

Preface

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Version 2.0

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Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Preface

Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation

Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

About the Manual

The manual consists of the following:

Chapter 1 Introducing the Motherboard	Describes features of the motherboard. Go to ➞ page 1
Chapter 2 Installing the Motherboard	Describes installation of motherboard components. Go to ➞ page 7
Chapter 3 Using BIOS	Provides information on using the BIOS Setup Utility. Go to ➞ page 25
Chapter 4 Using the Motherboard Software	Describes the motherboard software Go to ➞ page 43
Chapter 5 ATI CrossfireX™ Technology Support	Describes the ATI CrossfireX™ Technology Go to ➞ page 47
Chapter 6 Intel® Matrix Storage Manager RAID Configurations	Describes the Intel® Matrix Storage Manager RAID Configurations Go to ➞ page 51
Chapter 7 Setting Up eJIFFY	Describes the eJIFFY setting up Go to ➞ page 57
Chapter 8 Trouble Shooting	Provides basic trouble shooting tips Go to ➞ page 67

Preface

TABLE OF CONTENTS

Preface	i
Chapter 1	1
Introducing the Motherboard	1
Introduction.....	1
Feature	2
Specifications.....	4
Motherboard Components.....	5
Chapter 2	7
Installing the Motherboard	7
Safety Precautions.....	7
Choosing a Computer Case.....	7
Installing the Motherboard in a Case.....	7
Checking Jumper Settings.....	8
<i>Setting Jumpers.....</i>	<i>8</i>
<i>Checking Jumper Settings.....</i>	<i>9</i>
<i>Jumper Settings.....</i>	<i>9</i>
Installing Hardware.....	10
<i>Installing the Processor.....</i>	<i>10</i>
<i>Installing Memory Modules.....</i>	<i>12</i>
<i>Expansion Slots.....</i>	<i>14</i>
<i>Connecting Optional Devices.....</i>	<i>16</i>
<i>Installing a Hard Disk Drive/CD-ROM/SATA Hard Drive... </i>	<i>18</i>
<i>Installing a Floppy Diskette Drive.....</i>	<i>19</i>
Connecting I/O Devices.....	20
Connecting Case Components.....	21
<i>Front Panel Header.....</i>	<i>24</i>
Chapter 3	25
Using BIOS	25
About the Setup Utility.....	25
<i>The Standard Configuration.....</i>	<i>25</i>

<i>Entering the Setup Utility</i>	25
<i>Resetting the Default CMOS Values</i>	26
Using BIOS.....	27
<i>Standard CMOS Setup</i>	28
<i>Advanced Setup</i>	30
<i>Advanced Chipset Setup</i>	32
<i>Integrated Peripherals</i>	33
<i>Power Management Setup</i>	34
<i>PCI/PNP Configuration</i>	35
<i>PC Health Status</i>	36
<i>M.I.B. (MB Intelligent BIOS)</i>	38
<i>Load Default Settings</i>	40
<i>Supervisor Password</i>	40
<i>User Password</i>	41
<i>Save & Exit Setup</i>	41
<i>Exit Without Saving</i>	41
<i>Updating the BIOS</i>	42
Chapter 4	43
Using the Motherboard Software	43
About the Software DVD-ROM/CD-ROM.....	43
Auto-installing under Windows XP/Vista/7.....	43
<i>Running Setup</i>	44
Manual Installation.....	46
Utility Software Reference.....	46
Chapter 5	47
ATI CrossFireX™Technology Support	47
Requirements.....	47
Installing a single graphics card.....	47
Installing CrossFireX™ graphics cards.....	48
The Catalyst™ Control Center Dialog Box.....	50
<i>View</i>	50
<i>To Enable CrossFireX™</i>	50

Chapter 6	51
Intel®Matrix Storage Manager RAID Configurations	51
Before creating a RAID set.....	51
Entering Intel®Matrix Storage Manager RAID BIOS utility...	52
Creating a RAID set.....	53
Deleting a RAID set.....	55
Resetting disks to Non-RAID.....	56
Exiting Setup.....	56
Chapter 7	57
Setting Up eJIFFY	57
Introduction.....	57
Installation and BIOS Setup.....	58
Entering eJIFFY.....	61
Features Icons.....	62
Usage FAQ.....	63
Chapter 8	67
Trouble Shooting	67
Start up problems during assembly.....	67
Start up problems after prolong use.....	68
Maintenance and care tips.....	68
Basic Troubleshooting Flowchart.....	69

vi

Memo

Chapter 1

Introducing the Motherboard

Introduction

Thank you for choosing the P45T-A motherboard. This motherboard is a high performance, enhanced function motherboard designed to support the LGA775 socket Intel® Yorkfield/Wolfdale/Core™ 2 Duo processors for high-end business or personal desktop markets.

The motherboard incorporates the Intel Eaglelake P45 Northbridge (NB) and Intel ICH10R Southbridge (SB) chipsets. The Northbridge supports a Front Side Bus (FSB) frequency of 1333/1066/800 MHz using a scalable FSB Vcc_CPU. The memory controller supports DDR2 memory DIMM frequencies of 800/667. It supports four DDR2 sockets with maximum memory size of 16 GB. High resolution graphics via two PCI Express x16 slots, intended for Graphics Interface, are fully compliant to the PCI Express Base Specification Revision 2.0. It supports the ATI CrossFireX™ Technology that allows you to install GPU graphics cards.

The ICH10R Southbridge supports two PCI slots which are PCI v2.3 compliant. It implements an EHCI compliant interface that provides 480 Mb/s bandwidth for twelve USB 2.0 ports (six USB ports and three USB 2.0 headers support additional six USB ports). One onboard IDE connector supports two IDE devices in Ultra ATA 133/100/66/33 mode. The Southbridge supports six SATA ports with maximum transfer rate up to 3.0 Gb/s each. It supports Intel® Matrix Storage Technology, providing both AHCI and RAID 0, 1, 5 and 10 configuration.

There is an advanced full set of I/O ports in the rear panel, including PS/2 mouse and keyboard connectors, one serial port, one eSATA port, six USB ports, one LAN port and audio jacks for microphone, line-in and 8-ch line-out.

Introducing the Motherboard

Feature

Processor

This motherboard uses an LGA775 type of Intel® Yorkfield/Wolfdale/Core™ 2 Duo that carries the following features:

- Accommodates Intel® Yorkfield/Wolfdale/Core™ 2 Duo processors
- Supports a system bus (FSB) of 1333/1066/800 MHz

Chipset

The P45 Northbridge (NB) and ICH10R Southbridge (SB) chipsets are based on an innovative and scalable architecture with proven reliability and performance.

- | | |
|--------------------|---|
| P45 (NB) | <ul style="list-style-type: none"> • Supports 36-bit host bus addressing, allowing the CPU to access the entire 64 GB of the memory address space. • 2 GB/s point-to-point Direct Media Interface (DMI) to ICH10 (1 GB/s each direction) • Two PCI Express x16 slots, intended for Graphics Interface, are fully compliant to the PCI Express Base Specification Revision 2.0. • Supports 512-Mb and 1-Gb DDR2 and 512-Mb, 1-Gb, and 2-Gb DDR3 DRAM technologies for x8 and x16 devices |
| ICH10R (SB) | <ul style="list-style-type: none"> • Enhanced DMA Controller, interrupt controller, and timer functions • Compliant with PCI Express Base Specification, revision 1.1 • Compliant with PCI v2.3 specification • Compliant with SATA 3.0 Gb/s Host Controller • Integrated USB 2.0 Host Controller supporting up to twelve USB 2.0 ports • Supports Intel® Matrix Storage Technology, providing both AHCI and RAID 0, 1, 5 and 10 configuration |

Memory

- Supports DDR2 800/667 DDR2 SDRAM with Dual-channel architecture
- Accommodates four unbuffered DIMMs
- Up to 4 GB per DIMM with maximum memory size up to 16 GB

Audio

- RealTek ALC883 7.1ch High Definition audio CODEC

Onboard LAN

- Gigabit LAN, Athlos L1 PCIe GigaLAN controller

Introducing the Motherboard

Expansion Options

The motherboard comes with the following expansion options:

- Two PCI Express x16 slots for Graphics Interface
- Two PCI Express x1 slots
- Two 32-bit PCI v2.3 compliant slots
- One IDE connector supporting up to two IDE devices
- One floppy disk drive interface
- Six 7-pin SATA connectors

This motherboard supports Ultra DMA bus mastering with transfer rates of 133/100/66/33 Mb/s.

Integrated I/O

The motherboard has a full set of I/O ports and connectors:

- Two PS/2 ports for mouse and keyboard
- One Serial port
- One eSATA port
- Six USB ports
- One LAN port
- Audio jacks for microphone, line-in and 8-ch line-out

BIOS Firmware

The motherboard uses AMI BIOS that enables users to configure many system features including the following:

- Power management
- Wake-up alarms
- CPU parameters
- CPU and memory timing
- ECSP.M.I.B. BIOS

The firmware can also be used to set parameters for different processor clock speeds.



1. Some hardware specifications and software items are subject to change without prior notice.

2. Due to chipset limitation, we recommend that motherboard be operated in the ambience between 0 and 50 °C.

Specifications

CPU	<ul style="list-style-type: none"> LGA775 socket for Intel® Yorkfield/Wolfdale/Core™ 2 Duo processors FSB 1333/1066/800 MHz
Chipset	<ul style="list-style-type: none"> Intel Eaglelake P45 & ICH10R North Bridge: Intel Eaglelake P45 South Bridge: Intel ICH10R
Memory	<ul style="list-style-type: none"> Dual-channel DDR2 memory architecture 4 x 240-pin DDR DIMM socket support up to 16 GB Supports DDR2 800/667 DDRII SDRAM
Expansion Slots	<ul style="list-style-type: none"> 2 x PCI Express x16 slots 2 x PCI Express x1 slots 2 x PCI slots
Storage	<ul style="list-style-type: none"> Support by Intel ICH10R 6 x Serial ATAII devices Supports RAID0, 1, 5, 10 Support by JMicron® JMB361 2 x Ultra DMA 133/100/66 device 4 x 240-pin DDR DIMM socket support up to 16 GB 1 x e-SATAII 3.0 Gb/s device
Audio	<ul style="list-style-type: none"> RealTek ALC883 7.1ch High Definition audio CODEC
LAN	<ul style="list-style-type: none"> Gigabit LAN, Athlos L1 PCIe GigaLAN controller
Rear Panel I/O	<ul style="list-style-type: none"> 1 x PS/2 keyboard & PS/2 mouse connectors 6 x USB ports 1 x e-SATA port 1 x COM port 1 x RJ 45 LAN connector 1 x Audio port (1x Line in, 4x Line out, 1x Optical SPDIF Out)
Internal I/O Connectors & Headers	<ul style="list-style-type: none"> 1 x 24-pin ATX Power Supply connector & 8-pin 12V connector 1 x IDE connector 6 x Serial ATA connectors 3 x USB 2.0 headers support additional 6 USB ports 1 x Clear CMOS header 1 x Front panel header 1 x Front panel audio header 1 x CD_in header CPUFAN/SYSFAN connectors 1 x Reset button 1 x Power on button
System BIOS	<ul style="list-style-type: none"> AMI BIOS with 8Mb SPI ROM Supports Plug and Play, STR/STD, Hardware monitor, PCI interrupt selection, ACPI & DMI, CPU FSB adjustment (increase of 1MHz) Supports ACPI revision 1.0 specification
Form Factor	<ul style="list-style-type: none"> ATX Size, 305mm x 244mm

Introducing the Motherboard

Motherboard Components

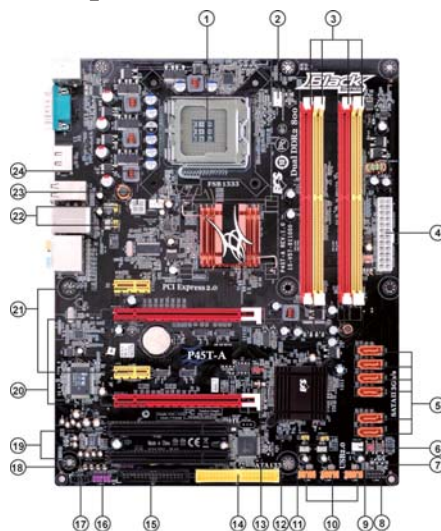


Table of Motherboard Components

LABEL	COMPONENTS
1. CPU Socket	LGA775 socket Intel® Yorkfield/Wolfdale/Core™ 2 Duo processors
2. CPU_FAN1	CPU cooling fan connector
3. DDR2_DIMM1~4	240-pin DDR2 SDRAM slots
4. ATX_POWER	Standard 24-Pin ATX Power connector
5. SATA1~6	Serial ATA connectors
6. RST_BOT	Reset button
7. PWR_BOT	Power on button
8. F_PANEL	Front Panel Switch/LED header
9. CASE_FAN	Case cooling fan connector
10. F_USB1~3	Front Panel USB headers
11. USBPWR_F1~2	Front Panel USB Power Select jumpers
12. SPK	Speaker header
13. CLR_CMOS	Clear CMOS jumper
14. IDE	Primary IDE connector
15. FDD	Floppy disk drive connector
16. F_AUDIO	Front Panel Audio header
17. CD_IN	Analog Audio Input connector
18. SPDIF0	SPDIF out header
19. PCI2~3	32-bit add-on card slots
20. PCIE16X_1~2	PCI Express x16 graphics card slots
21. PCIE1/3	PCI Express x1 slots
22. USBPWR_R1~2	Rear USB/PS2 Power Select jumpers
23. ATX12V	4-pin +12V power connector
24. SYS_FAN1	System cooling fan connector

This concludes Chapter 1. The next chapter explains how to install the motherboard.

Introducing the Motherboard

6

Memo

Introducing the Motherboard

Chapter 2

Installing the Motherboard

Safety Precautions

- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in the static-proof bags they came in
- Hold all circuit boards by the edges. Do not bend circuit boards

Choosing a Computer Case

There are many types of computer cases on the market. The motherboard complies with the specifications for the ATX system case. Firstly, some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required. Secondly, this motherboard supports one floppy diskette drive and two enhanced IDE drives. Make sure that your case has sufficient power and space for all drives that you intend to install.

Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the motherboard.

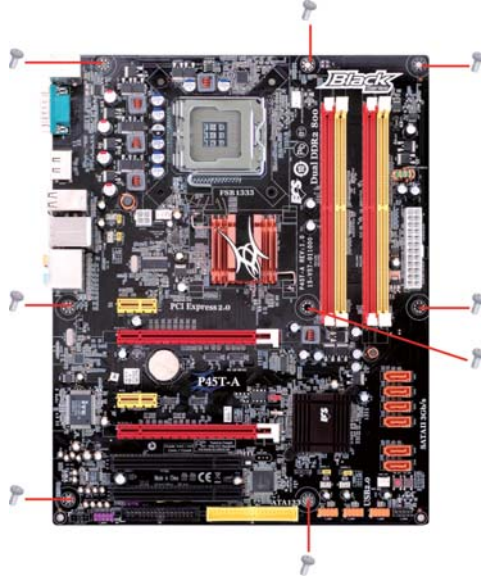
This motherboard carries an ATX form factor of 305 x 244 mm. Choose a case that accommodates this form factor.

Installing the Motherboard in a Case

Refer to the following illustration and instructions for installing the motherboard in a case.

Most system cases have mounting brackets installed in the case, which correspond the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your motherboard.



Do not over-tighten the screws as this can stress the motherboard.

Checking Jumper Settings

This section explains how to set jumpers for correct configuration of the motherboard.

Setting Jumpers

Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

The illustrations show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is **SHORT**. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is **OPEN**.

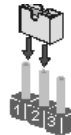


SHORT



OPEN

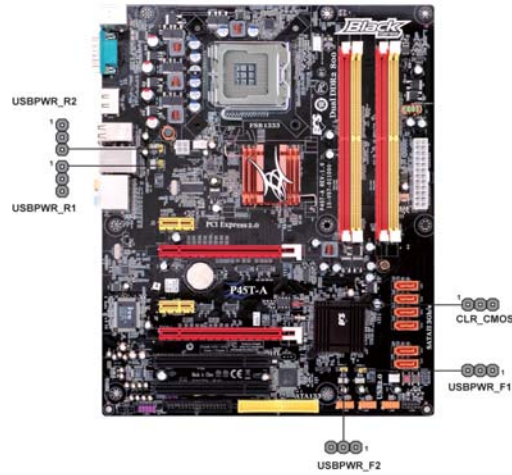
This illustration shows a 3-pin jumper. Pins 1 and 2 are **SHORT**.






Installing the Motherboard

Checking Jumper Settings

The following illustration shows the location of the motherboard jumpers. Pin 1 is labeled.



Jumper Settings

Jumper	Type	Description	Setting (default)	
CLR_CMOS	3-pin	CLEAR CMOS	1-2: NORMAL 2-3: CLEAR Before clearing the CMOS, make sure to turn the system off.	 1 CLR_CMOS
USBPWR_R1~2	3-pin	Rear USB/PS2 Power Select Jumper	1-2: VCC5 2-3: 5VSB	 1 USBPWR_R1~2
USBPWR_F1~2	3-pin	Front Panel USB Power Select Jumper	1-2: VCC5 2-3: 5VSB	 1 USBPWR_F1~2



1. To avoid the system instability after clearing CMOS, we recommend users to enter the main BIOS setting page to "Load Default Settings" and then "Save & Exit Setup".
2. Make sure the power supply provides enough 5VSB voltage before selecting the 5VSB function.
3. It is required that users place the USBPWR_F1~2 & USBPWR_R1~2 cap onto 2-3 pin rather than 1-2 pin as default if you want to wake up the computer by USB/PS2 KB/Mouse.

Installing the Motherboard

Installing Hardware

Installing the Processor



Caution: When installing a CPU heatsink and cooling fan make sure that you DO NOT scratch the motherboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the motherboard, you may cause serious damage to the motherboard or its components.

On most motherboards, there are small surface-mount resistors near the processor socket, which may be damaged if the cooling fan is carelessly installed.

Avoid using cooling fans with sharp edges on the fan casing and the clips. Also, install the cooling fan in a well-lit work area so that you can clearly see the motherboard and processor socket.

Before installing the Processor

This motherboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change the settings in the system Setup Utility. We strongly recommend that you do not over-clock processors or other components to run faster than their rated speed.



Warning:

1. Over-clocking components can adversely affect the reliability of the system and introduce errors into your system. Over-clocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.

2. Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.

This motherboard has an LGA775 socket. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

Installing the Motherboard

CPU Installation Procedure

The following illustration shows CPU installation components.

- A. Read and follow the instructions shown on the sticker on the CPU cap.



- B. Unload the cap
- Use thumb & forefinger to hold the lifting tab of the cap.
 - Lift the cap up and remove the cap completely from the socket.

- C. Open the load plate
- Use thumb & forefinger to hold the hook of the lever, pushing down and pulling aside unlock it.
 - Lift up the lever.
 - Use thumb to open the load plate. Be careful not to touch the contacts.



- D. Install the CPU on the socket
- Orientate CPU package to the socket. Make sure you match triangle marker to pin 1 location.



- E. Close the load plate
- Slightly push down the load plate onto the tongue side, and hook the lever.
 - CPU is locked completely.



- F. Apply thermal grease on top of the CPU.

- G. Fasten the cooling fan supporting base onto the CPU socket on the motherboard.



- H. Make sure the CPU fan is plugged to the CPU fan connector. Please refer to the CPU cooling fan user's manual for more detail installation procedure.



1. To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 3800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.

2. DO NOT remove the CPU cap from the socket before installing a CPU.

3. Return Material Authorization (RMA) requests will be accepted only if the motherboard comes with the cap on the LGA775 socket.

Installing the Motherboard

Installing Memory Modules

This motherboard accommodates four memory modules. It can support four 240-pin DDR2 800/667. The total memory capacity is 16 GB.

DDR2 SDRAM memory module table

Memory module	Memory Bus
<i>DDR2 667</i>	<i>333 MHz</i>
<i>DDR2 800</i>	<i>400 MHz</i>

You must install at least one module in any of the four slots. Each module can be installed with 4 GB of memory; total memory capacity is 16 GB.



Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.

Installation Procedure

Refer to the following to install the memory modules.

- 1 This motherboard supports unbuffered DDR2 SDRAM only.
- 2 Push the latches on each side of the DIMM slot down.
- 3 Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
- 4 Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
- 5 Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
- 6 Install any remaining DIMM modules.



Installing the Motherboard

Table A: DDR2 (memory module) QVL (Qualified Vendor List)

The following DDR2 800/667 memory modules have been tested and qualified for use with this motherboard.

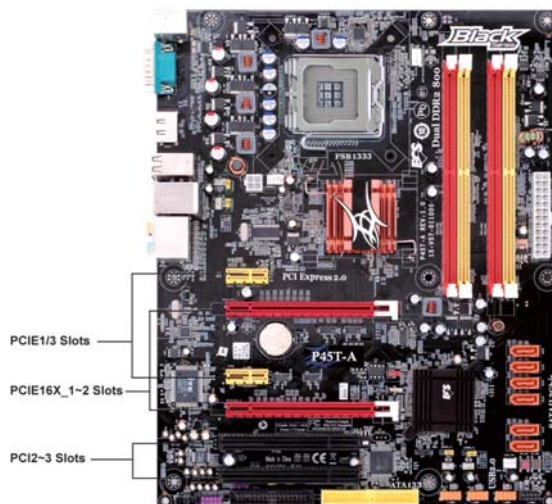
Type	Size	Vendor	Module Name	
DDR2 667	512 MB	A-DATA	AD29608A 88-3EG M2OAD5G3H3166I1C52	
		Apacer	78.91G 92.9K5	
		APOGEE	AU51082-667P005	
		Corsair	64M8CFE PS1000545	
		Infinity	0547W64M8 PC5300	
		Micron	MT4HTF6464AY-667E1	
		PSC	AL6E8E63J-6E1	
		Samsung	K4T51083QC	
		Twinmos	8D23JK-TT TMM6208G8M30B	
	1 GB	A-DATA	M2OAD5G3I417611C52	
		Apacer	78.01G9O.9K5 Elpida 1GB AM4B5708GEWS7E-0637F	
		APOGEE	AU1G082-667P005	
		Infineon	HYB18T512800BF3S	
		Micron	MT8HTF12864AY-667E1	
		PSC	AL7E8E63B-6E1T	
			AL7E8E63J-6E1	
			AL7E8F73C-6E1	
		Twinmos	8D23KK-TT	
	2 GB	Aeneon	AET860UD00-30DB08X	
		Apacer	78.A1G9O.9K4	
		Hynix	HYMP125U64AP8-Y5-AB-A	
		Lead Max	Lead Max LD5PS1G831	
		PSC	AL8E8F73C-6E1	
		Qimonda	HYS64T256020EU-3S-C2	
	DDR2 800	512 MB	A-DATA	M2OAD6G3H3160I1E53
			Infinity	04751208CZ5U2D
			Kingston	KHX6400D2ULK2/1G
KVR800D2N5/512				
Micron			MT8HTF6464AY-80ED4	
UMAX			U2S12D30TP-8E	
1 GB		Aeneon	AET760UD00-25DC08X	
		Apacer	78.01GA0.9K5	
		Infinity	04701G16CZ5U2G	
		Kingston	KHX6400D2ULK2/2G	
			KVR800D2N5/1G	
		Hexon	NCPT7AUDR-25M48	
2 GB		Aeneon	AET860UD00-25DC08X	
		Apacer	78.A1GA0.9K4	
		Micron	MT16HTF25664AY-800E1	
		PSC	AL8E8F73C-8E1	
		Qimonda	HYS64T256020EU-25F-C2	

Installing the Motherboard

Expansion Slots

Installing Add-on Cards

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.



PCIe16X_1~2 Slots The PCI Express x16 slots are used to install the external PCI Express graphics cards that are fully compliant to the PCI Express Base Specification Revision 2.0. For CrossFireX™ information please refer to Chapter 5.

PCIe1/3 Slots The PCI Express x1 slots are fully compliant to the PCI Express Base Specification Revision 1.1.

PCI2~3 Slots This motherboard is equipped with two standard PCI slots. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slots on this board are PCI v2.3 compliant.

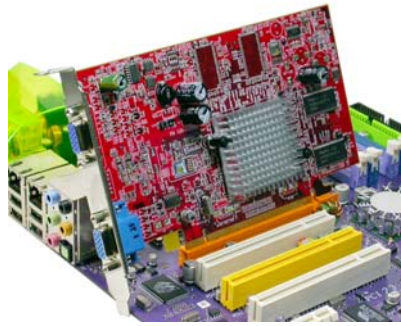


Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

Installing the Motherboard

Follow these instructions to install an add-on card:

- 1 Remove a blanking plate from the system case corresponding to the slot you are going to use.
- 2 Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
- 3 Secure the metal bracket of the card to the system case with a screw.

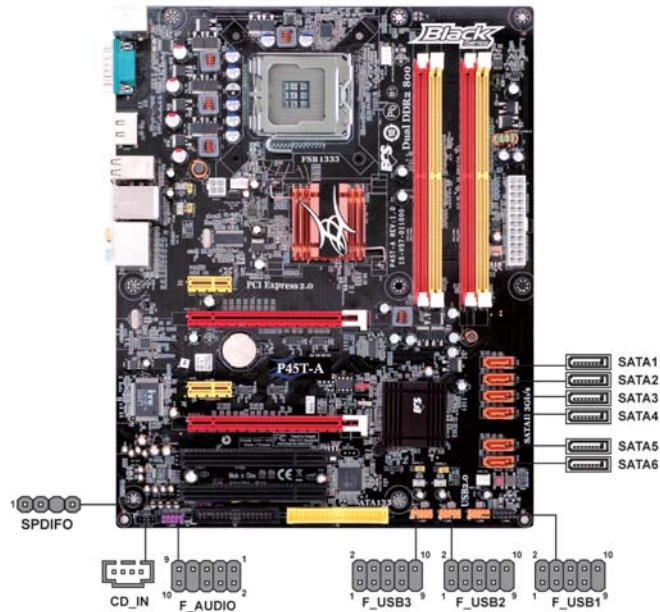


For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

Installing the Motherboard

Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:



F_AUDIO: Front Panel Audio header

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

Pin	Signal Name	Pin	Signal Name
1	PORT 1L	2	AUD_GND
3	PORT 1R	4	PRESENCE#
5	PORT 2R	6	SENSE1_RETURN
7	SENSE_SEND	8	KEY
9	PORT 2L	10	SENSE2_RETURN

SPDIFO: SPDIF out header

This is an optional header that provides an S/PDIF (Sony/Philips Digital Interface) output to digital multimedia device through optical fiber or coaxial connector.

Pin	Signal Name	Function
1	SPDIF	SPDIF digital output
2	+5VA	5V analog Power
3	Key	No pin
4	GND	Ground

Installing the Motherboard

F_USB1~3: Front Panel USB headers

The motherboard has six USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB connector to connect the front-mounted ports to the motherboard.

Pin	Signal Name	Function
1	USBPWR	Front Panel USB Power
2	USBPWR	Front Panel USB Power
3	USB_FP_P0-	USB Port 0 Negative Signal
4	USB_FP_P1-	USB Port 1 Negative Signal
5	USB_FP_P0+	USB Port 0 Positive Signal
6	USB_FP_P1+	USB Port 1 Positive Signal
7	GND	Ground
8	GND	Ground
9	Key	No pin
10	NC	Not connected



Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.

SATA1~6: Serial ATA connectors

These connectors are used to support the new Serial ATA devices for the highest data transfer rates (3.0 Gb/s), simpler disk drive cabling and easier PC assembly. It eliminates limitations of the current Parallel ATA interface. But maintains register compatibility and software compatibility with Parallel ATA.

Pin	Signal Name	Pin	Signal Name
1	Ground	2	TX+
3	TX-	4	Ground
5	RX-	6	RX+
7	Ground	-	-

CD_IN: Analog Audio Input connector

Pin	Signal Name	Function
1	CD_L	CD In left channel
2	GND	Ground
3	GND	Ground
4	CD_R	CD In right channel

Installing the Motherboard

Installing a Hard Disk Drive/CD-ROM/SATA Hard Drive

This section describes how to install IDE devices such as a hard disk drive and a CD-ROM drive.

About IDE Devices

Your motherboard has one IDE interface. An IDE ribbon cable supporting two IDE devices is bundled with the motherboard.



You must orient the cable connector so that the pin1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.

IDE: IDE Connector

This motherboard supports six high data transfer SATA ports with each runs up to 3.0 Gb/s. To get better system performance, we recommend users connect the CD-ROM to the IDE channel, and set up the hard drives on the SATA ports.



IDE devices enclose jumpers or switches used to set the IDE device as MASTER or SLAVE. Refer to the IDE device user's manual. Installing two IDE devices on one cable, ensure that one device is set to MASTER and the other device is set to SLAVE. The documentation of your IDE device explains how to do this.

About SATA Connectors

Your motherboard features six SATA connectors supporting a total of six drives. SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard and follow the illustration below to install the SATA hard drives.

Installing Serial ATA Hard Drives

To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. This SATA cable comes with a SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.



SATA cable (optional)



SATA power cable (optional)

Installing the Motherboard

Refer to the illustration below for proper installation:

- 1 Attach either cable end to the connector on the motherboard.
- 2 Attach the other cable end to the SATA hard drive.
- 3 Attach the SATA power cable to the SATA hard drive and connect the other end to the power supply.



This motherboard does not support the "Hot-Plug" function.

Installing a Floppy Diskette Drive

FDD: Floppy Disk Connector

Connect the single end of the of the floppy connector to the onboard floppy connector firstly, and then connect the remaining plugs on the other end to the floppy drives correspondingly.



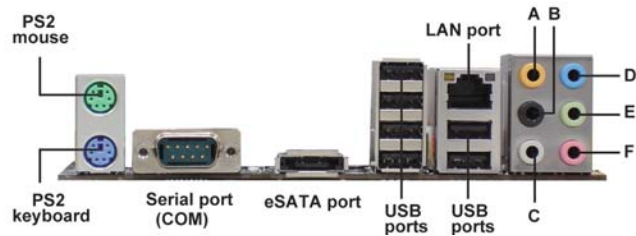
You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.



Installing the Motherboard

Connecting I/O Devices

The backplane of the motherboard has the following I/O ports:



PS2 Mouse Use the upper PS/2 port to connect a PS/2 pointing device.

PS2 Keyboard Use the lower PS/2 port to connect a PS/2 keyboard.

Serial Port (COM) Use the COM port to connect serial devices such as mice or fax/modems.

eSATA Port Use this port to connect to an external SATA box or a Serial ATA port multiplier.



Before connecting the eSATA cable, make sure to turn off the power of the external enclosure.

USB Ports Use the USB ports to connect USB devices.

LAN Port Connect an RJ-45 jack to the LAN port to connect your computer to the network.

Audio Ports Use the audio jacks to connect audio devices. The D port is for stereo line-in signal, while the F port is for microphone in signal. This motherboard supports 8-channel audio devices that correspond to the A,B, C, and E port respectively. In addition, all of the 3 ports, B, C, and E provide users with both right & left channels individually. Users please refer to the following note for specific port function definition.



A: Center & Woofers	D: Line-in
B: Back Surround	E: Front Out
C: Side Surround	F: Mic_in Rear

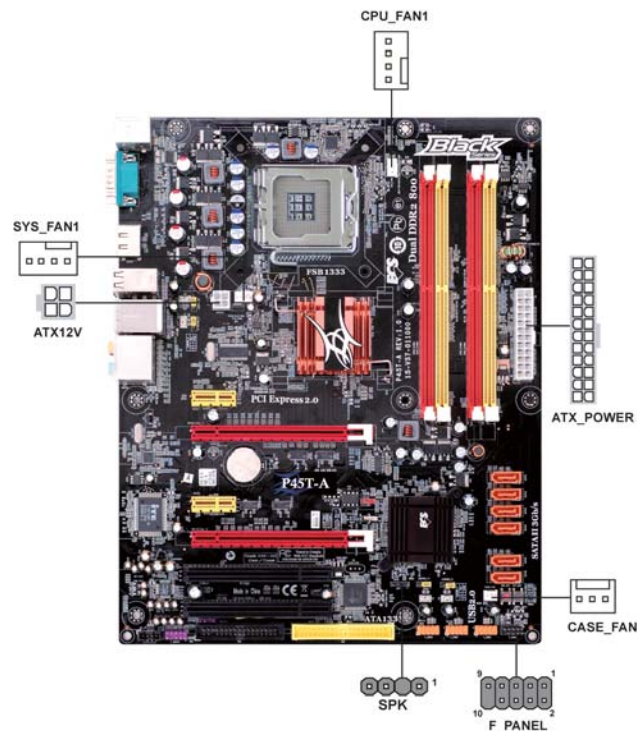
The above port definition can be changed to audio input or audio output by changing the driver utility setting.

Installing the Motherboard

Connecting Case Components

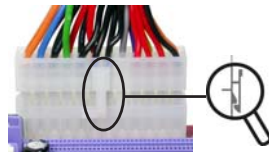
After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

- 1 Connect the CPU cooling fan cable to **CPU_FAN1**.
- 2 Connect the system cooling fan connector to **SYS_FAN1**.
- 3 Connect the case cooling fan connector to **CASE_FAN**.
- 4 Connect the standard power supply connector to **ATX_POWER**.
- 5 Connect the auxiliary case power supply connector to **ATX12V**.
- 6 Connect the case switches and indicator LEDs to the **F_PANEL**.
- 7 Connect the case speaker cable to **SPK**.



Connecting 24-pin power cable

The ATX 24-pin connector allows you to connect to ATX v2.x power supply.



24-pin power cable

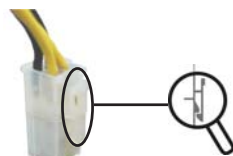
With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latches of power cable and the ATX_POWER match perfectly.

Installing the Motherboard



Connecting 4-pin power cable

The ATX12V power connector is used to provide power to the CPU.



4-pin power cable

When installing 4-pin power cable, the latches of power cable and the ATX12V match perfectly.

CPU_FAN1/SYS_FAN1: Cooling FAN Power Connector

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor
4	Control	CPU FAN control



Users please note that the fan connector supports the CPU cooling fan of 1.1A ~ 2.2A (26.4W max) at +12V.

CASE_FAN: Case cooling FAN Power Connector

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor

ATX_POWER: ATX 24-pin Power Connector

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

Installing the Motherboard

ATX12V: ATX 12V Power Connector

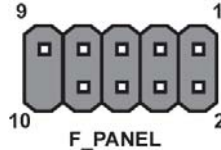
Pin	Signal Name
1	Ground
2	Ground
3	+12V
4	+12V

SPK: Internal speaker header

Pin	Signal Name
1	VCC
2	Key
3	GND
4	Signal

Front Panel Header

The front panel header (F_PANEL) provides a standard set of switch and LED headers commonly found on ATX or Micro ATX cases. Refer to the table below for information:



Pin	Signal	Function	Pin	Signal	Function
1	HD_LED_P	Hard disk LED (+)	2	FP PWR/SLP	*MSG LED (+)
3	HD_LED_N	Hard disk LED (-)	4	FP PWR/SLP	*MSG LED (-)
5	RST_SW_N	Reset Switch (-)	6	PWR_SW_P	Power Switch (+)
7	RST_SW_P	Reset Switch (+)	8	PWR_SW_N	Power Switch (-)
9	RSVD	Reserved	10	Key	No pin

*MSG LED (dual color or single color)

Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

Power/Sleep/Message waiting LED

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

Reset Switch

Supporting the reset function requires connecting pins 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal de-bounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

This concludes Chapter 2. The next chapter covers the BIOS.

Installing the Motherboard

Chapter 3

Using BIOS

About the Setup Utility

The computer uses the latest “American Megatrends Inc.” BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system’s configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

The Standard Configuration

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

Entering the Setup Utility

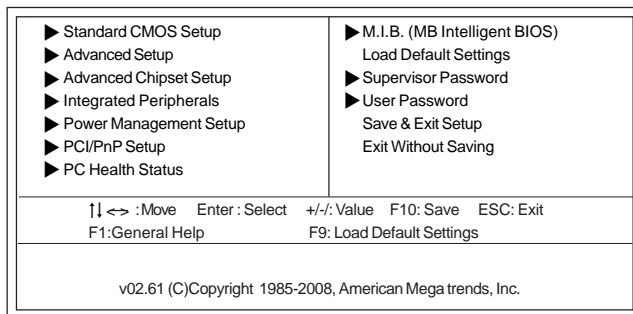
When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

Press DEL to enter SETUP

Using BIOS

Press the delete key to access the BIOS Setup Utility.

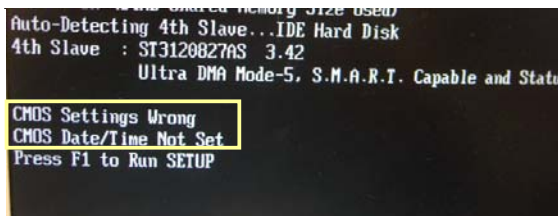
CMOS Setup Utility -- Copyright (C) 1985-2008, American Megatrends, Inc.



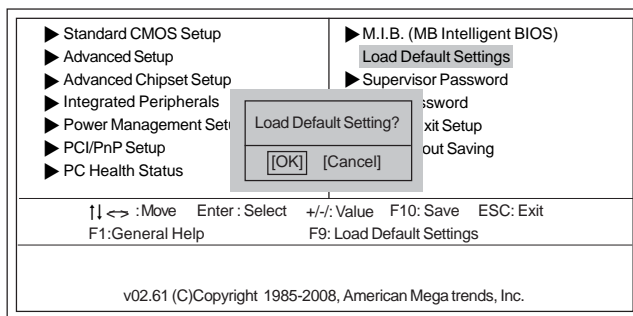
Resetting the Default CMOS Values

When powering on for the first time, the POST screen may show a “CMOS Settings Wrong” message. This standard message will appear following a clear CMOS data at factory by the manufacturer. You simply need to Load Default Settings to reset the default CMOS values.

Note: Changes to system hardware such as different CPU, memories, etc. may also trigger this message.



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Using BIOS

Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ►) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ►.



The default BIOS setting for this motherboard applies for most conditions with optimum performance. It is not suggested to change the default values in the BIOS setup and the manufacture takes no responsibility to any damage caused by changing the BIOS settings.

BIOS Navigation Keys

The BIOS navigation keys are listed below:

KEY	FUNCTION
ESC	Exits the current menu
↑↓↔	Scrolls through the items on a menu
+/-	Modifies the selected field's values
Enter	Select
F9	Load a default optimized setting
F10	Saves the current configuration and exits setup
F1	Displays a screen that describes all key functions



For the purpose of better product maintenance, the manufacture reserves the right to change the BIOS items presented in this manual. The BIOS setup screens shown in this chapter are for reference only and may differ from the actual BIOS. Please visit the manufacture's website for updated manual.

Using BIOS

Standard CMOS Setup

This option displays basic information about your system.

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Standard CMOS Setup

Date	Tue 03/25/2008	Help Item
Time Alarm (hh:mm:ss)	00:02:19	
▶ SATA1	Not Detected	Use [Enter], [TAB] or [SHIFT-TAB] to select a field. Use [+] or [-] to configure system Date.
▶ SATA2	Not Detected	
▶ SATA3	Not Detected	
▶ SATA4	Not Detected	
▶ SATA5	Not Detected	
▶ SATA6	Not Detected	
IDE BusMaster	Enabled	
Drive A:	1.44 MB 3 1/2"	

↑↓ ↔ : Move Enter : Select +/- : Value F10: Save ESC: Exit
F1: General Help F9: Load Default settings

Date & Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

▶ SATA1

This motherboard supports six SATA channels and each channel allows one SATA device to be installed. Use these items to configure each device on the SATA channel.

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SATA1

SATA1		Help Item
Device :	Not Detected	
Type	Auto	Select the type of device connected to the system.
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	

↑↓ ↔ : Move Enter : Select +/- : Value F10: Save ESC: Exit
F1: General Help F9: Load Default settings

Using BIOS

Type (Auto)

Use this item to configure the type of the IDE device that you specify. If the feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

LBA/Large Mode (Auto)

Use this item to set the LAB/Large mode to enhance hard disk performance by optimizing the area the hard disk is visited each time.

Block (Multi-Sector Transfer (Auto)

If the feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

PIO Mode (Auto)

Use this item to set the PIO mode to enhance hard disk performance by optimizing the hard disk timing.

DMA Mode (Auto)

DMA capability allows user to improve the transfer-speed and data-integrity for compatible IDE devices.

S.M.A.R.T. (Auto)

The S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance. S.M.A.R.T. software resides on both the disk drive and the host computer.

32Bit Data Transfer (Enabled)

Use this item to enable or disable 32Bit Data Transfer.

Press <Esc> to return to the Standard CMOS Setup page.

IDE BusMaster (Enabled)

This item enables or disables the DMA under DOS mode. We recommend you to leave this item at the default value.

Drive A: (1.44 MB 3¹/₂"

This item defines the characteristics of any diskette drive attached to the system. Only one floppy diskette drive is supported.

Press <Esc> to return to the main menu setting page.

Advanced Setup

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.

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Advanced Setup

		Help Item
Thermal Management	Enabled	
TM Status	TM1/TM2	
Limit CPUID MaxVal	Disabled	For the processor its CPUID belows 0F41h.
Enhanced Halt (C1E)	Enabled	TM2 only can be enable under below setting.
Intel XD Bit	Disabled	1. Freq.>=3.6GHz FSB800
Intel EIST	Enabled	2. Freq.>=2.8GHz FSB533
Intel Virtualization Technol	Enabled	
Quick Power on Self Test	Enabled	
Boot Up Numlock Status	ON	
APIC Mode	Enabled	
1st Boot Device	Hard Drive	
2nd Boot Device	CD/DVD	
3rd Boot Device	1st FLOPPY DRIVE	
▶ Removable Drives	Press Enter	
Boot Other Device	Yes	
ECS eJFFY Function	Disabled	

↑↓ <> :Move Enter: Select +/-: Value F10: Save ESC: Exit
F1: General Help F9: Load Default settings

Thermal Management (Enabled)

This item displays CPU's temperature and enables you to set a safe temperature to Prescott CPU.

TM Status (TM1/TM2)

This item displays CPU Monitor status.

Limit CPUID MaxVal (Disabled)

Use this item to enable or disable the Max CPU ID value limit. When supports Prescott and LGA775 CPUs, enables this to prevent the system from "rebooting" when trying to install Windows NT 4.0.

Enhanced Halt (C1E)

This item enables or disables enhanced halt.

Intel XD Bit (Disabled)

This item enables or disables the Intel XD Bit technology.

Intel EIST (Enabled)

This item allows users to enable or disable the EIST (Enhanced Intel Speedstep Technology) function. This item shows only if the CPU supports EIST.

Intel Virtualization Technol (Enabled)

When enabled, a VMM can utilize the additional hardware capabilities provided by Vendor Pool Technology.

Quick Power on Self Test (Enabled)

Enable this item to shorten the power on testing (POST) and have your system start up faster. You might like to enable this item after you are confident that your system hardware is operating smoothly.

Using BIOS

Boot Up Numlock Status (ON)

This item defines if the keyboard Num Lock key is active when your system is started.

APIC Mode (Enabled)

This item allows you to enable or disable the APCI (Advanced Programmable Interrupt Controller) mode. APIC provides symmetric multi-processing (SMP) for systems, allowing support for up to 60 processors.

1st/2nd/3rd Boot Device (Hard Drive/CD/DVD/1st FLOPPY DRIVE)

Use this item to determine the device order the computer used to look for an operating system to load at start-up time. The devices showed here will be different depending on the exact devices installed on your motherboard.

► Removable Drives (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

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Removable Drives

Removable Drives		Help Item
1st Drive	1st FLOPPY DRIVE	Specifies the boot sequence from the available devices.

↑↓ ↔ : Move Enter: Select +/-: Value F10: Save ESC: Exit
F1: General Help F9: Load Default settings

Press <Esc> to return to the Advanced Setup page.

Boot Other Device (Yes)

When enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified under the First, Second and Third boot devices.

ECS eJIFFY Function (Disabled)

Use this item to enable or disable the ECS eJIFFY Function. eJIFFY is ECS unique software program for the quick access to the internet without entering O.S. Please refer to Chapter 7 to know more about eJIFFY.

Press <Esc> to return to the main menu setting page.

Using BIOS

Advanced Chipset Setup

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.

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Advanced Chipset Setup

Memory Remap Feature	Enabled	Help Item
HPET	Enabled	<p>ENABLE: Allow remapping of overlapped PCI memory above the total physical memory.</p> <p>DISABLE: Do not allow remapping of memory.</p>

↑↓ <> : Move Enter : Select +/- : Value F10: Save ESC: Exit
F1: General Help F9: Load Default settings

Memory Remap Feature (Enabled)

This item allows users to enable or disable memory hole remapping.

HPET (Enabled)

This item enables or disables HPET (High Precision Event Timer) support.

Press <Esc> to return to the main menu setting page.

Integrated Peripherals

This page sets up some parameters for peripheral devices connected to the system.

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Integrated Peripherals

Onboard SATA Mode	Enhanced	Help Item
SATA Configuration	IDE	
Onboard LAN Function	Enabled	
Onboard LAN Boot ROM	Disabled	
Onboard AUDIO Function	Enabled	
Serial Port1 Address	3F8/IRQ4	
USB Functions	Enabled	
Legacy USB Support	Enabled	
On Chip SATA2 Controller	AHCI+IDE Mode	
		Options
		Disabled
		Compatible
		Enhanced

↑↓ ←→ : Move Enter: Select +/-: Value F10: Save ESC: Exit
F1: General Help F9: Load Default settings

Onboard SATA Mode (Enhanced)

Use this item to select the mode of the Serial ATA.

SATA Configuration (IDE)

Use this item to show the Serial ATA Configuration options.

OnBoard LAN Function (Enabled)

Use this item to enable or disable the onboard LAN function.

OnBoard LAN Boot ROM (Disabled)

Use this item to enable or disable the booting from the onboard LAN or a network add-in card with a remote boot ROM installed.

Onboard AUDIO Function (Enabled)

Use this item to enable or disable the onboard Audio function.

Serial Port1 Address (3F8/IRQ4)

Use this item to enable or disable the onboard COM1 serial port, and to assign a port address.

USB Functions (Enabled)

Use this item to enable or disable the USB function.

Legacy USB Support (Enabled)

Use this item to enable or disable support for legacy USB devices.

On Chip SATA2 Controller (AHCI+IDE Mode)

This item allows you to enable or disable the onchip Serial ATA controller.

Press <Esc> to return to the main menu setting page.

Power Management Setup

This page sets up some parameters for system power management operation.

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Power Management Setup

ACPI Suspend Type	S3 (STR)	Help Item
Soft-off by PWR-BTTN	Instant Off	Select the ACPI state used for System Suspend.
PWRON After PWR-Fail	Power Off	
Resume by Ring	Disabled	
Resume By PCI/PCI-E/Lan PME	Disabled	
Resume by USB (S3)	Disabled	
Resume By PS2 KB (S3)	Disabled	
Resume By PS2 MS (S3)	Disabled	
Resume on RTC Alarm	Disabled	

↑↓ ↔ : Move Enter : Select +/-: Value F10: Save ESC: Exit
F1: General Help F9: Load Default settings

ACPI Suspend Type (S3)

Use this item to define how your system suspends. In the default, S3, the suspend mode is a suspend to RAM, i.e, the system shuts down with the exception of a refresh current to the system memory.

Soft-off by PWR-BTTN (Instant off)

Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake Up Alarms. This item lets you install a software power down that is controlled by the power button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec, then you have to hold the power button down for four seconds to cause a software power down.

PWRON After PWR-Fail (Power Off)

This item enables your computer to power off, automatically restart or return to its previous status after abnormal power lost.

Resume By Ring (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the Modem. You must use an ATX power supply in order to use this feature.

Resume By PCI/PCI-E/Lan PME (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the PCI Modem or PCI LAN card. You must use an ATX power supply in order to use this feature. Use this item to do wake-up action if inserting the PCI card.

Resume By PS2 KB (S3) (Disabled)

This item enables or disables you to allow keyboard activity to awaken the system from S3 mode.

Using BIOS

Resume By PS2 MS (S3) (Disabled)

This item enables or disables you to allow mouse activity to awaken the system from S3 mode.

Resume By USB (S3) (Disabled)

This item allows you to enable/disable the USB device wakeup function from S3 mode.

Resume on RTC Alarm (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system's RTC (realtime clock). Use the items below this one to set the date and time of the wake-up alarm. You must use an ATX power supply in order to use this feature.

Press <Esc> to return to the main menu setting page.

PCI / PnP Setup

This page sets up some parameters for devices installed on the PCI bus and those utilizing the system plug and play capability.

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PCI / PnP Setup

Init Display First	PCI	Help Item
Allocate IRQ to PCI VGA	Yes	Select which graphics controller to use as the primary boot device.

↑↓ ↔ : Move Enter : Select +/- : Value F10: Save ESC: Exit
F1: General Help F9: Load Default settings

Init Display First (PCI)

Use this item to select which graphics controller to use as the primary boot devices.

Allocate IRQ to PCI VGA (Yes)

Press <Esc> to return to the main menu setting page.

PC Health Status

On motherboards support hardware monitoring, this item lets you monitor the parameters for critical voltages, temperatures and fan speeds.

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PC Health Status

-- System Hardware Monitor --		Help Item
▶ Smart Fan Function	Press Enter	
System Temperature	: 32°C/89°F	
CPU FAN Speed	: 2576 RPM	
SYS FAN Speed	: N/A	
CPU Core	: 1.040 V	
VDIMM	: 1.792 V	
-- PECl Mode --		
Offset to TCC Activation Temp.	: -70	

↑↓ ↔ : Move Enter: Select +/-: Value F10: Save ESC: Exit
F1: General Help F9: Load Default settings

▶ Smart Fan Function

Scroll to this item and press <Enter> to view the following screen:

CMOS Setup Utility - Copyright (C) 1985-2008, American Megatrends, Inc.
Smart Fan Function

		Help Item
CPU SMART FAN Control	Disabled	
SYS SMART FAN Control	Disabled	
		Options
		Disabled
		Enabled

↑↓ ↔ : Move Enter: Select +/-: Value F10: Save ESC: Exit
F1: General Help F9: Load Default settings

CPU/SYS SMART FAN Control (Disabled)

These items enable you to define the CPU/System temperature by smartly adjusting the CPU/System fan. When it is set at certain temperature, the CPU/SYS Fan PWM value will change accordingly.

Press <Esc> to return to the PC Health Status page.

Using BIOS



ECS supports the latest PECI host technology. While using Wolfdale or Yorkfield CPU, the original images of the BIOS item "PC Health Status" and "Smart FAN Function" will be replaced by PECI mode and negative number. (The max data from PECI is zero.)

CMOS Setup Utility - Copyright (C) 1985-2008, American Megatrends, Inc.
PC Health Status

Hardware Health Event Monitoring		Help Item
▶Smart Fan Function	Press Enter	
System Temperature	33°C/91°F	
CPU Fan Speed:	2537 RPM	
SYS FAN Speed:	0 RPM	
CPU Vcore:	1.280V	
VDIMM:	1.840V	
-- PECI Mode --		
Offset to TCC Activation Temp.:	-20	

↑↓←→: Move Enter: Select +/-: Value F10: Save ESC: Exit
F1: General Help F9: Optimized Defaults

CMOS Setup Utility - Copyright (C) 1985-2008, American Megatrends, Inc.
Smart Fan Function

SMART Fan Control		Help Item
SMART Fan Control	Enabled	
SMART Fan start PWM value	28	
SMART Fan start Offset (-)	30	
CPU DeltaT	+3	
Fan1 Slope PWM value/1 Unit	5	
Fan1 Full Speed Offset (-)	10	
SMART Fan2 Control	Disabled	
		Options
		Disabled
		Enabled

↑↓←→: Move Enter: Select +/-: Value F10: Save ESC: Exit
F1: General Help F9: Optimized Defaults

Press <Esc> to return to the PC Health Status page.

System Component Characteristics

These items display the monitoring of the overall inboard hardware health events, such as System & CPU temperature, CPU & DIMM voltage, CPU & system fan speed,...etc.

- System Temperature
- CPU FAN Speed
- SYS FAN Speed
- CPU Core
- VDIMM
- Offset to TCC Activation Temp.

Press <Esc> to return to the main menu setting page.

Using BIOS

M.I.B. (MB Intelligent BIOS)

This page enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.

CMOS Setup Utility - Copyright (C) 1985-2008, American Megatrends, Inc.
M.I.B. (MB Intelligent BIOS)

Manufacturer: Intel		Help item
Ratio Actual Value: 8		
CPU Frequency Setting :	333MHz	
Over-clocking Function. :	Disabled	Options
Auto Detect DIMM/PCI Clk	Enabled	Disabled
Spread Spectrum	Enabled	Enabled
Memory Current Type: CL5/Ttrcd5/Trp5/Tras16		
DRAM Frequency	Auto	
Configure DRAM Timing by SPD	Enabled	
CPU VOLTAGE	Normal	
Memory Voltage	1.90V	

↑↓ <> : Move Enter : Select +/-: Value F10: Save ESC: Exit
F1: General Help F9: Load Default settings

Manufacturer: Intel

This item displays the information of current manufacturer of the CPU installed in your computer.

Ratio Actual Value: 8

This item shows the actual ratio of the CPU installed in your system.

CPU Frequency Setting (333MHz)

This item is used to set the CPU Frequency.

Over-clocking Function. (Disabled)

This item decides the CPU over-clocking function/frequency installed in your system. If the over-clocking fails, please turn off the system power. And then, hold the PageUp key (similar to the Clear CMOS function) and turn on the power, the BIOS will recover the safe default.

Auto Detect DIMM/PCI Clk (Enabled)

When this item is enabled, BIOS will disable the clock signal of free DIMM/PCI slots.

Spread Spectrum (Enabled)

If you enable spread spectrum, it can significantly reduce the EMI (Electro-Magnetic Interference) generated by the system.

Memory Current Type

This item is used to show the current memory type.

DRAM Frequency (Auto)

This item enables users to adjust the DRAM frequency. The default setting is auto and we recommend users leave the setting unchanged. Modify it at will may cause the system to be unstable.

Using BIOS

Configure DRAM Timing by SPD (Enabled)

This item allows users to enable or disable the DRAM timing defined by the Serial Presence Detect electrical. User please note that if setting this item to auto, the following two items are not available.

CPU VOLTAGE (Normal)

This item allows users to adjust the CPU voltage.

Memory Voltage (1.90V)

This item allows users to adjust the DDR memory voltage.

Press <Esc> to return to the main menu setting page.

Load Default Settings

This option opens a dialog box to ask if you are sure to install optimized defaults or not. You select [OK], and then <Enter>, the Setup Utility loads all default values; or select [Cancel], and then <Enter>, the Setup Utility does not load default values.

Supervisor Password

This page helps you install or change a password.

CMOS Setup Utility - Copyright (C) 1985-2008, American Megatrends, Inc.
Supervisor Password

Supervisor Password :Not Installed		Help item
Change Supervisor Password	Press Enter	Install or Change the password.

↑↓ <> :Move Enter :Select +/-: Value F10: Save ESC: Exit
F1: General Help F9: Load Default settings

Supervisor Password (Not Installed)

This item indicates whether a supervisor password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

Change Supervisor Password (Press Enter)

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

Press <Esc> to return to the main menu setting page.

User Password

This page helps you install or change a password.

CMOS Setup Utility - Copyright (C) 1985-2008, American Megatrends, Inc.
User Password

User Password : Not Installed	Help item
Change User Password Press Enter	Install or Change the password.

↑↓ <> : Move Enter : Select +/-: Value F10: Save ESC: Exit
F1: General Help F9: Load Default settings

User Password (Not Installed)

This item indicates whether a user password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

Change User Password (Press Enter)

You can select this option and press <Enter> to access the sub menu. You can use the sub menu to change the user password. This item will show if Supervisor Password is set.

Press <Esc> to return to the main menu setting page.

Save & Exit Setup

Highlight this item and press <Enter> to save the changes that you have made in the Setup Utility and exit the Setup Utility. When the Save and Exit dialog box appears, select [OK] to save and exit, or select [Cancel] to return to the main menu.

Exit Without Saving

Highlight this item and press <Enter> to discard any changes that you have made in the Setup Utility and exit the Setup Utility. When the Exit Without Saving dialog box appears, select [OK] to discard changes and exit, or select [Cancel] to return to the main menu.



If you have made settings that you do not want to save, use the "Exit Without Saving" item and select [OK] to discard any changes you have made.

Updating the BIOS

You can download and install updated BIOS for this motherboard from the manufacturer's Web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

- 1 If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.
- 2 If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)
- 3 Create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
- 4 Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the bootable device.
- 5 Turn off your computer and insert the bootable device in your computer. (You might need to run the Setup Utility and change the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the bootable device first.)
- 6 At the C:\ or A:\ prompt, type the Flash Utility program name and the file name of the new bios and then press <Enter>. Example: AMINF340.EXE 040706.ROM
- 7 When the installation is complete, remove the bootable device from the computer and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten. The computer will restart automatically.

This concludes Chapter 3. Refer to the next chapter for information on the software supplied with the motherboard.

Chapter 4

Using the Motherboard Software

About the Software DVD-ROM/CD-ROM

The support software DVD-ROM/CD-ROM that is included in the motherboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your motherboard version. More information on some programs is available in a README file, located in the same directory as the software. Before installing any software, always inspect the folder for files named README.TXT or something similar. These files may contain important information that is not included in this manual.



1. Never try to install all software from folder that is not specified for use with your motherboard.
2. The notice of Intel HD audio installation (optional): The Intel High Definition audio functionality unexpectedly quits working in Windows Server 2003 Service Pack 1 or Windows XP Professional x64 Edition. Users need to download and install the update packages from the Microsoft Download Center “before” installing HD audio driver bundled in the Driver disk. Please log on to <http://support.microsoft.com/default.aspx?scid=kb:en-us;901105#apliesto> for more information.

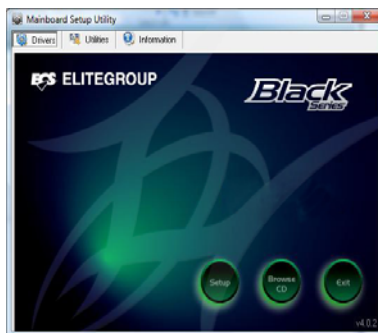
Auto-installing under Windows XP/Vista/7

The Auto-install DVD-ROM/CD-ROM makes it easy for you to install the drivers and software for your motherboard.



If the Auto-install DVD-ROM/CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Refer to the Utility Folder Installation Notes later in this chapter.

The support software DVD-ROM/CD-ROM disc loads automatically under Windows XP/Vista/7. When you insert the DVD-ROM/CD-ROM disc in the DVD-ROM/CD-ROM drive, the autorun feature will automatically bring up the install screen. The screen has three buttons on it, Setup, Browse CD and Exit.



If the opening screen does not appear; double-click the file “setup.exe” in the root directory.

Using the Motherboard Software

Drivers Tab

Setup	Click the Setup button to run the software installation program. Select from the menu which software you want to install.
Browse CD	<p>The Browse CD button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support disk.</p> <p>Before installing the software from Windows Explorer, look for a file named README.TXT or something similar. This file may contain important information to help you install the software correctly.</p> <p>Some software is installed in separate folders for different operating systems, such as Windows XP/Vista/7. Always go to the correct folder for the kind of OS you are using.</p> <p>In install the software, execute a file named SETUP.EXE by double-clicking the file and then following the instructions on the screen.</p>
Exit	The EXIT button closes the Auto Setup window.

Utilities Tab

Lists the software utilities that are available on the disk.

Information Tab

Displays the path for all software and drivers available on the disk.

Running Setup

Follow these instructions to install device drivers and software for the motherboard:

1. Click **Setup**. The installation program begins:

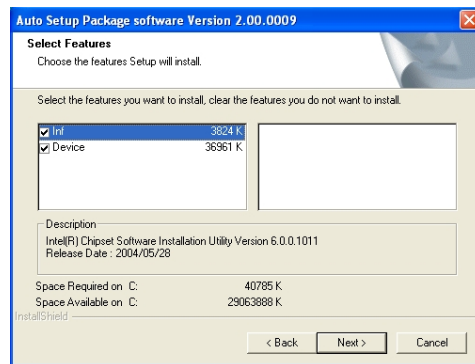


The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

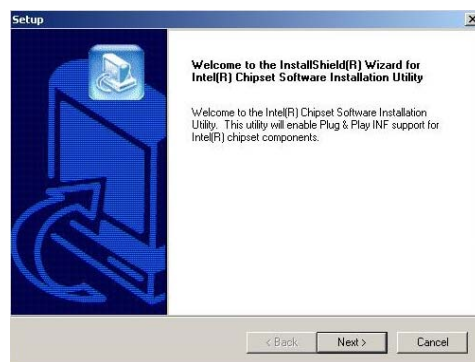
The motherboard identification is located in the upper left-hand corner.

Using the Motherboard Software

2. Click **Next**. The following screen appears:



3. Check the box next to the items you want to install. The default options are recommended.
4. Click **Next** run the Installation Wizard. An item installation screen appears:



5. Follow the instructions on the screen to install the items.

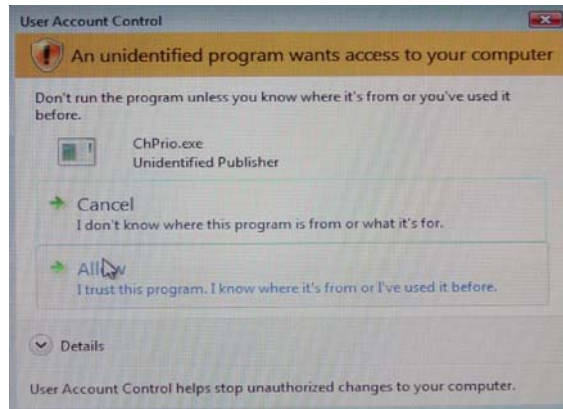


Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

Using the Motherboard Software



Windows Vista/7 will appear below UAC (User Account Control) message after the system restart. You must select “Allow” to install the next driver. Continue this process to complete the drivers installation.



Manual Installation

Insert the disk in the DVD-ROM/CD-ROM drive and locate the PATH.DOC file in the root directory. This file contains the information needed to locate the drivers for your motherboard.

Look for the chipset and motherboard model; then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.



These software(s) are subject to change at anytime without prior notice. Please refer to the support disk for available software.

This concludes chapter 4.

Using the Motherboard Software

Chapter 5

ATI CrossFireX™ Technology Support

This motherboard supports the ATI CrossFireX™ Technology that allows you to install multi-graphics processing units (GPU) graphics cards. Follow the installation procedures in this section.

Requirements

- 1 You should have a CrossFireX™ Ready motherboard, a CrossFireX™ Edition graphics card and a CrossFireX™ ready graphics card.
- 2 Visit the ECS website (www.ecs.com.tw) for a list of qualified CrossFireX™ ready graphics card for this motherboard.
- 3 Make sure that your graphics card driver supports the ATI CrossFireX™ technology. Download the latest driver from the ATI website (www.ati.com).
- 4 Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system.

Installing a single graphics card

1. Install a PCI Express x16 graphics card on the **PCIE16X_1** slot.



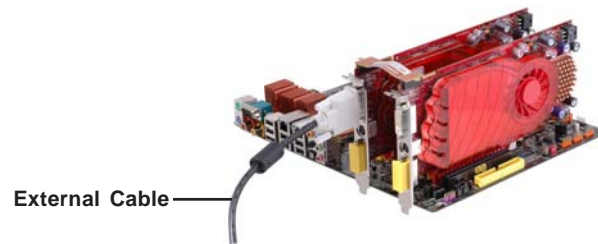
2. Connect one end of the external cable to the graphics card.
3. Connect the loose end to the corresponding port on your monitor.
4. Connect an auxiliary power source from the power supply to the graphics card.

Installing CrossFireX™ graphics cards

1. Insert the CrossFireX™ graphics cards into the **PCIE16X_1** and **PCIE16X_2** slots. Make sure that the card is properly seated on the slot.



2. Connect an external cable to the CrossFireX™ ready graphics card installed on the **PCIE16X_2** slot.



3. Connect the two CrossFireX™ Edition graphics cards installed on **PCIE16X_1** and **PCIE16X_2** slots with the CrossFire Bridge.



4. Connect the external cable to the corresponding port on your monitor.
5. Connect an auxiliary power source from the power supply to the graphics cards.

ATI CrossFireX™ Technology Support

Table A: Supported PCI Express VGA Card List for CrossFireX™ Function

Vender	PCI-E Card	
ATI	MSI RX1300 TD256E (256M)	Radeon X1300Pro
	ATI X1600XT (256M)	Radeon X1600XT
	PowerColor X1900XTX (512M)	Radeon X1900XTX
	ASUS EAX1950PRO/HTDP/256M/A (256M)	Radeon X1950Pro
	MSI RX2600XT (256MB)	Radeon HD2600XT
	MSI RX3850-T2D256E-OC (256MB)	Radeon HD3850
	POWER Color AX3870 512MD-PH	Radeon HD3870

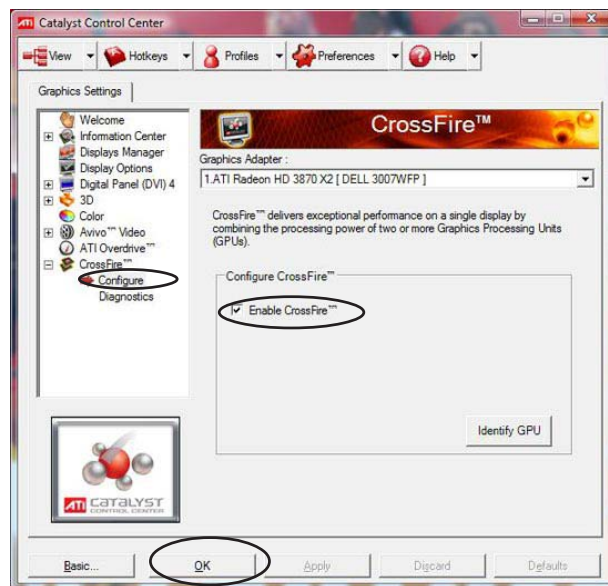
The Catalyst™ Control Center Dialog Box

View

The Catalyst™ Control Center provides two views; one is Standard view for beginners, the other is Advance view for advanced users to access and configure the complete features of the software.

To enable CrossFireX™:

- Set the view to **Advance**.
- Click the CrossFireX™ item in Graphics Settings.
- In the CrossFireX™ Setting dialog, tick the box opposite Enable CrossFireX™.
- Click **OK** to effect the setting.



Set to Advanced View to enable the CrossFireX™ function.

Chapter 6

Intel®Matrix Storage Manager RAID Configurations

The Intel®Matrix Storage Manager allows you to configure RAID 0, and 1 sets on the external Serial ATA hard disk drives.

Before creating a RAID set

Prepare the following items:

1. One SATA HDD.
2. A write-enabled floppy disk.
3. Microsoft® Windows® OS installation disk (Windows XP/Vista).
4. Motherboard support CD with Intel®Matrix Storage Manager driver.

Complete the following steps before you create a RAID set:

1. Install the external Serial ATA hard disk drive (HDD) on your system.
2. Set the *Onboard SATA Mode* item in the BIOS to *.RAID..*

See section “Integrated Peripherals” for details.



3. Enter the Intel®Matrix Storage Manager option to set up your RAID configuration.
4. Create an Intel®Matrix Storage Manager driver disk for Windows® OS installation. See section “Creating a RAID driver disk” for details.
5. Install the Intel®Matrix Storage Manager driver after the Windows® OS had been installed.

Intel®Matrix Storage Manager RAID Configurations

Entering Intel®Matrix Storage Manager RAID BIOS utility

1. During POST, press <Ctrl-I> to enter the Intel®Matrix Storage Manager RAID BIOS menu.

```

Intel(R) Matrix Storage Manager option ROM v7.6.0.1011 ICH9R wRAIDS
Copyright(C) 2003-07 Intel Corporation. All Rights Reserved.

RAID Volumes:
None defined.

Physical Disks:
Port Drive Model      Serial #             Size  Type/Status(Uol ID)
4  Maxtor 7H500F0     H81D3FLH            465.86B Non-RAID Disk
5  ST3500320AS        SQM9KLEY            465.86B Non-RAID Disk

Press [Ctrl-I] to enter Configuration Utility...

```

2. The main Intel®Matrix Storage Manager RAID BIOS menu appears.
3. Use the arrow keys to move the color bar and navigate through the items.

```

Intel(R) Matrix Storage Manager option ROM v7.6.0.1011 ICH9R wRAIDS
Copyright(C) 2003-07 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(Uol ID)
4  Maxtor 7H500F0     H81D3FLH            465.86B Non-RAID Disk
5  ST3500320AS        SQM9KLEY            465.86B Non-RAID Disk

[F1]-Select      [ESC]-Exit      [ENTER]-Select Menu

```

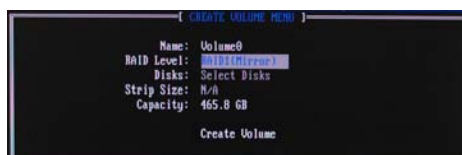
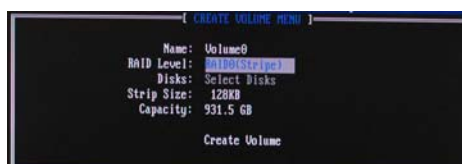
Intel®Matrix Storage Manager RAID Configurations

Creating a RAID set

1. In the main Intel®Matrix Storage Manager RAID BIOS menu, highlight *Create RAID Volume* using the up/down arrow key then press <Enter>.



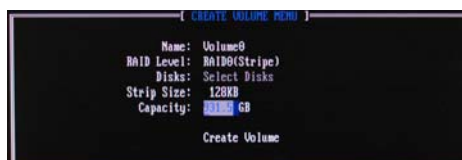
2. When the *RAID Level* item is highlighted, use the up/down arrow key to select the RAID set that you want to create.



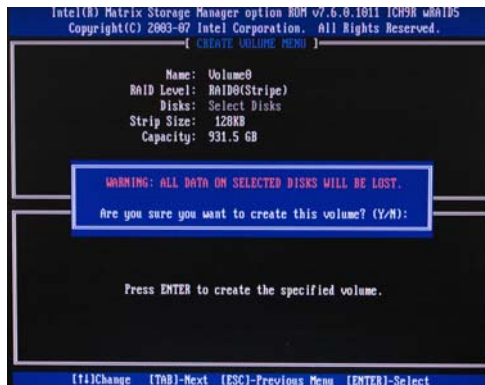
When more than two HDDs are installed in your computer, the *Disks* item will be selectable. Then users can select the HDD that you want to belong to the RAID set. Please be noticed that selecting a wrong disk will result in losing the original data of the HDD.



3. Key in the RAID volume capacity. Use the up/down arrow to choose the *Capacity*. The default value indicates the maximum capacity using the selected disks. Entering a lower capacity allows you to create a second volume on these disks.



- When done, press <Enter> to confirm the creation of the RAID set. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N>.



Pressing <Y> deletes all the data in the HDDs.

- The following screen appears, displaying the relevant information about the RAID set you created.



Users please be noted that RAID 0 (Stripe) is set to accelerate the data access, and RAID 1 (Mirror) is set to provide the data backup. If you want to set RAID 0, you need to set the *2nd Boot Device* item in the BIOS to *Intel Volume0*. See section “Advanced Setup” for details.



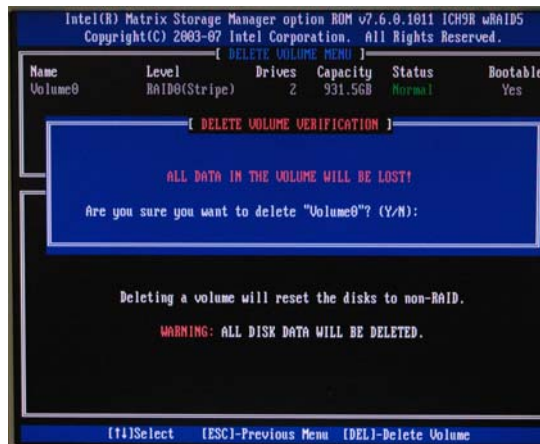
Intel® Matrix Storage Manager RAID Configurations

Deleting a RAID set

1. In the main Intel®Matrix Storage Manager RAID BIOS menu, highlight *Delete RAID Volume* using the up/down arrow key then press <Enter>.



2. Use the space bar to select the RAID set you want to delete.
Press the key to delete the set.
3. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N>.



Pressing <Y> deletes all the data in the HDDs.

Resetting disks to Non-RAID



An HDD that has been previously configured as part of another RAID set in another platform is called a broken RAID HDD. When you install a broken RAID HDD, you cannot select this disk when configuring a RAID set through the Intel®Matrix Storage Manager option. If you still want to use this broken RAID HDD as part of the RAID set configured through the Intel®Matrix Storage Manager, you may do so by resetting the disk to Non-RAID. You will, however, lose all data and previous RAID configurations.

To reset disks to Non-RAID:

1. In the main Intel®Matrix Storage Manager RAID BIOS menu, highlight *Reset Disks to Non-RAID* using the up/down arrow key then press <Enter>.



2. Use the space bar to select the HDD to reset to Non-RAID.
3. A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N>.

Pressing <Y> deletes all the data in the HDDs.

Exiting Setup

When you have finished, highlight *Exit* using the up/down arrow key then press <Enter> to exit the Intel®Matrix Storage Manager RAID BIOS utility.

A dialogue box appears to confirm the action. Press <Y> to confirm; otherwise, press <N> to return to the Intel®Matrix Storage Manager RAID BIOS menu.

Chapter 7

Setting Up eJIFFY

Introduction

eJIFFY is a fast boot program under Linux. Instead of waiting Windows O.S to start execution, eJIFFY is ready to provide users the instant enjoyment on web browsing, photo review and online chat just within several seconds after boot up.



Note: eJIFFY is ECS *optional* feature utility corresponding to the DVD activation and BIOS setup. Please check the hard copy user's guide or product color-box to see if the model has embodied eJIFFY feature. (eJIFFY icon on color-box



Version: 5.0

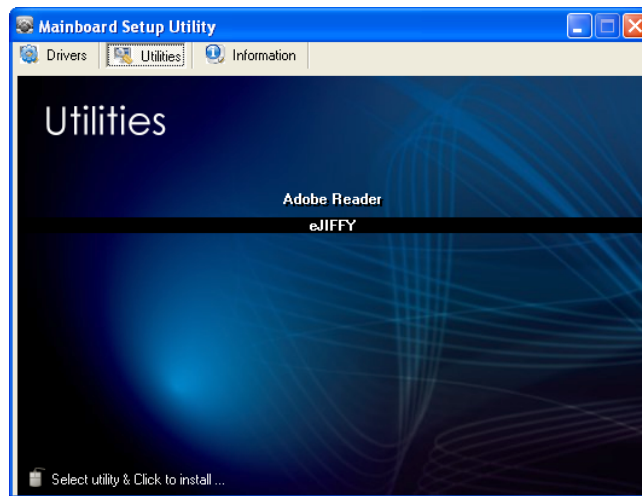
Setting Up eJIFFY

Installation and BIOS Setup

DVD Activation

Finish the DVD utility setup, and then set the BIOS to complete eJIFFY activation.

1. Insert ECS software utility DVD and enter below “Utilities” screen. Click eJIFFY feature item to install.

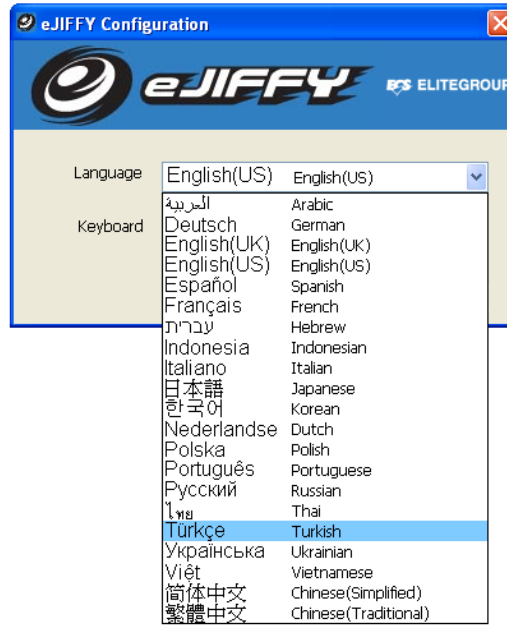


2. Follow the onscreen instructions to finish eJIFFY setup.



Setting Up eJIFFY

3. After setting up eJIFFY under Windows, you can switch eJIFFY display/keyboard language from English to your local language. The changes will be applied after rebooting.



Note: The keyboard language selection list offers several more regional keyboard setups to switch with the default English typing. Please refer to the usage FAQ for more tips.

Setting Up eJIFFY

4. Restart your computer after eJIFFY installation. Press or click the BIOS Setup button on the post screen to enter the BIOS setup page after boot up.



5. And then enter the *Advanced Setup* page to enable the item *ECS eJIFFY Function*. Press F10 to save the configuration and exit. Restart your computer.



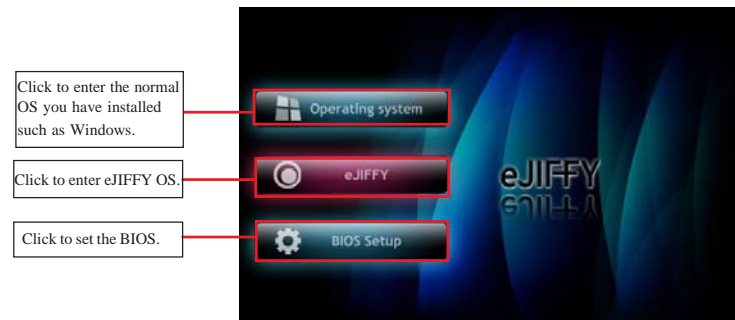
Note: 1. eJIFFY is available in SATA/IDE/AHCI mode. It does not support RAID configuration and the onboard 34-pin floppy drives.

2. Please refer to ECS website for new eJIFFY application updates.

Setting Up eJIFFY

Entering eJIFFY

The post screen appears within several seconds after boot up and it has three buttons on it, Operating system, eJIFFY and BIOS Setup.



If you click eJIFFY, the following screen will appear. And if you make no choice it will enter the normal OS automatically after ten seconds.



Setting Up eJIFFY

Feature Icons

The following illustration shows the main feature icons that eJIFFY provides on the menu.



eWeb: Firefox for web browsing/webmail and watching flash video.



ePix: Photo viewing.



ePal: On-line chat tool to use the most popular IMs in the world. (MSN, ICQ, AIM, etc.)



Shows ePal on-line connection status.



Shut Down/Restart: Ends your session and turns off the computer./Ends your session and restart the computer..



Click once to connect the storage disk to your computer. Click for the second time to remove your storage disk safely. (please refer to the FAQ for more usage information.)



Shows the network connection status.



Language Control Panel



Switch Keyboard Languages


Setting Up eJIFFY

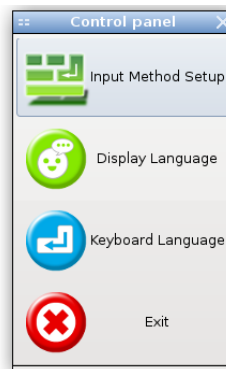
Usage FAQ



Language Control Panel: Besides setting English as the default interface, eJIFFY offers multi-language displays and keyboard settings for language-switch. Open the language control panel to select a preferable language setting.

Keyboard Language Setup

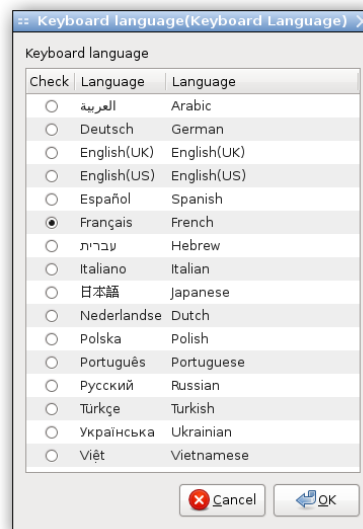
Step1. Click  to open the language control panel.




Step 2: Click “Keyboard Language” icon  to open the keyboard selection

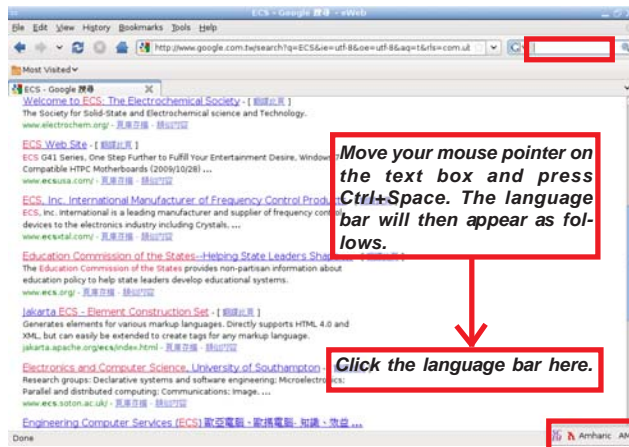
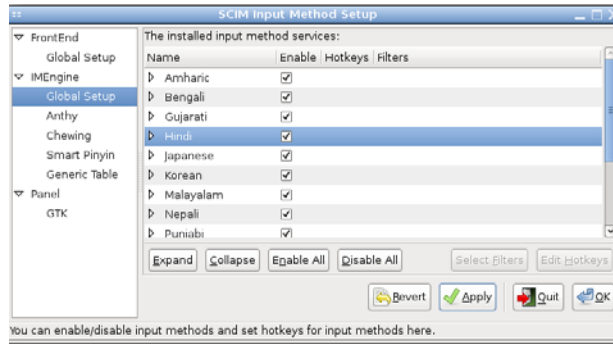
list, which offers several regional keyboard settings besides default English keyboard.

Step 3: Click the selected keyboard language (e.g. French) and press “OK”.

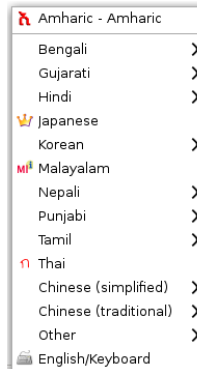


Setting Up eJIFFY

Click  to enable all possible language inputs you want to apply, and click “Apply”:



Select your desired language

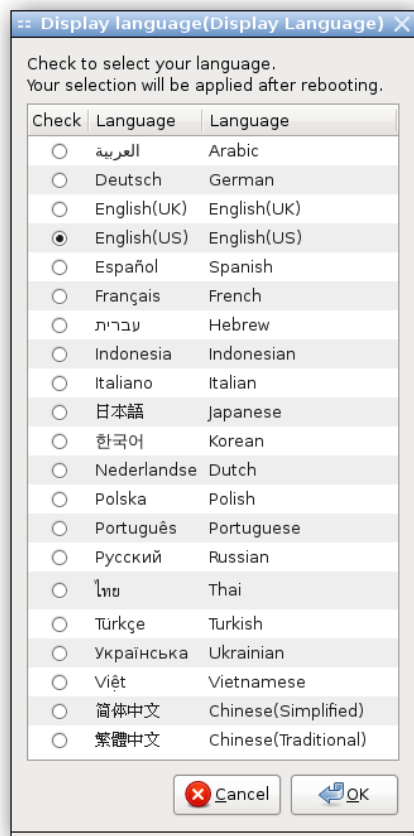


Setting Up eJIFFY

How to change display language?

Open the Language Control Panel and click  to show the display language

list. Check your desired display language. Your selected display language will be applied after rebooting.



Note: Details about eJIFFY please refer to eJIFFY in disk.

Setting Up eJIFFY

Memo

Chapter 8

Trouble Shooting

Start up problems during assembly

After assembling the PC for the first time you may experience some start up problems. Before calling for technical support or returning for warranty, this chapter may help to address some of the common questions using some basic troubleshooting tips.

a) System does not power up and the fans are not running.

1. Disassemble the PC to remove the VGA adaptor card, DDR memory, LAN, USB and other peripherals including keyboard and mouse. Leave only the motherboard, CPU with CPU cooler and power supply connected. Turn on again to see if the CPU and power supply fans are running.
2. Make sure to remove any unused screws or other metal objects such as screwdrivers from the inside PC case. This is to prevent damage from short circuit.
3. Check the CPU FAN connector is connected to the motherboard.
4. For Intel platforms check the pins on the CPU socket for damage or bent. A bent pin may cause failure to boot and sometimes permanent damage from short circuit.
5. Check the 12V power connector is connected to the motherboard.
6. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.

b) Power is on, fans are running but there is no display

1. Make sure the monitor is turned on and the monitor cable is properly connected to the PC.
2. Check the VGA adapter card (if applicable) is inserted properly.
3. Listen for beep sounds. If you are using internal PC speaker make sure it is connected.
 - a. continuous 3 short beeps : memory not detected
 - b. 1 long beep and 8 short beeps : VGA not detected

c) The PC suddenly shuts down while booting up.

1. The CPU may experience overheating so it will shutdown to protect itself. Ensure the CPU fan is working properly.
2. From the BIOS setting, try to disable the Smartfan function to let the fan run at default speed. Doing a Load Optimised Default will also disable the Smartfan.

Start up problems after prolong use

After a prolong period of use your PC may experience start up problems again. This may be caused by breakdown of devices connected to the motherboard such as HDD, CPU fan, etc. The following tips may help to revive the PC or identify the cause of failure.

1. Clear the CMOS values using the CLR_CMOS jumper. Refer to CLR_CMOS jumper in Chapter 2 for Checking Jumper Settings in this user manual. When completed, follow up with a Load Optimised Default in the BIOS setup.
2. Check the CPU cooler fan for dust. Long term accumulation of dust will reduce its effectiveness to cool the processor. Clean the cooler or replace a new one if necessary.
3. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.
4. Remove the hard drive, optical drive or DDR memory to determine which of these component may be at fault.

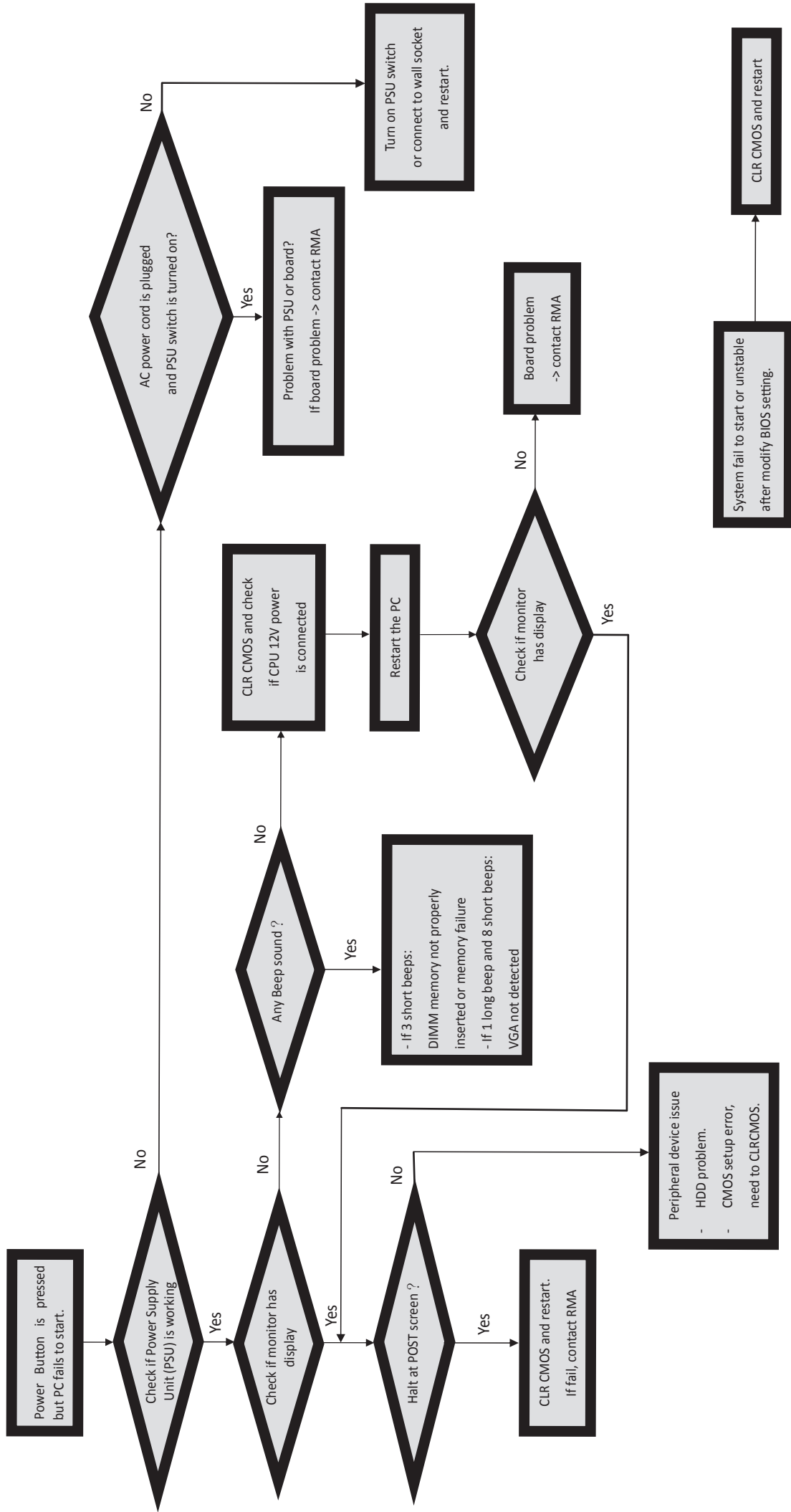
Maintenance and care tips

Your computer, like any electrical appliance, requires proper care and maintenance. Here are some basic PC care tips to help prolong the life of the motherboard and keep it running as best as it can.

1. Keep your computer in a well ventilated area. Leave some space between the PC and the wall for sufficient airflow.
2. Keep your computer in a cool dry place. Avoid dusty areas, direct sunlight and areas of high moisture content.
3. Routinely clean the CPU cooler fan to remove dust and hair.
4. In places of hot and humid weather you should turn on your computer once every other week to circulate the air and prevent damage from humidity.
5. Add more memory to your computer if possible. This not only speeds up the system but also reduces the loading of your hard drive to prolong its life span.
6. If possible, ensure the power cord has an earth ground pin directly from the wall outlet. This will reduce voltage fluctuation that may damage sensitive devices.

Trouble Shooting

Basic Troubleshooting Flowchart



70

Memo

Trouble Shooting