard/mouse connector	4 x 2 header, pitch 2.00mm
<b>FAN1</b>	CPU fan connector	4 x 1 wafer, pitch 2.54mm
<b>DCIN1</b>	DC Power-in connector	
<b>PWR1</b>	Power connector	2 x 2 wafer, pitch 4.20mm
<b>SATA1/2</b>	Serial ATA connector 1	
<b>SPWR1/2</b>	SATA Power connector 1	4 x 1 wafer, pitch 2.54mm
<b>HDMI1</b>	HDMI connector	
<b>LOUT1</b>	Line-out audio jack	
<b>MIC1</b>	Mic-in audio jack	
<b>SIM1</b>	SIM card slot	

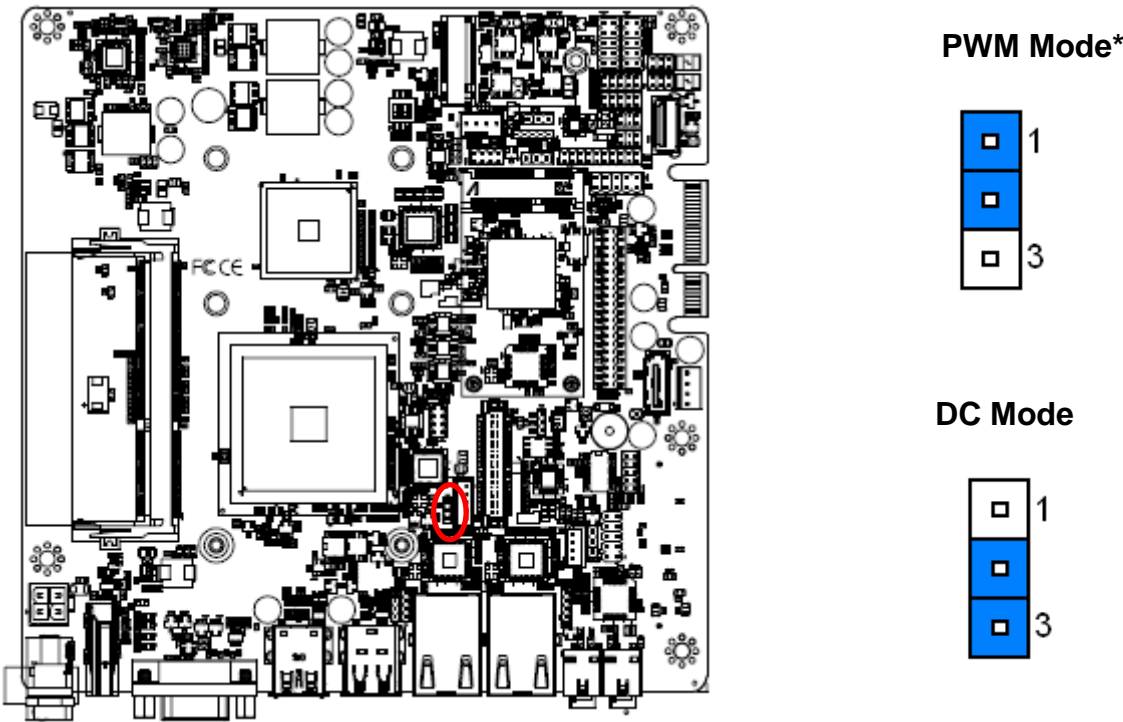
2.3 Setting Jumpers & Connectors

2.3.1 Serial port 1/2 pin9 signal select (JRI1/JRI2)



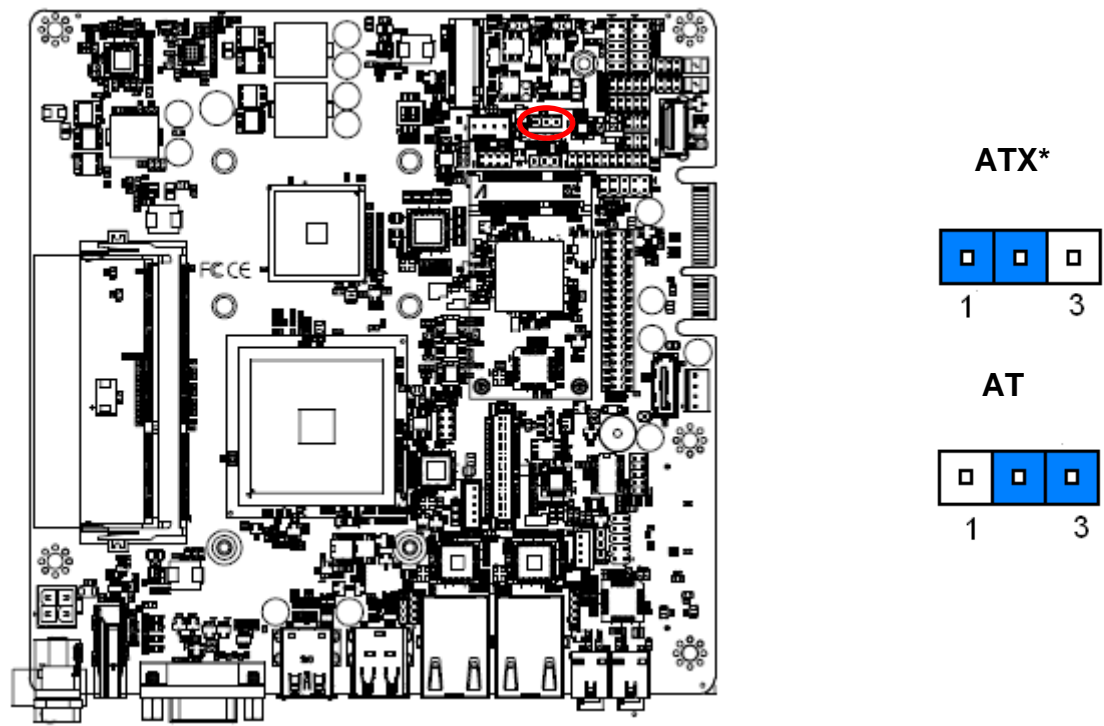
\* Default

2.3.2 LVDS Back Light power selection (JSBKL1)



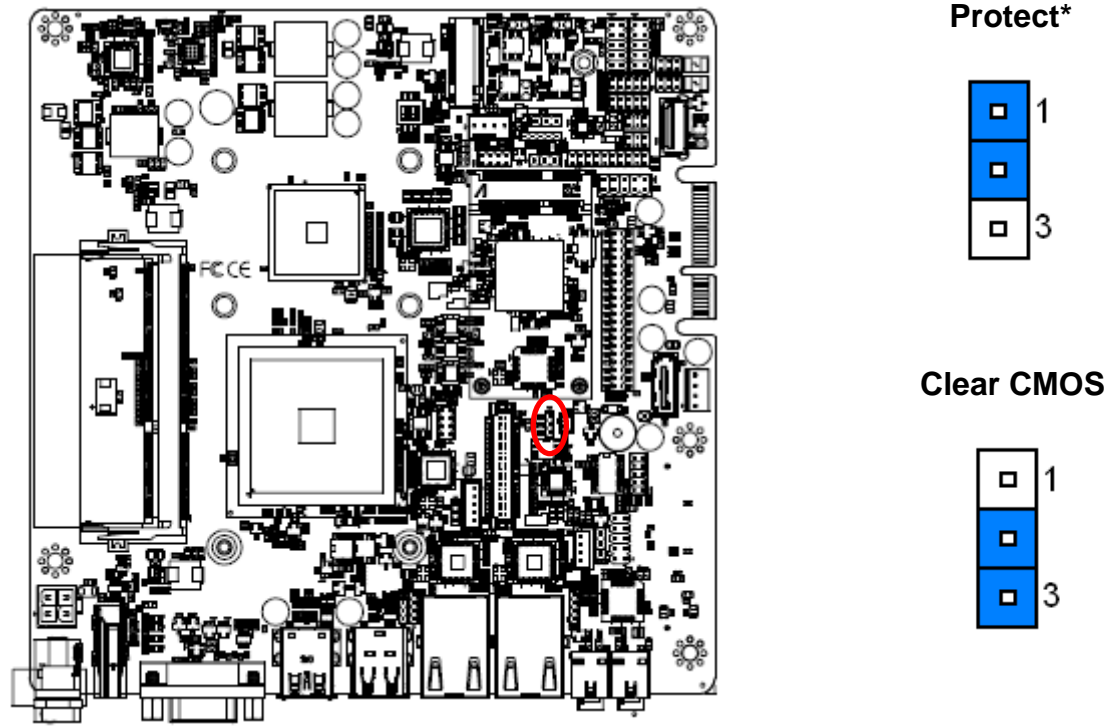
\* Default

2.3.3 AT/ATX Power Mode Select (JSATX1)



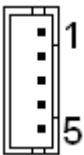
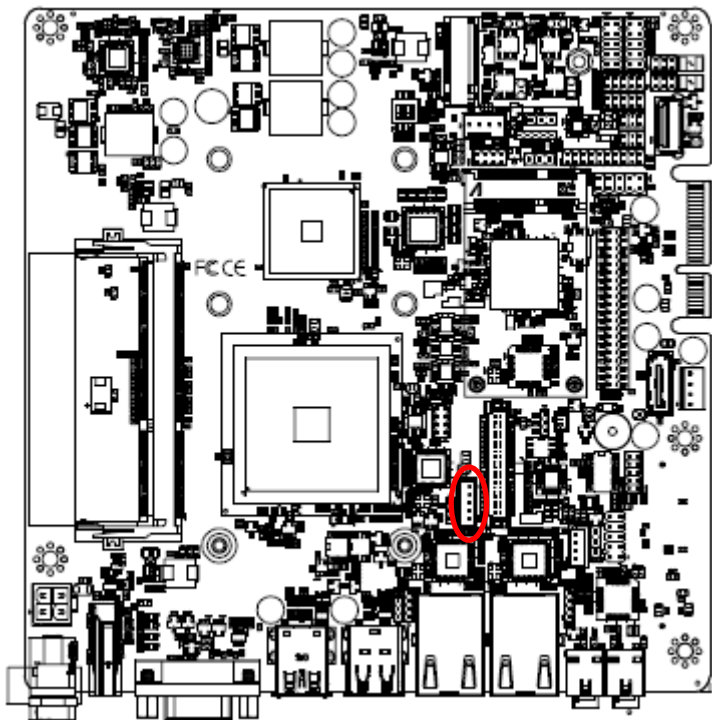
\* Default

2.3.4 Clear CMOS (JCMOS1)



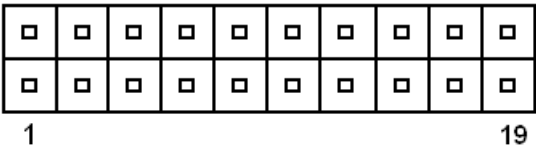
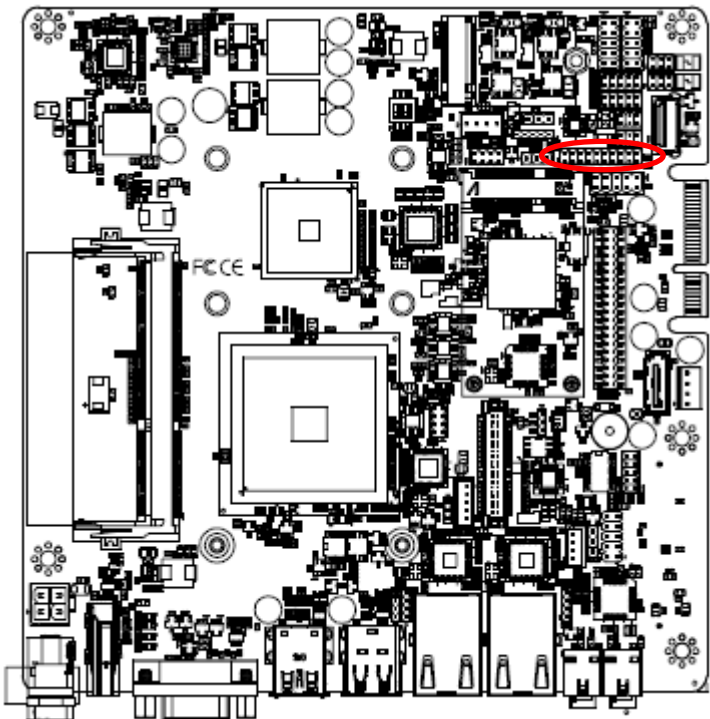
\* Default

2.3.5 LCD Inverter connector (JBKL1)



PIN	Signal
1	+12V
2	GND
3	LVDS1_BKLT_EN
4	LVDS1_BKLTCTL
5	+5V

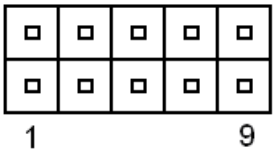
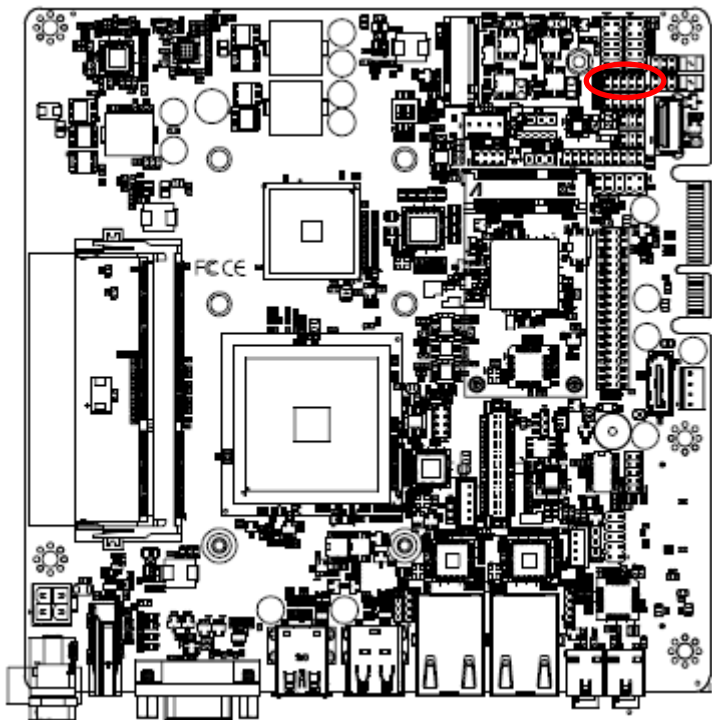
2.3.6 General purpose I/O connector (DIO1)



Signal	PIN	PIN	Signal
DI0	1	2	DO0
DI1	3	4	DO1
DI2	5	6	DO2
DI3	7	8	DO3
DI4	9	10	DO4
DI5	11	12	DO5
DI6	13	14	DO6
DI7	15	16	DO7
SMB_CLK_VCC	17	18	SMB_DATA_VCC
GND	19	20	+5V

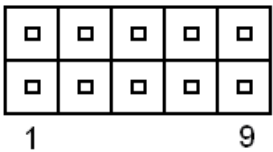
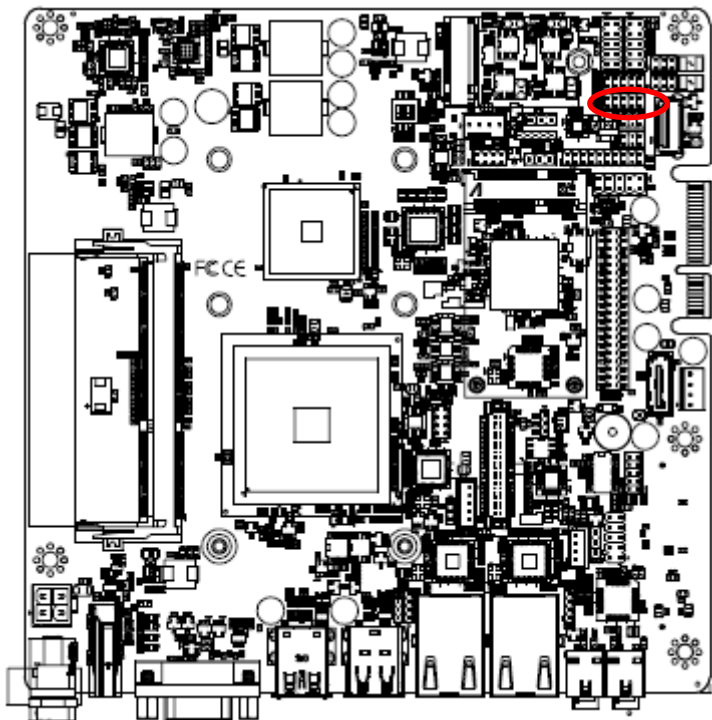


2.3.7 Serial port 1 connector (COM1)



Signal	PIN	PIN	Signal
COM_DCD#_1	1	2	COM_RXD_1
COM_TXD_1	3	4	COM_DTR#_1
GND	5	6	COM_DSR#_1
COM_RTS#_1	7	8	COM_CTS#_1
COM_RI#	9	10	NC

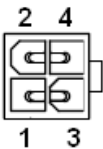
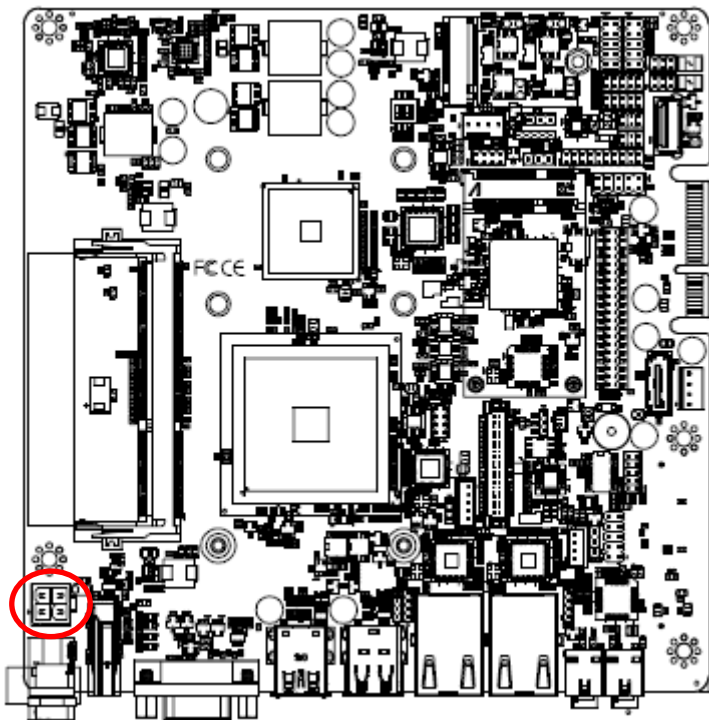
2.3.8 Serial port 2 connector (COM2)



Signal	PIN	PIN	Signal
COM_DCD#_2	1	2	COM_RXD_2
COM_TXD_2	3	4	COM_DTR#_2
GND	5	6	COM_DSR#_2
COM_RTS#_2	7	8	COM_CTS#_2
COM_RI#	9	10	NC

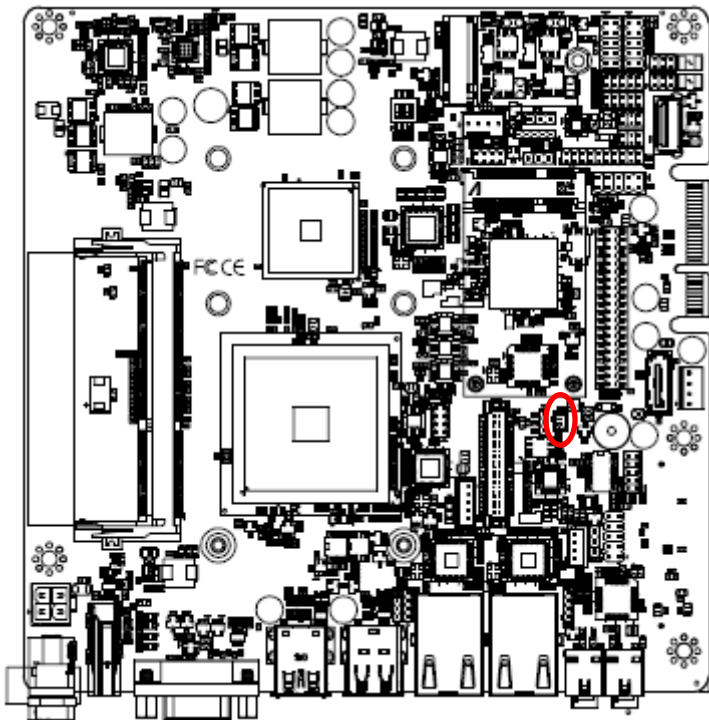


2.3.9 Power connector (PWR1)



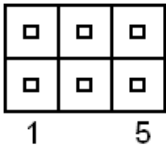
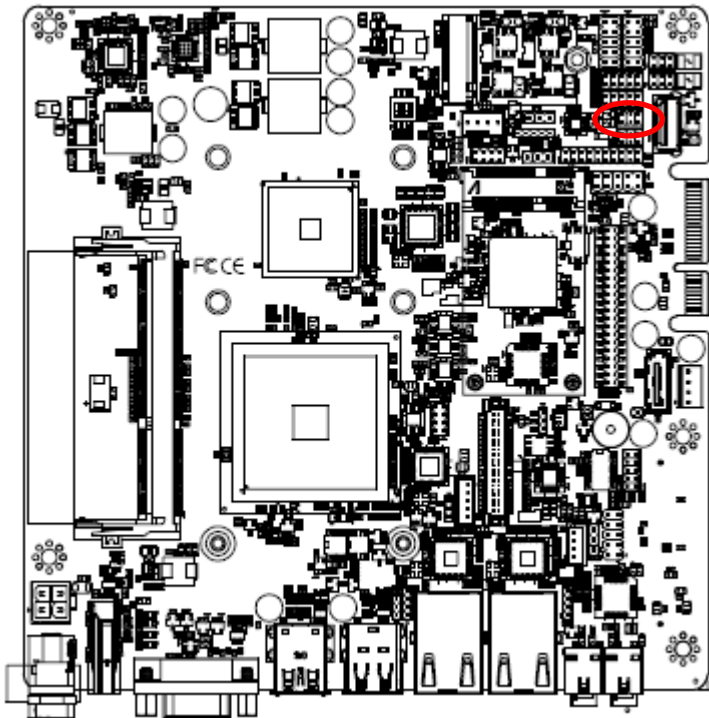
Signal	PIN	PIN	Signal
GND	2	4	+VIN_26V
GND	1	3	+VIN_26V

2.3.10 Battery connector (JBAT1)



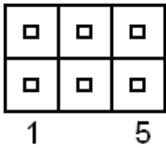
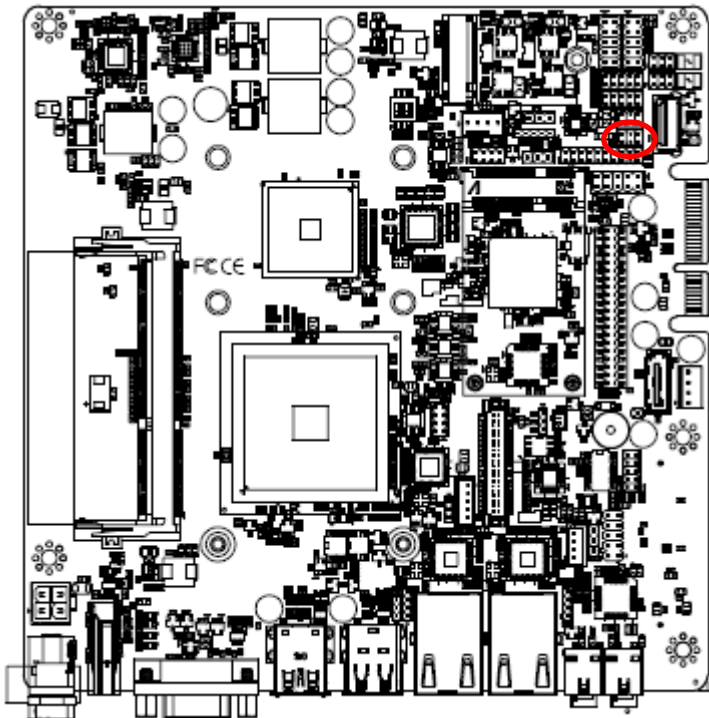
Signal	PIN
+3V	1
GND	2

2.3.11 Serial Port 1/2 RS485/422 Mode connector (JRS485\_1)



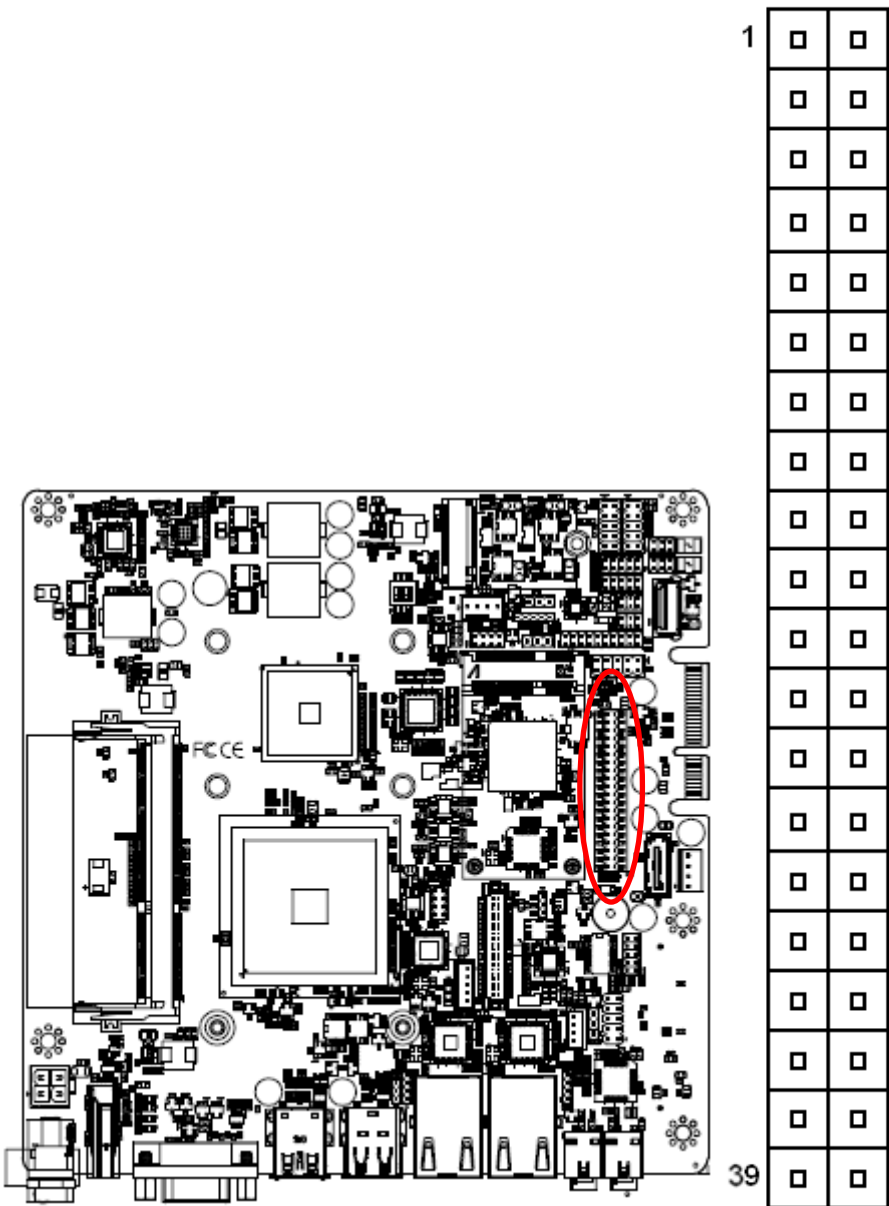
Signal	PIN	PIN	Signal
485_422TX1-	1	2	422RX1-
485_422TX1+	3	4	422RX1+
+5V	5	6	GND

2.3.12 Serial Port 1/2 RS485/422 Mode connector (JRS485\_2)



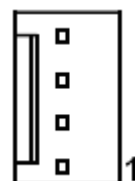
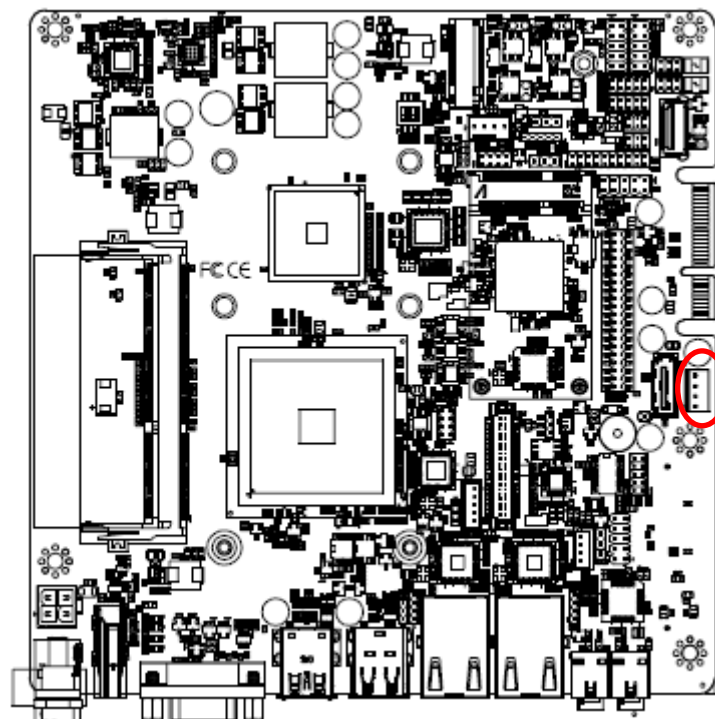
Signal	PIN	PIN	Signal
485_422TX2-	1	2	422RX2-
485_422TX2+	3	4	422RX2+
+5V	5	6	GND

2.3.13 Serial port 3/4/5/6 connector (COM3/4/5/6)



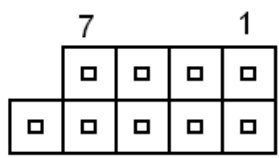
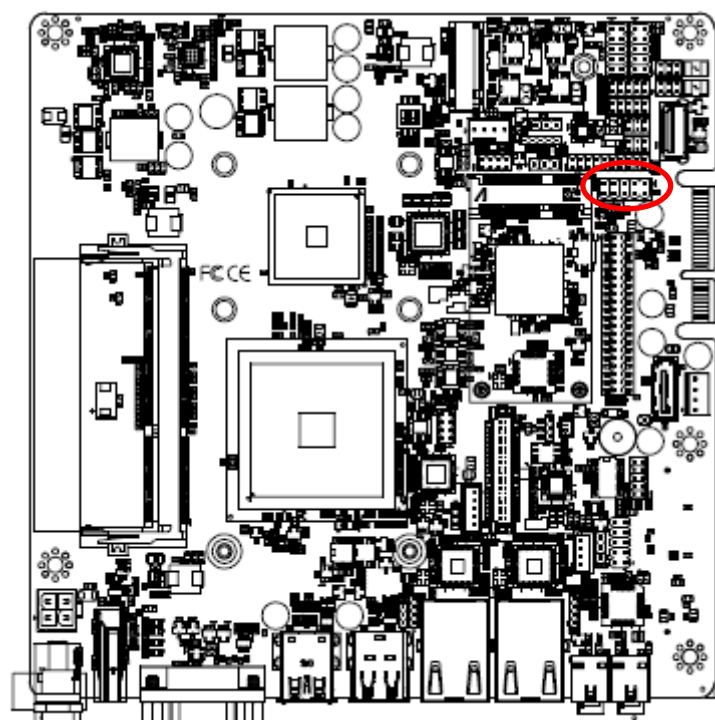
Signal	PIN	PIN	Signal
COM_DCD#_3	1	2	COM_RXD_3
COM_TXD_3	3	4	COM_DTR#_3
GND	5	6	COM_DSR#_3
COM_RTS#_3	7	8	COM_CTS#_3
COM_RI#_3	9	10	NC
COM_DCD#_4	11	12	COM_RXD_4
COM_TXD_4	13	14	COM_DTR#_4
GND	15	16	COM_DSR#_4
COM_RTS#_4	17	18	COM_CTS#_4
COM_RI#_4	19	20	NC
COM_DCD#_5	21	22	COM_RXD_5
COM_TXD_5	23	24	COM_DTR#_5
GND	25	26	COM_DSR#_5
COM_RTS#_5	27	28	COM_CTS#_5
COM_RI#_5	29	30	NC
COM_DCD#_6	31	32	COM_RXD_6
COM_TXD_6	33	34	COM_DTR#_6
GND	35	36	COM_DSR#_6
COM_RTS#_6	37	38	COM_CTS#_6
COM_RI#_6	39	40	NC

2.3.14 SATA Power connector 1 (SPWR1)



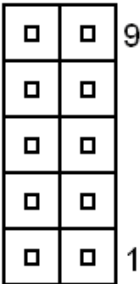
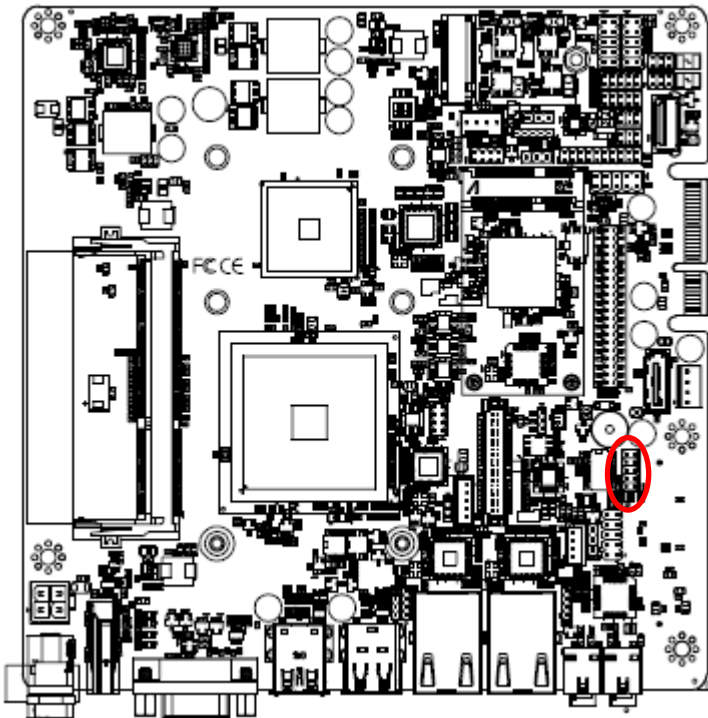
PIN	Signal
4	+V12S_SATA
3	GND
2	GND
1	+V5S_SATA

2.3.15 USB connector 1 (JUSB1)



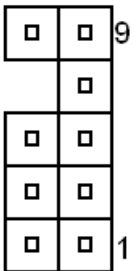
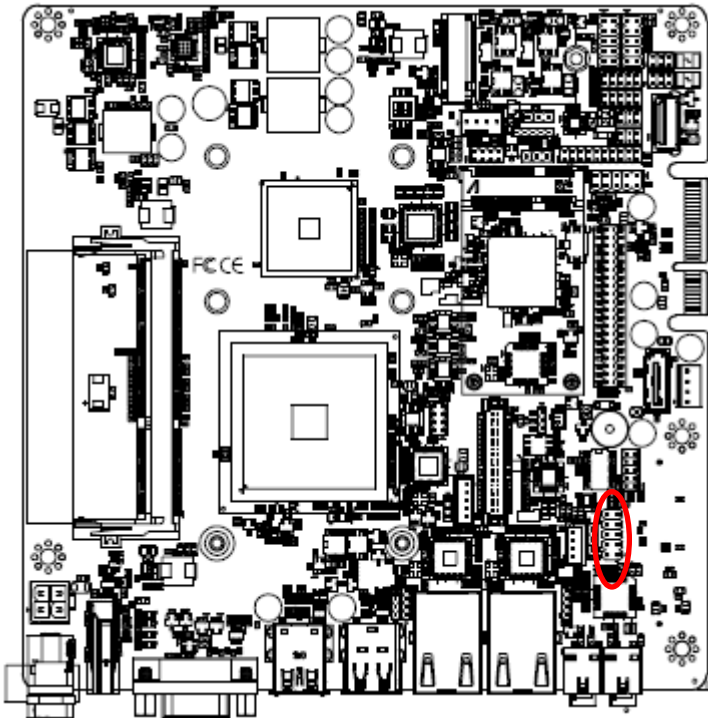
Signal	PIN	PIN	Signal
+5VUSB34	1	2	+5VUSB34
USB_DN3	3	4	USB_DN4
USB_DP3	5	6	USB_DP4
GND	7	8	GND
		10	NC

2.3.16 LPC connector (JLPC1)



Signal	PIN	PIN	Signal
GND	10	9	SERIRQ
LPC_DEBUG_CLK	8	7	LPCAD3
-LPCFRAME	6	5	LPCAD2
-LPCRST	4	3	LPCAD1
+3.3V	2	1	LPCAD0

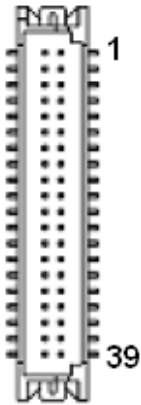
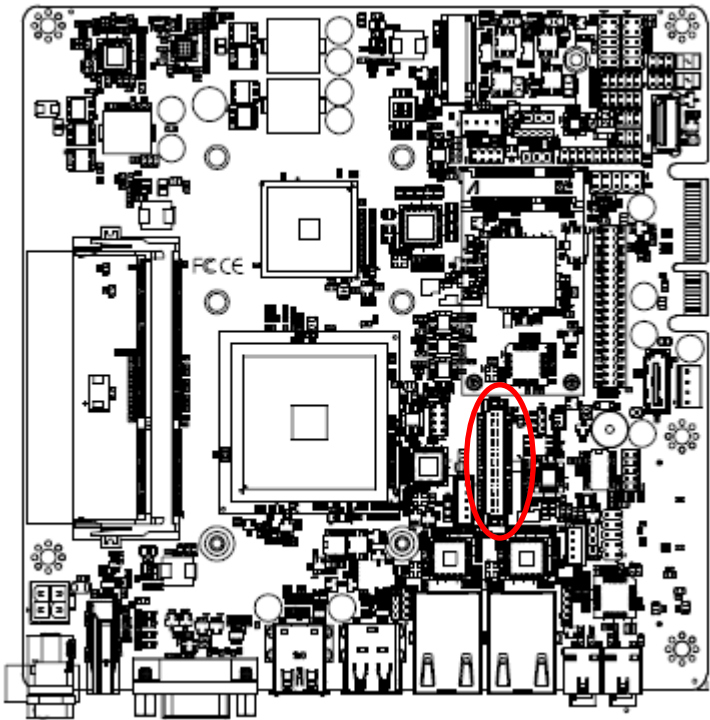
2.3.17 Audio connector (FAUD1)



Signal	PIN	PIN	Signal
LINE2_JD	10	9	LINE2_L
		7	SENSE_B
MIC2_JD	6	5	LINE2_R
AUD_FRONT_DET	4	3	MIC2_R
GND	2	1	MIC2_L

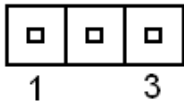
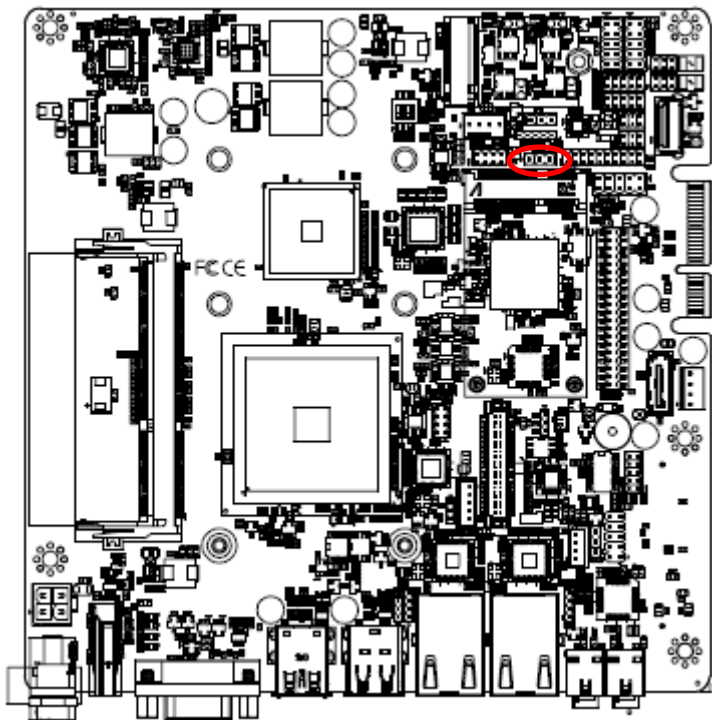


2.3.18 LVDS connector (LVDS1)



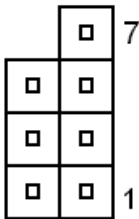
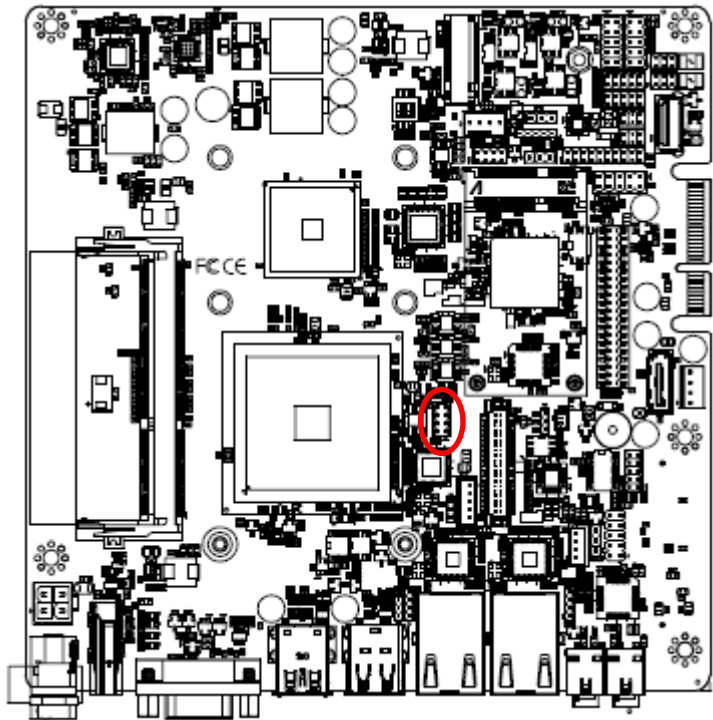
Signal	PIN	PIN	Signal
+V5S_LVDS2	2	1	+V3.3S_LVDS2
GND	4	3	+3.3V
NC	6	5	NC
GND	8	7	GND
LVDS1_DATA0_P	10	9	LVDS1_DATA1_P
LVDS1_DATA0_N	12	11	LVDS1_DATA1_N
GND	14	13	GND
LVDS1_DATA2_P	16	15	LVDS1_DATA3_P
LVDS1_DATA2_N	18	17	LVDS1_DATA3_N
GND	20	19	GND
LVDS1_DATA4_P	22	21	LVDS1_DATA5_P
LVDS1_DATA4_N	24	23	LVDS1_DATA5_N
GND	26	25	GND
LVDS1_DATA6_P	28	27	LVDS1_DATA7_P
LVDS1_DATA6_N	30	29	LVDS1_DATA7_N
GND	32	31	GND
LVDS1_CLK1_P	34	33	LVDS1_CLK2_P
LVDS1_CLK1_N	36	35	LVDS1_CLK2_N
GND	38	37	GND
+V12S_LVDS2	40	39	+V12S_LVDS2

2.3.19 EC Debug (JEC\_PG1)



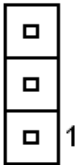
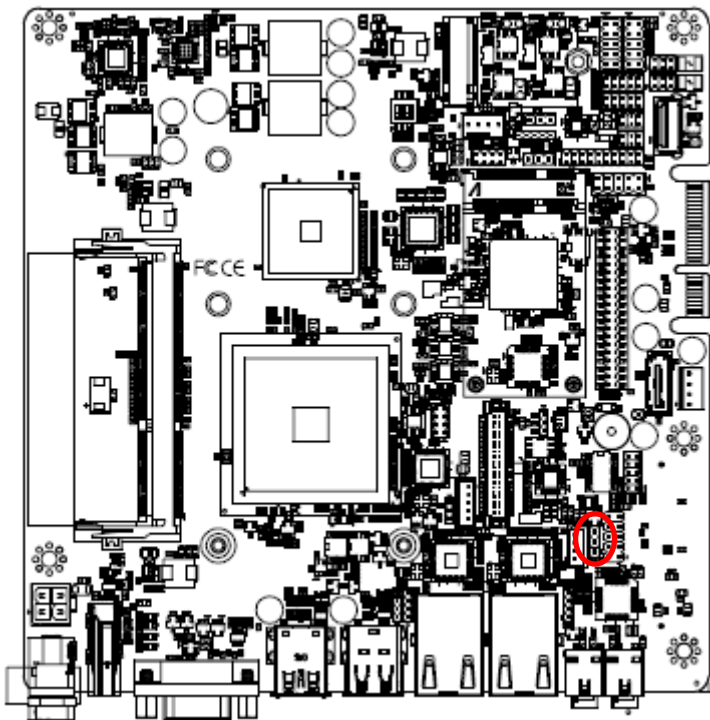
PIN	Signal
1	EC_SMCLK
2	EC_SMDAT
3	GND

2.3.20 SPI connector (JSPI1)



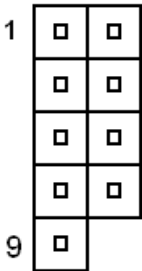
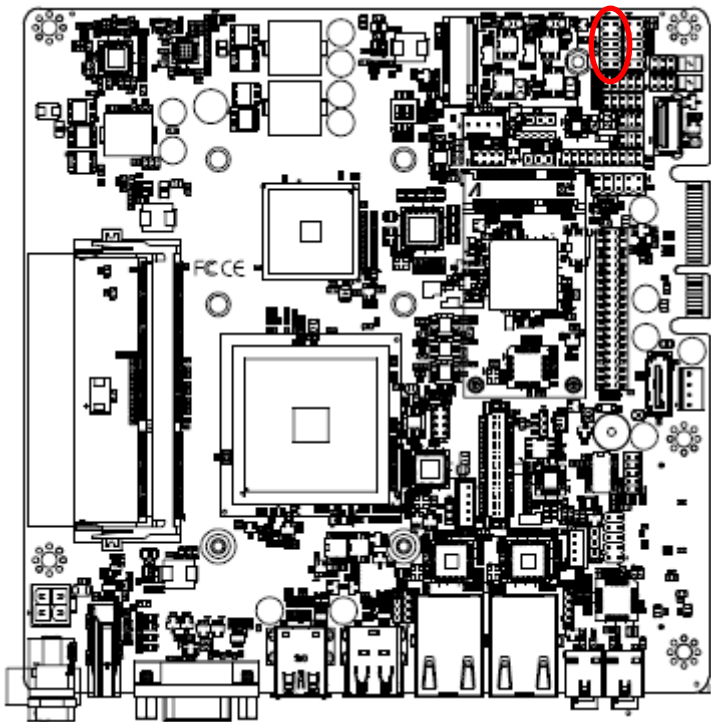
Signal	PIN	PIN	Signal
		7	SSPI_HOLD#0
SSPI_SI_R	6	5	SSPI_SO_R
SSPI_SCLK_R	4	3	SSPI_CS0#_R
GND	2	1	SPIVCC

2.3.21 Sony/Philips Digital Interface (SPDIF1)



Signal	PIN
GND	3
SPDIF_OUT	2
+5V	1

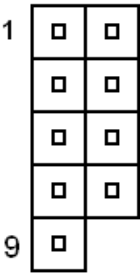
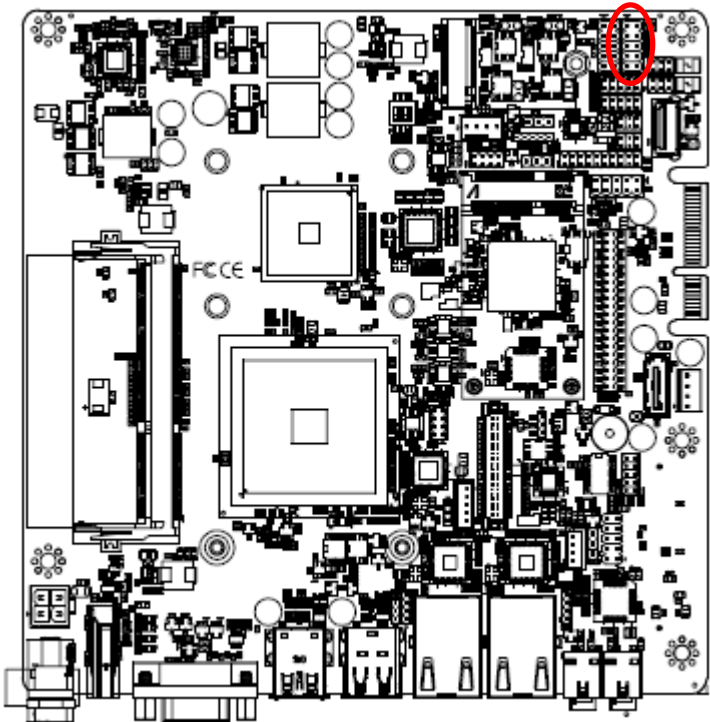
2.3.22 Miscellaneous setting connector 1 (FPT1)



Signal	PIN	PIN	Signal
HDD_LED+	1	2	PWR_LED+
HD_LED-	3	4	PWE_LED-
-RST_SW	5	6	FP_PWR_BTN_EC#
GND	7	8	GND
NC	9		

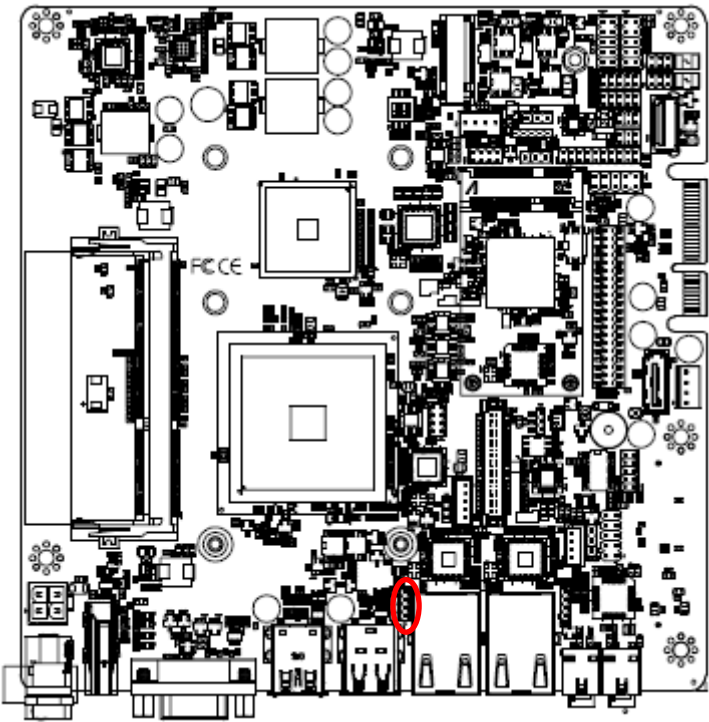


2.3.23 Miscellaneous setting connector 2 (FPT2)



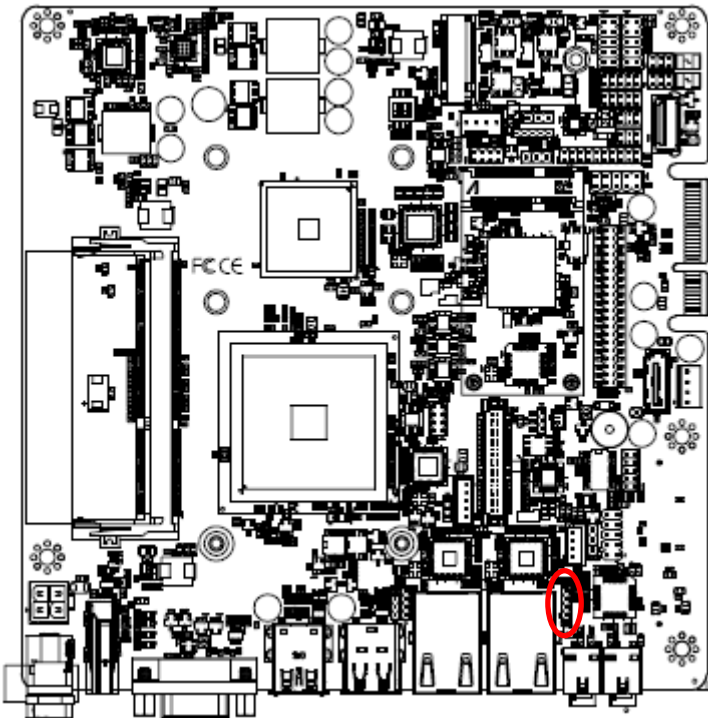
Signal	PIN	PIN	Signal
SPKR+	1	2	BLK_VR_MOD
NC	3	4	BLK_BRI_UP#
NC	5	6	BLK_BRI_DN#
SPKR-	7	8	GND
NC	9	10	

2.3.24 LED indicator connector 1 (LED1)



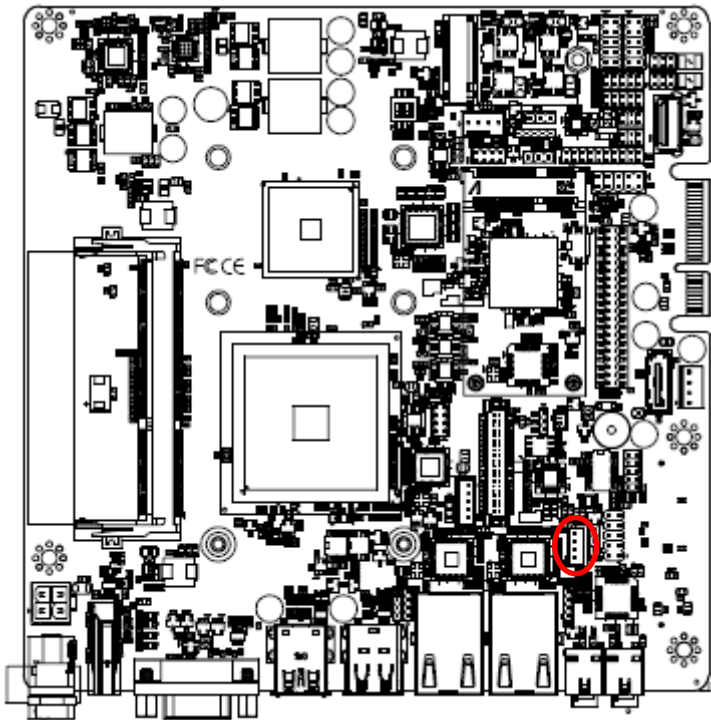
Signal	PIN
LAN1_1000#_LED	4
LAN1_100#_LED	3
LAN1_ACT_N	2
LAN1_ACT_P	1

2.3.25 LED indicator connector 2 (LED2)



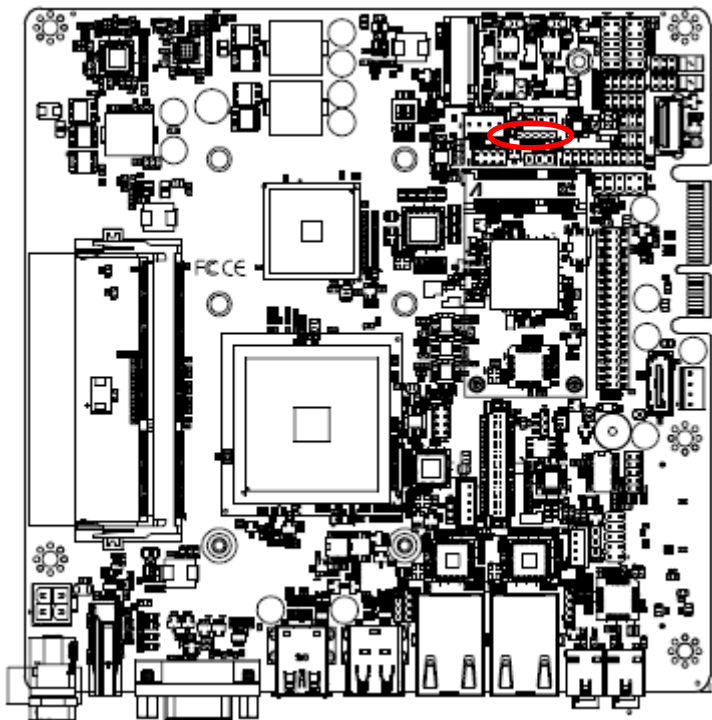
Signal	PIN
LAN2_1000#_LED	4
LAN2_100#_LED	3
LAN2_ACT_N	2
LAN2_ACT_P	1

2.3.26 Speaker connector (SPK1)



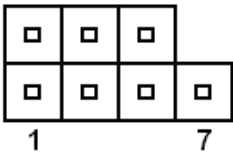
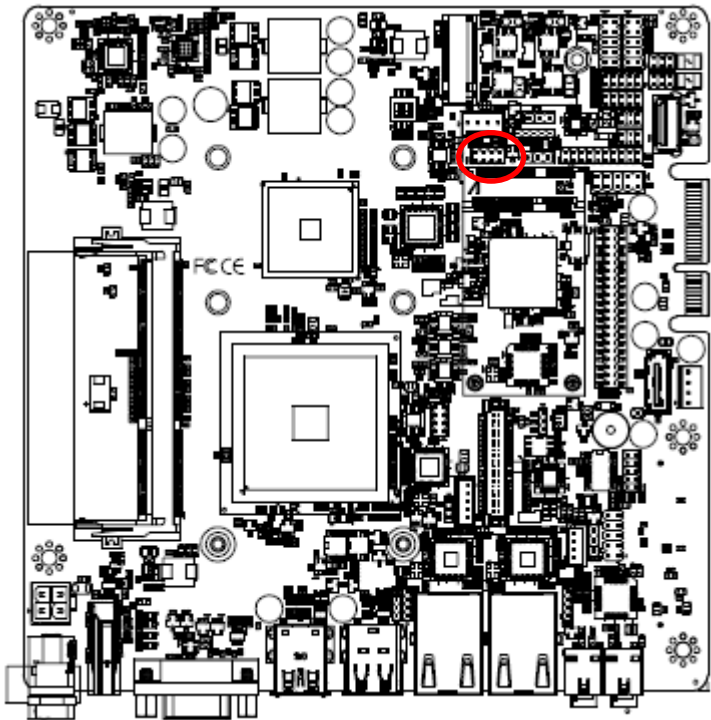
Signal	PIN
RSPK-	4
RSPK+	3
LSPK-	2
LSPK+	1

2.3.27 JSMB connector (JSMB1)



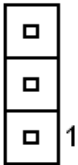
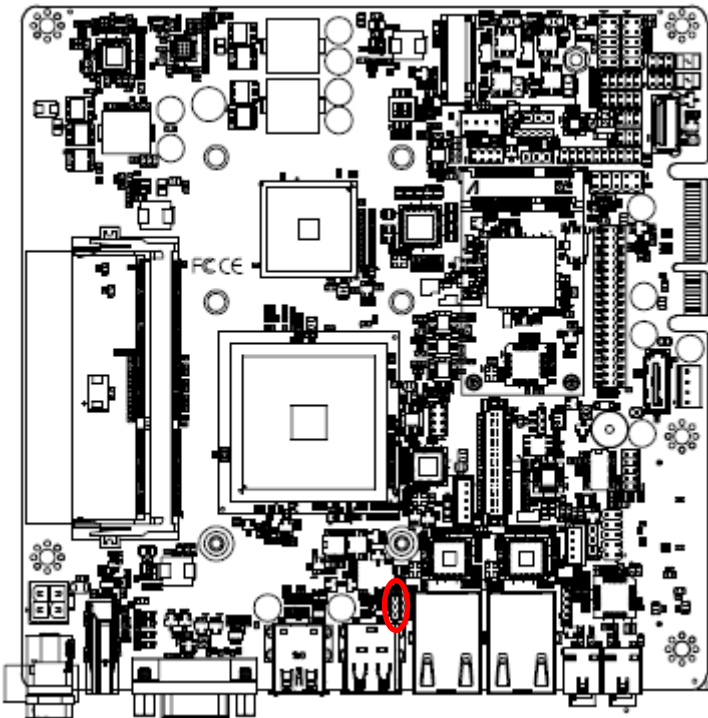
Signal	PIN
+3.3V	1
-SMBALRT_M2_+3.3V	2
SMBCK_+3.3V	3
SMBDT_+3.3V	4
GND	5

2.3.28 PS2 keyboard/mouse connector (JKBMS)



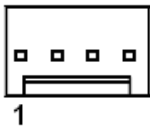
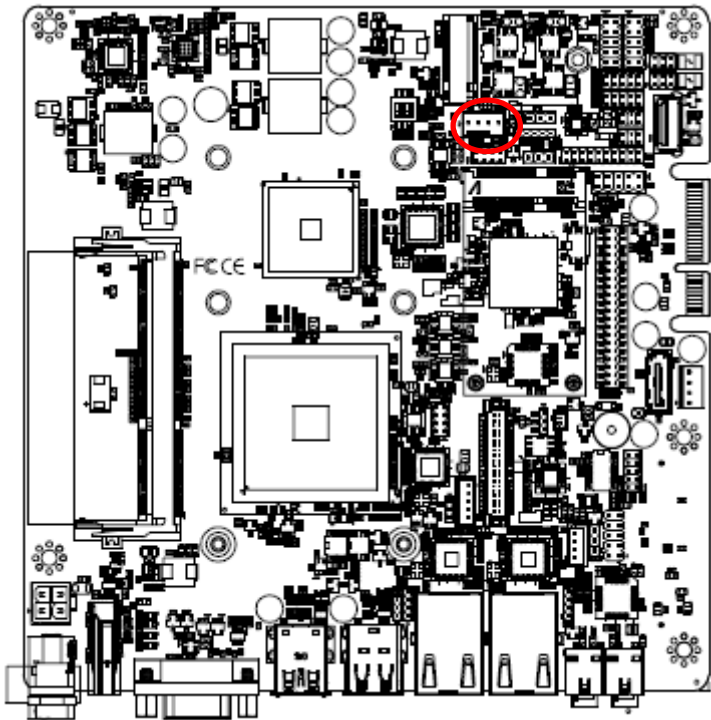
Signal	PIN	PIN	Signal
KB_DT	1	2	KB_CK
GND	3	4	+V5A_KBMS
MS_DT	5	6	MS_CK
NC	7		

2.3.29 Connector reserved for CH7511 FW flash jig (JROM)



Signal	PIN
GND	3
LVDS1_DOC_DATA	2
LVDS1_DOC_CLK	1

2.3.30 FAN connector (FAN1)



PIN	Signal
4	FAN_PWM
3	CPU FANIN
2	+12V
1	GND

## 3. BIOS Setup

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### 3.1 Introduction

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

### 3.2 Starting Setup

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

While the BIOS is in control, the Setup program can be activated in one of two ways:

By pressing <Del> or <F2> immediately after switching the system on, or

By pressing the <Del> or <F2> key when the following message appears briefly at the left-top of the screen during the POST (Power On Self Test).

**Press <Del> or <F2> to enter SETUP**

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

**Press F1 to Continue, DEL to enter SETUP**

### 3.3 Using Setup

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

Button	Description
↑↓→←	Move
Enter	Select
+/-	Value
Esc	Exit
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit Setup
<K>	Scroll help area upwards
<M>	Scroll help area downwards

- **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 <Enter> key.

### 3.5 In Case of Problems

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

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



## 3.6 BIOS setup

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

### 3.6.1 Main Menu

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



#### 3.6.1.1 System Language

This option allows choosing the system default language.

#### 3.6.1.2 System Date

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

#### 3.6.1.3 System Time

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



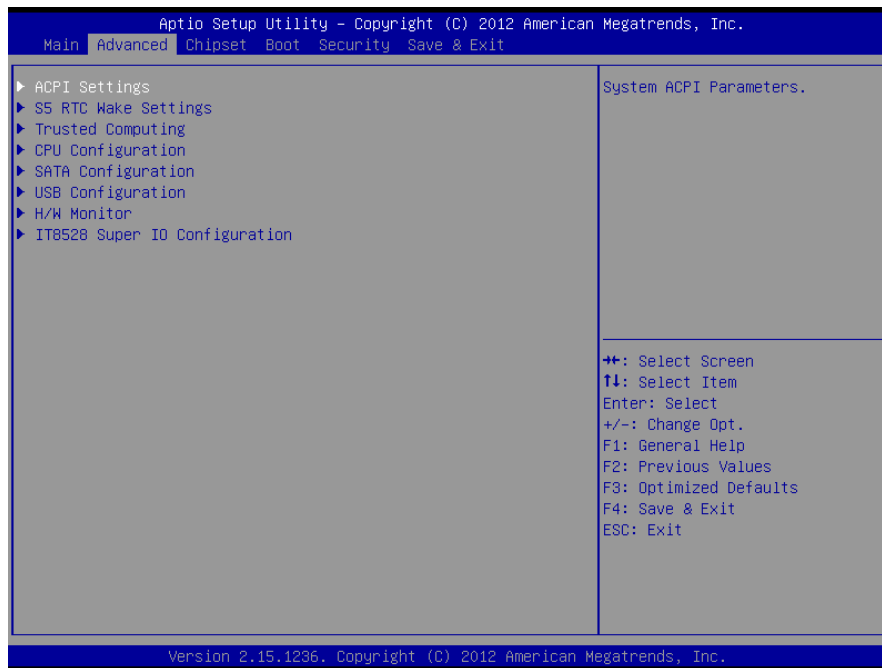
**Note:** The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.

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

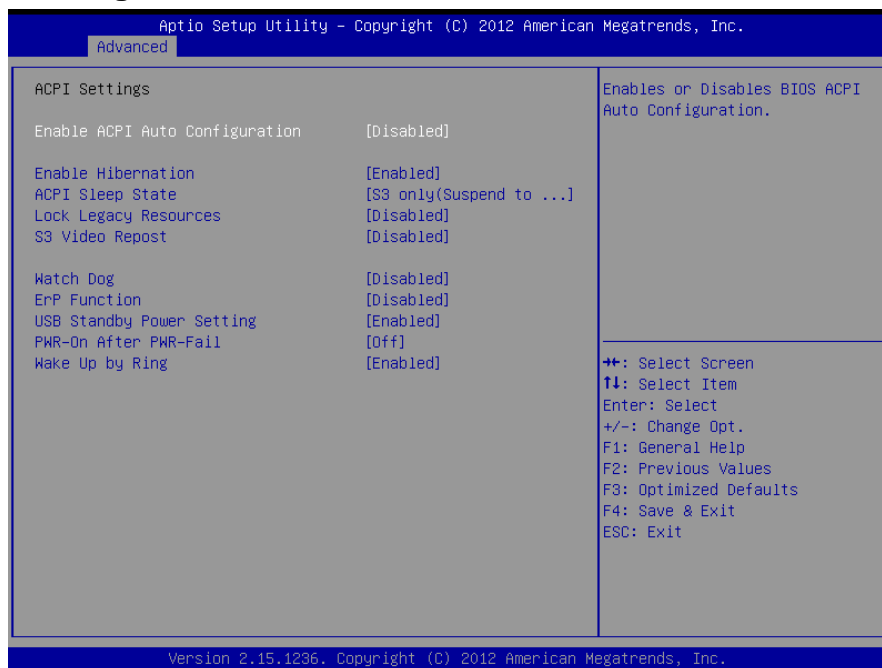
## EMX-VX11P User's Manual

### 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.



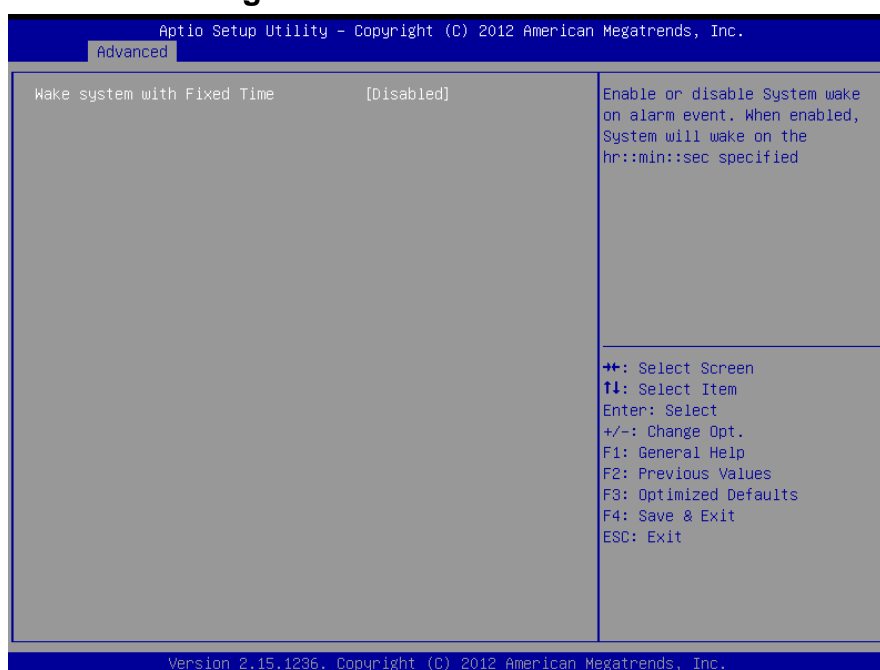
#### 3.6.2.1 ACPI Settings



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.
<b>ACPI Sleep State</b>	Suspend Disabled, S3 (Suspend to RAM)[ <b>Default</b> ]	Select the highest ACPI sleep state the system will enter when the SUSPEDN button is pressed.
<b>Lock Legacy Resources</b>	Disabled[ <b>Default</b> ] Enabled,	Enable or Disable Lock of Legacy Resources
<b>S3 Video Repost</b>	Disabled[ <b>Default</b> ] Enabled,	Enable or Disable S3 Video Repost
<b>Watch Dog</b>	Disabled[ <b>Default</b> ], 30 sec 40 sec 50 sec 1 min 2 min 10 min 30 min	Select WatchDog.
<b>ErP Function</b>	Disabled[ <b>Default</b> ] Enabled,	ErP Function (Deep S5).
<b>USB Standby Power Setting</b>	Disabled Enabled[ <b>Default</b> ]	Enabled/Disabled USB Standby Power during S3/S4/S5.
<b>PWR-On After PWR-Fail</b>	Off[ <b>Default</b> ] On Last state	AC loss resume.
<b>Wake Up by Ring</b>	Disabled Enabled[ <b>Default</b> ]	Wake Up by Ring from S3/S4/S5

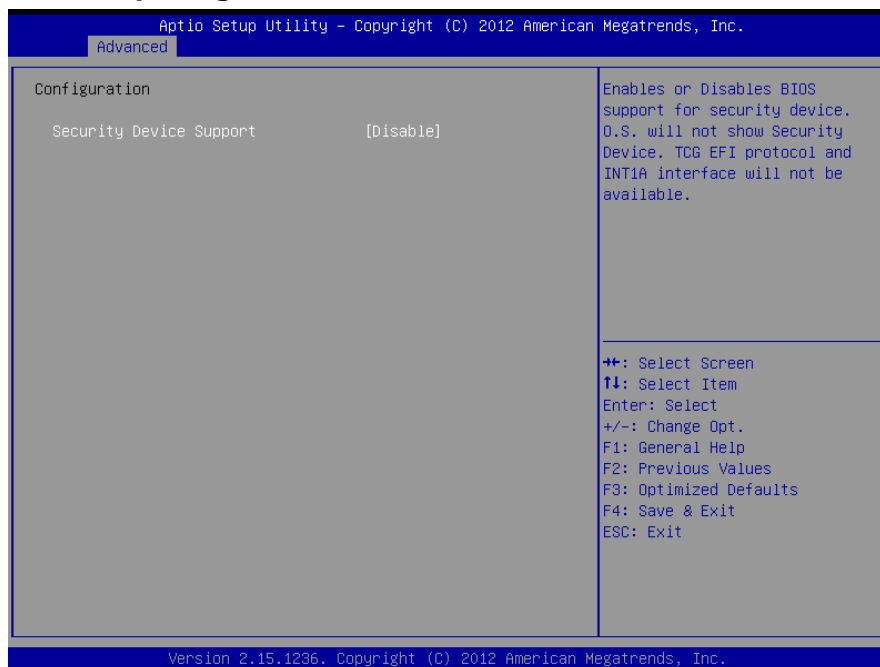
### 3.6.2.2 S5 RTC Wake Settings



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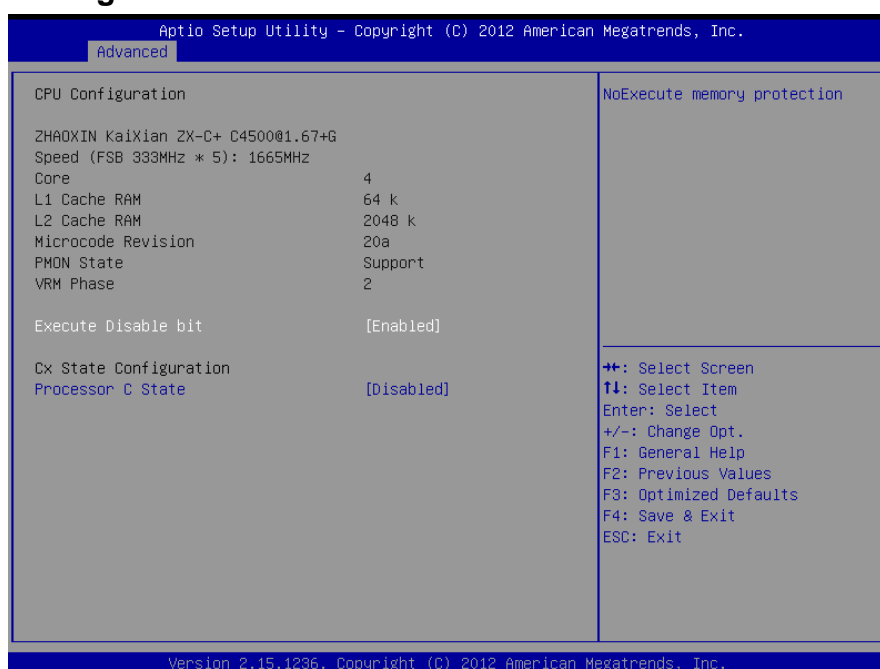
Item	Options	Description
Wake system with Fixed Time	Disable[Default] Enable	Enables or Disables System wake on alarm event. When enabled, System will wake on the hr::min::sec specified

### 3.6.2.3 Trusted Computing



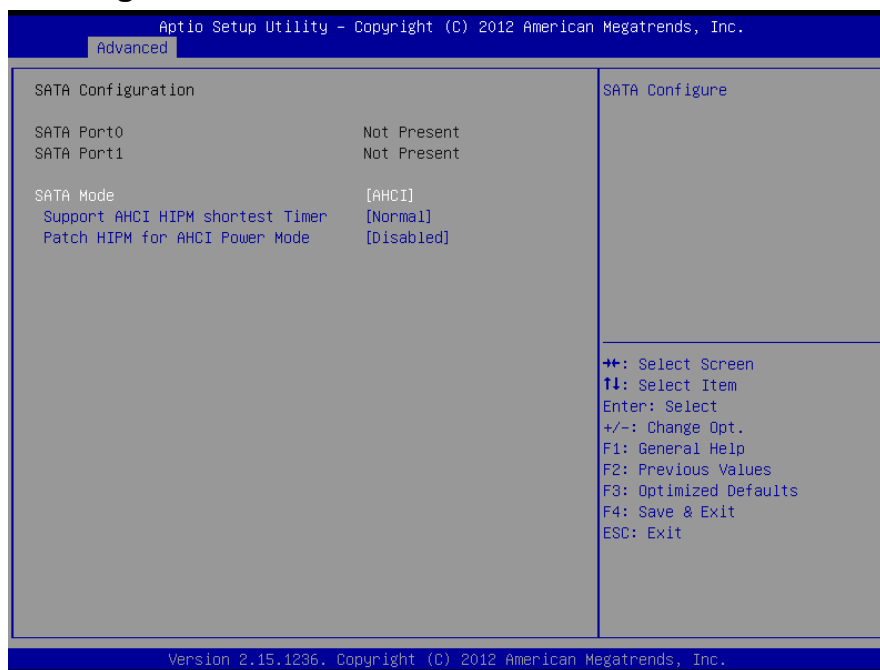
Item	Options	Description
Security Device Support	Disable[Default] Enable	Enables or Disables BIOS support for security devices. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

### 3.6.2.4 CPU Configuration



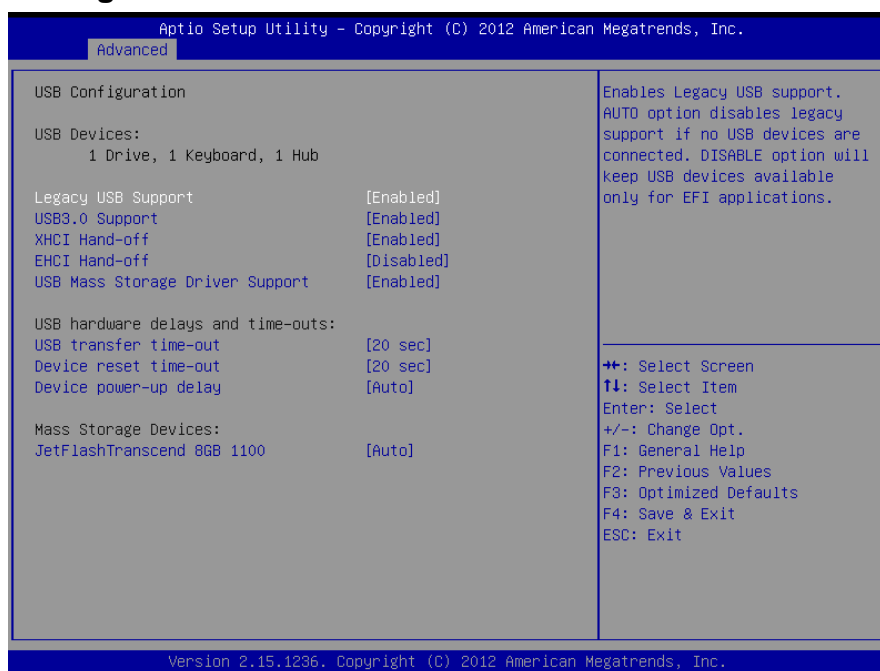
Item	Options	Description
Execute Disable bit	Disabled Enabled[Default],	NoExecute memory protection
Processor C State	Disabled[Default] Enabled,	Main switch for enable Processor C State State support

### 3.6.2.5 SATA Configuration



Item	Options	Description
SATA Mode	IDE AHCI [Default]	SATA Configure
Support AHCI HIPM shortest Timer	Normal[Default] Shortest Disabled	Support AHCI HIPM shortest Timer select
Patch HIPM for AHCI Power Mode	Disabled[Default] Enabled	In the some SATA device, system will random hang during S3 resume in AHCI power mode, So BIOS can offer patch code for AHCI power mode after S3 resume

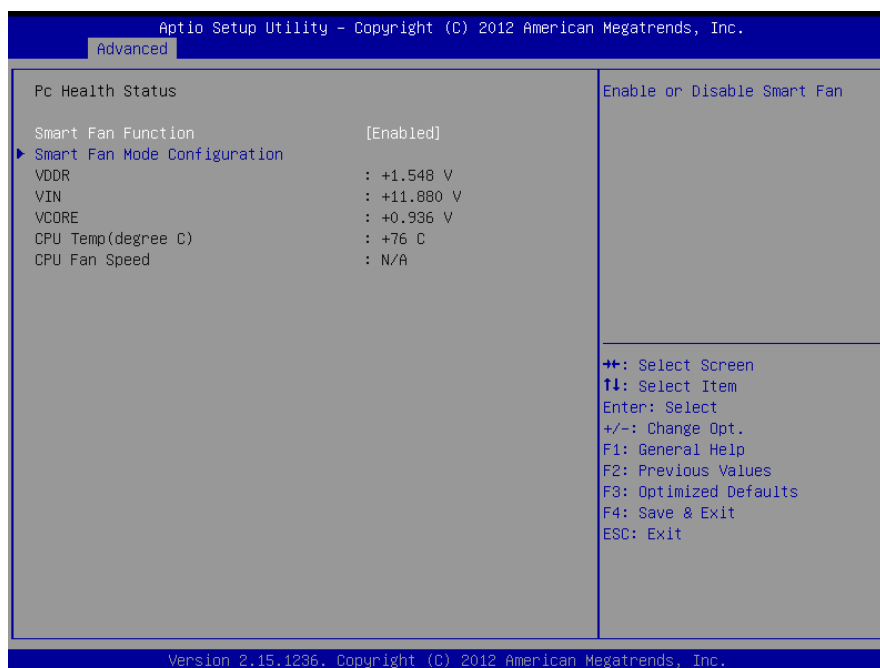
## 3.6.2.6 USB Configuration



Item	Options	Description
<b>Legacy USB Support</b>	Enabled[Default], Disabled Auto	Enables Legacy USB Support. AUTO option disables Legacy Support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
<b>USB3.0 Support</b>	Enabled[Default], Disabled	Enable/Disable USB3.0 (XHCI) Controller support.
<b>XHCI Hand-off</b>	Enabled[Default], Disabled	This is a workaround for OSES without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
<b>EHCI Hand-off</b>	Disabled[Default], Enabled	This is a workaround for OSES without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.
<b>USB Mass Storage Driver Support</b>	Disabled Enabled[Default],	Enable/Disable USB Mass Storage Driver Support.
<b>USB transfer time-out</b>	1 sec 5 sec 10 sec 20 sec[Default],	The time-out value for Control, Bulk, and Interrupt transfers.
<b>Device reset time-out</b>	1 sec 5 sec 10 sec 20 sec[Default],	USB mass storage device Start Unit command time-out.
<b>Device power-up delay</b>	Auto[Default], Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.
<b>JetFlashTranscend 8GB 1100</b>	Auto[Default], Floppy	Mass storage device emulation type. 'Auto' enumerates devices according to their media format. Optical drives

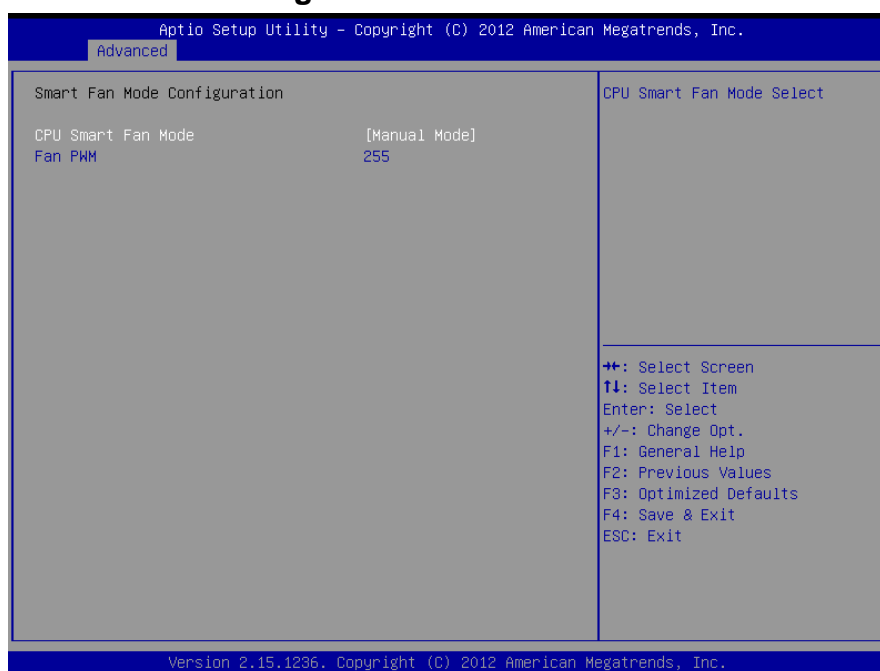
	Forced FDD Hard Disk CD-ROM	are emulated as 'CDROM', drives with no media will be emulated according to a drive type.
--	-----------------------------------	---

### 3.6.2.7 H/W Monitor



Item	Options	Description
Smart Fan Function	Disabled Enabled[Default],	Enable or Disable Smart Fan

#### 3.6.2.7.1 Smart Fan Mode Configuration

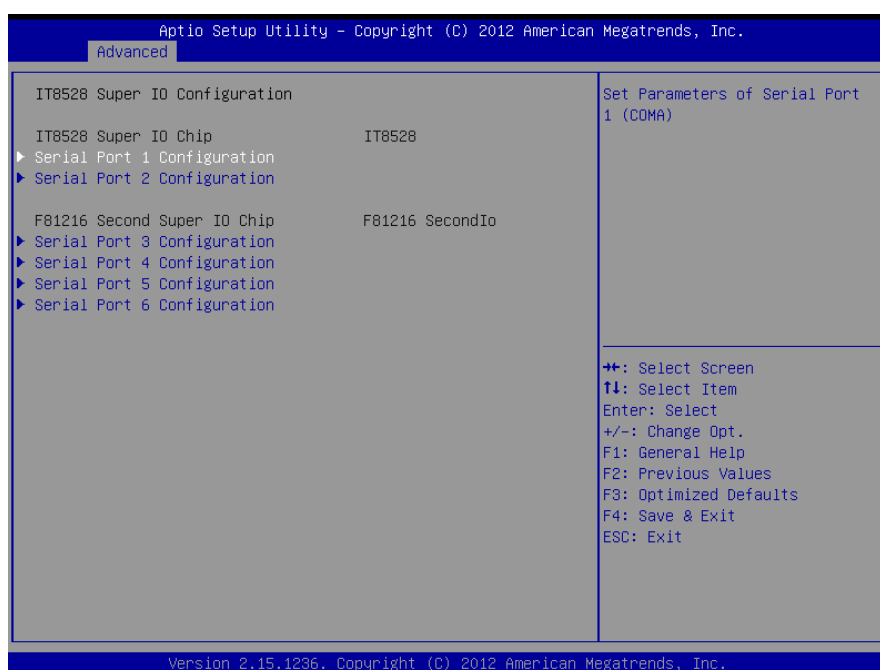


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Item	Option	Description
<b>CPU Smart Fan Mode</b>	Manual Mode[Default]/Mode 01/Mode 02/Mode 03/Mode 04/Mode 05/Mode 06/Mode 07/Mode 08/Mode 09/Mode 10/Mode 11/Mode 12/Mode 13/Mode 14/Mode 15/Mode 16/Mode 17/Mode 18/Mode 19/Mode 20	CPU Smart Fan Mode Select
<b>Fan PWM</b>	0-255	Fan PWM duty

### 3.6.2.8 IT8528 Super IO Configuration

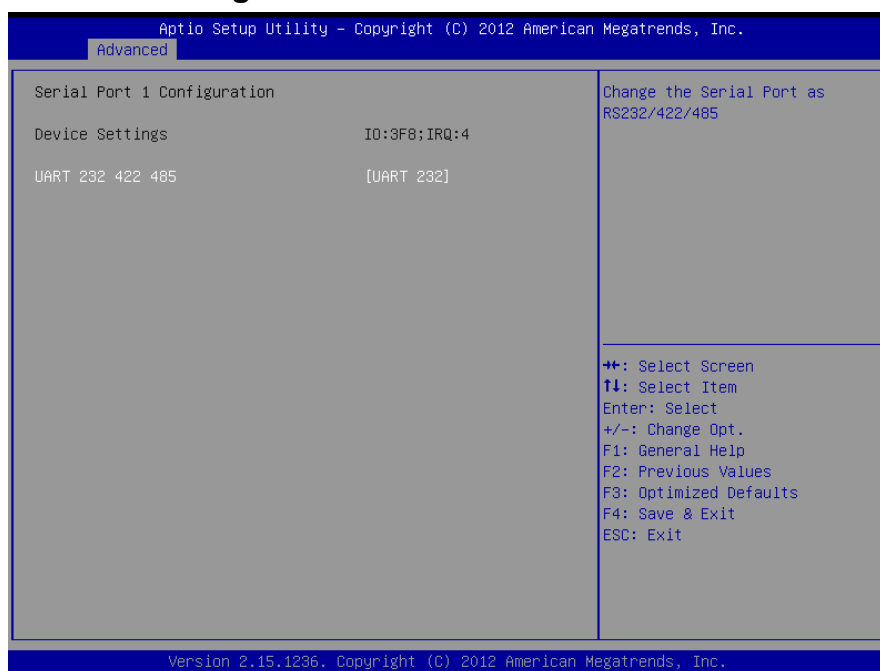
You can use this item to set up or change the IT8528 Super IO configuration for serial ports. Please refer to 3.6.2.5.1~ 3.6.2.5.6 for more information.



Item	Description
<b>Serial Port 1 Configuration</b>	Set Parameters of Serial Port 1 (COMA).
<b>Serial Port 2 Configuration</b>	Set Parameters of Serial Port 2 (COMB).
<b>Serial Port 3 Configuration</b>	Set Parameters of Serial Port 3 (COMC).
<b>Serial Port 4 Configuration</b>	Set Parameters of Serial Port 4 (COMD).
<b>Serial Port 5 Configuration</b>	Set Parameters of Serial Port 5 (COME).
<b>Serial Port 6 Configuration</b>	Set Parameters of Serial Port 6 (COMF).

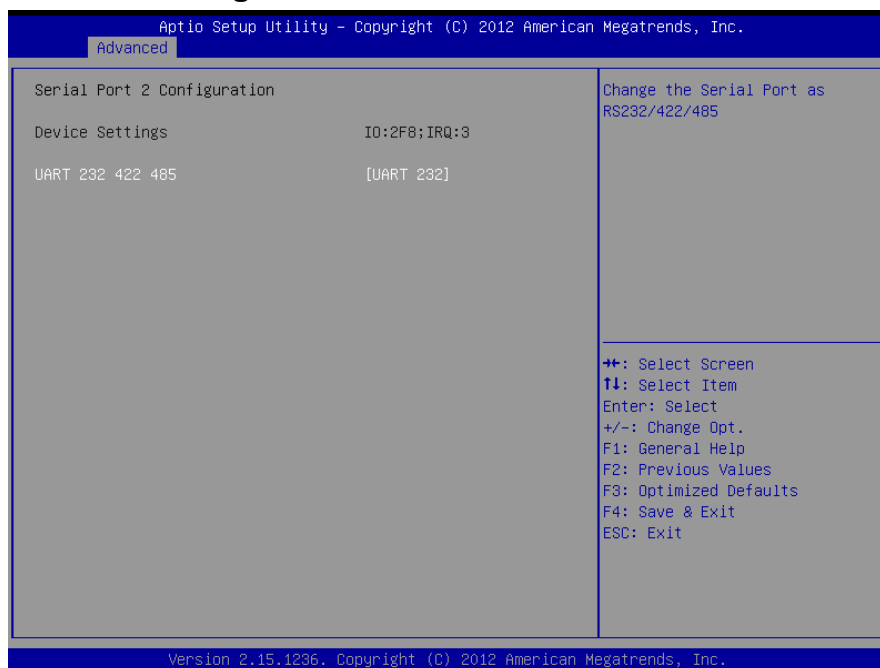


### 3.6.2.8.1 Serial Port 1 Configuration



Item	Option	Description
<b>UART 232 422 485</b>	UART 232 <b>[Default]</b> , UART 422, UART 485	Change the Serial Port as RS232/422/485.

### 3.6.2.8.2 Serial Port 2 Configuration



Item	Option	Description
<b>UART 232 422 485</b>	UART 232 <b>[Default]</b> , UART 422, UART 485	Change the Serial Port as RS232/422/485.

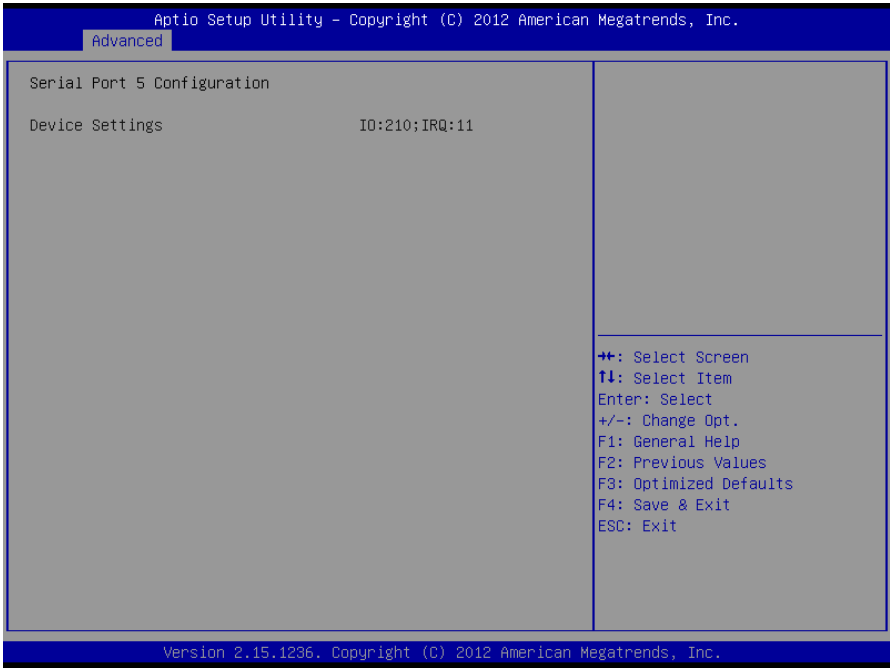
3.6.2.8.3 Serial Port 3 Configuration



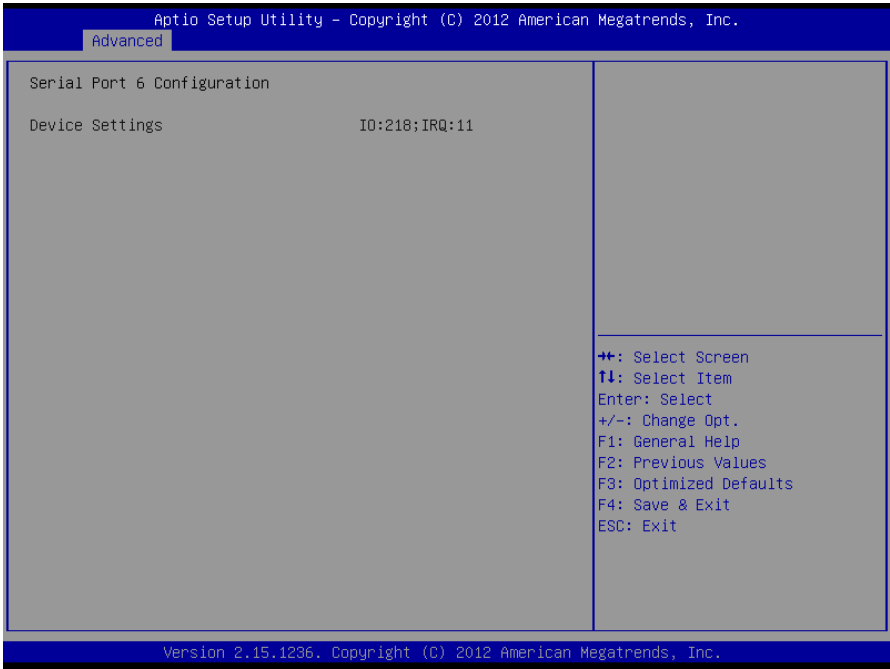
3.6.2.8.4 Serial Port 4 Configuration



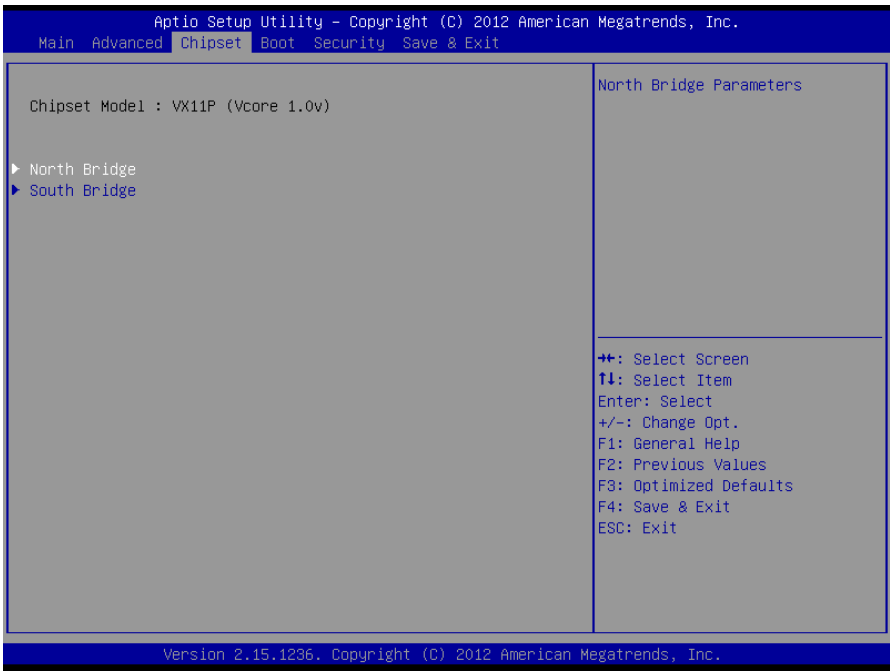
3.6.2.8.5 Serial Port 5 Configuration



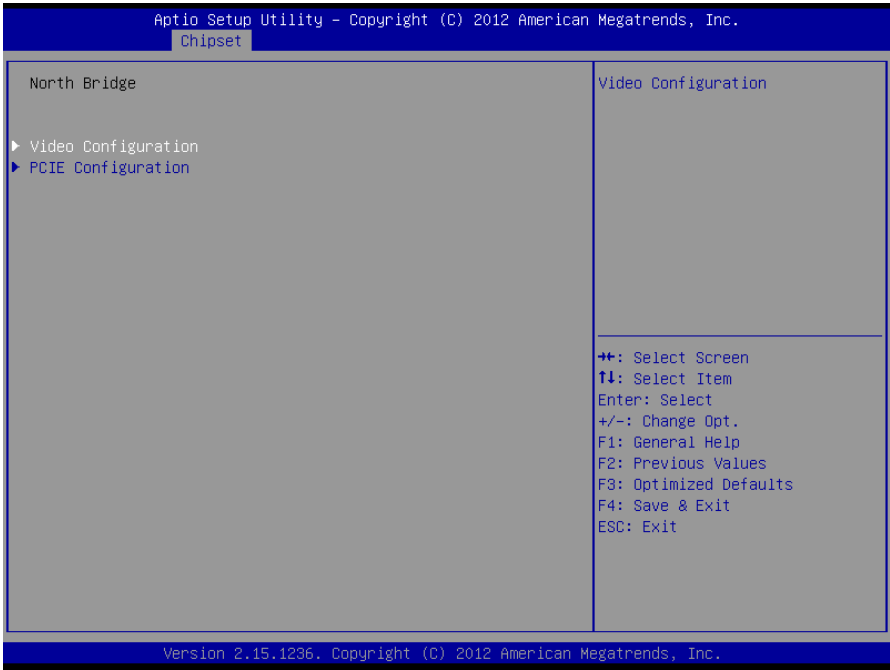
3.6.2.8.6 Serial Port 6 Configuration



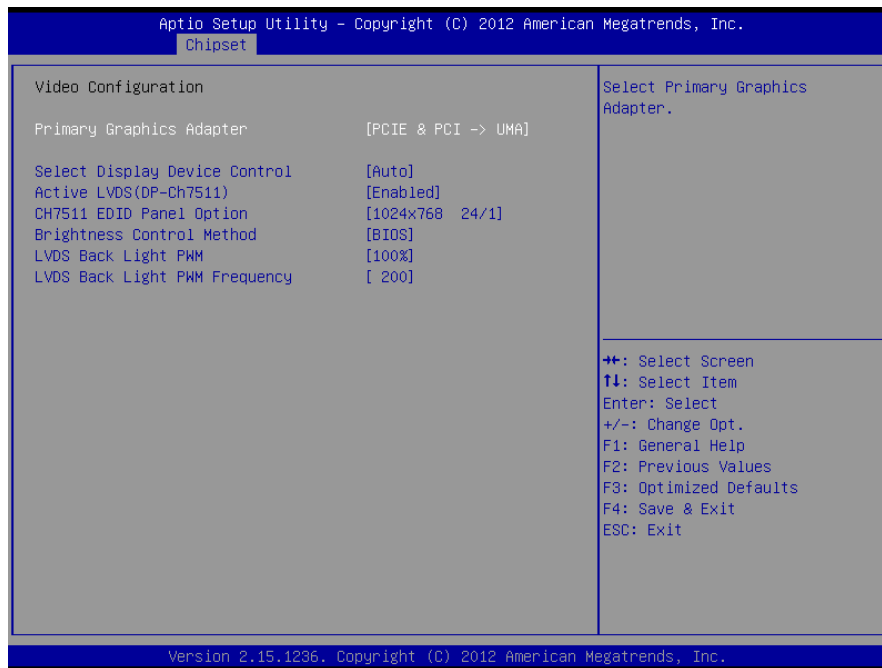
3.6.3 Chipset



3.6.3.1 North Bridge

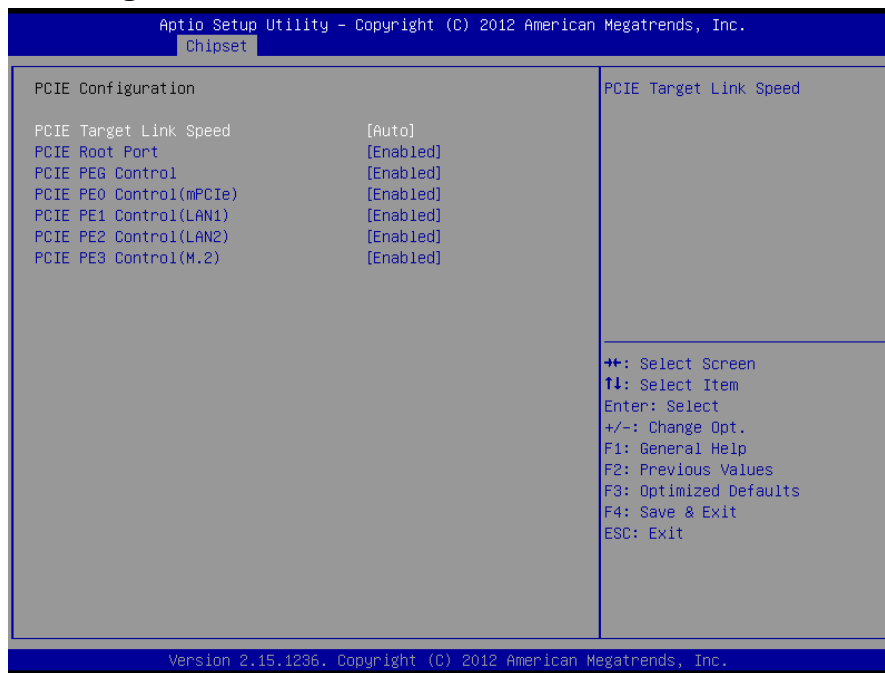


### 3.6.3.1.1 Video Configuration



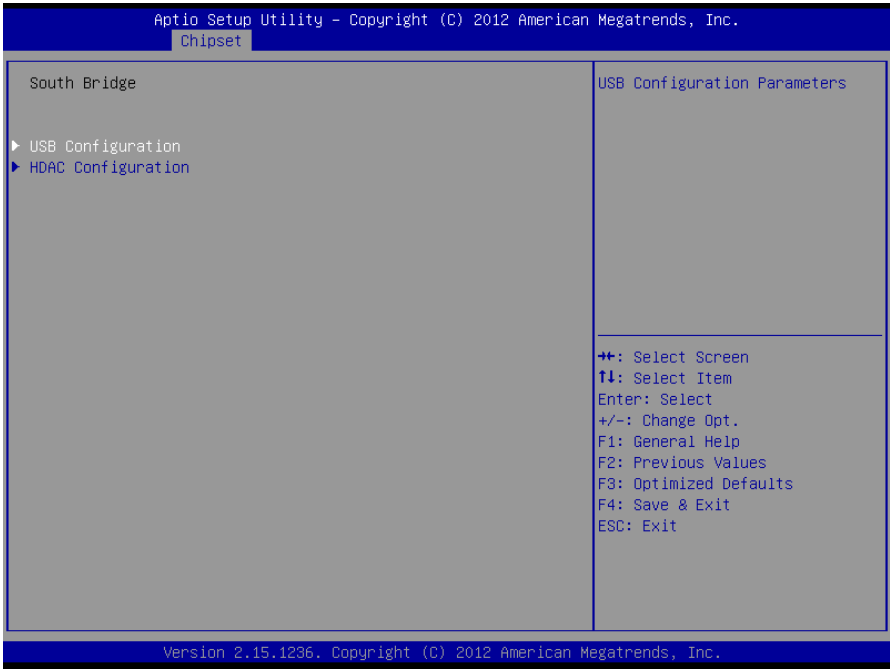
Item	Option	Description
Primary Graphics Adapter	PCIE & PCI -> UMA[Default] UMA I -> PCIE & PCI	Select Primary Graphics Adapter.
Select Display Device Control	Auto[Default] MANUAL	Select Display Device Control
Active LVDS(DP-Ch7511)	Enabled[Default], Disabled	Active Internal LVDS(eDP->Ch7511-to-LVDS)
CH7511 EDID Panel Option	1024x768 24/1[Default], 1280x1024 24/2 1920x1080 24/2	Port1-EDP to LVDS(Chrotel 7511) Panel EDID Option
Brightness Control Method	BIOS[Default], BR Button VR	LVDS Brightness Control Method 1. BIOS 2.BR Button 3.VR
LVDS Back Light PWM	00% 25% 50% 75% 100%[Default],	Select LVDS back Light PWM duty.
LVDS Back Light PWM Frequency	200[Default], 300 400 500 700 1k 2k 3k 5k 10k 20k	Select LVDS back Light PWM Frequency..

## 3.6.3.1.2 PCIE Configuration

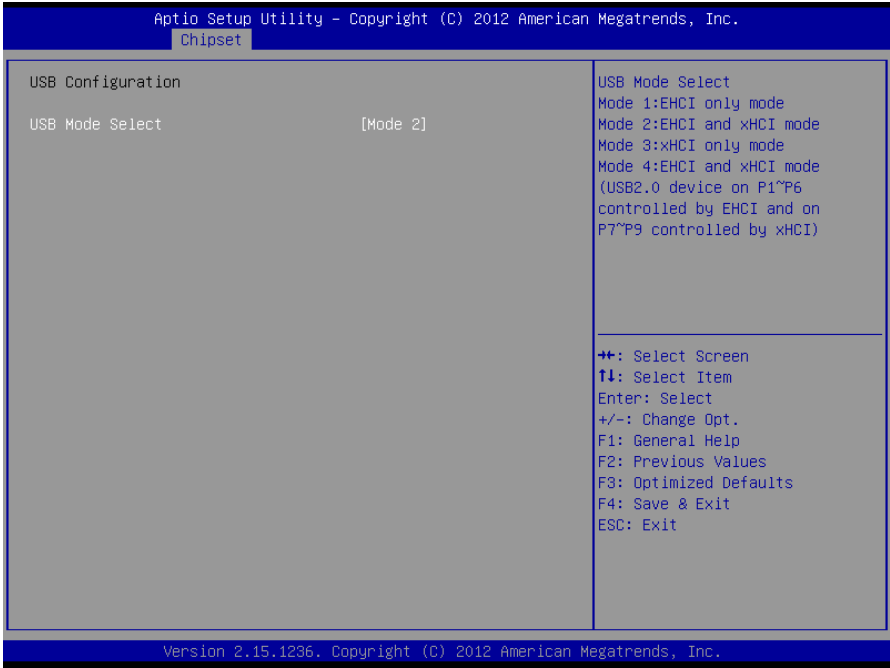


Item	Option	Description
PCIE Target Link Speed	Auto[Default] Force Gen 1	PCIE Target Link Speed
PCIE Root Port	Disabled Enabled[Default],	PCIE Root Port
PCIE PEG Control	Disabled Enabled[Default],	PCIE PEG Control
PCIE PE0 Control(mPCIe)	Disabled Enabled[Default],	PCIE PE0 Control(mPCIe)
PCIE PE1 Control(LAN1)	Disabled Enabled[Default],	PCIE PE1 Control(LAN1)
PCIE PE2 Control(LAN2)	Disabled Enabled[Default],	PCIE PE2 Control(LAN2)
PCIE PE3 Control(M.2)	Disabled Enabled[Default],	PCIE PE3 Control(M.2)

3.6.3.2 South Bridge

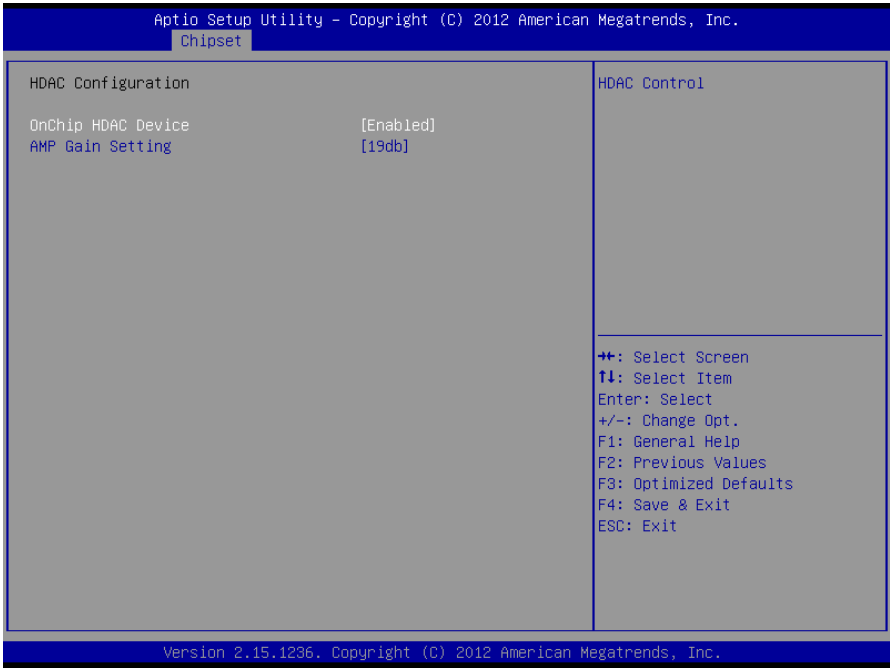


3.6.3.2.1 USB Configuration



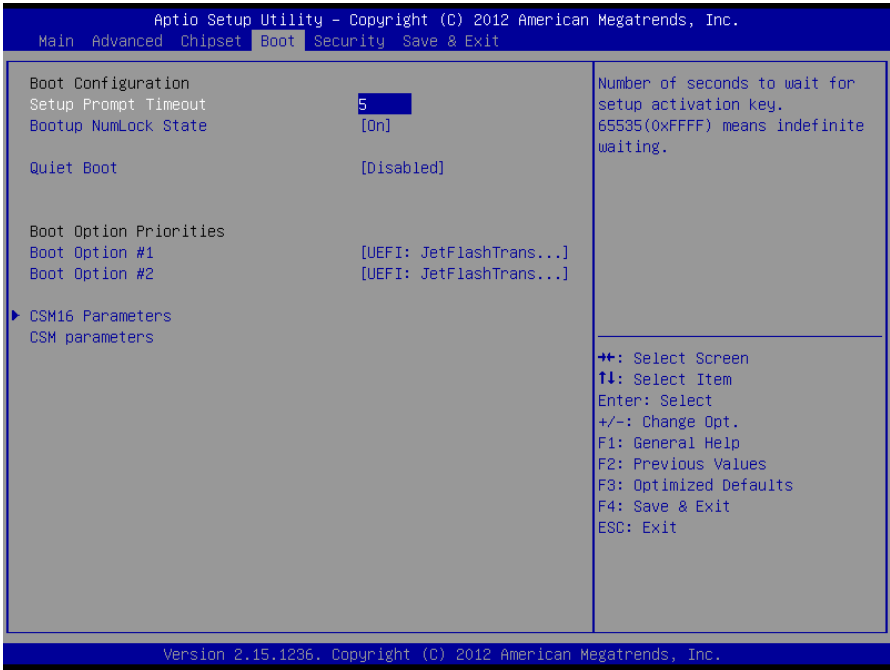
Item	Option	Description
USB Mode Select	Mode 1 Mode 2[Default] Mode 3 Mode 4	USB Mode Select Mode 1:EHCI only mode Mode 2:EHCI and xHCI mode Mode 3:xHCI only mode Mode 4:EHCI and xHCI mode (USB2.0 device on P1~P6 controlled by EHCI and on P7~P9 controlled by xHCI)

3.6.3.2.2 HDAC Configuration



Item	Option	Description
OnChip HDAC Device	Disabled Enabled[Default],	HDAC Control
AMP Gain Setting	11db 14db 19db[Default], 25db	Select AMP Gain db

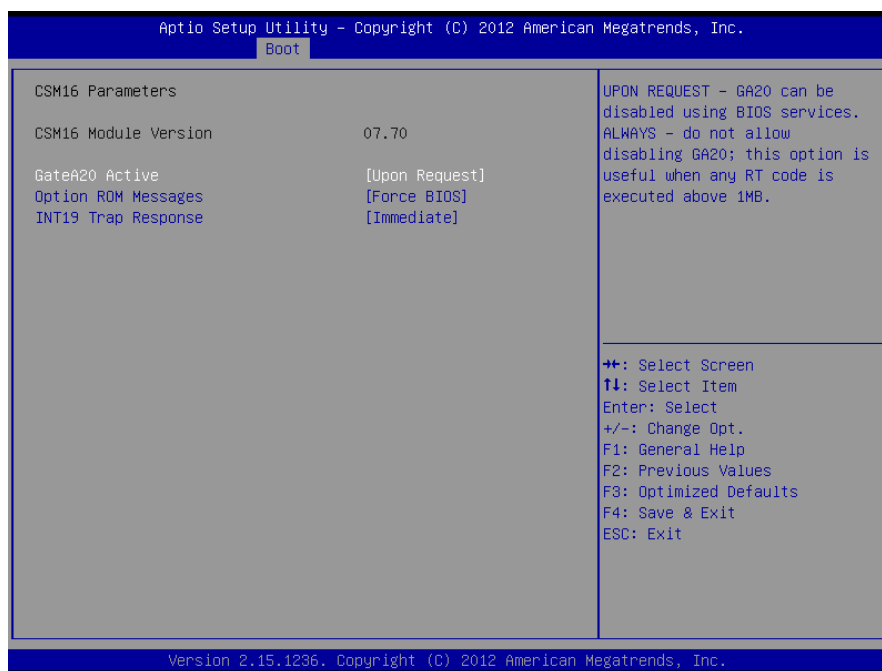
3.6.4 Boot





Item	Option	Description
Setup Prompt Timeout	5	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
Boot Option #1	Set the system boot order.	
CSM parameters	OpROM execution, boot options filter, etc.	

### 3.6.4.1 CSM16 Parameters



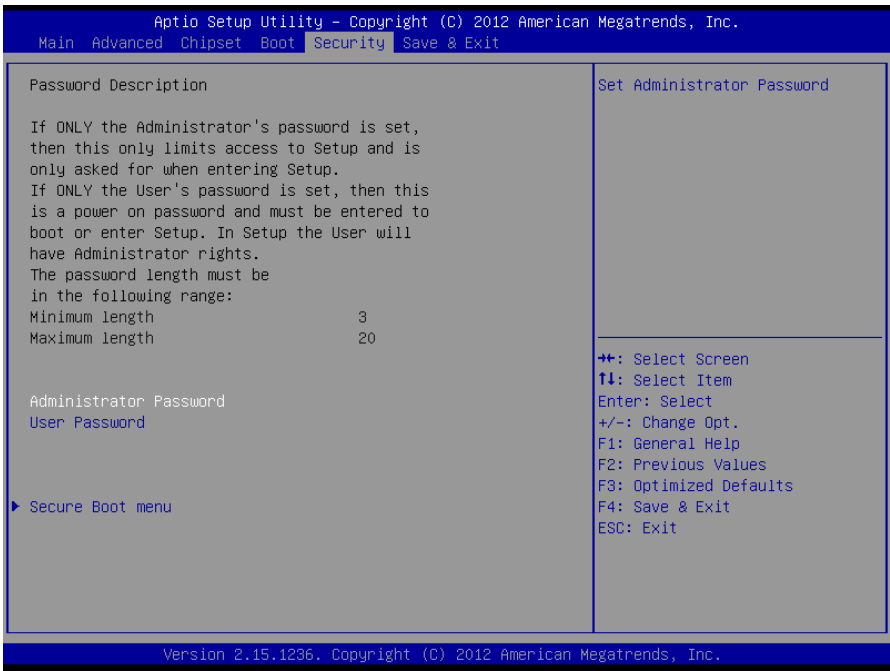
Item	Option	Description
GateA20 Active	Upon Request[Default] Always	UPON REQUEST- GA20 can be disabled using BIOS services. ALWAYS - do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.
Option ROM Messages	Force BIOS[Default] Keep Current	Set display mode for Option 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 <b>[Default]</b>	This option controls if CSM will be launched
Boot option filter	UEFI and Legacy <b>[Default]</b> Legacy only UEFI only	This option controls what devices system can boot to
Launch PXE OpROM policy	Do not launch <b>[Default]</b> Legacy only	Controls the execution of UEFI and Legacy PXE OPROM
Launch Storage OpROM policy	UEFI only Legacy only <b>[Default]</b>	Controls the execution of UEFI and Legacy Storage OpROM
Launch Video OpROM policy	UEFI only Legacy only <b>[Default]</b>	Controls the execution of UEFI and Legacy Video OpROM
Other PCI device ROM priority	UEFI OpROM <b>[Default]</b> Legacy OpROM	For PCI devices other than Network, Mass storage or Video defines which OpROM to launch

3.6.5 Security



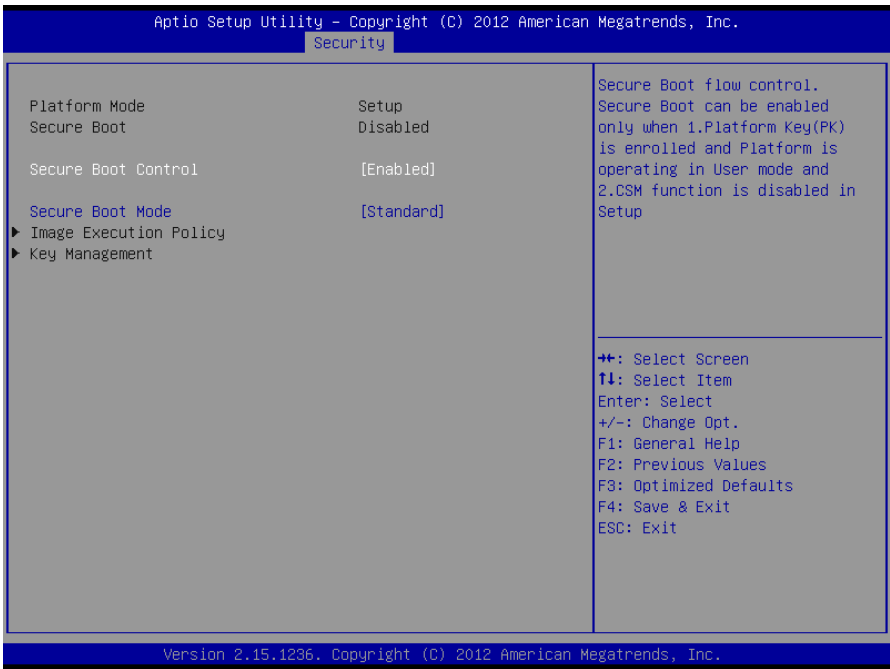
● Administrator Password

Set setup Administrator Password

● User Password

Set User Password

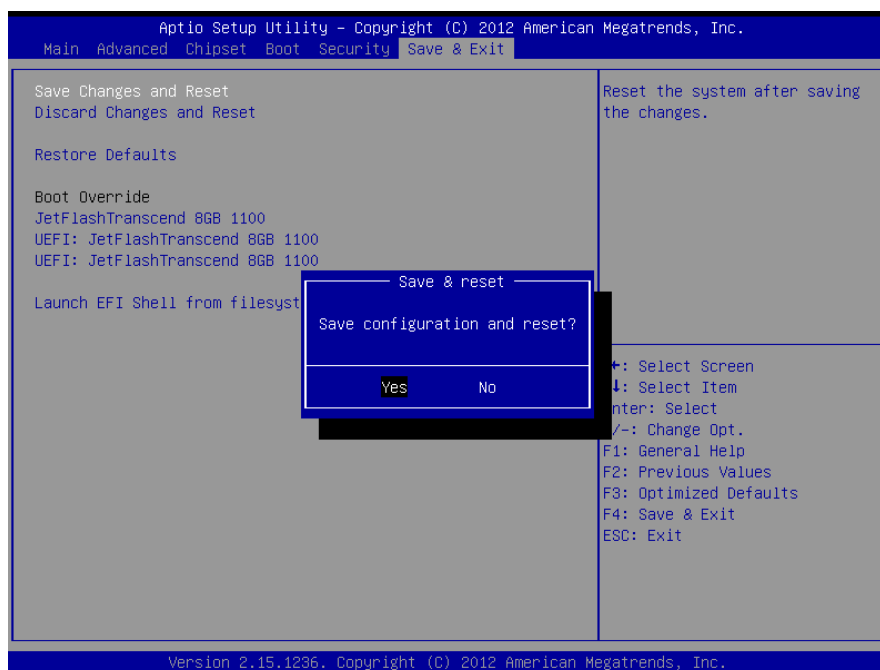
3.6.5.1 Secure Boot menu



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Item	Option	Description
Secure Boot Control	Disabled Enabled[Default],	Secure Boot flow control. Secure Boot can be enabled only when 1.Platform Key(PK) is enrolled and Platform is operating in User mode and 2 CSM function is disabled in Setup
Secure Boot Mode	Standard[Default] Custom	Secure Boot mode selector. 'Custom' Mode allows for more flexibility changing Image Execution policy and Secure Boot Key management.

### 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***

Reset system setup without saving any changes.

#### **3.6.6.3 *Restore Defaults***

Restore/Load Default values for all the setup options.

#### **3.6.6.4 *Launch EFI Shell from filesystem device***

Attempts to Launch EFI Shell application (Shell.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.

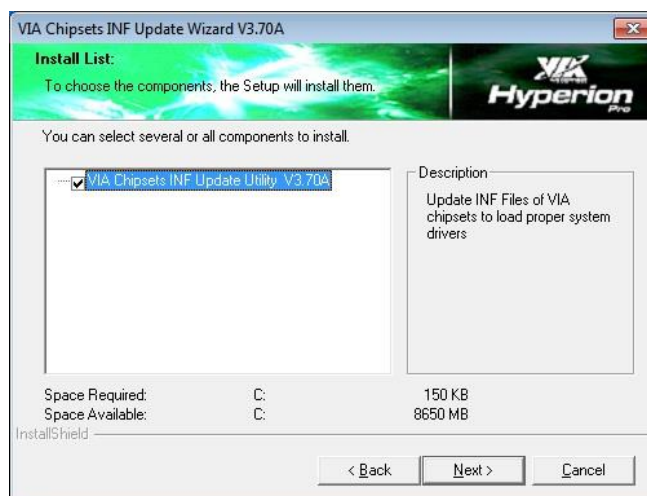
## 4.1 Install Chipset Driver

All drivers can be found on the Avalue Official Website:

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



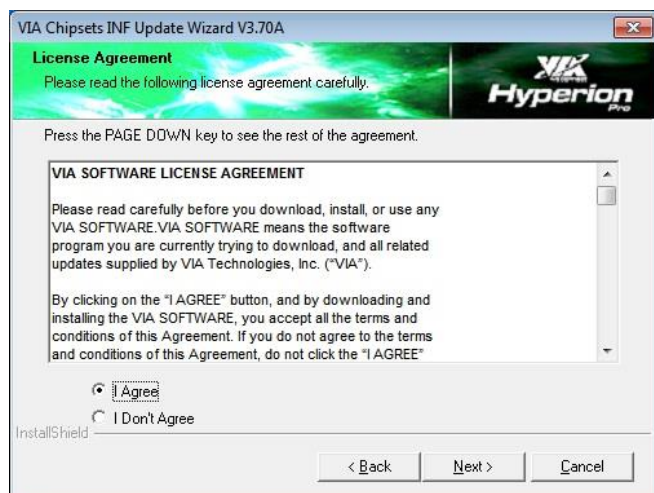
**Note:** The installation procedures and screen shots in this section are based on Windows 7 operation system. If the warning message appears while the installation process, click Continue to go on.



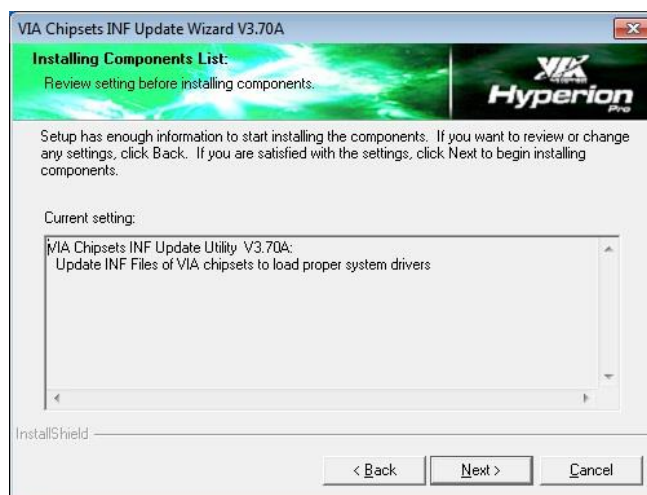
**Step 3. Click Next.**



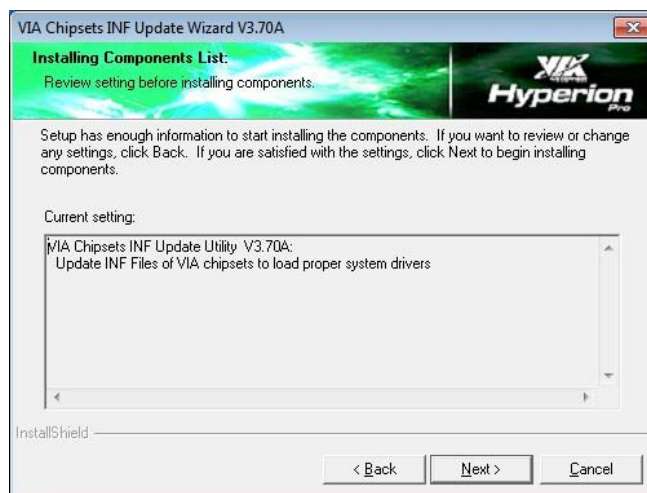
**Step1. Click Next.**



**Step 2. Click Next.**

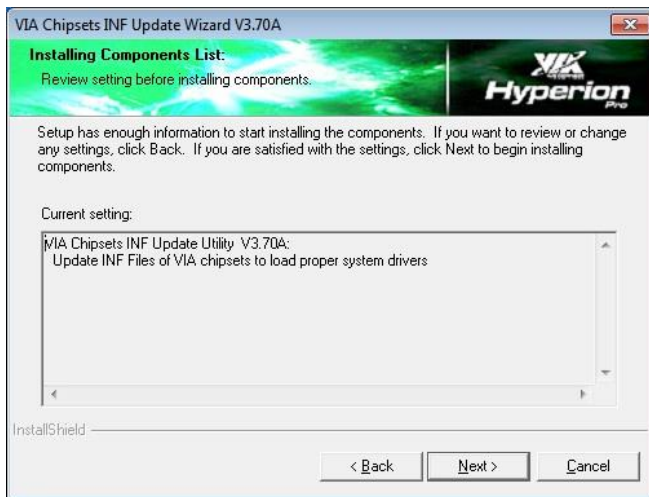


**Step 4. Click Next.**



**Step 5. Click Next.**

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**Step 6. Click Next.**



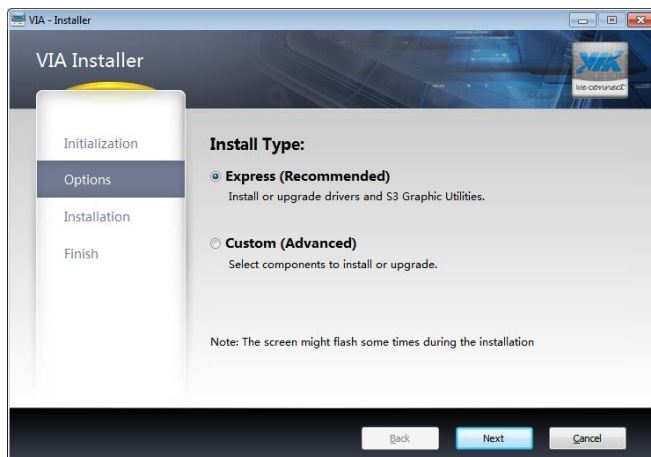
## 4.2 Install VGA Driver

All drivers can be found on the Avalue Official Website:

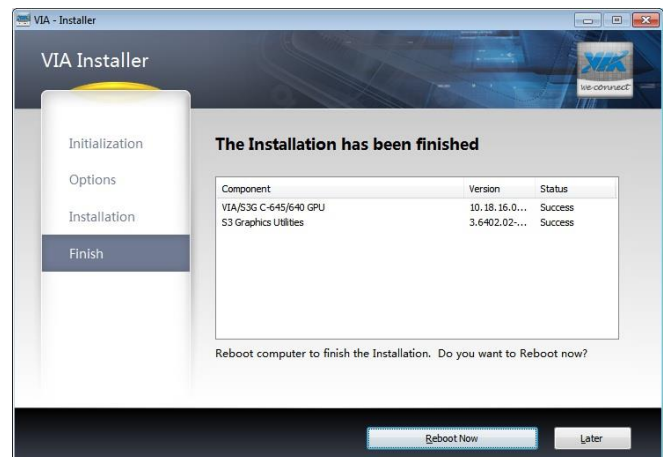
<http://www.avalue.com.tw>.



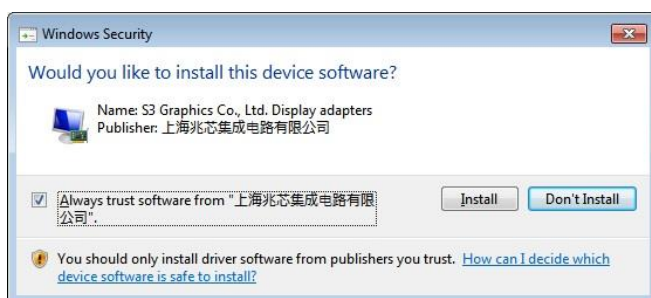
**Note:** The installation procedures and screen shots in this section are based on Windows 7 operation system.



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



**Step 3.** Click **Reboot Now**.



**Step 2.** Click **Install**.

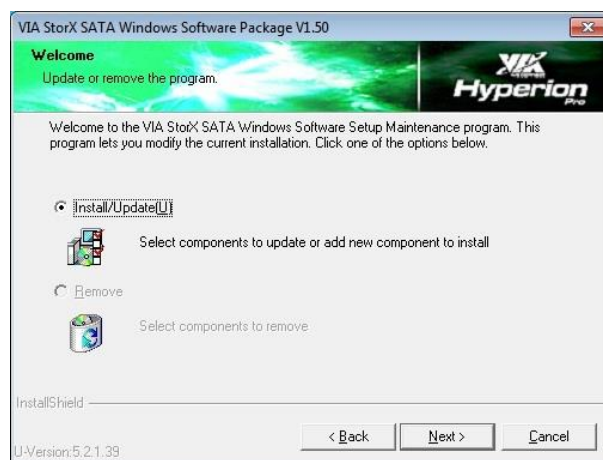
## 4.3 Install AHCI Driver

All drivers can be found on the Avalue Official Website:

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



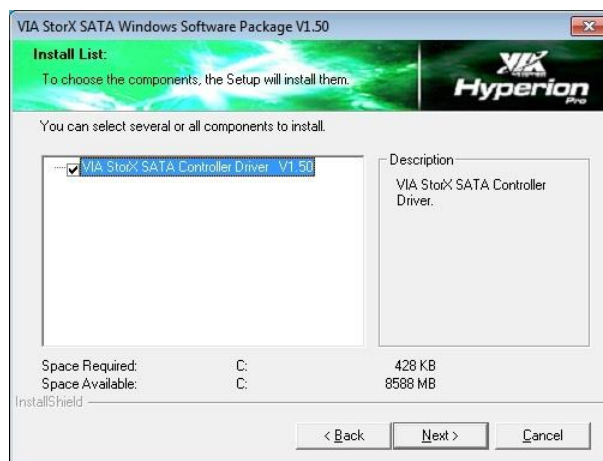
**Note:** The installation procedures and screen shots in this section are based on Windows 7 operation system.



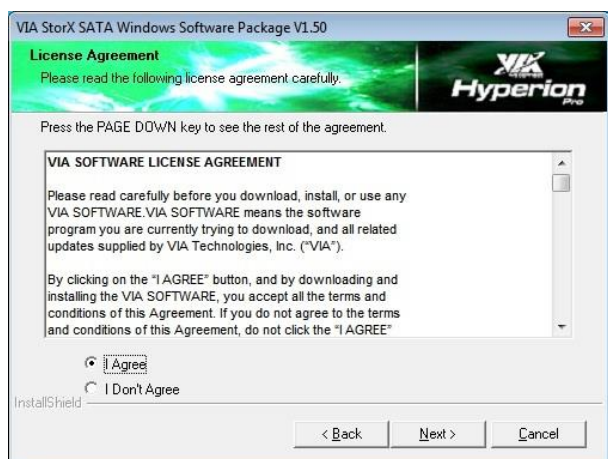
**Step 3. Click Next.**



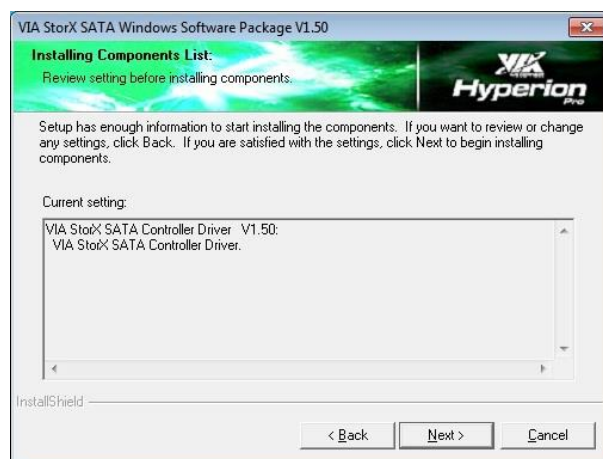
**Step 1. Click Next to continue installation.**



**Step 4. Click Next.**



**Step 2. Click Next.**



**Step 5. Click Next.**



**Step 6. Click Install.**

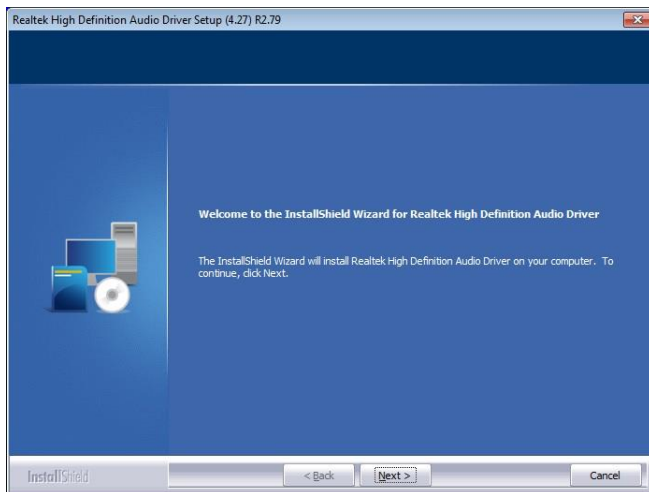
### 4.4 Install Audio Driver (For Realtek ALC892 HD Audio)

All drivers can be found on the Avalue Official Website:

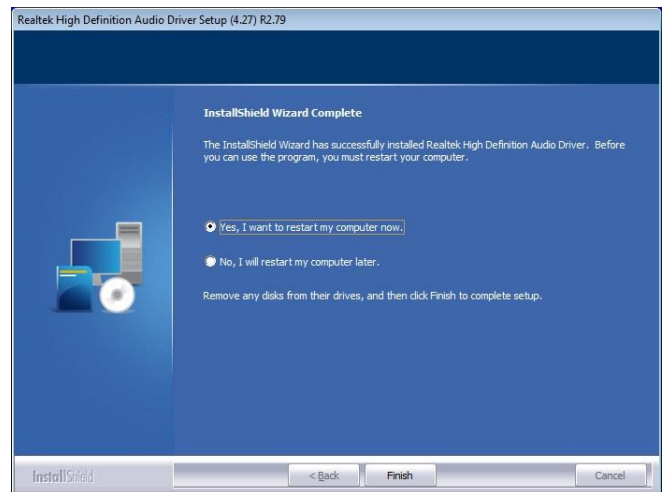
<http://www.avalue.com.tw>.



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



**Step 2.** Click **Finish** to complete setup.

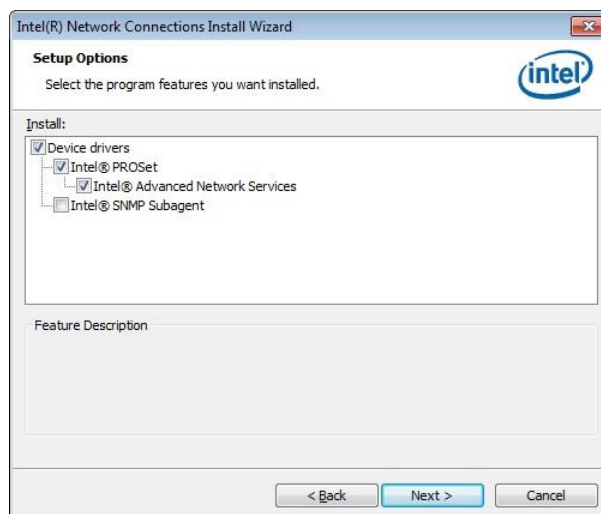
## 4.5 Install LAN Driver

All drivers can be found on the Avalue Official Website:

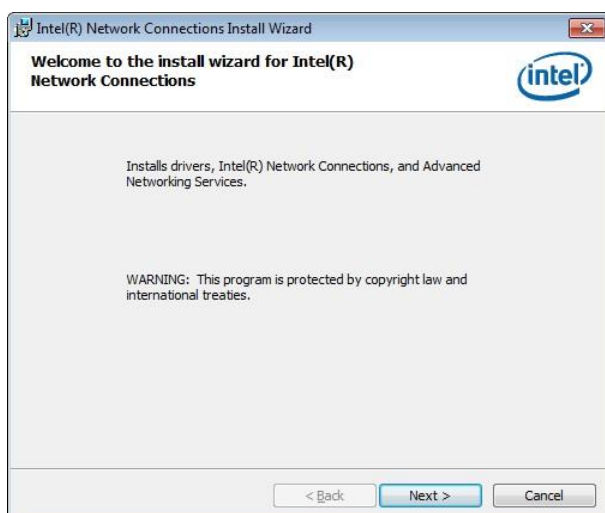
<http://www.avalue.com.tw>.



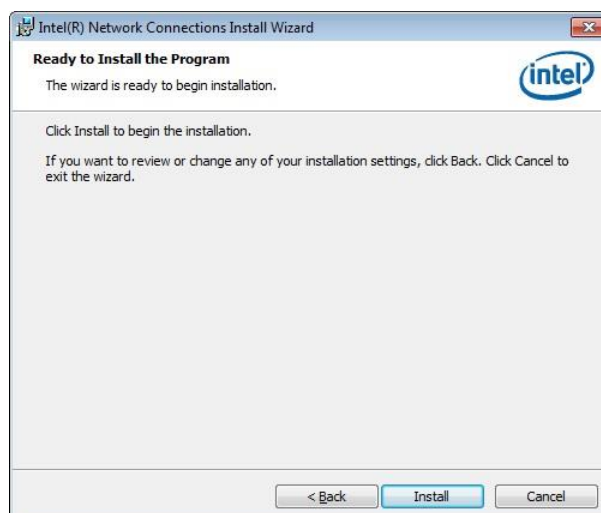
**Note:** The installation procedures and screen shots in this section are based on Windows 7 operation system.



**Step 3. Click Next.**



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



**Step 4. Click Install.**



**Step 2. Click Next.**



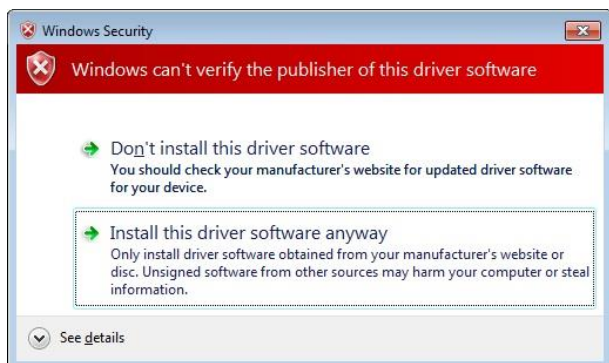
**Step 5. Click Install.**



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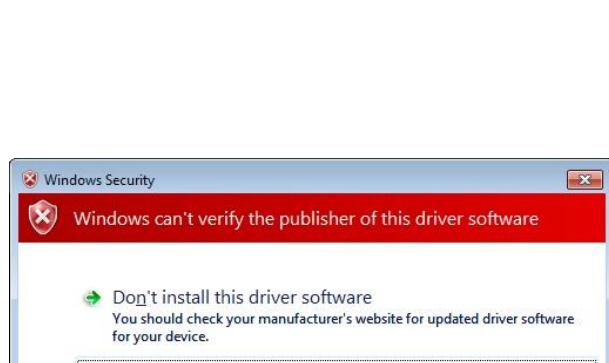
**Step 6. Click Install.**



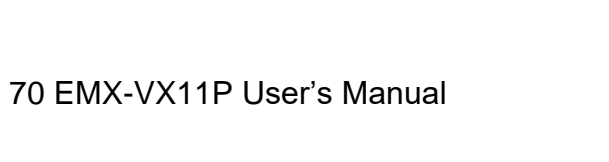
**Step 7. Click Install.**



**Step 8. Click Install.**



**Step 9. Click Install.**



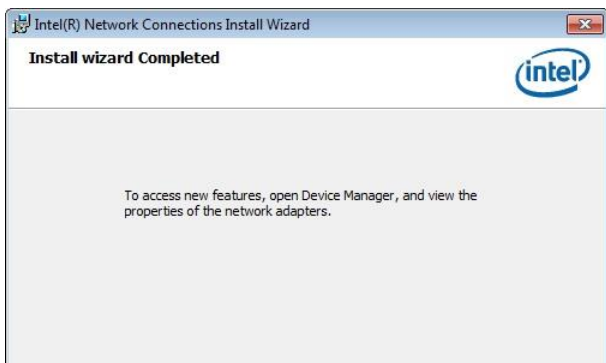
**Step 10. Click Install.**



**Step 11. Click Install.**



**Step 12. Click Install.**



**Step 13. Click Finish to complete setup.**

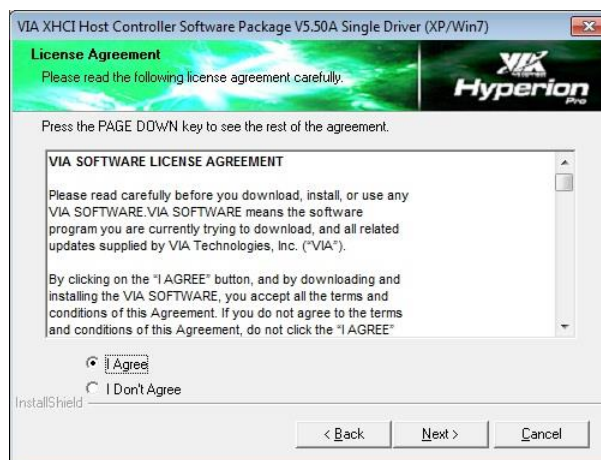
## 4.6 Install USB3.0 Driver

All drivers can be found on the Avalue Official Website:

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



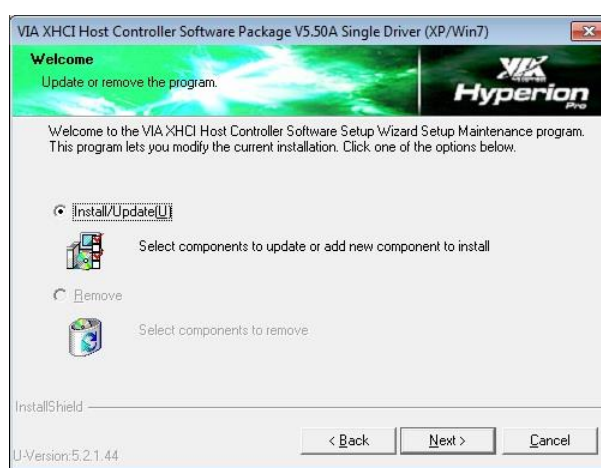
**Note:** The installation procedures and screen shots in this section are based on Windows 7 operating system.



**Step 3. Click Next.**



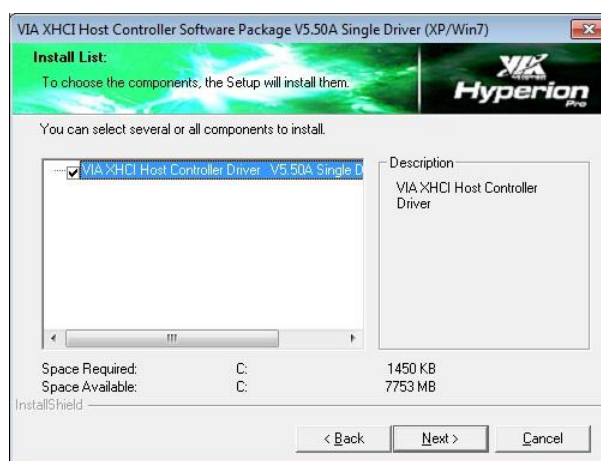
**Step 1. Click Next** to continue installation.



**Step 4. Click Next.**

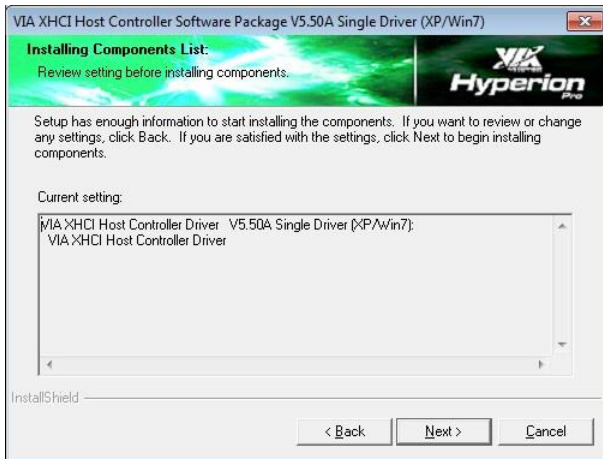


**Step 2. Click Next.**

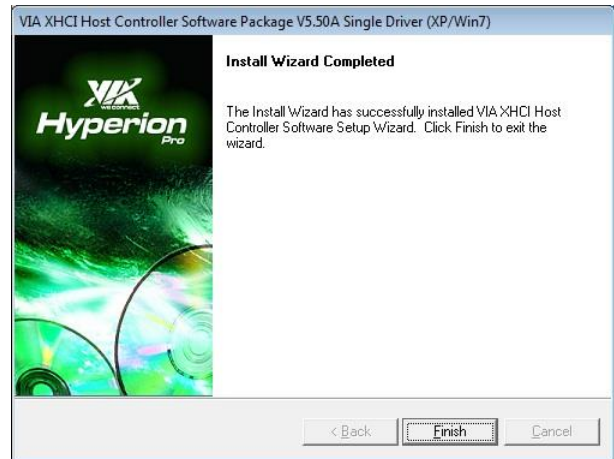


**Step 5. Click Next.**

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**Step 6. Click Next.**



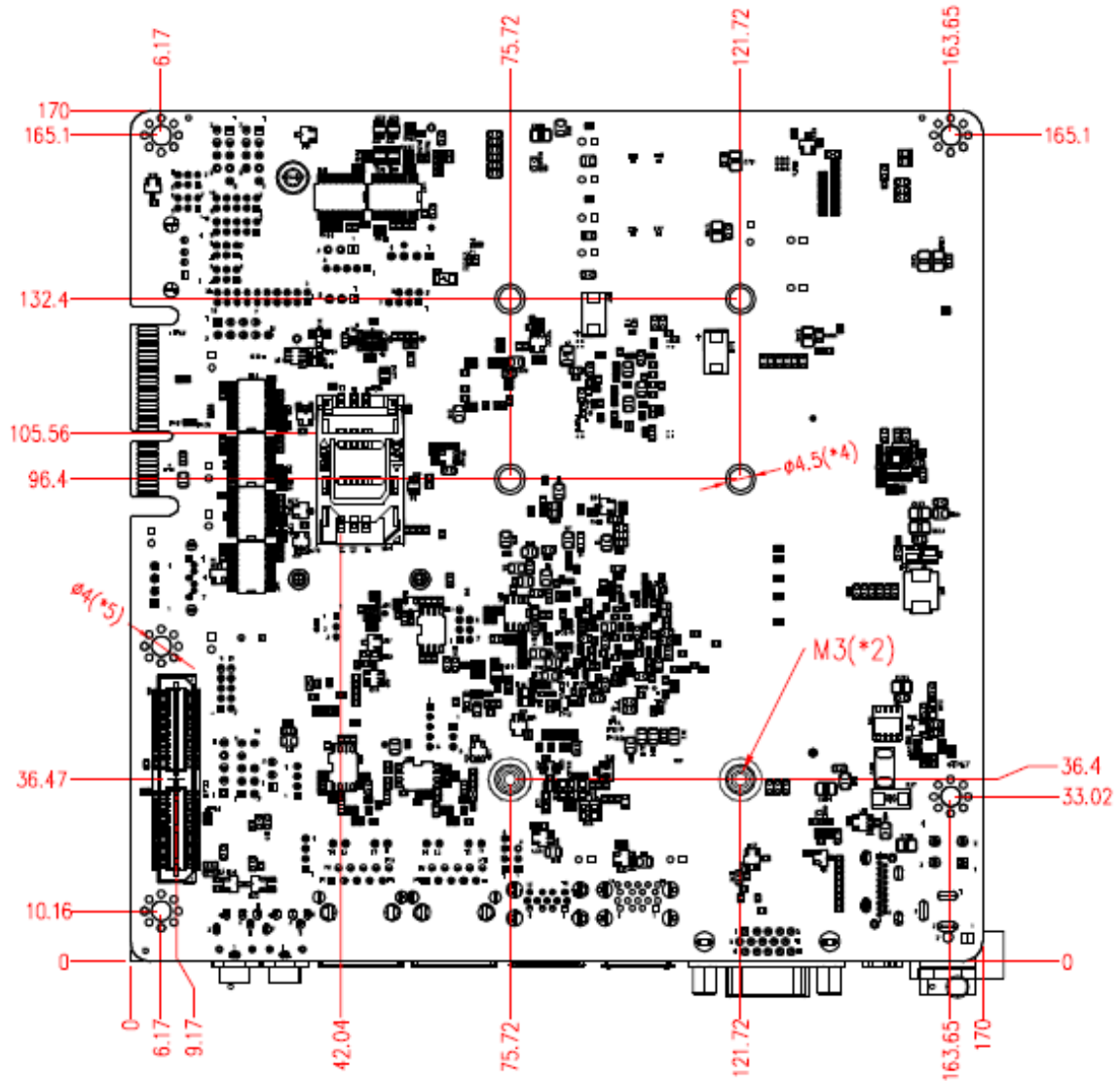
**Step 7. Click Finish to complete setup.**



# 5. Mechanical Drawing

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Unit: mm

