

EMX-CDV

Intel® Atom™ EMX-CDV Mini ITX Motherboard
with Intel® ICH10R Chipset

User's Manual



3rd Ed – 04 November 2015

FCC Statement



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

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

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

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

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

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

Notice

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

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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.

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

1.2 Packing List

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

- 1 x EMX-CDV Mini-ITX Motherboard
- 1 x CD-ROM contains OS drivers/QIG/User's Manual
- 2 x COM cable
- 2 x SATA cable
- 1 x SATA Power Cable
- 1 x DC Jack to ATX Power Cable
- 1 x I/O shield



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

1.3 Document Amendment History

Revision	Date	Comment
1 st	June 2012	Initial Release
2 nd	June 2015	Update Packing List
3 rd	November 2015	Update Connector List

EMX-CDV

This manual describes in detail the Avalue Technology EMX-CDV 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 EMX-CDV 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.

1.4 System Specifications

System 	
CPU	Onboard Intel® Atom™ D2550(N2800/N2600 for Option)
BIOS	AMI 16Mb SPI BIOS
System Chipset	Intel® ICH10R
I/O Chip	ITE8783+ FINTEK F81214
System Memory	2x 204-pin DDR3 SODIMM, up to 4GB (N2600 support 1 x DDR3 SODIMM only)
Watchdog Timer	H/W Reset : 1 to 255 sec/min per step
H/W Status Monitor	Monitoring temperature, voltage, and cooling fan status. Auto throttling control when CPU overheats
TPM	Infineon TPM1.2 SLB9635 (Optional)
Expansion	1x PCI 2 x mini-PCI-E connectors
SSD	1 x mSATA supports on the 2 nd mini-PCIe (Optional)
Smart Fan Control	Yes
Display 	
Chipset	Cedarview Integrated graphics
Dual Display	LVDS+VGA, VGA+HDMI, HDMI+LVDS
VGA	Max resolution: 1920 x 1200
HDMI	Max resolution: 1920 x 1200
LVDS	eDP to LVDS translator, Dual channel 18/24 bit Max resolution: 1920 x 1080
LVDS Backlight	Yes, through internal LVDS Backlight Connector
Audio 	
Audio Codec	Azalia Realtek ALC269
Audio Interface	Mic-In, Line-In and Line-Out, speaker out
Audio Amplifier(W)	Build-in 2W Audio amplifier on chip
Ethernet 	
Chipset	2 x Realtek 8111E
Ethernet Interface	10/100/1000 Gigabit Ethernet Compatible
I/O 	
MIO	2 External(COM1, RS-232/422/485; COM2, RS-232), 4 Internal (COM3, RS-232 with 5V/12V selected by jumper, COM4~6, RS-232), 4 SATA II, 1 HDMI, 1 VGA, 1 LVDS, 2 LAN, 1 PS/2
USB	7 USB 2.0 (4 Rear, 3 Internal)

EMX-CDV

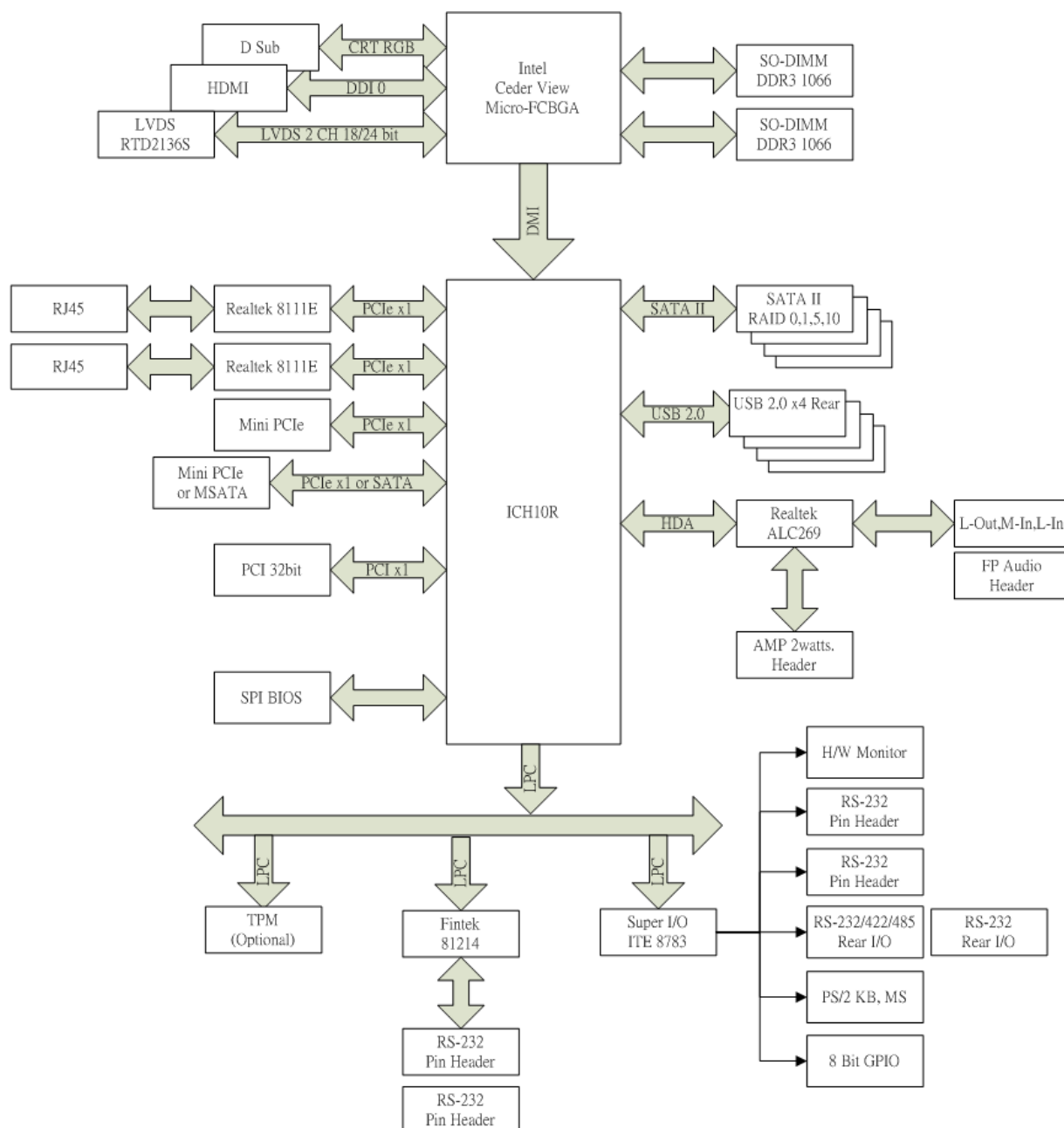
Back Panel I/O Port 	
Back Panel I/O Port	1 DC-in Connector (4-pin) 1 VGA Port 1 HDMI Port 2 COM Ports 4 USB 2.0 Ports 2 LAN RJ45 Ports 1 Audio I/O (3 Jacks) 1 PS/2 Mini-Din (KB/MS support by external Y-cable)
Internal I/O Connector 	
Internal I/O Connector	1 USB Connector supports 2 USB Ports 1 USB Connector supports 1 USB Port 4 COM RS-232 Connectors 4 SATA II Connectors, RAID 0,1,5,10 supported 2 SATA Power Connectors 1 Front Panel Connector 1 Front Audio Connector 1 System Fan Connector 1 GPIO Connector 2 Mini PCI-E Connectors 1 Speaker-out L/R Connector 1 LVDS Connector 1 LVDS Backlight Connector 1 LPC Connector
Power 	
Power Requirement	DC 12V
Power Type	AT / ATX mode (selectable by Jumper)
Power Connector	4-pin DC-in Power Connector, 4-pin ATX 12V Power Connector
Mechanical & Environmental 	
Operating Temperature	0°C to 60°C (32°F to 140°F)
Operating Humidity	0% to 90% relative humidity, non-condensing
Size	6.69" x 6.69" (170 x 170 mm)
Weight	0.77 lbs (0.35 Kg)



Note: Specifications are subject to change without notice.

1.5 Architecture Overview – Block Diagram

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



2. Hardware Configuration

2.1 Product Overview

EMX-CDV is designed to unleash the power of the new Intel® Atom™ processor D2000 / N2000 which supports the new revolutionary two-chip layout. The Intel® Cedarview processor also provides additional flexibility and upgradeability with two slots of single channel DDR3 memory at 1066 MHz supporting up to 4GB maximum.

2. With breakthrough low-power silicon, EMX-CDV can be used with a passive thermal solution based on the recommended boundary conditions.¹

3. EMX-CDV represents a fundamental shift in system design—small, yet powerful enough to enable a big Internet experience for all audiences.

2.1.1 Platform Features and Benefits

- DirectX® 10.1 let you enjoy awesome graphics performance, stunning 3D visual effect and dynamic interactivity
- Memory support, integrated DDR3 memory controller
- Operating system support:
 - Microsoft Windows XP 32/64bit
 - Microsoft Windows 7 32/64bit

2.1.2 Key Architecture Features

- Supports Intel® Atom™ processor D2000 / N2000.series
 - Supports 2 lanes in each direction for N2000 processor and 4 lanes in each direction for D2000 processor (Gen 1 2.5gbps) per lane per direction point- to- point DMI interface.
 - Compatible with high speed DDR3-1066MHz
 - TDP: 16W
- Intel® HD Audio Technology
- Integrated Display Interfaces
 - HDMI
 - VGA
 - Dual Channel LVDS
- Doubles the transfer speed of SATA, running at speed up to 3.0Gb/s
- Provides 10/100/1000 Mbps solution to your network or broadband connection without having to buy an
- Onboard audio CODEC supports uncompromising DVD audio quality, bringing a move vivid sound experience and high-quality audio without having to buy advanced sound cards.

EMX-CDV

- Main Memory

EMX-CDV provides 2x 204-pin DDR3 SODIMM, up to 4GB (N2600 support 1 x DDR3 SODIMM only).

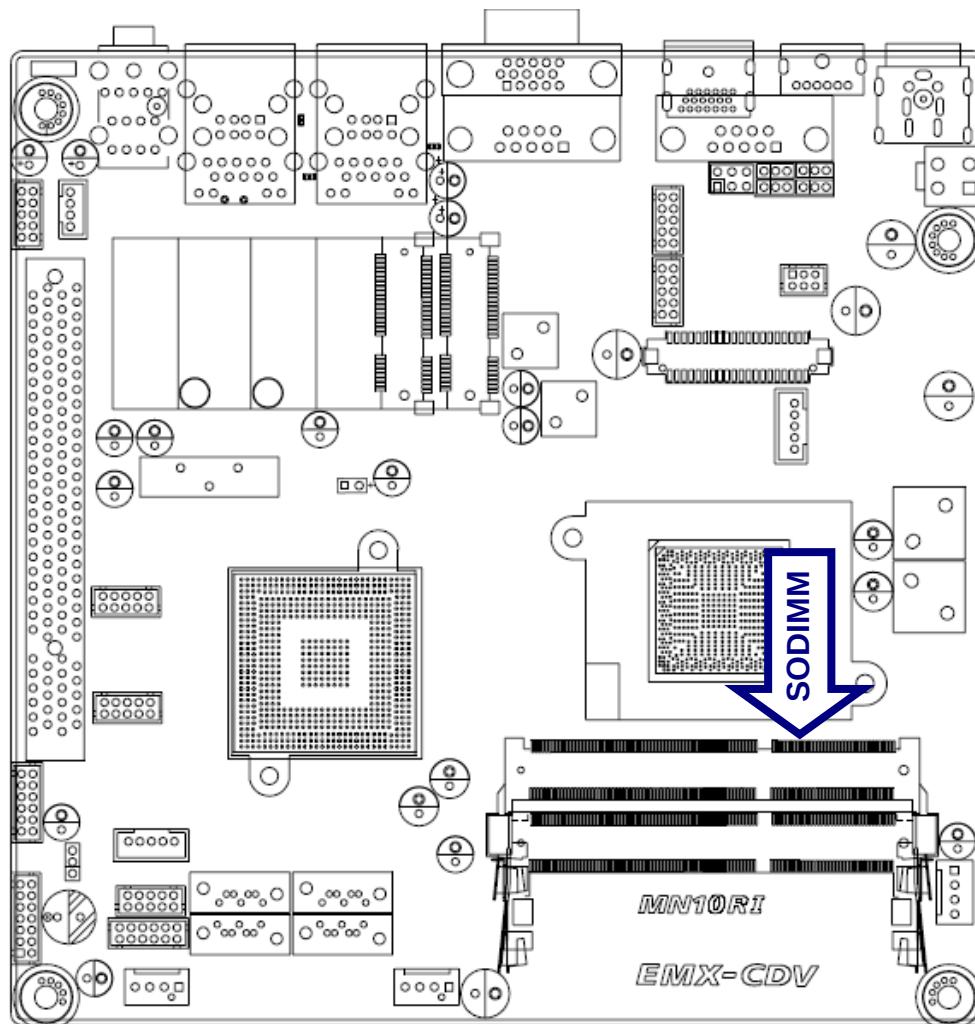
- SODIMM module.



Note:

- (1) Please do not change any DDR 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.
- (3) The Platform requires DDR3 SODIMMs to be populated starting with the SODIMM at the far end from the processor.

Here, SODIMM2 is situated at the far end from the processor.



- I/O
 - One PCI slot
 - Two Mini-PCIe sockets
 - Four SATA2 ports
 - Two 10/100/1000 Mbps Ethernet Controller
 - High Definition Audio
 - USB: USB 2.0/1.1, up to 7 ports
 - Hardware Monitor
 - Fan control (Voltage, Temp)

2.2 Before you Proceed

Take note of the following precautions before you install motherboard components or change any motherboard settings.



- Unplug the power cord from the wall socket before touching any component.
- Use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity
- Hold components by the edges to avoid touching the ICs on them.
- Whenever you uninstall any component, place it on a grounded anti-static pad or in the bag that came with the component.
- Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

2.3 Motherboard Overview

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it. Refer to the chassis documentation before installing the motherboard.



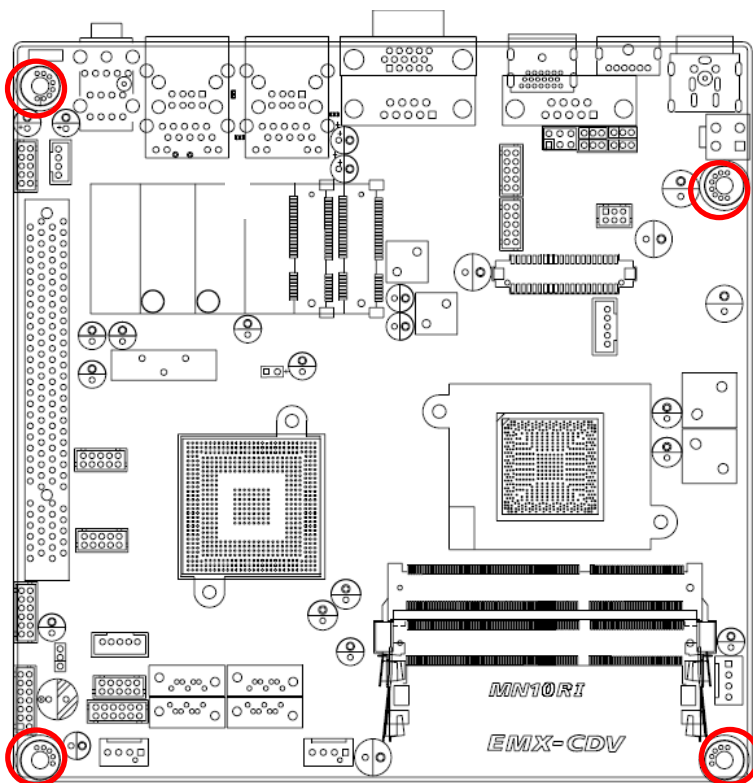
Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so can cause you physical injury and damage motherboard components.

2.3.1 Placement Direction

When installing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

2.3.2 Screw Holes

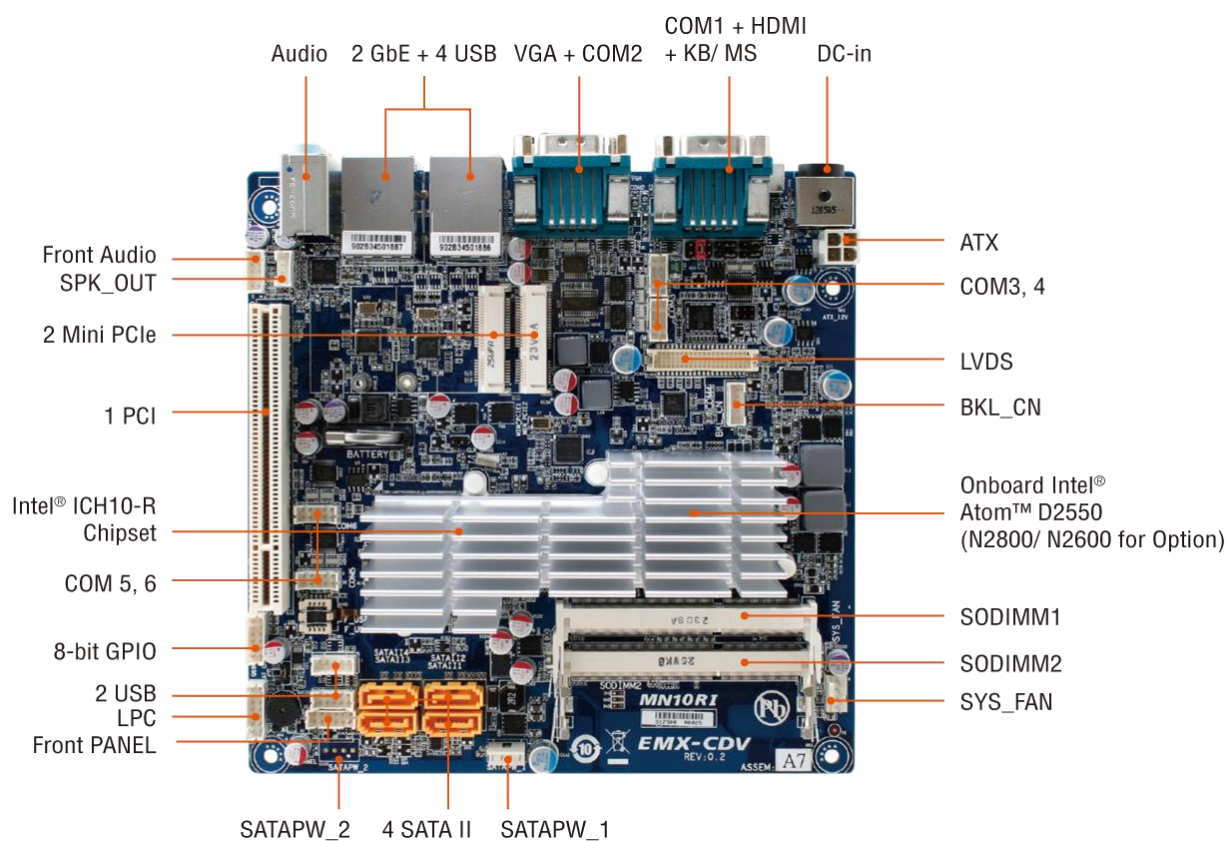
Place four (4) screws into the holes indicated by circles to secure the motherboard to the chassis.



Place this side towards the rear of the chassis.

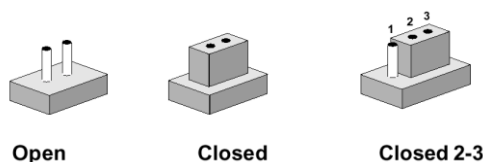


Do not over tighten the screws! Doing so can damage the motherboard.



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
JRS1/2/3/4	Serial Port 1 Setting – RS232/422/485	3 x 1 header, pitch 2.00 mm
JCOM1	Serial Port 1 Select - RS-232/422/485	3 x 2 header, pitch 2.00 mm
JCOM3	Serial Port 3 RI Pin Signal Select – Ring/+5V/+12V	3 x 2 header, pitch 2.54 mm
AT_CN	Power Mode Select – AT or ATX	3 x 1 header, pitch 2.00 mm
CLR_CMOS	Clear CMOS	2 x 1 header, pitch 2.54 mm

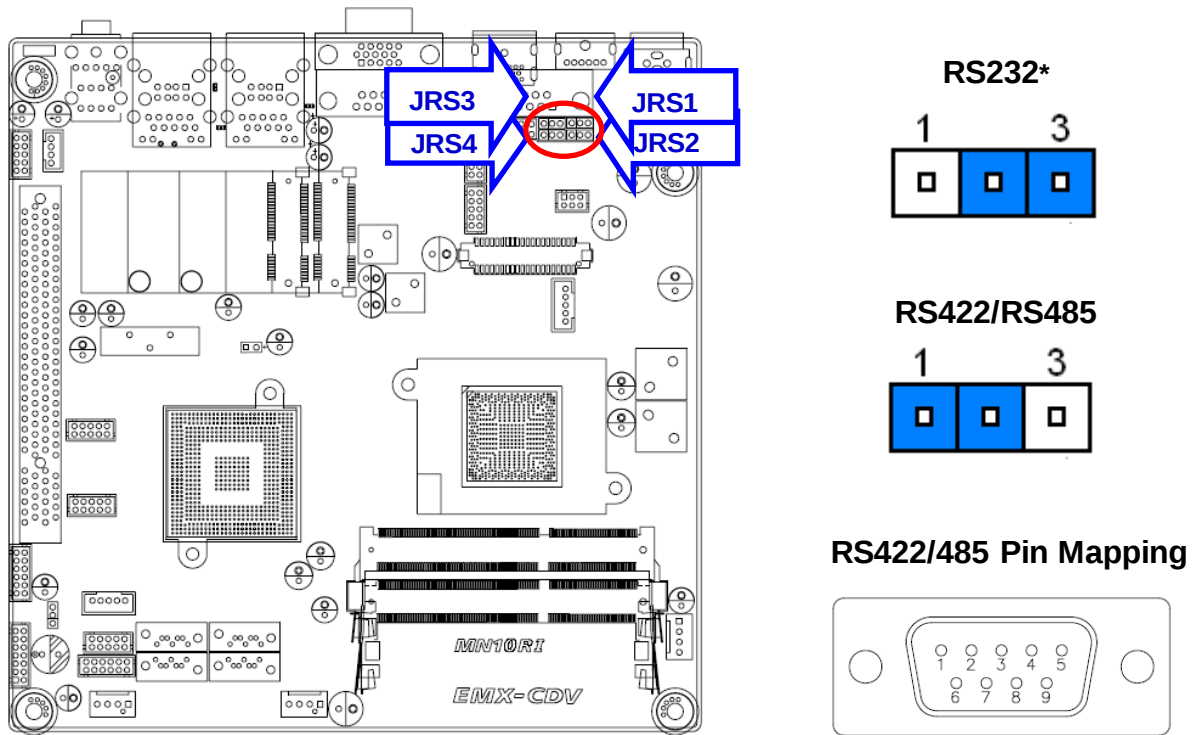
Connectors

Label	Function	Note
ATX_12V	ATX 4pin DC12	
SODIMM1	DIMM Slot DDR3	

SODIMM2	DIMM Slot DDR3	
SYS_FAN	System Fan Connector	4 x 1 wafer, pitch 2.54mm
COM1	Serial Port 1 Connector	D-sub 9-pin, male
COM2	Serial Port 2 Connector	D-sub 9-pin, male
COM3	Serial Port 3 Connector	5 x 2 wafer, pitch 2.00 mm
COM4	Serial Port 4 Connector	5 x 2 wafer, pitch 2.00 mm
COM5	Serial Port 5 Connector	5 x 2 wafer, pitch 2.00 mm
COM6	Serial Port 6 Connector	5 x 2 wafer, pitch 2.00 mm
LVDS	LVDS Connector	20 x 2 wafer, pitch 1.25mm
BKL_CN	LCD Inverter Connector	5 x 1 wafer, pitch 2.00mm
USB_LAN1	USB+LAN1	
USB_LAN2	USB+LAN2	
KB_MS	PS/2 Keyboard & Mouse Connector	
HDMI	HDMI	
VGA	VGA Connector	
Min_PCIE1	Mini PCIE Connector 1	
Min_PCIE2	Mini PCIE Connector 2 (co-lay mSATA)	
AUDIO	AUDIO Line-In/Line-Out/Mic-In	
PCI1	PCI Slot	
F_AUDIO	Front Panel Audio Connector	5 x 2 wafer, pitch 2.00 mm
SPK_OUT	Audio Amplifier Connector	4 x 1 wafer, pitch 2.00 mm
SATA1/2/3/4	Serial ATA Connector 1/2/3/4	
SATAPW_1	SATA Power 1	4 x 1 wafer, pitch 2.54mm
F_USB1	USB Connector 1	5 x 2 wafer, pitch 2.00 mm
F_USB2	USB Connector 2	5 x 1 wafer, pitch 2.00 mm
GPIO_CNT	GPIO Connector	6 x 2 wafer, pitch 2.00 mm
LPC	Low Pin Count Connector	7 x 2 wafer, pitch 2.00 mm
F_PANEL	Front Panel Connector	6 x 2 wafer, pitch 2.00 mm
DC_IN	DC Power-In Connector	

2.4 Setting Jumpers & Connectors

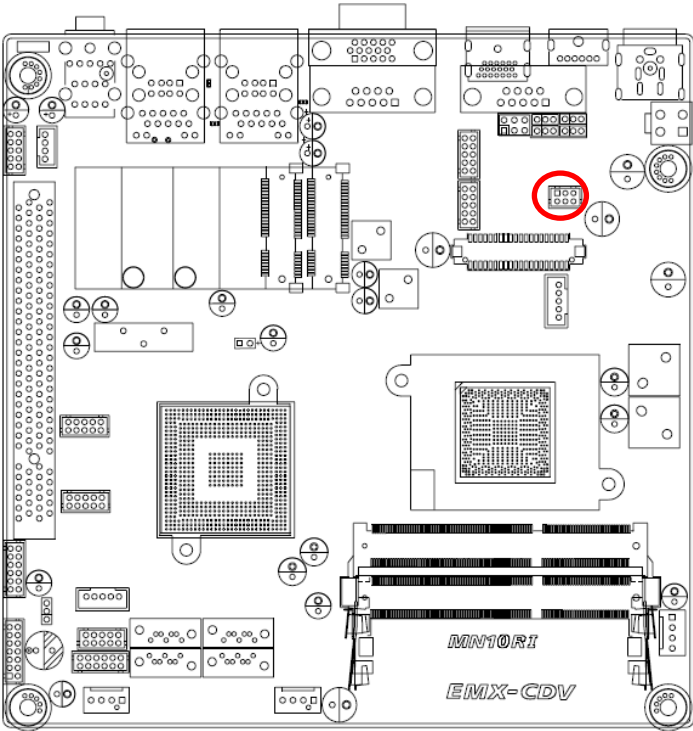
2.4.1 Serial Port 1 Setting - RS232/422/485 (JRS1, JRS2, JRS3, JRS4)



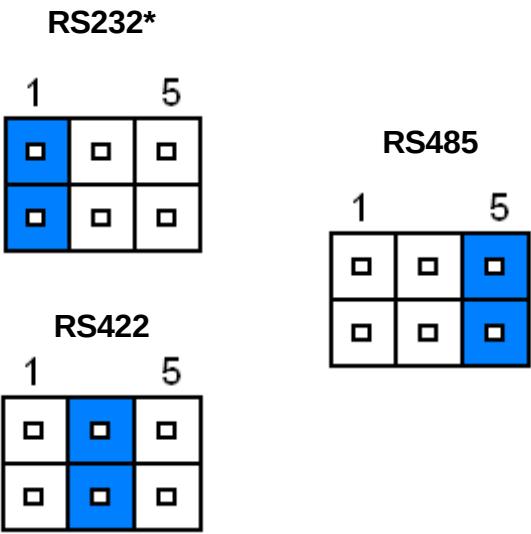
* Default

Pin	RS-232	RS-485	RS-422
1	DCD	TXD-	TXD-
2	RXD	TXD+	TXD+
3	TXD		RXD+
4	DTR		RXD-
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

2.4.2 Serial Port 1 Select - RS-232/422/485 (JCOM1)

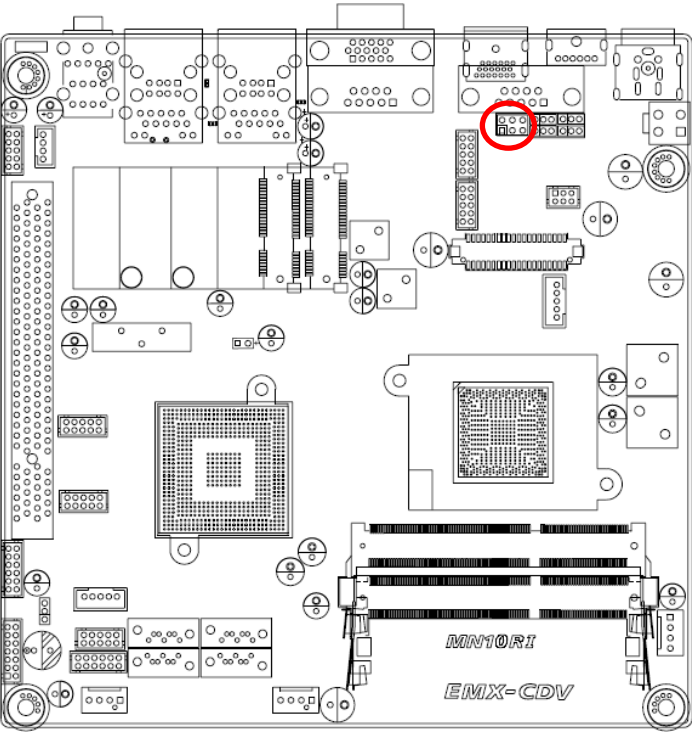


* Default

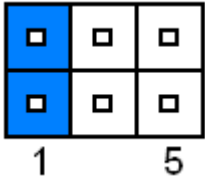


Signal	PIN	PIN	Signal
RXD232	1	2	RXD1
RXD422	3	4	RXD1
RXD485	5	6	RXD1

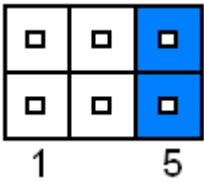
2.4.3 Serial Port 3 RI Pin Signal Select – Ring/+5V/+12V (JCOM3)



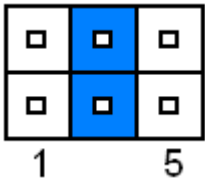
+5V



+12V



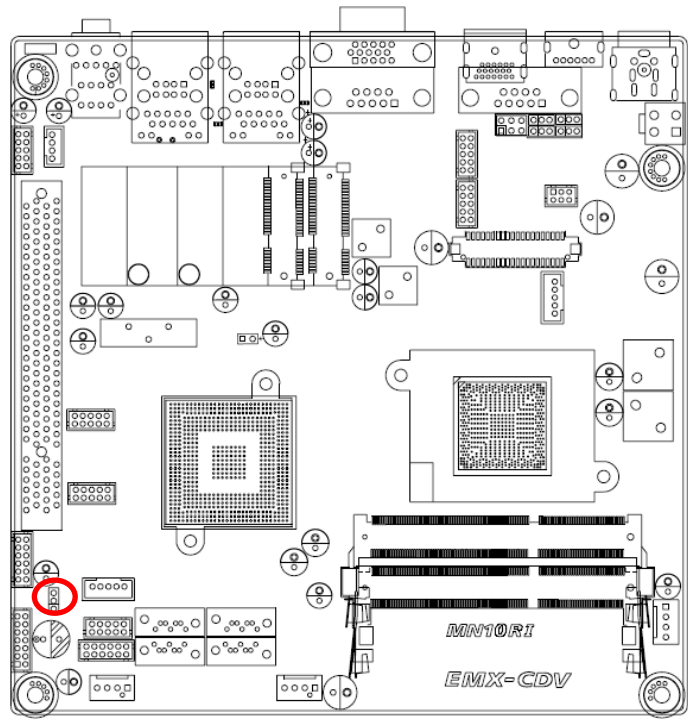
Ring*



* Default

Signal	PIN	PIN	Signal
VCC	1	2	RI3-/5V/12V
NRI3-	3	4	RI3-/5V/12V
+12V	5	6	RI3-/5V/12V

2.4.4 Power Mode Select – AT or ATX (AT_CN)

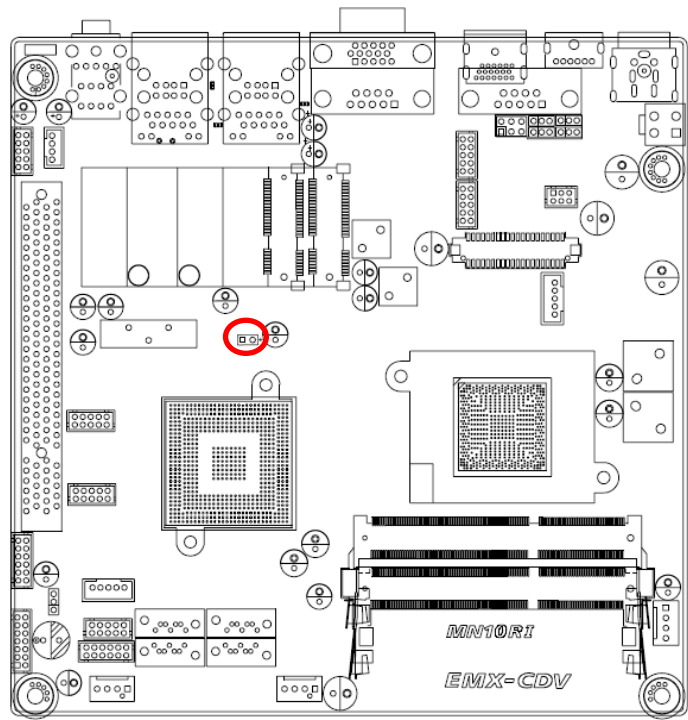


* Default

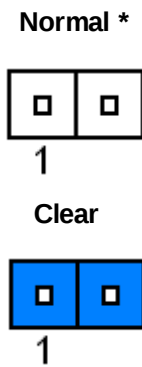


Signal	PIN
AT_PWR_F_BTN#	1
PWR_F_BTN#	2
NC	3

2.4.5 Clear CMOS (CLR_CMOS)

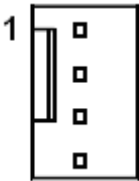
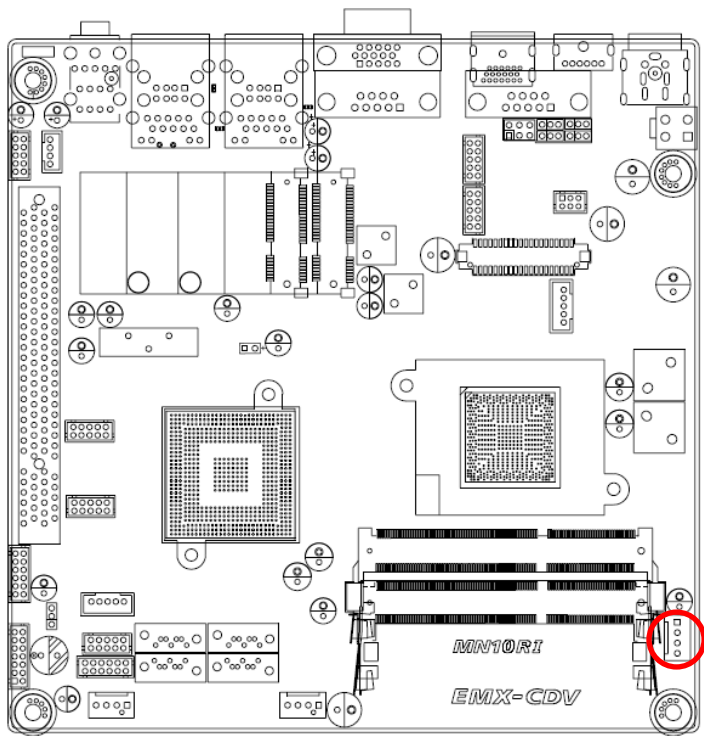


* Default



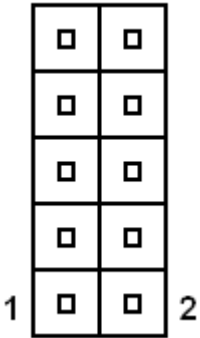
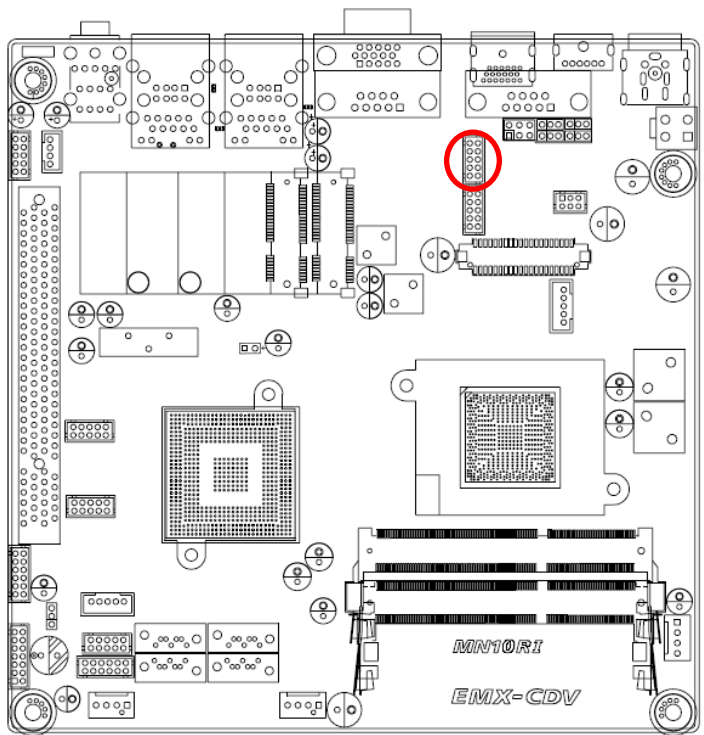
Signal	PIN
-RTCST	1
GND	2

2.4.6 System Fan Connector (SYS_FAN)



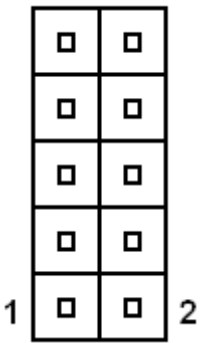
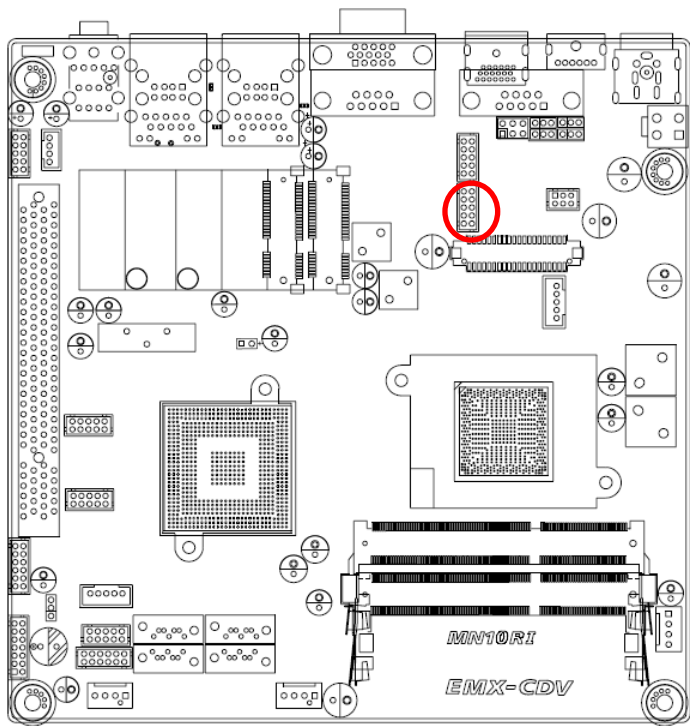
Signal	PIN
PWM Input	4
FANIO2	3
+12V	2
GND	1

2.4.7 Serial Port 3 Connector (COM3)



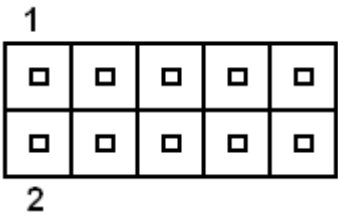
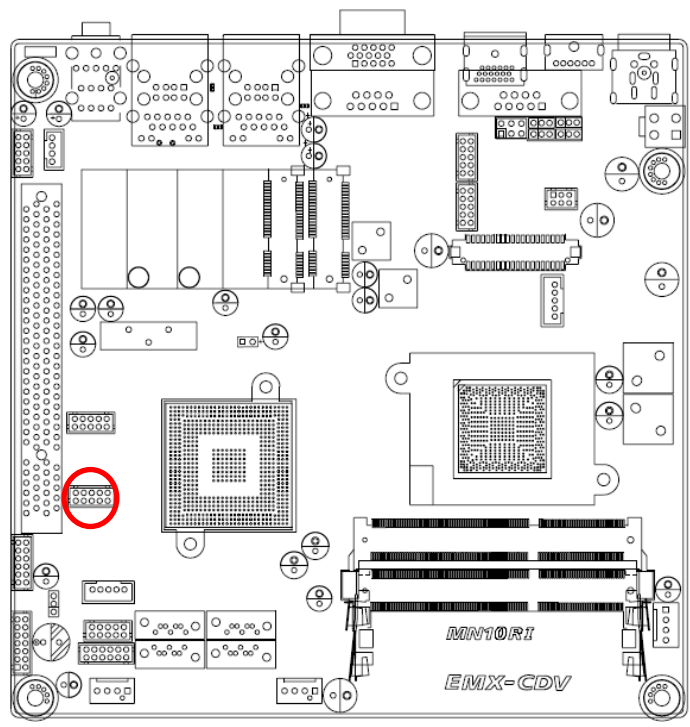
Signal	PIN	PIN	Signal
NC	9	10	RI3-/5V/12V
NCTS3-	7	8	NRTS3-
NDSR3-	5	6	GND
NDTR3-	3	4	NTXD3-
NRXD3-	1	2	NDCD3-

2.4.8 Serial Port 4 Connector (COM4)



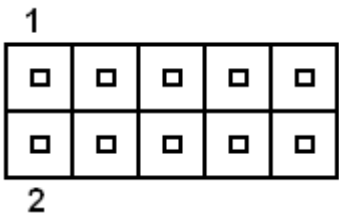
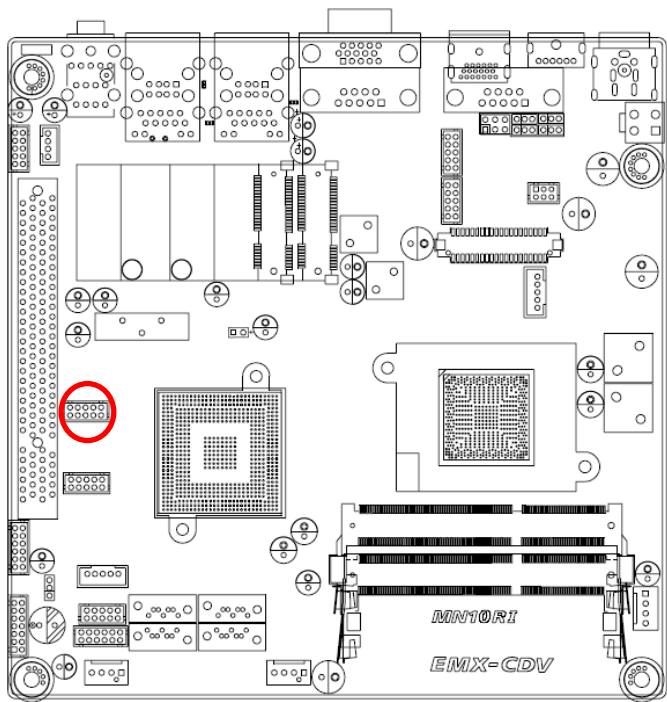
Signal	PIN	PIN	Signal
NC	9	10	NRI4-
NCTS4-	7	8	NRTS4-
NDSR4-	5	6	GND
NDTR4-	3	4	NTXD4-
NRXD4-	1	2	NDCD4-

2.4.9 Serial Port 5 Connector (COM5)



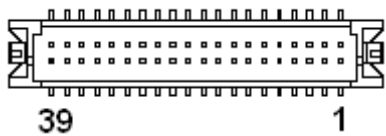
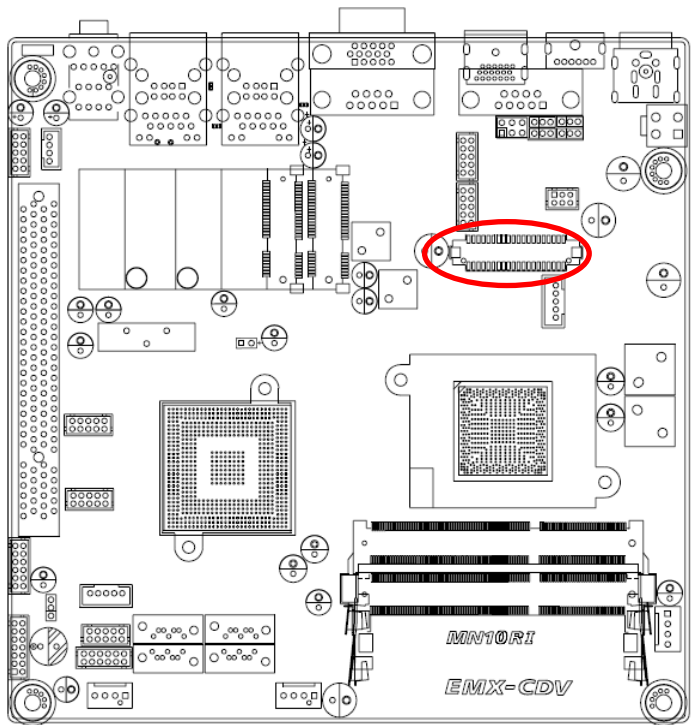
Signal	PIN	PIN	Signal
NC	9	10	NRI5-
NCTS5-	7	8	NRTS5-
NDSR5-	5	6	GND
NDTR5-	3	4	NTXD5-
NRXD5-	1	2	NDCD5-

2.4.10 Serial Port 6 Connector (COM6)



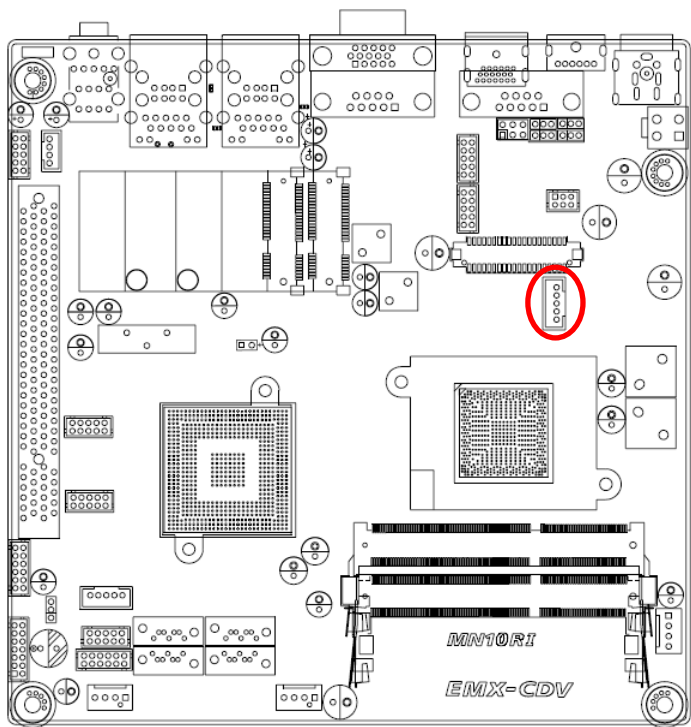
Signal	PIN	PIN	Signal
NC	9	10	NRI6-
NCTS6-	7	8	NRTS6-
NDSR6-	5	6	GND
NDTR6-	3	4	NTXD6-
NRXD6-	1	2	NDCD6-

2.4.11 LVDS Connector (LVDS)



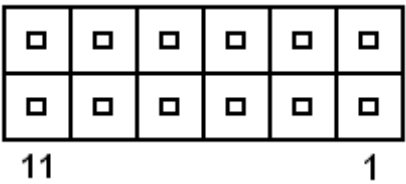
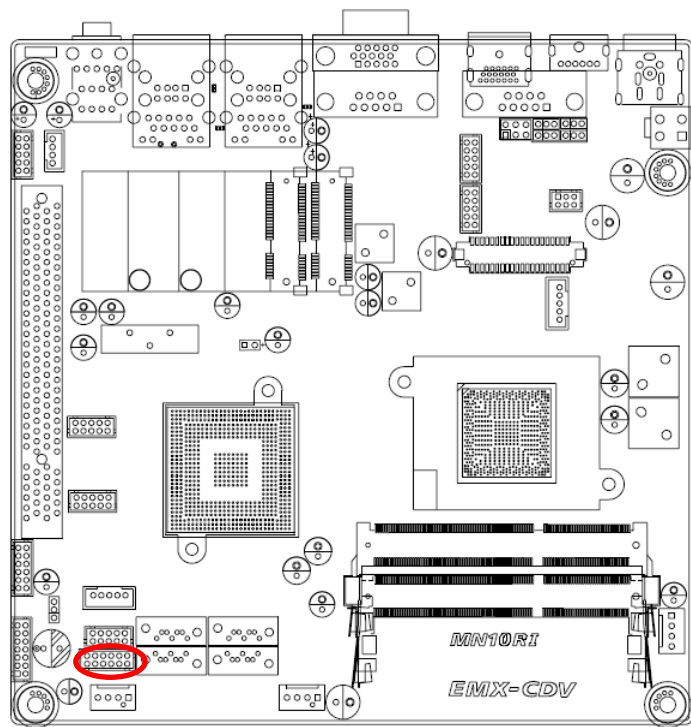
Signal	PIN	PIN	Signal
VCC3	1	2	VCC
VCC3	3	4	VCC
SCL1	5	6	SDA1
GND	7	8	GND
+RXO1_C	9	10	+RXO0_C
-RXO1_C	11	12	-RXO0_C
GND	13	14	GND
+RXO3_C	15	16	+RXO2_C
-RXO3_C	17	18	-RXO2_C
GND	19	20	GND
+RXE1_C	21	22	+RXE0_C
-RXE1_C	23	24	-RXE0_C
GND	25	26	GND
+RXE3_C	27	28	+RXE2_C
-RXE3_C	29	30	-RXE2_C
GND	31	32	GND
+RXECLKE_C	33	34	+RXECLKO_C
-RXECLKE_C	35	36	-RXECLKO_C
GND	37	38	GND
+12V	39	40	+12V

2.4.12 LCD Inverter Connector (BKL_CN)



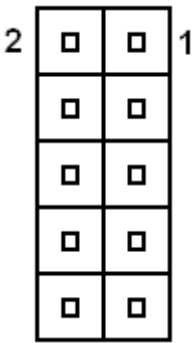
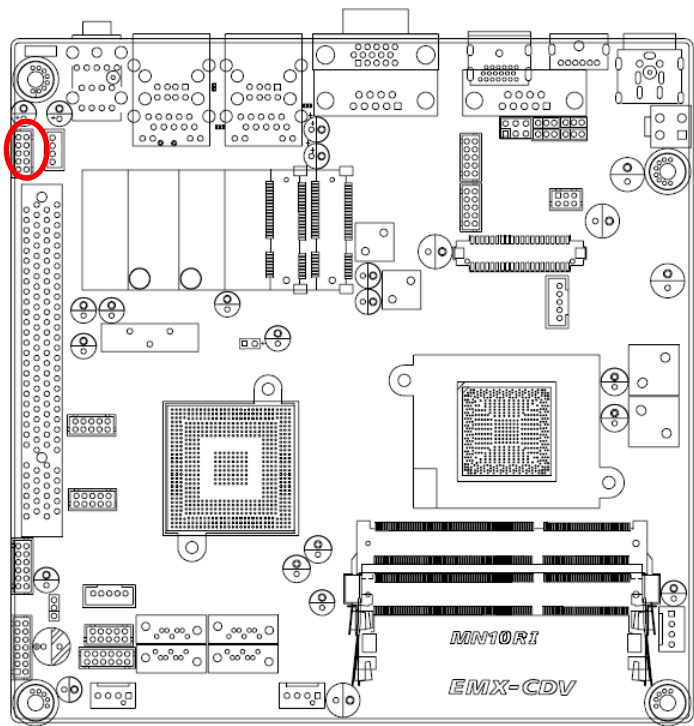
Signal	PIN
+12V	5
GND	4
BKLTEN	3
BKLTCTL	2
VCC	1

2.4.13 Front Panel Connector (F_PANEL)



Signal	PIN	PIN	Signal
Standby Power LED+	11	12	Standby Power LED-
-INTRUDER	9	10	GND
SATA LED-	7	8	SATA LED+
Power LED+	5	6	Power LED GND
System Reset#	3	4	RST GND
Power Button#	1	2	Power Button GND

2.4.14 Front Panel Audio Connector (F_AUDIO)

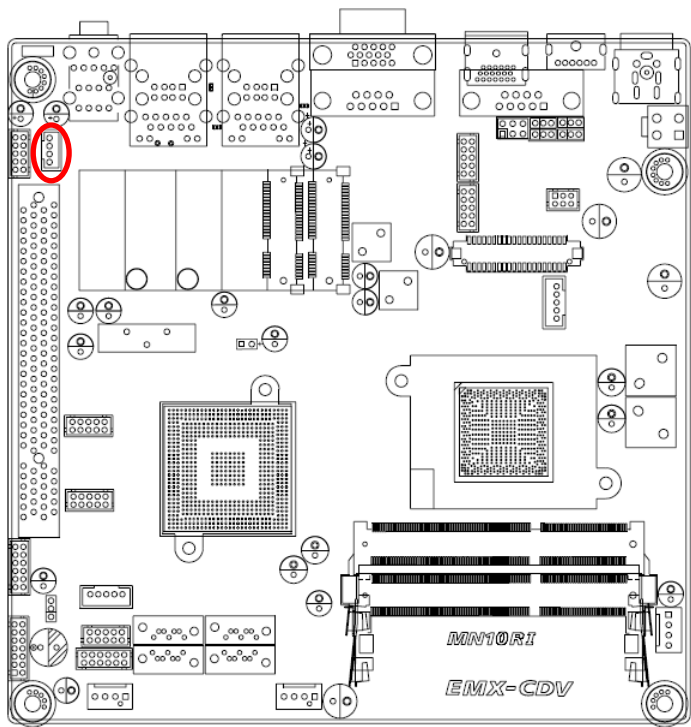


Signal	PIN	PIN	Signal
GND	2	1	MIC_L
-ACZ_DET	4	3	MIC_R
SRTN1	6	5	HPOUT_R_H
NC	8	7	FAUDIO_JD
SRTN2	10	9	HPOUT_L_H

2.4.14.1 Signal Description – Audio connector (F_AUDIO)

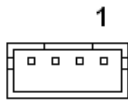
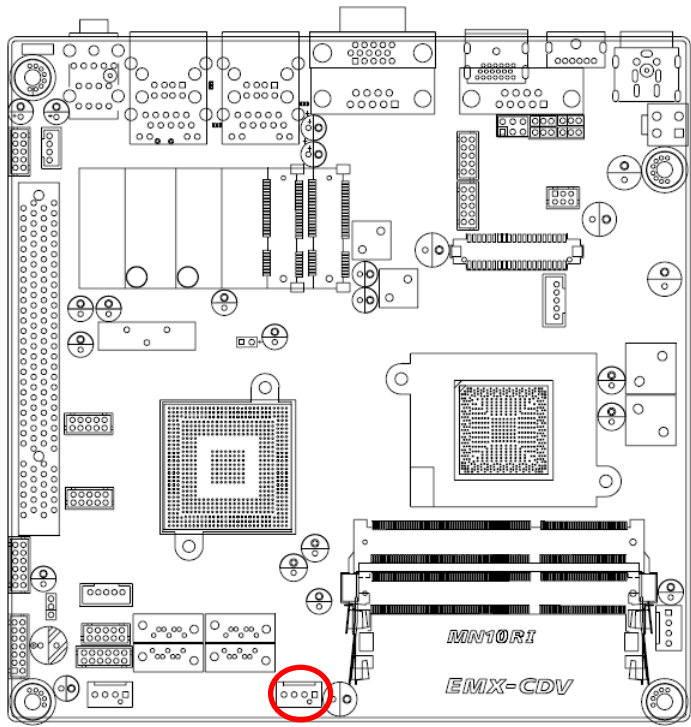
Signal	Signal Description
MIC_L	Front panel microphone left channel
MIC_R	Front panel microphone right channel
-ACZ_DET	Active low when an Intel® HD Audio dongle is connected
HPOUT_R_H	Front panel headphone right channel
HPOUT_L_H	Front panel headphone left channel
SRTN1	Jack detection for front panel microphone
SRTN2	Jack detection for front panel headphone
FAUDIO_JD	Front panel jack detect

2.4.15 Audio Amplifier Connector (SPK_OUT)



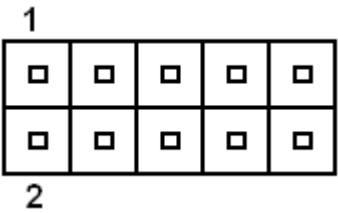
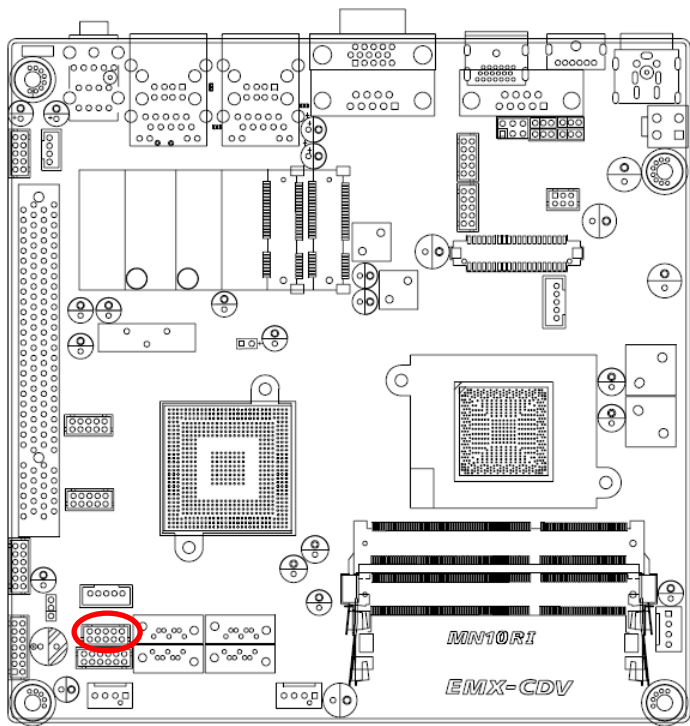
Signal	PIN
OUT_R+	1
OUT_R-	2
OUT_L-	3
OUT_L+	4

2.4.16 SATA Power (SATAPW_1)



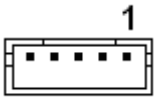
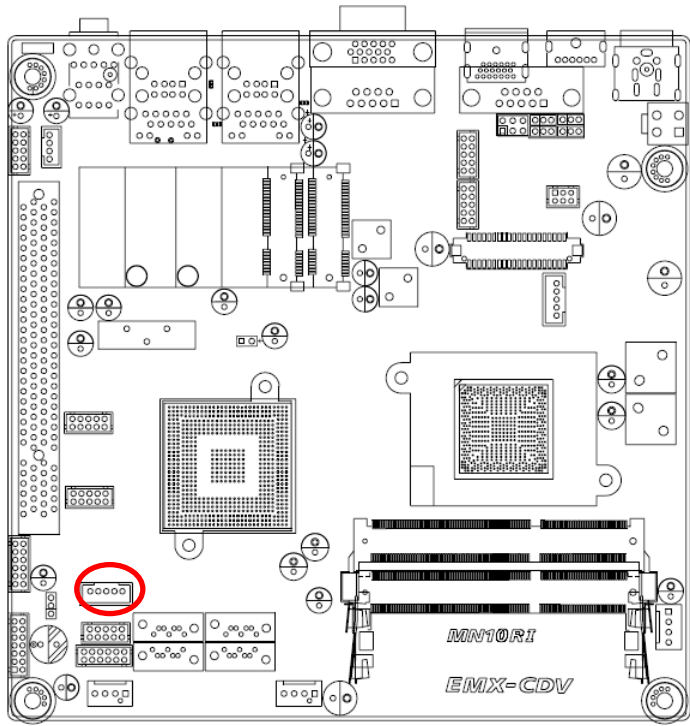
Signal	PIN
+12V	1
GND	2
GND	3
VCC	4

2.4.17 USB Connector (F_USB1)



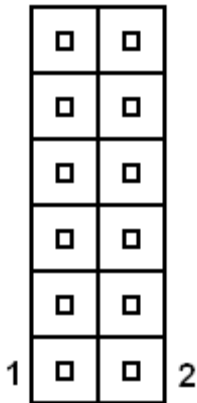
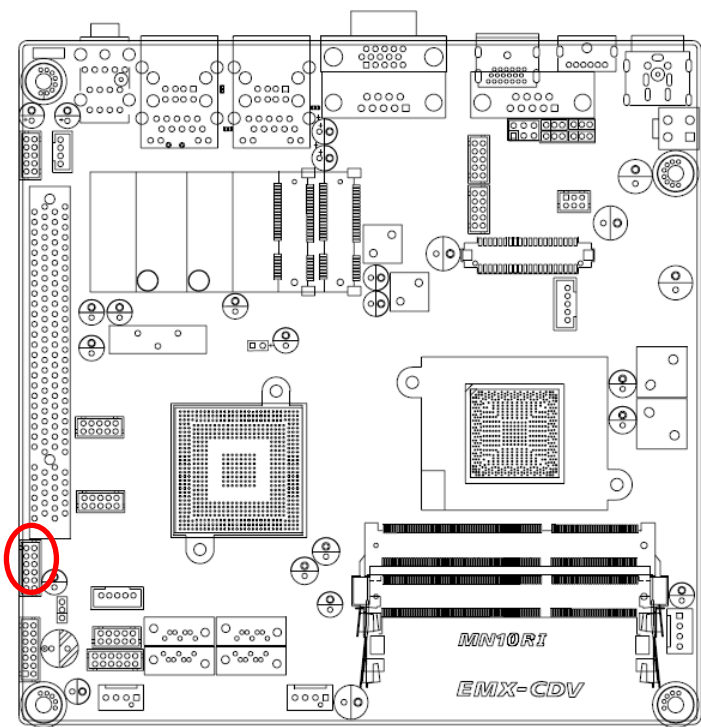
Signal	PIN	PIN	Signal
USB Power	2	1	USB Power
USBP0-	4	3	USBP1-
USBP0+	6	5	USBP1+
GND	8	7	GND
GND	10	9	GND

2.4.18 USB Connector (F_USB2)



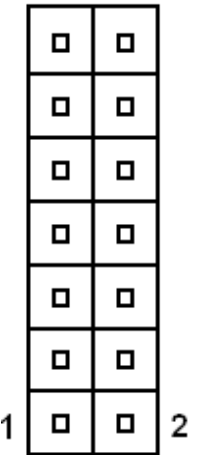
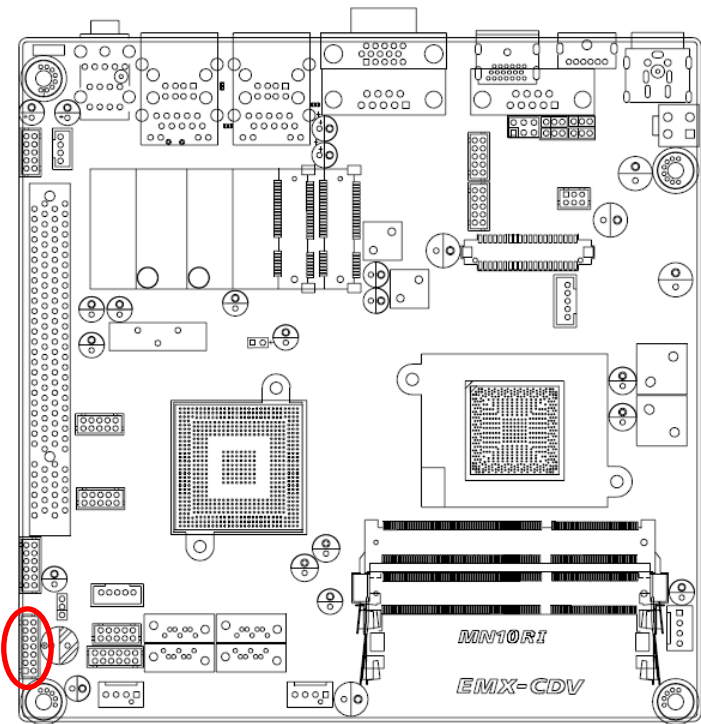
Signal	PIN
GND	1
GND	2
USBP2+	3
USBP2-	4
USB Power	5

2.4.19 GPIO Connector (GPIO_CNT)



Signal	PIN	PIN	Signal
VCC	11	12	GND
SMBCLK	9	10	SMBDATA
SOGP0_4	7	8	SOGP1_4
SOGP0_3	5	6	SOGP1_3
SOGP0_2	3	4	SOGP1_2
SOGP0_1	1	2	SOGP1_1

2.4.20 Low Pin Count Connector (LPC)



Signal	PIN	PIN	Signal
-LDRQ1	13	14	5VDUAL
GND	11	12	VCC
GND	9	10	SERIRQ
LPC_CLK	7	8	LAD3
-LFRAME	5	6	LAD2
-PFMRST	3	4	LAD1
VCC3	1	2	LAD0

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 CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

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

By pressing immediately after switching the system on, or

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

Press DEL to enter SETUP

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 CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ 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 CMOS settings which resets your system to its defaults.

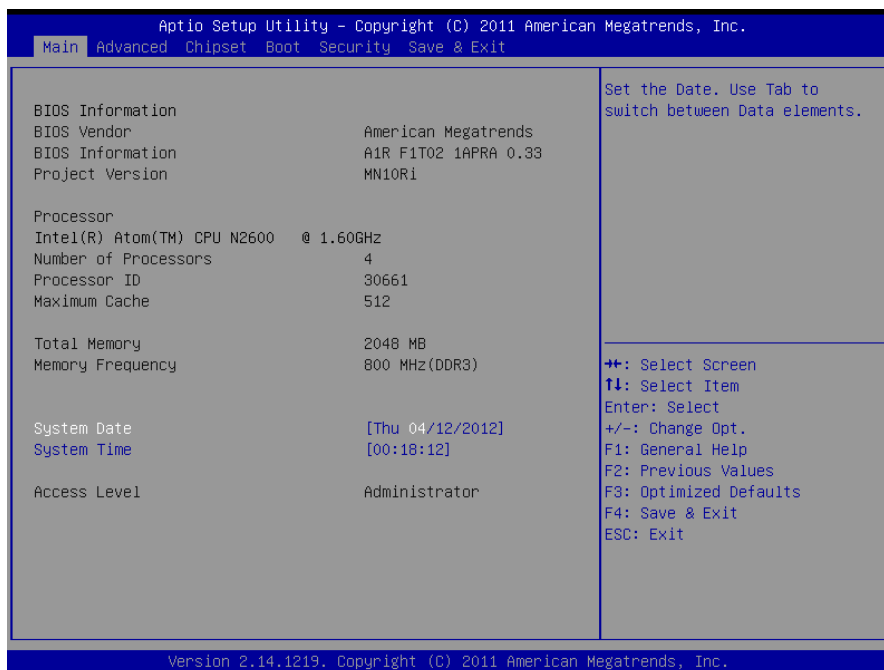
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your systems manufacturer to provide the absolute maximum performance and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

3.6 BIOS setup

Once you enter the AMI BIOS CMOS 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 Date

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

3.6.1.2 System Time

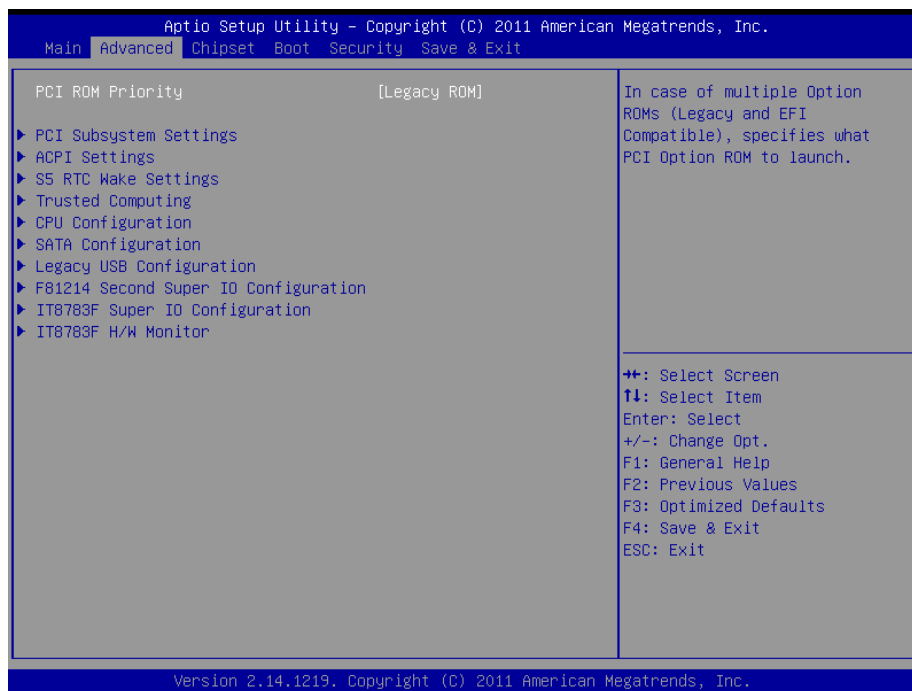
Use the system time option to set the system time. Manually enter the hours, minutes and seconds.



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

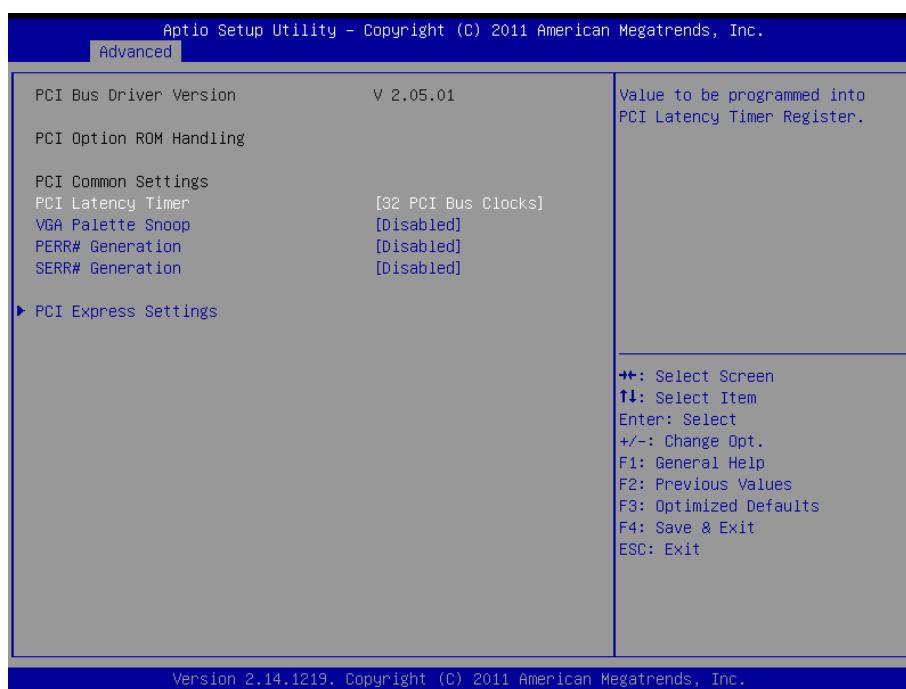
3.6.2 Advanced BIOS settings

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



Item	Options	Description
PCI ROM Priority	Legacy ROM[Default] EFI Compatible ROM	In case of multiple Option ROMs (Legacy and EFI Compatible), specifies what PCI Option ROM to launch.

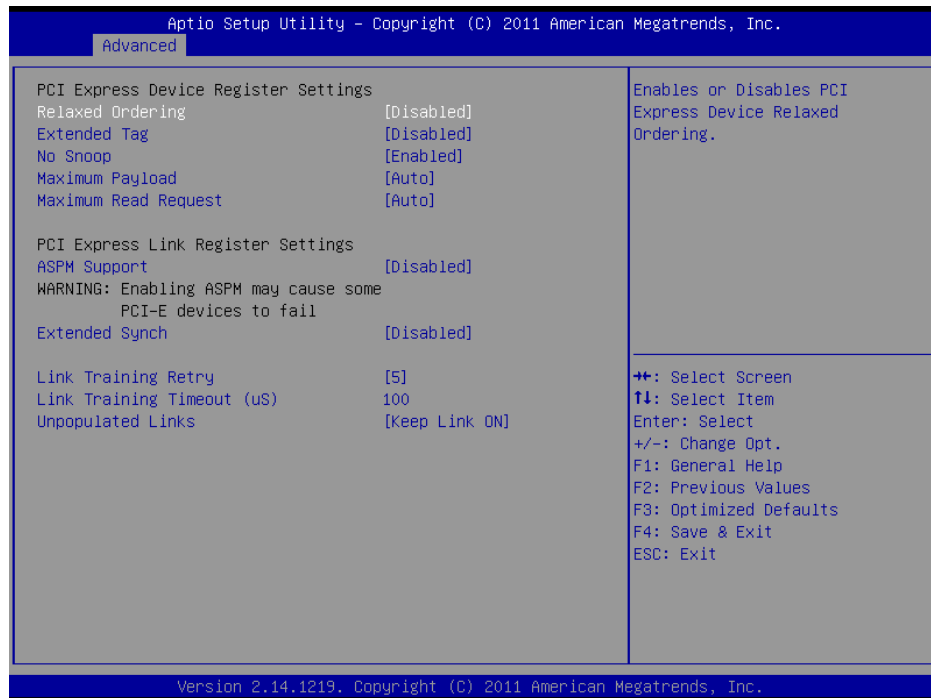
3.6.2.1 PCI Subsystem Settings



EMX-CDV

Item	Options	Description
PCI Latency Timer	32 PCI Bus Clocks[Default] 64 PCI Bus Clocks 96 PCI Bus Clocks 128 PCI Bus Clocks 160 PCI Bus Clocks 192 PCI Bus Clocks 224 PCI Bus Clocks 248 PCI Bus Clocks	Value to be programmed into PCI Latency Timer Register.
VGA Palette Snoop	Enabled Disabled[Default]	Enables or Disables VGA Palette Registers Snooping.
PERR# Generation	Enabled Disabled[Default]	Enables or Disables PCI Device to Generate PERR#
SERR# Generation	Enabled Disabled[Default]	Enables or Disables PCI Device to Generate SERR#
PCI Express Settings	Change PCI Express Devices Settings.	

3.6.2.1.1 PCI Express Settings

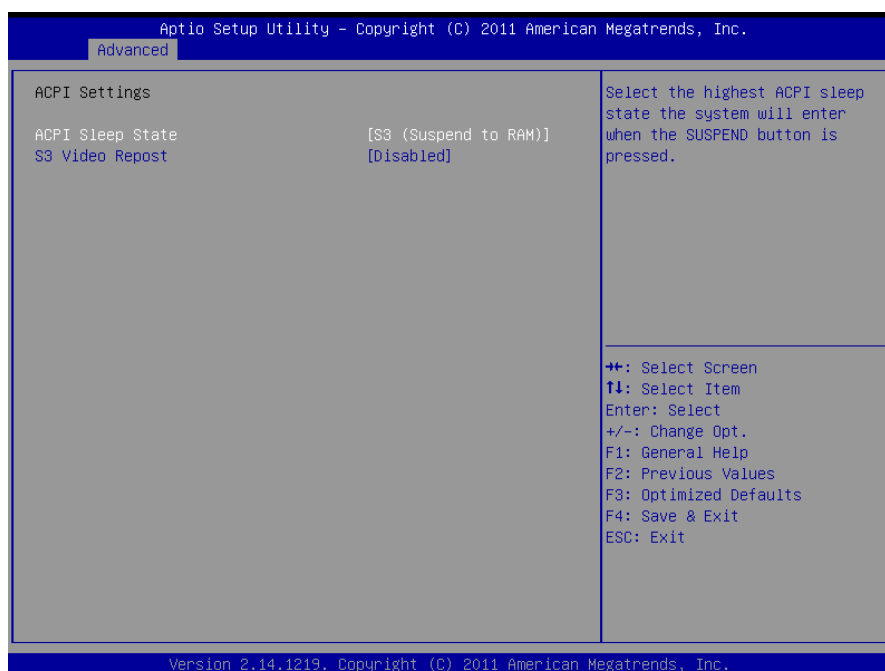


Item	Options	Description
Relaxed Ordering	Enabled Disabled[Default]	Enables or Disables PCI Express Device Relaxed Ordering.
Extended Tag	Enabled Disabled[Default]	If ENABLED allows Device to use 8-bit Tag field as a requester.
No Snoop	Enabled[Default] Disabled	Enables or Disables PCI Express Device No Snoop option.
Maximum Payload	Auto[Default] 128 Bytes 256 Bytes 512 Bytes 1024 Bytes 2048 Bytes	Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.

	4096 Bytes	
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 the ASPM Level: Force L0s-Force all links to L0s State: AUTO – BIOS auto configure: DISABLE – Disables ASPM.
Extended Synch	Enabled Disabled[Default]	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	Defines number of Microseconds software will before polling 'Link Training' bit in Link Status register. Value range from 10 to 1000 uS.
Unpopulated Links	Keep Link ON[Default] Disable Link	In order to save power, software will disable unpopulated PCI Express links, if this option set to 'Disable Link'.

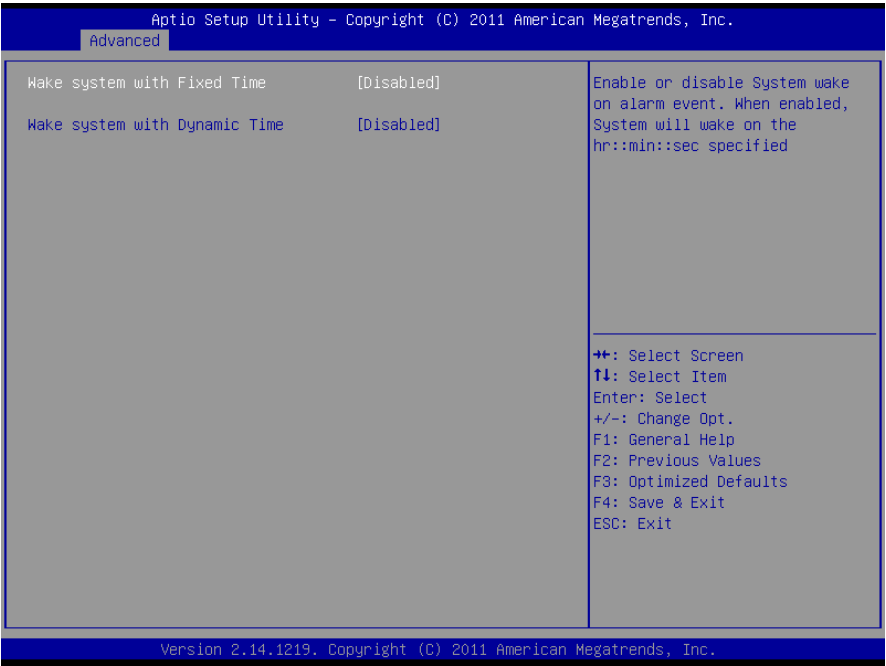
3.6.2.2 ACPI Settings

You can use this item to set up ACPI Configuration.



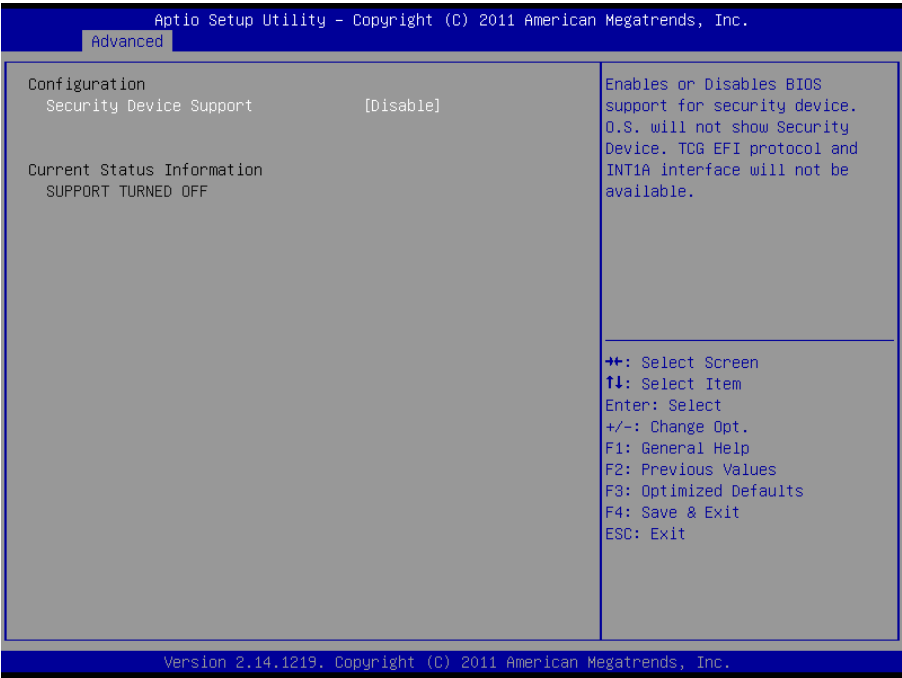
Item	Options	Description
ACPI Sleep State	Suspend Disabled S1 (CPU Stop Clock), S3 (Suspend to RAM) [Default]	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
S3 Video Repost	Enabled Disabled[Default]	Enable or Disable S3 Video Repost

3.6.2.3 S5 RTC Wake settings



Item	Options	Description
Wake system with Fixed Time	Enabled Disabled[Default]	Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified.
Wake system with Dynamic Time	Enabled Disabled[Default]	Enable or disable wake on alarm event. When enabled, System will wake on the current time + Increase minutes (s)

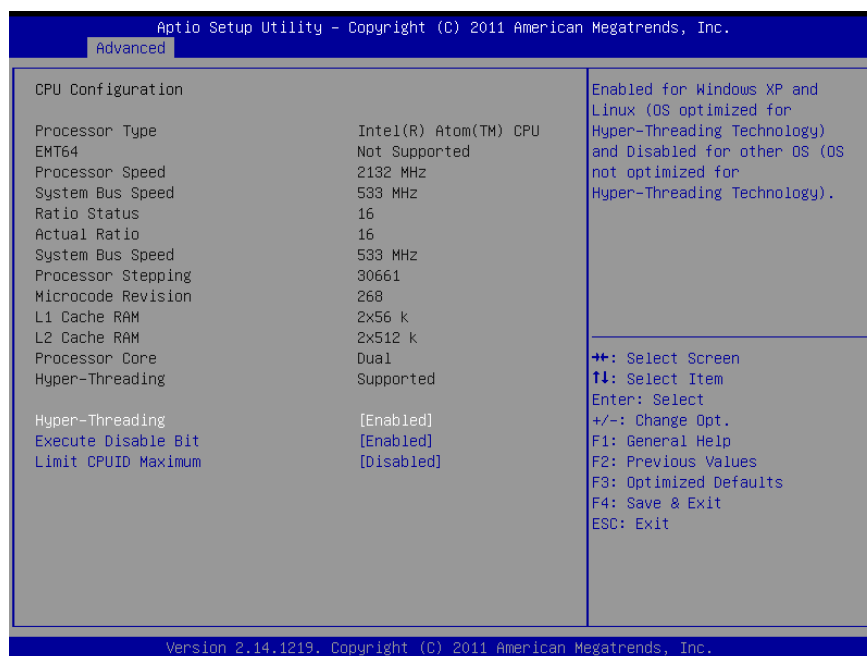
3.6.2.4 Trusted Computing



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

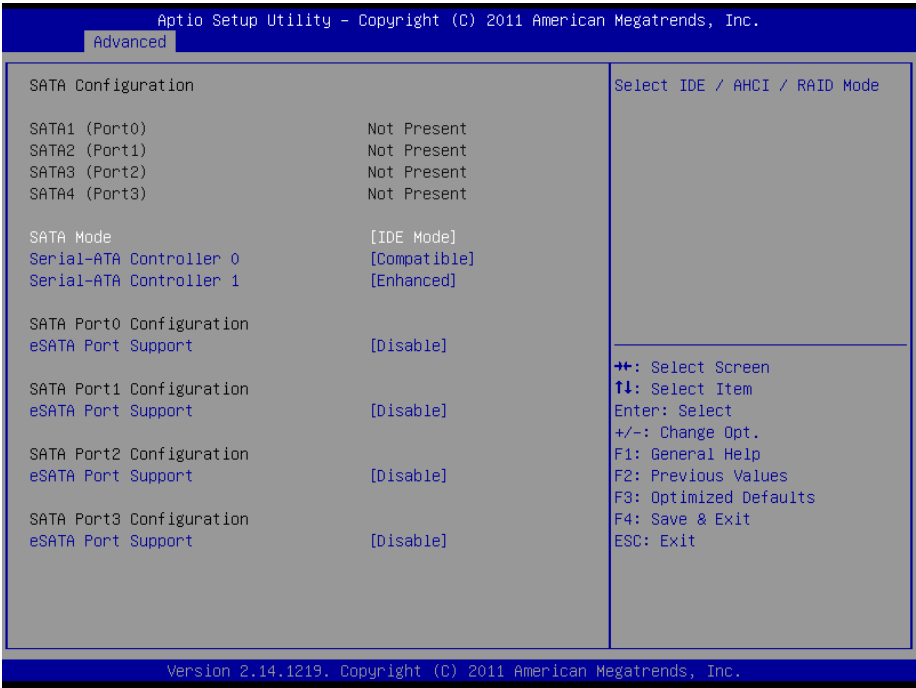
3.6.2.5 CPU Configuration

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



Item	Options	Description
Hyper-Threading	Enabled Disabled[Default]	Hyper Threading Technology Supported / Not-Supported in this processor.
Execute Disable Bit	Enabled Disabled[Default]	XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3).
Limit CPUID Maximum	Enabled Disabled[Default]	Disabled for Windows XP.

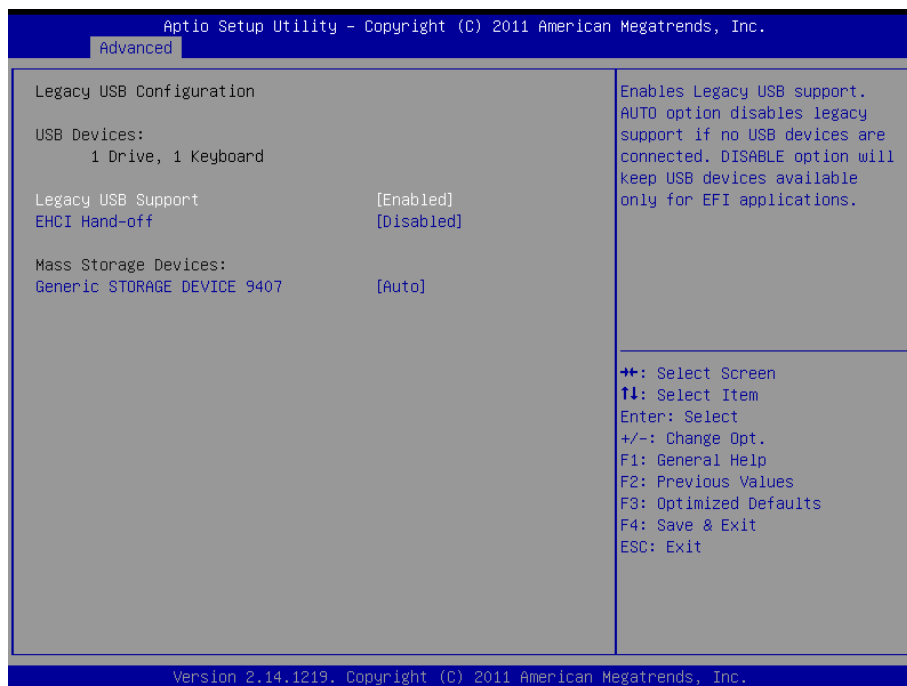
3.6.2.6 SATA Configuration



Item	Options	Description
SATA Mode	Disabled IDE Mode [Default] ACHI Mode RAID Mode	Select IDE/ AHCI/ RAID Mode.
Serial-ATA Controller 0	Enabled Disabled Compatible [Default]	Enable/ Disable Serial ATA Controller 0.
Serial-ATA Controller 1	Enabled [Default] Disabled	Enable/ Disable Serial ATA Controller 1.
eSATA Port Support	Enabled Disabled [Default]	eSATA Port Support.

3.6.2.7 Legacy USB Configuration

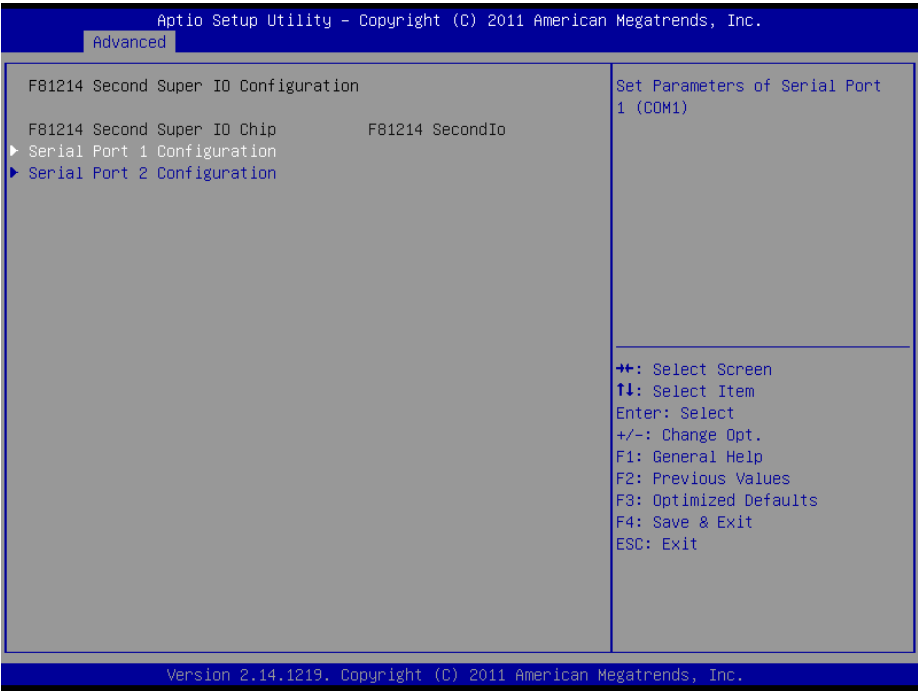
The USB configuration menu is used to read USB configuration information and configure USB.



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.
ECHI 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.
Generic STORAGE DEVICE 9407	Auto[Default] Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. 'AUTO' enumerates devices less than 530MB as floppies. Forced FDD option can be used to force HDD formatted drive to boot as FDD (e.g. ZIP drive).

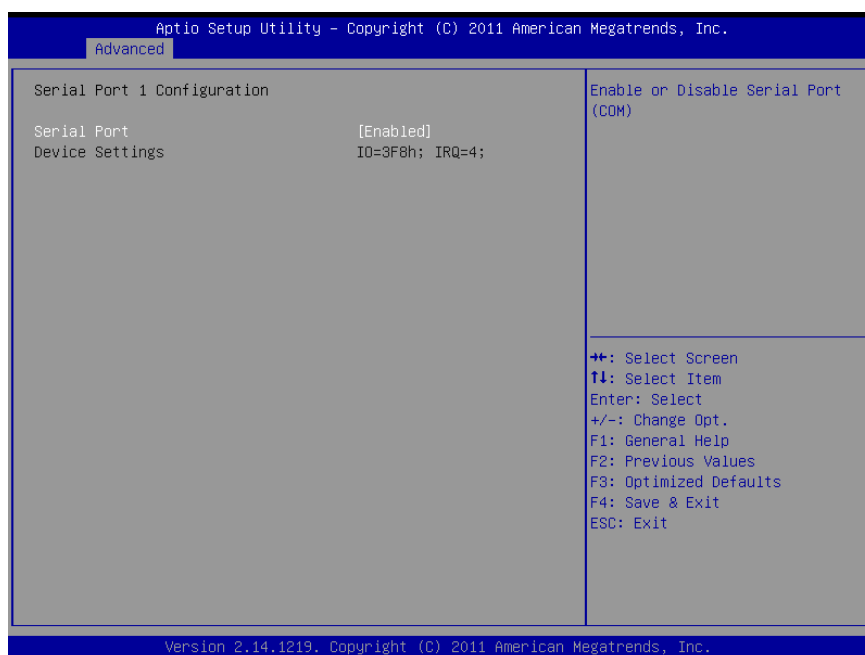
3.6.2.8 F81214 Second Super IO Configuration

You can use this item to set up or change the F81214 Second Super IO configuration for serial ports. Please refer to 3.6.2.8.1 and 3.6.2.8.2 for more information.



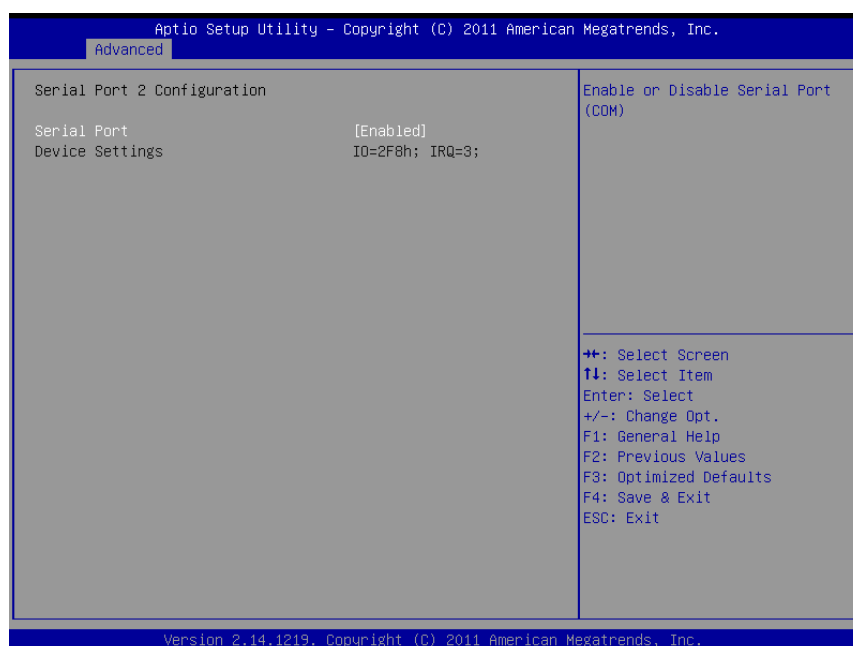
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COM1).
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COM2).

3.6.2.8.1 Serial Port 1 Configuration



Item	Option	Description
Serial Port	Enabled Disabled[Default]	Enable or Disable Serial Port (COM).

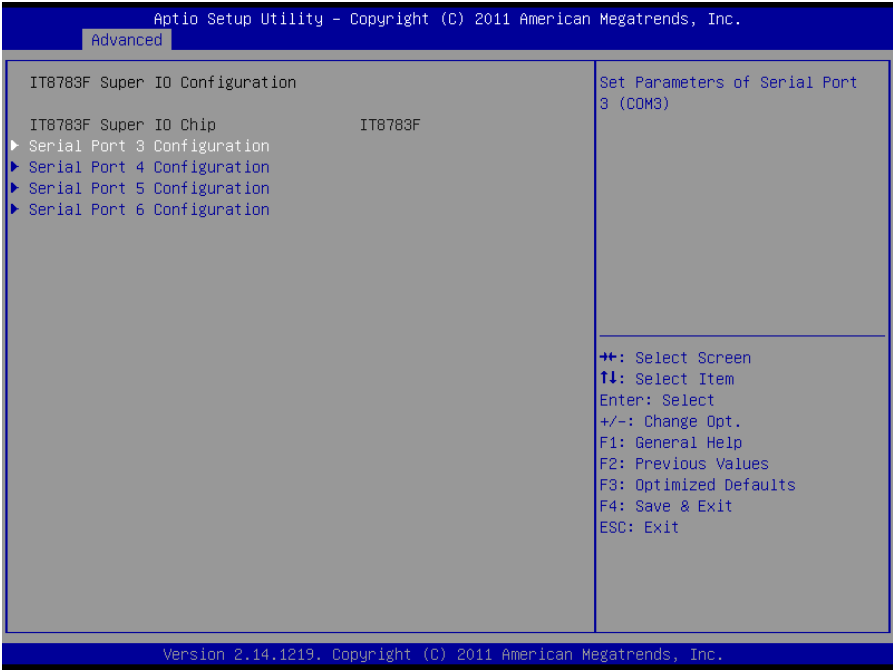
3.6.2.8.2 Serial Port 2 Configuration



Item	Option	Description
Serial Port	Enabled Disabled[Default]	Enable or Disable Serial Port (COM).

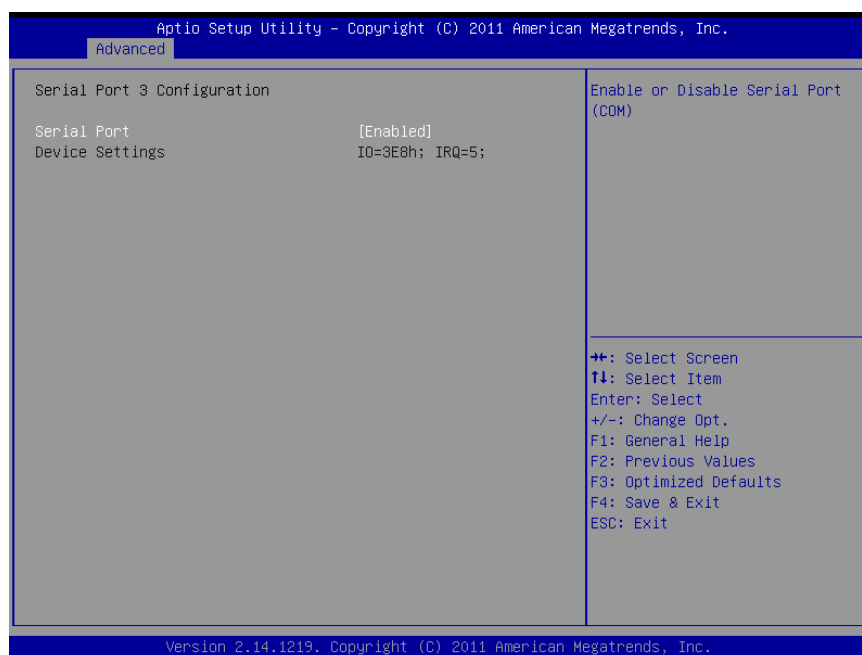
3.6.2.9 IT8783F Super IO Configuration

You can use this item to set up or change the IT8783F Super IO configuration for serial ports. Please refer to 3.6.2.9.1, 3.6.2.9.2, 3.6.2.9.3 and 3.6.2.9.4 for more information.



Item	Description
Serial Port 3 Configuration	Set Parameters of Serial Port 3 (COM3).
Serial Port 4 Configuration	Set Parameters of Serial Port 4 (COM4).
Serial Port 5 Configuration	Set Parameters of Serial Port 5 (COM5).
Serial Port 6 Configuration	Set Parameters of Serial Port 6 (COM6).

3.6.2.9.1 Serial Port 3 Configuration



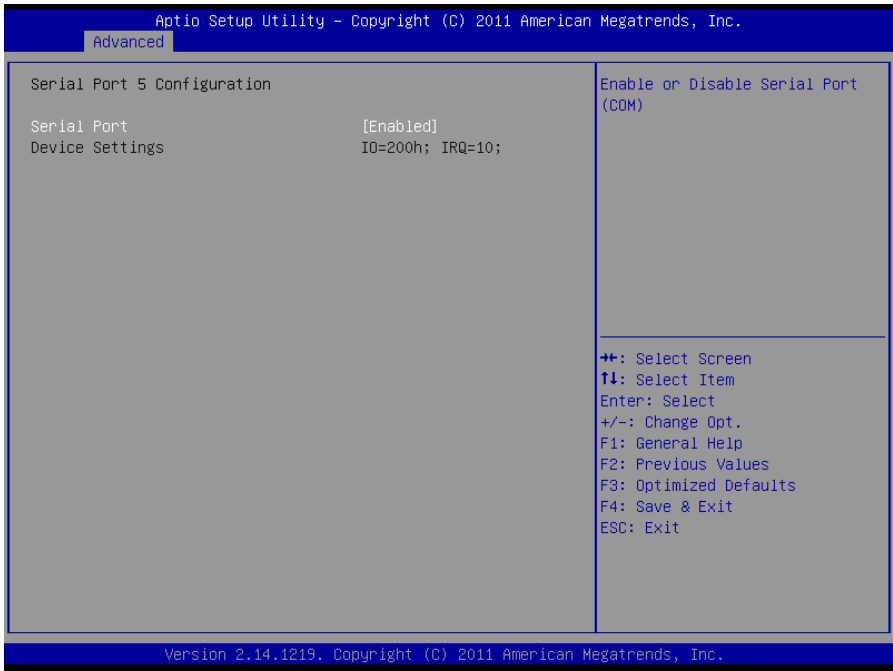
Item	Option	Description
Serial Port	Enabled Disabled[Default]	Enable or Disable Serial Port (COM).

3.6.2.9.2 Serial Port 4 Configuration



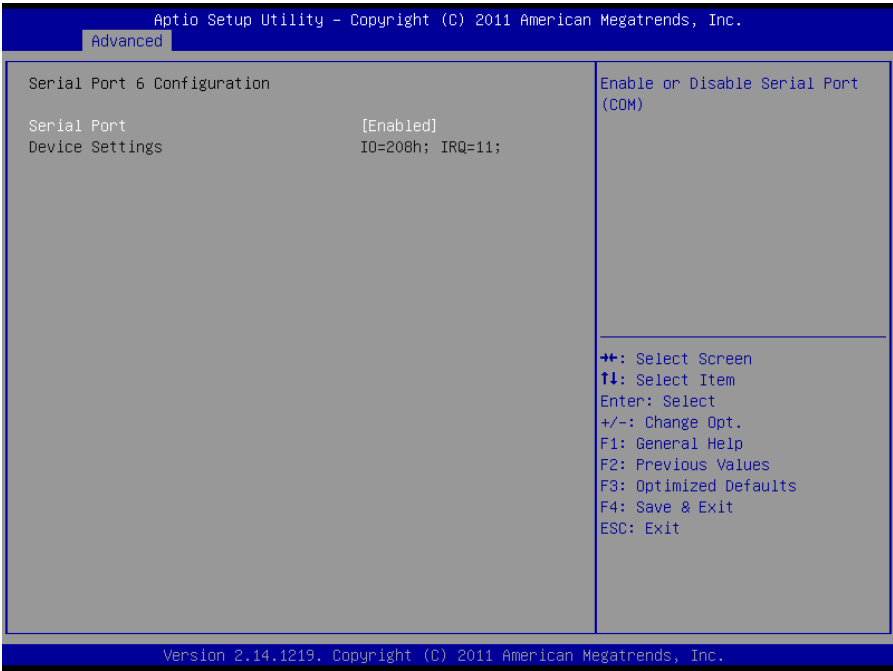
Item	Option	Description
Serial Port	Enabled Disabled[Default]	Enable or Disable Serial Port (COM).

3.6.2.9.3 Serial Port 5 Configuration



Item	Option	Description
Serial Port	Enabled Disabled[Default]	Enable or Disable Serial Port (COM).

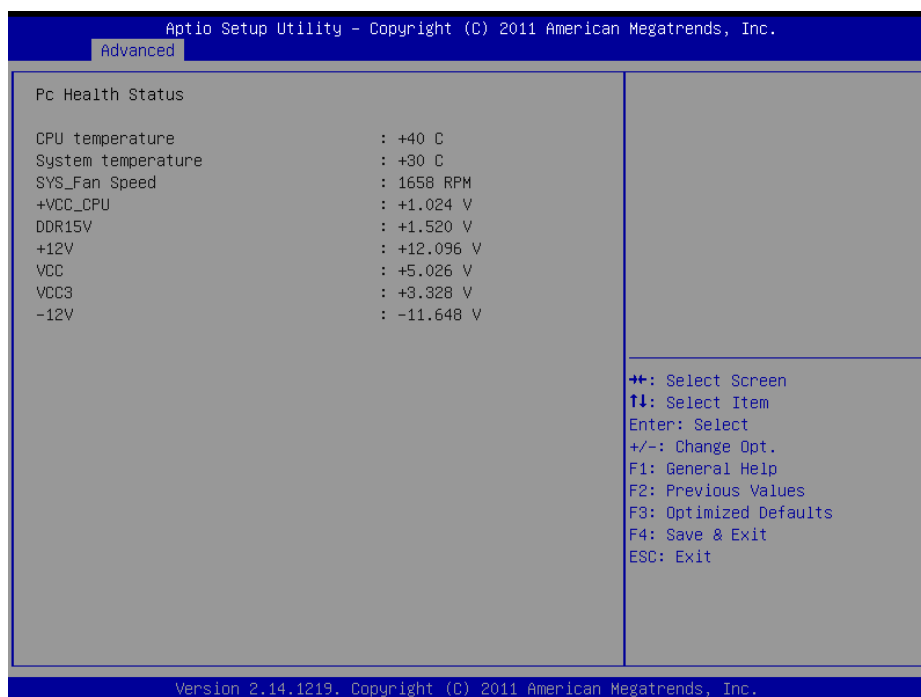
3.6.2.9.4 Serial Port 6 Configuration



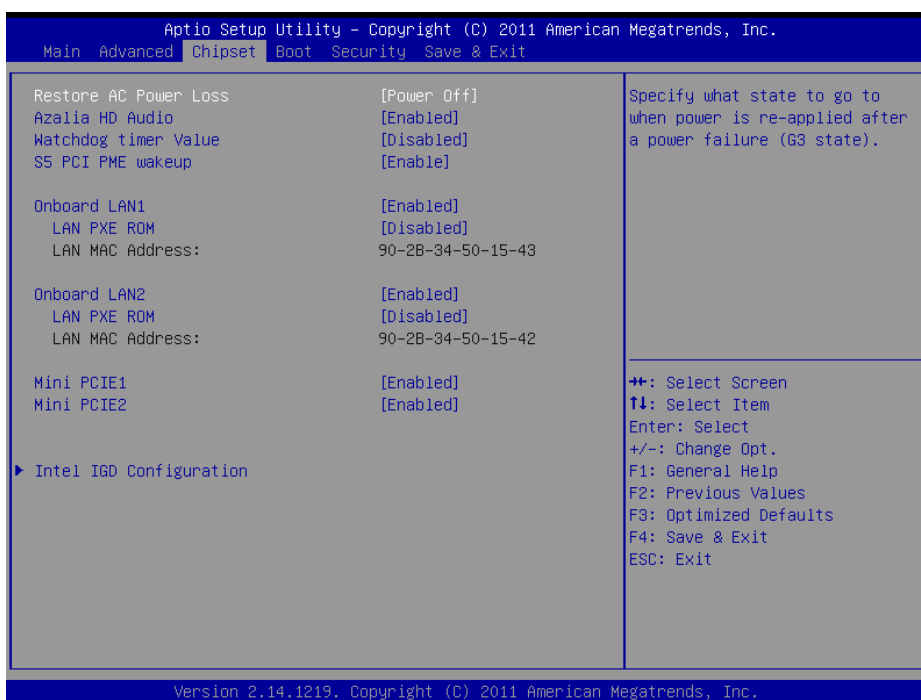
Item	Option	Description
Serial Port	Enabled Disabled[Default]	Enable or Disable Serial Port (COM).

3.6.2.10 IT8783F H/W Monitor

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



3.6.3 Advanced Chipset Features



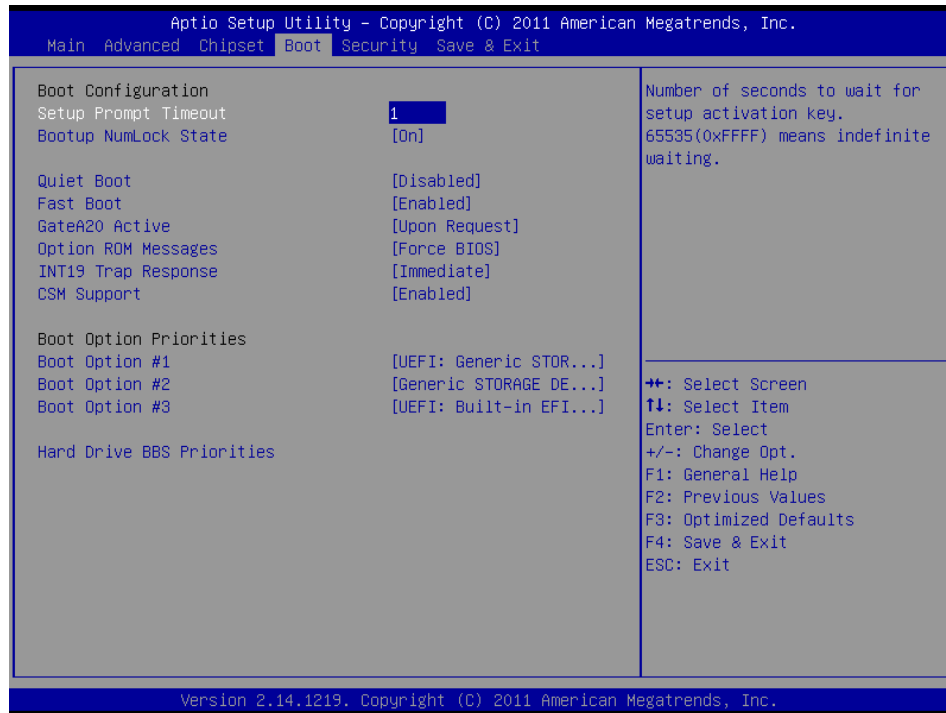
Item	Options	Description
Restore AC Power Loss	Power Off[Default] Power On Last State	Specify what state to go to when power is re-applied after a power failure (G3 state).
Azalia HD Audio	Enabled[Default] Disabled	Enable / Disable Azalia HD Audio.
Watchdog timer Value	Disabled [Default] 20 seconds 30 seconds 40 seconds 50 seconds 1 minute 2 minute 3 minute 4 minute 5 minute 6 minute 7 minute 8 minute 9 minute 10 minute	Watchdog timer Value.
S5 PCI PME wakeup	Enabled[Default] Disabled	Enable / Disable PCI PME wakeup from S5.
Onboard LAN1	Enabled[Default] Disabled	Enable or Disable the PCI Express Ports in the Chipset.
LAN PXE ROM	Enabled[Default] Disabled	Enable or Disable Boot Option for Legacy Network Devices.
Onboard LAN2	Enabled[Default] Disabled	Enable or Disable the PCI Express Ports in the Chipset.
LAN PXE ROM	Enabled[Default] Disabled	Enable or Disable Boot Option for Legacy Network Devices.
Mini PCIE1	Enabled[Default] Disabled	Enable or Disable the PCI Express Ports in the Chipset.
Mini PCIE2	Enabled[Default] Disabled	Enable or Disable the PCI Express Ports in the Chipset.
Intel IGD Configuration	Config Intel IGD Settings.	

3.6.3.1 Intel IGD Configuration



Item	Options	Description
IGFX – Boot Type	VBIOS Default[Default] CRT EFP CRT+EFP	Select the Video Device which will be activated during POST. This has no effect if external graphics present.
Fixed Graphics Memory Size	128MB[Default] 256MB	Configure Fixed Graphics Memory Size.
LVDS Backlight PWM	0% [Default] 25% 50% 75% 100%	LVDS Backlight PWM Configuration.
Panel ID	1024x768 1ch 24bit[Default] 800x600 1ch 1024x768 1ch 18bit 1024x600 1ch 1280x800 1ch 1920x1200 2ch 640x480 1ch 800x480 1ch 1280x1024 2ch 1440x900 2ch 1600x1200 2ch 1366x768 1ch 1920x1080 2ch 1680x1050 2ch	Panel ID.

3.6.4 Boot settings



Item	Option	Description
Setup Prompt Timeout	1~65535	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On Off[Default]	Select the keyboard NumLock state
Quiet Boot	Enabled Disabled[Default]	Enables or Disables Quiet Boot Option
Fast Boot	Enabled Disabled[Default]	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
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.
CSM Support	Disabled Enabled[Default] Auto	Enable/Disable CSM Support. If Auto is selected, based on OS, CSM will be enabled/disabled automatically.
Boot Option #1/2/3	Sets the system boot order	

3.6.5 Security

Use the Security menu to set system and user password.



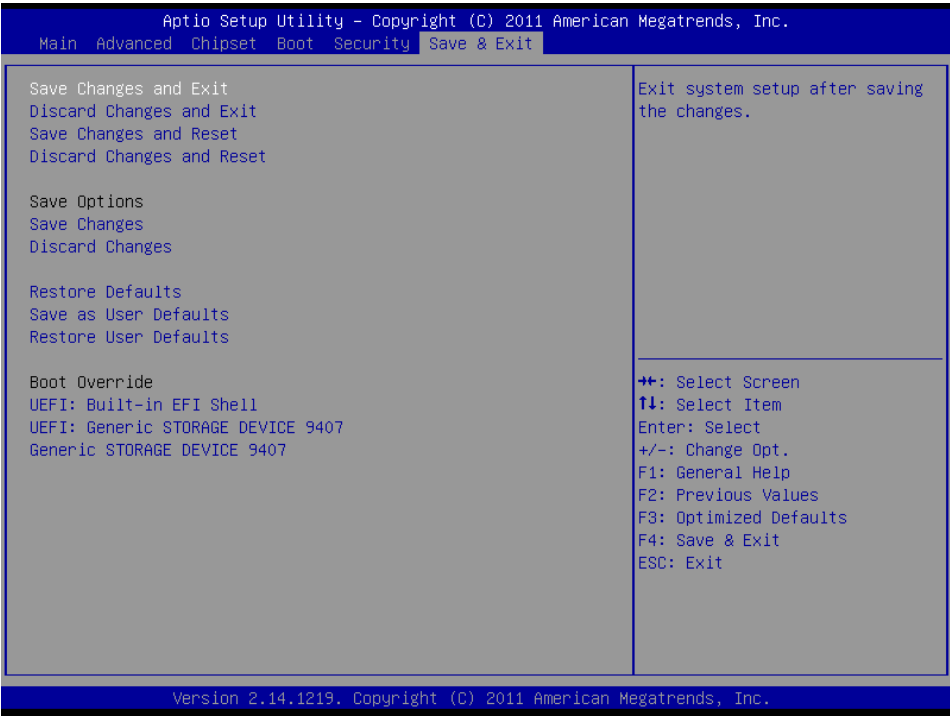
3.6.5.1 Administrator Password

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

3.6.5.2 User Password

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

3.6.6 Save & Exit



3.6.6.1 Save Changes and Exit

Use the save changes and reset option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.



3.6.6.2 *Discard Changes and Exit*

Use the Discard changes and Exit option to exit the system without saving the changes made to the BIOS configuration setup program.

3.6.6.3 *Save Changes and Reset*

Any changes made to BIOS settings are stored in NVRAM. The setup program then exits and reboots the controller.

3.6.6.4 *Discard Changes and Reset*

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

3.6.6.5 *Save Changes*

Changes made to BIOS settings during this session are committed to NVRAM. The setup program remains active, allowing further changes.

3.6.6.6 *Discard Changes*

Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The BIOS setup continues to be active.

3.6.6.7 *Restore Defaults*

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

3.6.6.8 *Save as user defaults*

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

3.6.6.9 *Restore user defaults*

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

3.6.6.10 *Boot override*

This option lists all possible bootable devices and allows the user to override the **Boot**

EMX-CDV

Option Priorities list for the current boot. If no changes have been made to the BIOS setup options, the system will continue booting to the selected device without first rebooting. If BIOS setup options have been changed and saved, a reboot will be required and the boot override selection will not be valid.

4. Mechanical Drawing

