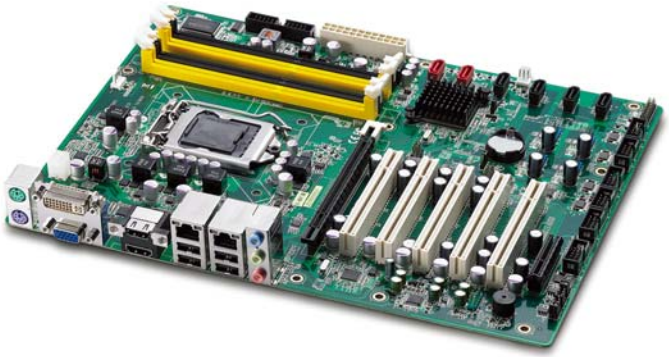
M-342

ATX Intel® Core™ i7/i5/i3
Industrial Motherboard

User's Manual



Manual Rev.: 2.01

Revision Date: March 28, 2012

Part No: 50-1Z087-1010

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Revision History

Revision	Release Date	Description of Change(s)
2.00	2011/12/05	Initial release
2.01	2012/03/28	Add CLCMOS pin header to Board Layout; correct COM6 Mode Jumper Settings

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Preface

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Using this Manual

Audience and Scope

The M-342 User's Manual is intended for hardware technicians and systems operators with knowledge of installing, configuring and operating industrial grade systems.

Manual Organization

This manual is organized as follows:

Preface: Presents important copyright notifications, disclaimers, trademarks, and associated information on the proper understanding and usage of this document and its associated product(s).

Chapter 1, Introduction: Introduces the M-342, its features, applications, and specifications, including functional descriptions and board layout.

Chapter 2, Hardware Information: Provides technical information on connectors and jumpers for configuring the M-342.

Chapter 3, Getting Started: Illustrates how to install components on the M-342 such as CPU, heatsink, and memory modules.

Chapter 4, Driver Installation: Provides information on how to install the M-342 device drivers.

Chapter 5, BIOS Setup: Describes basic navigation for the AMI EFI BIOS setup utility.

Appendix A, Watchdog Timer: Presents information on implementing the watchdog timer.

Appendix B, System Resources: Presents information on I/O mapping, IRQ routing, and resource allocation.

Important Safety Instructions: Presents safety instructions all users must follow for the proper setup, installation and usage of equipment and/or software.

Getting Service: Contact information for ADLINK's worldwide offices.

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Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.



NOTE: Additional information, aids, and tips that help users perform tasks.



CAUTION: Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.



WARNING: Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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1 Introduction

1.1 Overview

The ADLINK M-342 is an ATX industrial motherboard supporting the 2nd Generation Intel® Core™ i7/i5/i3 and Pentium® processors in LGA1155 package to deliver a scalable high performance platform for a wide array of industrial applications. The M-342 supports 32nm process CPUs at up to 3.4 GHz with integrated graphics and memory controllers, Direct Media Interface (DMI) and Flexible Display Interface (FDI) connectivity to the Intel® Q67 Express Chipset. Dual-channel DDR3 1066/1333 MHz memory is supported up to a maximum of 16 GB in four DIMM slots.

These advanced features, coupled with integrated graphics, one PCI Express x16 slot, one PCI Express x4 slot, five PCI slots, dual PCI Express-based Gigabit Ethernet, SATA 6 Gb/s dual HDMI ports and audio interfaces make the M-342 ideal for vision and automation control, medical, test & measurement, and telecom applications requiring a high-performance, easy-to-deploy and reliable mainboard.

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1.2 Features

- ATX form factor (305 mm x 244 mm)
- Supports Intel® Core™ i7/i5/i3 and Pentium® processors in LGA1155 package
- Integrated Intel® HD Graphics
- One PCIe x16 slot, one PCIe x4 slot, five PCI slots
- Dual Gigabit Ethernet
- 12x USB 2.0 ports (8x onboard, 4x on faceplate)
- 2x SATA 6 Gb/s ports, 4x SATA 3 Gb/s ports
- VGA, DVI-D, 2x HDMI Type A ports
- 5x RS-232 + 1x RS-232/422/485
- Watchdog Timer, Hardware Monitor
- Realtek ALC892 HD audio codec
- Parallel Port
- 2x Mini-DIN for PS/2 keyboard/mouse
- RoHS compliant

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1.3 Specifications

System	
CPU	• Intel® Core™ i7-2600, 3.4 GHz, 8M Cache, 95W TDP • Intel® Core™ i5-2400, 3.1 GHz, 6M Cache, 95W TDP • Intel® Core™ i3-2120, 3.3 GHz, 3M Cache, 65W TDP • Intel® Pentium® G850, 2.9GHz, 3M Cache, 65W TDP
Chipset	Intel® Q67 Platform Controller Hub
Memory	Four 240-pin DIMM sockets support dual-channel 1066/1333 MHz DDR3 (up to 16GB)
BIOS	AMIBIOS in 32-Mbit SPI Flash
Audio	Realtek ALC892 HD codec Supports line-in, line-out and mic-in
Watch Dog Timer	1-255 second or 1-255 minute programmable and can generate system reset.
Hardware Monitor	CPU/System temperature, fan speed and onboard DC voltage
Operating Systems	• Windows XP, 7 32/64-bit • Fedora 14 • Red Hat Enterprise Linux 5
I/O Interfaces	
Serial ATA	• 2x SATA 6 Gb/s ports • 4x SATA 3 Gb/s ports • Supports RAID 0/1/5/10
Onboard I/O	• 4x USB 2.0 pin headers (8 ports) • 5x RS-232 + 1x RS-232/422/485 (COM6) • 1x parallel port • 1x front panel pin header
Rear I/O	• 2x Gigabit Ethernet RJ45 ports • 4x USB 2.0 ports • 1x VGA connector • 1x DVI-D port • 2x HDMI Type A ports • 2x PS2 keyboard/mouse ports • 3x audio jacks (line-in, line-out and mic-in)
Expansion Slots	• 1x PCIe x16 slot • 1x PCIe x4 slot • 5x PCI slots

Table 1-1: M-342 General Specifications

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Display	
Graphics	Integrated Intel® HD Graphics
VGA	Dsub-15 connector, up to 2048x1536 @ 75 Hz
DVI-D	DVI-D connector, up to 1920x 1200 @ 60 Hz
HDMI	HDMI Type A connector, up to 1920x 1200 @ 60 Hz
Ethernet	
Controller	• Dual Gigabit Ethernet (Intel® 82579LM Gigabit Ethernet PHY, Intel® 82574L Gigabit Ethernet Controller) • Supports Preboot Execution Environment (PXE), Wake-On-LAN, and Intel® AMT 7.0 on LAN1 (82579LM)
Ports	Two RJ-45 Ethernet ports
Mechanical and Environment	
Form Factor	ATX Industrial Motherboard
Dimensions	305 mm x 244 mm (L x W)
Operating Temp.	0ºC to 60ºC
Storage Temp.	-20ºC to 80ºC
Rel. Humidity	10% to 90% non-condensing
Safety	CE, FCC Class A

Table 1-1: M-342 General Specifications

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1.4 Block Diagram

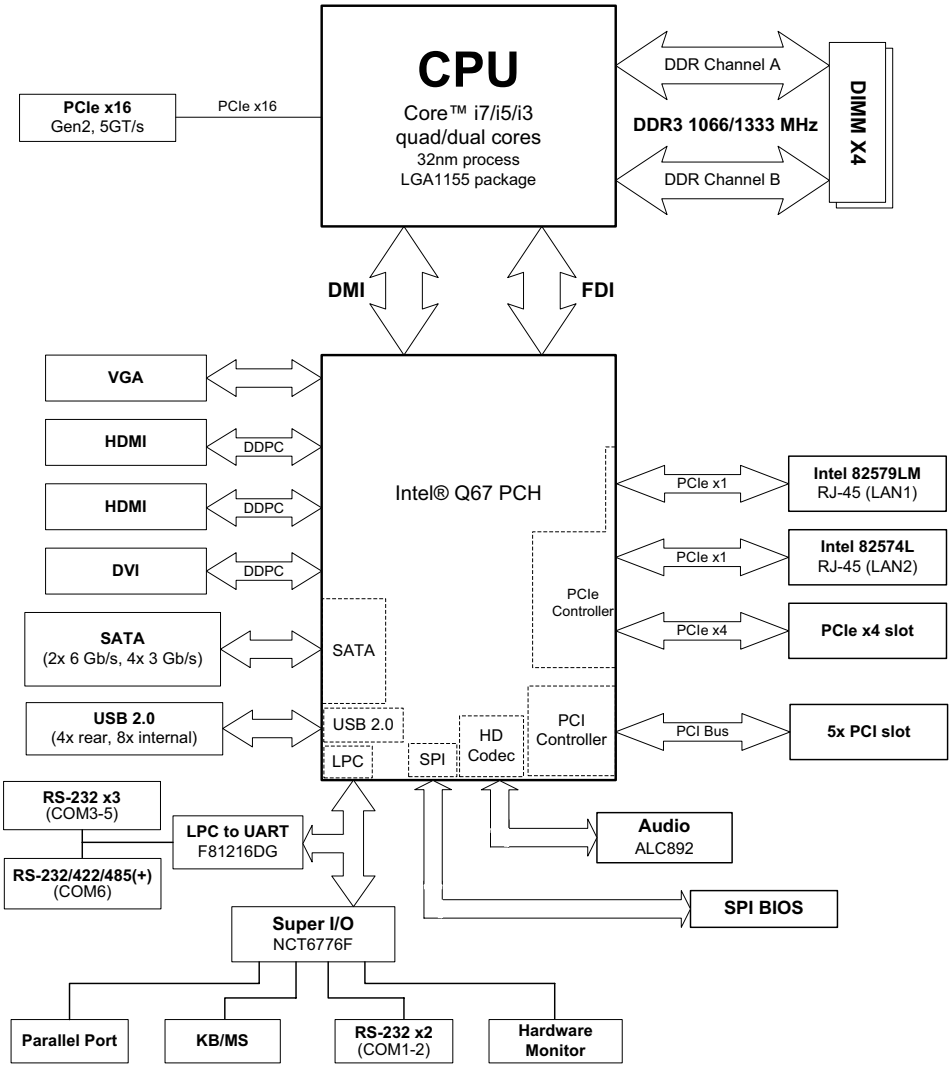


Figure 1-1: M-342 Block Diagram

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1.5 Functional Description

Processor Support

The M-342 is an industrial motherboard supporting the 2nd generation Intel® Core™ processor family (Intel® Core™ i7/i5/i3) in LGA1155 socket. An integrated memory controller supports dual channel 1066/1333 MHz DDR3 and Intel® HD Graphics is integrated onboard the CPU. The CPU provides a PCI Express x16 for external graphics or expansion. Direct Media Interface (DMI) and Flexible Display Interface (FDI) provide connectivity to the Intel® Q67 Express Chipset.

Intel® Q67 Express Chipset

The Intel® BD82Q67 Platform Controller Hub (PCH) combines with the processor to provide a compact yet powerful 2-chip solution. Direct Media Interface (DMI) is the chip-to-chip connection between the processor and PCH. Intel® Flexible Display Interface carries display traffic from the integrated graphics in the processor to the legacy display connectors in the PCH. The PCH supports all other required interfaces including PCI Express, SATA 6 Gb/s, USB 2.0, PCI, LPC, and SPI.

Dual-Channel DDR3 Memory

To meet the requirements of memory-intensive applications, the M-342 has a dual-channel memory architecture supporting DDR3 1066/1333 MHz DIMMs. The key advantages of DDR3 are the higher bandwidth and the increase in performance at lower power than DDR2. DDR3 memory technology meets the requirements of the latest 3D graphics, multimedia, and network application, and boosts system performance by eliminating bottlenecks.

Gigabit Ethernet

The M-342 utilizes an Intel® 82579LM Gigabit Ethernet PHY and Intel® 82574L Gigabit Ethernet Controller connected to the PCI-E bus of the Q67 PCH. Intel® AMT 7.0 (82579LM on LAN1), Wake-on-LAN and PXE are supported.

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Serial ATA

The M-342 provides two SATA 6 GB/s ports and four SATA 3 GB/s ports. Intel® Rapid Storage Technology supports AHCI and RAID 0/1/5/10 functionality.

Hardware monitoring

A built-in, proactive hardware monitoring system in the Super I/O monitors the CPU temperature, system fan speed, and voltage levels to prevent overheating and/or component damage, effect timely failure detection, and ensure stable supply of current for critical components.

Watchdog Timer

The watchdog timer (WDT) monitors system operations based on user-defined configurations. The WDT can be programmed for different time-out periods, such as from 1 to 255 seconds or from 1 to 255 minutes. The WDT generates a reset signal, then a reset request, after failure to strobe it within the programmed time period. A register bit may be enabled to indicate if the watchdog timer caused the reset event. The WDT register is cleared during the power-on sequence to enable the operating system to take appropriate action when the watchdog generates a reboot.

Intel® Active Management Technology

Intel® Active Management Technology (Intel® AMT) is hardware-based technology for remotely managing and securing PCs out-of-band. Intel® AMT includes hardware-based remote management, security, power-management, and remote-configuration features. Intel® AMT allows remote access to a system when traditional techniques and methods are not available.

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1.6 Power Consumption

Test Configuration	
Memory	4x Transcend DDR3-1333 2G (Hynix H5TQ2G83BFR)
Graphics	Intel® Graphics Media Accelerator HD (integrated)
Storage	WD WD1002FAEX SATA 3 Gb/s 1TB
Power Supply	FSP46060PLN 460W

Intel® Pentium® Processor G850 (3M Cache, 2.90 GHz)

DOS (idle)				
Power Req.	+12V	+5V	+3.3V	Total
Current (A)	1.80	0.88	1.64	—
Power (W)	21.60	4.40	5.41	31.4
Windows XP, logon screen (idle)				
Power Req.	+12V	+5V	+3.3V	Total
Current (A)	1.04	0.86	1.53	—
Power (W)	12.48	4.30	5.05	21.9
Windows XP, Total System Stress (BurnIn Test)				
Power Req.	+12V	+5V	+3.3V	Total
Current (A)	3.30	1.07	1.74	—
Power (W)	39.60	5.35	5.74	50.7

Table 1-2: Pentium® Processor G850 Power Consumption

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Intel® Core™ i3-2120 Processor (3M Cache, 3.30 GHz)

DOS (idle)				
Power Req.	+12V	+5V	+3.3V	Total
Current (A)	2.68	0.89	1.60	—
Power (W)	32.16	4.45	5.28	41.9
Windows XP, logon screen (idle)				
Power Req.	+12V	+5V	+3.3V	Total
Current (A)	0.98	0.49	1.47	—
Power (W)	11.76	2.45	4.85	19.1
Windows XP, Total System Stress (BurnIn Test)				
Power Req.	+12V	+5V	+3.3V	Total
Current (A)	3.55	1.50	1.70	—
Power (W)	42.6	7.50	5.61	55.7

Table 1-3: Core™ i3-2120 Processor Power Consumption

Intel® Core™ i5-2400 Processor (6M Cache, 3.10 GHz)

DOS (idle)				
Power Req.	+12V	+5V	+3.3V	Total
Current (A)	3.72	0.89	1.71	—
Power (W)	44.6	4.45	5.64	54.7
Windows XP, logon screen (idle)				
Power Req.	+12V	+5V	+3.3V	Total
Current (A)	1.00	0.50	1.51	—
Power (W)	12.00	2.50	4.98	19.5
Windows XP, Total System Stress (BurnIn Test)				
Power Req.	+12V	+5V	+3.3V	Total
Current (A)	4.92	1.50	1.78	—
Power (W)	59.04	7.50	5.87	72.4

Table 1-4: Core™ i5-2400 Processor Power Consumption

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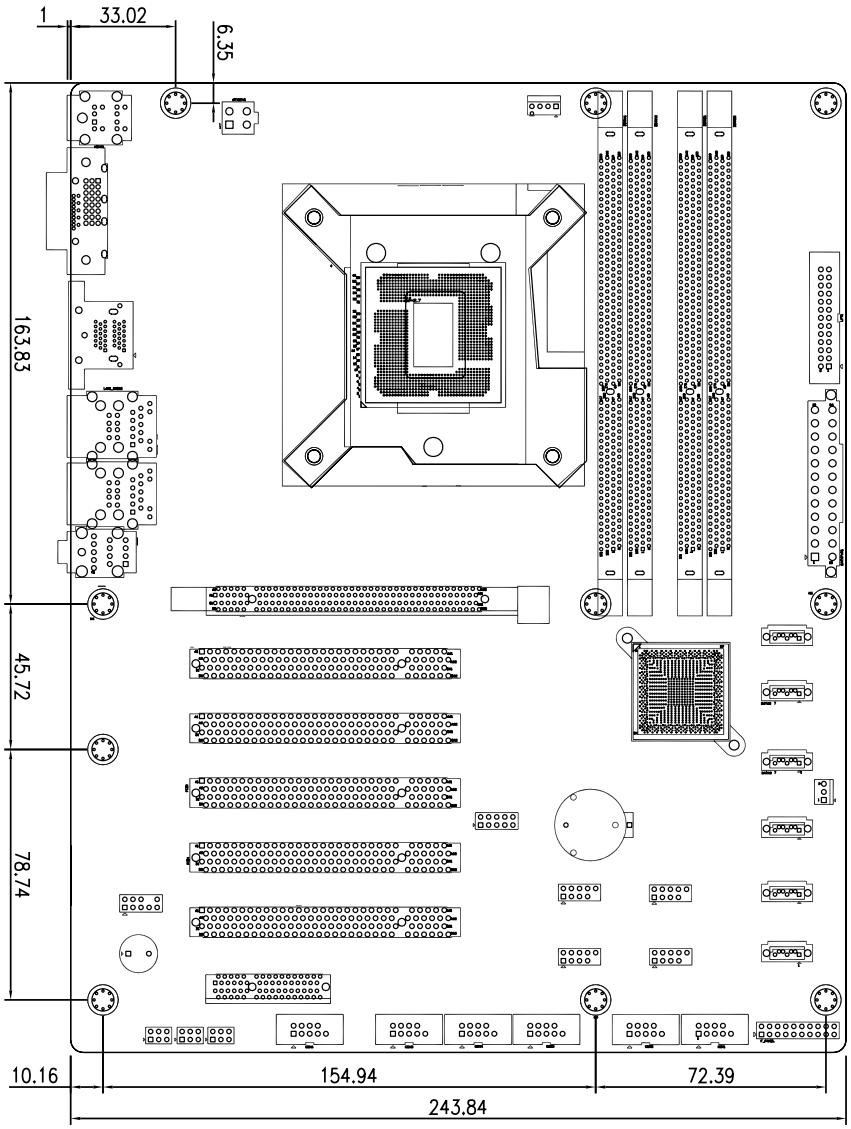
Intel® Core™ i7-2600 Processor (8M Cache, 3.40 GHz)

DOS (idle)				
Power Req.	+12V	+5V	+3.3V	Total
Current (A)	4.82	0.89	1.75	—
Power (W)	57.8	4.45	5.78	68.1
Windows XP, logon screen (idle)				
Power Req.	+12V	+5V	+3.3V	Total
Current (A)	1.06	0.51	1.54	—
Power (W)	12.7	2.55	5.08	20.4
Windows XP, Total System Stress (BurnIn Test)				
Power Req.	+12V	+5V	+3.3V	Total
Current (A)	6.73	1.54	1.86	—
Power (W)	80.76	7.70	6.14	94.6

Table 1-5: Core™ i7-2600 Processor Power Consumption

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1.7 Mechanical Drawings



Dimensions in mm

Figure 1-2: M-342 Board Dimensions

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1.8 Package Contents

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from the dealer before returning any product to ADLINK.

- M-342 ATX Industrial Motherboard
- I/O shield
- SATA cable x2
- 2-port COM cable x1
- Driver CD
- Quick Installation Guide



The M-342 must be protected from static discharge and physical shock. Never remove any of the socketed parts except at a static-free workstation. Use the anti-static bag shipped with the product to handle the board. Wear a grounded wrist strap when installing and/or servicing.

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2 Hardware Information

2.1 Rear I/O Connectors

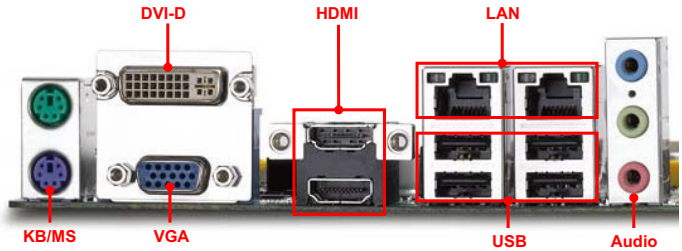
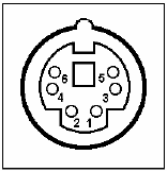


Figure 2-1: M-342 Rear I/O Layout

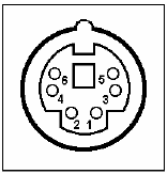
PS/2 Mouse Port (green)

Pin #	Signal	Function
1	MSDATA	Mouse Data
2	NC	not connected
3	GND	Ground
4	+5V	Power
5	CLK	Clock
6	NC	not connected



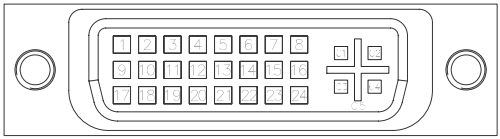
PS/2 Keyboard Port (purple)

Pin #	Signal	Function
1	KBDATA	Keyboard Data
2	NC	not connected
3	GND	Ground
4	+5V	Power
5	CLK	Clock
6	NC	not connected



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DVI-D Connector



Pin #	Signal	Pin #	Signal
1	TMDS Data2-	16	Hot Plug Detect
2	TMDS Data2+	17	TMDS Data0-
3	TMDS Data2/4 Shield	18	TMDS Data0+
4	TMDS Data4-	19	TMDS Data0/5 Shield
5	TMDS Data4+	20	TMDS Data5-
6	DDC Clock	21	TMDS Data5+
7	DDC Data	22	TMDS Clock Shield
8	Analog Vertical Sync	23	TMDS Clock +
9	TMDS Data1-	24	TMDS Clock -
10	TMDS Data1+	C1	NC
11	TMDS Data1/3 Shield	C2	NC
12	TMDS Data3-	C3	NC
13	TMDS Data3+	C4	NC
14	+5 V Power	C5	NC
15	GND		

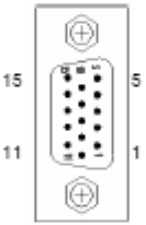
NOTE:

Although the connector has a DVI-I type pinout, pins C1 through C5 are not connected and no VGA signals are supported.

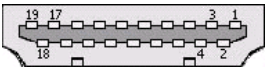
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VGA Connector.

Signal Name	Pin #	Pin #	Signal Name
Red	1	2	Green
Blue	3	4	VCC pull-up
GND	5	6	GND
GND	7	8	GND
VCC	9	10	GND
VCC pull-up	11	12	DDC2B DATA
HSYNC	13	14	VSYNC
DDC2B CLK	15		



HDMI Connector



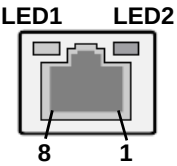
Pin #	Signal	Pin #	Signal
1	TMDS Data2+	2	TMDS Data2 Shield
3	TMDS Data2–	4	TMDS Data1+
5	TMDS Data1 Shield	6	TMDS Data1–
7	TMDS Data0+	8	TMDS Data0 Shield
9	TMDS Data0–	10	TMDS Clock+
11	TMDS Clock Shield	12	TMDS Clock–
13	CEC	14	Reserved
15	SCL	16	SDA
17	DDC/CEC Ground	18	+5 V Power
19	Hot Plug Detect		

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LAN Port (RJ-45)

Refer to the tables below for the LAN port pin and LED definitions.

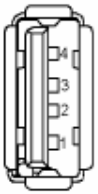
Pin #	10BASE-T/100BASE-TX	1000BASE-T
1	TX+	BI_DA+
2	TX-	BI_DA-
3	RX+	BI_DB+
4	--	BI_DC+
5	--	BI_DC-
6	RX-	BI_DB-
7	--	BI_DD+
8	--	BI_DD-



LED1 (Activity/Link)		LED2 (Speed)	
Status	**Description**	**Status**	**Description**
Off	No Link	Off	10 Mb connection
Orange	Linked	Orange	100 Mb connection
Blinking	Data Activity	Green	1 Gb connection

USB Connectors

Pin #	Signal Name
1	Vcc
2	USB-
3	USB+
4	GND



Audio I/O port

The three-jack audio I/O supports Line-In, Line-Out, and Mic-In functions. The blue Line-In jack onnects to an audio source such as a CD player. The green Line-Out port connects to a speaker or headphone, while the pink Mic-In jack connects to a microphone.

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2.2 Board Layout

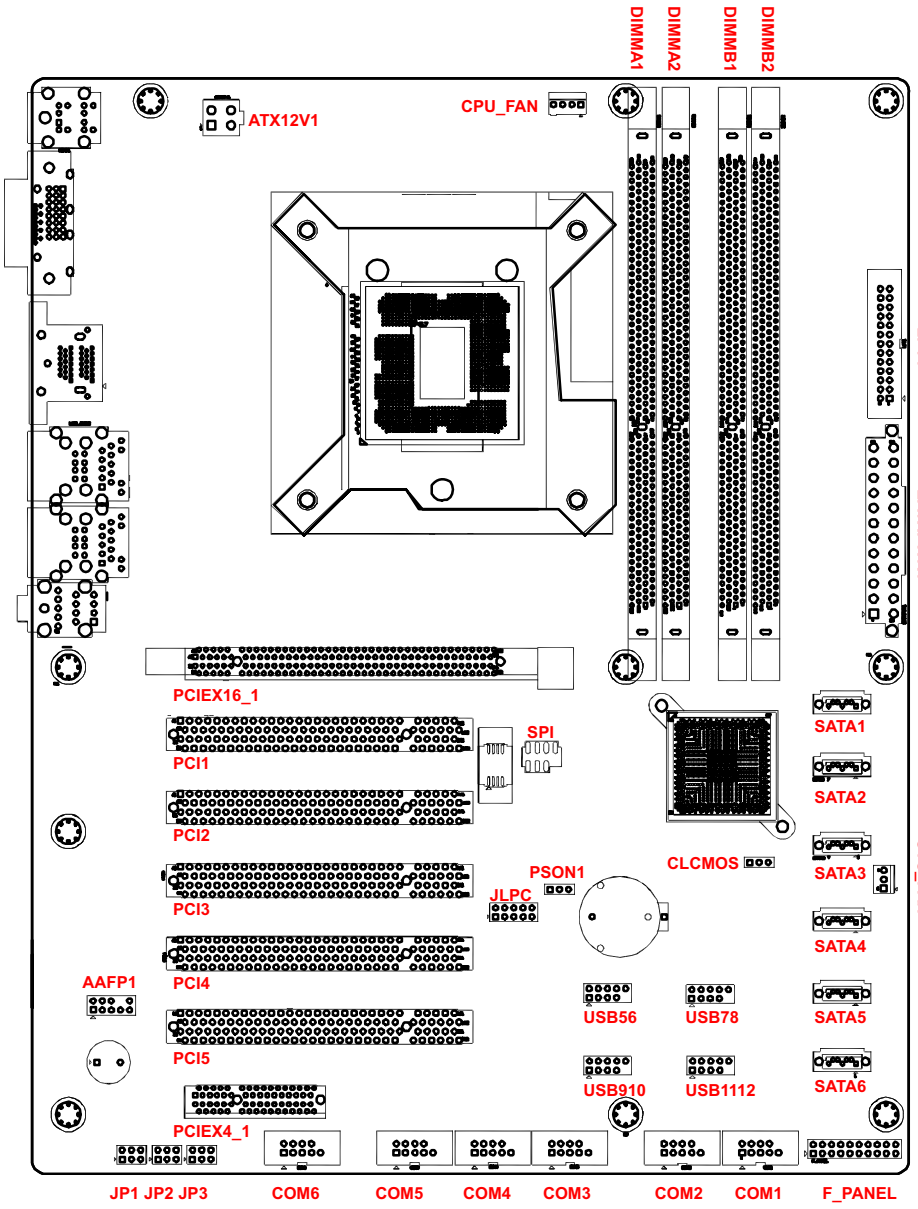


Figure 2-2: M-342 Board Layout

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AAFP1	Front Panel Audio Header
ATX12V1	ATX 12V Power Connector
DIMM_A1/A2	240-pin DIMM slots (Channel A)
DIMM_B1/B2	240-pin DIMM slots (Channel B)
EATXPWR1	ATX Power Connector
CLCMOS	Clear CMOS Jumper
COM1~6	Serial Port Connectors 1~6
CPU_FAN	CPU Fan Connector
F_PANEL	System Panel Pin Header
JLPC	LPC Pin Header
JP1~3	COM6 Mode Jumpers
LPT1	Printer Port Connector
PCIEX4_1	PCI Express x4 slot
PCIEX16_1	PCI Express x16 slot
PCI1~5	PCI slots
PSON1	AT/ATX Mode Jumper
SATA1~2	SATA 6 Gb/s Connector
SATA3~6	SATA 3 Gb/s Connector
SPI	SPI Pin Header
SYS _FAN	System Fan Connector
USB56/78/910/1112	USB 2.0 Pin Headers

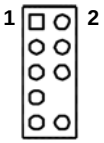
Table 2-1: M-342 Board Layout Legend

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2.3 Onboard Connectors & Jumpers

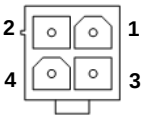
Front Panel Audio Pin Header (AAFP1)

Pin #	Signal	Pin #	Signal
1	MIC2_L	2	AGND
3	MIC2_R	4	FP_PRES#
5	LIN2_R	6	SRTN1
7	SENSE A	8	NC
9	LIN2_L	10	SRTN2



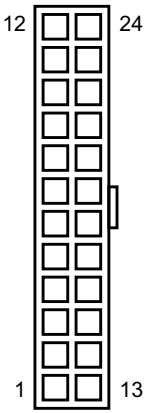
ATX 12V Power Connector (ATX12V1)

Pin #	Signal
1	GND
2	GND
3	+12V DC
4	+12V DC



ATX Power Connector (EATXPWR1)

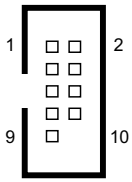
Pin #	Signal	Pin #	Signal
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS-ON#
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWRGD	20	NC
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND



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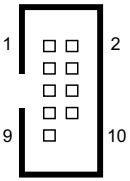
Serial Port Connectors - RS-232 (COM1~6)

Pin #	Signal	Function
1	DCD	Data Carrier Detect
2	DSR	Data Set Ready
3	RXD	Receive Data
4	RTS	Request to Send
5	TXD	Transmit Data
6	CTS	Clear to Send
7	DTR	Data Terminal Ready
8	RI	Ring Indicate
9	GND	Ground
10	NC	Key



Serial Port Connector - RS-422/485 (COM6)

Pin #	RS-422	RS-485
1	TX-	DATA-
2	N/A	N/A
3	TX+	DATA+
4	N/A	N/A
5	RX+	N/A
6	N/A	N/A
7	RX-	N/A
8	N/A	N/A
9	GND	GND
10	Key	Key

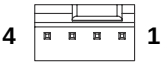


See "COM6 Mode Jumper Settings (JP1~3)" on page 25.

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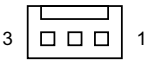
CPU Fan Connector (CPU__FAN)

Pin #	Signal
1	GND
2	Fan power (+12V)
3	Fan Tachometer
4	Fan Speed Control



System Fan Connector (SYS_FAN)

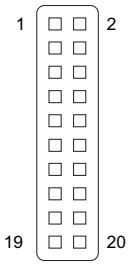
Pin #	Signal
1	GND
2	Fan Power (+12V)
3	Fan Tachometer



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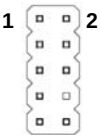
System Panel Pin Header (F_PANEL1)

Pin #	Signal	Function	Pin Group
1	WDSPK	Speaker signal	Chassis Speaker
3	NC		
5	NC		
7	P5V	Power	
9	NC		
11	GND	Ground	Key Lock
13	KEYLOCK	Keyboard lock	
15	PLED	Power LED signal	Power LED
17	NC		
19	P5V	Power LED pull-up	
2	GND	Ground	RESET Button
4	RESETBT	RESET signal	
6	NC		
8	GND	Ground	Power On Button
10	POWERBT	Power-on signal	
12	NC		
14	NC		
16	HDDLED	Hard Disk LED signal	Hard Disk LED
18	P3V3	Hard Disk LED pull-up	
20	NC		



LPC Pin Header (JLPC)

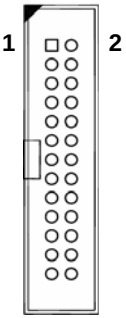
Pin #	Signal	Pin #	Signal
1	V3.3	2	GND
3	BIOS_DISABLE#	4	LPC_AD3
5	PRST_SIO	6	LPC_AD2
7	CLK33M_LPC	8	LPC_AD1
9	LPC_FRAME#	10	LPC_AD0



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Parallel Port Connector (LPT1)

Pin #	Signal	Pin #	Signal
1	Line Printer Strobe	2	Auto-Feed
3	Parallel Data 0	4	Error
5	Parallel Data 1	6	Initialize
7	Parallel Data 2	8	Select
9	Parallel Data 3	10	Ground
11	Parallel Data 4	12	Ground
13	Parallel Data 5	14	Ground
15	Parallel Data 6	16	Ground
17	Parallel Data 7	18	Ground
19	Acknowledge	20	Ground
21	Busy	22	Ground
23	Paper Empty	24	Ground
25	Select	26	NC



SATA Connectors (SATA1~6)

Pin #	Signal
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

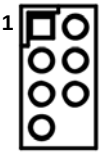


NOTE: SATA1~2 are 6 Gb/s ports, SATA3~6 are 3 Gb/s ports.

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SPI Pin Header (SPI)

Pin #	Signal	Pin #	Signal
1	+3V ROM	2	GND
3	F_SPI_CS#	4	F_SPI_CLK
5	F_SPI_MISO	6	F_SPI_MOSI
7	SPI_HOLD#	8	NC



USB 2.0 Pin Headers (USB56/78/910/1112)

Pin #	Signal	Pin #	Signal
1	+5V	2	+5V
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key	10	NC



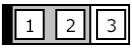
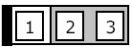
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2.4 Jumpers

Clear CMOS (CLCMOS)

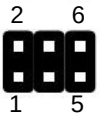
The CMOS RAM data contains the date / time and BIOS setting information. CMOS is powered by the onboard button cell battery. To erase the CMOS RAM data:

1. Power down and disconnect power from the system.
2. Short pins 2-3 on JP1.
3. Reconnect power and power up the system.
4. After power up, remove the jumper cap from pins 2-3 and reinstall it to pins 1-2.

RTC status	Connection	CLCMOS
Normal	1 – 2	
Clear CMOS	2 – 3	

COM6 Mode Jumper Settings (JP1~3)

Short the jumper pins according to the following settings to set COM6 to RS-232/422/485 mode:

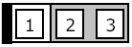


	RS-232	RS-422	RS-485
JP1	1-3, 2-4	3-5, 4-6	3-5, 4-6
JP2	1-2	3-4	5-6
JP3	1-3, 2-4	3-5, 4-6	3-5, 4-6

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AT/ATX Mode Jumper (PSON1)

Pin #	Signal
1	PSON_AT
2	FRP_PANSWUN
3	NC

Status	Connection	JCLRT_C2
AT Mode	1 – 2	
ATX Mode	2 – 3 (default)	

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3 Getting Started

This chapter provides information on how to install components on the M-342 motherboard.

3.1 Installing the CPU

The M-342 supports an Intel® Core™ i7/i5/i3 or Pentium® processor in an LGA1155 socket.

WARNING:

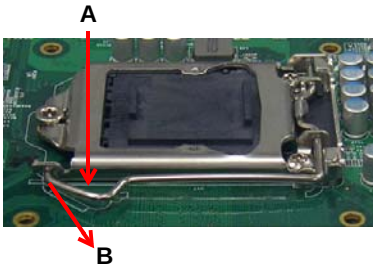
Disconnect all power to the board before installing a CPU to prevent damaging the board and CPU.

Do not touch socket contacts. Damaging the contacts voids the product warranty. Follow the installation instructions carefully to avoid damaging the board components.



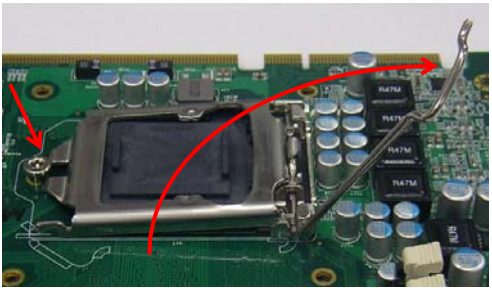
To install the CPU:

1. Press down on the locking arm (A), then push it away from the socket to disengage it from the retention tab (B).

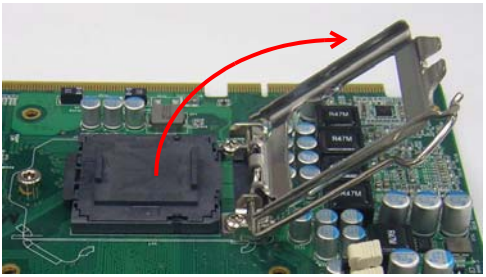


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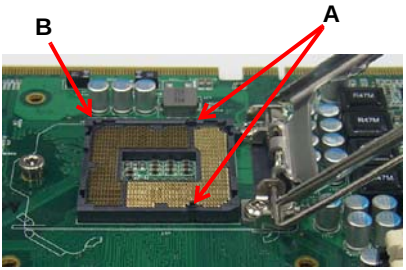
2. Raise the locking arm to unlock the load plate.



3. Lift the load plate to uncover the socket.



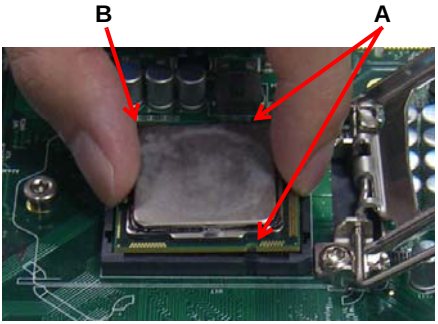
4. Remove the plastic protective cover from the socket. Note the locations of the alignment keys (A) and Pin 1 indicator (B).



WARNING:

Do NOT touch socket contacts.

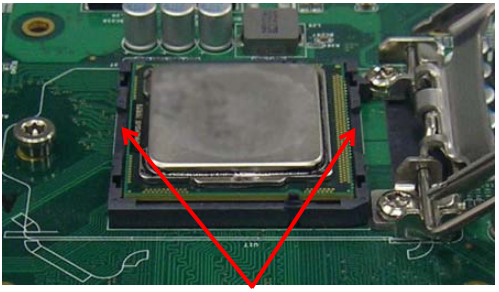
5. Hold the CPU using thumb and forefinger as shown. Position the CPU over the socket, matching the notches on the sides of the CPU with the alignment keys on the socket (A). The golden triangle on the CPU must be positioned at the corner of the socket with the Pin 1 indicator as shown (B).



WARNING:

The CPU fits into the socket in only one orientation. DO NOT force it into the socket to avoid causing damage.

6. Carefully place the CPU into the socket vertically. The socket has cutouts for your fingers to fit into.



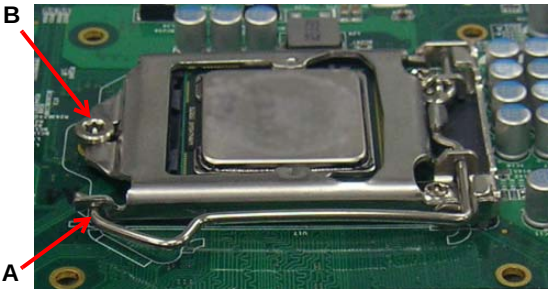
Cutouts

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7. Gently lower the load plate. Make sure the front edge of the plate is under the screw as indicated.



8. Lower the locking arm and fasten it to the retention tab (A). The load plate should be locked underneath the screw as shown (B).



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3.2 Installing the CPU Fan and Heatsink



The CPU requires a chassis with an airflow inlet and maximum internal ambient temperature of 50° C. A especially-designed CPU fan and heatsink must be installed before using the motherboard. Failure to install a CPU fan and heatsink may damage the system host board and/or the CPU.

When the CPU fan installation procedures presented here are inconsistent with the installation procedures you obtained from the CPU fan and heatsink package, follow the latter.

To install the CPU fan:

1. Apply thermal grease evenly on top of the installed CPU.
2. Lower the CPU fan to the CPU, then secure it using the provided attachments or screws.
3. Connect the CPU fan cable to the CPU fan connector on the motherboard labeled FAN1 (see “Onboard Connectors & Jumpers” on page 19).

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3.3 Installing Memory Modules

The M-342 supports up to 16 GB of DDR3 1066/1333 MHz memory modules in four DIMM sockets. A DDR3 module has a 240-pin footprint compared to the legacy 184-pin DDR DIMM. DDR3 modules are notched to facilitate correct installation in the DIMM sockets and prevent installation of DDR2 or DDR modules.

WARNING:

Disconnect all power to the board before installing a memory module to prevent damaging the board and memory module .

Memory Configuration Options

The M-342 supports 1GB, 2GB and 4GB unbuffered non-ECC DDR3 DIMMs in the following configurations:

- Channel A: DIMM1
  Channel B: DIMM2
- For dual-channel configuration, the total size of memory module installed per channel must be the same (DIMM1 = DIMM2).
- It is recommended that you install DIMMs with the same CAS latency. For maximum compatibility, install memory modules with the same brand, model, and/or rating.

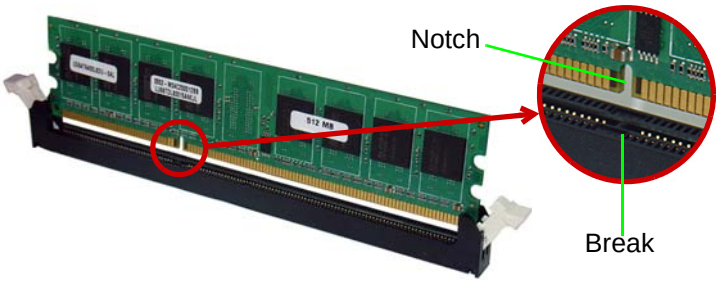
To install a memory module:

1. Locate the DIMM sockets on the motherboard.
2. Press the socket's retaining clips outward to unlock.

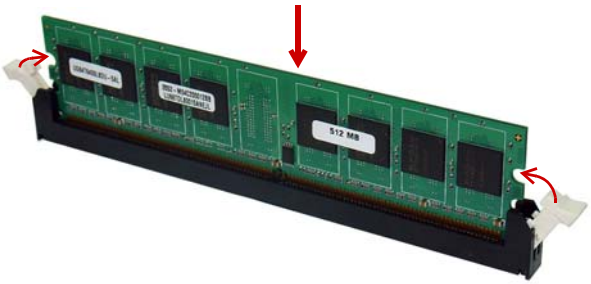


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3. Align the memory module on the socket making sure that the notch matches the break on the socket.



4. Insert the module firmly into the slot until the retaining clips snap back inwards and the module is securely seated.



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4 Driver Installation

This chapter provides information on how to install the M-342 device drivers under Windows XP. The device drivers are located in the following ADLINK All-in-One CD directories:

Chipset	X:\CHIP
Display	X:\VGA
Ethernet	X:\LAN
Audio	X:\AUDIO
Rapid Storage	X:\RAID
Mgmt. Engine	X:\ME

Follow the instructions below to install the required M-342 drivers:

1. Install the Windows operating system before installing any driver. Most standard I/O device drivers are installed during Windows installation.


NOTE:

In order to enable AHCI mode, you must pre-install the Intel® Rapid Storage Technology driver using the F6 installation method described in **F6Readme.txt**. that can be found here: **X:\RAID\Floppy Raid Driver For Win XP 32bits.zip**.

2. Install the **Chipset driver** by running the program **infinst_autol.exe** in **X:\CHIP\Chipset driv-er_intel_INF _Update_Utility_All_WinOS.zip**. Follow the instructions given and reboot when instructed.
3. Install the **Display driver** and utilities by running the program **Setup.exe** in **X:\VGA\VGA_driver_intel_Integrated _Graphic_Windows XP_32bit.zip**. Follow the instructions given and reboot when instructed.
4. Install the **Ethernet driver** by running the program **PROWIn32.exe** in **X:\LAN\Network_driver_Intel_Network _Adapter for window XP 32-bit.zip**. Follow the instructions given and reboot if required.
5. Install the **Audio driver** by running the program **WDM_R257.exe** in **X:\AUDIO\Audio_driver_Realtek_Windows XP.zip**. Follow the instructions given and reboot if required.

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6. Install the **Intel Rapid Storage Technology Utility** by extracting and running the program **iata_cd.exe** in **X:\RAID\Intel RST Driver.zip**.
7. Install the **Management Engine driver** by running the program **Setup.exe** in **X:\ME\Intel Management Engine Driver.zip**. Follow the instructions given and reboot if required.

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5 BIOS Setup

The following chapter describes basic navigation for the AMIBIOS® EFI BIOS setup utility.

5.1 Starting the BIOS

To enter the setup screen, follow these steps:

1. Power on the motherboard
2. Press the < Delete > key on your keyboard when you see the following text prompt:
   < Press DEL to run Setup >
3. After you press the < Delete > key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as Chipset and Power menus.



Note: In most cases, the < Delete > key is used to invoke the setup screen. There are several cases that use other keys, such as < F1 >, < F2 >, and so on.

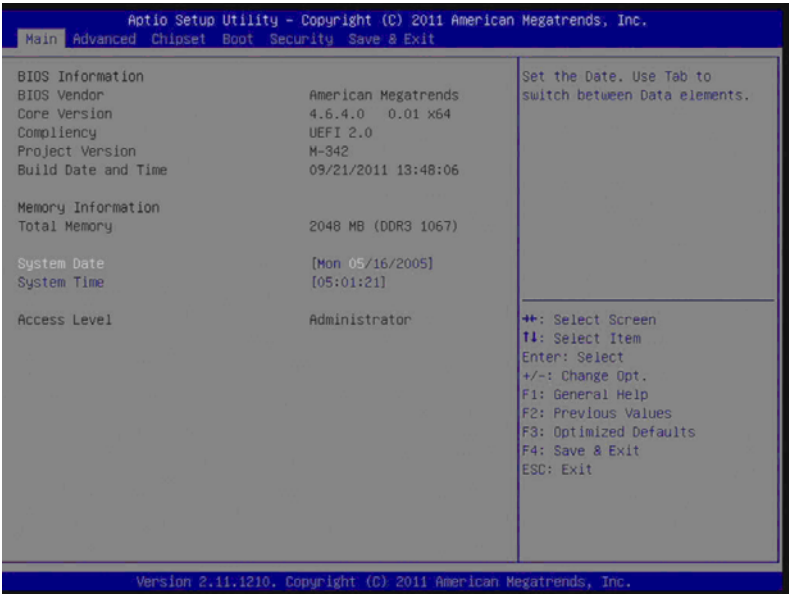
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Setup Menu

The main BIOS setup menu is the first screen that you can navigate. Each main BIOS setup menu option is described in this user's guide.

The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. "Grayed" options cannot be configured, "Blue" options can be.

The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

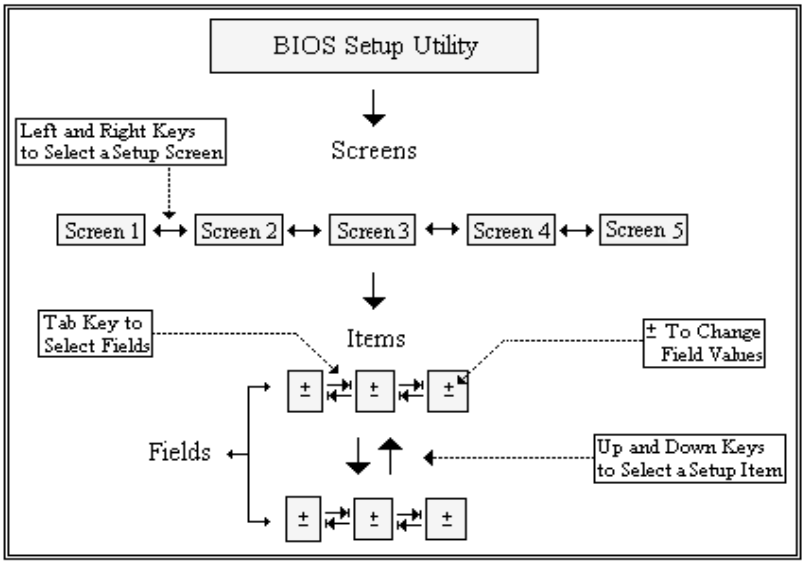


Navigation

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.

These keys include < F1 >, < F10 >, < Enter >, < ESC >, < Arrow > keys, and so on. .

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Note: There is a hot key legend located in the right frame on most setup screens.

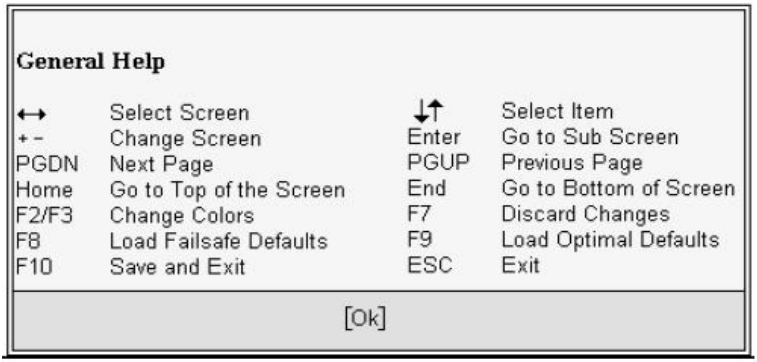
The < F8 > key on your keyboard is the Fail-Safe key. It is not displayed on the key legend by default. To set the Fail-Safe settings of the BIOS, press the < F8 > key on your keyboard. It is located on the upper row of a standard 101 keyboard. The Fail-Safe settings allow the motherboard to boot up with the least amount of options set. This can lessen the probability of conflicting settings.

Hotkey Descriptions

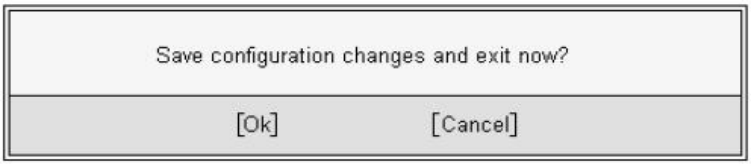
F1 The < F1 > key allows you to display the General Help screen.

Press the < F1 > key to open the General Help screen.

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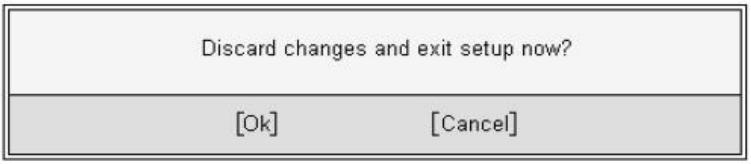


F10 The < F10 > key allows you to save any changes you have made and exit Setup. Press the < F10 > key to save your changes. The following screen will appear:



Press the < Enter > key to save the configuration and exit. You can also use the < Arrow > key to select Cancel and then press the < Enter > key to abort this function and return to the previous screen.

ESC The < Esc > key allows you to discard any changes you have made and exit the Setup. Press the < Esc > key to exit the setup without saving your changes. The following screen will appear:



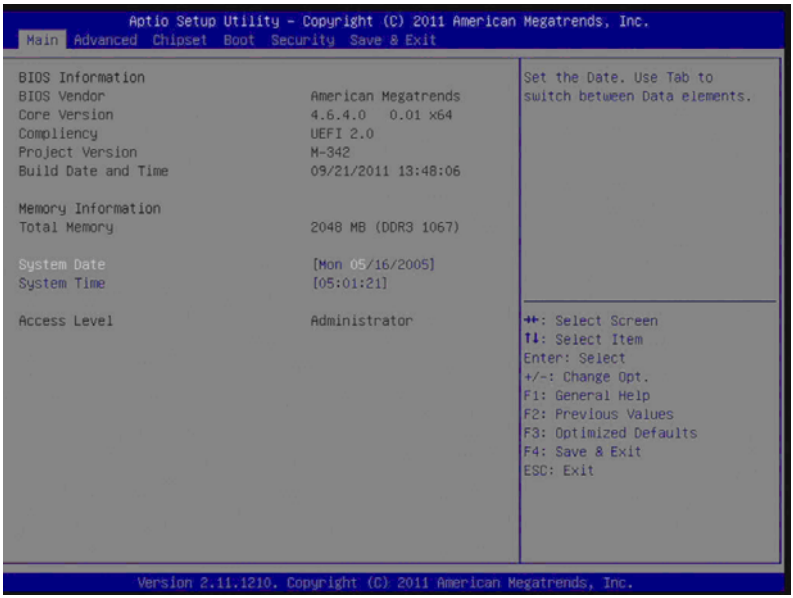
Press the < Enter > key to discard changes and exit. You can also use the < Arrow > key to select Cancel and then press the < Enter > key to abort this function and return to the previous screen.

Enter The < Enter > key allows you to display or change the setup option listed for a particular setup item. The < Enter > key can also allow you to display the setup sub-screens.

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5.2 Main Setup

When you first enter the Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.



System & Board Info

BIOS Vendor

Displays the BIOS vendor.

Core Version

Displays the BIOS core version.

Compliancy

Displays the current BIOS compliancy.

Project Version

Displays the current BIOS revision.

Build Date and Time

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Displays the BIOS build data.

System Time/System Date

Use this option to change the system time and date. Highlight System Time or System Date using the < Arrow > keys. Enter new values using the keyboard. Press the < Tab > key or the < Arrow > keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

Note: The time is in 24-hour format. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

Access Level

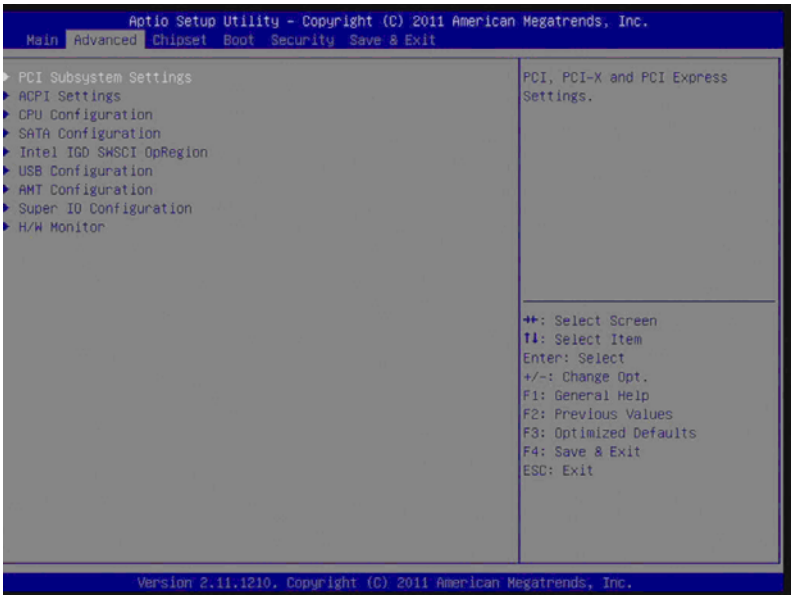
Displays the current system access level.

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5.3 Advanced BIOS Setup

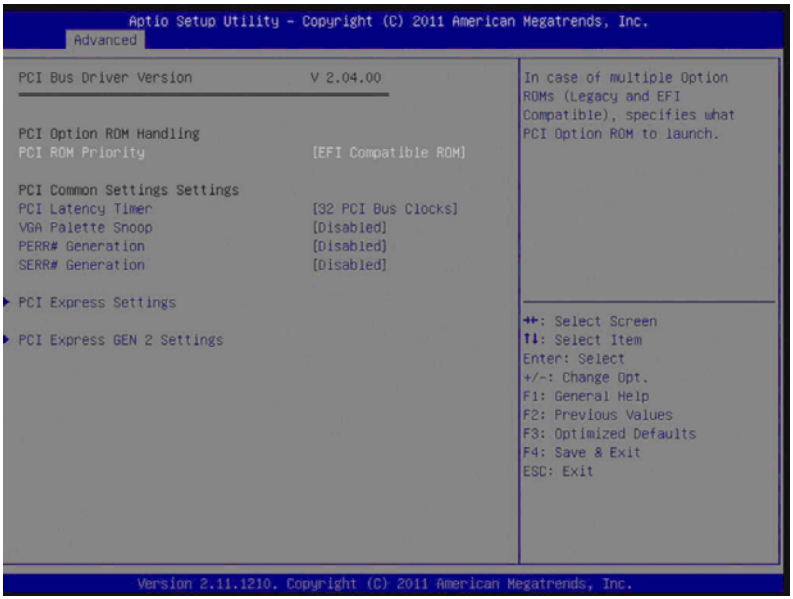
Select the Advanced tab from the setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the < Arrow > keys. The Advanced BIOS Setup screen is shown below.

The sub menus are described on the following pages.



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5.3.1 PCI Subsystem Settings



PCI ROM Priority

In case of multiple Option ROMs (Legacy and EFI Compatible), specifies what PCI Option ROM to launch. Options: Legacy ROM, EFI Compatible ROM.

PCI Latency Timer

Value to be programmed into PCI Latency Timer Register. Options:, 32 PCI Bus Clocks , 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.

VGA Palette snoop

Enable or Disable VGA Palette Registers Snooping. Options: Disabled, Enabled.

PERR# Generation

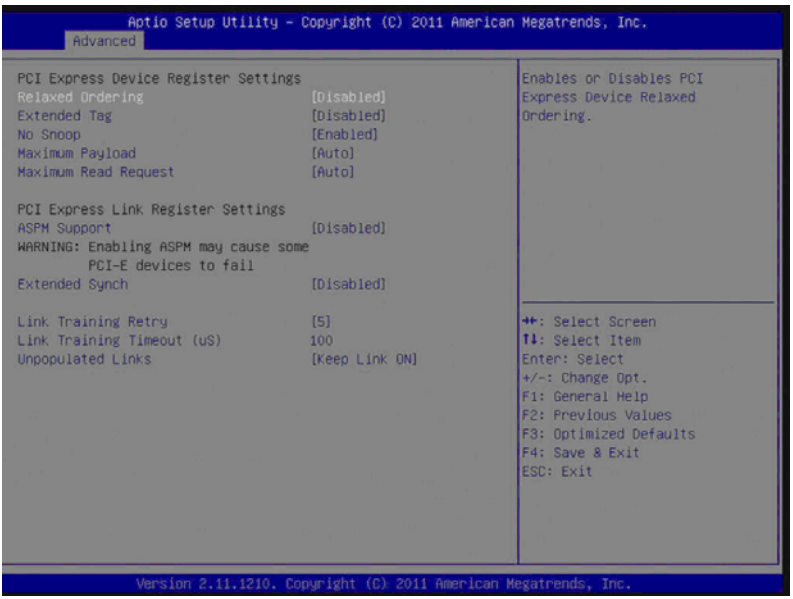
Enable or Disable PCI Device to Generate PERR#. Options: Disabled, Enabled.

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SERR# Generation

Enable or Disable PCI Device to Generate SERR#. Options: Disabled, Enabled.

PCI Express Settings



Relaxed Ordering

Enable or Disable PCI Express Device Relaxed Ordering. Options: Disabled, Enabled.

Extended Tag

If Enabled allows device to use 8-bit Tag field as a requester. Options: Disabled, Enabled.

No Snoop

Enable or Disable PCI Express Device No Snoop option. Options: Disabled, Enabled.

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Maximum Payload

Set Maximum Payload of PCI Express Device or allow System BIOS to select the value. Options: Auto, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, 4096 Bytes.

Maximum Read Request

Set Maximum Read Request Size of PCI Express Device or allow System BIOS to select the value. Options: Auto, 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048 Bytes, 4096 Bytes.

ASPM Support

Set the ASPM Level: Force L0s - Force all links to L0s State. Options: Disabled, Auto, Force L0s.

Extended Synch

If Enabled allows generation of Extended Synchronization patterns. Options: Disabled, Enabled.

Link Training Retry

Defines number of Retry Attempts software will take to retrain the link if previous training attempt was unsuccessful. Options: Disabled, 2, 3, 5.

Link Training Timeout (us)

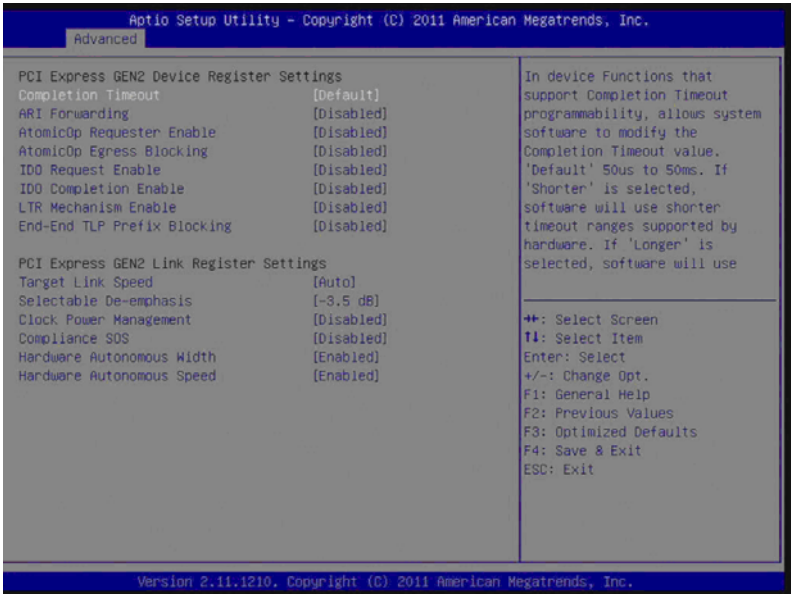
Defines number of microseconds software will wait before polling 'Link Training' bit in Link Status register. Value range from 1 to 100 uS.

Unpopulated Links

In order to save power, software will disable unpopulated PCI Express links, if this option set to 'disable Link'. Options: Keep Link ON, Disable Link.

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PCI Express Gen2 Settings



Completion Timeout

In device functions that support Completion Timeout programmability, allows system software to modify the Completion Timeout value (Default: 50us to 50ms). If 'Shorter' is selected, software will use shorter timeout ranges supported by hardware. If 'Longer' is selected, software will use software will use longer timeout ranges supported by hardware. Options: Default, Shorter, Longer, Disabled.

ARI Forwarding

If supported by hardware and set to "Enable", the Downstream Port disables its traditional Device Number field being 0 enforcement when turning a Type1 Configuration Request into a Type0 Configuration Request, permitting access to be extended immediately below the Port. Options: Disabled, Enabled.

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Atomic0p Requester Enable

If supported by hardware and set to "Enable", this function initiates Atomic0p Requests only if the Bus Master Enable bit is in the Command Register Set. Options: Disabled, Enabled.

Atomic0p Egress Blocking

If supported by hardware and set to "Enable", outbound Atomic0p Requests via Egress Ports will be blocked. Options:Disabled, Enabled.

IDO Request Enable

If supported by hardware and set to "Enabled", this permits setting the number of ID-Based Ordering (IDO) bit (Attribute [2]) requests to be initiated. Options: Disabled, Enabled.

IDO Completion Enable

If supported by hardware and set to "Enabled", this permits setting the number of ID-Based Ordering (IDO) bit (Attribute [2]) requests to be initiated. Options: Disabled, Enabled.

LTR Mechanism Enable

If supported by hardware and to "Enable", this enables the Latency Tolerance Reporting (LTR) Mechanism. Options: Disabled, Enabled.

End-End TLP Prefix Blocking

If supported by hardware and set to " Enable", this function will block forwarding of TLPs containing End-End TLP Prefixes. Options:Disabled, Enabled.

Target Link Speed

If supported by hardware and set to "Force to 2.5 GT/s" for Downstream Ports, this sets an upper limit on Link operational speed by restricting the values advertised by the Upstream component in its training sequences. When "Auto" is selected HW initialized data will be used. Options: Disabled, Enabled.

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Selectable De-emphasis

If supported by hardware, this will control transmission de-emphasis of target link when operating at 5.0GT/s. Options: -3.5 dB, -6.0 dB

Clock Power Management

If supported by hardware and set to "Enabled", the device is permitted to use CLKREQ# signal for power management of Link Clock in accordance to protocol defined in appropriate form factor specification. Options: Disabled, Enabled.

Compliance SOS

If supported by hardware and set to "Enabled", this will force LTSSM to send SKP Ordered Sets between sequences when sending Compliance Pattern or Modified Compliance Pattern. Options: Disabled, Enabled.

Hardware Autonomous Width

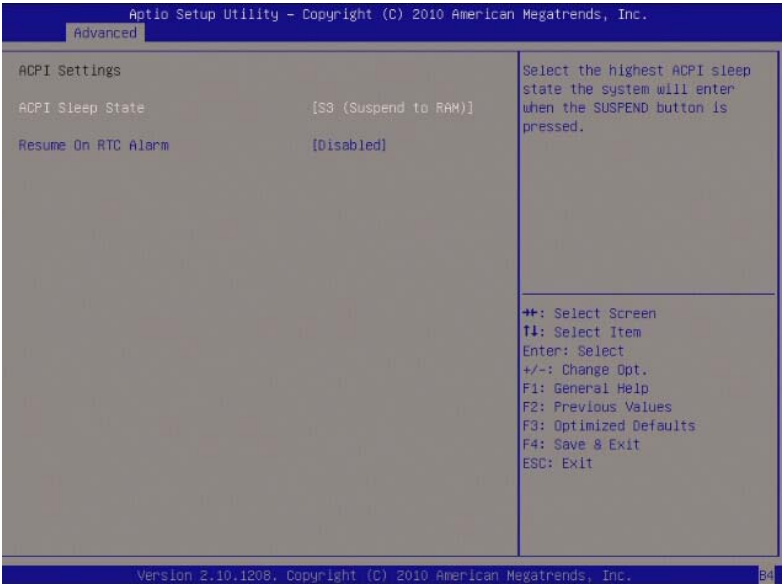
If supported by hardware and set to "Enabled", this will disable the hardware's ability to change link width except width size reduction for the purpose of correcting unstable link operation. Options:Disabled, Enabled.

Hardware Autonomous Speed

If supported by hardware and set to "Enabled", this will disable the hardware's ability to change link speed except speed rate reduction for the purpose of correcting unstable link operation. Options: Disabled, Enabled.

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5.3.2 ACPI Settings



ACPI Sleep State

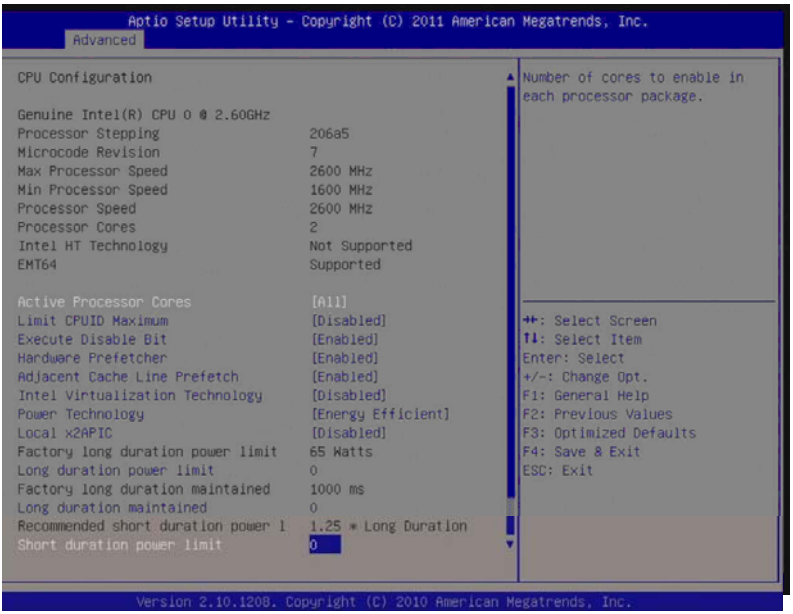
Select the highest ACPI sleep state the system will enter, when the SUSPEND button is pressed. Options: Suspend Disable, S1 (CPU Stop Clock), S3 (Suspend to RAM).

Resume On RTC Alarm

Enable or disable system wake on alarm event. When enabled, the system will wake at the hr/min/sec specified.

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5.3.3 CPU Configuration



Active Processor Cores

Number of cores to enable in processor. Options: All, 1, 2, 3.

Limit CPUID Value Maximum

When Enabled, the processor will limit the maximum CPUID input value to 03h when queried, even if the processor supports a higher CPUID input value. When Disabled, the processor will return the actual maximum CPUID input value of the processor when queried. Enable this option to allow compatibility with older operating systems.

Execute Disable Bit

Allows you to enable or disable the No-Execution Page Protection Technology. Setting this item to [Disabled] forces the XD feature flag to always return a zero (0). Options: Enabled, Disabled.

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Hardware Prefetcher

Enables/disables the Mid Level Cache (L2) streamer prefetcher.

Adjacent Cache Line Prefetch

Enables/disables the prefetching of adjacent cache lines.

Intel® Virtualization Tech

When enabled, Intel® Virtualization Technology (Intel® VT) makes a single system appear as multiple independent systems to software. This allows for multiple, independent operating systems to be running simultaneously on a single system.

Power Technology

Sets the power management features. Options: Disabled, Energy Efficient, Custom.

Local x2APIC

Enables/disables Local x2APIC. Some OSes do not support this.

Long Duration Power Limit

Sets the Long Duration Power Limit in watts.

Long Duration Maintained

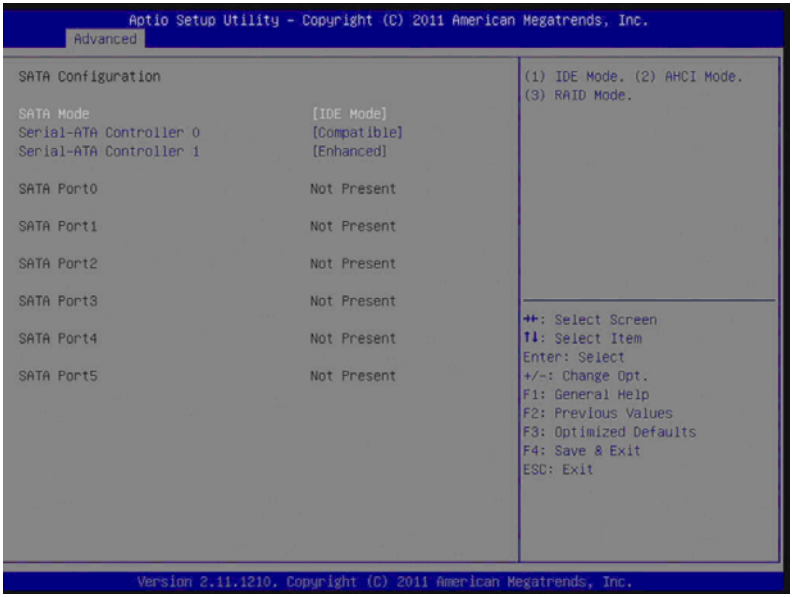
Sets the time window for which the Long Duration Power Limit is maintained in miliseconds.

Short Duration Power Limit

Sets the short duration power limit in watts.

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5.3.4 SATA Configuration



SATA Mode

Options: IDE, RAID, AHCI.

Serial-ATA Controller 0

Enable or disable the SATA controller. Options: Disabled, Enhanced, Compatible.

Serial-ATA Controller 1

Enable or disable the SATA controller. Options: Disabled, Enhanced.

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5.3.5 Intel IGD SWSCI OpRegion



DVMT/Fixed Memory

Select DVMT/Fixed memory size used by the Integrated Graphics Device. Options: 128MB, 256MB, Maximum.

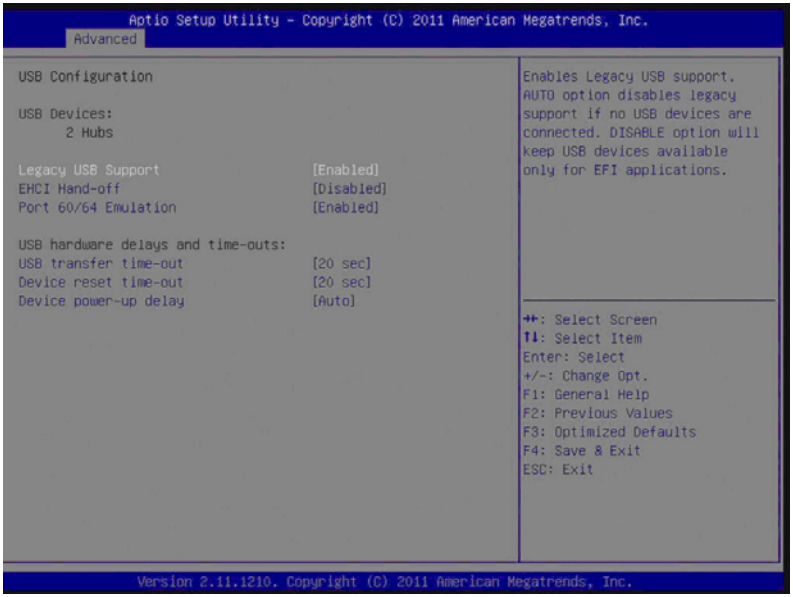
IGD - Boot Type

Select the video device which will be activated during POST. This has no effect if an external graphics device is present. Options: VBIOS Default, CRT, DVI, HDMI1, HDMI2. See table below for *VBIOS Default* display output settings.

Connected Display(s)	BIOS Mode	DOS Mode
CRT + DVI	VGA	DVI + VGA
CRT + HDMI1	VGA	HDMI1 + VGA
DVI + HDMI1	DVI	DVI + HDMI1
HDMI1 + HDMI2	HDMI2	HDMI2
CRT + HDMI2	VGA	VGA + HDMI2
DVI + HDMI2	DVI	DVI + HDMI2

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5.3.6 USB Configuration



Legacy USB Support

Legacy USB Support refers to USB mouse and keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard will not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there are no USB drivers loaded on the system. Set this value to enable or disable the Legacy USB Support.

- **Disabled:** Set this value to prevent the use of any USB device in DOS or during system boot.
- **Enabled:** Set this value to allow the use of USB devices during boot and while using DOS.
- **Auto:** This option auto detects USB Keyboards or Mice and if found, allows them to be utilized during boot and while using DOS.

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EHCI Hand-Off

This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver. Options: Enable, Disable.

Port 60/64 Emulation

Enable or disable I/O port 60h/64h emulation support. Options: Disabled, Enabled.

USB transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers. Options: 1 sec, 5 sec, 10 sec, 20 sec.

Device reset time-out

USB mass storage device Start Unit command time-out. Options: 10 sec, 20 sec, 30 sec, 40 sec.

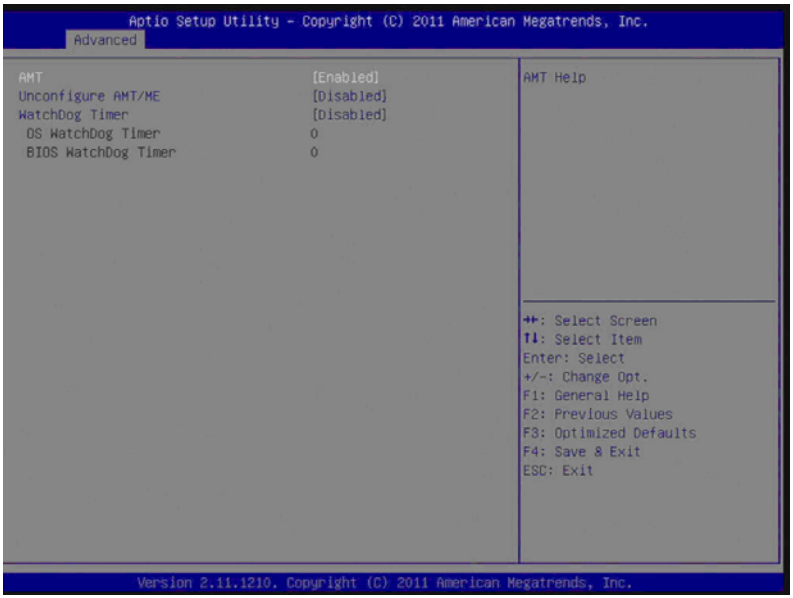
Device power-up delay

Maximum time the device will take before it properly reports itself to the Host Controller. Options: Auto, Manual.

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5.3.7 AMT Configuration

You can use this screen to select options for the Intel Active Management Technology settings.



AMT

This item allows the user to Enable/Disable the Intel AMT function.

Un-Configure ME

This item allows the user to unprovision the ME function without a password. Options: Enabled, Disabled.

WatchDog

Enable or disable the WatchDog Timer.

OS Timer

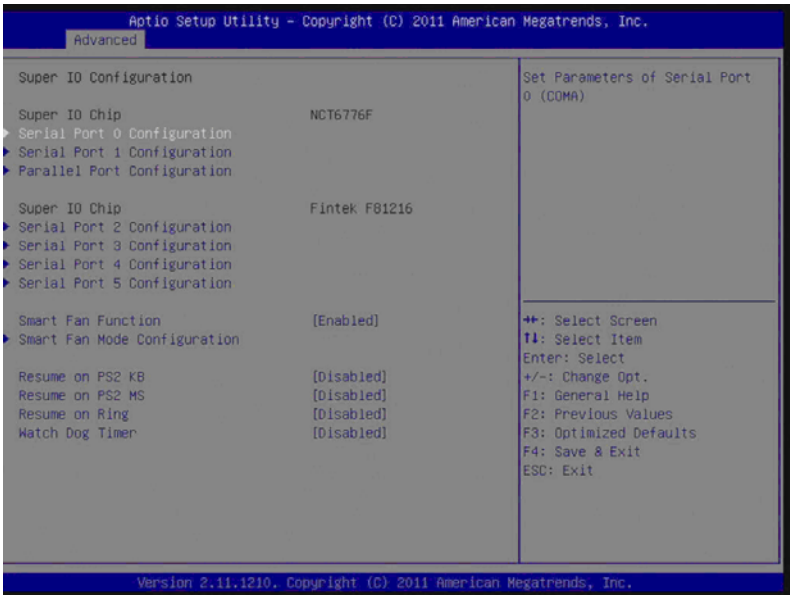
Sets the OS WatchDog Timer (seconds).

BIOS Timer

Sets the BIOS WatchDog Timer (seconds).

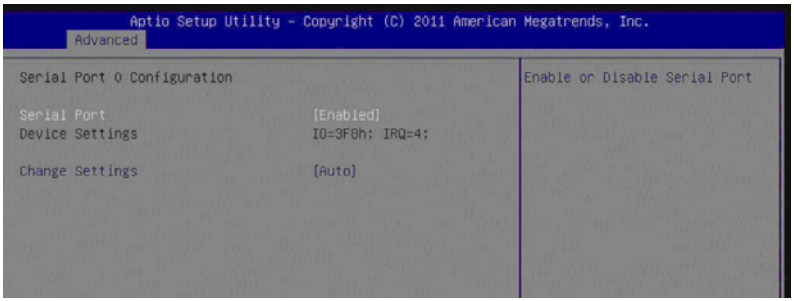
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5.3.8 Super IO Configuration



Serial Port 0~5 Configuration

Enter the submenu for each serial port to enable/disable and view the I/O port and IRQ settings.



Serial Port

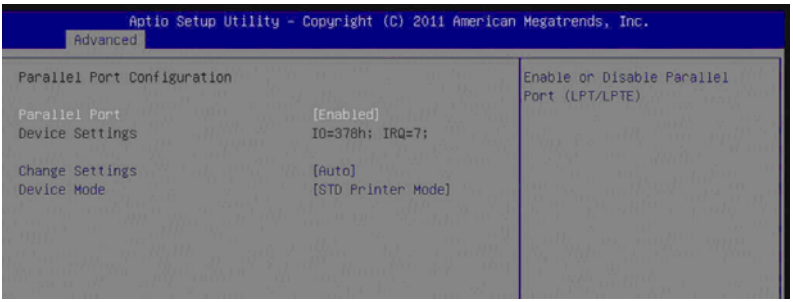
Enable or disable Serial Port 0~5.

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Device Settings

Set the serial port address and IRQ. Options: Auto, IO=2F8h; IRQ=3, IO=3F8h; IRQ=3, 4, 5, 6, 7, 9. 10, 11, 12, IO=2F8h; IRQ=3, 4, 5, 6, 7, 9. 10, 11, 12, IO=3E8h; IRQ=3, 4, 5, 6, 7, 9. 10, 11, 12, IO=2E8h; IRQ=3, 4, 5, 6, 7, 9. 10, 11, 12

Parallel Port Configuration



Parallel Port

Enable or disable Parallel Port. Options: Disabled, Enabled.

Change Settings

Select an optimal setting for Super IO device. Options: Auto, IO=378h; IRQ=5, IO=378h; IRQ=5, 6, 7, 9, 10, 11, 12, IO=278h; IRQ=5, 6, 7, 9, 10, 11,12, IO=3BCh; IRQ=5, 6, 7, 9, 10, 11, 12.

Device Mode

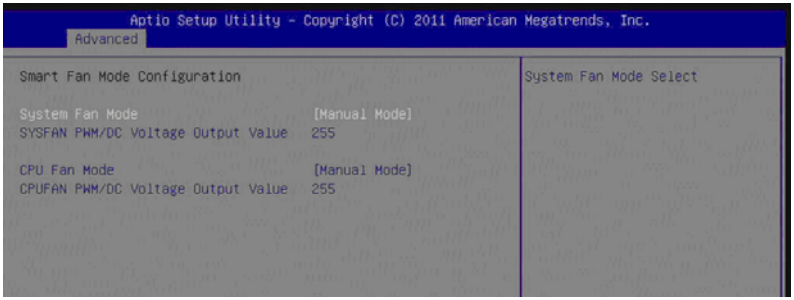
Change the Printer Port Mode. Options: STD Printer Mode, SPP Mode, EPP-1.9 and SPP Mode, EPP-1.7 and SPP Mode, ECP Mode, ECP and EPP-1.9 Mode, ECP and EPP-1.7 Mode.

Smart Fan Function

Enable or disable the Smart Fan function.

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Smart Fan Mode Configuration



System Fan Mode

System Smart Fan mode select. Options: Manual Mode, Thermal Cruise Mode, SMART FAN IV Mode

SYSFAN PWM/DC Voltage Output Value

Range of setting: 0-255.

CPU Fan Mode

CPU Smart Fan mode select. Options: Manual Mode, Thermal Cruise Mode, SMART FAN IV Mode

CPUFAN PWM/DC Voltage Output Value

Range of setting: 0-255.

Resume on PS2 KB

Enable or disable Resume on PS/2 Keyboard function.

Resume on PS2 MS

Enable or disable Resume on PS2 Mouse function.

Resume on Ring

Enable or disable Resume on Ring function.

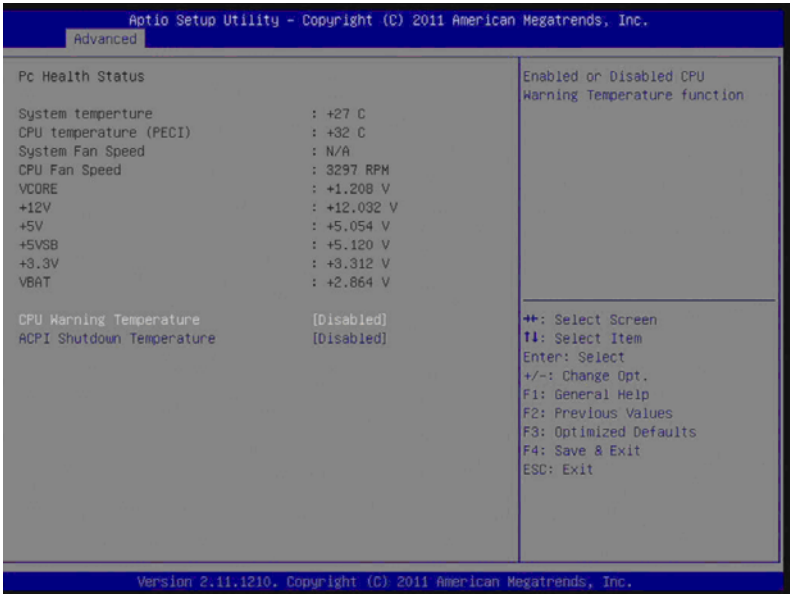
Watch Dog Timer

Enable or disable Watchdog Timer Function.

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5.3.9 H/W Monitor

This screen displays the current status of all of the monitored hardware devices/components such as voltages and temperatures.



CPU Warning Temperature

Enables or disables the CPU warning temperature function. Options: Disable, 50 C/122 F, 55 C/131, 60 C/140 F, 65 C/149 F, 70 C/158 F, 75 C/167 F.

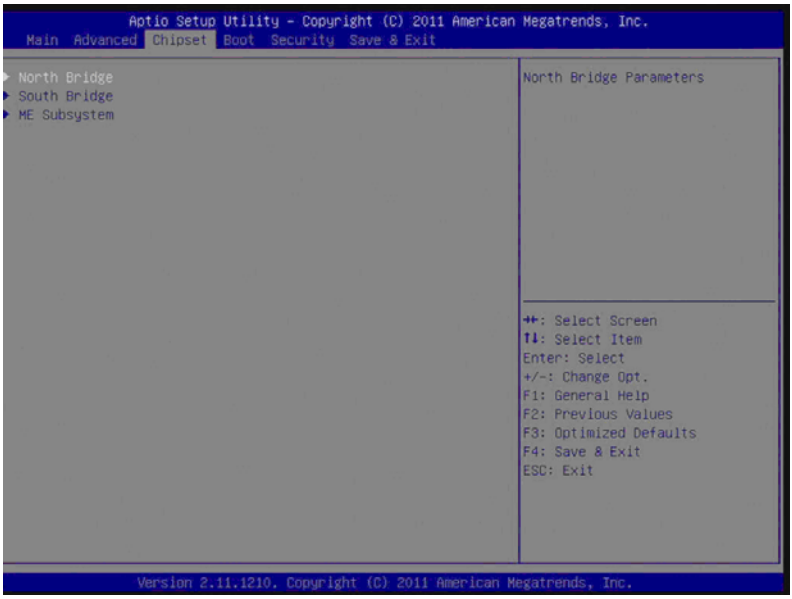
ACPI Shutdown Temperature

Enables or disables the ACPI shutdown temperature function. Options: Disable, 70 C/158 F, 75 C/167 F, 80 C/176 F, 85 C/185 F, 90 C/194 F, 95 C/205 F.

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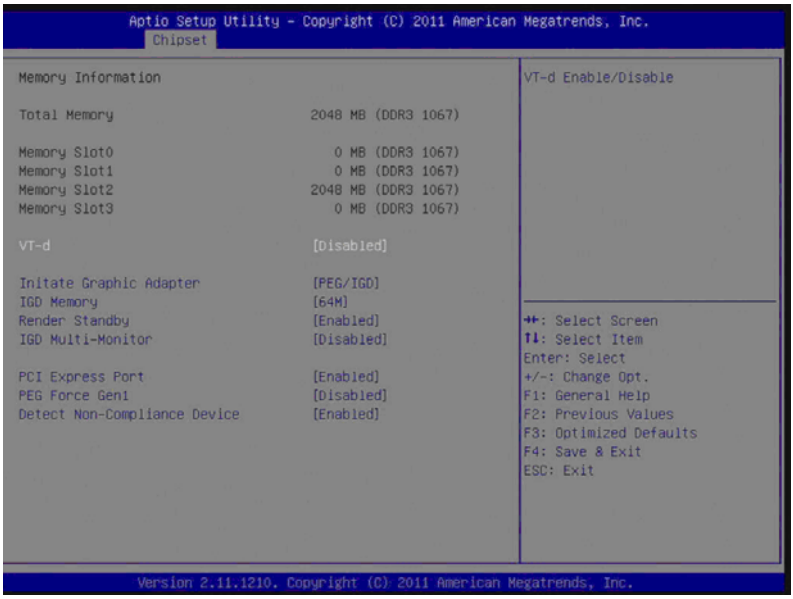
5.4 Chipset Setup

Select the Chipset tab from the setup screen to enter the Chipset BIOS Setup screen. You can select any of the items in the left frame of the screen to go to the sub menu for that item. The Chipset BIOS Setup screen is shown below.



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5.4.1 North Bridge Configuration



VT-d

Intel Virtualization Technology for Directed I/O. Options: Enabled/Disabled.

Initial Graphics Adapter

Selects which graphics controller to use as the primary boot device. Options: IGD, PCI/IGD, PCI/PEG, PEG/IGD, PEG/PCI.

IGD Memory

Select IGD shared memory size. Options: Disable, 32M, 64M, 96M, 128M, 160M, 192M, 224M, 256M, 288M, 320M, 352M, 384M, 416M, 448M, 480M, 512M.

Render Standby

Enable or disable Render Standby by Internal Graphics Device. Options: Enabled, Disabled.

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IGD Multi-Monitor

Enable or disable IGD Multi-Monitor by Internal Graphics Device. Options: Disabled, Enabled.

PCI Express Port

Enable or disable PCIE port. Options: Disabled, Enabled, Auto.

PEG Force Gen1

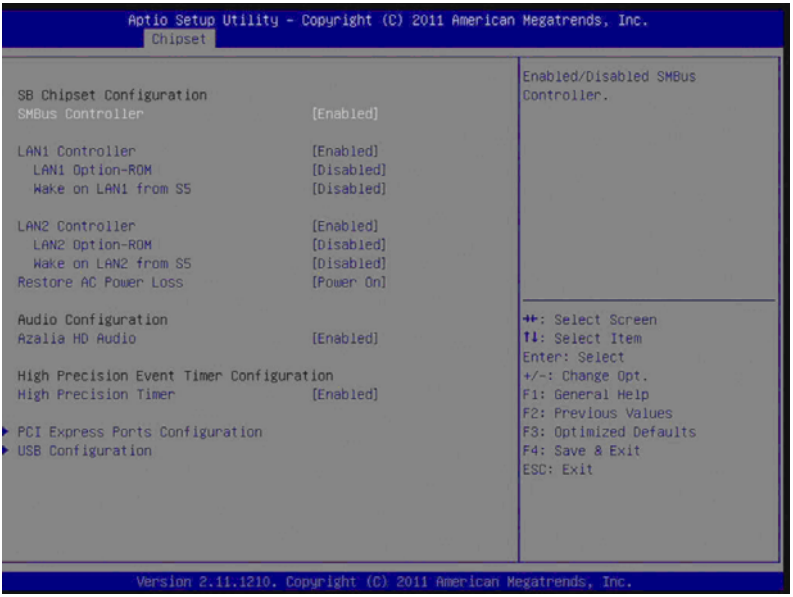
If enabled , PCI Express port will be forced to Gen1. Options: Disabled, Enabled.

Detect Non-Compliance

Detect non-compliant PCI Express device in PEG. Options: Disabled, Enabled.

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5.4.2 South Bridge Configuration



SMBus Controller

Enable or disable SMBus Controller.

LAN1/2 Controller

Controls the onboard LAN1/2 controller. Options: Enabled/Disabled.

LAN1/2 Option-ROM

Enable or disable LAN1/2 Boot Option for legacy network devices.

Wake on LAN1/2 from S5

Enable or disable wake on LAN1/2 from S5.

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Restore on AC Power Loss

Determines which state the computer enters when AC power is restored after a power loss. The options for this value are Last State, Power On and Power Off.

- **Power Off:** Set this value to always power off the system while AC power is restored.
- **Power On:** Set this value to always power on the system while AC power is restored.
- **Last State:** Set this value to power off/on the system depending on the last system power state while AC power is restored.

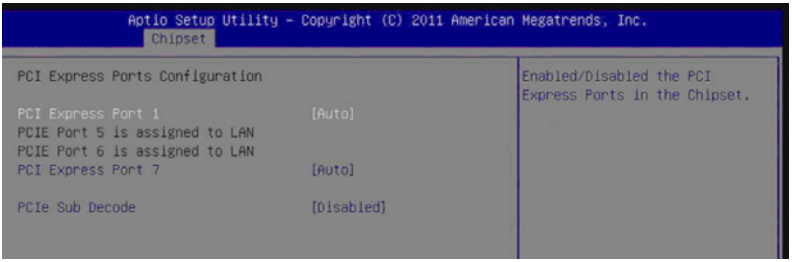
Azalia HD Audio

Enable or disable Azalia HD Audio.

High Precision Timer

Enable or disable the High Precision Event Timer.

PCI Express Port Configuration



PCI Express Port1

Enable or disable the PCI Express Port 1 in the Chipset. Options: Disabled, Enabled, Auto.

PCI Express Port7

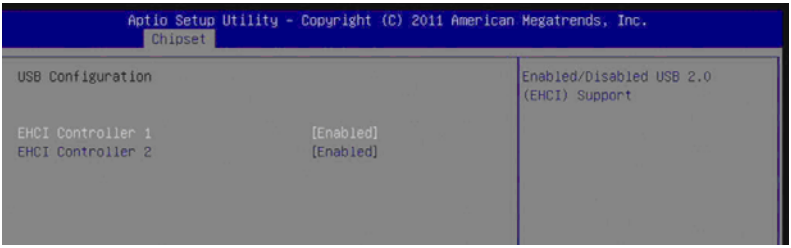
Enable or disable the PCI Express Port 7 in the Chipset. Options: Disabled, Enabled, Auto.

PCI Sub Decode

Enable or disable the PCIe Sub Decode Port. Options: Disabled, Enabled, Auto.

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USB Configuration

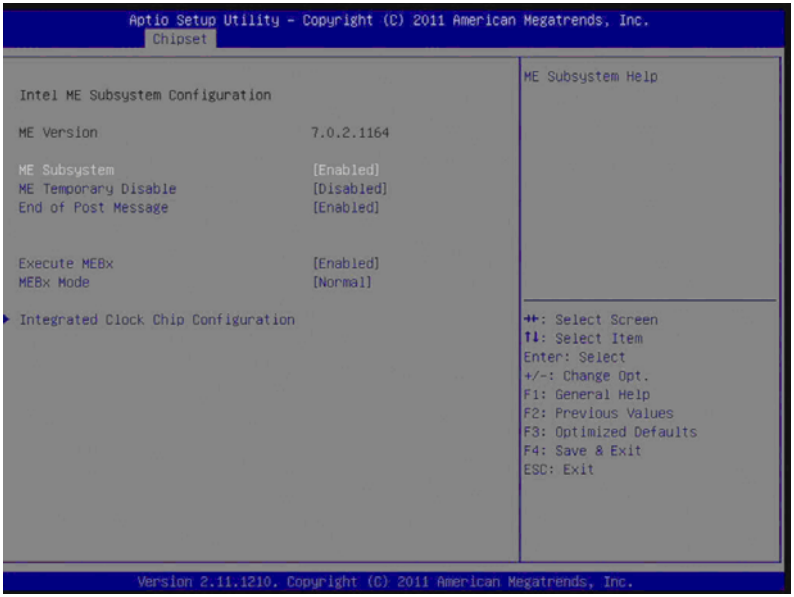


EHCI Controller 1/2

Enable or disable the USB 2.0 (EHCI) support. Options: Disabled, Enabled.

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5.4.3 ME Subsystem Configuration



ME Subsystem

Options: Disabled, Enabled

ME Temporary Disable

Options: Disabled, Enabled

End of Post Message

Options: Disabled, Enabled

Execute MEBx

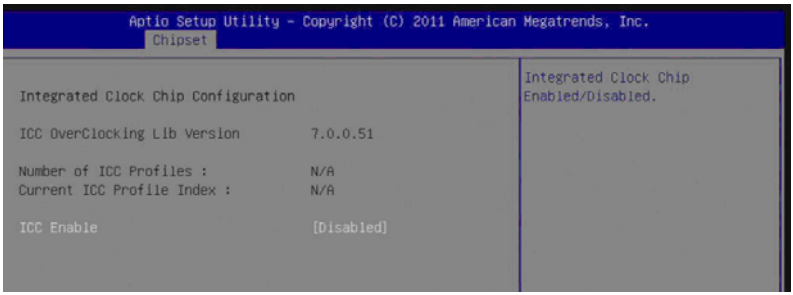
Options: Disabled, Enabled

MEBx Mode

Options: Normal, Hidden Ctrl+P, Enter MEBx setup.

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Integrated Clock Chip Configuration



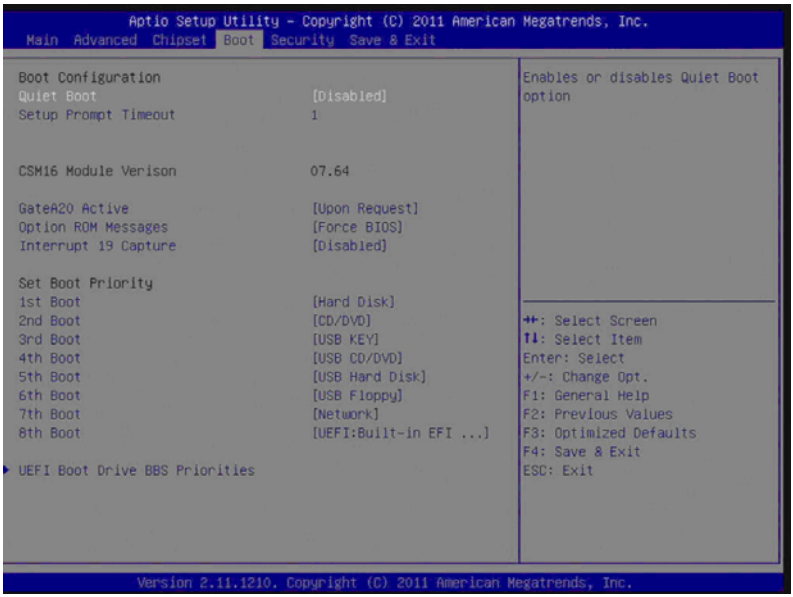
ICC Enable

Enable or disable Integrated Clock Chip.

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5.5 Boot Configuration

Select the Boot tab from the setup screen to enter the Boot BIOS Setup screen. You can select any of the items in the left frame of the screen, such as Boot Device Priority, to go to the sub menu for that item. You can display a Boot BIOS setup option by highlighting it using the < Arrow > keys. The Boot Configuration screen is shown below:



Quiet Boot

When this feature is enabled, the BIOS will display the full-screen logo during the boot-up sequence, hiding normal POST messages.

When it is disabled, the BIOS will display the normal POST messages, instead of the full-screen logo.

Setup Prompt Timeout

Number of seconds to wait for setup activation key. Value range from 1 to 65535.

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GateA20 Active

Upon Request- GA20 can be disabled using BIOS services. Always: do not allow disabling ofGA20; this option is useful when any RT code is executed above 1MB. Options: Upon Request, Always.

Option ROM Messages

Set the display mode for Option ROM messages. Options: Force BIOS, Keep Current.

Interrupt 19 Capture

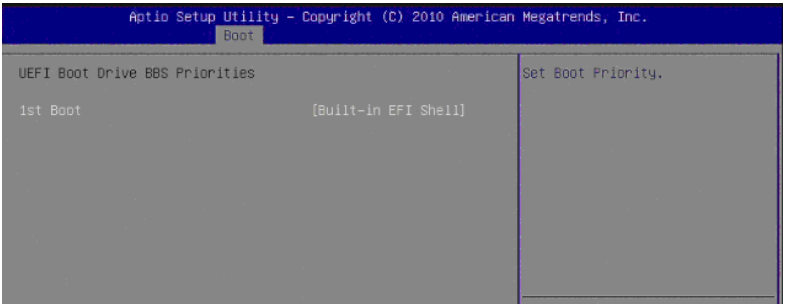
Allows Option ROMs to trap INT 19. Options: Disabled, Enabled.

Set Boot Priorities

The Boot devices are listed in groups by device type. First press <Enter> to enter the sub-menu. Then you may use the arrow keys to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list. For example, USB storage disks will be listed as "USB Drives" in the sub-menu as below. Only the first device in each device group will be available for selection in the Boot Device Priority option.

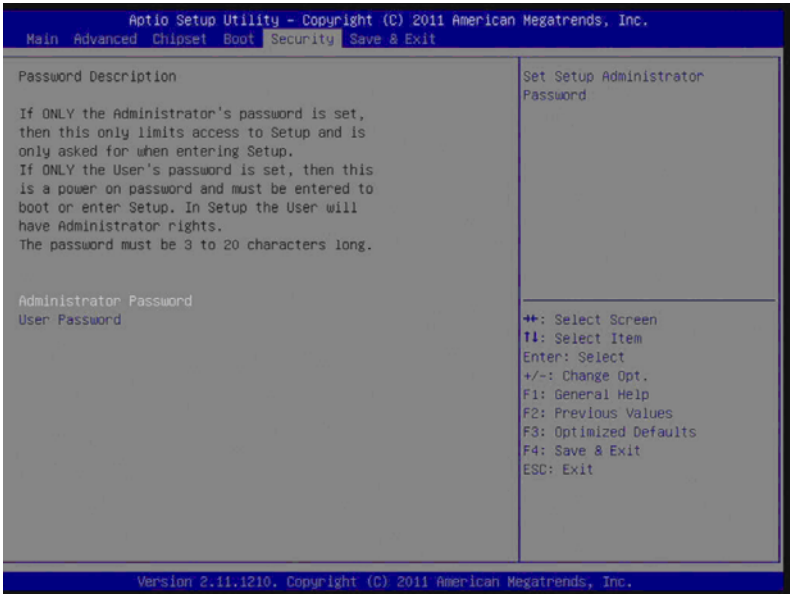
UEFI Boot Drive BBS Priorities

Specifies the Boot Device priority sequence of UEFI Boot drives.



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5.6 Security Setup



Administrator Password

Select this option and press < Enter > to access the sub menu. You can use the sub menu to change the Administrator password.

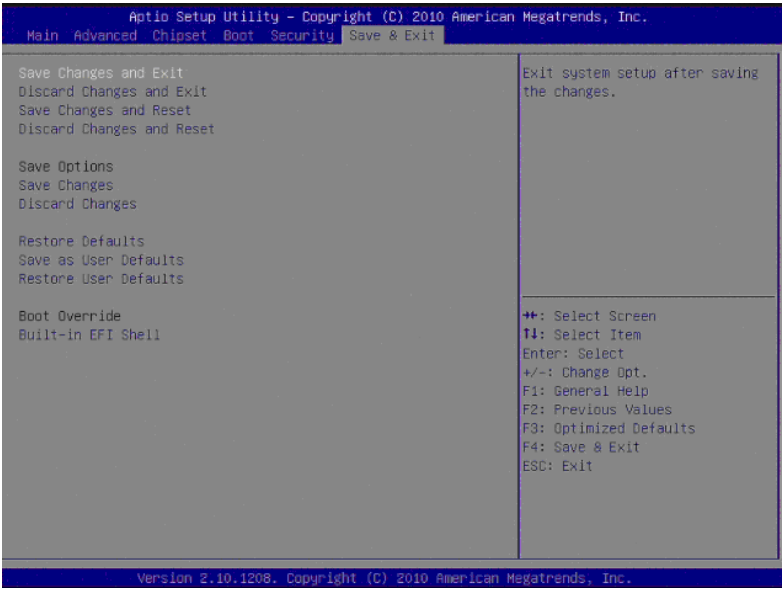
User Password

Select this option and press < Enter > to access the sub menu. You can use the sub menu to change the User password.

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5.7 Save & Exit Menu

Select the Save & Exit tab from the setup screen to enter the Exit BIOS Setup screen. You can display an Exit BIOS Setup option by highlighting it using the < Arrow > keys. The Exit BIOS Setup screen is shown below.



Save Changes and Exit

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect.

Save Configuration Changes and Exit Now?

[Yes] [No]

appears in the window. Select [Yes] to save changes and exit.

Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration.

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Discard Changes and Exit Setup Now?

[Yes] [No]

appears in the window. Select [Yes] to discard changes and exit.

Save Changes and Reset

Reset the system after saving the changes.

Discard Changes and Reset

Reset system setup without saving any changes.

Save Changes

Save changes made so far to any of the setup options.

Discard Changes

Select Discard Changes from the Exit menu and press < Enter >.

Select [Yes] to discard changes.

Restore Defaults

Restore/Load Default values for all the setup options.

Save as User Defaults

Save the changes made so far as User Defaults.

Restore User Defaults

Restore the User Defaults to all the setup options.

Boot Override

This group of functions includes a list of devices within the boot order. Select a drive to immediately boot that device regardless of the current boot order. If you are booting to the EFI Shell, an exit from the shell returns to Setup.

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Appendix A - Watchdog Timer

A sample program for configuring the M-342's watchdog timer is shown below.

A.1 Sample Code

```
void SIOConfigEnter ()
{
    IoWrite8 (NCT6776F_CONFIG_INDEX , 0x87);
    IoWrite8 (NCT6776F_CONFIG_INDEX , 0x87);
}


void SIOConfigExit ()
{
    IoWrite8 (NCT6776F_CONFIG_INDEX , 0xaa);
}

void Oem_WDT_Init (
  IN SETUP_DATA                *SetupData
)
{
    UINT8                       Data8;

    SIOConfigEnter();

    IoWrite8 (NCT6776F_CONFIG_INDEX , 0x2B);
     // Pin80 function selection to ATXPGD
    Data8 = IoRead8(NCT6776F_CONFIG_DATA) & 0xEF;
    IoWrite8 (NCT6776F_CONFIG_DATA , Data8);

    IoWrite8 (NCT6776F_CONFIG_INDEX , 0x07);
    IoWrite8 (NCT6776F_CONFIG_DATA , 0x09);

    IoWrite8 (NCT6776F_CONFIG_INDEX , 0x30);
    Data8 = IoRead8(NCT6776F_CONFIG_DATA) | 0x08;
    IoWrite8 (NCT6776F_CONFIG_DATA , Data8);

    IoWrite8 (NCT6776F_CONFIG_INDEX , 0xE4);
     // selection GP34 to GPO High
    IoWrite8 (NCT6776F_CONFIG_DATA , 0xEF);
    IoWrite8 (NCT6776F_CONFIG_INDEX , 0xE5);
    IoWrite8 (NCT6776F_CONFIG_DATA , 0x10);
```

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```
    IoWrite8 (NCT6776F_CONFIG_INDEX , 0xEA);
     // selection GP34 to WDTO
    IoWrite8 (NCT6776F_CONFIG_DATA , 0x10);

    IoWrite8 (NCT6776F_CONFIG_INDEX , 0x2B);
     // Pin80 function selection to GP34
    Data8 = IoRead8(NCT6776F_CONFIG_DATA) | 0x10;
    IoWrite8 (NCT6776F_CONFIG_DATA , Data8);

    IoWrite8 (NCT6776F_CONFIG_INDEX , 0x07);
    IoWrite8 (NCT6776F_CONFIG_DATA , 0x08);

    IoWrite8 (NCT6776F_CONFIG_INDEX , 0x30);
    Data8 = IoRead8(NCT6776F_CONFIG_DATA) | SetupData-
     >WDT_Control ;  //Enable(1) / Disable(0) WDT
     function.
    IoWrite8 (NCT6776F_CONFIG_DATA , Data8);

    IoWrite8(NCT6776F_CONFIG_INDEX, 0xF5);
    Data8 = IoRead8(NCT6776F_CONFIG_DATA) | SetupData-
     >WDT_CountMode;   //WDT_CountMode: 0x00 is Second
     mode, 0x08 is minute mode
    IoWrite8 (NCT6776F_CONFIG_DATA , Data8);

    IoWrite8(NCT6776F_CONFIG_INDEX, 0xF6);
    IoWrite8(NCT6776F_CONFIG_DATA, SetupData-
     >WDT_TimeOut);  //WDT_TimeOut means the timeout
     value

    SIOConfigExit();
}
```

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Appendix B - System Resources

B.1 System Memory Map

Address Range (decimal)	Address Range (hex)	Size	Description
(4GB-2MB)	FFE00000 – FFFFFFFF	2 MB	High BIOS Area
(4GB-18MB) – (4GB-17MB-1)	FEE00000 – FEEFFFFF	1 MB	FSB Interrupt Memory Space
(4GB-20MB) – (4GB-19MB-1)	FEC00000 – FECFFFFF	1 MB	APIC Configuration Space
960 K – 1024 K	F0000 – FFFFF	64 KB	System BIOS Area
896 K – 960 K	E0000 – EFFFF	64 KB	Extended System BIOS Area
768 K – 896 K	C0000 – DFFFF	128 KB	PCI expansion ROM area
640 K – 768 K	A0000 – BFFFF	128 KB	Video Buffer & SMM space
0 K – 640 K	00000 – 9FFFF	640 KB	DOS Area

Table B-1: System Memory Map

B.2 Direct Memory Access Channels

Channel Number	Data Width	System Resource
0		Open
1		Open
2		Open
3		Open
4		DMA Controller
5		Open
6		Open
7		Open

Table B-2: Direct Memory Access Channels

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B.3 IO Map

Hex Range	Device
000-00F	DMA controller 1
020-021	Programmable interrupt controller
02E-02F 04E-04F	LPC SIO (Winbond W83627 and Fintek 81216) configuration index/data registers
040-043	System timer
060, 062, 064, 066	8742 equivalent (keyboard)
061	System speaker
070-071	System CMOS/Real time clock
080-091	DMA page register
092	Reset (Bit 0)/ Fast Gate A20 (Bit 1)
093-09F	DMA page registers continued
0A0-0B1 and 0B4-0BD	Interrupt controller 2, 8259 equivalent
0C0-0DF	DMA controller 2, 8237A-5 equivalent
0F0	Read: PCI and Master abort. (Note 1) Write: FERR#/ IGNNE# /Interrupt controller
2F8 – 2FF	Serial Port 2
170-177 and 1F0-1F7 376 and 3F6	ATA Channel 0
378 - 37F	Parallel port
3B0 – 3BB	Mono/VGA mode video
3C0- 3DF	VGA registers
3F8 – 3FF	Serial Port 1
4D0 and 4D1	Interrupt controller
400 – 47F	SB PM Base Address
500 – 57F	SB GPIO
A00 – A3F	SIO PME Base Address
C80-C87	Serial Port 3
C88-C8F	Serial Port 4
C90-C97	Serial Port 5
C98-C9F	Serial Port 6
CF9	Reset Control register (8 bit I/O)
F040-F05F	Smbus Controller

Table B-3: IO Map

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Hex Range	Device
F080-F08F F090-F09F F0A0-F0A3 F0B0-F0B7 F0C0-F0C3 F0D0-F0D7	SATA Controller 1
F0E0-F0EF F140-F147	SATA Controller 2

Table B-3: IO Map

B.4 Interrupt Request (IRQ) Lines

APIC Mode

IRQ#	Typical Interrupt Resource	Connected to Pin
0	System Timer	N/A
1	Keyboard controller	N/A
2	N/A	N/A
3	Serial Port 2 (COM2) / PCI / ISA	IRQ3 via SERIRQ, IRQ3 at ISA bus
4	Serial Port 1 (COM1) / PCI / ISA	IRQ4 via SERIRQ, IRQ4 at ISA bus
5	Serial Port 3 (COM3) / PCI / ISA	IRQ5 via SERIRQ, IRQ5 at ISA bus
6	N/A	N/A
7	Parallel Port/ Serial Port 4 / PCI / ISA	IRQ7 via SERIRQ, IRQ7 at ISA bus
8	Real-time clock	N/A
9	N/A	N/A
10	Serial Port 5 (COM5) / PCI / ISA	IRQ10 via SERIRQ, IRQ10 at ISA bus
11	Serial Port 6 (COM6) /PCI / ISA	IRQ11 via SERIRQ, IRQ11 at ISA bus

Table B-4: IRQ Lines APIC Mode

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IRQ#	Typical Interrupt Resource	Connected to Pin
12	PS/2 Mouse / PCI / ISA	IRQ12 via SERIRQ, IRQ12 at ISA bus
13	Math Processor	N/A
14	SATA Controller 0	IRQ14 via SERIRQ, IRQ14 at ISA bus
15	SATA Controller 1	IRQ15 via SERIRQ, IRQ15 at ISA bus
16	USB Controller	N/A
17	INTEL AMT	N/A
18	Standard Dual Channel PCI IDE Controller	N/A
19	N/A	N/A
20	N/A	N/A
21	N/A	N/A
22	High Definition Audio Contoller	N/A
23	USB Contoller	N/A

Table B-4: IRQ Lines APIC Mode

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B.5 PCI Configuration Space Map

Bus #	Device #	Function #	Routing	Description
00h	00h	00h	N/A	Intel Host Bridge
00h	01h	00h	Internal	PCI Express Root Port
00h	02h	00h	Internal	Intel Integrated Graphics Device
00h	16h	00h	Internal	Intel Management Engine Interface
00h	16h	02h	Internal	IDE-R Controller
00h	16h	03h	Internal	PCI Serial controller
00h	19h	00h	Internal	GbE Controller
00h	1Ah	00h	Internal	Intel USB EHCI Controller #2
00h	1Bh	00h	Internal	High Definition Audio controller
00h	1Ch	00h	Internal	PCI Express Root port 1
00h	1Ch	04h	Internal	PCI Express Root port 5
00h	1Dh	00h	Internal	Intel USB EHCI Controller #1
00h	1Eh	00h	N/A	Intel PCI to PCI Bridge
00h	1Fh	00h	N/A	Intel LPC Interface Bridge
00h	1Fh	02h	Internal	Intel SATA controller #1
00h	1Fh	03h	Internal	Intel SMBus Controller
00h	1Fh	05h	Internal	Intel SATA controller #2
03h	00h	00h	Internal	Intel Ethernet (PCI Express)

Table B-5: PCI Configuration Space Map

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B.6 PCI Interrupt Routing Map

PIRQ	A	B	C	D	E	F	G	H
INT Line	INTA	INTB	INTC	INTD				
P.E.G Root Port	INTA	INTB	INTC	INTD				
VGA	X							
SATAController1			X	X				
SATAController2				X				
SMBUS controller			X					
Thermal Controller			X					
EHCI 1								X
EHCI 2	X							
HDA							X	
Intel GBE					X			
HECI host 1	X							
HECI host 2	X							
IDER Controller			X					
KT Controller		X						
PCIE port 0	INTB	INTA	INTC	INTD				
PCIE port 4	INTA	INTB	INTC	INTD				
PCIE port 5	INTB	INTC	INTD	INTA				
PCIE port 6	INTC	INTD	INTA	INTB				
PCIE port 7	INTD	INTA	INTB	INTC				
PCI Slot 1				X				
PCI Slot2			X					
PCI Slot3		X						
PCI Slot 4	X							
PCI Slot 5								X

Table B-6: PCI Interrupt Routing Map

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Important Safety Instructions

For user safety, please read and follow all **instructions**, **WARNINGS**, **CAUTIONS,** and **NOTES** marked in this manual and on the associated equipment before handling/operating the equipment.

- Read these safety instructions carefully.
- Keep this user's manual for future reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment:
  - Turn off power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources;
  - Keep equipment away from high heat or high humidity;
  - Keep equipment properly ventilated (do not block or cover ventilation openings);
  - Make sure to use recommended voltage and power source settings;
  - Always install and operate equipment near an easily accessible electrical socket-outlet;
  - Secure the power cord (do not place any object on/over the power cord);
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings; and,
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.

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- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.

A Lithium-type battery may be provided for uninterrupted, backup or emergency power.



Risk of explosion if battery is replaced with one of an incorrect type. Dispose of used batteries appropriately.

- Equipment must be serviced by authorized technicians when:
  - The power cord or plug is damaged;
  - Liquid has penetrated the equipment;
  - It has been exposed to high humidity/moisture;
  - It is not functioning or does not function according to the user's manual;
  - It has been dropped and/or damaged; and/or,
  - It has an obvious sign of breakage.

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