

## Preface

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Version 1.0

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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:

<b>Chapter 1</b> <b>Introducing the Motherboard</b>	Describes features of the motherboard. Go to  page 1
<b>Chapter 2</b> <b>Installing the Motherboard</b>	Describes installation of motherboard components. Go to  page 7
<b>Chapter 3</b> <b>Using BIOS</b>	Provides information on using the BIOS Setup Utility. Go to  page 23
<b>Chapter 4</b> <b>Using the Motherboard Software</b>	Describes the motherboard software. Go to  page 41
<b>Chapter 5</b> <b>Trouble Shooting</b>	Provides basic trouble shooting tips Go to  page 45

## Preface

## **TABLE OF CONTENTS**

Preface	i
<b>Chapter 1</b>	<b>1</b>
<b>Introducing the Motherboard</b>	<b>1</b>
Introduction.....	1
Feature.....	2
Specification.....	4
Motherboard Components.....	5
<b>Chapter 2</b>	<b>7</b>
<b>Installing the Motherboard</b>	<b>7</b>
Safety Precautions.....	7
Choosing a Computer Case.....	7
Installing the Motherboard in a Case.....	7
Checking Jumper Settings.....	8
<i>Setting Jumpers</i> .....	8
<i>Checking Jumper Settings</i> .....	9
<i>Jumper Settings</i> .....	9
Installing Hardware.....	10
<i>Installing the Processor</i> .....	10
<i>Installing Memory Modules</i> .....	12
<i>Expansion Slots</i> .....	13
<i>Connecting Optional Devices</i> .....	15
<i>Installing a Hard Disk Drive/CD-ROM/SATA Hard Drive</i> ..	17
Connecting I/O Devices.....	19
Connecting Case Components.....	20
<i>Front Panel Header</i> .....	22
<b>Chapter 3</b>	<b>23</b>
<b>Using BIOS</b>	<b>23</b>
About the Setup Utility.....	23
<i>The Standard Configuration</i> .....	23
<i>Entering the Setup Utility</i> .....	23
<i>Resetting the Default CMOS Values</i> .....	24

Using BIOS.....	25
<i>Standard CMOS Setup</i> .....	26
<i>Advanced Setup</i> .....	28
<i>Advanced Chipset Setup</i> .....	30
<i>Integrated Peripherals</i> .....	31
<i>Power Management Setup</i> .....	32
<i>PCI/PnP Setup</i> .....	33
<i>PC Health Status</i> .....	33
<i>Frequency/Voltage Control</i> .....	38
<i>Load Default Settings</i> .....	38
<i>Supervisor Password</i> .....	39
<i>User Password</i> .....	39
<i>Save &amp; Exit Setup</i> .....	40
<i>Exit Without Saving</i> .....	40
<i>Updating the BIOS</i> .....	40
<b>Chapter 4</b>	<b>41</b>
<b>Using the Motherboard Software</b>	<b>41</b>
About the Software DVD-ROM/CD-ROM.....	41
Auto-installing under Windows XP/Vista/7.....	41
<i>Running Setup</i> .....	42
Manual Installation.....	44
Utility Software Reference.....	44
<b>Chapter 5</b>	<b>45</b>
<b>Trouble Shooting</b>	<b>45</b>
Start up problems during assembly.....	45
Start up problems after prolong use.....	46
Maintenance and care tips.....	46
Basic Troubleshooting Flowchart.....	47

## Chapter 1

### ***Introducing the Motherboard***

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#### **Introduction**

Thank you for choosing the G41T-M16 motherboard. This motherboard is a high performance, enhanced function motherboard designed to support the LGA775 socket for Core™ 2 Quad/Core™ 2 Duo/Pentium® Dual Core/Celeron® Dual Core/Celeron® 400 series/Pentium® 4/Celeron® D processors for high-end business or personal desktop markets.

The motherboard incorporates the Intel® G41 Northbridge (NB) and Intel® ICH7 Southbridge (SB) chipsets. The Northbridge supports a Front Side Bus (FSB) frequency of 1333/1066/800/533\* MHz using a scalable FSB Vcc\_CPU. The memory controller supports DDR3 memory DIMM frequencies of 1333(OC)/1066/800\*. It supports two DDR3 sockets with up to maximum memory of 8 GB. DDR3 Maximum memory bandwidth of 12.8 GB/s in dual-channel symmetric mode assuming DDR3 1333(OC)/1066/800 MHz. One PCI Express x16 slot, intended for Graphics Interface, is fully compliant to the PCI Express Gen 1.0.

The ICH7 Southbridge supports one PCI slot which is PCI v2.3 compliant. In addition, one PCI Express x1 slot is supported, fully compliant to the PCI Express Base Specification revision 1.0a. It implements an EHCI compliant interface that provides 480 Mb/s bandwidth for eight USB 2.0 ports (four USB 2.0 ports and two USB 2.0 headers support additional four USB 2.0 ports). One onboard IDE connector supports two IDE devices in Ultra ATA100/66 mode. The Southbridge integrates a Serial ATA host controller, supporting two SATA ports with maximum transfer rate up to 3.0 Gb/s each.

The motherboard is equipped with advanced full set of I/O ports in the rear panel, including PS/2 mouse and keyboard connectors, one D-sub (VGA) port, four USB 2.0 ports, one RJ45 LAN port, and audio jacks for microphone, line-in and line-out.



*\*Due to the chipset spec, this motherboard runs at DDR3 1333(OC)/1066/800 MHz memory speed.*



*\*Due to the chipset spec, please refer to the CPU support list on ECS website regarding the FSB 533 CPU <http://www.ecs.com.tw>.*

## Feature

### Processor

The motherboard uses an LGA775 type of Core™ 2 Quad/Core™ 2 Duo/Pentium® Dual Core/Celeron® Dual Core/Celeron® 400 series/Pentium® 4/Celeron® D processors that carries the following features:

- Core™ 2 Quad/Core™ 2 Duo/Pentium® Dual Core/Celeron® Dual Core/Celeron® 400 series/Pentium® 4/Celeron® D processors
- Supports a system bus (FSB) of 1333/1066/800/533\* MHz
- LGA775 socket for latest Intel® 45nm Multi-Core processors



\*Due to the chipset spec, please refer to the CPU support list on ECS website regarding the FSB 533 CPU <http://www.ecs.com.tw>.

### Chipset

The Intel® G41 Northbridge (NB) and Intel® ICH7 Southbridge (SB) chipsets are based on an innovative and scalable architecture with proven reliability and performance.

- G41 (NB)**
  - 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 ICH7 (1 GB/s each direction)
  - Supports 1-Gb, 512 Mb DDR3 technologies for x8 and x16 devices
  - One 16-lane (x16) PCI Express port intended for external device attach, fully compatible to the PCI Express Gen 1.0
  - An integrated graphics device (IGD) delivering cost competitive 3D, 2D and video capabilities
  - Microsoft DX10 and 128MB share memory are supported
- ICH7 (SB)**
  - Enhanced DMA Controller, interrupt controller, and timer functions
  - Compliant with PCI Express Base Specification, Revision 1.0a
  - Compliant with PCI v2.3 specification
  - Integrated SATA 3.0 Gb/s Host Controller
  - Integrated USB 2.0 Host Controller supporting up to eight USB 2.0 ports
  - Integrated IDE controller supports Ultra ATA 100/66

### Memory

- Supports DDR3 1333(OC)/1066/800 DDR3 SDRAM with Dual-channel architecture.
- Accommodates two unbuffered DIMMs.
- 2 x 240-pin DDR3 DIMM sockets support up to 8 GB.

## Introducing the Motherboard

## Onboard LAN (optional)

- |   |
|---|
| <ul style="list-style-type: none"> <li>• Supports PCI Express™ 1.1</li> <li>• Integrated 10/100/1000 transceiver</li> <li>• Wake-On-LAN (WOL) and remote wake-up support</li> </ul> |
| <ul style="list-style-type: none"> <li>• Supports PCI Express™ 1.1</li> <li>• Integrated 10/100 transceiver</li> <li>• Wake-On-LAN (WOL) and remote wake-up support</li> </ul>      |

## Audio

This motherboard may support either of the following Audio chipsets:

- 5.1 Channel High Definition Audio Codec
- Exceeds Microsoft Windows Logo Program (WLP) Requirements
- ADCs support 44.1K/48K/96K/192KHz sample rate
- Power Support: Digital: 3.3V; Analog: 5.0V

## Expansion Options

The motherboard comes with the following expansion options:

- One PCI Express x16 slots for Graphic Interface
- One PCI Express x1 slot
- One 32-bit PCI v2.3 compliant slot
- One IDE connector supports two IDE devices
- Two 7-pin SATA connectors

## Integrated I/O

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

- Two PS/2 ports for mouse and keyboard
- One D-sub (VGA) port
- Four USB 2.0 ports
- One RJ45 LAN port
- Audio jacks for microphone, line-in and line-out

## BIOS Firmware

This 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

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.*

## Introducing the Motherboard

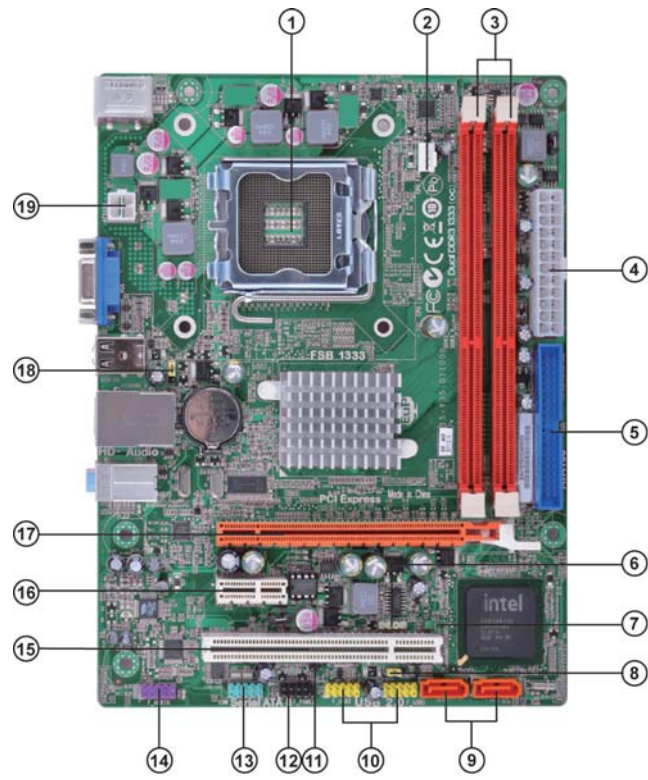
## Specifications

CPU	<ul style="list-style-type: none"> <li>LGA775 socket for Core™ 2 Quad/Core™ 2 Duo/Pentium® Dual Core/Celeron® Dual Core/Celeron® 400 series/Pentium® 4/Celeron® D processors</li> </ul>
Chipset	<ul style="list-style-type: none"> <li>Intel® G41 &amp; ICH7 Express Chipset North Bridge: Intel® G41 South Bridge: ICH7</li> </ul>
Memory	<ul style="list-style-type: none"> <li>Dual-channel DDR3 memory architecture</li> <li>2 x 240-pin DDR3 DIMM sockets support up to 8 GB</li> <li>Supports DDR3 1333(OC)/1066/800 SDRAM</li> </ul>
Expansion Slots	<ul style="list-style-type: none"> <li>1 x PCI Express x16 slot</li> <li>1 x PCI Express x1 slot</li> <li>1 x PCI slot</li> </ul>
Storage	<ul style="list-style-type: none"> <li>Supported by Intel ICH7 Express Chipset</li> <li>2 x Serial ATA 3.0 Gb/s device</li> <li>1 x Ultra DMA100/66 devices</li> </ul>
Audio	<ul style="list-style-type: none"> <li>VIA VT1705 6-Ch High Definition audio CODEC</li> <li>Compliant with HD audio specification</li> </ul>
10/100 LAN	<ul style="list-style-type: none"> <li>Realtek RTL8105E-VL 10/100 LAN (Co-lay RTL8111E-VL GIGA LAN)</li> </ul>
Rear Panel I/O	<ul style="list-style-type: none"> <li>1 x PS/2 keyboard &amp; PS/2 mouse connector</li> <li>1 x D-sub (VGA) port</li> <li>4 x USB 2.0 ports</li> <li>1 x RJ45 LAN connector</li> <li>1 x Audio port (Line in, microphone in, line out)</li> </ul>
Internal I/O Connectors & Headers	<ul style="list-style-type: none"> <li>1 x 24-pin ATX power supply connector</li> <li>1 x 4-pin ATX power supply connector</li> <li>1 x 4-pin CPU_FAN connector</li> <li>2 x USB 2.0 headers support additional four USB 2.0 ports</li> <li>2 x SATA 3.0Gb/s connectors</li> <li>1 x COM header (optional)</li> <li>1 x Case Open header</li> <li>1 x Front panel switch/LED header</li> <li>1 x Front panel audio header</li> <li>1 x Speaker header</li> <li>1 x Clear CMOS header</li> <li>1 x IDE connector</li> </ul>
System BIOS	<ul style="list-style-type: none"> <li>AMI BIOS with 8Mb SPI Flash ROM</li> </ul>
Support AP	<ul style="list-style-type: none"> <li>Support eBLU/eDLU/eSF</li> </ul>
Form Factor	<ul style="list-style-type: none"> <li>Micro ATX Size, 225mm x 170mm</li> </ul>

## Introducing the Motherboard



### Motherboard Components



### Introducing the Motherboard

*Table of Motherboard Components*

LABEL	COMPONENTS
1. CPU Socket	LGA775 socket for Core™ 2 Quad/Core™ 2 Duo/Pentium® Dual Core/Celeron® Dual Core/Celeron® 400 series/Pentium® 4/Celeron® D processors
2. CPU_FAN	CPU cooling fan connector
3. DDR3_1~2	240-pin DDR3 SDRAM slots
4. ATX_POWER	Standard 24-pin ATX power connector
5. IDE	Primary IDE channel
6. SPK	Speaker header
7. CLR_CMOS	Clear CMOS jumper
8. USBPWR_F	Front panel USB power select jumper
9. SATA1~2	Serial ATA connectors
10. F_USB1~2	Front panel USB headers
11. CASE	Chassis intrusion header
12. F_PANEL	Front panel switch/LED header
13. COM	Onboard serial port header (Optional)
14. F_AUDIO	Front panel audio header
15. PCI	32-bit add-on card slot
16. PCIE	PCI Express x 1 slot
17. PCIEX16	PCI Express x16 graphics card slot
18. USBPWR_R	Rear Panel USB/PS2 Power Select jumper
19. ATX12V	4-pin +12V power connector

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

## Introducing the Motherboard

## **Chapter 2**

### ***Installing the Motherboard***

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#### **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 Micro ATX system case. First, 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 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.

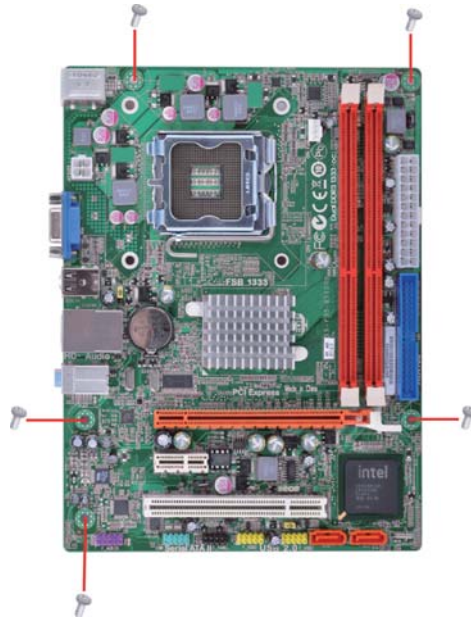
This motherboard carries a Micro ATX form factor of 225 x 170 mm. Choose a case that accommodates this form factor.

#### **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.

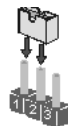


**SHORT**



**OPEN**

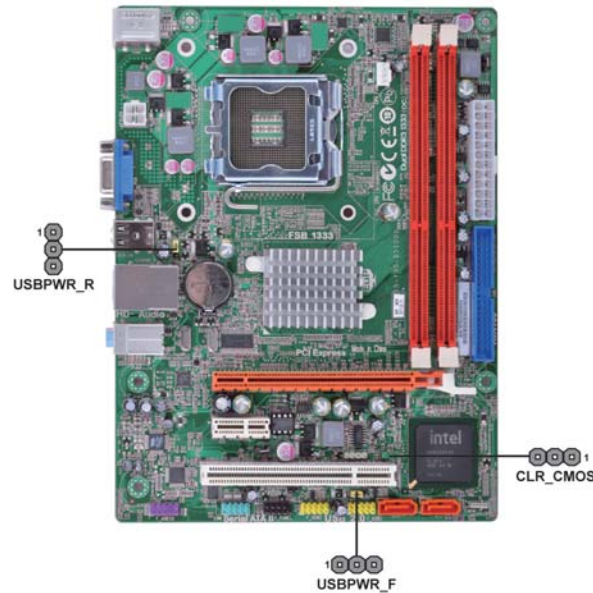
This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT.






## 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.	 CLR_CMOS
USBPWR_R	3-pin	Rear USB/PS2 Power Select Jumper	1-2: VCC 2-3: 5VSB	 USBPWR_R
USBPWR_F	3-pin	Front Panel USB Power Select Jumper	1-2: VCC 2-3: 5VSB	 USBPWR_F



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".

## Installing the Motherboard

2. Make sure the power supply provides enough 5VSB voltage before selecting the 5VSB function.
3. It is required that users place the USBPWR\_F & USBPWR\_R 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 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.

### Fail-Safe Procedures for Over-clocking

When end-users encounter failure after attempting over-clocking, please take the following steps to recover from it.

1. Shut down the computer.
2. Press and hold the “Page Up Key (PgUp)” of the keyboard, and then boot the PC up.
3. Two seconds after the PC boots up, release the “Page Up Key (PgUp)”.
4. The BIOS returns to the default setting by itself.

## 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 two memory modules. It runs at dual-channel DDR3 1333(OC)/1066/800MHz memory speed. The total memory capacity is 8 GB.

#### **DDR3 SDRAM memory module table**

Memory module	Memory Bus
<i>DDR3 800</i>	<i>400 MHz</i>
<i>DDR3 1066</i>	<i>533 MHz</i>
<i>DDR3 1333(OC)</i>	<i>667MHz</i>

You must install at least one module in any of the two slots.

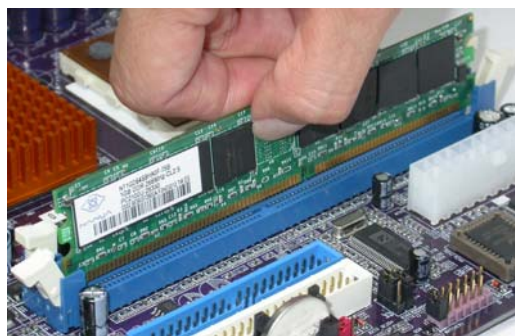


*Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.*

### **Installation Procedure**

Refer to the following to install the memory modules.

- 1 This motherboard supports unbuffered DDR3 SDRAM .
- 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.



*\* For reference only*

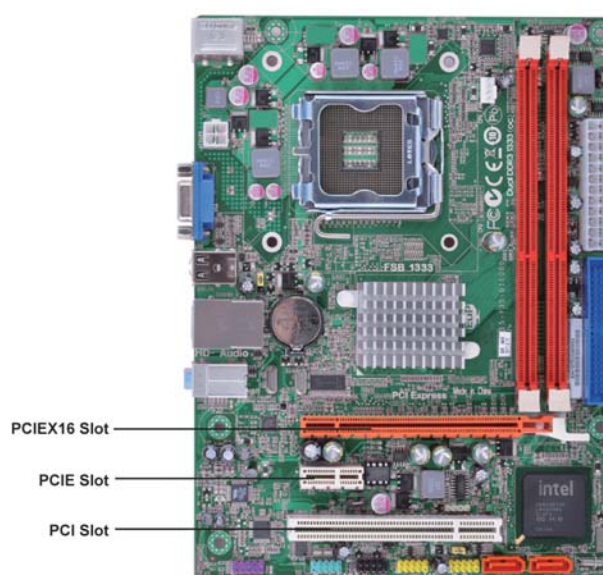
## **Installing the Motherboard**



## 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.



**PCIEX16 Slot** The PCI Express slot is used to install an external PCI Express graphics card that is fully compliant to the PCI Express Gen 1.0.

**PCIe Slot** The PCI Express x1 slot is fully compliant to the PCI Express Base Specification revision 1.0a.

**PCI Slot** This motherboard is equipped with one standard PCI slot. 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 slot on this board is PCI v2.3compliant.

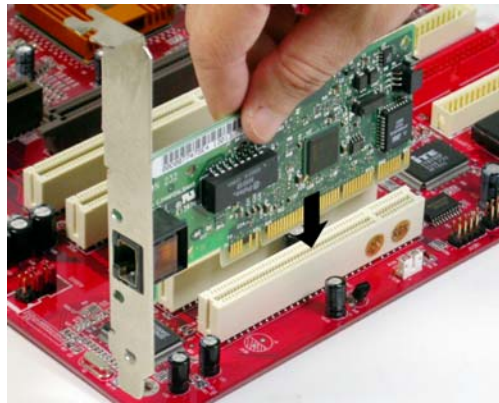


*Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.*

## 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 reference only*



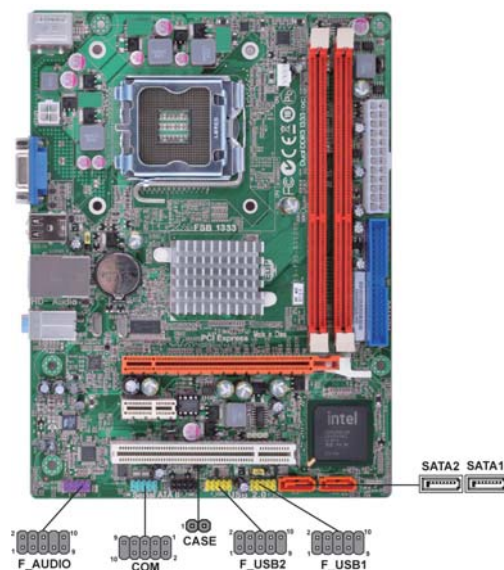
*1. For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.*

*2. The onboard PCI interface does not support 64-bit SCSI cards.*

## **Installing the Motherboard**

### Connecting Optional Devices

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



#### SATA1~2: Serial ATA connectors

These connectors are used to support Serial ATA devices for 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	-	-

#### F\_AUDIO: Front Panel Audio header for Azalia

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

## Installing the Motherboard

### F\_USB1~2: Front Panel USB headers

The motherboard has four USB 2.0 ports installed on the rear edge I/O port array. Additionally, some computer cases have USB 2.0 ports at the front of the case. If you have this kind of case, use auxiliary USB 2.0 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	USB_FP_OC0	Overcurrent signal



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.

### CASE: Chassis intrusion detect header

This detects if the chassis cover has been removed. This function needs a chassis equipped with intrusion detection switch and needs to be enabled in BIOS.

Pin 1-2	Function
Short	Chassis cover is removed
Open	Chassis cover is closed

### COM: Onboard Serial Port header (Optional)

Connect a serial port extension bracket to this header to add a second serial port to your system.

Pin	Signal Name	Pin	Signal Name
1	DCDB	2	SINB
3	SOUTB	4	DTRB
5	GND	6	DSRB
7	RTSB	8	CTSB
9	RI	10	KEY

## Installing the Motherboard

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

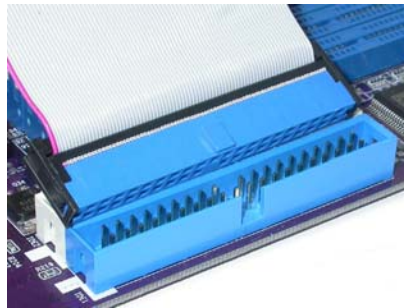
This section describes how to install IDE devices such as a hard disk drive and a CD-ROM drive.

#### **About IDE Devices**

Your motherboard has one IDE channel interface.

#### **IDE: IDE Connector**

This motherboard supports two 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.



*\* For reference only*

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 two SATA connectors supporting a total of two 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 an SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.

## **Installing the Motherboard**



**SATA cable** (optional)



**SATA power cable** (optional)

Refer to the illustration below for proper installation:

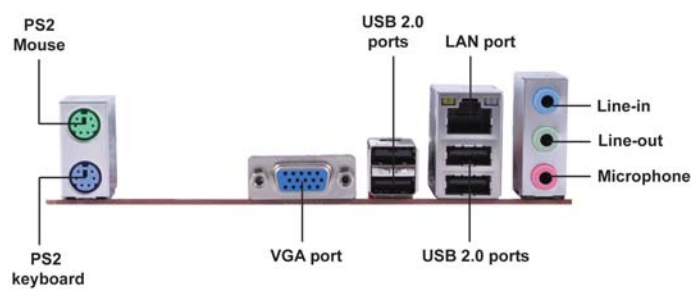
- 1 Attach either cable end to the connector on the motherboard.
- 2 Attach the other cable end to the SATA hard drive.
- 3 Attach the SATA power cable to the SATA hard drive and connect the other end to the power supply.



## Installing the Motherboard

## Connecting I/O Devices

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



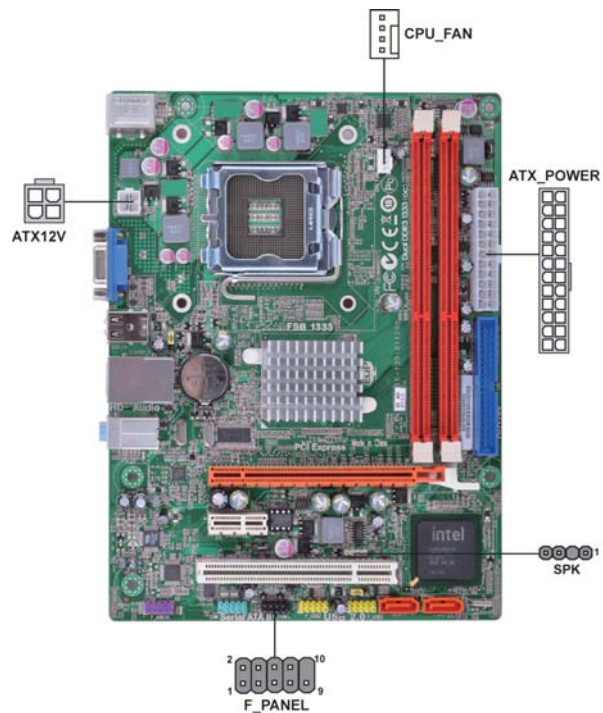
- PS2 Mouse** Use the upper PS/2 port to connect a PS/2 pointing device.
- PS2 Keyboard** Use the lower PS/2 port to connect a PS/2 keyboard.
- VGA Port** Connect your monitor to the VGA port.
- LAN Port** Connect an RJ-45 jack to the LAN port to connect your computer to the Network.
- USB 2.0 Ports** Use the USB 2.0 ports to connect USB 2.0 devices.
- Audio Ports** Use the three audio ports to connect audio devices. The first jack is for stereo line-in signal. The second jack is for stereo line-out signal. The third jack is for microphone.

## Installing the Motherboard

## Connecting Case Components

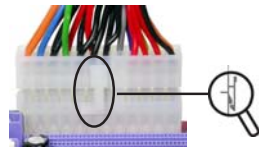
After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

- 1 Connect the CPU cooling fan cable to **CPU\_FAN**.
- 2 Connect the standard power supply connector to **ATX\_POWER**.
- 3 Connect the case switches and indicator LEDs to the **F\_PANEL**.
- 4 Connect the case speaker cable to **SPK**.
- 5 Connect the auxiliary case power supply connector to **ATX12V**.



### Connecting 24-pin power cable

The ATX\_POWER 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.

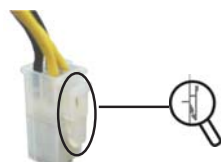
## Installing the Motherboard





### Connecting 4-pin power cable

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



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

4-pin power cable

### CPU\_FAN: CPU Cooling FAN Power Connector

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



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

### 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

### SPK: Internal speaker

Pin	Signal Name
1	VCC
2	Key
3	NC
4	Signal

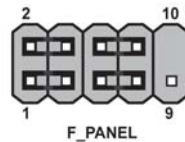
## Installing the Motherboard

### ATX12V: ATX 12V Power Connector

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

### 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*

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#### 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*

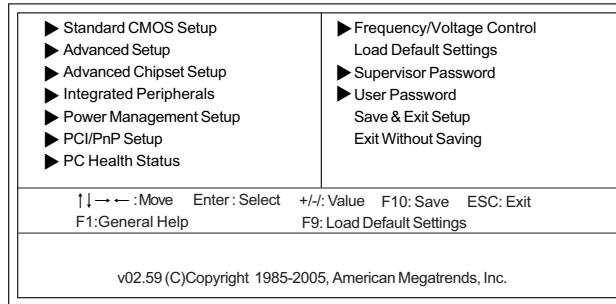
When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

**Press DEL to enter SETUP**

**Using BIOS**

Press the delete key to access the BIOS Setup Utility.

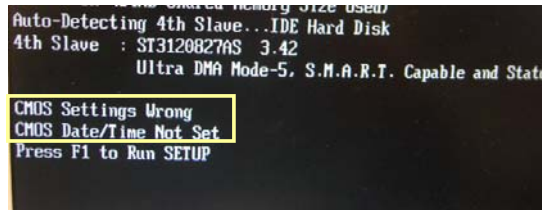
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.



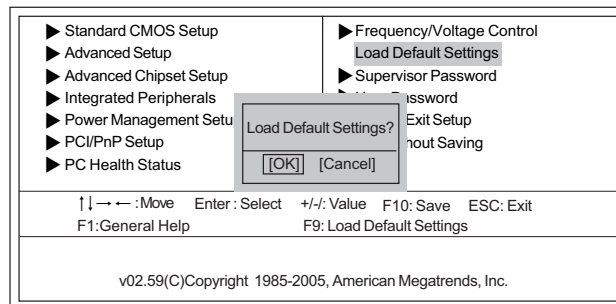
**Resetting the Default CMOS Values**

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 apply for most conditions with optimum performance. We do not suggest users change the default values in the BIOS setup and take no responsibility to any damage caused by changing the BIOS settings.*

### BIOS Navigation Keys

The BIOS navigation keys are listed below:

KEY	FUNCTION
<b>ESC</b>	Exits the current menu
↑↓→←	Scrolls through the items on a menu
+/-	Modifies the selected field's values
<b>Enter</b>	Select
<b>F9</b>	Loads an optimized setting for better performance
<b>F10</b>	Saves the current configuration and exits setup
<b>F1</b>	Displays a screen that describes all key functions



*For the purpose of better product maintenance, we reserve the right to change the BIOS items presented in the manual. The BIOS setup screens shown in this chapter are for reference only. Please visit our website for updated manual.*

## Using BIOS

### Standard CMOS Setup

This option displays basic information about your system.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
Standard CMOS Setup

		Help Item
Date	Thu 02/26/2010	Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.
Time	07:02:24	
▶ Primary IDE Master	Not Detected	Use [+] or [-] to configure system Date.
▶ Primary IDE Slave	Not Detected	
▶ SATA1	Not Detected	
▶ SATA2	Not Detected	
IDE BusMaster	Enabled	

↑↓ → ← : 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.

### ▶ Primary IDE Master/Slave; SATA1~2

Your computer has one IDE channel and each channel can be installed with one or two devices (Master and Slave). In addition, this motherboard supports two SATA channels and each channel allows one SATA device to be installed. Use these items to configure each device on the SATA channel.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
Primary IDE Master

		Help Item
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	

↑↓ → ← : 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 LBA/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 users 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.

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.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
Advanced Setup

Thermal Management	Enabled	Help Item
TM Status	TM1/TM2	
Limit CPUID MaxVal	Disabled	For the processor its CPUID belows 0F41h.
Intel XD Bit	Disabled	TM2 only can be enable under below setting.
Quick Power on Self Test	Enabled	1.Freq.>=3.6GHz FSB800
Boot Up Numlock Status	On	2.Freq.>=2.8GHz FSB533
APIC Mode	Enabled	
1st Boot Device	Hard Disk Drive	
2nd Boot Device	CD/DVD	
3rd Boot Device	Removable Dev.	
Boot Other Device	Yes	

↑↓ ← → : 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 all CPU.

#### TM Status (TM1/TM2)

This item shows TM function status if CPU can support TM function.

#### 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.

#### Intel XD Bit (Disabled)

This item allows users to enable or disable the Intel XD bit.

#### 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.

#### 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 APIC (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 Disk Drive/CD/DVD/Removable Dev.)

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.

## Using BIOS



**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.

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

### 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.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
Advanced Chipset Setup

DRAM Frequency	Auto	Help Item
Configure DRAM Timing by SPD	Enabled	Options
Share Memory Size	64MB	
DVMT Memory	256MB	
Memory Remap Feature	Enabled	Auto
HPET	Enabled	800 MHz
		1066 MHz

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

#### 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.

#### Configure DRAM Timing by SPD (Enabled)

When this item is set to enable, the DDR timing is configured using SPD. SPD (Serial Presence Detect) is located on the memory modules, BIOS reads information coded in SPD during system boot up.

#### Share Memory Size (Enabled, 64MB)

This item lets you allocate a portion of the main memory for the onboard VGA display application.

#### DVMT Memory (256MB)

When set to Fixed Mode, the graphics driver will reserve a fixed portion of the system memory as graphics memory, according to system and graphics requirements.

#### Memory Remap Feature (Enabled)

This item allows you to remap the overlapped PCI memory above the total physical memory if you have a 64 bit OS and 8 GB of RAM.

#### 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

		Help Item
Onboard IDE Controller	Enabled	
Onboard SATA Controller	Enhanced	
Onboard Audio Function	Enabled	
Onboard LAN Function	Enabled	
Onboard LAN Boot ROM	Disabled	DISABLED: disables the integrated IDE Controller.
Serial Port1 Address	3F8/IRQ4	ENABLED: enables both Controllers.
USB Functions	Enabled	
Legacy USB Support	Enabled	

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

#### **Onboard IDE Controller (Enabled)**

Use this item to enable or disable the onboard IDE interface.

#### **Onboard SATA Controller (Enhanced)**

This item allows you to enable or disable the onboard SATA controller.

#### **Onboard Audio Function (Enabled)**

Use this item to enable or disable the onboard audio device.

#### **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.

#### **Serial Port1 Address (3F8/IRQ4) (Optional)**

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.

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

## Using BIOS

### Power Management Setup

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

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
Power Management Setup

ACPI Suspend Type	S3	Help Item
PWRON After PWR-Fail	Power Off	Select the ACPI state used for System Suspend.
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.

#### PWRON After PWR-Fail (Power Off)

This item enables your computer to automatically restart or return to its operating status.

#### Resume By RING (Disabled)

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

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

These items specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.

#### Resume By USB (S3) (Disabled)

This item allows you to enable/disable the USB device wakeup function from S3/S4 mode.

#### Resume By PS2 KB (S3) (Disabled)

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

#### Resume By PS2 MS (S3) (Disabled)

This item enables or disables you to allow mouse activity to awaken the system from power saving 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.

**Using BIOS**

### 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.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
PCI/PnP Setup

Init Display First	PCI	Help Item
Dual Monitor Support	[Enabled]	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.

#### Dual Monitor Support (Enabled)

Use this item to enable or disable dual monitor support.

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.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
PC Health Status

-- System Hardware Monitor --	Help Item
▶ Smart Fan Function <b>Press Enter</b>	
Shutdown Temperature Disabled	
CPU Temperature : 40°C / 104°F	
CPU Fan Speed : 963 RPM	
CPU Vcore : 1.280 V	
VDIMM : 1.496 V	
Case Open Warning Disabled	
Chassis Opened No	

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

## Using BIOS

### ► Smart Fan Function (Press Enter)

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

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
Smart Fan Function

		Help Item
Smart Fan Function	Enabled	
SMART Fan Mode	Normal	Options
high Limit Temperature (° C)	63	Disabled
Low Limit Temperature (° C)	43	Enabled
High Limit PWM	200	
low Limit PWM	58	

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

#### **SMART Fan Control (Enabled)**

This item allows you to enable/disable the control of the CPU fan speed by changing the fan voltage.

#### **SMART Fan Mode (Normal)**

This item allows you to select the fan mode (Normal, Quiet, Silent, or Manual) for a better operation environment. If you choose Normal mode, the fan speed will be auto adjusted depending on the CPU temperature. If you choose Quiet mode, the fan speed will be auto minimized for quiet environment. If you choose Silent mode, the fan speed will be auto restricted to make system more quietly. If you choose Manual mode, the fan speed will be adjust depending on users' parameters.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
Smart Fan Function

		Help Item
Smart Fan Function	Enabled	
SMART Fan Mode	Normal	Options
high Limit Temperature (° C)	63	Normal: auto adjusts depending on the CPU temperature.
Low Limit Temperature (° C)	43	Quiet: auto minimizes fan speed for quiet environment operation.
High Limit PWM	200	Silent: auto restricts fan speed to make system more quietly.
low Limit PWM	58	Manual: the fan adjust depending on user's parameter.

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

Press <Esc> to return to the Smart Fan Function page.

## Using BIOS

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
Smart Fan Function

		Help Item
Smart Fan Function	Enabled	
SMART Fan Mode	Quiet	Options
high Limit Temperature (° C)	80	Normal: auto adjusts depending on the CPU temperature.
Low Limit Temperature (° C)	60	Quiet: auto minimizes fan speed for quiet environment operation.
High Limit PWM	200	Silent: auto restricts fan speed to make system more quietly.
low Limit PWM	30	Manual: the fan adjust depending on user's parameter.

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

Press <Esc> to return to the Smart Fan Function page.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
Smart Fan Function

		Help Item
Smart Fan Function	Enabled	
SMART Fan Mode	Silent	Options
high Limit Temperature (° C)	85	Normal: auto adjusts depending on the CPU temperature.
Low Limit Temperature (° C)	70	Quiet: auto minimizes fan speed for quiet environment operation.
High Limit PWM	200	Silent: auto restricts fan speed to make system more quietly.
low Limit PWM	15	Manual: the fan adjust depending on user's parameter.

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

Press <Esc> to return to the Smart Fan Function page.

## Using BIOS

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
Smart Fan Function

		Help Item
Smart Fan Function	Enabled	
SMART Fan Mode	Manual	<b>Options</b>
high Limit Temperature (° C)	63	Normal: auto adjusts fan speed depending on the CPU temperature.
Low Limit Temperature (° C)	43	Quiet: auto minimizes fan speed for quiet environment operation.
High Limit PWM	200	Silent: auto restricts fan speed to make system more quietly.
low Limit PWM	58	Manual: the fan adjust depending on user's parameter.

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

Press <Esc> to return to the Smart Fan Mode page.



*ECS supports the latest PECI host technology. While using Core™ 2 Quad or Core™ 2 Duo CPU which supports PECI, 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) 1985-2005, American Megatrends, Inc.  
PC Health Status

		Help Item
-- System Hardware Monitor --		
▶ Smart Fan Function	Press Enter	
CPU Fan Speed	: 3722 RPM	
CPU Vcore	: 1.216 V	
VDIMM	: 1.576 V	
-- PECI Mode --		
Offset to TCC Activation Temp. :	-54	
Case Open Warning	Disabled	
Chassis Opened	No	

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

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

## Using BIOS



**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.

- CPU Fan Speed
- CPU Vcore
- VDIMM

**Case Open Warning (Disabled)**

This item enables or disables the warning if the case is opened up, and the item below indicates the current status of the case.

**Chassis Opened (No)**

This item indicates whether the case has been opened.

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

### Frequency/Voltage Control

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) 1985-2005, American Megatrends, Inc.  
Frequency/Voltage Control

Manufacturer: Intel Ratio Status :Unlocked (Min:06, Max:12) Ratio Actual Value : 12 CPU Frequency Setting : 200MHz Auto Detect DIMM/PCI Clk : Enabled Spread Spectrum : Enabled	<b>Help Item</b>  Stes the ratio between CPU Core Clock and the FSB Frequency. Note: For CedarMill and Prescott Family CPUs. The setup potion only available when Intel SpeedStep technology is disabled.
--	--

↑↓←→ : 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 Status: Unlocked (Min:06, Max:12)

This item displays the information of current ratio status in your computer.

#### Ratio Actual Value: 12

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

#### CPU Frequency Setting (200MHz)

This item is used to set the CPU Frequency.

#### 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.

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

### Load Default Settings

This option opens a dialog box that lets you install stability-oriented defaults for all appropriate items in the Setup Utility. Select <OK> and then press <Enter> to install the defaults. Select <Cancel> and then press <Enter> to not install the defaults.

## Using BIOS

### ***Supervisor Password***

This page helps you install or change a password.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.  
Supervisor Password

Supervisor Password : Not Installed	Help Item
Change Supervisor Password <input type="button" value="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) 1985-2005, American Megatrends, Inc.  
User Password

User Password : Not Installed	Help Item

↑↓←→ : 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.

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

## **Using BIOS**

### ***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 Prepare a bootable device or 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 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: AFUDOS.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.

## **Using BIOS**

## Chapter 4

### Using the Motherboard Software

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#### 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#appliesto> for more information.

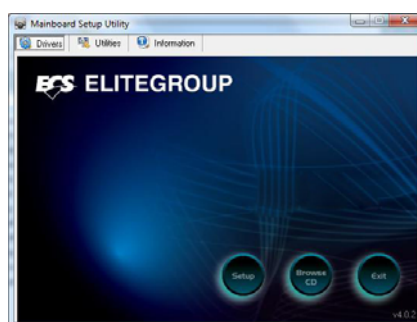
#### Auto-installing under Windows XP/Vista/7

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

<b>Setup</b>	Click the <b>Setup</b> button to run the software installation program. Select from the menu which software you want to install.
<b>Browse CD</b>	<p>The <b>Browse CD</b> 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>
<b>Exit</b>	The <b>Exit</b> button closes the Auto Setup window.

### Utilities Tab

Lists the software utilities that are available on the disk.

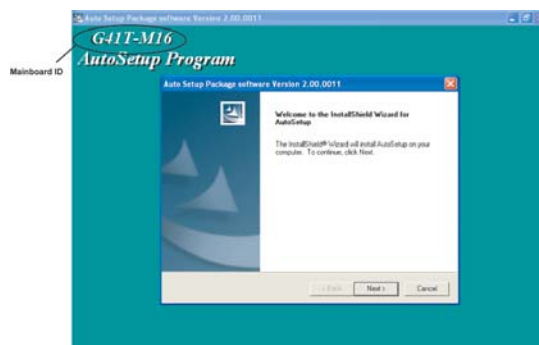
### Information Tab

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:

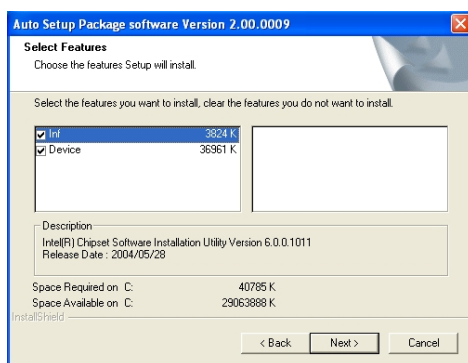


The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

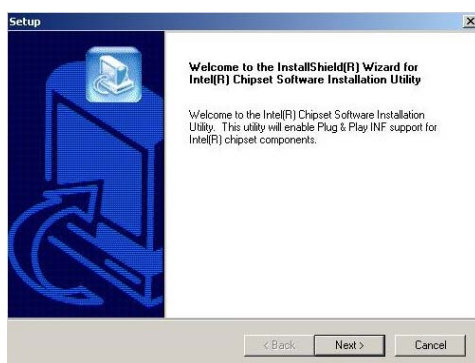
The motherboard identification is located in the upper left-hand corner.

## 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.

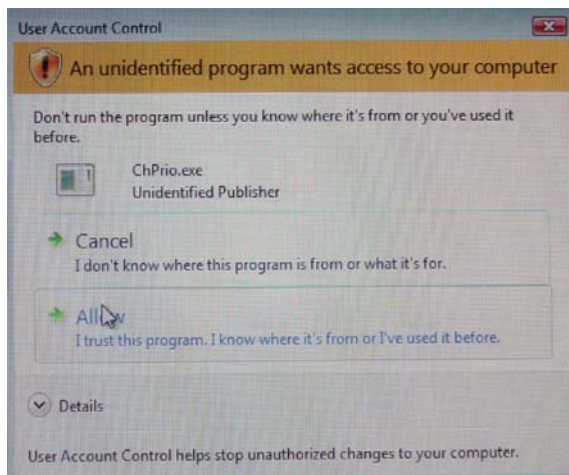


Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

## 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

### ***Trouble Shooting***

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#### **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.

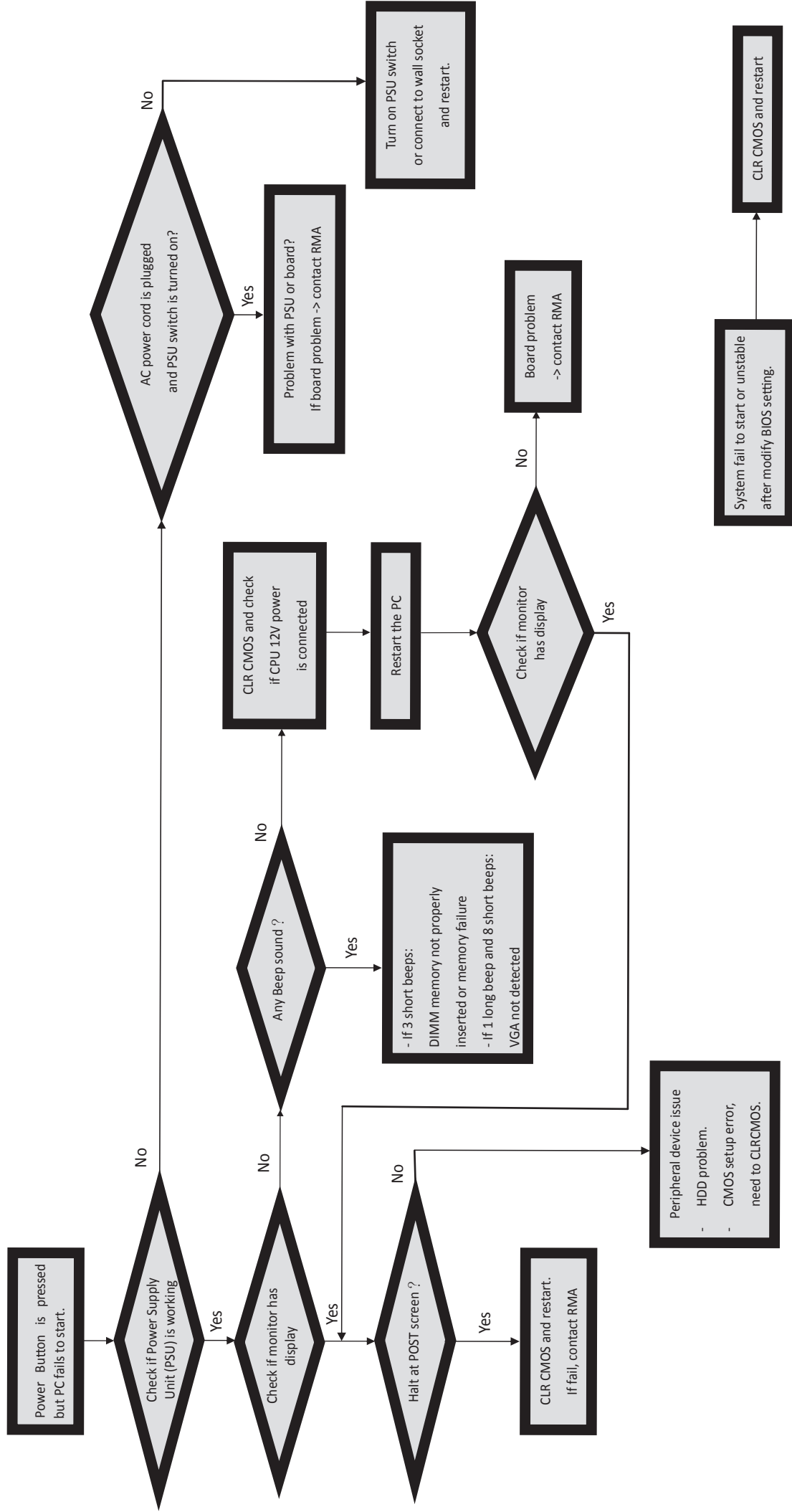
### **Maintenance and care tips**

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



**48**

***Memo***

**Trouble Shooting**