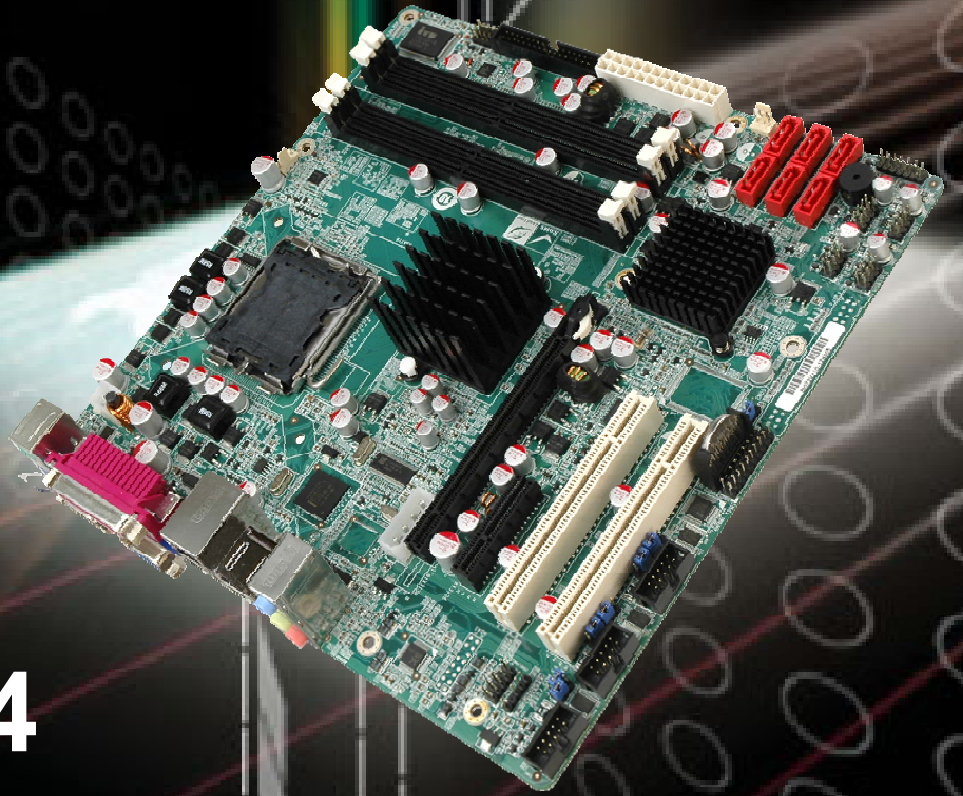




IEI Technology Corp.



**MODEL:
IMB-Q354**

**Intel® Q35 Chipset microATX Motherboard Supports
LGA775 Intel® Core™2 Quad/Core™2 Duo/Celeron® CPU,
8 GB DDR2, Six SATA 3Gb/s, Twelve USB 2.0,
One PCIe x16, One PCIe x4, Two PCI and PCIe GbE**

User Manual

Rev. 1.20 – 16 May, 2013



Revision

Date	Version	Changes
16 May, 2013	1.20	Updated for R12 version
14 June, 2012	1.10	Updated for R11 version
5 November, 2008	1.00	Initial release

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Table of Contents

1 INTRODUCTION.....	1
1.1 OVERVIEW.....	2
1.2 FEATURES.....	3
1.3 CONNECTORS.....	4
1.4 DIMENSIONS.....	5
1.5 DATA FLOW.....	6
1.6 TECHNICAL SPECIFICATIONS.....	7
2 UNPACKING.....	9
2.1 ANTI-STATIC PRECAUTIONS.....	10
2.2 UNPACKING PRECAUTIONS.....	10
2.3 PACKAGE CONTENTS.....	11
2.4 OPTIONAL ITEMS.....	12
3 CONNECTOR PINOUTS.....	13
3.1 PERIPHERAL INTERFACE CONNECTORS.....	14
3.1.1 <i>IMB-Q354 Layout</i>	14
3.1.2 <i>Peripheral Interface Connectors</i>	15
3.1.3 <i>External Interface Panel Connectors</i>	16
3.2 INTERNAL PERIPHERAL CONNECTORS.....	17
3.2.1 <i>ATX Power Connector</i>	17
3.2.2 <i>CPU Power Connector</i>	18
3.2.3 <i>Digital Input/Output (DIO) Connector</i>	19
3.2.4 <i>Fan Connector, CPU (12V, 4-pin)</i>	20
3.2.5 <i>Fan Connector, System (+12V, 3-pin)</i>	21
3.2.6 <i>Floppy Disk Connector (34-pin)</i>	22
3.2.7 <i>Front Audio Connector</i>	24
3.2.8 <i>Front Panel Connector</i>	25
3.2.9 <i>Infrared Interface Connector</i>	26
3.2.10 <i>PCIe Power Connector</i>	27
3.2.11 <i>SATA Drive Connectors</i>	28

IMB-Q354 microATX Motherboard

3.2.12 Serial Port Connector (COM2, COM 3 and COM4).....	29
3.2.13 SPDIF Connector.....	30
3.2.14 SPI Flash Connector.....	31
3.2.15 Trusted Platform Module (TPM) Connector.....	32
3.2.16 USB Connectors (Internal).....	33
3.3 EXTERNAL PERIPHERAL INTERFACE CONNECTOR PANEL	34
3.3.1 Audio Connectors.....	34
3.3.2 Keyboard/Mouse Connector	35
3.3.3 LAN and Dual USB Connector.....	36
3.3.4 Parallel Port, Serial Port and VGA Combo Connector.....	37
4 INSTALLATION	40
4.1 ANTI-STATIC PRECAUTIONS	41
4.2 INSTALLATION CONSIDERATIONS.....	42
4.2.1 Installation Notices	42
4.2.2 Installation Checklist	43
4.3 UNPACKING.....	44
4.3.1 Unpacking Precautions.....	44
4.4 CPU, CPU COOLING KIT AND DIMM INSTALLATION	44
4.4.1 Socket LGA775 CPU Installation	45
4.4.2 Socket LGA775 CF-520 Cooling Kit Installation.....	48
4.4.3 DIMM Installation	50
4.4.3.1 DIMM Purchasing Guidelines	51
4.4.3.2 DIMM Installation Order	51
4.4.3.3 DIMM Installation Guidelines	52
4.5 JUMPER SETTINGS	53
4.5.1 Clear CMOS Jumper.....	54
4.5.2 COM Port Pin 9 Setting Jumpers	55
4.5.3 COM Port Pin 9 Voltage Setting Jumpers	56
4.6 CHASSIS INSTALLATION.....	58
4.6.1 Airflow.....	58
4.6.2 Motherboard Installation.....	58
4.7 INTERNAL PERIPHERAL DEVICE CONNECTIONS.....	58
4.7.1 Dual RS-232 Cable Connection.....	58
4.7.2 SATA Drive Connection	59

4.7.3 USB Cable (Dual Port).....	61
4.7.4 PCIe x16 Expansion Card Installation	62
4.8 EXTERNAL PERIPHERAL INTERFACE CONNECTION	63
4.8.1 Audio Connection.....	63
4.8.2 LAN Connection (Single Connector)	64
4.8.3 Parallel Device Connection.....	65
4.8.4 PS/2 Keyboard and Mouse Connection	66
4.8.5 Serial Device Connection	67
4.8.6 USB Device Connection.....	68
4.8.7 VGA Monitor Connection	69
5 AMI BIOS	71
5.1 INTRODUCTION.....	72
5.1.1 Starting Setup.....	72
5.1.2 Using Setup	72
5.1.3 Getting Help.....	73
5.1.4 Unable to Reboot After Configuration Changes.....	73
5.1.5 BIOS Menu Bar.....	73
5.2 MAIN.....	74
5.3 ADVANCED	75
5.3.1 CPU Configuration.....	76
5.3.2 IDE Configuration	77
5.3.2.1 IDE Master, IDE Slave	78
5.3.3 Floppy Configuration.....	82
5.3.4 Super IO Configuration	83
5.3.5 Hardware Health Configuration.....	87
5.3.6 ICP Power Configuration	89
5.3.6.1 ACPI Configuration	90
5.3.6.2 Power Configuration	90
5.3.7 AHCI Configuration.....	92
5.3.7.1 AHCI Port n	93
5.3.8 Intel VT-d Configuration	94
5.3.9 Remote Access Configuration	95
5.3.10 Trusted Computing	96
5.3.11 USB Configuration.....	97

IMB-Q354 microATX Motherboard

5.3.12 IEI Feature.....	99
5.4 PCI/PNP.....	100
5.5 BOOT.....	103
5.5.1 Boot Settings Configuration.....	103
5.6 SECURITY.....	105
5.7 CHIPSET	106
5.7.1 North Bridge Configuration.....	107
5.7.2 South Bridge Configuration.....	108
5.8 EXIT	110
6 SOFTWARE DRIVERS	112
6.1 AVAILABLE SOFTWARE DRIVERS	113
6.2 DRIVER CD AUTO-RUN	113
6.3 INTEL® CHIPSET DRIVER.....	115
6.4 INTEL® GRAPHICS MEDIA ACCELERATOR DRIVER	119
6.5 INTEL® 82573 PCI EXPRESS GIGABIT ETHERNET CONTROLLER DRIVER	124
6.6 REALTEK HD AUDIO DRIVER (ALC662) INSTALLATION	132
6.6.1 BIOS Setup.....	132
6.6.2 Driver Installation	132
6.7 INTEL® MATRIX STORAGE MANAGER DRIVER INSTALLATION.....	135
A BIOS OPTIONS.....	141
B TERMINOLOGY.....	145
C DIO INTERFACE.....	150
C.1 DIO INTERFACE INTRODUCTION	151
C.2 DIO CONNECTOR PINOUTS.....	151
C.3 ASSEMBLY LANGUAGE SAMPLES.....	152
C.3.1 Enable the DIO Input Function.....	152
C.3.2 Enable the DIO Output Function.....	152
D WATCHDOG TIMER.....	153
E COMPATIBILITY	156
E.1 COMPATIBLE OPERATING SYSTEMS.....	157
E.2 COMPATIBLE PROCESSORS	157
E.3 COMPATIBLE MEMORY MODULES	157

F INTEL® MATRIX STORAGE MANAGER.....	159
F.1 INTRODUCTION.....	160
<i>F.1.1 Precautions</i>	160
F.2 FEATURES AND BENEFITS	161
F.3 ACCESSING THE INTEL® MATRIX STORAGE MANAGER.....	161
F.4 RAID CONFIGURATION	162
<i>F.4.1 Creating a RAID Volume</i>	162
<i>F.4.2 Deleting a RAID Volume</i>	167
<i>F.4.3 Resetting a Disk to Non-RAID</i>	169
<i>F.4.4 Exiting the Matrix Storage Manager</i>	171
G HAZARDOUS MATERIALS DISCLOSURE	173
G.1 HAZARDOUS MATERIAL DISCLOSURE TABLE FOR IPB PRODUCTS CERTIFIED AS ROHS COMPLIANT UNDER 2002/95/EC WITHOUT MERCURY	174

List of Figures

Figure 1-1: IMB-Q354 microATX Motherboard	2
Figure 1-2: IMB-Q354 Overview.....	4
Figure 1-3: IMB-Q354 Dimensions (mm)	5
Figure 1-4: Data Flow Block Diagram.....	6
Figure 3-1: Connector and Jumper Locations.....	14
Figure 3-2: ATX Power Connector Pinout Locations.....	17
Figure 3-3: CPU Power Connector Location.....	19
Figure 3-4: DIO Connector Location.....	20
Figure 3-5: +12V Fan Connector Location	21
Figure 3-6: +12V Fan Connector Location	22
Figure 3-7: 34-pin FDD Connector Location	23
Figure 3-8: Front Audio Connector Location (10-pin).....	24
Figure 3-9: Front Panel Connector Pinout Locations (14-pin).....	25
Figure 3-10: Infrared Connector Location.....	26
Figure 3-11: PCIe Power Connector Location	27
Figure 3-12: SATA Drive Connector Locations	28
Figure 3-13: Serial Connector Location	29
Figure 3-14: SPDIF Connector Location	30
Figure 3-15: SPI Flash Connector Locations.....	31
Figure 3-16: TPM Connector Location.....	32
Figure 3-17: USB Connector Locations.....	33
Figure 3-18: IMB-Q354 External Peripheral Interface Connector	34
Figure 3-19: Audio Connector	35
Figure 3-20: PS/2 Pinouts	35
Figure 3-21: RJ-45 Ethernet Connector.....	36
Figure 3-22 Parallel Port Connector Pinout Locations.....	38
Figure 3-23: COM1 Pinout Locations.....	39
Figure 3-24: VGA Connector	39
Figure 4-1: Intel® LGA775 Socket.....	45
Figure 4-2: Remove the CPU Socket Protective Shield	46

Figure 4-3: Open the CPU Socket Load Plate.....	47
Figure 4-4: Insert the Socket LGA775 CPU.....	48
Figure 4-5: IEI CF-520 Cooling Kit.....	49
Figure 4-6: Securing the Heat sink to the PCB Board	50
Figure 4-7: DDR2 Channels	51
Figure 4-8: Installing a DIMM.....	53
Figure 4-9: Clear CMOS Jumper	55
Figure 4-10: COM Port Pin 9 Setting Jumper Locations.....	56
Figure 4-11: COM Port Pin 9 Voltage Setting Jumper Locations	57
Figure 4-12: Dual RS-232 Cable Installation	59
Figure 4-13: SATA Drive Cable Connection.....	60
Figure 4-14: SATA Power Drive Connection.....	60
Figure 4-15: Dual USB Cable Connection	61
Figure 4-16: PCIe x16 Installation	62
Figure 4-17: Audio Connectors	64
Figure 4-18: LAN Connection	65
Figure 4-19: Parallel Device Connector.....	66
Figure 4-20: PS/2 Keyboard/Mouse Connector	67
Figure 4-21: Serial Device Connector.....	68
Figure 4-22: USB Device Connection	69
Figure 4-23: VGA Connector	70
Figure 6-1: Introduction Screen	114
Figure 6-2: Available Drivers.....	114
Figure 6-3: Intel® Chipset Driver Directory.....	115
Figure 6-4: Intel® Chipset Driver Setup Icon.....	116
Figure 6-5: Intel® Package Manager.....	117
Figure 6-6: Intel® Setup Welcome Screen	117
Figure 6-7: Intel® Chipset Driver License Agreement.....	118
Figure 6-8: Readme File.....	118
Figure 6-9: Intel® Chipset Driver Complete Installation Screen.....	119
Figure 6-10: Select the Operating System	120
Figure 6-11: Intel® Driver Directory.....	120
Figure 6-12: Intel® VGA Driver Setup Icon	121
Figure 6-13: GMA Driver Readme File	122
Figure 6-14: GMA Driver File Extraction	122

IMB-Q354 microATX Motherboard

Figure 6-15: GMA Driver Installation Welcome Screen	122
Figure 6-16: GMA Driver License Agreement	123
Figure 6-17: GMA Driver Installing Notice	123
Figure 6-18: GMA Driver Installation Complete	124
Figure 6-19: Intel® 82573 Driver Directory Icon	125
Figure 6-20: Intel® 82573 Operating System	126
Figure 6-21: Select Operating System Type	126
Figure 6-22: Driver Directory	127
Figure 6-23: Intel® 82573 Driver Startup Icon.....	127
Figure 6-24: Intel® 82573 License Agreement.....	128
Figure 6-25: Intel® 82573 File Location Select	128
Figure 6-26: Intel® 82573 Installation Files Extraction	129
Figure 6-27: Intel® PRO Network Connections window	129
Figure 6-28: Intel® PRO Network Connections Welcome	130
Figure 6-29: License Agreement	130
Figure 6-30: Setup Type	131
Figure 6-31: Intel® 82573 Driver Installation Progress.....	131
Figure 6-32: The InstallShield Wizard Starts	132
Figure 6-33: Preparing Setup Screen	133
Figure 6-34: InstallShield Wizard Welcome Screen	133
Figure 6-35: Audio Driver Software Configuration.....	134
Figure 6-36: Installation Wizard Updates the System.....	134
Figure 6-37: Restart the Computer	135
Figure 6-38: SATA RAID Driver Installation Program	136
Figure 6-39: SATA RAID Setup Program Icon	137
Figure 6-40: InstallShield Wizard Setup Screen	137
Figure 6-41: Matrix Storage Manager Setup Screen	138
Figure 6-42: Matrix Storage Manager Welcome Screen	138
Figure 6-43: Matrix Storage Manager Warning Screen.....	138
Figure 6-44: Matrix Storage Manager License Agreement.....	139
Figure 6-45: Matrix Storage Manager Readme File	139
Figure 6-46: Matrix Storage Manager Setup Complete.....	140

List of Tables

Table 1-1: Technical Specifications.....	8
Table 2-1: Package List Contents	12
Table 2-2: Package List Contents	12
Table 3-1: Peripheral Interface Connectors	16
Table 3-2: Rear Panel Connectors	17
Table 3-3: ATX Power Connector Pinouts	18
Table 3-4: CPU Power Connector Pinouts	19
Table 3-5: DIO Connector Pinouts	20
Table 3-6: +12V Fan Connector Pinouts.....	21
Table 3-7: +12V Fan Connector Pinouts.....	22
Table 3-8: 34-pin FDD Connector Pinouts	23
Table 3-9: Front Audio Connector Pinouts	24
Table 3-10: Front Panel Connector Pinouts (14-pin).....	26
Table 3-11: Infrared Connector Pinouts	27
Table 3-12: PCIe Power Connector Pinouts.....	27
Table 3-13: SATA Drive Connector Pinouts.....	29
Table 3-14: Serial Connector Pinouts.....	30
Table 3-15: SPDIF Connector Pinouts	30
Table 3-16: SPI Flash Connector Pinouts	31
Table 3-17: TPM Connector Pinouts	32
Table 3-18: USB Port Connector Pinouts.....	33
Table 3-19: PS/2 Connector Pinouts.....	36
Table 3-20: LAN Pinouts	36
Table 3-21: RJ-45 Ethernet Connector LEDs	37
Table 3-22: USB Port Pinouts.....	37
Table 3-23: Parallel Port Connector Pinouts	38
Table 3-24: RS-232 Serial Port (COM 1) Pinouts	39
Table 3-25: VGA Connector Pinouts.....	39
Table 4-1: Jumpers	54
Table 4-2: Clear CMOS Jumper Settings.....	55

IMB-Q354 microATX Motherboard

Table 4-3: COM Port Pin 9 Setting Jumper Settings	56
Table 4-4: COM Port Pin 9 Voltage Setting Jumper Settings	57
Table 5-1: BIOS Navigation Keys	73

BIOS Menus

Menu 1: Main	74
Menu 2: Advanced	76
Menu 3: CPU Configuration	76
Menu 4: IDE Configuration	77
Menu 5: IDE Master and IDE Slave Configuration	79
Menu 6: Floppy Configuration	83
Menu 7: Super IO Configuration	84
Menu 8: Hardware Health Configuration	88
Menu 9: ICP Power Configuration	89
Menu 10: ACPI Configuration	90
Menu 11: Power Configuration	91
Menu 12: AHCI Configuration	93
Menu 13: AHCI Port n Configuration Menu	94
Menu 14: Intel VT-d Configuration	95
Menu 15: Remote Access Configuration [Advanced]	96
Menu 16: Trusted Computing	97
Menu 17: USB Configuration	98
Menu 18: IEI Feature	100
Menu 19: PCI/PnP Configuration	101
Menu 20: Boot	103
Menu 21: Boot Settings Configuration	103
Menu 22: Security	105
Menu 23: Chipset	106
Menu 24: North Bridge Configuration	107
Menu 25: South Bridge Chipset Configuration	109
Menu 26: Exit	110

Chapter

1

Introduction

1.1 Overview

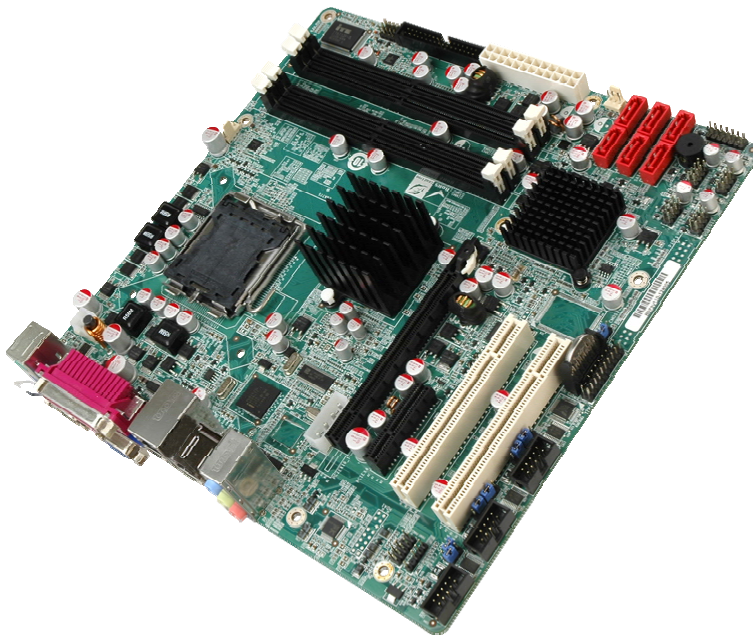


Figure 1-1: IMB-Q354 microATX Motherboard

The IMB-Q354 microATX form factor motherboard (**Figure 1-1**) is an LGA775 Intel® Core™2 Quad, Intel® Core™2 Duo or Intel® Celeron® CPU processor platform. Both 45nm core (Wolfdale, Yorkfield) and 65nm core (Conroe) processors are supported.

Up to four 2.0 GB 667 MHz or 800 MHz un-buffered DDR2 SDRAM DIMM are supported by the Intel® Q35 graphics memory controller hub (GMCH). The Intel® Q35 GMCH also has a single PCI Express x16 (PCIe x16) expansion lane for a PCIe x16 graphics card.

The integrated Intel® ICH9DO I/O controller hub (ICH) supports six SATA 3Gb/s drives with data transfer speeds of 3.0 Gbps with SATA RAID configuration support. Twelve USB 2.0 channels, one expansion PCIe x4 channel and two expansion PCI channels provide flexible expansion options. Support for a (optional) trusted platform module (TPM) provides additional system security during system boot-up.

IMB-Q354 microATX Motherboard

1.2 Features

Some of the IMB-Q354 features are listed below.

- Supports the following Intel® LGA775 processors:
 - Intel® Core™2 Duo (45nm and 65nm)
 - Intel® Core™2 Quad (45nm and 65nm)
 - Intel® Celeron® (65nm)
- Supports four 240-pin 2 GB 667 MHz or 800 MHz DDR2 DIMMs
- Six SATA 3Gb/s drives with transfer rates of 3.0 Gbps supported
- Twelve USB 2.0 devices supported (eight onboard and four on the rear panel)
- One GbE Ethernet connector
- microATX form factor
- RoHS compliant
- Supports ATX power supplies

1.3 Connectors

The IMB-Q354 has a wide variety of peripheral interface connectors. **Figure 1-2** is a labeled photo of the peripheral interface connectors on the IMB-Q354.

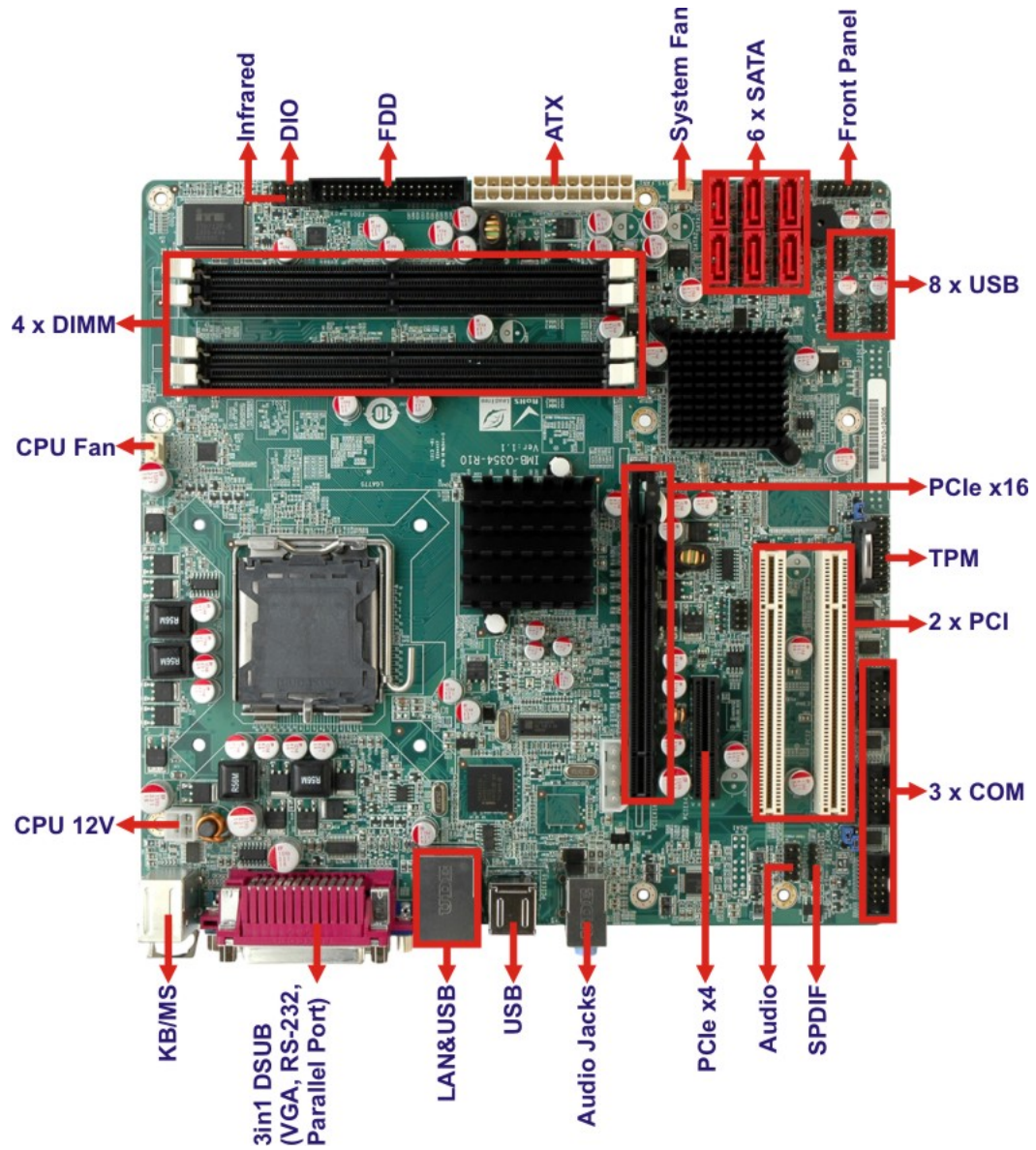


Figure 1-2: IMB-Q354 Overview

IMB-Q354 microATX Motherboard

1.4 Dimensions

The dimensions of the board are listed below:

- **Length:** 243.84mm
- **Width:** 243.84mm

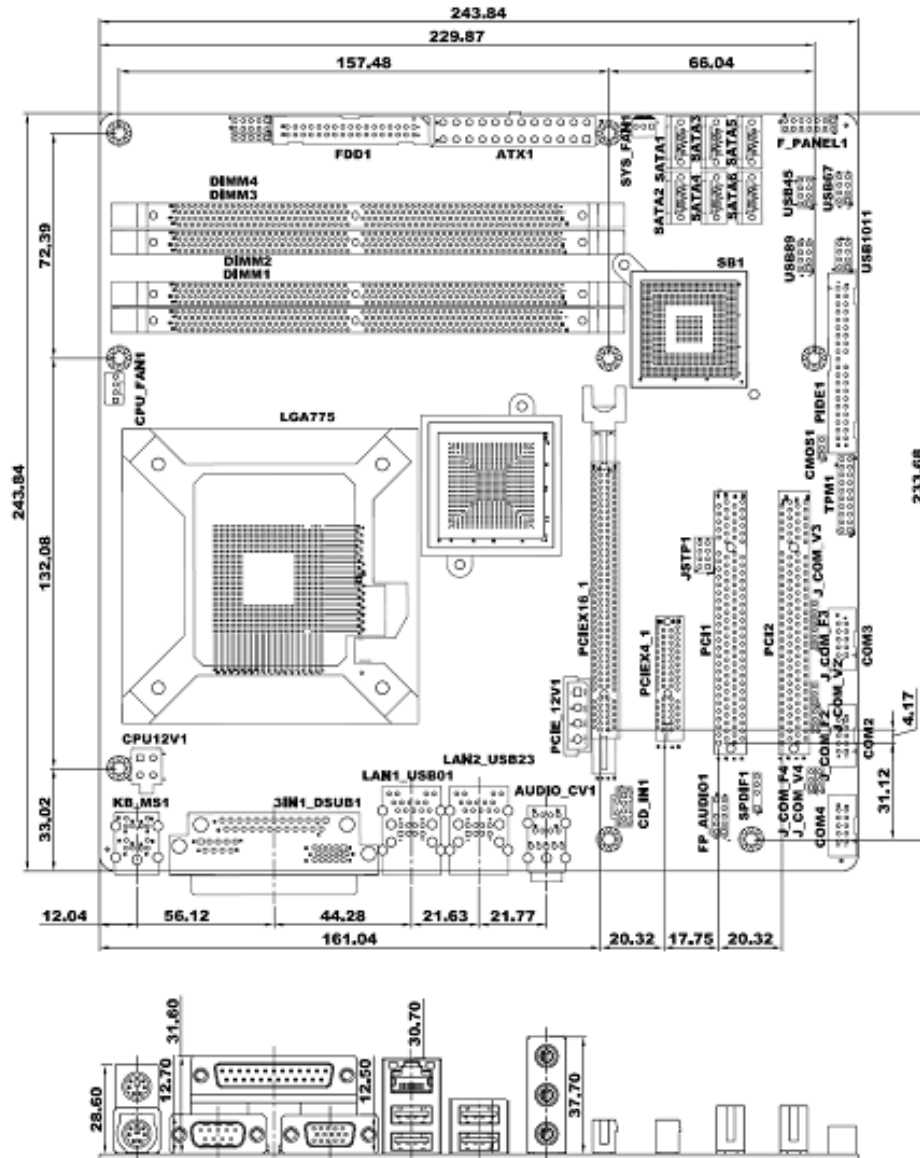


Figure 1-3: IMB-Q354 Dimensions (mm)

1.5 Data Flow

Figure 1-4 shows the data flow between the two on-board chipsets and other components installed on the motherboard and described in the following sections of this chapter.

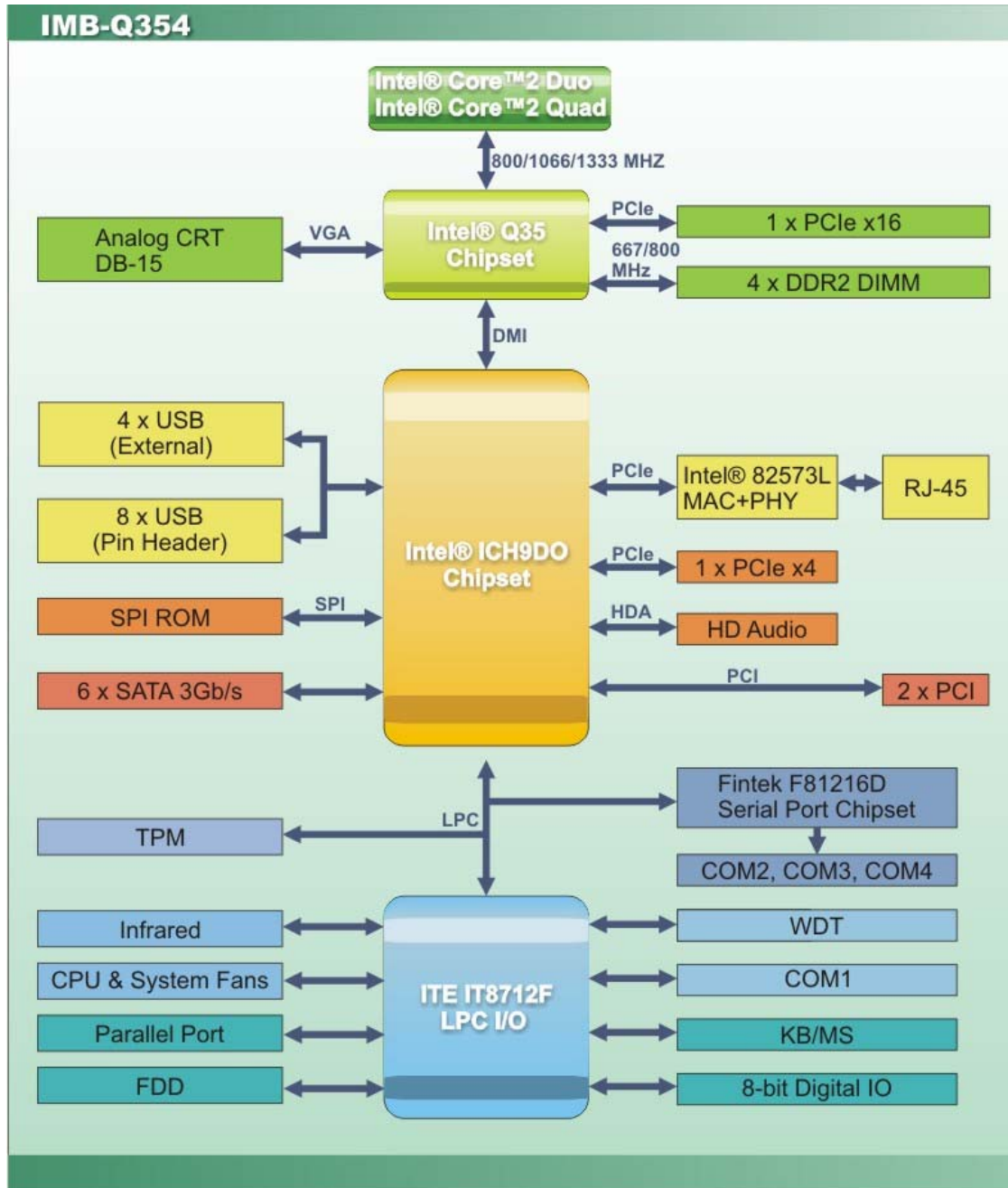


Figure 1-4: Data Flow Block Diagram

IMB-Q354 microATX Motherboard

1.6 Technical Specifications

IMB-Q354 technical specifications are listed in **Table 1-1**.

Specification	IMB-Q354
Form Factor	microATX
System CPU	LGA775 Intel® Core™2 Quad LGA775 Intel® Core™2 Duo LGA775 Intel® Celeron®
Front Side Bus (FSB)	800 MHz, 1066 MHz or 1333 MHz
System Chipset	Intel® Q35 Express Chipset Intel® ICH9DO Controller Hub
Memory	Four 240-pin DDR2 DIMM sockets support 2.0 GB 667 MHz or 800 MHz DDR2 DIMMs (system max. 8 GB)
Super I/O	ITE IT8712F Rev. I
Display	Analog VGA display through external DB-15 connector
BIOS	AMI BIOS label SPI EEPROM 4.0 MB
Audio	Realtek ALC662 codec.
LAN	Intel® 82573L (MAC and PHY) PCIe GbE controller
COM	Four RS-232 serial ports <ul style="list-style-type: none"> ▪ Three by onboard pin-headers ▪ One by external connector
USB2.0	Twelve USB 2.0 devices supported: <ul style="list-style-type: none"> ▪ Eight by onboard pin-headers ▪ Four by external connectors

SATA	Six SATA 3Gb/s drives supported
SATA RAID Levels	RAID 0, RAID 1, RAID 5 and RAID 10
Keyboard/mouse	By external PS/2 connector through the ITE IT8712F super I/O
Digital I/O	One 8-bit digital input/output connector; 4-bit input/4-bit output through the ITE IT8712F super I/O
Watchdog Timer	Software programmable 1-255 sec. through the ITE IT8712F super I/O
Infrared	One infrared connector through the ITE IT8712F super I/O.
Power Supply	ATX power supply
TPM	Supports TPM v1.2 with 20-pin onboard pin-header
Fan Connector	One system fan 3-pin header One CPU fan 4-pin header
Buzzer	Yes
Power Consumption	3.3V@2.41A, 5V@5.71A, +12V@3.69A (3Dmark® 2001) and 5VSB@0.13A (3.0 GHz E6850 Intel® Core™2 Duo CPU with four 2.0 GB, 800 MHz DDR2 DIMM running 3Dmark® 2001)
Temperature	0°C – 60°C (32°F - 140°F)
Humidity (Operating)	5%~95% non-condensing
Dimensions (LxW)	244 mm x 244 mm
Weight (GW)	1.1 kg

Table 1-1: Technical Specifications

Chapter

2

Unpacking

2.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the IMB-Q354 may result in permanent damage to the IMB-Q354 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IMB-Q354. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IMB-Q354, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- **Wear an anti-static wristband:** Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- **Self-grounding:** Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- **Use an anti-static pad:** When configuring the IMB-Q354, place it on an anti-static pad. This reduces the possibility of ESD damaging the IMB-Q354.
- **Only handle the edges of the PCB:** When handling the PCB, hold the PCB by the edges.

2.2 Unpacking Precautions

When the IMB-Q354 is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 2.1**.
- Make sure the packing box is facing upwards so the IMB-Q354 does not fall out of the box.
- Make sure all the components shown in **Section 2.3** are present.

IMB-Q354 microATX Motherboard





2.3 Package Contents



NOTE:

If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the IMB-Q354 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The IMB-Q354 is shipped with the following components:

Quantity	Item and Part Number	Image
1	IMB-Q354 motherboard	
1	Dual RS-232 cable (P/N: 19800-000051-RS)	
6	SATA cables (P/N: 32801-000703-200-RS)	
3	SATA power cables (P/N: 32102-000100-200-RS)	

1	USB cable (P/N: 19800-003100-200-RS)	
1	Mini jumper Pack	
1	Quick Installation Guide	
1	Utility CD	

Table 2-1: Package List Contents

2.4 Optional Items




CPU cooling kit (P/N: CF-520-RS-R11)	
CPU cooling kit (P/N: CF-775A-RS)	
Infineon TPM module (P/N: TPM-IN01-R11)	

Table 2-2: Package List Contents

Chapter

3

Connector Pinouts

3.1 Peripheral Interface Connectors

Section 3.1.1 shows peripheral interface connector locations. Section 3.1.2 lists all the peripheral interface connectors seen in Section 3.1.1.

3.1.1 IMB-Q354 Layout

Figure 3-1 shows the on-board peripheral connectors, rear panel peripheral connectors and on-board jumpers.

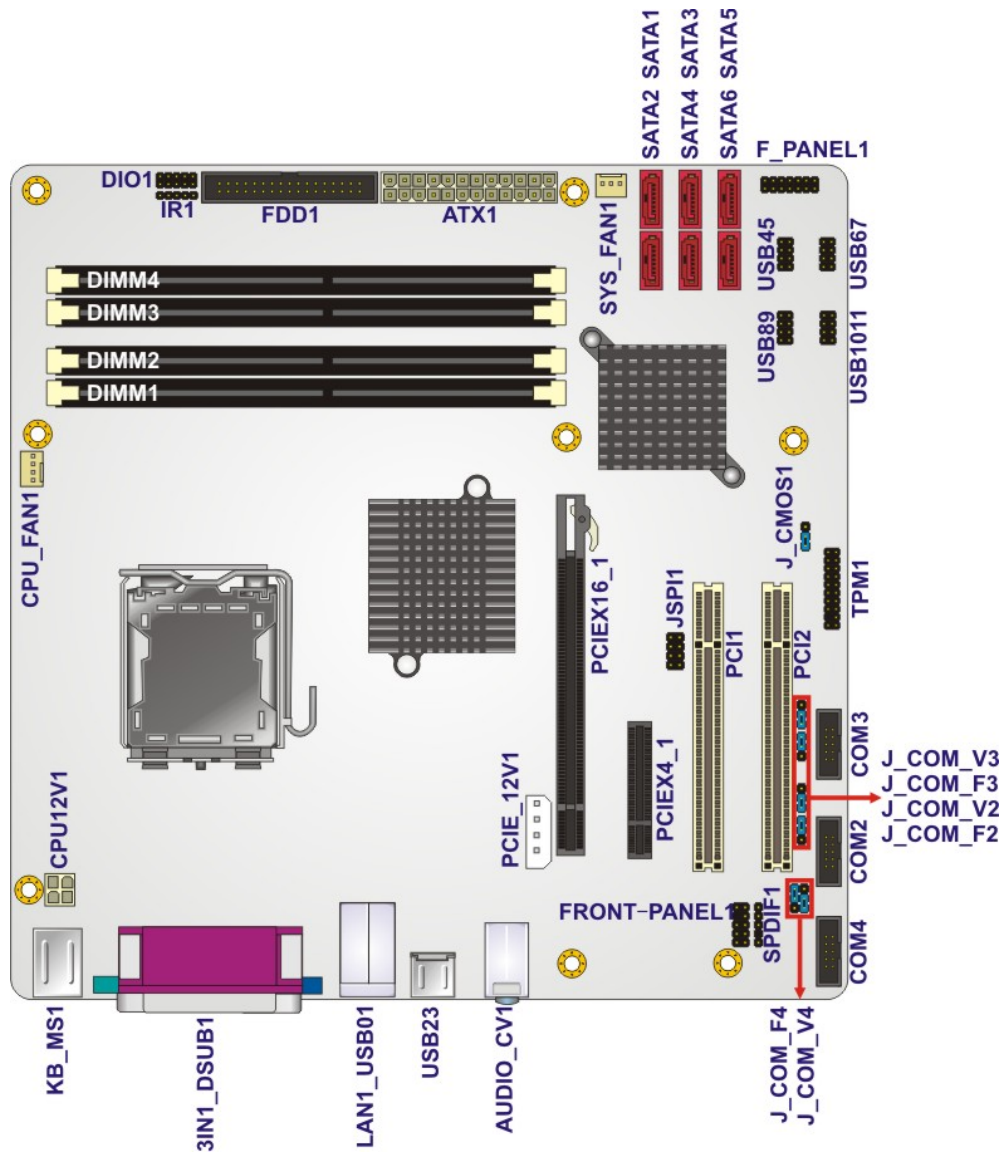


Figure 3-1: Connector and Jumper Locations

IMB-Q354 microATX Motherboard

3.1.2 Peripheral Interface Connectors

Table 3-1 shows a list of the peripheral interface connectors on the IMB-Q354. Detailed descriptions of these connectors can be found below.

Connector	Type	Label
ATX power connector	24-pin ATX connector	ATX1
Cooling fan connector, CPU	4-pin wafer	CPU_FAN1
Cooling fan connector, System	3-pin wafer	SYS_FAN1
CPU power connector	4-pin connector	CPU12V1
Digital input/output connector	10-pin header	DIO1
DIMM socket	240-pin socket	DIMM1
DIMM socket	240-pin socket	DIMM2
DIMM socket	240-pin socket	DIMM3
DIMM socket	240-pin socket	DIMM4
Floppy drive connector	34-pin box header	FDD1
Front audio connector	10-pin header	FRONT-PANEL1
Front panel connector	14-pin header	F_PANEL1
Infrared (IrDA) connector	5-pin header	IR1
PCI socket	120-pin slot	PCI1
PCI socket	120-pin slot	PCI2
PCIe x16 socket	164-pin slot	PCIEX16
PCIe x4 socket	64-pin slot	PCIEX4
PCIe power connector	4-pin wafer	PCIE_12V1
Serial ATA drive connector	7-pin SATA	SATA1
Serial ATA drive connector	7-pin SATA	SATA2

Serial ATA drive connector	7-pin SATA	SATA3
Serial ATA drive connector	7-pin SATA	SATA4
Serial ATA drive connector	7-pin SATA	SATA5
Serial ATA drive connector	7-pin SATA	SATA6
Serial port connector (COM2)	10-pin box header	COM2
Serial port connector (COM3)	10-pin box header	COM3
Serial port connector (COM4)	10-pin box header	COM4
SPDIF connector	5-pin header	SPDIF1
SPI flash connector	8-pin header	JSPI1
TPM connector	20-pin header	TPM1
USB connector	8-pin header	USB45
USB connector	8-pin header	USB67
USB connector	8-pin header	USB89
USB connector	8-pin header	USB1011

Table 3-1: Peripheral Interface Connectors

3.1.3 External Interface Panel Connectors

Table 3-2 lists the rear panel connectors on the IMB-Q354. Detailed descriptions of these connectors can be found in **Section 3.3**.

Connector	Type	Label
Audio connector	Audio jack	AUDIO_CV1
Ethernet and dual USB combo connector	RJ-45 and two USB	LAN1_USB01
USB connectors	USB	USB23
Mouse or keyboard connector	PS/2	KB_MS1

IMB-Q354 microATX Motherboard

Parallel port, serial port and VGA combo connector	DB-25, DB-9 and DB-15	3IN1_DSUB1
----------------------------------------------------	-----------------------	------------

Table 3-2: Rear Panel Connectors

3.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the IMB-Q354.

3.2.1 ATX Power Connector

- CN Label:** ATX1
- CN Type:** 24-pin ATX (2x12)
- CN Location:** See **Figure 3-2**
- CN Pinouts:** See **Table 3-3**

The ATX connector is connected to an external ATX power supply. Power is provided to the system, from the power supply through this connector.

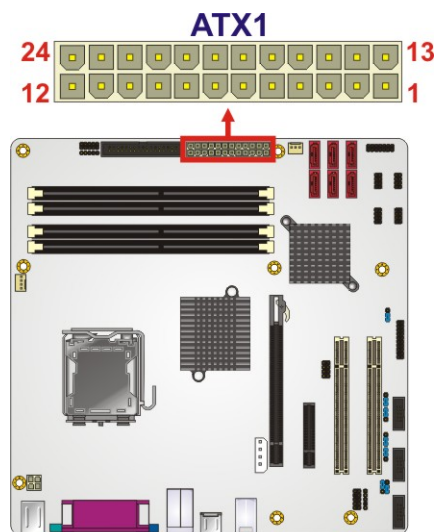


Figure 3-2: ATX Power Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
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	Power good	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	3.3V	24	GND

Table 3-3: ATX Power Connector Pinouts

3.2.2 CPU Power Connector

- CN Label:** CPU12V1
- CN Type:** 4-pin power connector (2x2)
- CN Location:** See **Figure 3-3**
- CN Pinouts:** See **Table 3-4**

The 4-pin CPU power connector is connected to an ATX power supply and powers the CPU.

IMB-Q354 microATX Motherboard

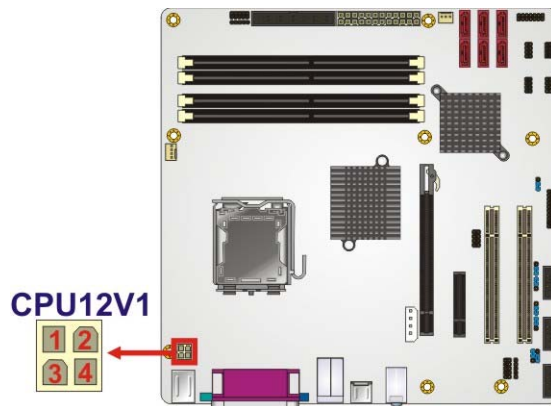


Figure 3-3: CPU Power Connector Location

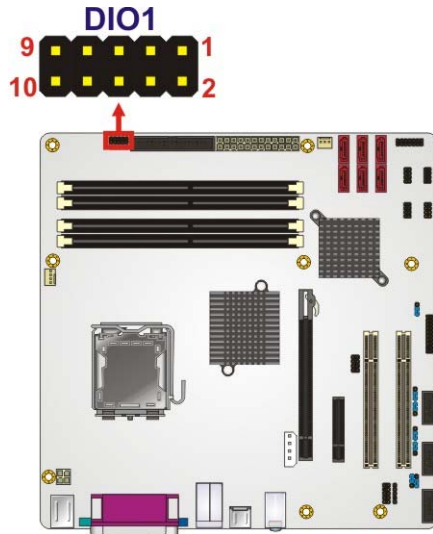
PIN NO.	DESCRIPTION
1	GND
2	GND
3	+12V
4	+12V

Table 3-4: CPU Power Connector Pinouts

3.2.3 Digital Input/Output (DIO) Connector

- CN Label:** DIO1
- CN Type:** 10-pin header (2x5)
- CN Location:** See **Figure 3-4**
- CN Pinouts:** See **Table 3-5**

The digital input/output connector is managed through a Super I/O chip. The DIO connector pins are user programmable. To see details on how to program the DIO chip, please refer to **Appendix C**.


Figure 3-4: DIO Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Ground	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

Table 3-5: DIO Connector Pinouts

3.2.4 Fan Connector, CPU (12V, 4-pin)

- CN Label:** CPU_FAN1
- CN Type:** 4-pin wafer (1x4)
- CN Location:** See **Figure 3-5**
- CN Pinouts:** See **Table 3-6**

The CPU cooling fan connector provides a 12V, 500mA current to a CPU cooling fan. The connector has a "rotation" pin to get rotation signals from fans and notify the system so the system BIOS can recognize the fan speed. Please note that only specified fans can issue the rotation signals.

IMB-Q354 microATX Motherboard

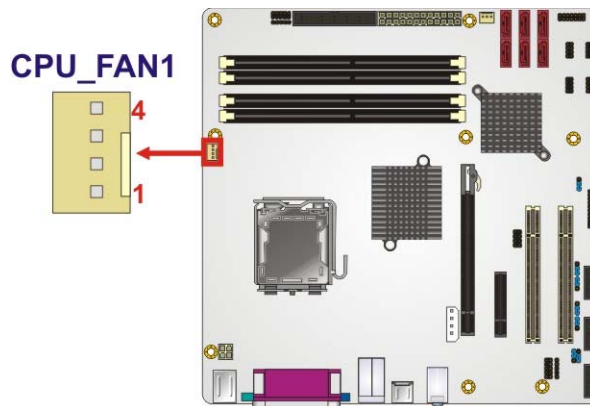


Figure 3-5: +12V Fan Connector Location

PIN NO.	DESCRIPTION
1	GND
2	+12VCC
3	Rotation Signal
4	Control

Table 3-6: +12V Fan Connector Pinouts

3.2.5 Fan Connector, System (+12V, 3-pin)

- CN Label:** **SYS_FAN1**
- CN Type:** 3-pin wafer (1x3)
- CN Location:** See **Figure 3-6**
- CN Pinouts:** See **Table 3-7**

The system cooling fan connector provides a 12V, 500mA current to a system cooling fan. The connector has a "rotation" pin to get rotation signals from fans and notify the system so the system BIOS can recognize the fan speed. Please note that only specified fans can issue the rotation signals.

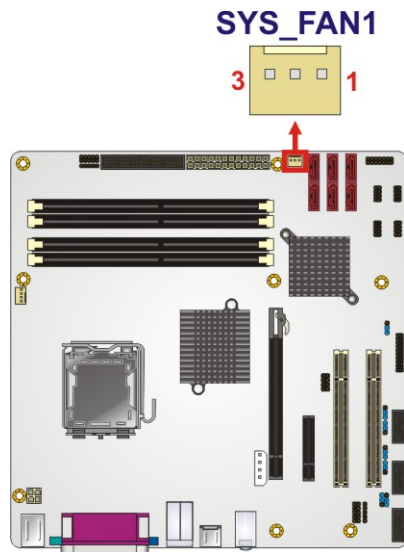


Figure 3-6: +12V Fan Connector Location

PIN NO.	DESCRIPTION
1	GND
2	+12V
3	Rotation Signal

Table 3-7: +12V Fan Connector Pinouts

3.2.6 Floppy Disk Connector (34-pin)

- CN Label:** FDD1
- CN Type:** 34-pin box header (2x17)
- CN Location:** See **Figure 3-7**
- CN Pinouts:** See **Table 3-8**

The floppy disk connector is connected to a floppy disk drive.

IMB-Q354 microATX Motherboard

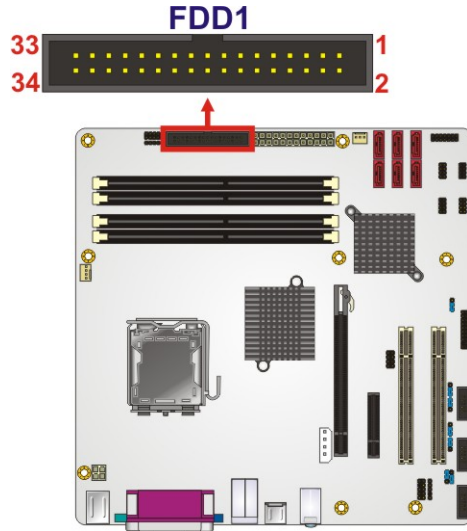


Figure 3-7: 34-pin FDD Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	Density Select#
3	GND	4	N/C
5	N/C	6	N/C
7	GND	8	INDEX#
9	GND	10	MOTOR ENABLE A#
11	GND	12	DRIVE ENABLE B#
13	GND	14	DRIVE ENABLE A#
15	GND	16	MOTOR ENABLE B#
17	GND	18	DIRECTION#
19	GND	20	STEP#
21	GND	22	WRITE DATA#
23	GND	24	WRITE GATE#
25	GND	26	TRACK 0#
27	GND	28	WRITE PROTECT#
29	GND	30	READ DATA#
31	GND	32	SIDE 1 SELECT#
33	GND	34	DISK CHANGE#

Table 3-8: 34-pin FDD Connector Pinouts

3.2.7 Front Audio Connector

- CN Label:** FRONT_PANEL1
- CN Type:** 10-pin header (2x5)
- CN Location:** See **Figure 3-8**
- CN Pinouts:** See **Table 3-9**

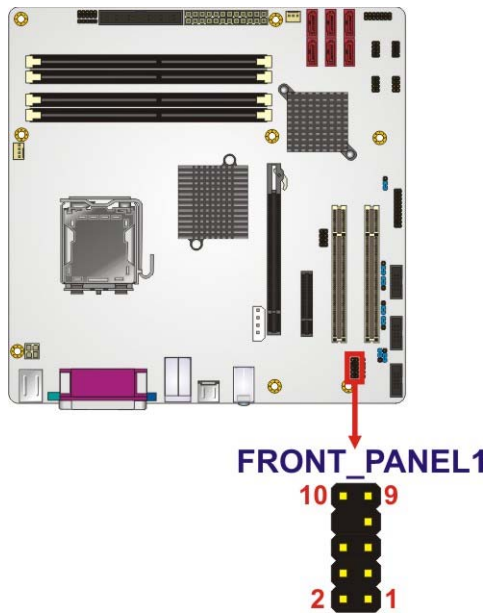


Figure 3-8: Front Audio Connector Location (10-pin)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MIC_L	2	GND
3	MIC_R	4	Audio Detect
5	LINE2-R	6	GND
7	Jack Detection	8	N/C
9	LINE2-L	10	GND

Table 3-9: Front Audio Connector Pinouts

IMB-Q354 microATX Motherboard

3.2.8 Front Panel Connector

CN Label:	F_PANEL1
CN Type:	14-pin header (2x7)
CN Location:	See Figure 3-9
CN Pinouts:	See Table 3-10

The front panel connector connects to external switches and indicators to monitor and controls the motherboard. These indicators and switches include:

- Power LED
- Speaker
- Power button
- Reset
- HDD LED

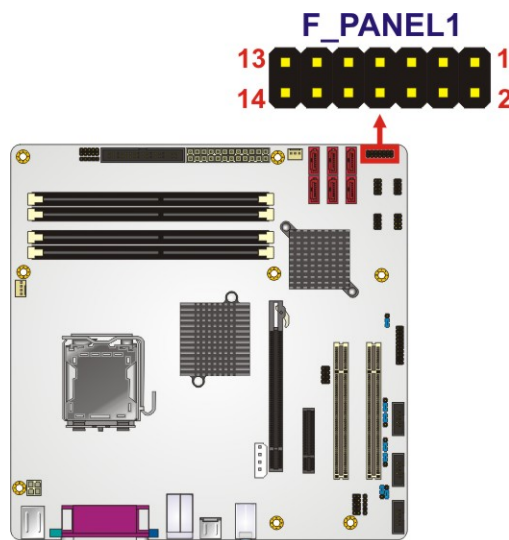


Figure 3-9: Front Panel Connector Pinout Locations (14-pin)

FUNCTION	PIN	DESCRIPTION	FUNCTION	PIN	DESCRIPTION
Power LED	1	+5V	Speaker	2	+5V
	3	N/C		4	N/C
	5	GROUND		6	N/C

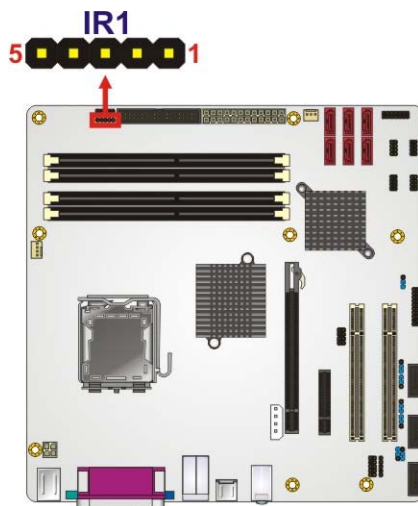
Power	7	PWRBTN+	Reset	8	SPEAKER
Button	9	PWRBTN-		10	N/C
HDD LED	11	+5V		12	RESET-
	13	IDE LED-		14	GROUND

Table 3-10: Front Panel Connector Pinouts (14-pin)

3.2.9 Infrared Interface Connector

- CN Label:** IR1
- CN Type:** 5-pin header (1x5)
- CN Location:** See **Figure 3-10**
- CN Pinouts:** See **Table 3-11**

The infrared interface connector supports both Serial Infrared (SIR) and Amplitude Shift Key Infrared (ASKIR) interfaces.


Figure 3-10: Infrared Connector Location

PIN NO.	DESCRIPTION
1	VCC
2	NC
3	IR-RX
4	GND

IMB-Q354 microATX Motherboard

5	IR-TX
---	-------

Table 3-11: Infrared Connector Pinouts

3.2.10 PCIe Power Connector

CN Label:	PCIE_12V1
CN Type:	4-pin wafer (1x4)
CN Location:	See Figure 3-11
CN Pinouts:	See Table 3-12

The 4-pin PCIe power connector is connected to a power supply to power the PCIe expansion card.

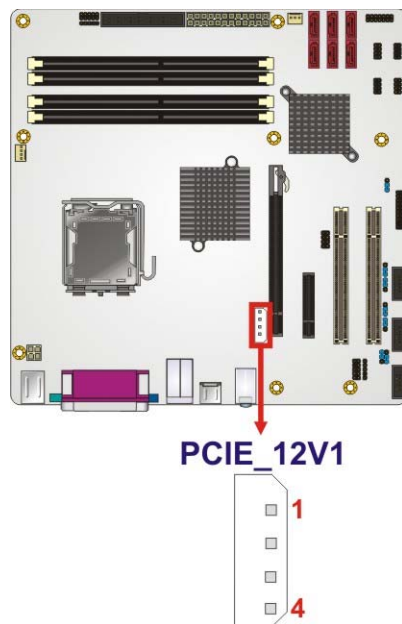


Figure 3-11: PCIe Power Connector Location

PIN NO.	DESCRIPTION
1	+12V
2	GND
3	GND
4	+5V

Table 3-12: PCIe Power Connector Pinouts

3.2.11 SATA Drive Connectors

CN Label: SATA1, SATA2, SATA3, SATA4, SATA5 and SATA6

CN Type: 7-pin SATA drive connectors (1x7)

CN Location: See **Figure 3-12**

CN Pinouts: See **Table 3-13**

The six SATA drive connectors are each connected to second generation SATA drives. Second generation SATA drives transfer data at speeds as high as 3.0 Gbps. The SATA drives can be configured in a RAID configuration.

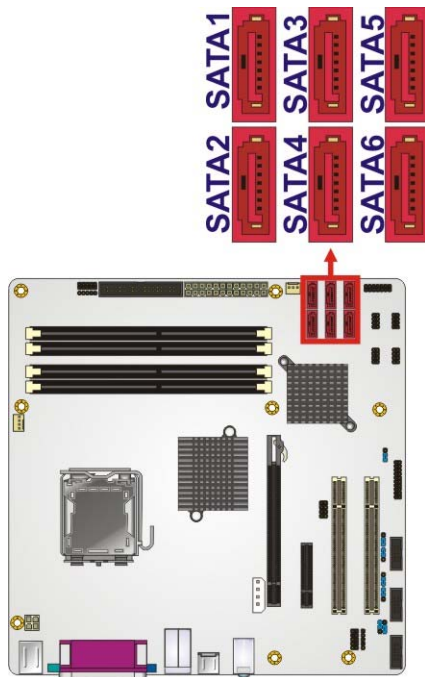


Figure 3-12: SATA Drive Connector Locations

PIN NO.	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-

IMB-Q354 microATX Motherboard

6	RX+
7	GND

Table 3-13: SATA Drive Connector Pinouts

3.2.12 Serial Port Connector (COM2, COM3 and COM4)

CN Label: COM2, COM3 and COM4

CN Type: 10-pin box header (2x5)

CN Location: See **Figure 3-13**

CN Pinouts: See **Table 3-14**

The 10-pin serial port connector provides a second RS-232 serial communications channel. The serial port connectors can be connected to external RS-232 serial port devices.

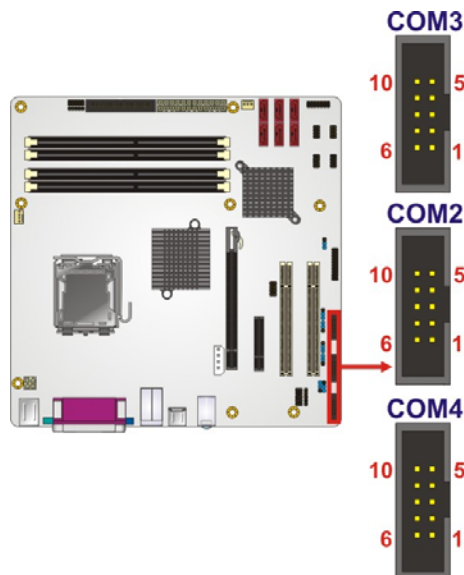


Figure 3-13: Serial Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Data Carrier Direct (DCD)	6	Data Set Ready (DSR)
2	Receive Data (RXD)	7	Request To Send (RTS)
3	Transmit Data (TXD)	8	Clear To Send (CTS)

4	Data Terminal Ready (DTR)	9	Ring Indicator (RI)
5	Ground (GND)	10	N/C

Table 3-14: Serial Connector Pinouts

3.2.13 SPDIF Connector

- CN Label:** SPDIF1
- CN Type:** 5-pin header (1x5)
- CN Location:** See **Figure 3-14**
- CN Pinouts:** See **Table 3-15**

Use the SPDIF connector to connect digital audio devices to the system.

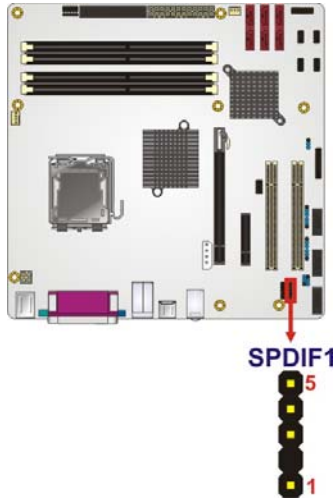


Figure 3-14: SPDIF Connector Location

PIN	DESCRIPTION
1	5V
2	NC
3	SPDIF OUT
4	GND
5	SPDIF IN

Table 3-15: SPDIF Connector Pinouts

IMB-Q354 microATX Motherboard

3.2.14 SPI Flash Connector

- CN Label:** JSPI1
- CN Type:** 8-pin header (2x4)
- CN Location:** See **Figure 3-17**
- CN Pinouts:** See **Table 3-18**

The 8-pin SPI Flash connector is used to flash the BIOS.

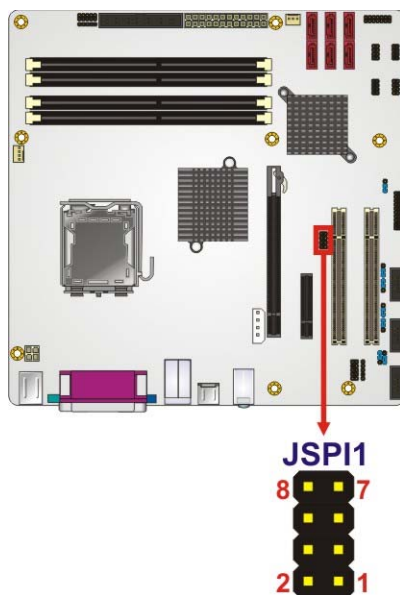


Figure 3-15: SPI Flash Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	CS#	4	CLOCK
5	SO	6	SI
7	NC	8	NC

Table 3-16: SPI Flash Connector Pinouts

3.2.15 Trusted Platform Module (TPM) Connector

- CN Label:** TPM1
- CN Type:** 20-pin header (2x10)
- CN Location:** See **Figure 3-16**
- CN Pinouts:** See **Table 3-17**

The Trusted Platform Module (TPM) connector secures the system on bootup. An optional TPM (see packing list in **Chapter 3**) can be connected to the TPM connector.

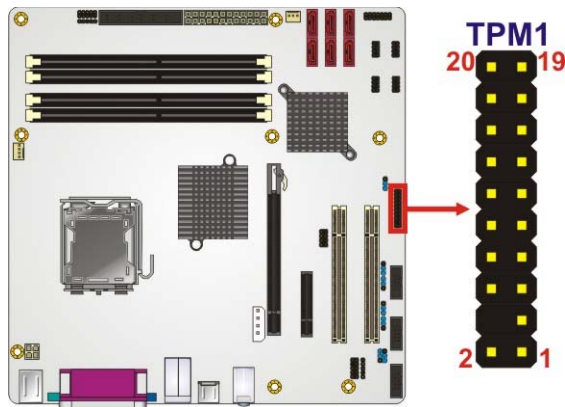


Figure 3-16: TPM Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	FWHPCLK	2	GND
3	LFRAME#	4	KEY
5	PCIRST#	6	VCC
7	LAD3	8	LAD2
9	VCC3	10	LAD1
11	LAD0	12	GND
13	SMBCLK	14	SMBDATA
15	3VDUAL	16	SERIRQ
17	GND	18	CLKRUN#
19	LPCPD#	20	LDRQ#

Table 3-17: TPM Connector Pinouts

IMB-Q354 microATX Motherboard

3.2.16 USB Connectors (Internal)

CN Label: USB45, USB67, USB89 and USB1011

CN Type: 8-pin header (2x4)

CN Location: See Figure 3-17

CN Pinouts: See Table 3-18

The 2x4 USB pin connectors each provide connectivity to two USB 1.1 or two USB 2.0 ports. Each USB connector can support two USB devices. Additional external USB ports are found on the rear panel. The USB ports are used for I/O bus expansion.

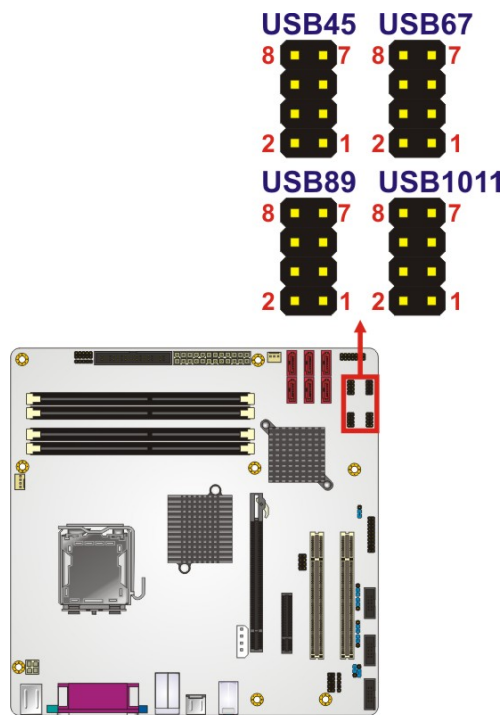


Figure 3-17: USB Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	VCC

Table 3-18: USB Port Connector Pinouts

3.3 External Peripheral Interface Connector Panel

Figure 3-18 shows the IMB-Q354 external peripheral interface connector (EPIC) panel. The IMB-Q354 EPIC panel consists of the following:

- 3 x Audio jacks
- 1 x Parallel port
- 2 x PS/2 keyboard/mouse connectors
- 1 x RJ-45 LAN connector
- 1 x Serial port connector
- 4 x USB 2.0 ports
- 1 x VGA connector

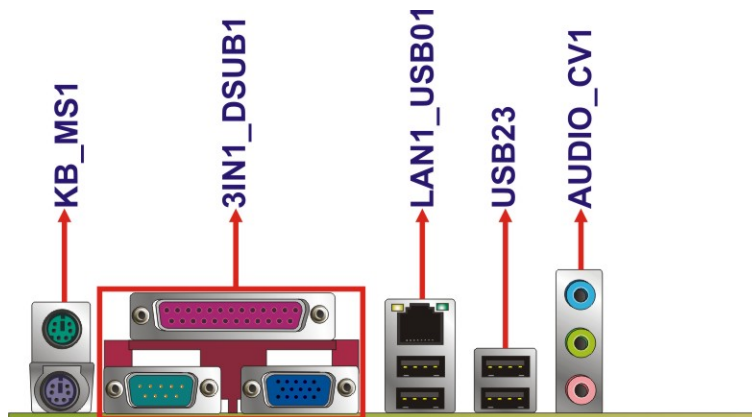


Figure 3-18: IMB-Q354 External Peripheral Interface Connector

3.3.1 Audio Connectors

CN Label:	AUDIO_CV1
CN Type:	3 x audio jacks
CN Location:	See Figure 3-18

The three audio jacks on the external audio connector enable the IMB-Q354 to be connected to external audio devices as specified below.

- **Line In port (Light Blue):** Connects a CD-ROM, DVD player, or other audio devices.

IMB-Q354 microATX Motherboard

- **Line Out port (Lime):** Connects to a headphone or a speaker. With multi-channel configurations, this port can also connect to front speakers.
- **Microphone (Pink):** Connects a microphone.

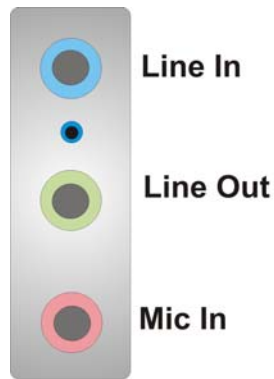


Figure 3-19: Audio Connector

3.3.2 Keyboard/Mouse Connector

CN Label:	KB_MS1
CN Type:	Dual PS/2
CN Location:	See Figure 3-18
CN Pinouts:	See Figure 3-20 and Table 3-19

The IMB-Q354 keyboard and mouse connectors are standard PS/2 connectors.

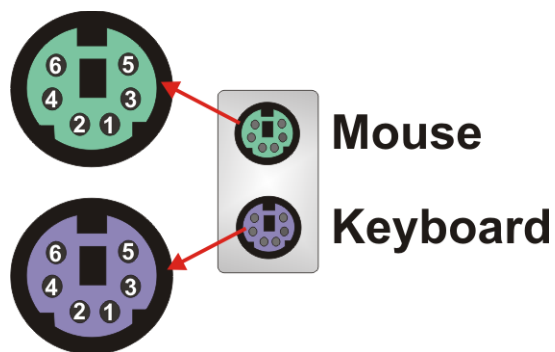


Figure 3-20: PS/2 Pinouts

PIN	DESCRIPTION
1	DATA
2	NC
3	GND
4	VCC5
5	CLK
6	NC

Table 3-19: PS/2 Connector Pinouts

3.3.3 LAN and Dual USB Connector

CN Label: LAN1_USB01, USB23

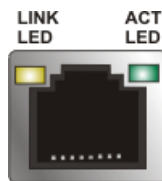
CN Type: RJ-45, USB 2.0

CN Location: See **Figure 3-18**

CN Pinouts: See **Table 3-20**

The IMB-Q354 is equipped one built-in RJ-45 Ethernet controller. The controller can connect to the LAN through the RJ-45 LAN connector. There are two LEDs on the connector indicating the status of LAN. The pin assignments are listed in the following table:

PIN	DESCRIPTION	PIN	DESCRIPTION
1	MDIA3-	5	MDIA1+
2	MDIA3+	6	MDIA2+-
3.	MDIA2-	7	MDIA0-
4.	MDIA1-	8	MDIA0+

Table 3-20: LAN Pinouts

Figure 3-21: RJ-45 Ethernet Connector

IMB-Q354 microATX Motherboard

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked. See **Table 3-21**.

LINK LED		Activity LED	
Status	Description	Status	Description
Off	Not linked	Off	10 Mbps
Yellow	Linked	Green	100 Mbps
Blinking	Data activity	Orange	1 GbE

Table 3-21: RJ-45 Ethernet Connector LEDs

The IMB-Q354 has four external USB 2.0 ports. The ports are integrated into two dual USB and LAN combo connectors. The ports connect to both USB 2.0 and USB 1.1 devices.

PIN NO.	DESCRIPTION
1	VCC
2	DATA-
4	DATA+
4	GROUND

Table 3-22: USB Port Pinouts

3.3.4 Parallel Port, Serial Port and VGA Combo Connector

CN Label: 3IN1_DSUB1

CN Type: DB-25, DB-9 and DB-15

CN Location: See **Figure 3-18**

CN Pinouts: See **Table 3-23**, **Table 3-24** and **Table 3-25**

A 25-pin parallel port connector, a male DB-9 serial port (COM1) and a female DB-15 VGA connector are integrated into a single EPIC connector as shown in **Figure 3-18**.

The IMB-Q354 includes one on-board parallel port accessed through one 25-pin D-type female connector. The parallel port is usually connected to a printer. The connector is shown in **Figure 3-22** and the pinouts are shown in **Table 3-23**.

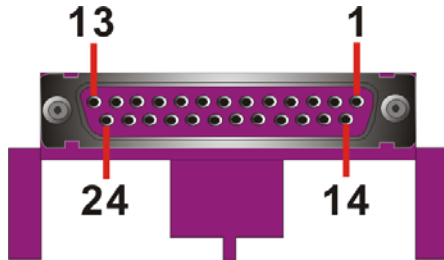


Figure 3-22 Parallel Port Connector Pinout Locations

PIN	Description	PIN	Description
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND		

Table 3-23: Parallel Port Connector Pinouts

The male DB-9 COM 1 serial port connector is connected to RS-232 serial communications devices. The connector is shown in **Figure 3-23** and the pinouts are shown in **Table 3-24**.

IMB-Q354 microATX Motherboard

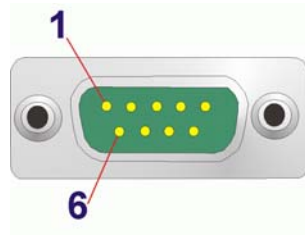


Figure 3-23: COM1 Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	6	DSR
2	RX	7	RTS
3	TX	8	CTS
4	DTR	9	RI
5	GND		

Table 3-24: RS-232 Serial Port (COM 1) Pinouts

The female DB-15 VGA connector connects to standard VGA displays. The connector is shown in **Figure 3-24** and the pinouts are shown in **Table 3-25**.

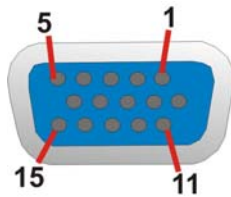


Figure 3-24: VGA Connector

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC / NC	10	GND
11	NC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 3-25: VGA Connector Pinouts

Chapter

4

Installation

4.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the IMB-Q354 may result in permanent damage to the IMB-Q354 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IMB-Q354. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IMB-Q354, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding:*** Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring the IMB-Q354, place it on an anti-static pad. This reduces the possibility of ESD damaging the IMB-Q354.
- ***Only handle the edges of the PCB:*** When handling the PCB, hold the PCB by the edges.

4.2 Installation Considerations



NOTE:

The following installation notices and installation considerations should be read and understood before the IMB-Q354 is installed. All installation notices pertaining to the installation of the IMB-Q354 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the IMB-Q354 and injury to the person installing the motherboard.

4.2.1 Installation Notices



WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the IMB-Q354, IMB-Q354 components and injury to the user.

Before and during the installation please **DO** the following:

- Read the user manual:
 - The user manual provides a complete description of the IMB-Q354 installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD):
 - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the IMB-Q354 on an antistatic pad:
 - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- Turn all power to the IMB-Q354 off:

IMB-Q354 microATX Motherboard

- When working with the IMB-Q354, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the IMB-Q354 **DO NOT**:

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.

4.2.2 Installation Checklist

The following checklist is provided to ensure the IMB-Q354 is properly installed.

- All the items in the packing list are present
- The CPU is installed
- The CPU cooling kit is properly installed
- A compatible memory module is properly inserted into the slot
- The jumpers have been properly configured
- The IMB-Q354 is inserted into a chassis with adequate ventilation
- The correct power supply is being used
- The following devices are properly connected
 - SATA drives
 - Power supply
 - USB cable
 - Serial port cable
- The following external peripheral devices are properly connected to the chassis:
 - Keyboard/Mouse
 - VGA screen
 - USB devices
 - LAN

4.3 Unpacking

4.3.1 Unpacking Precautions

When the IMB-Q354 is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 4.1**.
- Make sure the packing box is facing upwards so the IMB-Q354 does not fall out of the box.
- Make sure all the components in the checklist shown in **Chapter 2** are present.



NOTE:

If some of the components listed in the checklist in **Chapter 2** are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the IMB-Q354 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

4.4 CPU, CPU Cooling Kit and DIMM Installation



WARNING:

A CPU should never be turned on without the specified cooling kit being installed. If the cooling kit (heat sink and fan) is not properly installed and the system turned on, permanent damage to the CPU, IMB-Q354 and other electronic components attached to the system may be incurred. Running a CPU without a cooling kit may also result in injury to the user.

The CPU, CPU cooling kit and DIMM are the most critical components of the IMB-Q354. If one of these components is not installed the IMB-Q354 cannot run.

IMB-Q354 microATX Motherboard

4.4.1 Socket LGA775 CPU Installation



NOTE:

Enabling Hyper-Threading Technology on your system requires meeting all of the platform requirements listed below:

- **CPU:** An Intel® Processor with HT Technology must be installed
- **Chipset:** An Intel® Chipset that supports HT Technology (that has been met by the IMB-Q354)
- **OS:** An operating system that has optimizations for HT Technology



WARNING:

CPUs are expensive and sensitive components. When installing the CPU please be careful not to damage it in anyway. Make sure the CPU is installed properly and ensure the correct cooling kit is properly installed.

The LGA775 socket is shown in **Figure 4-1**.

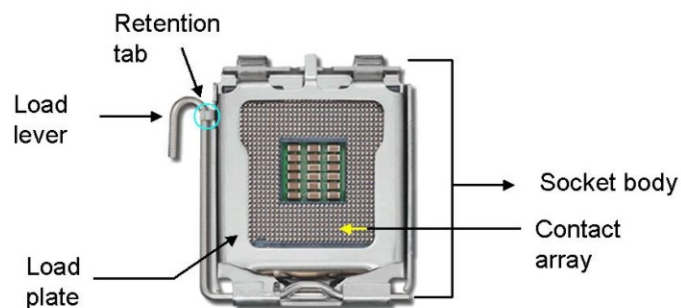


Figure 4-1: Intel® LGA775 Socket

To install a socket LGA775 CPU onto the IMB-Q354, follow the steps below:

**WARNING:**

When handling the CPU, only hold it on the sides. DO NOT touch the pins at the bottom of the CPU.

- Step 1: Remove the protective cover.** Remove the black protective cover by prying it off the load plate. To remove the protective cover, locate the “REMOVE” sign and use your fingernail to pry the protective cover off. See **Figure 4-2**.

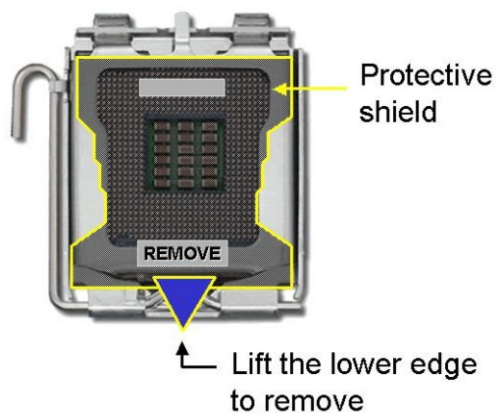


Figure 4-2: Remove the CPU Socket Protective Shield

- Step 2: Open the socket.** Disengage the load lever by pressing the lever down and slightly outward to clear the retention tab. Rotate the load lever to a fully open position. Then rotate the load plate towards the opposite direction. See **Figure 4-3**.

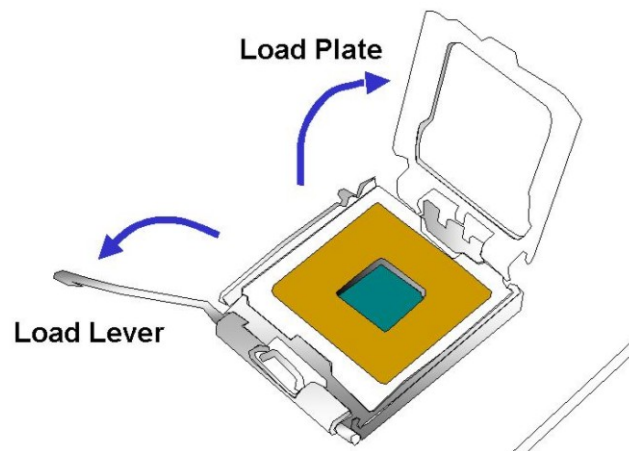


Figure 4-3: Open the CPU Socket Load Plate

- Step 3: Inspect the CPU socket** Make sure there are no bent pins and make sure the socket contacts are free of foreign material. If any debris is found, remove it with compressed air.
- Step 4: Orientate the CPU properly.** Make sure the IHS (Integrated Heat Sink) side is facing upward.
- Step 5: Correctly position the CPU.** Match the Pin 1 mark with the cut edge on the CPU socket.
- Step 6: Align the CPU pins.** Locate pin 1 and the two orientation notches on the CPU. Carefully match the two orientation notches on the CPU with the socket alignment keys.
- Step 7: Insert the CPU.** Gently insert the CPU into the socket. If the CPU pins are properly aligned, the CPU should slide into the CPU socket smoothly.
- See **Figure 4-4**.

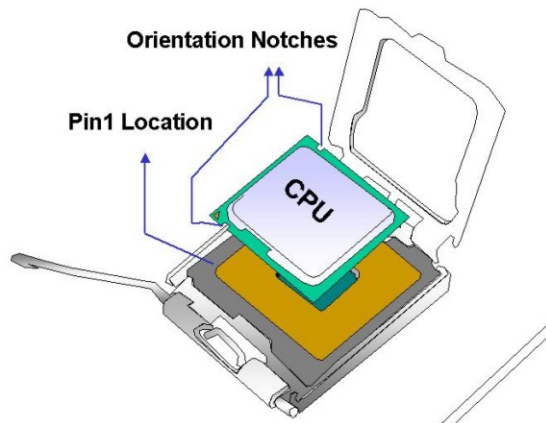


Figure 4-4: Insert the Socket LGA775 CPU

- Step 8: Close the CPU socket.** Close the load plate and engage the load lever by pushing it back to its original position. Secure the load lever under the retention tab on the side of CPU socket.
- Step 9: Connect the CPU 12V cable to the 12V power.** After the cooling kit is installed connect the CPU cable to the CPU 12V power connector.

4.4.2 Socket LGA775 CF-520 Cooling Kit Installation



WARNING:

It is strongly recommended that you **DO NOT** use the original heat sink and cooler provided by Intel® on the IMB-Q354.

IEI's cooling kit (CF-520) includes a support bracket that is combined with the heat sink mounted on the CPU to counterweigh and balance the load on both sides of the PCB.

IMB-Q354 microATX Motherboard



Figure 4-5: IEI CF-520 Cooling Kit

An IEI Socket LGA775 CPU cooling kit shown in **Figure 4-5** can be purchased separately. The cooling kit comprises a CPU heat sink and a cooling fan.



WARNING:

Do not wipe off (accidentally or otherwise) the pre-sprayed layer of thermal paste on the bottom of the CF-520 heat sink. The thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

To install the cooling kit, follow the instructions below.

- Step 1:** Place the cooling kit onto the socket LGA775 CPU. Make sure the CPU cable can be properly routed when the cooling kit is installed.
- Step 2:** Properly align the cooling kit. Make sure the four spring screw fasteners can pass through the pre-drilled holes on the PCB.
- Step 3:** Mount the cooling kit. Gently place the cooling kit on top of the CPU. Make sure the four threaded screws on the corners of the cooling kit properly pass through the predrilled holes on the bottom of the PCB.
- Step 4:** Secure the cooling kit. From the solder side of the PCB, align the support bracket to the screw threads on heat sink that were inserted through the PCB holes. (See **Figure 4-6**)

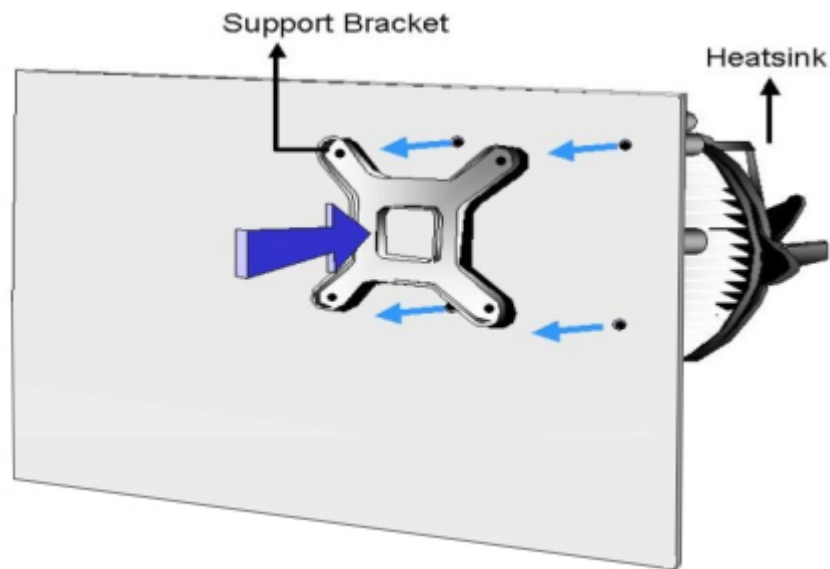


Figure 4-6: Securing the Heat sink to the PCB Board

- Step 5: Tighten the screws.** Use a screwdriver to tighten the four screws. Tighten each nut a few turns at a time and do not over-tighten the screws.
- Step 6: Connect the fan cable.** Connect the cooling kit fan cable to the fan connector on the IMB-Q354. Carefully route the cable and avoid heat generating chips and fan blades.

4.4.3 DIMM Installation



WARNING:

Using incorrectly specified DIMM may cause permanently damage the IMB-Q354. Please make sure the purchased DIMM complies with the memory specifications of the IMB-Q354. DIMM specifications compliant with the IMB-Q354 are listed in **Chapter 1**.

IMB-Q354 microATX Motherboard

4.4.3.1 DIMM Purchasing Guidelines



WARNING:

Only use DDR2 DIMMs. If DDR DIMMs are used the system may be irreparably damaged.

When purchasing the DDR2 DIMM, please follow the guidelines below:

- ONLY purchase DDR2 DIMM
- Have a frequency of 667 MHz or 800 MHz
- Have a maximum capacity of 2.0 GB
- If more than one DDR2 DIMM is being installed in the system, please purchase DIMM that have the same capacity and operating frequency.

4.4.3.2 DIMM Installation Order

There are two 64-bit wide DDR2 channels on the Intel® Q35 Northbridge, Channel A and Channel B. DDR2 Channel A and DDR2 Channel B are shown in **Figure 4-7** below.

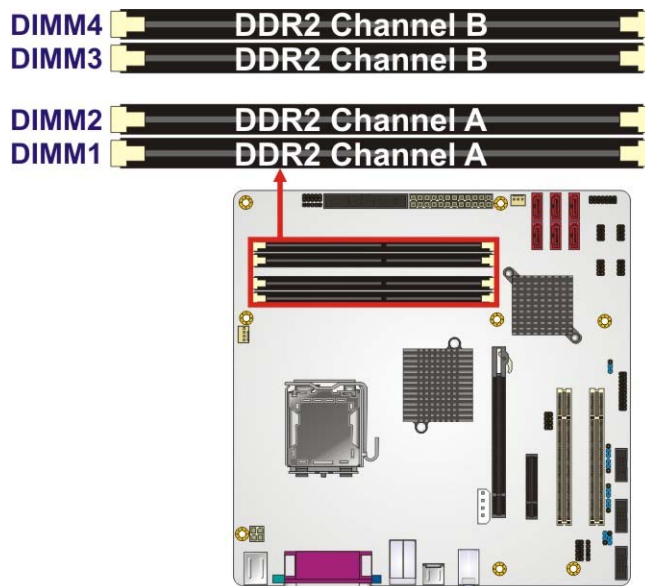


Figure 4-7: DDR2 Channels

On the IMB-Q354, each channel is interfaced to two 240-pin DIMM sockets in the following order (see **Figure 4-7** above):

- Channel A: DIMM1 and DIMM2
- Channel B: DIMM3 and DIMM4

When populating the DDR2 DIMM sockets, populate them in the following order to optimize the memory performance:

Step 1: DIMM1. Install the first DDR2 DIMM into the DIMM1 DDR2 DIMM socket.

Step 2: DIMM3. Install the second DDR2 DIMM into the DIMM3 DDR2 DIMM socket.

Step 3: DIMM2. Install the third DDR2 DIMM into the DIMM2 DDR2 DIMM socket.

Step 4: DIMM4. Install the fourth DDR2 DIMM into the DIMM4 DDR2 DIMM socket.

4.4.3.3 DIMM Installation Guidelines

To install a DIMM into a DIMM socket, please follow the steps below and refer to **Figure 4-8**.

Step 1: Open the DIMM socket handles. The DIMM socket has two handles that secure the DIMM into the socket. Before the DIMM can be inserted into the socket, the handles must be opened. See **Figure 4-8**.

Step 2: Align the DIMM with the socket. The DIMM must be oriented in such a way that the notch in the middle of the DIMM must be aligned with the plastic bridge in the socket. See **Figure 4-8**.

IMB-Q354 microATX Motherboard

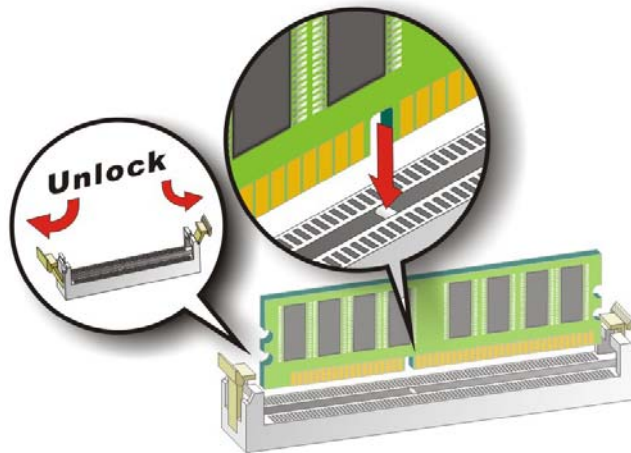


Figure 4-8: Installing a DIMM

Step 3: Insert the DIMM. Once properly aligned, the DIMM can be inserted into the socket. As the DIMM is inserted, the white handles on the side of the socket will close automatically and secure the DIMM to the socket. See **Figure 4-8**.

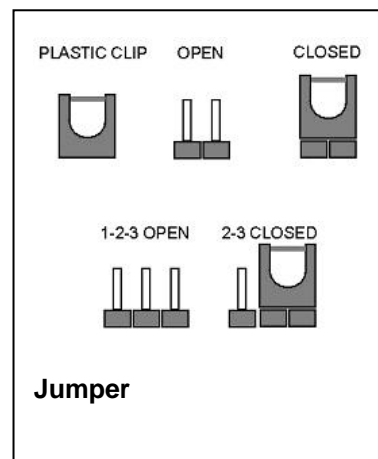
Step 4: Removing a DIMM. To remove a DIMM, push both handles outward. The memory module is ejected by a mechanism in the socket.

4.5 Jumper Settings



NOTE:

A jumper is a metal bridge that is used to close an electrical circuit. 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/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.



Before the IMB-Q354 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the IMB-Q354 are listed in **Table 4-1**.

Description	Label	Type
Clear CMOS	J_CMOS1	3-pin header
COM2 pin 9 setting	J_COM_F2	3-pin header
COM3 pin 9 setting	J_COM_F3	3-pin header
COM4 pin 9 setting	J_COM_F4	3-pin header
COM2 pin 9 voltage setting	J_COM_V2	3-pin header
COM3 pin 9 voltage setting	J_COM_V3	3-pin header
COM4 pin 9 voltage setting	J_COM_V4	3-pin header

Table 4-1: Jumpers

4.5.1 Clear CMOS Jumper

- Jumper Label:** J_CMOS1
- Jumper Type:** 3-pin header
- Jumper Settings:** See **Table 4-2**
- Jumper Location:** See **Figure 4-9**

If the IMB-Q354 fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

If the “CMOS Settings Wrong” message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults

IMB-Q354 microATX Motherboard

- Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu. The clear CMOS jumper settings are shown in **Table 4-2**.

Clear CMOS	Description	
Short 1 - 2	Keep CMOS Setup	Default
Short 2 - 3	Clear CMOS Setup	

Table 4-2: Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 4-9** below.

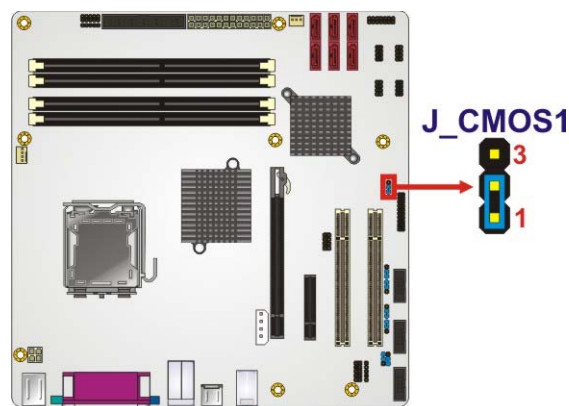


Figure 4-9: Clear CMOS Jumper

4.5.2 COM Port Pin 9 Setting Jumpers

Jumper Label: J_COM_F2, J_COM_F3 and J_COM_F4

Jumper Type: 3-pin header

Jumper Settings: See **Table 4-3**

Jumper Location: See **Figure 4-10**

The COM Port Pin 9 Setting jumpers configure pin 9 on COM 2/COM 3/COM 4 as either a +5V, +12V power source (see **Section 4.5.3** to setup) or as a ring-in (RI) line. The COM Port Pin 9 Setting jumpers selection options are shown in **Table 4-3**.

J_COM_F2	Description	
Short 1 – 2	COM 2 RI Pin use voltage	
Short 2 – 3	COM 2 RI Pin use RI	Default
J_COM_F3	Description	
Short 1 – 2	COM 3 RI Pin use voltage	
Short 2 – 3	COM 3 RI Pin use RI	Default
J_COM_F4	Description	
Short 1 – 2	COM 4 RI Pin use voltage	
Short 2 – 3	COM 4 RI Pin use RI	Default

Table 4-3: COM Port Pin 9 Setting Jumper Settings

The COM Port Pin 9 Setting jumper locations are shown in **Figure 4-10** below.

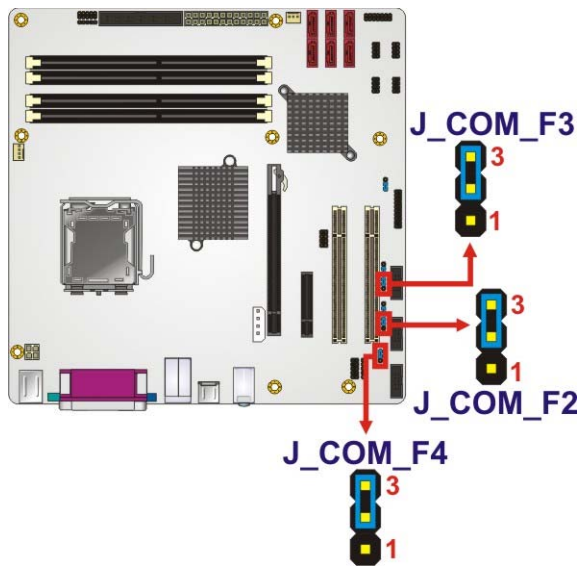


Figure 4-10: COM Port Pin 9 Setting Jumper Locations

4.5.3 COM Port Pin 9 Voltage Setting Jumpers

Jumper Label: J_COM_V2, J_COM_V3 and J_COM_V4

Jumper Type: 3-pin header

Jumper Settings: See Table 4-3

Jumper Location: See Figure 4-10

IMB-Q354 microATX Motherboard

The COM Port Pin 9 Voltage Setting jumpers configure pin 9 on COM 2/COM 3/COM 4 as either a +5V or +12V power source. The COM Port Pin 9 Voltage Setting jumpers selection options are shown in **Table 4-3**.

J_COM_V2	Description	
Short 1 – 2	COM 2 RI Pin use +5V	Default
Short 2 – 3	COM 2 RI Pin use +12V	
J_COM_V3	Description	
Short 1 – 2	COM 3 RI Pin use +5V	Default
Short 2 – 3	COM 3 RI Pin use +12V	
J_COM_V4	Description	
Short 1 – 2	COM 4 RI Pin use +5V	Default
Short 2 – 3	COM 4 RI Pin use +12V	

Table 4-4: COM Port Pin 9 Voltage Setting Jumper Settings

The COM Port Pin 9 Voltage Setting jumper locations are shown in **Figure 4-10** below.

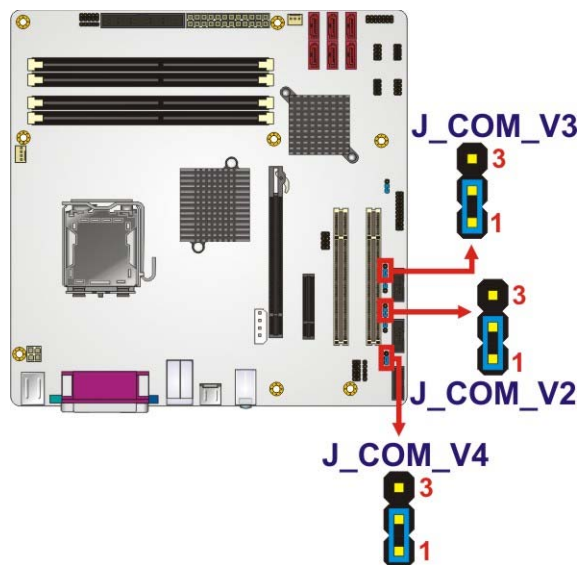


Figure 4-11: COM Port Pin 9 Voltage Setting Jumper Locations

4.6 Chassis Installation

4.6.1 Airflow



WARNING:

Airflow is critical to the cooling of the CPU and other onboard components. The chassis in which the IMB-Q354 must have air vents to allow cool air to move into the system and hot air to move out.

The IMB-Q354 must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit, the cooling fan of a power supply can also help generate airflow through the board surface.

4.6.2 Motherboard Installation

To install the IMB-Q354 motherboard into the chassis please refer to the reference material that came with the chassis.

4.7 Internal Peripheral Device Connections

This section outlines the installation of peripheral devices to the onboard connectors.

4.7.1 Dual RS-232 Cable Connection

The dual RS-232 cable consists of two connectors attached to two independent cables. Each cable is then attached to a D-sub 9 male connector that is mounted onto a bracket. To install the dual RS-232 cable, please follow the steps below.

Step 1: Locate the connectors. The locations of the RS-232 connectors are shown in Chapter 3.

Step 2: Insert the cable connectors. Insert one connector into each serial port box headers. See **Figure 4-12**. A key on the front of the cable connectors ensures the connector can only be installed in one direction.

IMB-Q354 microATX Motherboard

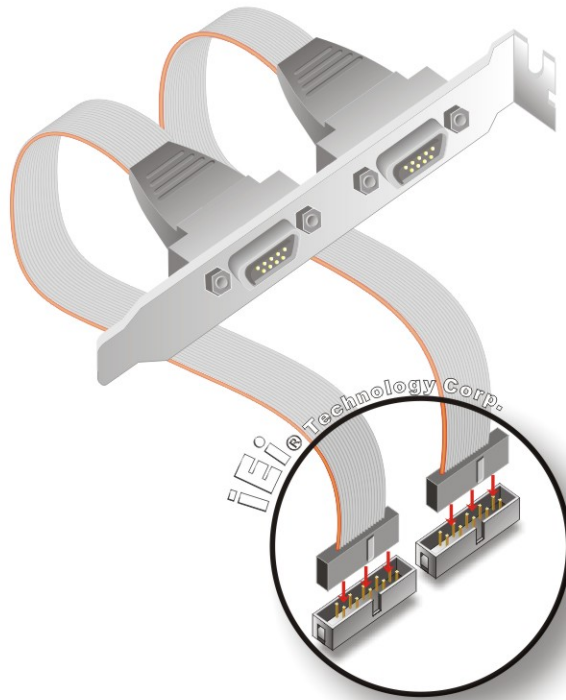


Figure 4-12: Dual RS-232 Cable Installation

Step 3: Secure the bracket. The dual RS-232 connector has two D-sub 9 male connectors secured on a bracket. To secure the bracket to the chassis please refer to the reference material that came with the chassis

4.7.2 SATA Drive Connection

The IMB-Q354 is shipped with two SATA drive cables and one SATA drive power cable. To connect the SATA drives to the connectors, please follow the steps below.

Step 1: Locate the connectors. The locations of the SATA drive connectors are shown in **Chapter 3**.

Step 2: Insert the cable connector. Press the clip on the connector at the end of the SATA cable and insert the cable connector into the onboard SATA drive connector. See **Figure 4-13**.

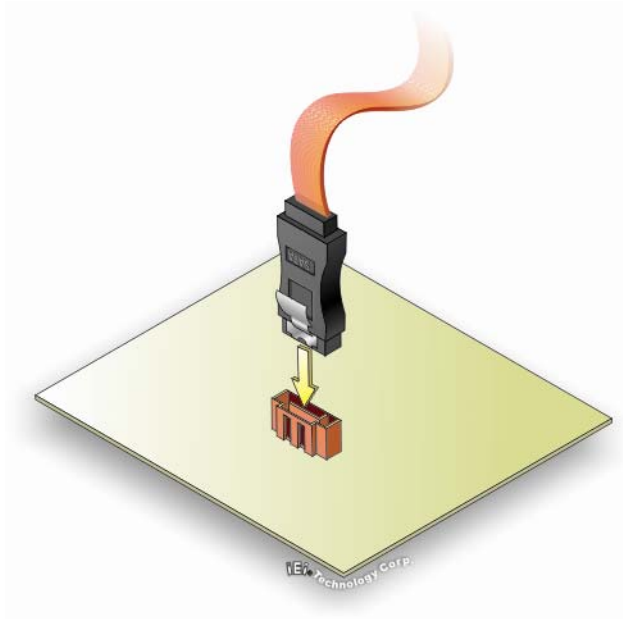


Figure 4-13: SATA Drive Cable Connection

Step 3: Connect the cable to the SATA disk. Connect the connector on the other end of the cable to the connector at the back of the SATA drive. See **Figure 4-14**.

Step 4: Connect the SATA power cable. Connect the SATA power connector to the back of the SATA drive. See **Figure 4-14**.

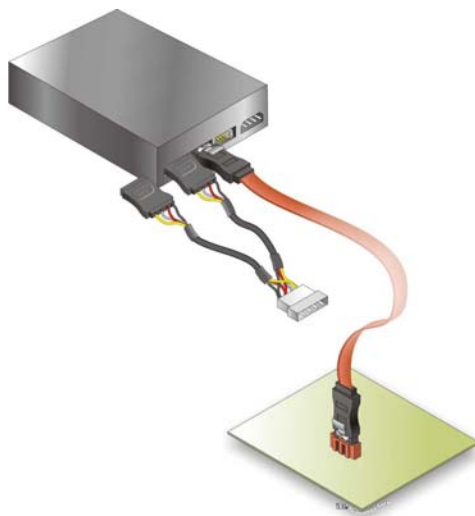


Figure 4-14: SATA Power Drive Connection

IMB-Q354 microATX Motherboard

4.7.3 USB Cable (Dual Port)

The IMB-Q354 is shipped with a dual port USB 2.0 cable. To connect the USB cable connector, please follow the steps below.

Step 1: Locate the connectors. The locations of the USB connectors are shown in Chapter 3.



WARNING:

If the USB pins are not properly aligned, the USB device can burn out.

Step 2: Align the connectors. The cable has two connectors. Correctly align pin 1 on each cable connector with pin 1 on the IMB-Q354 USB connector.

Step 3: Insert the cable connectors. Once the cable connectors are properly aligned with the USB connectors on the IMB-Q354, connect the cable connectors to the onboard connectors. See **Figure 4-15**.

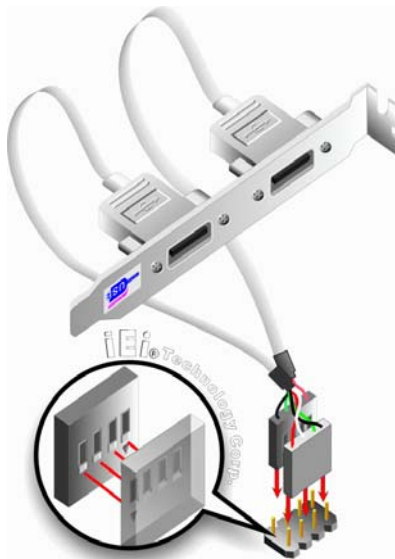


Figure 4-15: Dual USB Cable Connection

Step 4: Attach the bracket to the chassis. The USB 2.0 connectors are attached to a bracket. To secure the bracket to the chassis please refer to the installation instructions that came with the chassis.

4.7.4 PCIe x16 Expansion Card Installation

A PCIe x16 expansion card can be installed on the IMB-Q354 using the PCIe x16 expansion slot. To install a PCIe expansion card into the PCIe socket, please follow the steps below and refer to **Figure 4-16**.

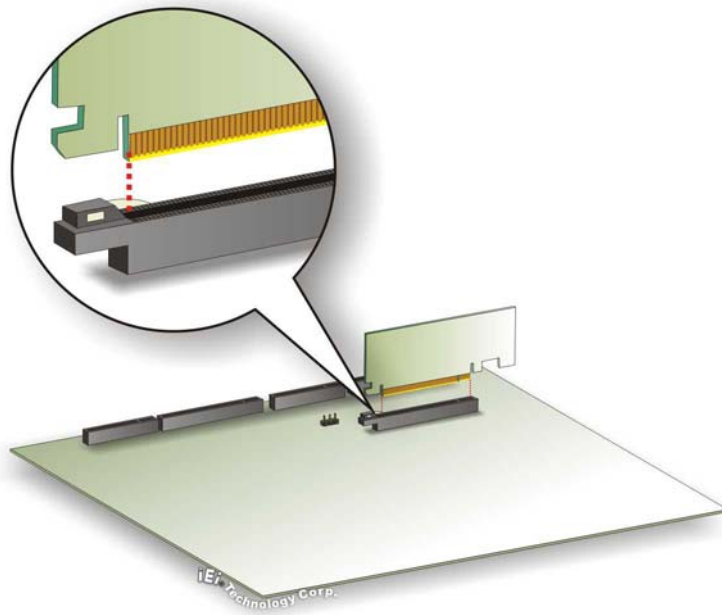


Figure 4-16: PCIe x16 Installation

Step 1: Locate the PCIe x16 socket. Place the IMB-Q354 on an anti-static pad with the solder side facing up.

Step 2: Align the PCIe x16 card with the socket. The PCIe x16 card must be aligned so the notch on the PCIe x16 card aligns with the plastic bridge in the socket.

Step 3: Insert the PCIe x16 card. Push the PCIe x16 card into the socket, perpendicular to the IMB-Q354.

IMB-Q354 microATX Motherboard

Step 4: Secure the PCI x16 card. Push the PCIe x16 card down until the clip engages, securing the card in place.

4.8 External Peripheral Interface Connection

The following external peripheral devices can be connected to the external peripheral interface connectors.

- Audio devices
- RJ-45 Ethernet cable connectors
- Parallel port device
- Keyboard/mouse
- Serial port devices
- USB devices
- VGA monitors

To install these devices, connect the corresponding cable connector from the actual device to the corresponding IMB-Q354 external peripheral interface connector making sure the pins are properly aligned.

4.8.1 Audio Connection

Audio signals are interfaced through three phone jack connections. The red phone jack is for Mic In, blue is for Line In and green is for Speaker Out. Follow the steps below to connect audio devices to the IMB-Q354.

Step 1: Locate the audio phone jacks. The locations of the audio phone jacks are shown in **Chapter 3**.

Step 2: Insert audio phone jack plugs. Insert audio phone jack plugs into the audio phone jacks on the external peripheral interface. See **Figure 4-17**.

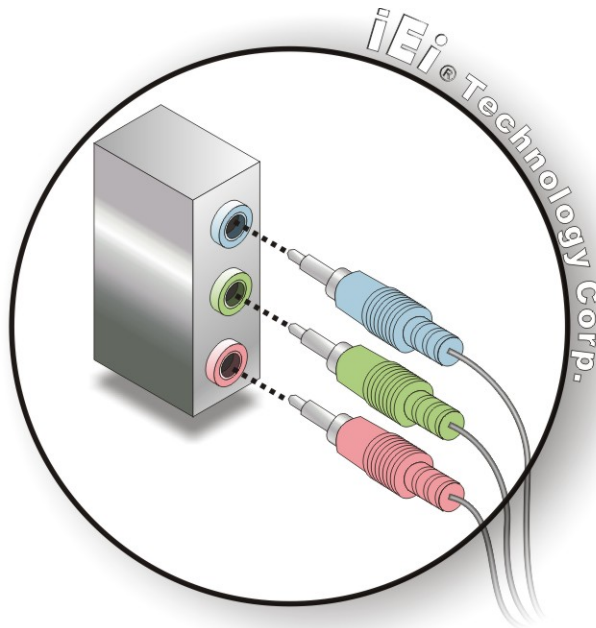


Figure 4-17: Audio Connectors

4.8.2 LAN Connection (Single Connector)

There is one external RJ-45 LAN connector. The RJ-45 connector enables connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: Locate the RJ-45 connector. The locations of the RJ-45 connector is shown in Chapter 4.

Step 2: Align the connectors. Align the RJ-45 connector on the LAN cable with the RJ-45 connector on the IMB-Q354. See **Figure 4-18**.

IMB-Q354 microATX Motherboard

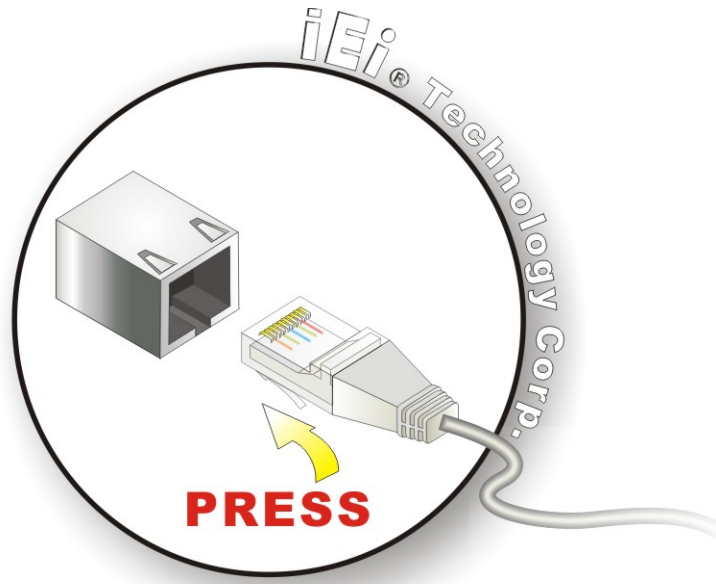


Figure 4-18: LAN Connection

Step 3: Insert the LAN cable RJ-45 connector. Once aligned, gently insert the LAN cable RJ-45 connector into the onboard RJ-45 connector.

4.8.3 Parallel Device Connection

The IMB-Q354 has a single female DB-25 connector on the external peripheral interface panel for parallel devices. Follow the steps below to connect a parallel device to the IMB-Q354.

Step 1: Locate the DB-25 connector. The location of the DB-25 connector is shown in Chapter 3.

Step 2: Insert the DB-25 connector. Insert the DB-25 connector of a parallel device into the DB-25 connector on the external peripheral interface. See **Figure 4-19**.

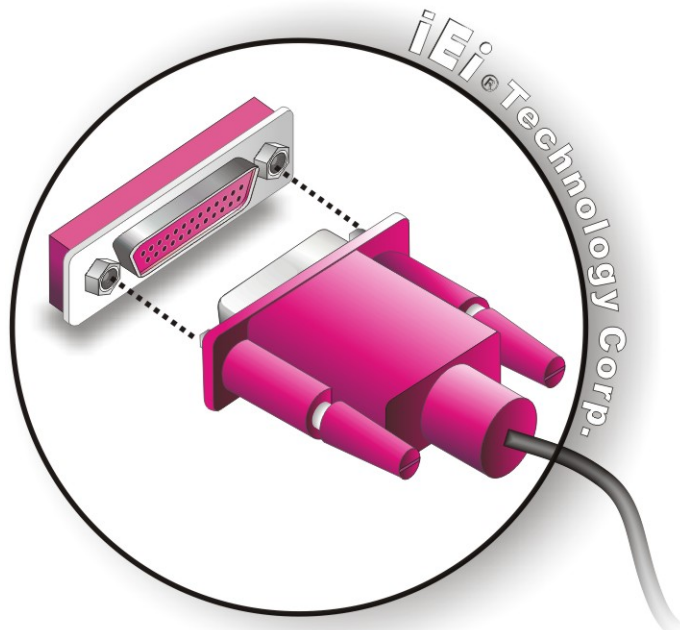


Figure 4-19: Parallel Device Connector

Step 3: **Secure the connector.** Secure the DB-25 connector to the external interface by tightening the two retention screws on either side of the connector.

4.8.4 PS/2 Keyboard and Mouse Connection

The IMB-Q354 has a dual PS/2 connector on the external peripheral interface panel. The dual PS/2 connector is used to connect to a keyboard and mouse to the system. Follow the steps below to connect a keyboard and mouse to the IMB-Q354.

Step 1: **Locate the dual PS/2 connector.** The location of the dual PS/2 connector is shown in **Chapter 3**.

Step 2: **Insert the keyboard/mouse connector.** Insert a PS/2 keyboard or mouse connector into the appropriate PS/2 connector on the external peripheral interface connector. See **Figure 4-20**.

IMB-Q354 microATX Motherboard

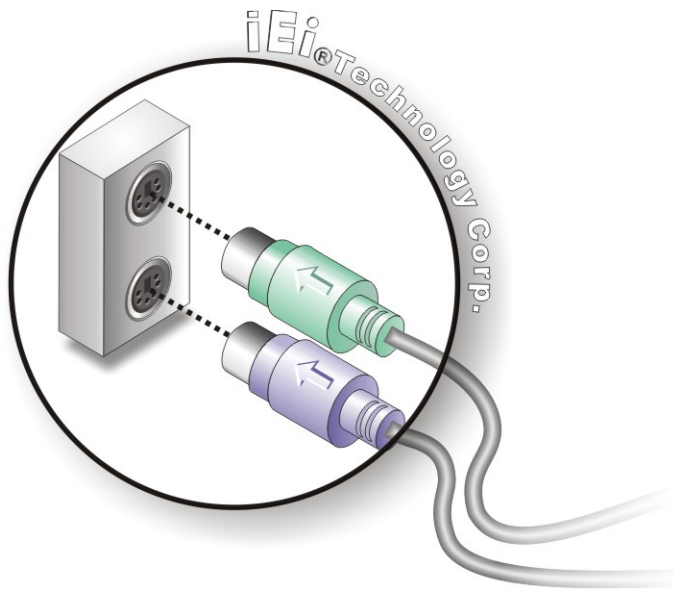


Figure 4-20: PS/2 Keyboard/Mouse Connector

4.8.5 Serial Device Connection

The IMB-Q354 has a single male DB-9 connector on the external peripheral interface panel for a serial device. Follow the steps below to connect a serial device to the IMB-Q354.

Step 1: **Locate the DB-9 connector.** The location of the DB-9 connector is shown in Chapter 3.

Step 2: **Insert the serial connector.** Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See **Figure 4-21**.

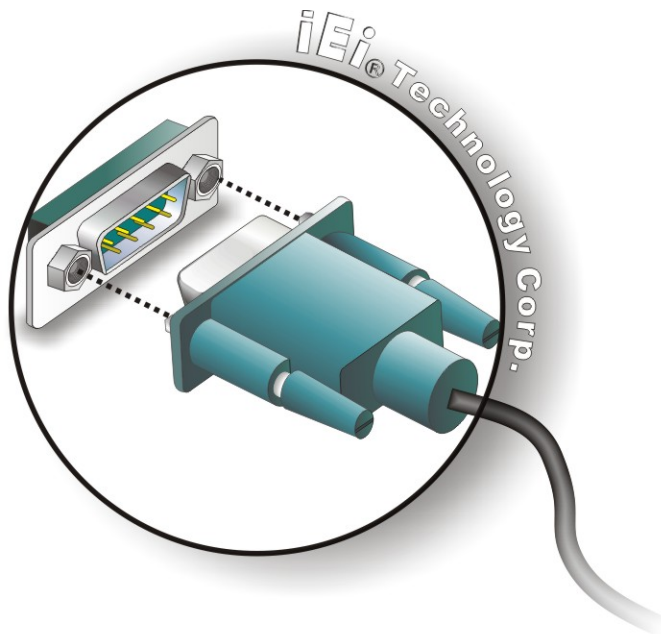


Figure 4-21: Serial Device Connector

Step 3: Secure the connector. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

4.8.6 USB Device Connection

There are four external USB 2.0 connectors. To connect a USB 2.0 or USB 1.1 device, please follow the instructions below.

Step 1: Located the USB connectors. The locations of the USB connectors are shown in **Chapter 4**.

Step 2: Align the connectors. Align the USB device connector with one of the connectors on the IMB-Q354. See **Figure 4-22**.

IMB-Q354 microATX Motherboard

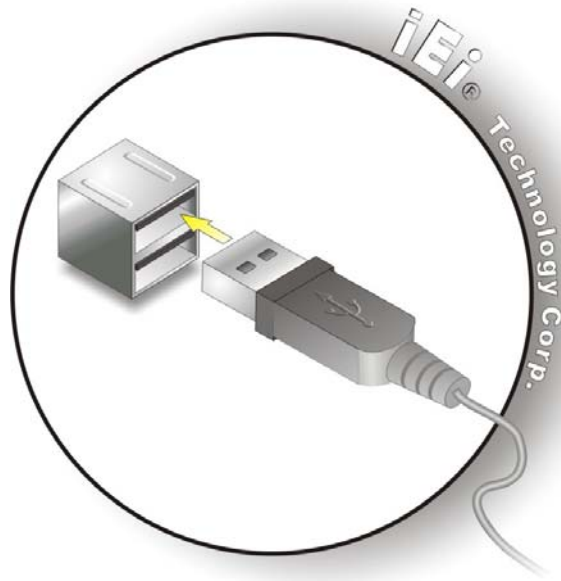


Figure 4-22: USB Device Connection

Step 3: **Insert the device connector.** Once aligned, gently insert the USB device connector into the onboard connector.

4.8.7 VGA Monitor Connection

The IMB-Q354 has a single female DB-15 connector on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the IMB-Q354, please follow the instructions below.

- Step 1:** **Locate the female DB-15 connector.** The location of the female DB-15 connector is shown in **Chapter 3**.
- Step 2:** **Align the VGA connector.** Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.
- Step 3:** **Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the IMB-Q354. See **Figure 4-23**.

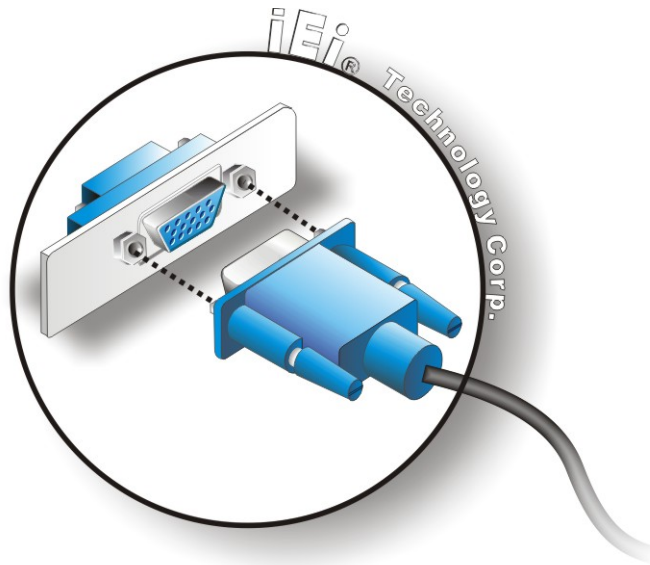


Figure 4-23: VGA Connector

Step 4: Secure the connector. Secure the DB-15 VGA connector from the VGA monitor to the external interface by tightening the two retention screws on either side of the connector.

Chapter

5

AMI BIOS

5.1 Introduction

A licensed copy of AMI BIOS is preprogrammed into the ROM BIOS. The BIOS setup program allows users to modify the basic system configuration. This chapter describes how to access the BIOS setup program and the configuration options that may be changed.

5.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the “**Press Del to enter SETUP**” message appears on the screen.

If the message disappears before the **DELETE** key is pressed, restart the computer and try again.

5.1.2 Using Setup

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. Navigation keys are shown in.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
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
Page Up key	Increase the numeric value or make changes
Page Dn key	Decrease the numeric value or make changes

IMB-Q354 microATX Motherboard

F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

5.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in **Chapter 4.5.1**.

5.1.5 BIOS Menu Bar

The **menu bar** on top of the BIOS screen has the following main items:

- **Main** Changes the basic system configuration.
- **Advanced** Changes the advanced system settings.
- **PCIPnP** Changes the advanced PCI/PnP Settings
- **Boot** Changes the system boot configuration.
- **Security** Sets User and Supervisor Passwords.
- **Chipset** Changes the chipset settings.
- **Exit** Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

5.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.

```

BIOS SETUP UTILITY
Main  Advanced  PCIPNP  Boot  Security  Chipset  Exit

System Overview
-----
AMIBIOS
Version      :08.00.15
Build Date   :04/19/12
ID:          :B073MR41

Processor
Intel(R) Core(TM)2 CPU      6600  @2.40GHz
Speed        :2400MHz
Count        :1

System Memory
Size         :2023MB

System Time           [14:20:27]
System Time           [Tue 05/06/2008]

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Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.
Use [+] or [-] to configure system time.

←→ Select Screen
↑↓ Select Item
+ - Change Field
Tab Select Field
F1  General Help
F10 Save and Exit
ESC Exit
    
```

BIOS Menu 1: Main

→ System Overview

The **System Overview** lists a brief summary of different system components. The fields in **System Overview** cannot be changed. The items shown in the system overview include:

- AMI BIOS: Displays auto-detected BIOS information
 - **Version:** Current BIOS version
 - **Build Date:** Date the current BIOS version was made
 - **ID:** Installed BIOS ID
- Processor: Displays auto-detected CPU specifications
 - **Type:** Names the currently installed processor
 - **Speed:** Lists the processor speed
 - **Count:** The number of CPUs on the motherboard
- System Memory: Displays the auto-detected system memory.
 - **Size:** Lists memory size

IMB-Q354 microATX Motherboard

The System Overview field also has two user configurable fields:

→ **System Time [xx:xx:xx]**

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

→ **System Date [xx/xx/xx]**

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

5.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:



WARNING!

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

-
- CPU Configuration (see **Section 5.3.1**)
 - IDE Configuration (see **Section 5.3.2**)
 - Floppy Configuration (see **Section 5.3.3**)
 - Super IO Configuration (see **Section 5.3.4**)
 - Hardware Health Configuration (see **Section 5.3.5**)
 - ICP Power Configuration (see **Section 5.3.6**)
 - AHCI Configuration (see **Section 5.3.7**)
 - Intel VT-d Configuration (see **Section 5.3.8**)
 - Remote Access Configuration (see **Section 5.3.9**)
 - Trusted Computing (see **Section 5.3.10**)
 - USB Configuration (see **Section 5.3.11**)
 - iEi Feature (see **Section 5.3.12**)

```

BIOS SETUP UTILITY
Main  Advanced  PCIPNP  Boot  Security  Chipset  Exit
-----
Advanced Settings                                Configure CPU
-----
WARNING: Setting wrong values in below sections may cause
system to malfunction

> CPU Configuration
> IDE Configuration
> Floppy Configuration
> SuperIO Configuration
> Hardware Health Configuration
> ICP Power Configuration
> AHCI Configuration
> Intel VT-d Configuration
> Remote Access Configuration
> Trusted Computing
> USB Configuration
> iEi Feature

                                  ←→  Select Screen
                                  ↑↓  Select Item
                                  + -  Change Field
                                  Tab  Select Field
                                  F1   General Help
                                  F10  Save and Exit
                                  ESC  Exit

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```

BIOS Menu 2: Advanced
5.3.1 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 3**) to view detailed CPU specifications and configure the CPU.

```

BIOS SETUP UTILITY
Main  Advanced  PCIPNP  Boot  Security  Chipset  Exit
-----
Configure Advanced CPU Settings
Module Version - 3F.12
-----
Manufacturer   :Intel@
Intel(R) Core(TM)2 CPU      6600  @2.40GHz
Frequency      :1.40GHz
FSB Speed      :400MHz
Cache L1       : 32KB
Cache L2       : 1024KB

                                  ←→  Select Screen
                                  ↑↓  Select Item
                                  + -  Change Field
                                  Tab  Select Field
                                  F1   General Help
                                  F10  Save and Exit
                                  ESC  Exit

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```

BIOS Menu 3: CPU Configuration

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The CPU Configuration menu (**BIOS Menu 3**) lists the following CPU details:

- Manufacturer: Lists the name of the CPU manufacturer
- Brand String: Lists the brand name of the CPU being used
- Frequency: Lists the CPU processing speed
- FSB Speed: Lists the FSB speed
- Cache L1: Lists the CPU L1 cache size
- Cache L2: Lists the CPU L2 cache size

➔ Intel (R) Virtualization Tech. [Disabled]

Use the **Intel (R) Virtualization Tech.** option to enable or disable Intel® Virtualization Technology.

- ➔ **Disabled** **DEFAULT** Intel® Virtualization Technology is disabled
- ➔ **Enhanced** Intel® Virtualization Technology is activated

5.3.2 IDE Configuration

Use the **IDE Configuration** menu (**BIOS Menu 4**) to change and/or set the configuration of the IDE devices installed in the system.

```

BIOS SETUP UTILITY
Main  Advanced  PCIPNP  Boot  Security  Chipset  Exit
-----
IDE Configuration                               Disabled
                                                Enabled
SATA#1 Configuration                            [Enhanced]
  Configure SATA#1 as                            [IDE]
SATA#2 Configuration                            [Enhanced]

> Primary IDE Master                            : [Not Detected]      ←→  Select Screen
> Primary IDE Slave                             : [Not Detected]      ↑↓  Select Item
> Secondary IDE Master                          : [Not Detected]      + -  Change Field
> Secondary IDE Slave                           : [Not Detected]      Tab  Select Field
> Third IDE Master                              : [Not Detected]      F1   General Help
> Fourth IDE Master                             : [Not Detected]      F10  Save and Exit
                                                ESC  Exit

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```

BIOS Menu 4: IDE Configuration

→ SATA#1 Configuration [Enhanced]

Use the **SATA#n** BIOS option to enable the nth SATA drive port.

- **Disabled** The nth SATA drive port is disabled
- **Enhanced** **DEFAULT** The nth SATA drive port is activated

→ Configure SATA as [IDE]

Use the **Configure SATA as** option to configure SATA devices as normal IDE devices.

- **IDE** **DEFAULT** Configures SATA devices as normal IDE device.
- **RAID** Configures SATA devices as RAID device.
- **AHCI** Configures SATA devices as AHCI device.

→ IDE Master and IDE Slave

When entering setup, BIOS auto detects the presence of IDE devices. BIOS displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the **IDE Configuration** menu:

- Primary IDE Master
- Primary IDE Slave
- Secondary IDE Master
- Secondary IDE Slave
- Third IDE Master
- Fourth IDE Master

The **IDE Configuration** menu (**BIOS Menu 4**) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected, and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 5.3.2.1** appear.

5.3.2.1 IDE Master, IDE Slave

Use the **IDE Master** and **IDE Slave** configuration menu to view both primary and secondary IDE device details and configure the IDE devices connected to the system.

IMB-Q354 microATX Motherboard

```

BIOS SETUP UTILITY
Main  Advanced  PCIPNP  Boot  Security  Chipset  Exit
-----
Primary IDE Master                               Select the type of device
                                                connected to the system
-----
Device      :Not Detected
-----
Type                [Auto]
LBA/Large Mode     [Auto]
Block (Multi-Sector Transfer) [Auto]
PIO Mode           [Auto]
DMA Mode           [Auto]
S.M.A.R.T.         [Auto]
32Bit Data Transfer [Enabled]
-----
                                  ←→  Select Screen
                                  ↑↓  Select Item
                                  + -  Change Field
                                  Tab  Select Field
                                  F1   General Help
                                  F10  Save and Exit
                                  ESC  Exit
-----
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```

BIOS Menu 5: IDE Master and IDE Slave Configuration

→ Auto-Detected Drive Parameters

The “grayed-out” items in the left frame are IDE disk drive parameters automatically detected from the firmware of the selected IDE disk drive. The drive parameters are listed as follows:

- Device: Lists the device type (e.g. hard disk, CD-ROM etc.)
- Type: Indicates the type of devices a user can manually select
- Vendor: Lists the device manufacturer
- Size: List the storage capacity of the device.
- LBA Mode: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.
- Block Mode: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
- PIO Mode: Indicates the PIO mode of the installed device.
- Async DMA: Indicates the highest Asynchronous DMA Mode that is supported.
- Ultra DMA: Indicates the highest Synchronous DMA Mode that is supported.
- S.M.A.R.T.: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.

- 32Bit Data Transfer: Enables 32-bit data transfer.

→ Type [Auto]

Use the **Type** BIOS option select the type of device the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) is complete.

- **Not Installed** BIOS is prevented from searching for an IDE disk drive on the specified channel.
- **Auto** **DEFAULT** The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.
- **CD/DVD** The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel.
- **ARMD** This option specifies an ATAPI Removable Media Device. These include, but are not limited to:
 - **ZIP**
 - **LS-120**

→ LBA/Large Mode [Auto]

Use the **LBA/Large Mode** option to disable or enable BIOS to auto detects LBA (Logical Block Addressing). LBA is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

- **Disabled** BIOS is prevented from using the LBA mode control on the specified channel.
- **Auto** **DEFAULT** BIOS auto detects the LBA mode control on the specified channel.

IMB-Q354 microATX Motherboard

→ Block (Multi Sector Transfer) [Auto]

Use the **Block (Multi Sector Transfer)** to disable or enable BIOS to auto detect if the device supports multi-sector transfers.

- **Disabled** BIOS is prevented from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time.
- **Auto** **DEFAULT** BIOS auto detects Multi-Sector Transfer support on the drive on the specified channel. If supported the data transfer to and from the device occurs multiple sectors at a time.

→ PIO Mode [Auto]

Use the **PIO Mode** option to select the IDE PIO (Programmable I/O) mode program timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

- **Auto** **DEFAULT** BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined.
- **0** PIO mode 0 selected with a maximum transfer rate of 3.3MBps
- **1** PIO mode 1 selected with a maximum transfer rate of 5.2MBps
- **2** PIO mode 2 selected with a maximum transfer rate of 8.3MBps
- **3** PIO mode 3 selected with a maximum transfer rate of 11.1MBps
- **4** PIO mode 4 selected with a maximum transfer rate of 16.6MBps
(This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

→ DMA Mode [Auto]

Use the **DMA Mode** BIOS selection to adjust the DMA mode options.

→ **Auto** **DEFAULT** BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.

→ **S.M.A.R.T [Auto]**

Use the **S.M.A.R.T** option to auto-detect, disable or enable Self-Monitoring Analysis and Reporting Technology (SMART) on the drive on the specified channel. **S.M.A.R.T** predicts impending drive failures. The **S.M.A.R.T** BIOS option enables or disables this function.

→ **Auto** **DEFAULT** BIOS auto detects HDD SMART support.

→ **Disabled** Prevents BIOS from using the HDD SMART feature.

→ **Enabled** Allows BIOS to use the HDD SMART feature

→ **32Bit Data Transfer [Enabled]**

Use the **32Bit Data Transfer** BIOS option to enables or disable 32-bit data transfers.

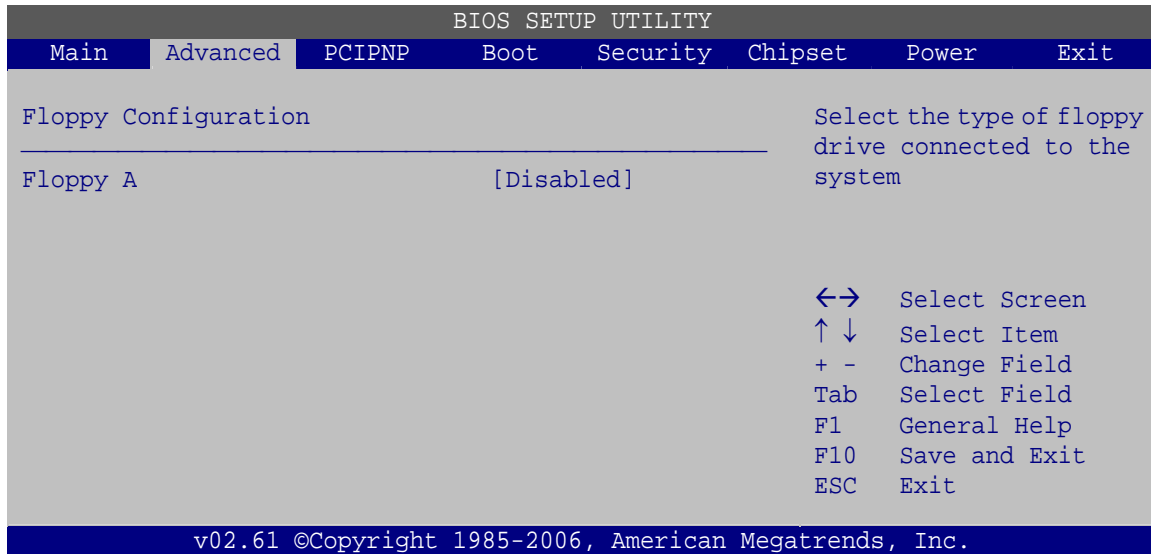
→ **Disabled** Prevents the BIOS from using 32-bit data transfers.

→ **Enabled** **DEFAULT** Allows BIOS to use 32-bit data transfers on supported hard disk drives.

5.3.3 Floppy Configuration

Use the **Floppy Configuration menu** to configure the floppy disk drive connected to the system.

IMB-Q354 microATX Motherboard



BIOS Menu 6: Floppy Configuration

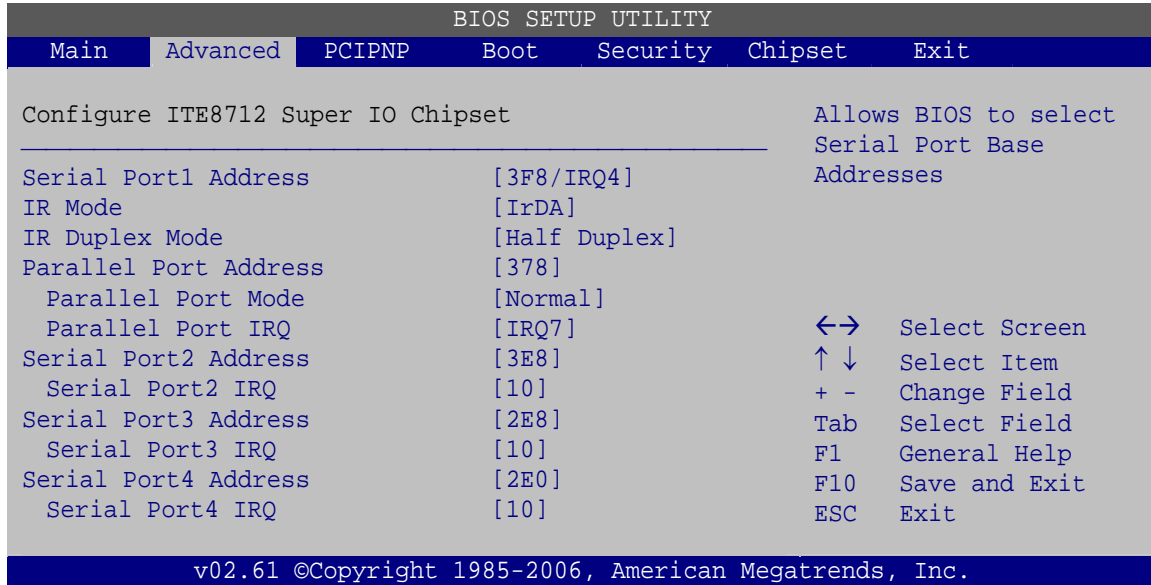
→ Floppy A

Use the **Floppy A** option to configure the floppy disk drive. Options are listed below:

- Disabled **DEFAULT**
- 1.44 MB 31/2'

5.3.4 Super IO Configuration

Use the **Super IO Configuration** menu (**BIOS Menu 7**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.



BIOS Menu 7: Super IO Configuration

→ Serial Port1 Address [3F8/IRQ4]

Use the **Serial Port1 Address** option to select the Serial Port 1 base address.

- **Disabled** No base address is assigned to Serial Port 1
- **3F8/IRQ4** **DEFAULT** Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4
- **3E8/IRQ4** Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4
- **2E8/IRQ3** Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3

→ IR Mode [IrDA]

Use the **IR Mode** option to select the infrared operational mode.

- **IrDA** **DEFAULT** Serial Port 2 mode is IrDA
- **ASK IR** Serial Port 2 mode is ASK IR

IMB-Q354 microATX Motherboard

→ IR Duplex Mode [Half Duplex]

Use the **IR Duplex Mode** option to select the infrared port operational mode.

- **Full Duplex** IR port mode is full-duplex
- **Half Duplex** **DEFAULT** IR port mode is half-duplex

→ Parallel Port Address [378]

Use the **Parallel Port Address** option to select the parallel port base address.

- **Normal** **DEFAULT** The normal parallel port mode is the standard mode for parallel port operation.
- **EPP** The parallel port operates in the enhanced parallel port mode (EPP). The EPP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode.
- **ECP** The parallel port operates in the extended capabilities port (ECP) mode. The ECP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode.
- **EPP+ECP** The parallel port is compatible with EPP and ECP devices described above.

→ Parallel Port IRQ [IRQ7]

Use the **Parallel Port IRQ** selection to set the parallel port interrupt address.

- **IRQ5** IRQ5 is assigned as the parallel port interrupt address
- **IRQ7** **DEFAULT** IRQ7 is assigned as the parallel port interrupt address

→ Serial Port5 IRQ [10]

Use the **Serial Port5 IRQ** option to select the interrupt address for serial port 5.

- 10 **DEFAULT** Serial port 5 IRQ address is 10
- 11 Serial port 5 IRQ address is 11

→ Serial Port2 Address [3E8]

Use the **Serial Port2 Address** option to select the Serial Port 2 base address.

- **Disabled** No base address is assigned to Serial Port 2
- 3E8 **DEFAULT** Serial Port 2 I/O port address is 3E8
- 2E8 Serial Port 2 I/O port address is 2E8
- 2E0 Serial Port 2 I/O port address is 2E0

→ Serial Port2 IRQ [10]

Use the **Serial Port2 IRQ** option to select the interrupt address for serial port 2.

- 10 **DEFAULT** Serial port 2 IRQ address is 10
- 11 Serial port 2 IRQ address is 11

→ Serial Port3 Address [2E8]

Use the **Serial Port3 Address** option to select the base addresses for serial port 3.

- **Disabled** No base address is assigned to serial port 3
- 3E8 Serial port 3 I/O port address is 3E8
- 2E8 **DEFAULT** Serial port 3 I/O port address is 2E8
- 2E0 Serial port 3 I/O port address is 2E0

→ Serial Port3 IRQ [10]

Use the **Serial Port3 IRQ** option to select the interrupt address for serial port 3.

IMB-Q354 microATX Motherboard

- **10** **DEFAULT** Serial port 3 IRQ address is 10
- **11** Serial port 3 IRQ address is 11

→ **Serial Port4 Address [2E0]**

Use the **Serial Port4 IRQ** option to select the interrupt address for serial port 4.

- **Disabled** No base address is assigned to serial port 3
- **3E8** Serial port 4 I/O port address is 3E8
- **2E8** Serial port 4 I/O port address is 2E8
- **2E0** **DEFAULT** Serial port 4 I/O port address is 2E0

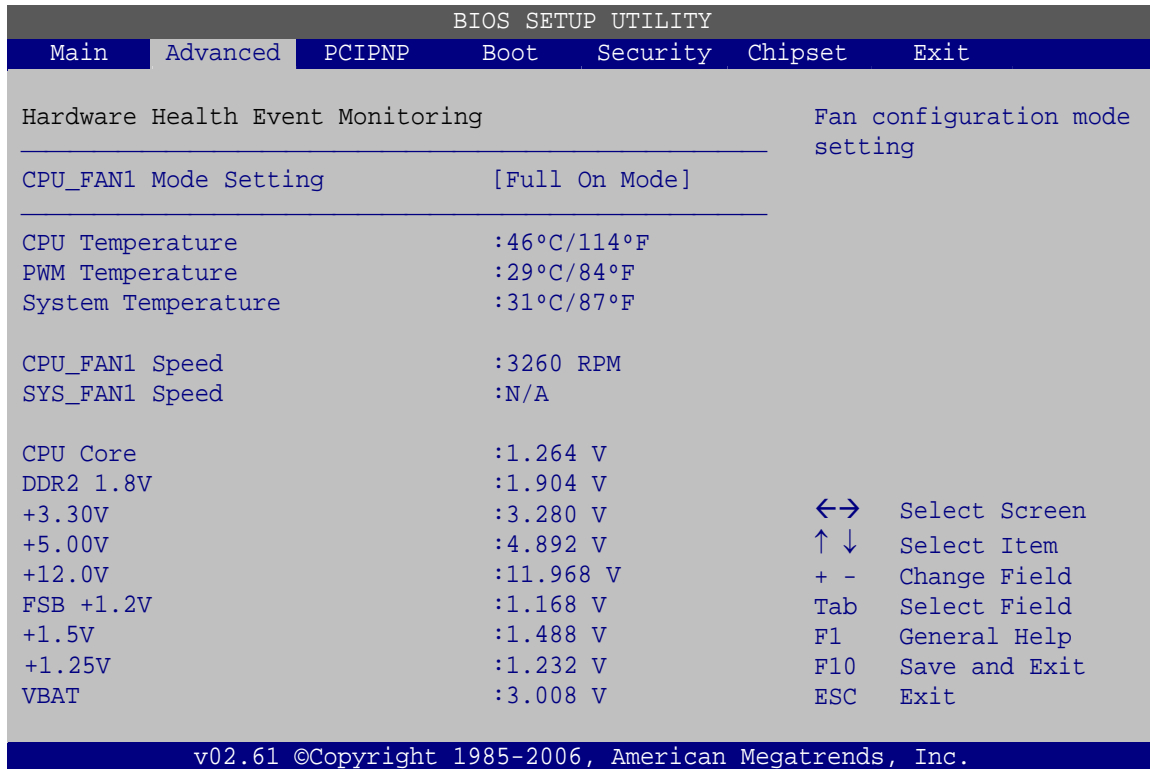
→ **Serial Port4 IRQ [10]**

Use the **Serial Port4 IRQ** option to select the interrupt address for serial port 4.

- **10** **DEFAULT** Serial port 4 IRQ address is 10
- **11** Serial port 4 IRQ address is 11

5.3.5 Hardware Health Configuration

The **Hardware Health Configuration** menu (**BIOS Menu 8**) shows the operating temperature, fan speeds and system voltages.



BIOS Menu 8: Hardware Health Configuration

→ CPU_FAN1 Mode Setting [Full On Mode]

Use the **CPU_FAN1 Mode Setting** option to configure the second fan.

- **Full On Mode** Fan is on all the time
- **Automatic mode** **DEFAULT** Fan is off when the temperature is low enough. Parameters must be set by the user.
- **PWM Manual mode** Pulse width modulation set manually

The following system parameters and values are shown. The system parameters that are monitored are:

- System Temperatures: The following system temperatures are monitored
 - CPU Temperature
 - PWM Temperature
 - System Temperature

IMB-Q354 microATX Motherboard

- Fan Speeds: The CPU cooling fan speed is monitored.
 - CPU_FAN1 Speed
 - SYS_FAN1 Speed
- Voltages: The following system voltages are monitored
 - CPU Core
 - DDR2 1.8V
 - +3.30V
 - +5.00V
 - +12.0V
 - FSB +1.2V
 - +1.5V
 - +1.25V
 - VBAT

5.3.6 ICP Power Configuration

Use the **ICP Power Configuration** menu (**BIOS Menu 9**) to configure advanced ACPI configuration options.

```

BIOS SETUP UTILITY
Main  Advanced  PCIPNP  Boot  Security  Chipset  Exit
> ACPI Configuration          Section for Advanced
> Power Configuration        ACPI Configuration.

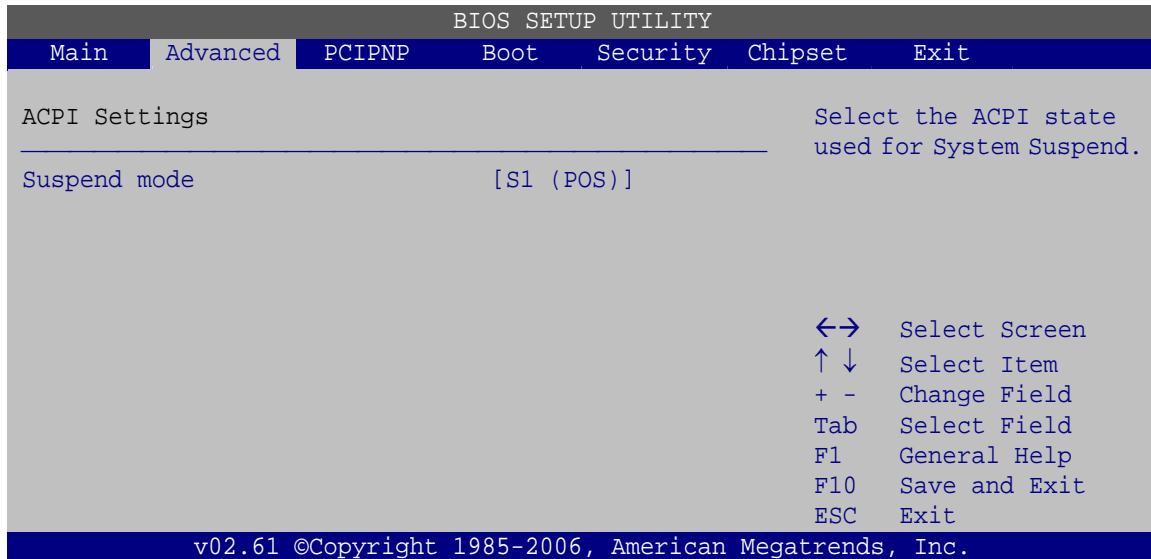
                                  ←→  Select Screen
                                  ↑↓  Select Item
                                  + -  Change Field
                                  Tab  Select Field
                                  F1   General Help
                                  F10  Save and Exit
                                  ESC  Exit

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```

BIOS Menu 9: ICP Power Configuration

5.3.6.1 ACPI Configuration

The **ACPI Configuration** menu (**BIOS Menu 10**) configures the Advanced Configuration and Power Interface (ACPI).



BIOS Menu 10: ACPI Configuration

➔ Suspend Mode [S1(POS)]

Use the **Suspend Mode** option to specify the sleep state the system enters when it is not being used.

- ➔ **S1 (POS) DEFAULT** The system enters S1 (POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.
- ➔ **S3 (STR)** The system enters S3 (STR) sleep state.

5.3.6.2 Power Configuration

The **Power Configuration** menu (**BIOS Menu 11**) allows the advanced power management options to be configured.

IMB-Q354 microATX Motherboard

```

BIOS SETUP UTILITY
Main  Advanced  PCIPNP  Boot  Security  Chipset  Exit
-----
Power Configuration                               Select the ACPI state
                                                    used for System Suspend.
Restore on AC Power Loss          [Power On]

Advanced Resume Event Controls
Resume On KeyBoard/Mouse         [Disabled]
Resume on PME#                   [Disabled]
Resume on Ring                    [Disabled]

                                  ←→  Select Screen
                                  ↑↓  Select Item
                                  + -  Change Field
                                  Tab  Select Field
                                  F1   General Help
                                  F10  Save and Exit
                                  ESC  Exit

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```

BIOS Menu 11: Power Configuration

→ Restore on AC Power Loss [Power On]

Use the **Restore on AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

- **Power Off** The system remains turned off
- **Power On** **DEFAULT** The system turns on

→ Resume on KeyBoard/Mouse [Disabled]

The **Resume on KeyBoard/Mouse** BIOS option specifies if the system is roused from a suspended or standby state when there is activity on the keyboard or mouse.

- **Disabled** **DEFAULT** Neither keyboard activity nor mouse activity can rouse the system from a suspend stated.
- **Resume On Keyboard** Wake event only generated by keyboard activity
- **Resume On Mouse** Wake event only generated by mouse activity
- **Enabled** Wake event generated by keyboard and mouse activity

→ **Resume on PME# [Disabled]**

Use the **Resume on PME#** BIOS option to enable activity on the PCI PME (power management event) controller to rouse the system from a suspend or standby state.

→ **Disabled** **DEFAULT** Wake event not generated by PCI PME controller activity

→ **Enabled** Wake event generated by PCI PME controller activity

→ **Resume on Ring [Disabled]**

Use the **Resume on Ring** BIOS option to enable activity on the RI (ring in) modem line to rouse the system from a suspend or standby state. That is, the system will be roused by an incoming call on a modem.

→ **Disabled** **DEFAULT** Wake event not generated by an incoming call

→ **Enabled** Wake event generated by an incoming call

5.3.7 AHCI Configuration



NOTE:

Advanced Host Controller Interface (AHCI) is a new programming interface for SATA host controllers. AHCI systems do not have master/slave designation for SATA devices, each device is treated as a master, and hardware-assisted native command queuing.

Use the **AHCI Settings** menu (**BIOS Menu 12**) to report on the auto-detection of devices connected to the onboard SATA drive connectors.

IMB-Q354 microATX Motherboard

```

BIOS SETUP UTILITY
Main  Advanced  PCIPNP  Boot  Security  Chipset  Exit
-----
AHCI Settings
-----
> AHCI Port0 [Not Detected]
> AHCI Port1 [Not Detected]
> AHCI Port2 [Not Detected]
> AHCI Port3 [Not Detected]
> AHCI Port4 [Not Detected]
> AHCI Port5 [Not Detected]

While entering setup,
BIOS auto detects the
presence of IDE devices.
This displays the status
of auto detection of IDE
devices.

<->  Select Screen
↑↓   Select Item
+ -  Change Field
Tab  Select Field
F1   General Help
F10  Save and Exit
ESC  Exit

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```

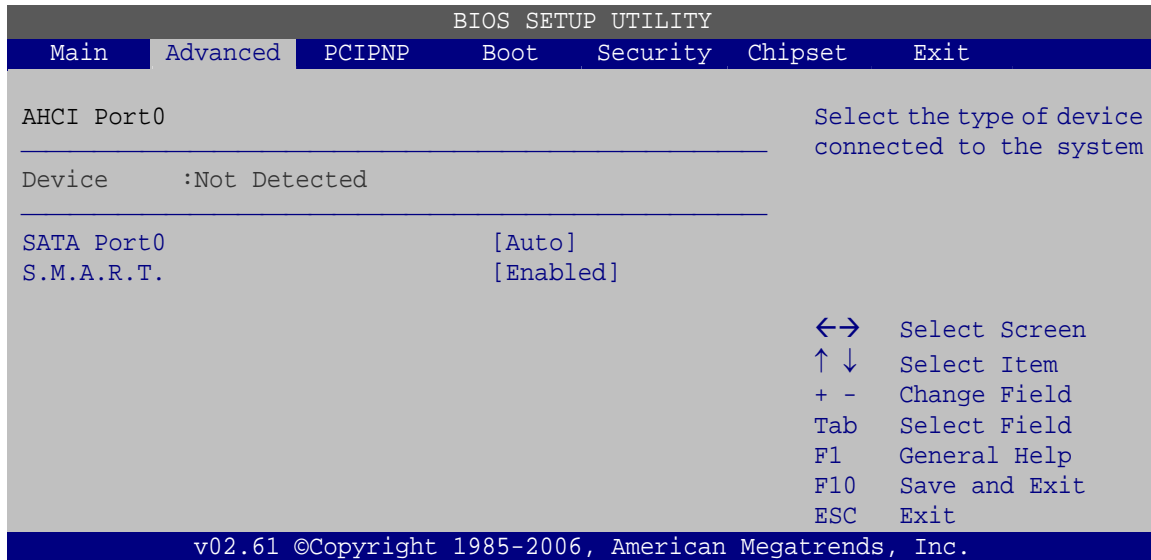
BIOS Menu 12: AHCI Configuration

→ AHCI Port n [Not Detected]

Use the **AHCI Port n** BIOS option to check what AHCI (Advanced Host Controller Interface) devices are detected to a specified SATA drive connector. If a device is detected, selecting the BIOS option, e.g. “**AHCI Port 3**” opens a new window.

5.3.7.1 AHCI Port n

Use the **AHCI Port n** configuration menu (**BIOS Menu 13**) to configure the drive connected to SATA connector n.



BIOS Menu 13: AHCI Port n Configuration Menu

➔ SATA Port n [Auto]

Use the **SATA Port n** option to enable the system to auto-detect the type of drive connected to SATA drive connector n.

➔ S.M.A.R.T [Enabled]

Use the **S.M.A.R.T** option to enable S.M.A.R.T (Self-Monitoring, Analysis, and Reporting Technology) on the drive connected to SATA drive connector n.

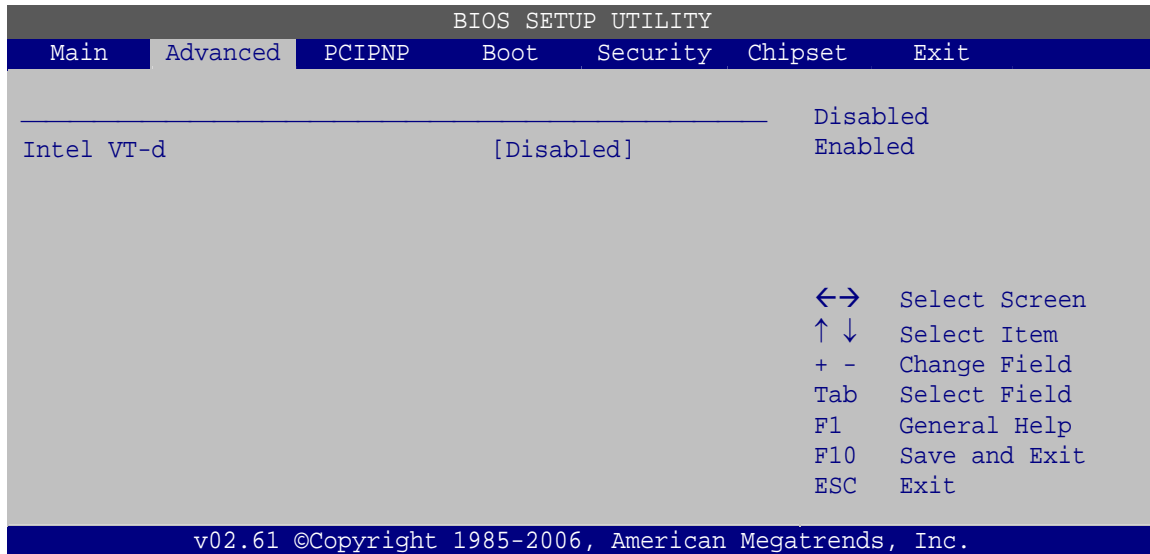
➔ **Disabled** S.M.A.R.T is disabled on the drive connected to SATA drive connector n on the system

➔ **Enabled** **DEFAULT** S.M.A.R.T is enabled on the drive connected to SATA drive connector n on the system

5.3.8 Intel VT-d Configuration

The **Intel VT-d Configuration** menu (**BIOS Menu 14**) configures the Intel® Virtualization Technology for Directed I/O (VT-d) options.

IMB-Q354 microATX Motherboard



BIOS Menu 14: Intel VT-d Configuration

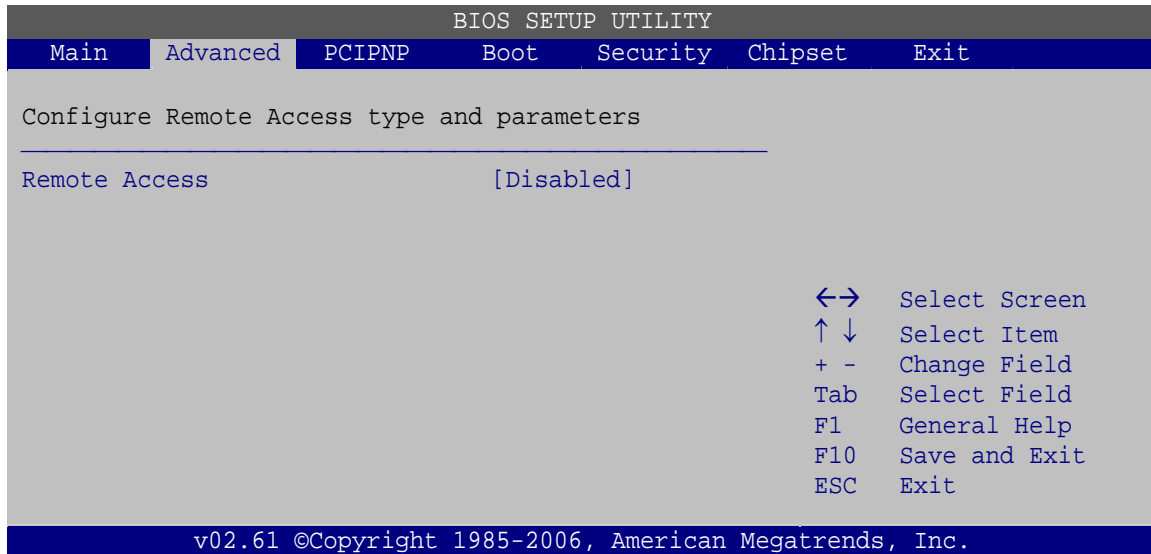
→ VT-d [Disabled]

Use the **VT-d** option to enable or disable VT-d support.

- **Disabled** **DEFAULT** Disables VT-d support.
- **Enabled** Enables VT-d support.

5.3.9 Remote Access Configuration

Use the **Remote Access Configuration** menu (**BIOS Menu 15**) to configure remote access parameters. The **Remote Access Configuration** is an AMIBIOS feature and allows a remote host running a terminal program to display and configure the BIOS settings.



BIOS Menu 15: Remote Access Configuration [Advanced]

→ Remote Access [Disabled]

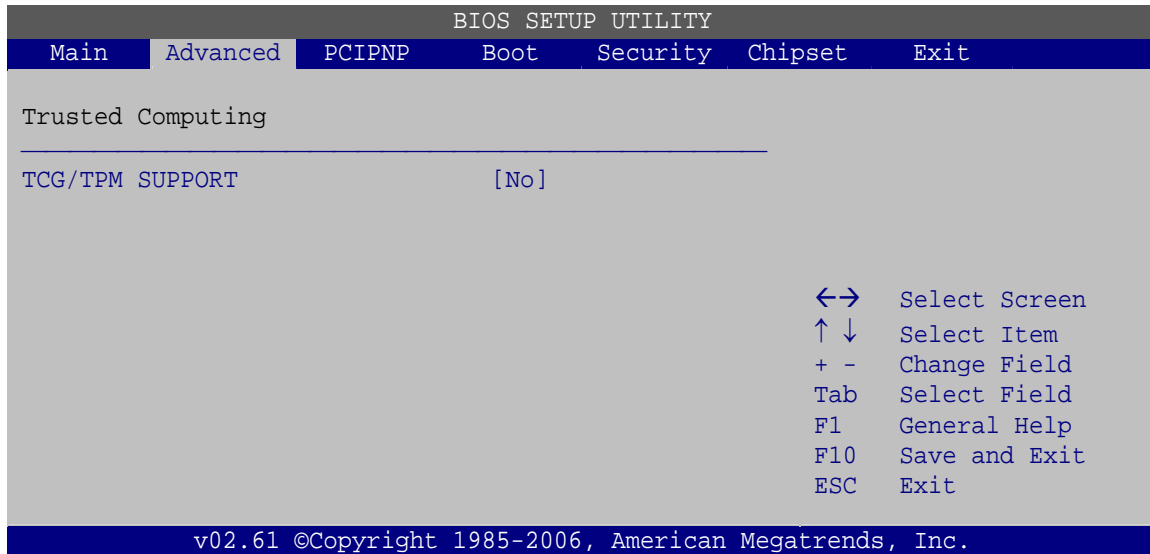
Use the **Remote Access** option to enable or disable access to the remote functionalities of the system.

- **Disabled** **DEFAULT** Remote access is disabled.
- **Enabled** Remote access configuration options shown below appear:
 - **Serial Port Number**
 - **Serial Port Mode**
 - **Redirection after BIOS POST**
 - **Terminal Type**

5.3.10 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 16**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).

IMB-Q354 microATX Motherboard



BIOS Menu 16: Trusted Computing

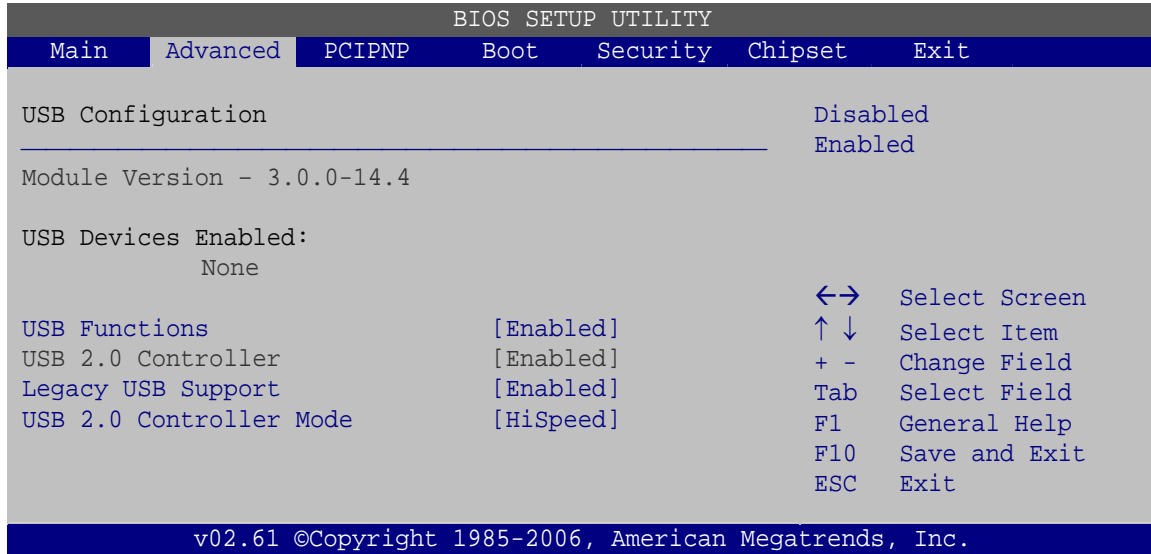
→ TCG/TPM Support [No]

Use the **TCG/TPM Support** option to configure support for the TPM.

- **No** **DEFAULT** TPM support is disabled.
- **Yes** TPM support is enabled.

5.3.11 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 17**) to read USB configuration information and configure the USB settings.



BIOS Menu 17: USB Configuration

→ USB Configuration

The **USB Configuration** field shows the system USB configuration. The items listed are:

- Module Version: x.xxxxx.xxxxx

→ USB Devices Enabled

The **USB Devices Enabled** field lists the USB devices that are enabled on the system

→ USB Functions [Enabled]

Use the **USB Functions** BIOS option to enable or disable USB function support.

- **Disabled** USB function support disabled
- **Enabled** **DEFAULT** USB function support enabled

→ USB 2.0 Controller [Enabled]

The **USB 2.0 Controller** option is enabled by default and can not be changed.

IMB-Q354 microATX Motherboard

→ Legacy USB Support [Enabled]

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support.

Normally if this option is not enabled, any attached USB mouse or USB keyboard does 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 is no USB driver loaded onto the system.

- | | | | |
|---|-----------------|----------------|-------------------------------------------------------------|
| → | Disabled | | Legacy USB support disabled |
| → | Enabled | DEFAULT | Legacy USB support enabled |
| → | Auto | | Legacy USB support disabled if no USB devices are connected |

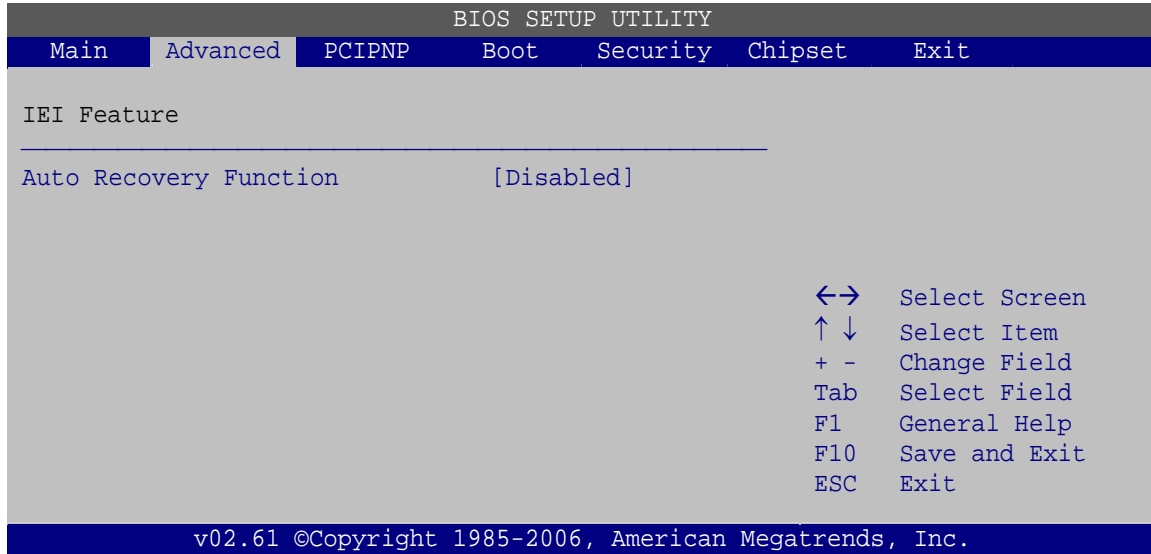
→ USB2.0 Controller Mode [HiSpeed]

Use the **USB2.0 Controller Mode** option to set the speed of the USB2.0 controller.

- | | | | |
|---|------------------|----------------|---------------------------------------------------|
| → | FullSpeed | | The controller is capable of operating at 12Mb/s |
| → | HiSpeed | DEFAULT | The controller is capable of operating at 480Mb/s |

5.3.12 IEI Feature

Use the **IEI Feature** menu (**BIOS Menu 18**) to configure One Key Recovery function.


BIOS Menu 18: IEI Feature
→ Auto Recovery Function [Disabled]

Use the **Auto Recovery Function** BIOS option to enable or disable the auto recovery function of the IEI One Key Recovery.

- **Disabled** **DEFAULT** Auto recovery function disabled
- **Enabled** Auto recovery function enabled

5.4 PCI/PnP

Use the **PCI/PnP** menu (**BIOS Menu 19**) to configure advanced PCI and PnP settings.


WARNING!

Setting wrong values for the BIOS selections in the PCIPnP BIOS menu may cause the system to malfunction.

IMB-Q354 microATX Motherboard

```

BIOS SETUP UTILITY
Main  Advanced  PCIPNP  Boot  Security  Chipset  Exit
-----
Advanced PCI/PnP Settings
-----
WARNING: Setting wrong values in below sections
         may cause system to malfunction

IRQ3      [Reserved]
IRQ4      [Reserved]
IRQ5      [Available]
IRQ7      [Available]
IRQ9      [Available]
IRQ10     [Reserved]
IRQ11     [Available]
IRQ14     [Available]
IRQ15     [Available]

DMA Channel 0 [Available]
DMA Channel 1 [Available]
DMA Channel 3 [Available]
DMA Channel 5 [Available]
DMA Channel 6 [Available]
DMA Channel 7 [Available]

Reserved Memory Size [Disabled]

Available: Specified IRQ
is available to be use
the PCI/PnP devices
Reserved: Specified IRQ
is reserved for use by
legacy ISA devices

←→  Select Screen
↑↓  Select Item
+ - Change Field
Tab Select Field
F1  General Help
F10 Save and Exit
ESC Exit

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```

BIOS Menu 19: PCI/PnP Configuration

→ IRQ# [Available]

Use the **IRQ#** address to specify what IRQs can be assigned to a particular peripheral device.

Available	DEFAULT	The specified IRQ is available to be used by PCI/PnP devices
Reserved		The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

- IRQ3
- IRQ4
- IRQ5
- IRQ7

- IRQ9
- IRQ10
- IRQ 11
- IRQ 14
- IRQ 15

→ **DMA Channel# [Available]**

Use the **DMA Channel#** option to assign a specific DMA channel to a particular PCI/PnP device.

- | | | | |
|---|------------------|----------------|--------------------------------------------------------------|
| → | Available | DEFAULT | The specified DMA is available to be used by PCI/PnP devices |
| → | Reserved | | The specified DMA is reserved for use by Legacy ISA devices |

Available DMA Channels are:

- DM Channel 0
- DM Channel 1
- DM Channel 3
- DM Channel 5
- DM Channel 6
- DM Channel 7

→ **Reserved Memory Size [Disabled]**

Use the **Reserved Memory Size** BIOS option to specify the amount of memory that should be reserved for legacy ISA devices.

- | | | | |
|---|-----------------|----------------|-------------------------------------------------|
| → | Disabled | DEFAULT | No memory block reserved for legacy ISA devices |
| → | 16K | | 16KB reserved for legacy ISA devices |
| → | 32K | | 32KB reserved for legacy ISA devices |
| → | 64K | | 54KB reserved for legacy ISA devices |

IMB-Q354 microATX Motherboard

5.5 Boot

Use the **Boot** menu (**BIOS Menu 20**) to configure system boot options.

```

BIOS SETUP UTILITY
Main  Advanced  PCIPNP  Boot  Security  Chipset  Exit
-----
Boot Settings                                Configure settings
                                             during system boot.
> Boot Settings Configuration

                                             ←→  Select Screen
                                             ↑↓  Select Item
                                             + -  Change Field
                                             Tab  Select Field
                                             F1   General Help
                                             F10  Save and Exit
                                             ESC  Exit

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```

BIOS Menu 20: Boot

5.5.1 Boot Settings Configuration

Use the **Boot Settings Configuration** menu (**BIOS Menu 21**) to configure advanced system boot options.

```

BIOS SETUP UTILITY
Main  Advanced  PCIPNP  Boot  Security  Chipset  Exit
-----
Boot Settings Configuration                Allows BIOS to skip
                                             certain tests while
                                             booting. This will
                                             decrease the time needed
                                             to boot the system.
Quick Boot                                [Enabled]
Quiet Boot                                 [Enabled]
AddOn ROM Display Mode                    [Force BIOS]
Bootup Num-Lock                            [On]
Boot From LAN Support (82573L)            [Disabled]

                                             ←→  Select Screen
                                             ↑↓  Select Item
                                             + -  Change Field
                                             Tab  Select Field
                                             F1   General Help
                                             F10  Save and Exit
                                             ESC  Exit

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```

BIOS Menu 21: Boot Settings Configuration

→ Quick Boot [Enabled]

Use the **Quick Boot** BIOS option to make the computer speed up the boot process.

- **Disabled** No POST procedures are skipped
- **Enabled** **DEFAULT** Some POST procedures are skipped to decrease the system boot time

→ Quiet Boot [Enabled]

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

- **Disabled** Normal POST messages displayed
- **Enabled** **DEFAULT** OEM Logo displayed instead of POST messages

→ AddOn ROM Display Mode [Force BIOS]

Use the **AddOn ROM Display Mode** option to allow add-on ROM (read-only memory) messages to be displayed.

- **Force BIOS** **DEFAULT** The system forces third party BIOS to display during system boot.
- **Keep Current** The system displays normal information during system boot.

→ Bootup Num-Lock [On]

Use the **Bootup Num-Lock** BIOS option to specify if the number lock setting must be modified during boot up.

- **Off** Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.
- **On** **DEFAULT** Allows the Number Lock on the keyboard to be enabled

IMB-Q354 microATX Motherboard

automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

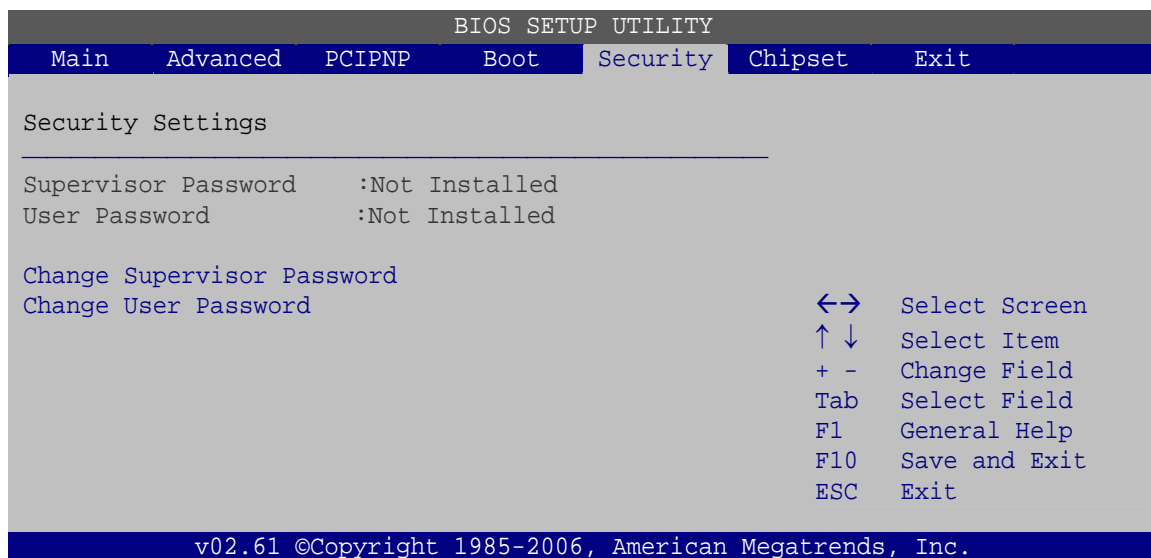
→ Boot From LAN Support (82573L) [Disabled]

Use the **BOOT From LAN Support (82573L)** option to enable the Intel® 82573L PCIe GbE controller to boot the system.

- **Disabled** **DEFAULT** Cannot be booted from a remote system through the Intel® 82573L PCIe GbE controller
- **Enabled** Can be booted from a remote system through the Intel® 82573L PCIe GbE controller

5.6 Security

Use the **Security** menu (**BIOS Menu 22**) to set system and user passwords.



BIOS Menu 22: Security

→ Change Supervisor Password

Use the **Change Supervisor Password** to set or change a supervisor password. The default for this option is **Not Installed**. If a supervisor password must be installed, select

this field and enter the password. After the password has been added, **Install** appears next to **Change Supervisor Password**.

➔ **Change User Password**

Use the **Change User Password** to set or change a user password. The default for this option is **Not Installed**. If a user password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change User Password**.

5.7 Chipset

Use the **Chipset** menu (**BIOS Menu 23**) to access the Northbridge and Southbridge configuration menus



WARNING!

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.

```

                                BIOS SETUP UTILITY
Main  Advanced  PCIPNP  Boot  Security  Chipset  Exit
-----
Advanced Chipset Settings
-----
WARNING: Setting wrong values in below section
         may cause system to malfunction.

> North Bridge Configuration
> South Bridge Configuration

                                  ←→  Select Screen
                                  ↑↓  Select Item
                                  + -  Change Field
                                  Tab  Select Field
                                  F1   General Help
                                  F10  Save and Exit
                                  ESC  Exit

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```

BIOS Menu 23: Chipset

IMB-Q354 microATX Motherboard

5.7.1 North Bridge Configuration

Use the **North Bridge Configuration** menu (**BIOS Menu 24**) to configure the Northbridge chipset.

```

BIOS SETUP UTILITY
Main  Advanced  PCIPNP  Boot  Security  Chipset  Exit
-----
North Bridge Chipset Configuration
-----
Memory Remap Feature          [Enabled]
  PCI MMIO Allocation: 4GB to 3072MB
Memory Hole                   [Disabled]

Initate Graphic Adapter       [PEG/PCI]          ←→  Select Screen
Internal Graphics Mode Select [Enabled, 8MB]    ↑↓  Select Item
                                     + -  Change Field
                                     Tab  Select Field
                                     F1   General Help
                                     F10  Save and Exit
                                     ESC  Exit

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```

BIOS Menu 24: North Bridge Configuration

→ Memory Remap Feature [Enabled]

Use the **Memory Remap Feature** option to allow the overlapped PCI memory above the total physical memory to be remapped.

- **Disabled** Overlapped PCI memory cannot be remapped
- **Enabled** **DEFAULT** Overlapped PCI memory can be remapped

→ Memory Hole [Disabled]

Use the **Memory Hole** option to reserve memory space between 15MB and 16MB for ISA expansion cards that require a specified area of memory to work properly. If an older ISA expansion card is used, please refer to the documentation that came with the card to see if it is necessary to reserve the space.

- **Disabled** **DEFAULT** Memory is not reserved for ISA expansion cards
- **15MB – 16MB** Between 15MB and 16MB of memory is reserved for

ISA expansion cards

→ **Initiate Graphic Adapter [PEG/PCI]**

Use the **Initiate Graphic Adapter** option to select the graphics controller used as the primary boot device. Select either an integrated graphics controller (IGD) or a combination of PCI graphics controller, a PCI express (PEG) controller or an IGD. Configuration options are listed below:

- IGD
- PCI/IGD
- PCI/PEG
- PEG/IGD
- PEG/PCI **DEFAULT**

→ **Internal Graphics Mode Select [Enable, 8MB]**

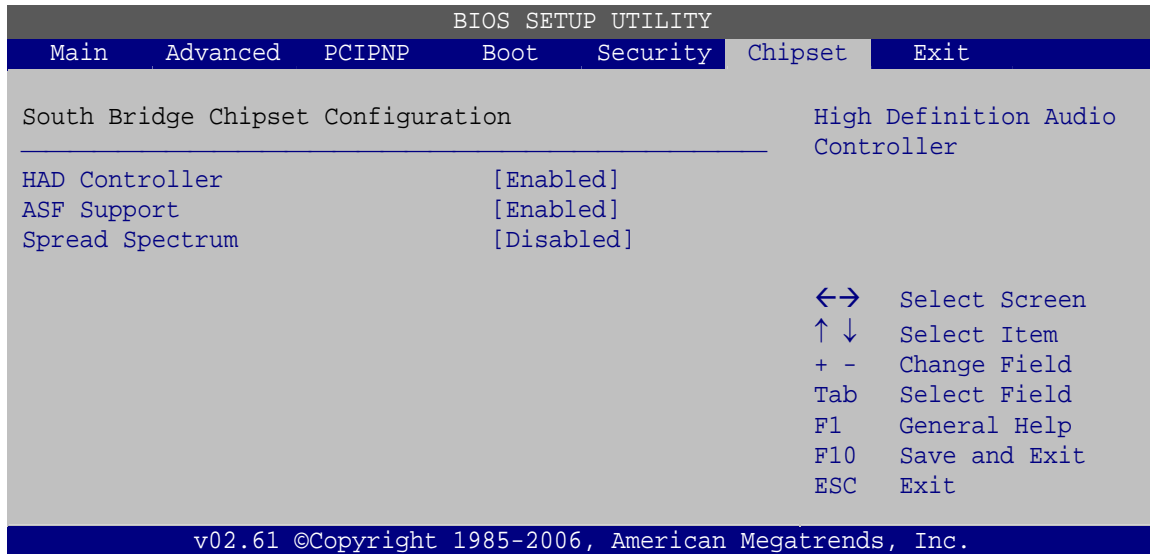
Use the **Internal Graphic Mode Select** option to specify the amount of system memory that can be used by the Internal graphics device.

- **Enable, 1MB** 1MB of memory used by internal graphics device
- **Enable, 8MB** **DEFAULT** 8MB of memory used by internal graphics device

5.7.2 South Bridge Configuration

The **South Bridge Configuration** menu (**BIOS Menu 25**) the Southbridge chipset to be configured.

IMB-Q354 microATX Motherboard



BIOS Menu 25: South Bridge Chipset Configuration

→ HDA Controller [Enabled]

Use the **HDA Controller** option to enable or disable the High Definition audio codec.

- **Enabled** **DEFAULT** The onboard High Definition audio codec automatically detected and enabled
- **Disabled** The onboard High Definition audio codec is disabled

→ ASF Support [Enabled]

Use the **ASF Support** BIOS option to control the system's ability to connect to a remote management server.

- **Disabled** The system will not communicate with a remote management server.
- **Enabled** **DEFAULT** The Alert Standard Format (ASF) controller is activated and can communicate with a remote management server.

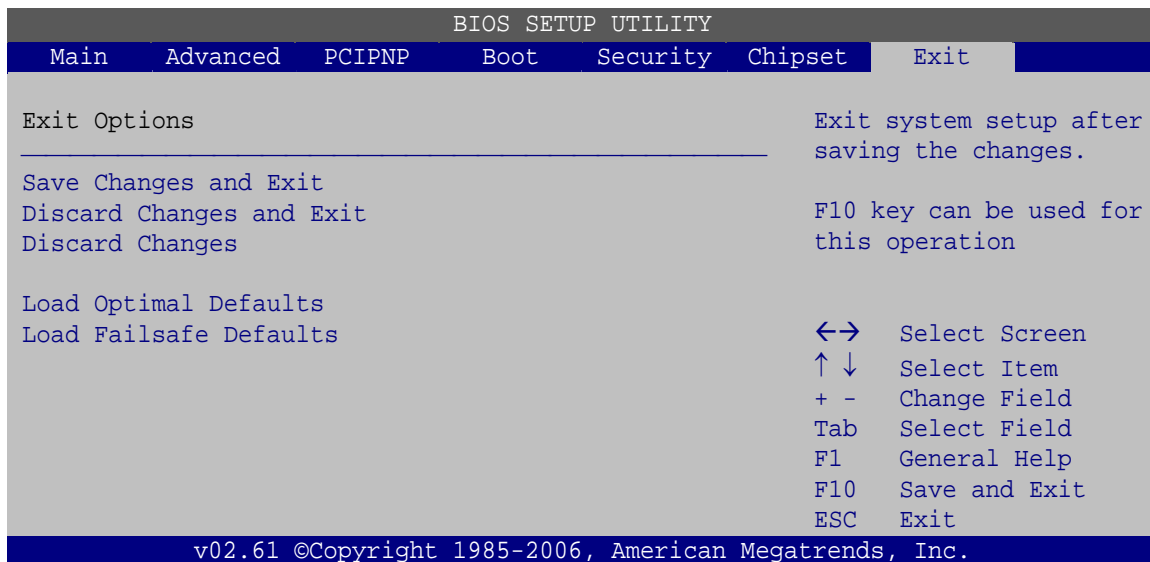
➔ **Spread Spectrum [Disabled]**

Use the **Spread Spectrum** option to reduce the EMI. Excess EMI is generated when the system clock generator pulses have extreme values. Spreading the pulse spectrum modulates changes in the extreme values from spikes to flat curves, thus reducing the EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device.

- ➔ **Disabled** **DEFAULT** EMI not reduced
- ➔ **Enabled** EMI reduced

5.8 Exit

Use the **Exit** menu (**BIOS Menu 26**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 26: Exit

➔ **Save Changes and Exit**

Use the **Save Changes and Exit** option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

IMB-Q354 microATX Motherboard

→ Discard Changes and Exit

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

→ Discard Changes

Use the **Discard Changes** option to discard the changes and remain in the BIOS configuration setup program.

→ Load Optimal Defaults

Use the **Load Optimal Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F9 key can be used for this operation.**

→ Load Failsafe Defaults

Use the **Load Failsafe Defaults** option to load failsafe default values for each of the parameters on the Setup menus. **F8 key can be used for this operation.**

Chapter

6

Software Drivers

6.1 Available Software Drivers



NOTE:

The content of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. Visit the IEI website or contact technical support for the latest updates.

The following drivers can be installed on the system:

- Intel® chipset driver
- LAN driver
- Audio driver

Installation instructions are given below.

6.2 Driver CD Auto-run

All the drivers for the IMB-Q354 are on the CD that came with the system. To install the drivers, please follow the steps below.

Step 1: Insert the CD into a CD drive connected to the system.



NOTE:

If the system does not initiate the "autorun" program when the CD is inserted, click the **Start** button, select **Run**, then type **X:\autorun.exe** (where **X:** is the system CD drive) to access the IEI Driver CD main menu.

Step 2: The driver main menu appears (**Figure 6-1**).

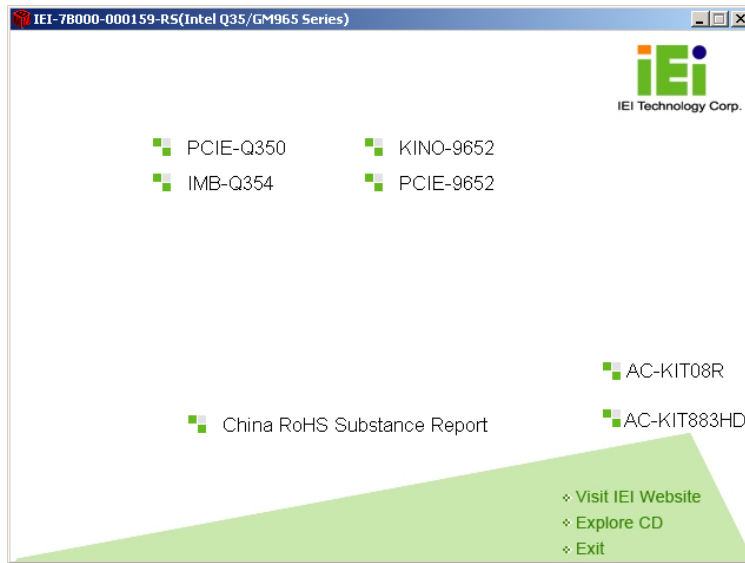


Figure 6-1: Introduction Screen

Step 3: Click IMB-Q354.

Step 4: A new screen with a list of available drivers appears (**Figure 6-2**).



Figure 6-2: Available Drivers

Step 5: Select the driver to install from the list in **Figure 6-2**. Detailed driver installation instructions follow below.

IMB-Q354 microATX Motherboard

6.3 Intel® Chipset Driver

To install the Intel® chipset driver, please follow the steps below.

Step 1: Select IMB-Q354 from the list in Figure 6-1.

Step 2: Select **INF** from the list in Figure 6-2.

Step 3: The window shown in Figure 6-3 appears.

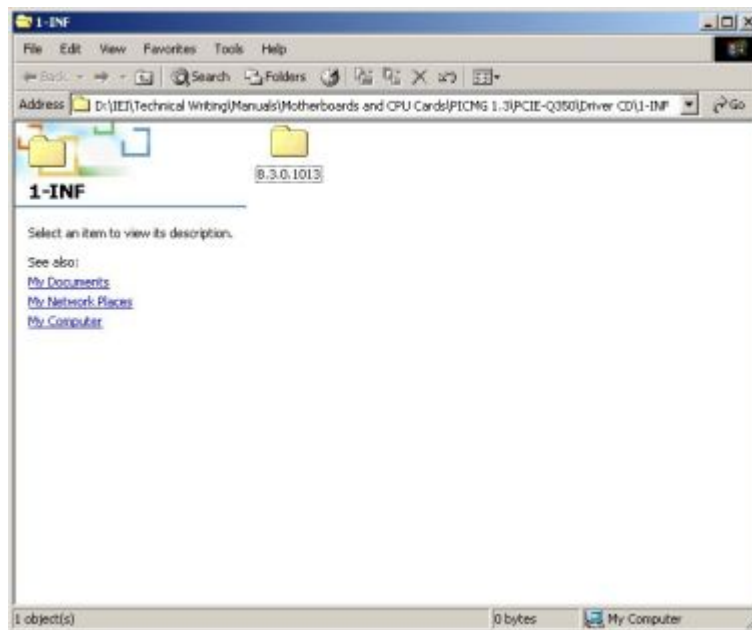


Figure 6-3: Intel® Chipset Driver Directory

Step 4: Click on the directory icon in Figure 6-3.

Step 5: The window in Figure 6-4 appears.

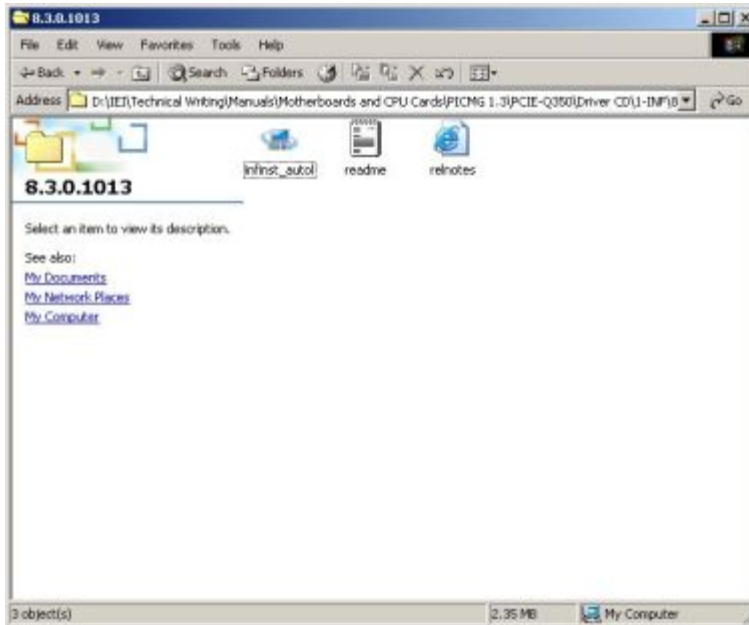


Figure 6-4: Intel® Chipset Driver Setup Icon

Step 6: Click on the **infinst_autol** setup icon in **Figure 6-4**.

Step 7: The **Intel® Package Manager** begins to extract the installation files. See **Figure 6-5**.



IMB-Q354 microATX Motherboard

Figure 6-5: Intel® Package Manager

Step 8: The Intel® Setup Welcome screen. See **Figure 6-6**.



Figure 6-6: Intel® Setup Welcome Screen

Step 9: Click **NEXT** to continue.

Step 10: The Intel® license agreement in appears.



Figure 6-7: Intel® Chipset Driver License Agreement

Step 11: Accept the terms and conditions by clicking **Yes**.

Step 12: The **Readme** file in **Figure 6-8** appears.

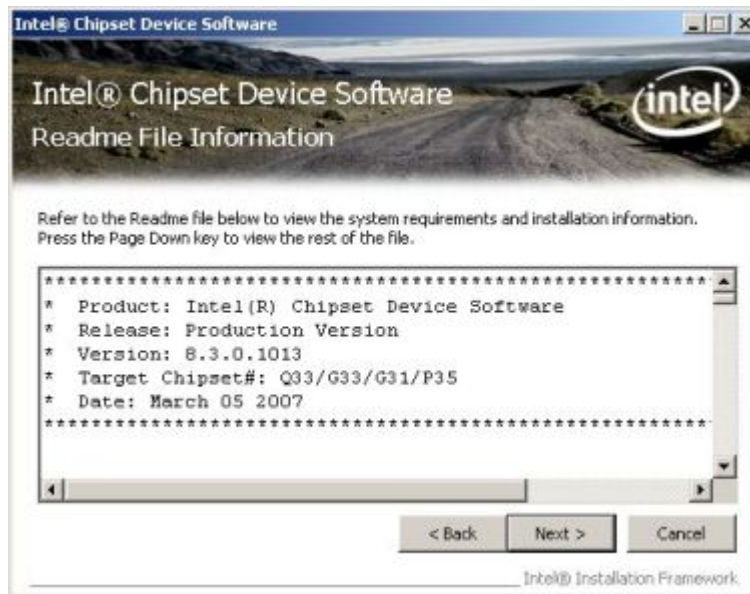


Figure 6-8: Readme File

Step 13: Click **NEXT** to continue.

Step 14: The driver is then installed.

Step 15: When the installation process is complete, the Setup Complete screen appears.

See **Figure 6-9**.

IMB-Q354 microATX Motherboard



Figure 6-9: Intel® Chipset Driver Complete Installation Screen

Step 16: To complete the chipset driver installation, click **FINISH**.

6.4 Intel® Graphics Media Accelerator Driver

To install the chipset driver, please follow the steps below:

Step 1: Select the VGA driver from the list in **Figure 6-2**.

Step 2: A new window opens. See **Figure 6-10**.

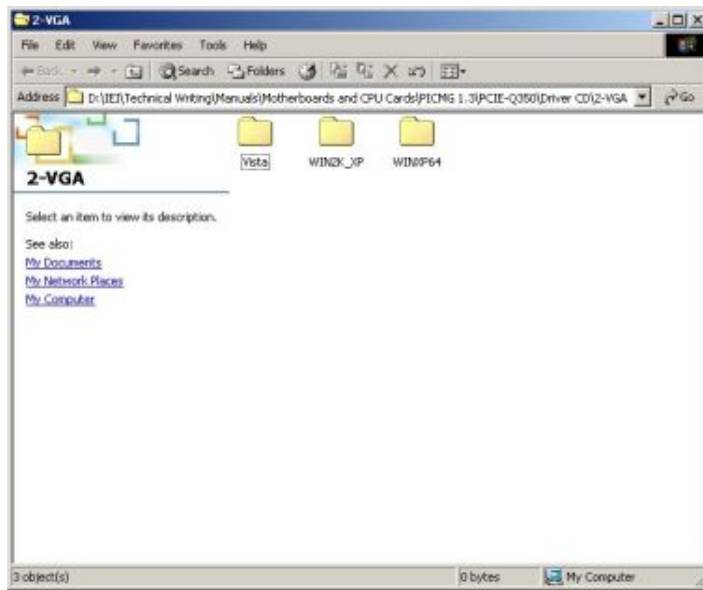


Figure 6-10: Select the Operating System

Step 3: Select the operating system from those shown in **Figure 6-10**.

Step 4: A new window appears. See **Figure 6-11**.

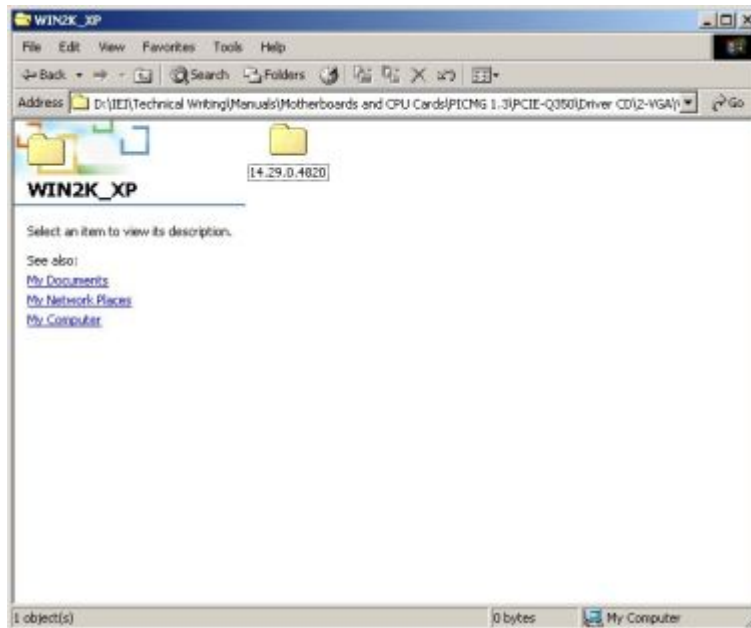


Figure 6-11: Intel® Driver Directory

IMB-Q354 microATX Motherboard

Step 5: Click the directory icon in **Figure 6-11**.

Step 6: A new window appears. See **Figure 6-12**.

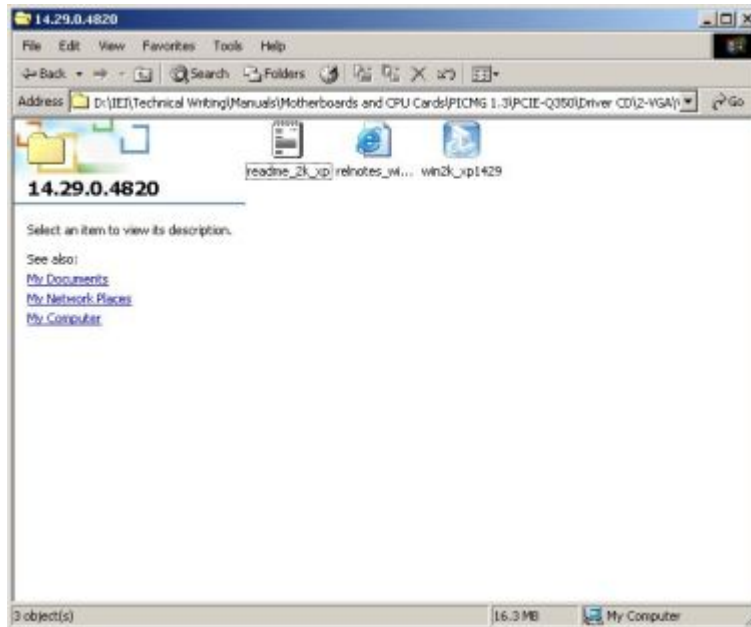


Figure 6-12: Intel® VGA Driver Setup Icon

Step 7: Click on the VGA driver installation icon in See **Figure 6-12**.

Step 8: The Readme information file shown in **Figure 6-13** appears.

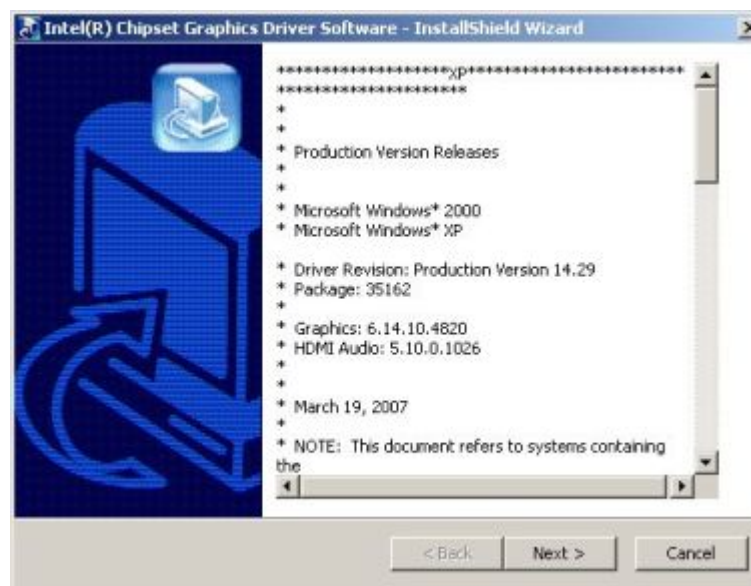
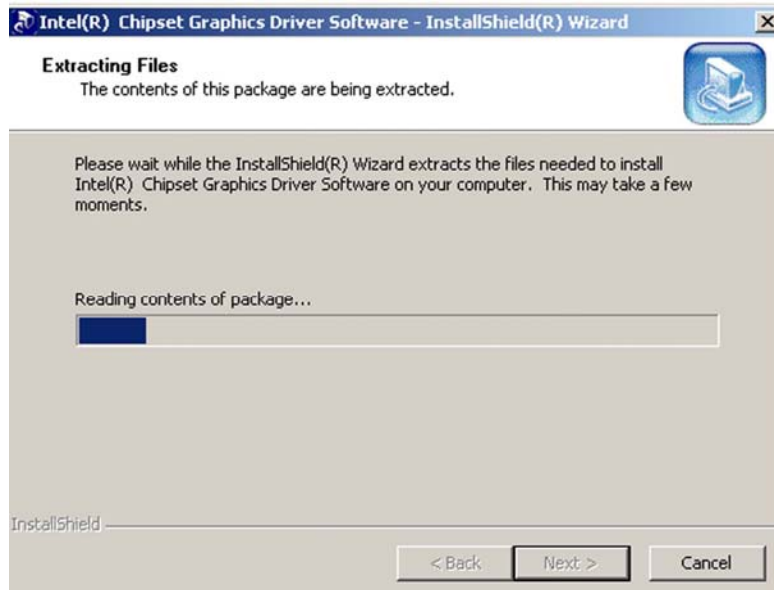
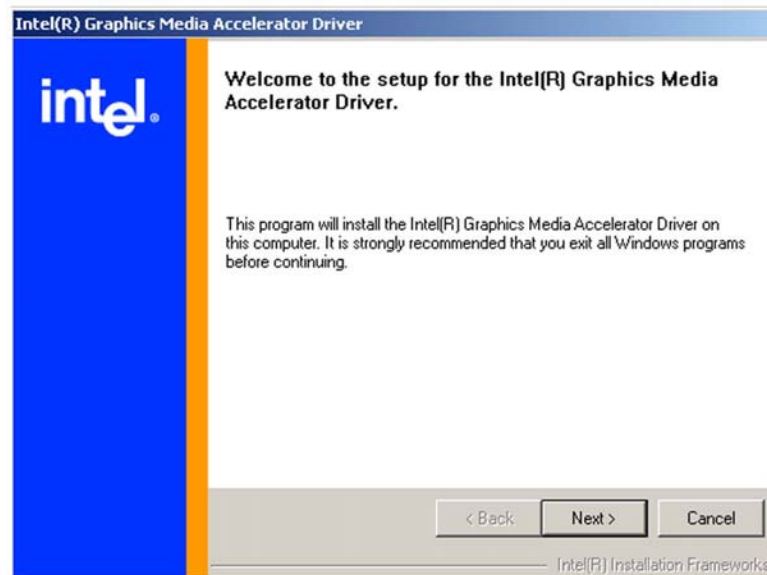


Figure 6-13: GMA Driver Readme File

Step 9: Click **NEXT** to extract the GMA driver files. See **Figure 6-14**.

**Figure 6-14: GMA Driver File Extraction**

Step 10: The welcome screen shown in **Figure 6-15** appears.

**Figure 6-15: GMA Driver Installation Welcome Screen**

Step 11: To continue the installation process, click **NEXT**.

IMB-Q354 microATX Motherboard

Step 12: The license agreement in **Figure 6-16** appears.



Figure 6-16: GMA Driver License Agreement

Step 13: Click the **YES** in **Figure 6-16** to continue.

Step 14: The installation notice shown in **Figure 6-17** appears.



Figure 6-17: GMA Driver Installing Notice

Step 15: A confirmation screen shown in **Figure 6-18** appears.

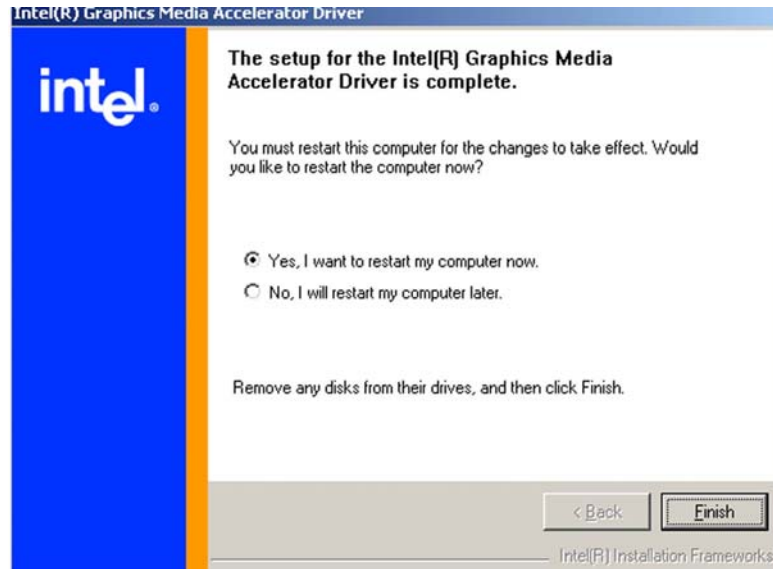


Figure 6-18: GMA Driver Installation Complete

Step 16: After selecting when to restart the computer in **Figure 6-18**, click **FINISH**.

6.5 Intel® 82573 PCI Express Gigabit Ethernet Controller Driver

To install the Intel® 82573 PCIe GbE controller, please follow the steps below.

Step 1: Select LAN from the list in **Figure 6-2**.

Step 2: The window in **Figure 6-19** appears.

IMB-Q354 microATX Motherboard

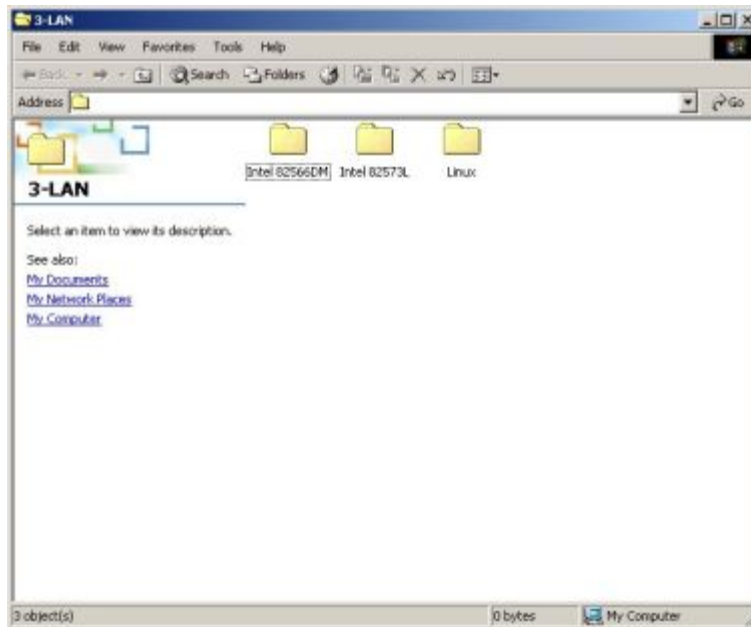


Figure 6-19: Intel® 82573 Driver Directory Icon

Step 3: Click on the Intel® 82573L directory icon in Figure 6-19.

Step 4: The window in Figure 6-20 appears.

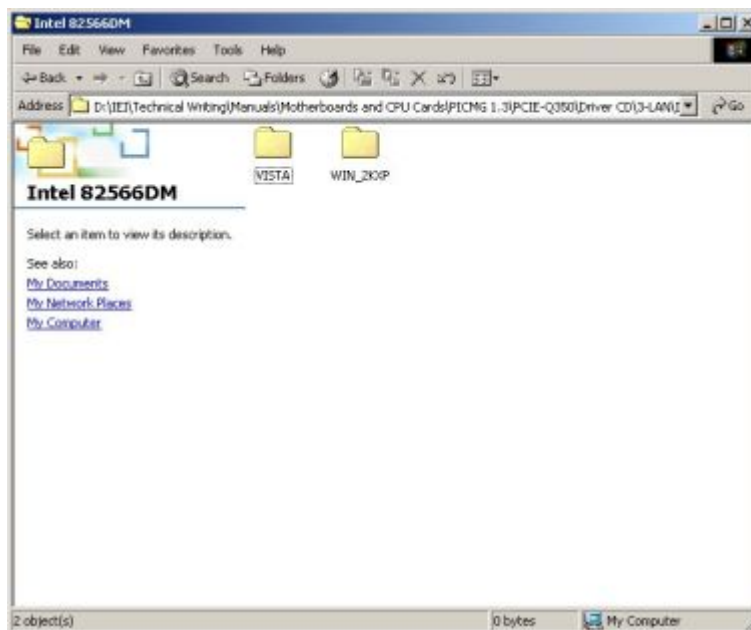


Figure 6-20: Intel® 82573 Operating System

Step 5: Select the Operating System in **Figure 6-20**.

Step 6: The window in **Figure 6-21** appears.

Step 7: In **Figure 6-21** select the operating system type installed on the system.

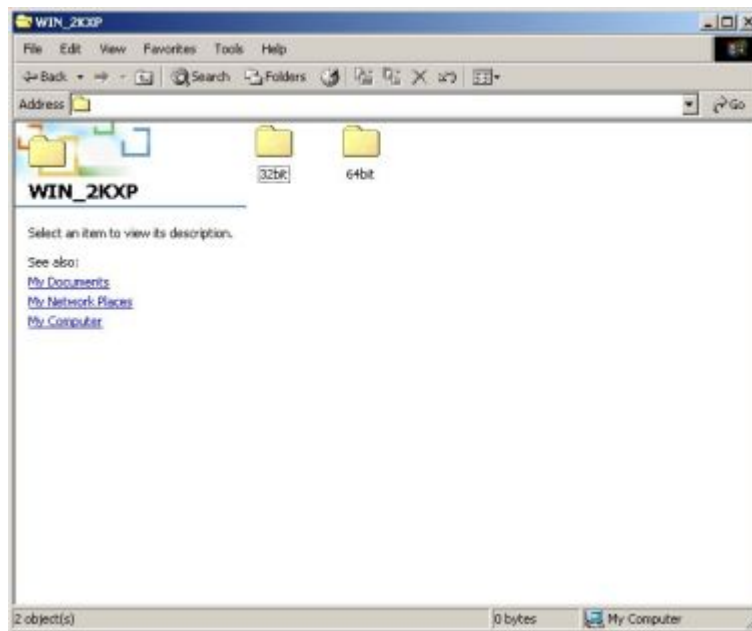


Figure 6-21: Select Operating System Type

Step 8: The window in **Figure 6-22** appears.

IMB-Q354 microATX Motherboard

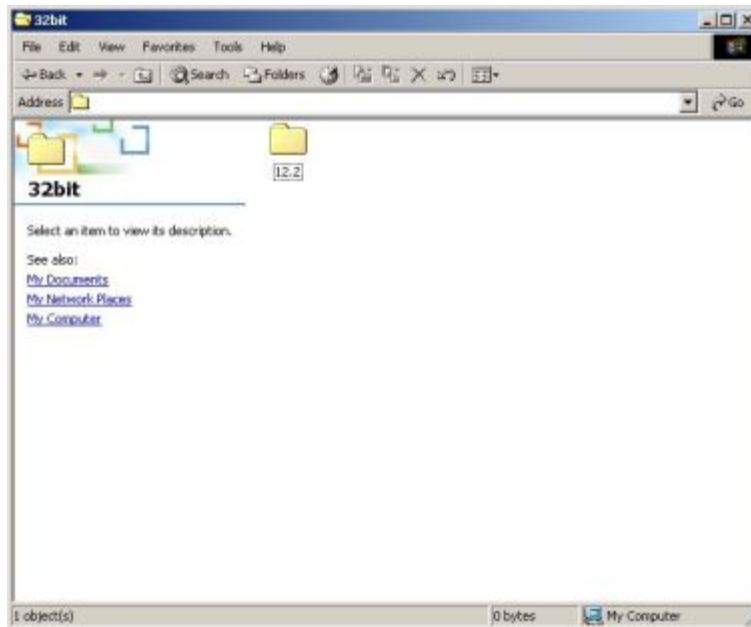


Figure 6-22: Driver Directory

Step 9: Click on the directory icon. A window containing the Intel® 82573 driver startup icon appears. See **Figure 6-22**.

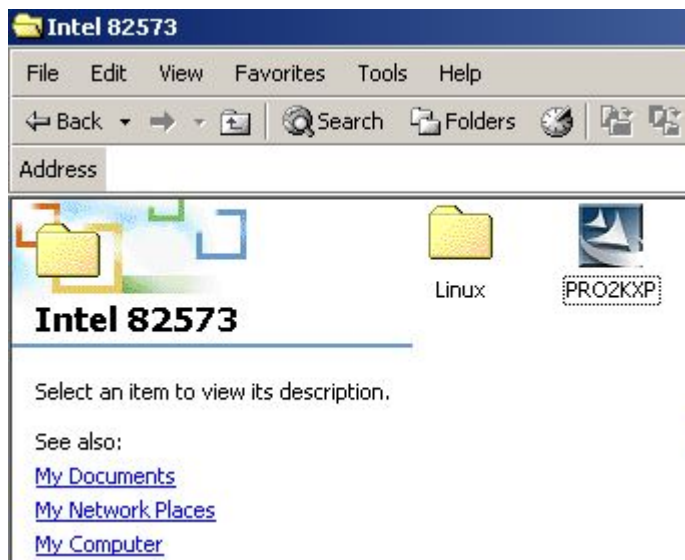


Figure 6-23: Intel® 82573 Driver Startup Icon

Step 10: Click the startup icon in **Figure 6-23**.

Step 11: The **License Agreement** for the Intel® 82573 appears. See **Figure 6-24**.



Figure 6-24: Intel® 82573 License Agreement

Step 12: Accept the license terms and agreements in and click **NEXT** to continue.

Step 13: Next, select the directory in which the files must be saved. See **Figure 6-25**.



Figure 6-25: Intel® 82573 File Location Select

Step 14: Click **NEXT** to continue.

IMB-Q354 microATX Motherboard

Step 15: The driver begins to extract the installation files. See **Figure 6-26**.



Figure 6-26: Intel® 82573 Installation Files Extraction

Step 16: The Intel® PRO Network Connections window appears. See **Figure 6-27**.



Figure 6-27: Intel® PRO Network Connections window

Step 17: Click **INSTALL DRIVERS** in **Figure 6-27**.

Step 18: The Intel® PRO Network Connections Welcome screen in **Figure 6-28** appears.



Figure 6-28: Intel® PRO Network Connections Welcome

Step 19: Click **NEXT** to continue.

Step 20: A new **License Agreement** appears. See **Figure 6-29**.



Figure 6-29: License Agreement

Step 21: Accept the terms and conditions in **Figure 6-29** and click **NEXT** to continue.

IMB-Q354 microATX Motherboard

Step 22: The **Setup Type** window in **Figure 6-30** appears.



Figure 6-30: Setup Type

Step 23: Select the setup type in **Figure 6-30** and click **NEXT** to continue.

Step 24: The drivers are installed. See **Figure 6-31**.

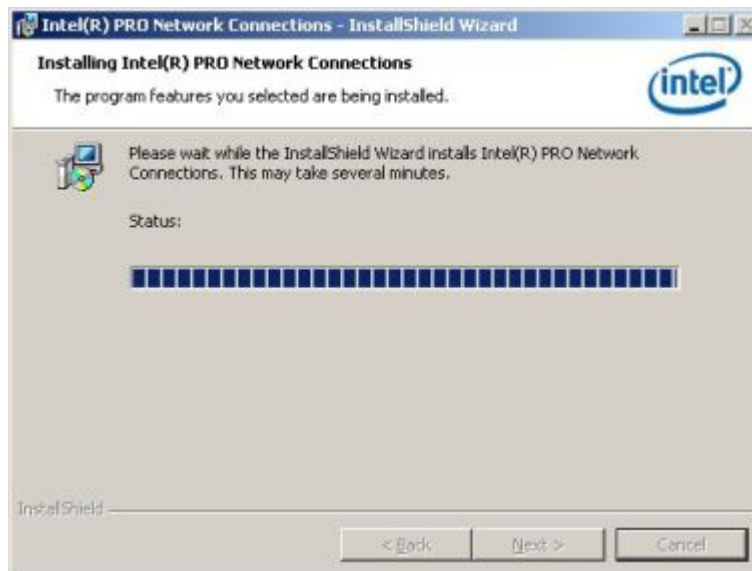


Figure 6-31: Intel® 82573 Driver Installation Progress

Step 25: When the driver is installed. Click **FINISH** in the termination screen.

6.6 Realtek HD Audio Driver (ALC662) Installation

To install the Realtek High Definition (HD) Audio driver, please follow the steps below.



NOTE:

This driver only needs to be installed if an external audio kit with a Realtek ALC662 codec is installed.

6.6.1 BIOS Setup

Step 1: Enter the BIOS setup. To do this, reboot the system and press **DEL** during POST.

Step 2: Go to the Southbridge Configuration menu. Enable the High Definition Audio controller.

Step 3: Press **F10** to save the changes and exit the BIOS setup. The system reboots.

6.6.2 Driver Installation

To install the audio driver please follow the steps below.

Step 1: Select **AUDIO** from the list in **Figure 6-2**.

Step 2: Double-click the ALC662 folder.

Step 3: Locate the **Setup.exe** program icon and double-click it.

Step 4: The **InstallShield Wizard** starts (**Figure 6-32**).

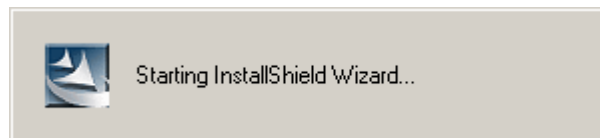


Figure 6-32: The InstallShield Wizard Starts

Step 5: The **InstallShield Wizard** is prepared to guide the user through the rest of the process (**Figure 6-33**).

IMB-Q354 microATX Motherboard

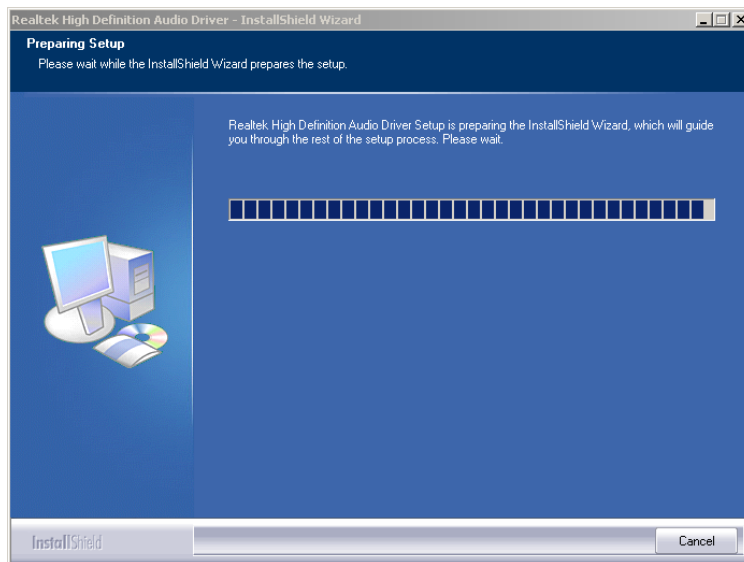


Figure 6-33: Preparing Setup Screen

Step 6: Once initialized, the **InstallShield Wizard** welcome screen appears (Figure 6-34).

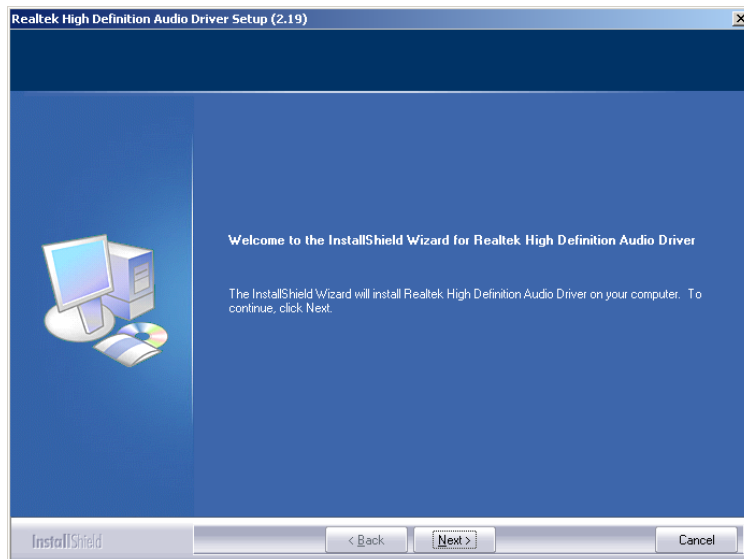


Figure 6-34: InstallShield Wizard Welcome Screen

Step 7: Click **NEXT** to continue the installation.

Step 8: InstallShield starts to install the new software as shown in **Figure 6-35**.

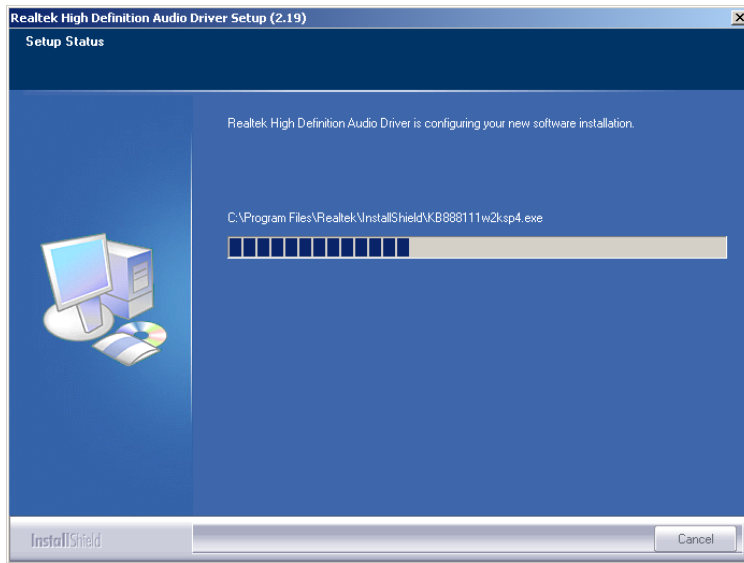


Figure 6-35: Audio Driver Software Configuration

Step 9: The Installation Wizard updates the system as shown in **Figure 6-36**.

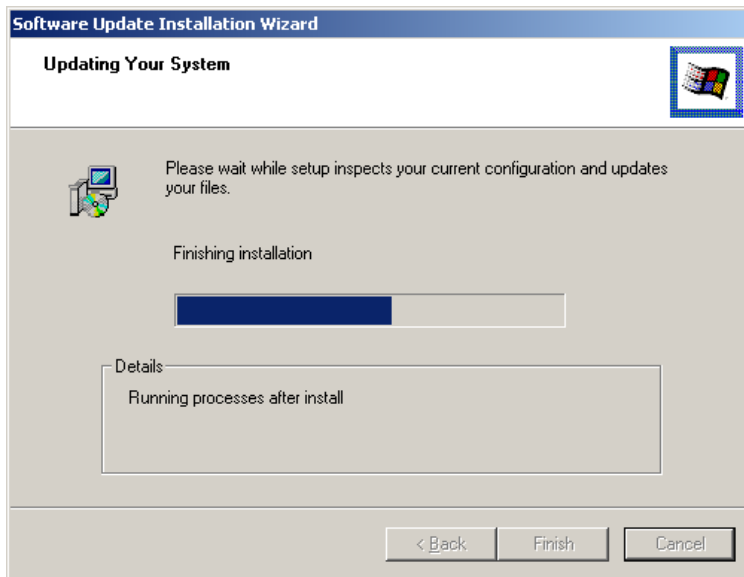


Figure 6-36: Installation Wizard Updates the System

Step 10: After the driver installation process is complete, a confirmation screen appears (Figure 6-37).

IMB-Q354 microATX Motherboard

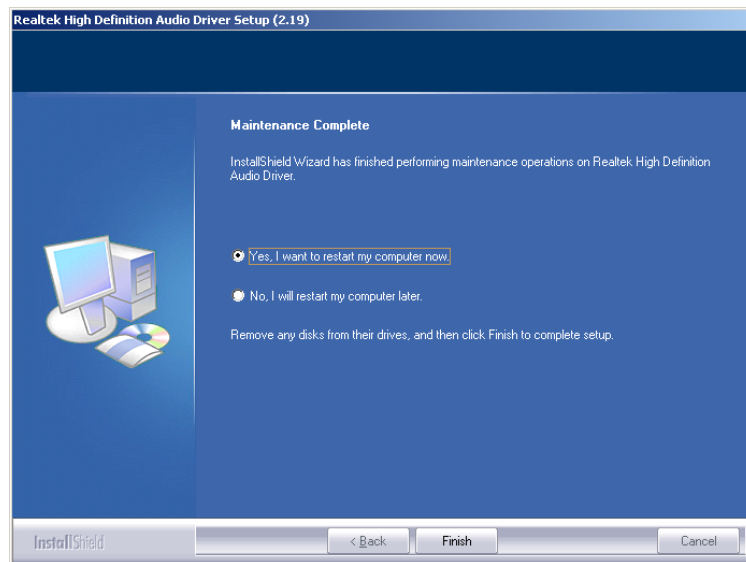


Figure 6-37: Restart the Computer

Step 11: The confirmation screen offers the option of restarting the computer now or later.

For the settings to take effect, the computer must be restarted. Click **FINISH** to restart the computer.

6.7 Intel® Matrix Storage Manager Driver Installation

To install the Intel® Matrix Storage Manager driver, please follow the steps below:

Step 1: Select **SATA** from the list in **Figure 6-2**.

Step 2: A new window opens (**Figure 6-38**).

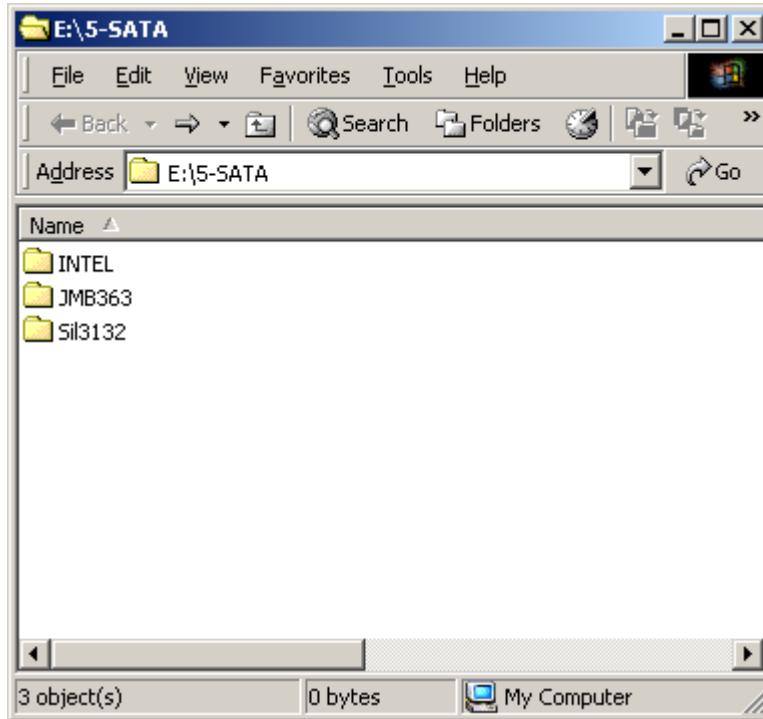
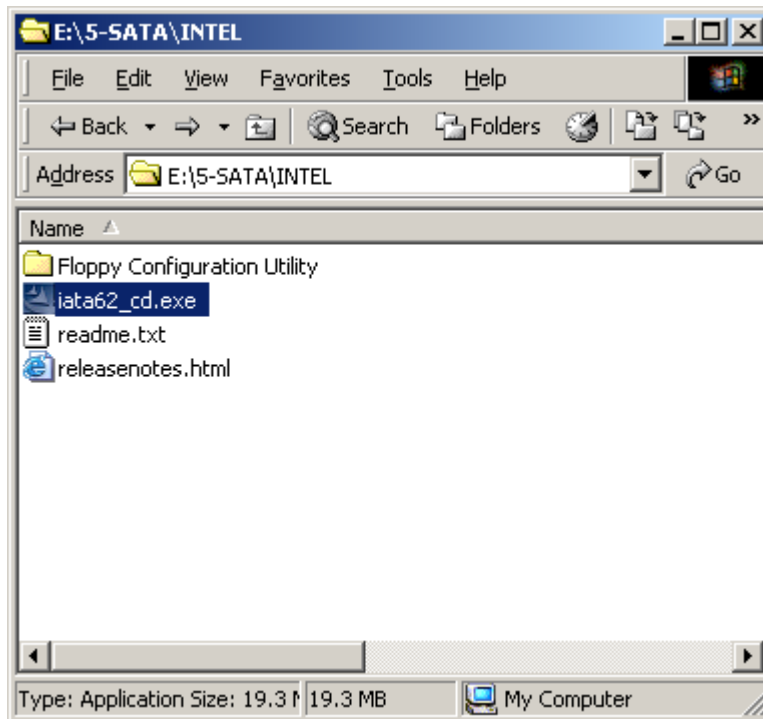


Figure 6-38: SATA RAID Driver Installation Program

Step 3: Double-click the INTEL® folder.

Step 4: Double-click the `iata62_cd.exe` program icon in Figure 6-39.



IMB-Q354 microATX Motherboard

Figure 6-39: SATA RAID Setup Program Icon

Step 5: **Figure 6-40** shows the **InstallShield Wizard** preparing to guide the user through the rest of the process.

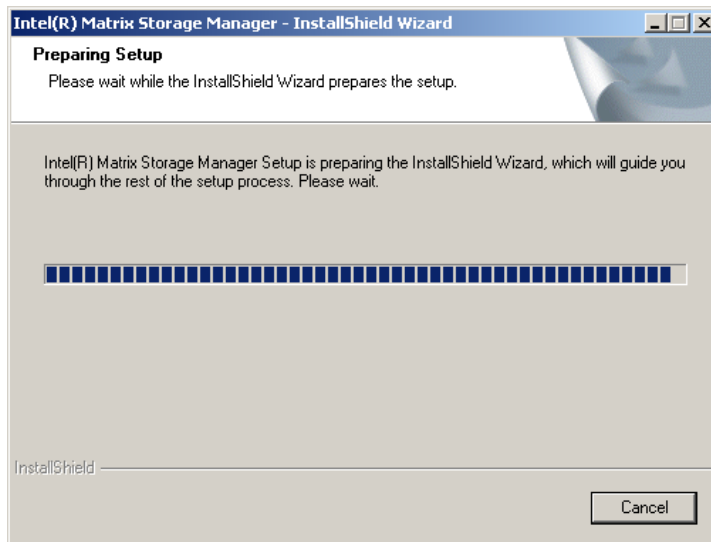


Figure 6-40: InstallShield Wizard Setup Screen

Step 6: **Figure 6-41** shows the **Matrix Storage Manager** software configuring the installation process.

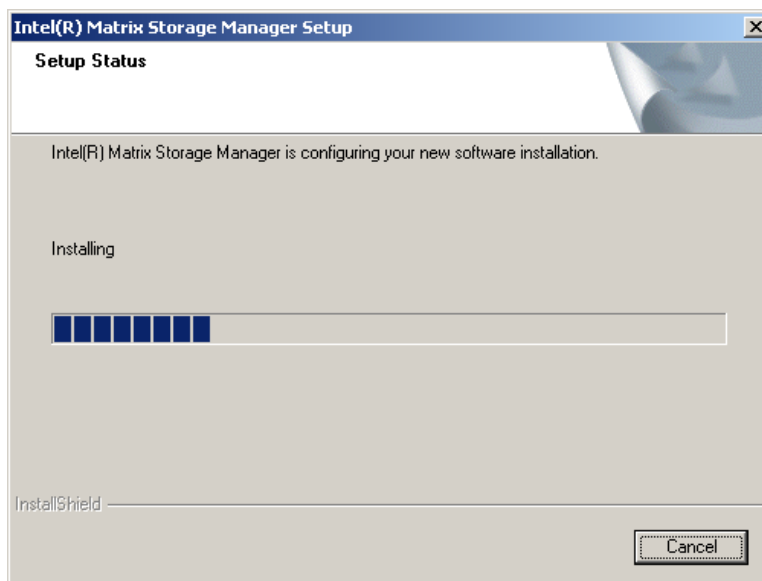
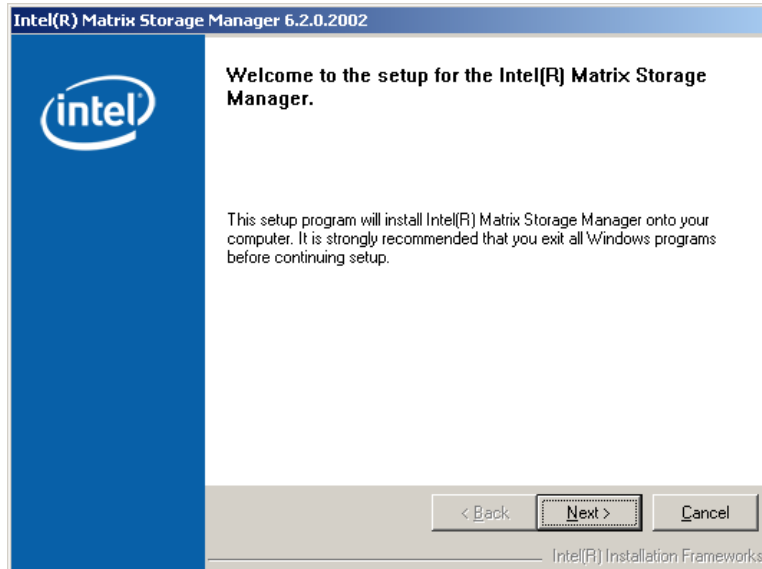
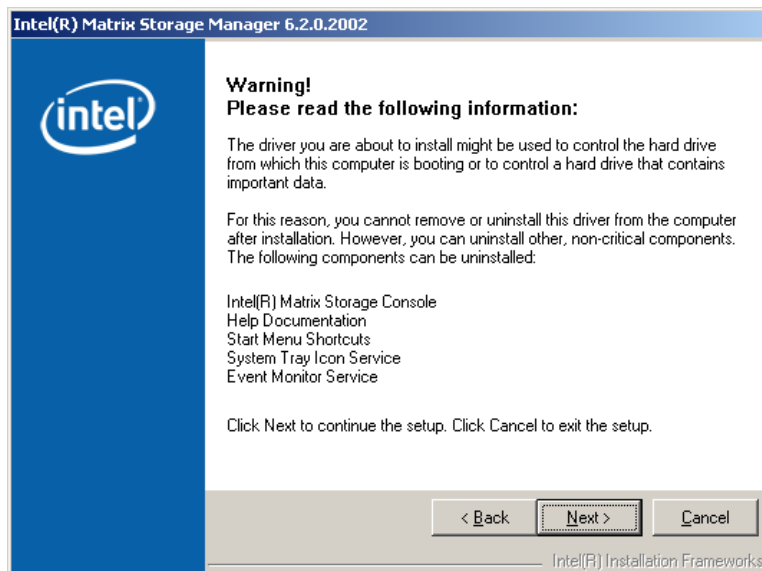


Figure 6-41: Matrix Storage Manager Setup Screen

Step 7: Figure 6-42 shows the **Matrix Storage Manager** welcome screen.

**Figure 6-42: Matrix Storage Manager Welcome Screen**

Step 8: Click **NEXT** and a warning appears (**Figure 6-43**). Read the warning carefully and decide whether or not to continue the installation process.

**Figure 6-43: Matrix Storage Manager Warning Screen**

Step 9: Click **NEXT** and a license agreement appears (**Figure 6-44**).

IMB-Q354 microATX Motherboard

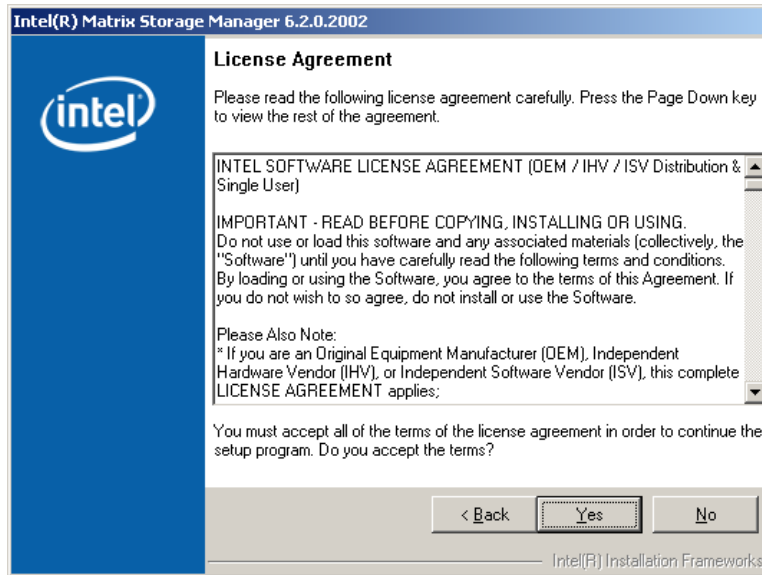


Figure 6-44: Matrix Storage Manager License Agreement

Step 10: Read the license agreement. To accept the terms and conditions stipulated in the license agreement shown, click **YES** and the Readme information file shown in **Figure 6-45** appears.

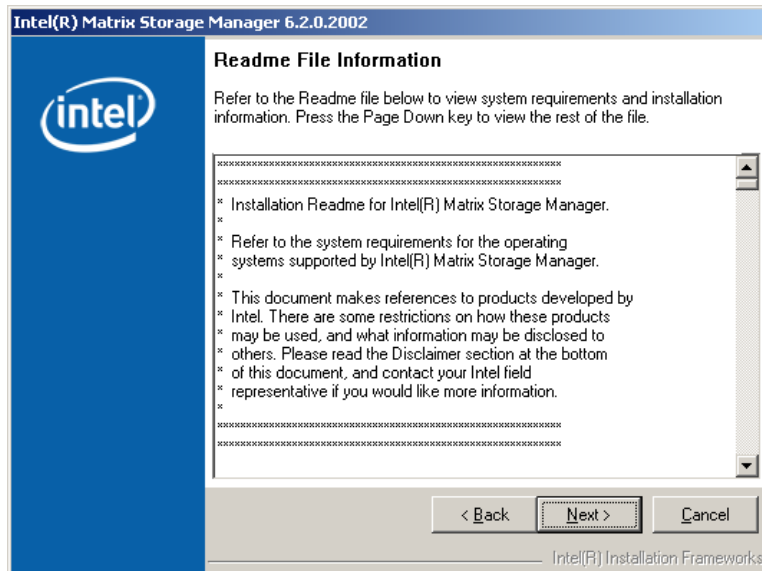


Figure 6-45: Matrix Storage Manager Readme File

Step 11: Read the Readme file information and click **NEXT**.

Step 12: After the driver installation process is complete, a confirmation screen appears (**Figure 6-46**).

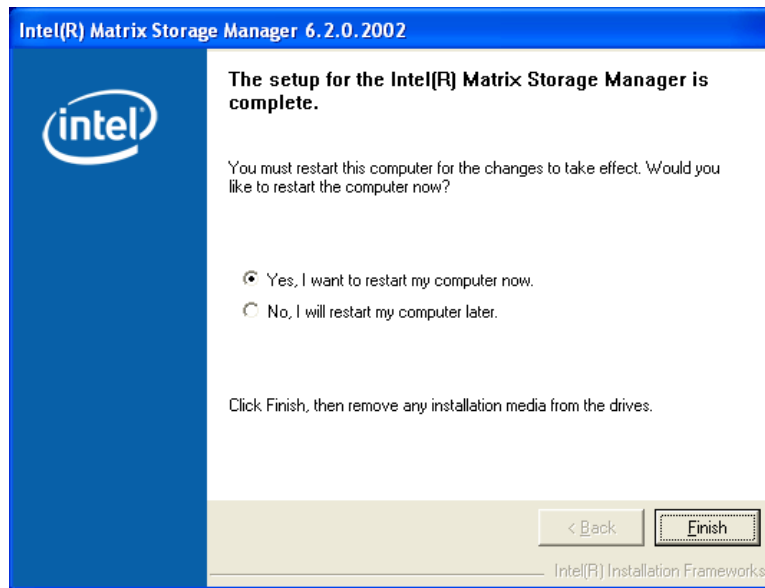


Figure 6-46: Matrix Storage Manager Setup Complete

Step 13: The confirmation screen offers the option of restarting the computer now or later.

For the settings to take effect, the computer must be restarted. Click **FINISH** to restart the computer.

Appendix

A

BIOS Options

System Overview	74
System Time [xx:xx:xx]	75
System Date [xx/xx/xx]	75
Intel (R) Virtualization Tech. [Disabled]	77
SATA#1 Configuration [Enhanced]	78
Configure SATA as [IDE]	78
IDE Master and IDE Slave	78
Auto-Detected Drive Parameters	79
Type [Auto]	80
ZIP	80
LS-120	80
LBA/Large Mode [Auto]	80
Block (Multi Sector Transfer) [Auto]	81
PIO Mode [Auto]	81
DMA Mode [Auto]	81
S.M.A.R.T [Auto]	82
32Bit Data Transfer [Enabled]	82
Floppy A	83
Serial Port1 Address [3F8/IRQ4]	84
IR Mode [IrDA]	84
IR Duplex Mode [Half Duplex]	85
Parallel Port Address [378]	85
Parallel Port IRQ [IRQ7]	85
Serial Port5 IRQ [10]	86
Serial Port2 Address [3E8]	86
Serial Port2 IRQ [10]	86
Serial Port3 Address [2E8]	86
Serial Port3 IRQ [10]	86
Serial Port4 Address [2E0]	87
Serial Port4 IRQ [10]	87
CPU_FAN1 Mode Setting [Full On Mode]	88
Suspend Mode [S1(POS)]	90
Restore on AC Power Loss [Power On]	91
Resume on KeyBoard/Mouse [Disabled]	91

IMB-Q354 microATX Motherboard

Resume on PME# [Disabled]	92
Resume on Ring [Disabled]	92
AHCI Port n [Not Detected]	93
SATA Port n [Auto]	94
S.M.A.R.T [Enabled].....	94
VT-d [Disabled].....	95
Remote Access [Disabled].....	96
Serial Port Number	96
Serial Port Mode.....	96
Redirection after BIOS POST.....	96
Terminal Type.....	96
TCG/TPM Support [No].....	97
USB Configuration.....	98
USB Devices Enabled.....	98
USB Functions [Enabled].....	98
USB 2.0 Controller [Enabled].....	98
Legacy USB Support [Enabled].....	99
USB2.0 Controller Mode [HiSpeed].....	99
Auto Recovery Function [Disabled].....	100
IRQ# [Available]	101
DMA Channel# [Available]	102
Reserved Memory Size [Disabled]	102
Quick Boot [Enabled]	104
Quiet Boot [Enabled]	104
AddOn ROM Display Mode [Force BIOS]	104
Bootup Num-Lock [On]	104
Boot From LAN Support (82573L) [Disabled]	105
Change Supervisor Password.....	105
Change User Password.....	106
Memory Remap Feature [Enabled].....	107
Memory Hole [Disabled].....	107
Initiate Graphic Adapter [PEG/PCI]	108
Internal Graphics Mode Select [Enable, 8MB]	108
HDA Controller [Enabled].....	109
ASF Support [Enabled].....	109

Spread Spectrum [Disabled].....	110
Save Changes and Exit	110
Discard Changes and Exit.....	111
Discard Changes.....	111
Load Optimal Defaults.....	111
Load Failsafe Defaults.....	111

Appendix

B

Terminology

ACPI	Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface.
AHCI	Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface.
ATA	The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and CD-ROM drives to a computer.
APM	The Advanced Power Management (APM) application program interface (API) enables the inclusion of power management in the BIOS.
ARMD	An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides CD and DVD drives.
ASKIR	Amplitude Shift Keyed Infrared (ASKIR) is a form of modulation that represents a digital signal by varying the amplitude (“volume”) of the signal. A low amplitude signal represents a binary 0, while a high amplitude signal represents a binary 1.
BIOS	The Basic Input/Output System (BIOS) is firmware that is first run when the computer is turned on and can be configured by the end user
CODEC	The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system.
CMOS	Complimentary metal-oxide-conductor is an integrated circuit used in chips like static RAM and microprocessors.
COM	COM refers to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal computer is usually a male DB-9 connector.
DAC	The Digital-to-Analog Converter (DAC) converts digital signals to analog signals.
DDR	Double Data Rate refers to a data bus transferring data on both the rising

IMB-Q354 microATX Motherboard

	and falling edges of the clock signal.
DMA	Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory.
DIMM	Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module.
DIO	The digital inputs and digital outputs are general control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.
EHCI	The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.
EIDE	Enhanced IDE (EIDE) is a newer IDE interface standard that has data transfer rates between 4.0 MBps and 16.6 MBps.
FSB	The Front Side Bus (FSB) is the bi-directional communication channel between the processor and the Northbridge chipset.
GbE	Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard.
GPIO	General purpose input
HDD	Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data.
ICH	The Input/Output Control Hub (ICH) is an Intel® Southbridge chipset.
IrDA	Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other.
L1 Cache	The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor.

L2 Cache	The Level 2 Cache (L2 Cache) is an external processor memory cache.
LCD	Liquid crystal display (LCD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between.
MAC	The Media Access Control (MAC) protocol enables several terminals or network nodes to communicate in a LAN, or other multipoint networks.
PCIe	PCI Express (PCIe) is a communications bus that uses dual data lines for full-duplex (two-way) serial (point-to-point) communications between the SBC components and/or expansion cards and the SBC chipsets. Each line has a 2.5 Gbps data transmission rate and a 250 MBps sustained data transfer rate.
POST	The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.
RAID	Redundant Array of Inexpensive Disks (RAID) refers to redundantly backing up data on multiple disks to ensure that if one disk fails, the data is not lost and can be restored from the remaining disks in the array.
RAM	Random Access Memory (RAM) is volatile memory that loses data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives.
SATA	Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gbps and the SATA 3Gb/s bus has data transfer speeds of up to 3.0 Gbps.
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives.
UART	Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports.

IMB-Q354 microATX Motherboard

UHCI	The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers.
USB	The Universal Serial Bus (USB) is an external bus standard for interfacing devices. USB 1.1 supports 12Mbps data transfer rates, while USB 2.0 supports 480Mbps data transfer rates.
VGA	The Video Graphics Array (VGA) is a graphics display system developed by IBM.



Appendix

C

DIO Interface

IMB-Q354 microATX Motherboard

C.1 DIO Interface Introduction

The DIO connector on the IMB-Q354 is interfaced to GPIO ports on the ITE IT8712F Super I/O chipset. The DIO has both 4-bit digital inputs and 4-bit digital outputs. The digital inputs and digital outputs are generally control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.



NOTE:

For further information, please refer to the datasheet for the ITE IT8712F Super I/O chipset.

C.2 DIO Connector Pinouts

The following table describes how the DIO connector pins are connected to the Super I/O GPIO port 1.

Pin	Description	Super I/O Pin	Super I/O Pin Description
1	Ground	N/A	N/A
2	VCC	N/A	N/A
3	Output 3	GP27	General purpose I/O port 2 bit 7.
4	Output 2	GP26	General purpose I/O port 2 bit 6.
5	Output 1	GP25	General purpose I/O port 2 bit 5.
6	Output 0	GP24	General purpose I/O port 2 bit 4.
7	Input 3	GP23	General purpose I/O port 2 bit 3.
8	Input 2	GP22	General purpose I/O port 2 bit 2
9	Input 1	GP21	General purpose I/O port 2 bit 1
10	Input 0	GP20	General purpose I/O port 2 bit 0

C.3 Assembly Language Samples

C.3.1 Enable the DIO Input Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O input functions is listed below.

MOV	AX, 6F08H	Sets the digital port as input
INT	15H	Initiates the INT 15H BIOS call

C.3.2 Enable the DIO Output Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O output functions is listed below.

MOV	AX, 6F09H	Sets the digital port as output
MOV	BL, 09H	
INT	15H	Initiates the INT 15H BIOS call

Appendix

D

Watchdog Timer


NOTE:

The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table D-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. While the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the Watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.



NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

Example program:

; INITIAL TIMER PERIOD COUNTER

;

W_LOOP:

```

MOV    AX, 6F02H    ;setting the time-out value
MOV    BL, 30       ;time-out value is 48 seconds
INT    15H

```

;

; ADD THE APPLICATION PROGRAM HERE

;

```

CMP    EXIT_AP, 1   ;is the application over?
JNE    W_LOOP      ;No, restart the application

```

```

MOV    AX, 6F02H    ;disable Watchdog Timer
MOV    BL, 0        ;
INT    15H

```

;

; EXIT ;

Appendix

E

Compatibility



NOTE:

The compatible items described here have been tested by the IEI R&D team and found to be compatible with the IMB-Q354.

E.1 Compatible Operating Systems

The following operating systems have been successfully run on the IMB-Q354.

- Microsoft Windows XP (SP2)
- Fedora Core 7

E.2 Compatible Processors

The following Intel® LGA775 processors have been successfully tested on the IMB-Q354.

CPU	Model Number	Frequency	FSB
65nm Intel® Core™ 2 Duo	E6850	3.0 GHz	1333 MHz
65nm Intel® Core™ 2 Duo	E6750	2.66 GHz	1333 MHz

E.3 Compatible Memory Modules



NOTE:

The memory modules listed below have been tested on the IMB-Q354 other memory modules that comply with the specifications may also work on the IMB-Q354 but have not been tested.

The following memory modules have been successfully tested on the IMB-Q354.

Manufacturer	Model No.	Capacity	Speed
Twinmos	8D25JK-TT	512 MB	800 MHz
UMAX	RMUMX-512DDR667C	512 MB	667 MHz

Appendix

F

Intel[®] Matrix Storage Manager

F.1 Introduction

The Intel® ICH9DO chipset can provide data protection for serial ATA (SATA) disks via the Intel® Matrix Storage Manager using one of three fault-tolerant RAID levels: RAID 1, 5 or 10. When using two hard drives, matrix RAID allows RAID 0 and RAID 1 functions to be combined, where critical files can be stored on RAID 1, and RAID 0 can be used for non-critical items such as software. RAID 5 and RAID 0 can be combined to provide higher performance, capacity, and fault tolerance.



CAUTION!

A configured RAID volume (which may consist of multiple hard drives) appears to an operating system as a contingent storage space. The operating system will not be able to distinguish the physical disk drives contained in a RAID configuration.

F.1.1 Precautions

One key benefit a RAID configuration brings is that a single hard drive can fail within a RAID array without damaging data. With RAID1 array, a failed drive can be replaced and the RAID configuration restored.



WARNING!

Irrecoverable data loss occurs if a working drive is removed when trying to remove a failed drive. It is strongly recommended to mark the physical connections of all SATA disk drives. Drive locations can be identified by attaching stickers to the drive bays. If a drive member of a RAID array should fail, the failed drive can then be correctly identified.

IMB-Q354 microATX Motherboard



CAUTION!

Do not accidentally disconnect the SATA drive cables. Carefully route the cables within the chassis to avoid system down time.

F.2 Features and Benefits

- Supports RAID levels 0, 1, 5 and 10
- Supports connectivity to two or more disk drives
- Supported Operating Systems include: Windows XP, Windows Server 2003 and Windows Vista

F.3 Accessing the Intel[®] Matrix Storage Manager

To access the Intel[®] Matrix Storage Manager, please follow the steps below.

Step 1: Connect SATA drives to the system. Connect two or more SATA drives to the system. Make sure the drives have the same capacity, are the same type and have the same speed.



NOTE:

Make sure the SATA drives are EXACTLY the same when they are configured in a RAID configuration. If they are not the same size, disk drive capacity is sacrificed and overall performance affected.

Step 2: Enable SATA drives in BIOS. Start the computer and access the BIOS setup program. Enable SATA support for all IDE devices. Refer to the applicable BIOS configuration section in this user manual.

- Step 3: Save and Exit BIOS.** After the **SATA** support option is enabled, save and exit the **BIOS**.
- Step 4: Reboot the system.** Reboot the system after saving and exiting the **BIOS**.
- Step 5: Press Ctrl+I.** During the system boot process, press **Ctrl+I** when prompted to enter the RAID configuration software.
- Step 6: Configure the RAID settings.** Use the Intel® Matrix Storage Manager to configure the RAID array. Brief descriptions of configuration options are given below.
- Step 7: Install the OS.** After the RAID array has been configured, install the OS. To do this, please refer to the documentation that came with the OS.

F.4 RAID Configuration

F.4.1 Creating a RAID Volume



WARNING!

All data previously stored on the member drives of a RAID configuration are destroyed during the RAID initialization process. If “used” drives are used to create a RAID array, make sure the data has been moved or backed up before creating a RAID array out of the disk drives.

- Step 1: Select “Create RAID Volume”.** Use the arrow keys to highlight **Create RAID Volume** and press **ENTER**. See **Figure F-1**.

IMB-Q354 microATX Motherboard

```

Intel(R) Matrix Storage Manager option ROM v5.0.0.1032 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.

[ MAIN MENU ]
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit

[ DISK/VOLUME INFORMATION ]

RAID Volumes:
None defined.

Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
2 Maxtor 6Y160M0 Y45TDYSE 152.7GB Non-RAID Disk
3 WDC WD1600JD-75H WD-WCAL92193433 149.0GB Non-RAID Disk

[Tab]-Select [ESC]-Exit [ENTER]-Select Menu
  
```

Figure F-1: Matrix Storage Manager Main Menu

Step 2: Name the RAID volume. Enter a name for the RAID volume, or press **ENTER** to accept the default volume name. Upper and lower case alphabetic, numeric, space, and underscore characters are all applicable for naming an array. See **Figure F-2**.

```

Intel(R) Matrix Storage Manager option ROM v5.0.0.1032 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.

[ CREATE VOLUME MENU ]

Name: Volume0
RAID Level: RAID0(Stripe)
Disks: Select Disks
Strip Size: 128KB
Capacity: 298.0 GB

Create Volume

[ HELP ]

Enter a string between 1 and 16 characters in length that can be used
to uniquely identify the RAID volume. This name is case sensitive and
cannot contain special characters.

[Tab]-Change [Tab]-Next [ESC]-Previous Menu [ENTER]-Select
  
```

Figure F-2: Create RAID Volume Name

Step 3: Choose the RAID level. Select a RAID level from the list. RAID levels include RAID 0, 1, 5 and 10. See **Figure F-3**.



NOTE:

RAID 0 and RAID1 levels require a minimum of two hard drives.

RAID5 level requires a minimum of three hard drives.

RAID10 level requires a minimum of four hard drives.

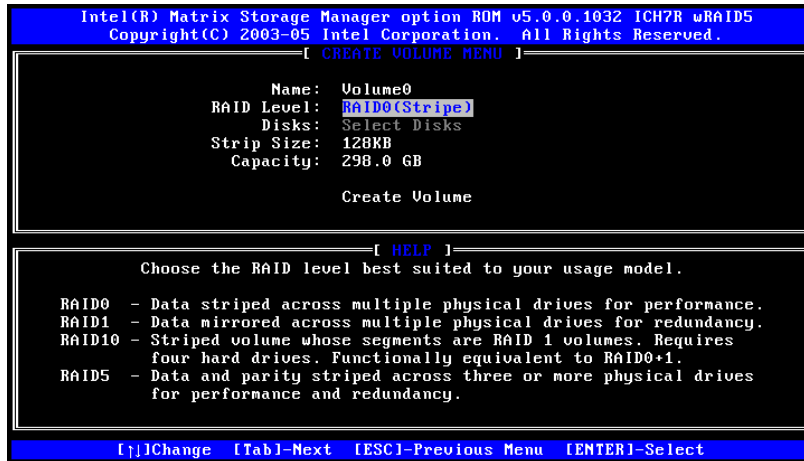


Figure F-3: Choose the Raid Level

Step 4: Select the Stripe Size. Select a stripe size from the list. See Figure F-4.

IMB-Q354 microATX Motherboard

```

Intel(R) Matrix Storage Manager option ROM v5.0.0.1032 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[ CREATE VOLUME MENU ]

Name: Volume0
RAID Level: RAID0(Stripe)
Disks: Select Disks
Strip Size: 128KB
Capacity: 298.0 GB

Create Volume

[ HELP ]

The following are typical values:

RAID0 - 128KB
RAID10 - 64KB
RAID5 - 64KB

[ ]Change [Tab]Next [ESC]Previous Menu [ENTER]Select
  
```

Figure F-4: Select the Stripe Size

Step 5: Enter the Volume Capacity. Enter the volume capacity, or press **ENTER** to accept the default capacity. See Figure F-5.

```

Intel(R) Matrix Storage Manager option ROM v5.0.0.1032 ICH7R wRAID5
Copyright(C) 2003-05 Intel Corporation. All Rights Reserved.
[ CREATE VOLUME MENU ]

Name: Volume0
RAID Level: RAID0(Stripe)
Disks: Select Disks
Strip Size: 128KB
Capacity: 298.0 GB

Create Volume

[ HELP ]

Enter the volume capacity. The default value indicates the
maximum volume capacity using the selected disks. If less
than the maximum capacity is chosen, creation of a second
volume is needed to utilize the remaining space.

[ ]Change [Tab]Next [ESC]Previous Menu [ENTER]Select
  
```

Figure F-5: Enter the Volume Capacity

Step 6: Create the RAID Volume. Press **ENTER** to create the RAID volume as specified. See Figure F-6.

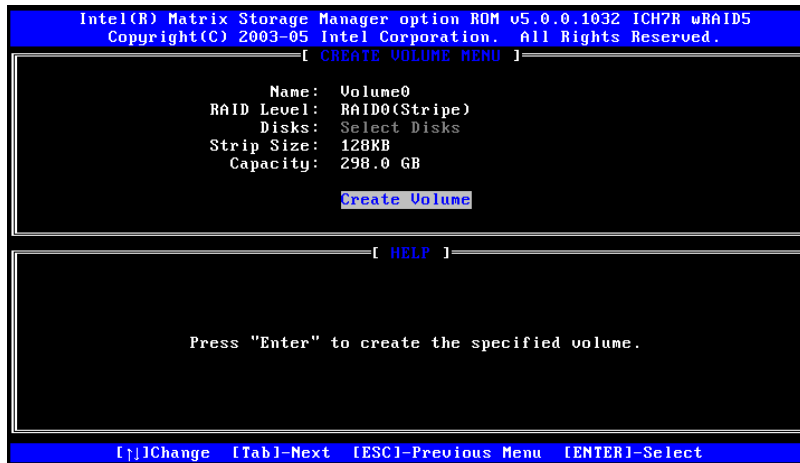


Figure F-6: Create the RAID Volume

Step 7: Create RAID Volume Verification. After reading the warning, press **Y** to create the RAID volume as specified, or **N** to return to the **Create RAID Volume** menu.

See Figure F-7.

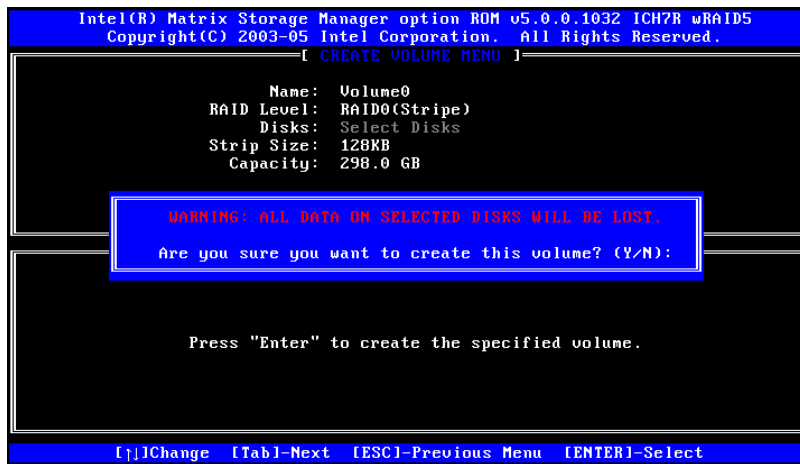


Figure F-7: Create RAID Volume Verification

F.4.2 Deleting a RAID Volume



WARNING!

All data stored on the member drives of a RAID volume are destroyed during the RAID deletion process. Make sure any data to be saved has been moved or backed up before deleting a RAID volume.

- Step 1:** Select “Delete RAID Volume.” Use the arrow keys to highlight Delete RAID Volume and press ENTER. See Figure F-8.

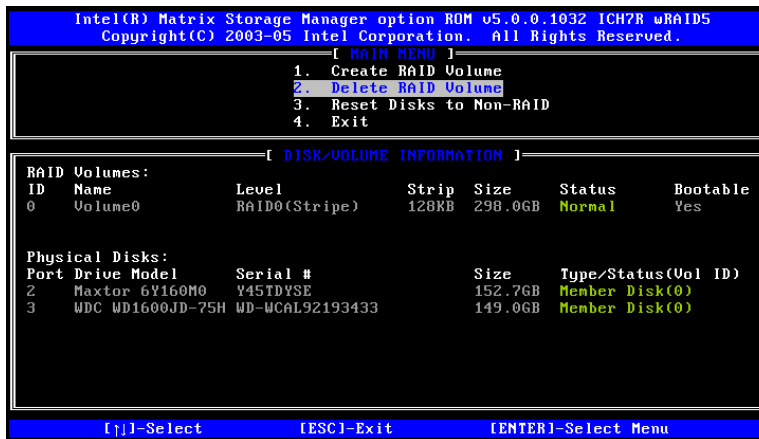


Figure F-8: Delete RAID Volume Menu

Step 2: Select RAID Volume to be Deleted. Use the arrow keys to highlight the RAID volume to be deleted and press **ENTER**. See **Figure F-9**.

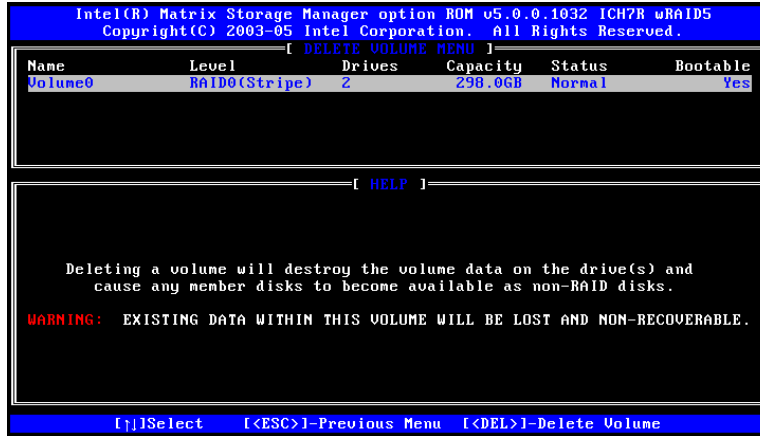


Figure F-9: Select RAID Volume to be Deleted

Step 3: Delete Volume Verification. After reading the warning, press **Y** to delete the specified RAID volume, or **N** to return to the **Delete Volume** menu.

See **Figure F-10**.

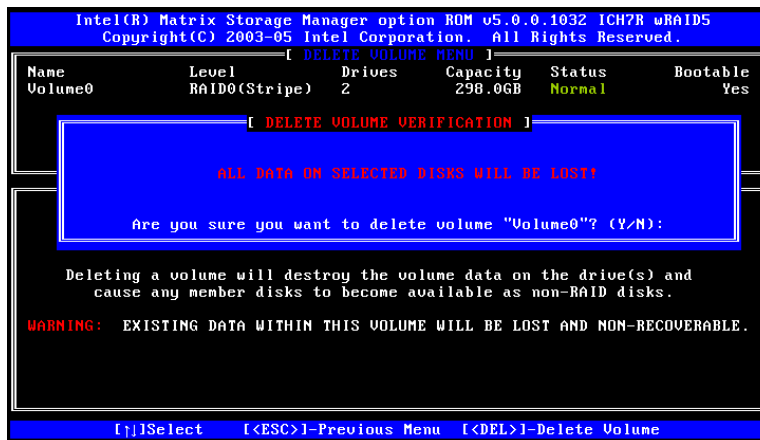


Figure F-10: Delete Volume Verification

Step 4: Non-RAID Disks. After deleting the RAID volume, the disks belonging to the volume will be shown as non-RAID disks. See **Figure F-11**.

IMB-Q354 microATX Motherboard

```

Intel(R) Matrix Storage Manager option ROM v5.0.0.1032 ICH7R wRAID5
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[ MAIN MENU ]
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit

[ DISK/VOLUME INFORMATION ]

RAID Volumes:
None defined.

Physical Disks:
Port Drive Model Serial # Size Type/Status(Vol ID)
2 Maxtor 6Y160M0 Y45TDYSE 152.7GB Non-RAID Disk
3 WDC WD1600JD-75H WD-WCAL92193433 149.0GB Non-RAID Disk

[Esc]-Select [F10]-Exit [Enter]-Select Menu
  
```

Figure F-11: Non-RAID Disks

F.4.3 Resetting a Disk to Non-RAID



WARNING!

All data stored on the disk drive of a RAID volume is destroyed when resetting it to non-RAID. Make sure any data to be saved has been moved or backed up before resetting a disk to non-RAID.

- Step 1:** Select “Reset Disk to Non-RAID.” Use the arrow keys to highlight Reset Disk to Non-RAID and press ENTER. See Figure F-12.

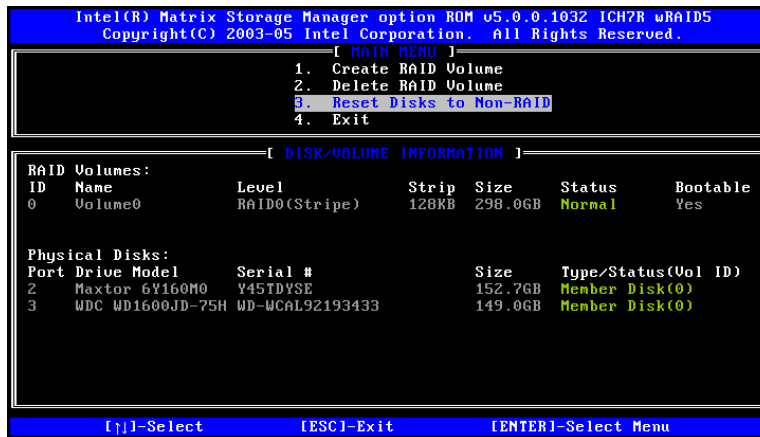


Figure F-12: Reset Disk to Non-RAID Menu

Step 2: Select Disks to Reset. Use the arrow keys to scroll through the disk drives and press **SPACE** to select which drives are to be reset as non-RAID. After all the disks to be reset have been chosen, press **ENTER**. See **Figure F-13**.

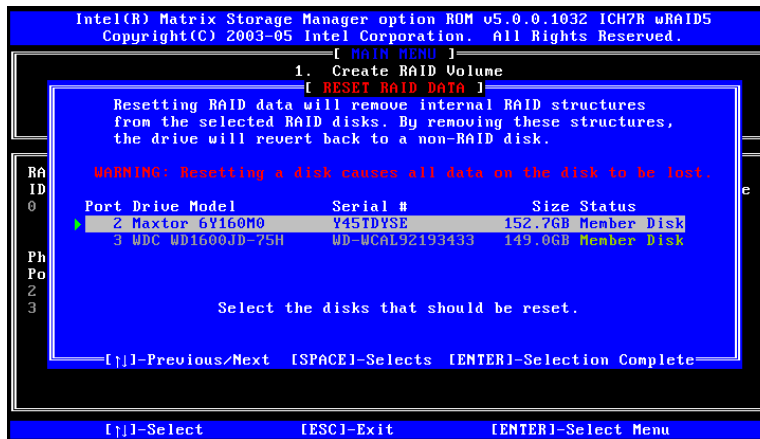


Figure F-13: Select Disk to Reset

Step 3: Reset Disk Verification. After reading the warning, press **Y** to reset the selected disks as non-RAID, or **N** to return to the **Reset RAID Data** menu. See **Figure F-14**.

IMB-Q354 microATX Motherboard

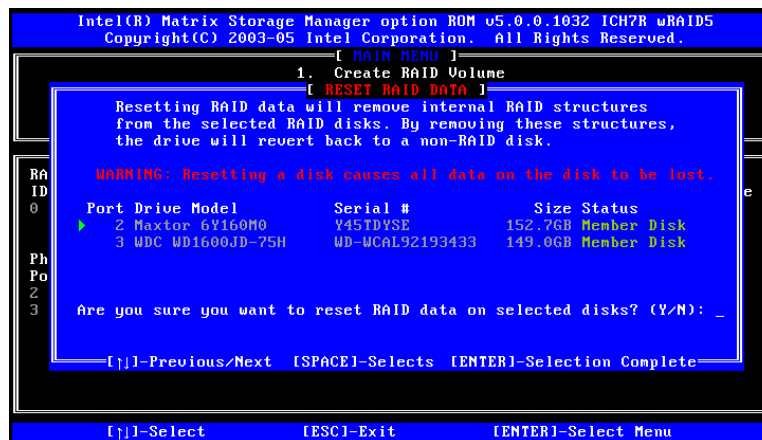


Figure F-14: Reset Disk Verification

Step 4: **Disk Drive and RAID Volume Status.** After the disk drives have been reset, the **Matrix Storage Manager Main** menu is shown indicating the status of the RAID volumes and disk drives. See **Figure F-15**.

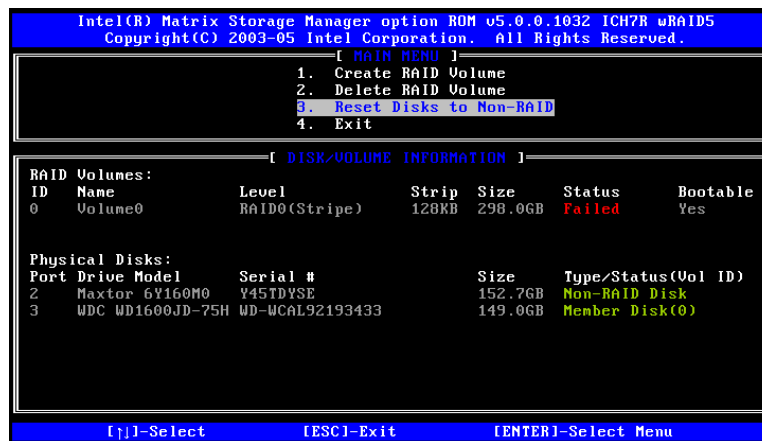
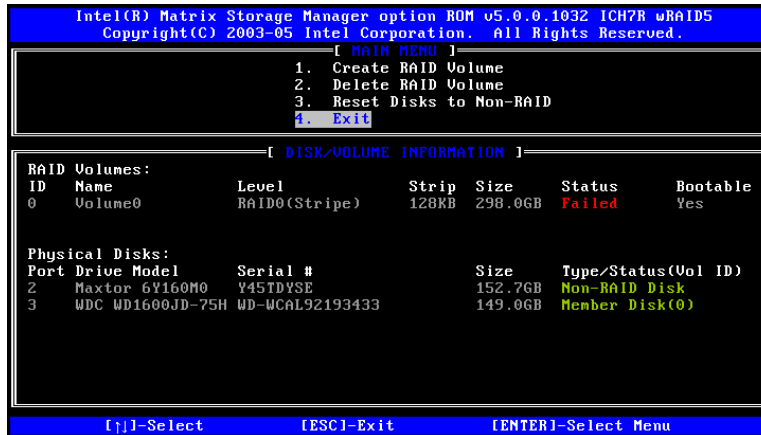


Figure F-15: Disk Drive and RAID Volume Status

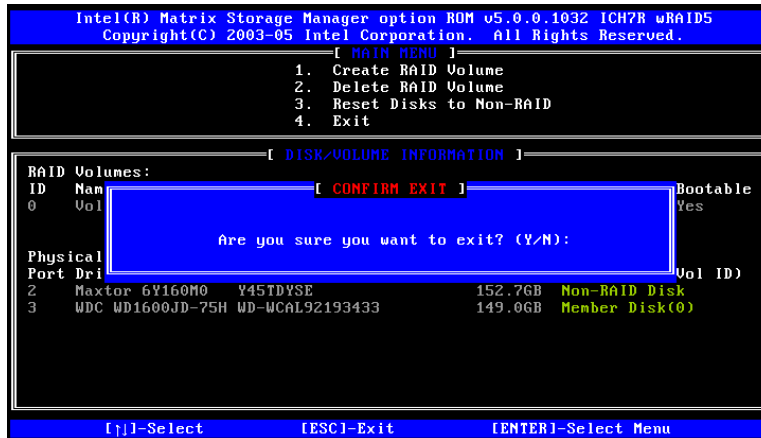
F.4.4 Exiting the Matrix Storage Manager

Step 1: Select "Exit." Use the arrow keys to highlight Exit and press ENTER.

See Figure F-16.


Figure F-16: Exit Menu

Step 2: Exit Verification. Press Y to exit the Matrix Storage Manager, or N to return to the Main menu. See Figure F-17.


Figure F-17: Exit Verification

Appendix

G

Hazardous Materials Disclosure

G.1 Hazardous Material Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

IMB-Q354 microATX Motherboard

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	X	O	O	O	O	X
Display	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Power Supply Assemblies	X	O	O	O	O	X
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有“环境友好使用期限”的标签，此期限是估算这些物质“不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	X	○	○	○	○	X
显示	X	○	○	○	○	X
印刷电路板	X	○	○	○	○	X
金属螺帽	X	○	○	○	○	○
电缆组装	X	○	○	○	○	X
风扇组装	X	○	○	○	○	X
电力供应组装	X	○	○	○	○	X
电池	○	○	○	○	○	○

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。
X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。