

P8H61-M LK R2.0



Motherboard

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Safety information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Ensure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, ensure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

About this guide

This user guide contains the information you need when installing and configuring the motherboard.

How this guide is organized

This guide contains the following parts:

- **Chapter 1: Product introduction**
This chapter describes the features of the motherboard and the new technology it supports.
- **Chapter 2: BIOS information**
This chapter tells how to change system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

Where to find more information

Refer to the following sources for additional information and for product and software updates.

1. **ASUS websites**
The ASUS website provides updated information on ASUS hardware and software products. Refer to the ASUS contact information.
2. **Optional documentation**
Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

Conventions used in this guide

To ensure that you perform certain tasks properly, take note of the following symbols used throughout this manual.



DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.



CAUTION: Information to prevent damage to the components when trying to complete a task.



IMPORTANT: Instructions that you **MUST** follow to complete a task.



NOTE: Tips and additional information to help you complete a task.

Typography

Bold text

Indicates a menu or an item to select.

Italics

Used to emphasize a word or a phrase.

<Key>

Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key.

Example: <Enter> means that you must press the Enter or Return key.

<Key1> + <Key2> + <Key3>

If you must press two or more keys simultaneously, the key names are linked with a plus sign (+).

P8H61-M LK R2.0 specifications summary

CPU	<p>LGA1155 socket for Intel® 3rd/2nd Generation Core™ i7 / i5 / i3 / Pentium® / Celeron® processors</p> <p>Supports Intel 22nm CPU</p> <p>Supports Intel® Turbo Boost Technology 2.0</p> <p>* The Intel® Turbo Boost Technology 2.0 support depends on the CPU types.</p> <p>** Refer to www.asus.com for Intel® CPU support list.</p>
Chipset	Intel® H61 Express Chipset
Memory	<p>2 x DIMMs, max. 16GB, DDR3 1333 / 1066 MHz, non-ECC, unbuffered memory</p> <p>Dual-channel memory architecture</p> <p>* Refer to www.asus.com for the latest Memory QVL (Qualified Vendors List).</p> <p>** When you install a total memory of 4GB capacity or more, Windows® 32-bit operating system may only recognize less than 3GB. We recommend a maximum of 3GB system memory if you are using a Windows® 32-bit operating system.</p>
Expansion slots	<p>1 x PCI Express 3.0*/2.0 x16 slot</p> <p>2 x PCI Express 2.0 x1 slots</p> <p>* PCIe 3.0 speed is supported by Intel® 3rd generation Core™ processors.</p>
Graphics	<p>Supports D-Sub with max. resolution of 2048 x 1536 @75Hz</p> <p>Max. UMA Memory: 1024MB</p>
Storage	<p>Intel® H61 Express Chipset:</p> <ul style="list-style-type: none"> - 4 x Serial ATA 3.0 Gb/s connectors
LAN	Realtek® 8111F PCIe Gigabit LAN controller
Audio	<p>ALC887 8-channel* High Definition Audio CODEC</p> <ul style="list-style-type: none"> - Supports Multi-Streaming <p>* Use a chassis with HD audio module in the front panel to support an 8-channel audio output.</p>
USB	8 x USB 2.0/1.1 ports (4 ports at the mid-board, 4 ports at the back panel)
ASUS unique features	<p>ASUS UEFI BIOS featuring friendly graphics user interface</p> <p>ASUS Fan Xpert</p> <p>ASUS Network iControl</p> <p>ASUS AI Charger</p> <p>ASUS WebStorage</p> <p>ASUS CrashFree BIOS 3</p> <p>ASUS EZ Flash 2</p> <p>ASUS Q-Fan2 (only supported by 4-pin CPU fan and Chassis fan)</p> <p>ASUS MyLogo 2™</p> <p>* The ASUS Network iControl feature does not support Windows® XP/Vista operating systems.</p>

(continued on the next page)

P8H61-M LK R2.0 specifications summary

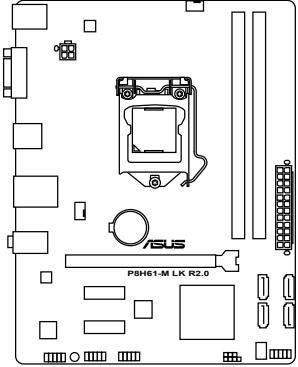
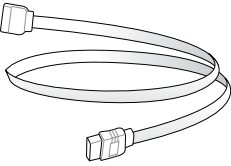
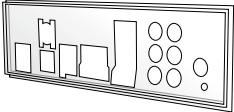
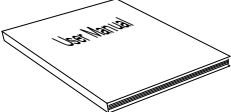
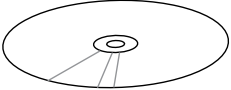
Rear panel ports	1 x PS/2 keyboard port (purple) 1 x PS/2 mouse port (green) 1 x D-Sub port 1 x LAN (RJ-45) port 4 x USB 2.0/1.1 ports 3 x Audio jacks
Internal connectors/jumpers	2 x USB 2.0/1.1 connectors support additional 4 USB 2.0/1.1 ports 4 x SATA 3.0 Gb/s connectors 1 x 4-pin CPU fan connector 1 x 4-pin chassis fan connector 1 x Front panel audio connector 1 x System panel connector 1 x Speaker header 1 x 24-pin ATX power connector 1 x 4-pin ATX 12V power connector 1 x Clear CMOS jumper
BIOS features	64 Mb Flash ROM, EFI BIOS, PnP, DMI v2.0, WfM 2.0, ACPI v2.0a, SM BIOS v2.7, SLP 3.0, EUP-ready
Manageability	WOL, PXE, PME Wake Up
Accessories	2 x Serial ATA 3.0Gb/s cables 1 x I/O shield 1 x User Manual 1 x Support DVD
Support DVD	Drivers ASUS utilities ASUS Update Anti-virus software (OEM version)
Form factor	uATX form factor: 8.9 in x 6.8 in (22.6 cm x 17.3 cm)



Specifications are subject to change without notice.

Package contents

Check your motherboard package for the following items.

		
<p>ASUS P8H61-M LK R2.0 motherboard</p>	<p>2 x Serial ATA 3.0 Gb/s cables</p>	
		
<p>1 x I/O-Shield</p>	<p>User Guide</p>	<p>Support DVD</p>



- If any of the above items is damaged or missing, contact your retailer.
- The illustrated items above are for reference only. Actual product specifications may vary with different models.

Product introduction

1

1.1 Special features

1.1.1 Product highlights

Intel® LGA1155 Intel® 3rd/2nd Generation Core™ i7 / Core™ i5 / Core™ i3, Pentium®, and Celeron™ processors

This motherboard supports the Intel® 3rd/2nd generation Core™ i7 / i5 / i3 / Pentium® / Celeron™ processors in the LGA1155 package, with iGPU, memory, and PCI Express controllers integrated to support onboard graphics out with dedicated chipsets, 2-channel (2 DIMMs) DDR3 memory, and 16 PCI Express 3.0/2.0 lanes. This provides great graphics performance. Intel® 3rd/2nd generation Core™ i7 / i5 / i3 / Pentium® / Celeron™ processors are among the most powerful and energy efficient CPUs in the world.

Intel® H61 Express Chipset

Intel® H61 Express Chipset is a single-chipset that supports the 1155 socket Intel® 3rd/2nd generation Core™ i7 / i5 / i3, Pentium®, and Celeron™ processors. It utilizes the serial point-to-point links, which increases bandwidth and enhances the system's performance.

Dual-Channel DDR3 1333/ 1066MHz support

The motherboard supports DDR3 memory that features data transfer rates of 1333/ 1066 MHz to boost the system's performance, and to meet the higher bandwidth requirements of the latest 3D graphics, multimedia, and Internet applications.

PCI Express® 3.0

PCI Express® 3.0 (PCIe 3.0) is the PCI Express bus standard that provides twice the performance and speed of PCIe 2.0. It provides an optimal graphics performance, unprecedented data speed, and seamless transition with its complete backward compatibility to PCIe 1.0/2.0 devices.

* Intel® 3rd generation Core™ processors support PCIe 3.0.

8-channel high definition audio

The onboard 8-channel HD audio (High Definition Audio, previously codenamed Azalia) CODEC enables high-quality 192KHz/24-bit audio output and jack-detect feature that automatically detects and identifies what types of peripherals are plugged into the audio I/O jacks and notifies users of inappropriate connection, which means there will be no more confusion of Line-in, Line-out, and Mic jacks.

Gigabit LAN solution

The onboard LAN controller is a highly integrated Gb LAN controller. It is enhanced with an ACPI management function to provide efficient power management for advanced operating systems.

100% All High-quality Conductive Polymer Capacitors

This motherboard uses all high-quality conductive polymer capacitors for durability, improved lifespan, and enhanced thermal capacity.

Network iControl

Network iControl is an intuitive one-step network control center that makes it easier for you to manage your bandwidth and allows you to set, monitor, and schedule the bandwidth priorities for your network programs. It allows you to automatically connect to a PPPoE network for a more convenient online experience.

ASUS UEFI BIOS (EZ Mode)

ASUS UEFI BIOS, a UEFI compliant architecture, offers the first mouse-controlled intuitive graphical BIOS interface that goes beyond the traditional keyboard-only BIOS controls, providing you with more flexibility, convenience, and easy to navigate EFI BIOS than the traditional BIOS versions. It offers you with dual selectable modes and native support for hard drives larger than 2.2 TB.

ASUS UEFI BIOS includes the following new features:

- F12 BIOS snapshot hotkey
- F3 Shortcut for most accessed information
- ASUS DRAM SPD (Serial Presence Detect) information detecting faulty DIMMs, and helping with difficult POST situations.

AI Suite II

With its user interface, ASUS AI Suite II integrates several ASUS utilities and allows you to launch and operate these utilities simultaneously. It allows you to configure the overclocking settings, adjust the frequencies and related voltages, remotely control the system via a mobile device, and other easy-to-use helpful utilities.

ASUS Anti-Surge Protection

This special design prevents expensive devices and the motherboard from damage caused by power surges from switching power supply (PSU).

Fan Xpert

ASUS Fan Xpert intelligently allows you to adjust both the CPU and chassis fan speeds based on different ambient temperatures, resulting to a quiet and cool computing environment.

ASUS MyLogo2™

This feature allows you to convert your favorite photo into a 256-color boot logo for a more colorful and vivid image on your screen.

ASUS CrashFree BIOS 3

ASUS CrashFree BIOS 3 is an auto-recovery tool that allows you to restore a corrupted BIOS file using the bundled support DVD or USB flash disk that contains the latest BIOS file.

ASUS EZ Flash 2

ASUS EZ Flash 2 is a utility that allows you to update the BIOS without using an OS-based utility.

C.P.R. (CPU Parameter Recall)

The BIOS C.P.R. feature automatically restores the CPU default settings when the system hangs due to overclocking failure. C.P.R. eliminates the need to open the system chassis and clear the RTC data. Simply shut down and reboot the system, and the BIOS automatically restores the CPU parameters to their default settings.

ErP Ready

The motherboard is European Union's Energy-related Products (ErP) ready, and ErP requires products to meet certain energy efficiency requirement in regards to energy consumptions. This is in line with ASUS vision of creating environment-friendly and energy-efficient products through product design and innovation to reduce carbon footprint of the product and thus mitigate environmental impacts.

1.2 Before you proceed

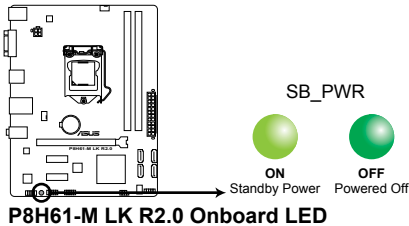
Take note of the following precautions before you install motherboard components or change any motherboard settings.



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

Standby Power LED

The motherboard comes with a standby power LED that lights up to indicate that the system is ON, in sleep mode, or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component. The illustration below shows the location of the onboard LED.



P8H61-M LK R2.0 Onboard LED

1.3 Motherboard overview

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



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

1.3.1 Placement direction

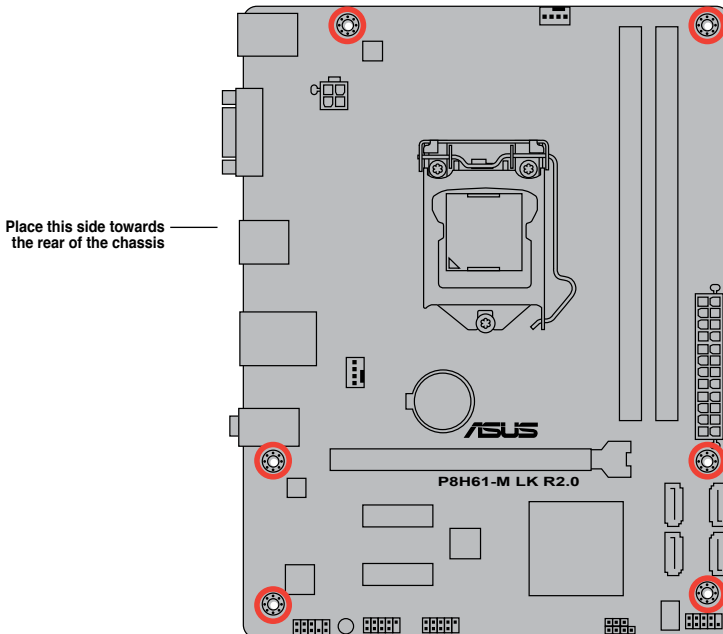
When installing the motherboard, ensure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

1.3.2 Screw holes

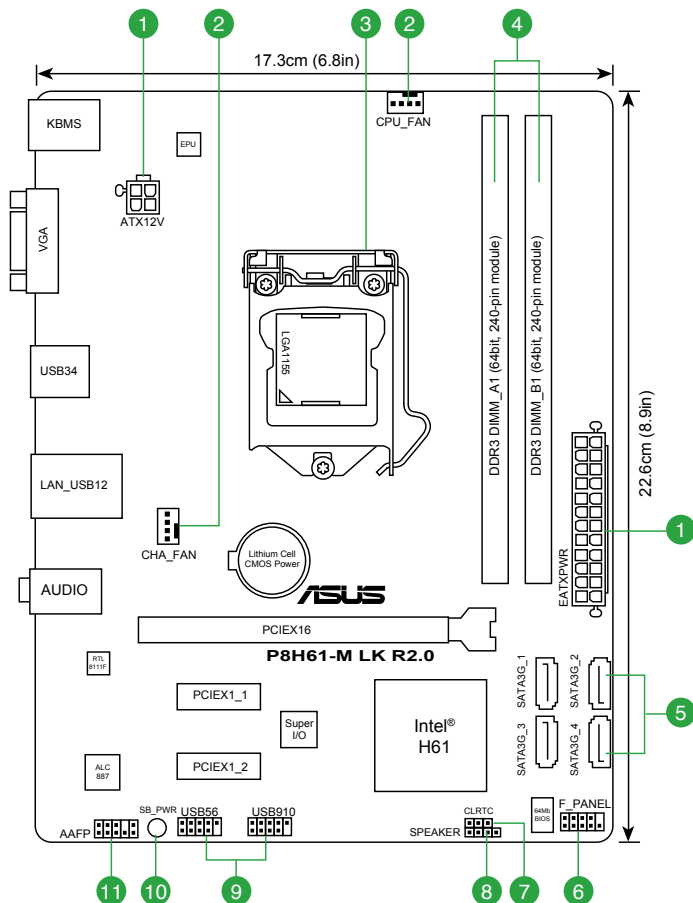
Place six screws into the holes indicated by circles to secure the motherboard to the chassis.



Do not overtighten the screws! Doing so can damage the motherboard.



1.3.3 Motherboard layout

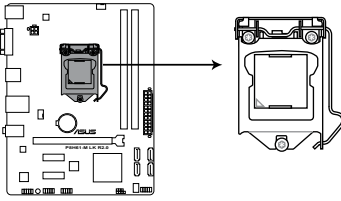


1.3.4 Layout contents

Connectors/Jumpers/Slots/LED		Page
1.	ATX power connectors (24-pin EATXPWR, 4-pin ATX12V)	1-21
2.	CPU and chassis fan connectors (4-pin CPU_FAN and 4-pin CHA_FAN)	1-22
3.	Intel® LGA1155 CPU socket	1-7
4.	DDR3 DIMM slots	1-12
5.	Intel® H61 Serial ATA 3.0Gb/s connectors (7-pin SATA3G_1/2/3/4)	1-24
6.	System panel connector (10-1 pin PANEL)	1-25
7.	Clear RTC RAM (3-pin CLRTC)	1-18
8.	Speaker connector (4-pin SPEAKER)	1-21
9.	USB 2.0 connectors (10-1 pin USB56, USB78)	1-23
10.	Standby power LED (SB_PWR)	1-4
11.	Front panel audio connector (10-1 pin AAFP)	1-20

1.4 Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA1155 socket designed for the Intel® 2nd/3rd Generation Core™ i7 / Core™ i5 / Core™ i3, Pentium®, and Celeron™ processors.



P8H61-M LK R2.0 CPU socket LGA1155



Unplug all power cables before installing the CPU.

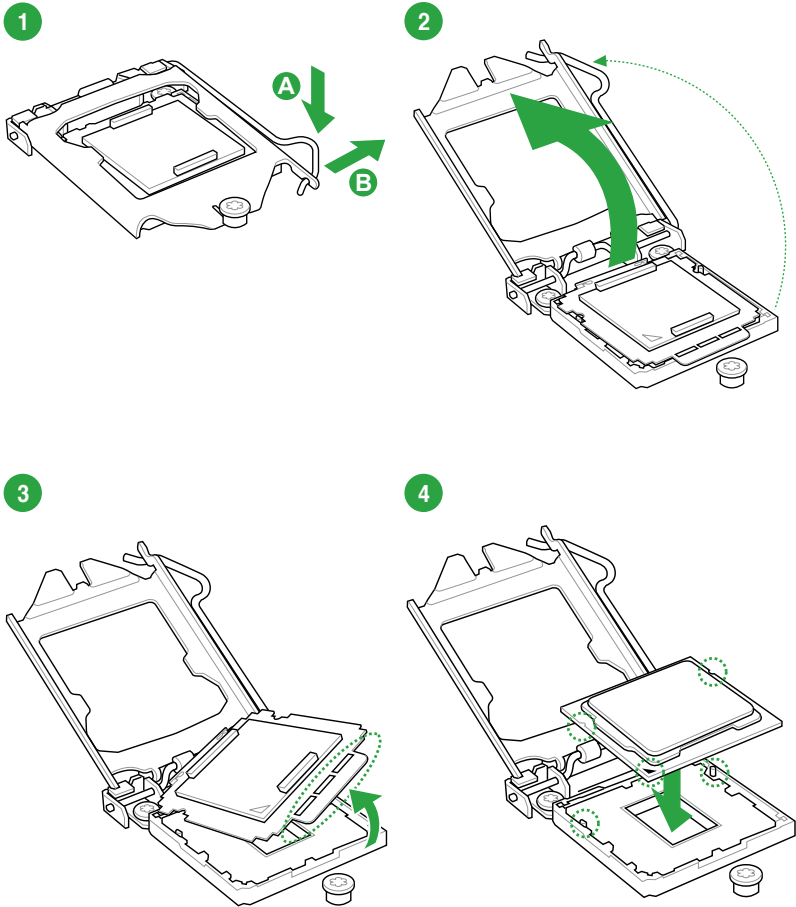


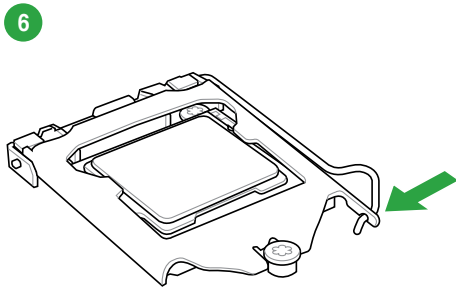
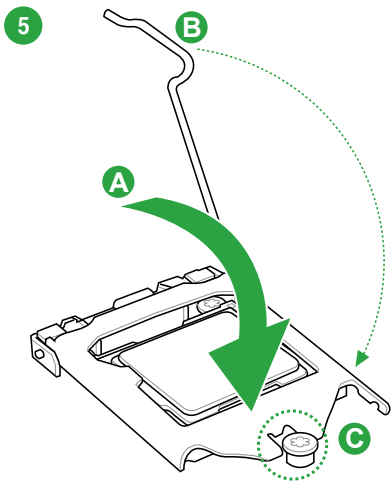
- Upon purchase of the motherboard, ensure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. ASUS will shoulder the cost of repair only if the damage is shipment/transit-related.
 - Keep the cap after installing the motherboard. ASUS will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA1155 socket.
 - The product warranty does not cover damage to the socket contacts resulting from incorrect CPU installation/removal, or misplacement/loss/incorrect removal of the PnP cap.
-

1.4.1 Installing the CPU

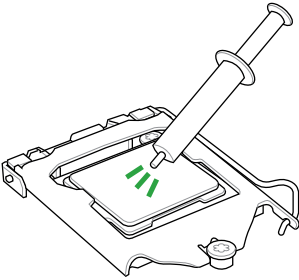


The LGA1156 CPU is incompatible with the LGA1155 socket. DO NOT install an LGA1156 CPU on the LGA1155 socket.



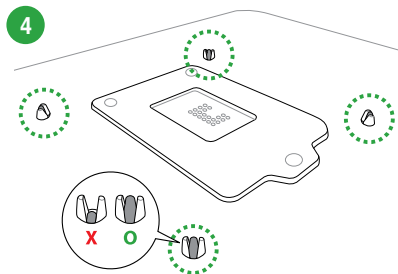
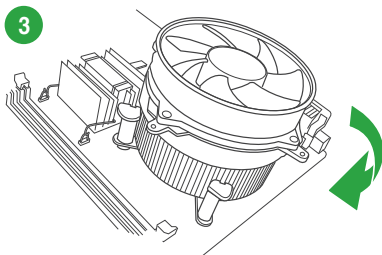
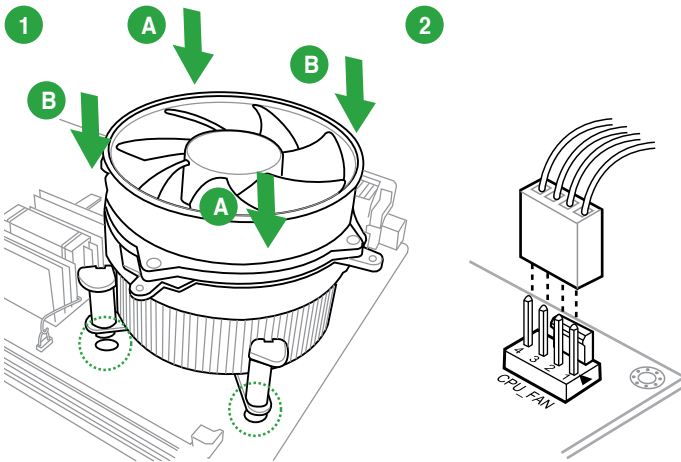


1.4.2 CPU heatsink and fan assembly installation

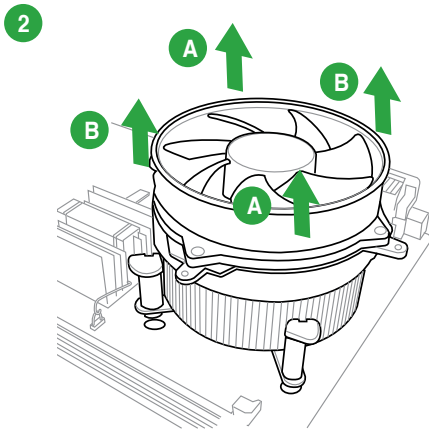
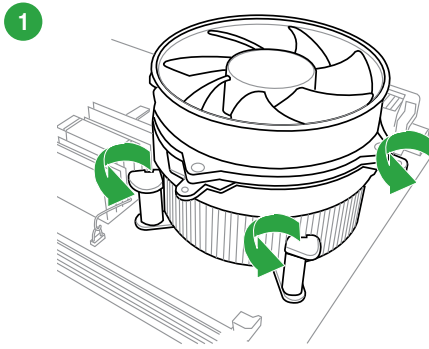


Apply the Thermal Interface Material to the CPU heatsink and CPU before you install the heatsink and fan if necessary.

To install the CPU heatsink and fan assembly



To uninstall the CPU heatsink and fan assembly



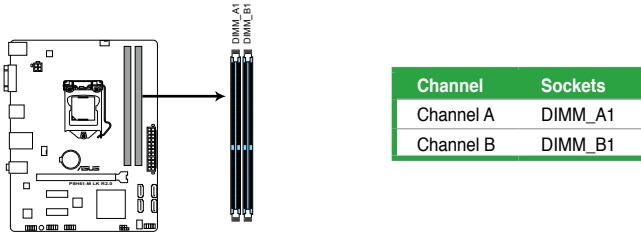
1.5 System memory

1.5.1 Overview

The motherboard comes with two Double Data Rate 3 (DDR3) Dual Inline Memory Modules (DIMM) sockets.

A DDR3 module has the same physical dimensions as a DDR2 DIMM but is notched differently to prevent installation on a DDR2 DIMM socket. DDR3 modules are developed for better performance with less power consumption.

The figure illustrates the location of the DDR3 DIMM sockets:



P8H61-M LK R2.0 240-pin DDR3 DIMM sockets

1.5.2 Memory configurations

You may install 1GB, 2GB, 4GB, and 8GB unbuffered non-ECC DDR3 DIMMs into the DIMM sockets.



-
- You may install varying memory sizes in Channel A and Channel B. The system maps the total size of the lower-sized channel for the dual-channel configuration. Any excess memory from the higher-sized channel is then mapped for single-channel operation.
 - Always install DIMMs with the same CAS latency. For optimal compatibility, we recommend that you install memory modules of the same version or date code (D/C) from the same vendor. Check with the retailer to get the correct memory modules.
 - Memory module with memory frequency higher than 2133 MHz and its corresponding timing or the loaded XMP Profile is not the JEDEC memory standard. The stability and compatibility of these memory modules depend on the CPU's capabilities and other installed devices.
 - Due to the memory address limitation on 32-bit Windows® OS, when you install 4GB or more memory on the motherboard, the actual usable memory for the OS can be about 3GB or less. For effective use of memory, we recommend that you do any of the following:
 - Use a maximum of 3GB system memory if you are using a 32-bit Windows® OS.
 - Install a 64-bit Windows® OS when you want to install 4GB or more on the motherboard.
 - This motherboard does not support DIMMs made up of 512Mb (64MB) chips or less.
-



-
- The default memory operation frequency is dependent on its Serial Presence Detect (SPD), which is the standard way of accessing information from a memory module. Under the default state, some memory modules for overclocking may operate at a lower frequency than the vendor-marked value. To operate at the vendor-marked or at a higher frequency, refer to section **2.4 Ai Tweaker menu** for manual memory frequency adjustment.
 - For system stability, use a more efficient memory cooling system to support a full memory load (2 DIMMs) or overclocking condition.
-

P8H61-M LK R2.0 Motherboard Qualified Vendors Lists (QVL)

DDR3-2666 MHz capability

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMMs
G.SKILL	F3-2666C11Q-16GTXD(XMP)	16GB(4GBx4)	DS	-	-	11-13-13-35	1.65V	*	*

DDR3-2600 MHz capability

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMMs
G.SKILL	F3-2600CL10Q-16GBZMD(XMP)	16GB(4GBx4)	DS	-	-	10-12-12-31	1.65V	*	*
G.SKILL	F3-2600CL11Q-32GBZHD(XMP)	32GB(8GBx4)	DS	-	-	11-13-13-35	1.65V	*	*

DDR3-2400 MHz capability

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMMs
CORSAIR	CMGTX8 (XMP)	8GB (2GB x4)	SS	-	-	10-12-10-27	1.65V	*	*
G.SKILL	F3-19200CL11Q-16GBZHD(XMP1.3)	16GB(4GBx4)	DS	-	-	11-11-11-31	1.65V	*	*
G.SKILL	F3-19200CL9Q-4GBPIS(XMP)	4GB(2GBx2)	DS	-	-	9-11-9-28	1.65V	*	*

DDR3-2250 MHz capability

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMMs
KINGSTON	KHX2250C9D3T1K2/4GX(XMP)	4GB(2GBx2)	DS	-	-	-	1.65V	*	*

DDR3-2200 MHz capability

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMMs
G.SKILL	F3-17600CL8D-4GBPIS(XMP)	4GB (2GB x2)	DS	-	-	8-8-8-24	1.65V	*	*
GEIL	GET34GB2200C9DC(XMP)	2GB	DS	-	-	9-10-9-28	1.65V	*	*
KINGMAX	FLKE85F-B8KJAFEIH(XMP)	4GB(2GBx2)	DS	-	-	-	1.57V-1.7V	*	*

DDR3-2133 MHz capability

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMMs
CORSAIR	CMT16GX3M4X2133C9(XMP 1.3)	16GB (4GB x4)	DS	-	-	9-11-10-27	1.50V	*	*
CORSAIR	CMT8GX3M2B2133C9(XMP)	8GB (4GB x 2)	DS	-	-	9-11-9-27	1.50V	*	*
KINGSTON	KHX2133C11D3T1K2/16GX(XMP)	16GB(8GB x 2)	DS	-	-	-	1.6V	*	*
KINGSTON	KHX2133C9AD3T1FK48GX(XMP)	8GB(4x 2GB)	DS	-	-	-	1.65V	*	*

DDR3-2000 MHz capability

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMMs
G.SKILL	F3-16000CL9D-4GBFLS(XMP)	4GB (2GB x2)	DS	-	-	9-9-9-24	1.65V	*	*
G.SKILL	F3-16000CL9D-4GBTD(XMP)	4GB (2GB x2)	DS	-	-	9-9-9-27	1.65V	*	*
GEIL	GUP34GB2000C9DC	4GB(2GBx2)	DS	-	-	9-9-9-28	1.65V	*	*

DDR3-1866 MHz capability

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMMs
CORSAIR	CMT4GX3M2A1866C9(XMP)	4GB(2 x 2GB)	DS	-	-	9-9-9-24	1.65V	*	*
G.SKILL	F3-14900CL10Q2-64GBZLD(XMP1.3)	64GB(8GBx 8)	DS	-	-	10-11-10-30	1.5V	*	*
G.SKILL	F3-14900CL9D-8GBXL(XMP)	8GB(2 x 4GB)	DS	-	-	9-10-9-28	1.5V	*	*
KINGSTON	KHX1866C9D3T1K3/6GX(XMP)	6GB(3 x 2GB)	DS	-	-	-	1.65V	*	*

DDR3-1600 MHz capability

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMMs
CORSAIR	CMP4GX3M2A1600C9(XMP)	4GB(2 x 2GB)	DS	-	-	9-9-9-24	1.65V	*	*
CORSAIR	CMX8GX3M4A1600C9(XMP)	8GB(4 x 2GB)	DS	-	-	9-9-9-24	1.65V	*	*
G.SKILL	F3-12800CL7D-4GBRM(XMP)	4GB(2 x 2GB)	DS	-	-	7-8-7-24	1.6V	*	*
G.SKILL	F3-12800CL9T-6GBNQ(XMP)	6GB(3 x 2GB)	DS	-	-	9-9-9-24	1.5V-1.6V	*	*
G.SKILL	F3-12800CL9D-8GBRL(XMP)	8GB(2 x 4GB)	DS	-	-	9-9-9-24	1.5V	*	*
KINGSTON	KHX1600C9D3P1K2/4G	4GB(2 x 2GB)	SS	-	-	-	1.5V	*	*

DDR3-1333 MHz capability

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMMs
A-DATA	AD3U1333C2G9	2GB	SS	A-DATA	3CCD-1509HNA1126L	-	-	*	*
Apacer	78.A1GC.9L1	2GB	DS	Apacer	AM5D5808DEWSBG	-	-	*	*
CORSAIR	TR3X6G1333C9 G	6GB(3x 2GB)	SS	-	-	9-9-9-24	1.50V	*	*
CORSAIR	CMD8GX3M4A1333C7	8GB(4 x 2GB)	DS	-	-	7-7-7-20	1.60V	*	*
KINGMAX	FLFE85F-C8K19 NAES	2GB	SS	KINGMAX	KFC8FNLXF-DXX-15A	-	-	*	*

DDR3-1066 MHz capability

Vendors	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)	
								1 DIMM	2 DIMMs
Crucial	CT12864BA1067.8FF	1GB	SS	Micron	9GF22D9KPT	7	-	*	*
KINGSTON	KVR1066D3N7/1G(low profile)	1GB	SS	ELPIDA	J1108BFSE-DJ-F	7	1.5V	*	*
KINGSTON	KVR1066D3N7/4G	4GB	DS	Hynix	H5TQ2G83AFR	7	1.5V	*	*



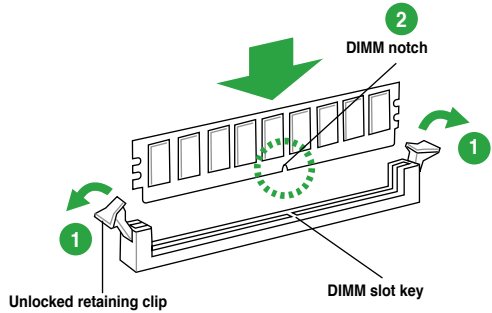
- **SS:** Single-sided / **DS:** Double-sided
- **DIMM support:**
 - **1 DIMM:** Supports one module inserted into either slot as single-channel memory configuration.
 - **2 DIMMs:** Supports one pair of modules inserted into both the blue slots as one pair of dual-channel memory configuration.
- DDR3 1600 MHz and higher memory frequency is supported by Intel® 3rd generation processors.
- Due to the CPU behavior, DDR3 2133/1866 memory module will run at DDR3 2000/1800 MHz frequency.
- Visit the ASUS website at www.asus.com for the latest QVL.

1.5.3 Installing a DIMM



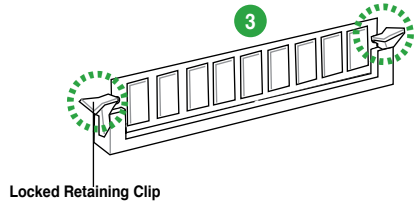
Unplug the power supply before adding or removing DIMMs or other system components. Failure to do so can cause severe damage to both the motherboard and the components.

1. Press the retaining clips outward to unlock a DIMM socket.
2. Align a DIMM on the socket such that the notch on the DIMM matches the DIMM slot key on the socket.



A DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket in the wrong direction to avoid damaging the DIMM.

3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.



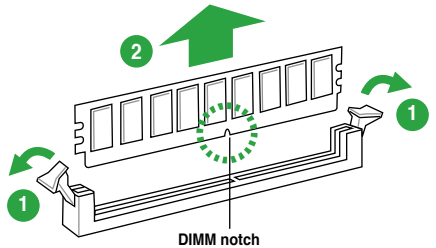
1.5.4 Removing a DIMM

To remove a DIMM:

1. Simultaneously press the retaining clips outward to unlock the DIMM.



Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.



2. Remove the DIMM from the socket.

1.6 Expansion slots

In the future, you may need to install expansion cards. The following sub-sections describe the slots and the expansion cards that they support.



Unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.

1.6.1 Installing an expansion card

To install an expansion card:

1. Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.
2. Remove the system unit cover (if your motherboard is already installed in a chassis).
3. Remove the bracket opposite the slot that you intend to use. Keep the screw for later use.
4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
5. Secure the card to the chassis with the screw you removed earlier.
6. Replace the system cover.

1.6.2 Configuring an expansion card

After installing the expansion card, configure it by adjusting the software settings.

1. Turn on the system and change the necessary BIOS settings, if any. See Chapter 2 for information on BIOS setup.
2. Assign an IRQ to the card.
3. Install the software drivers for the expansion card.



When using PCI cards on shared slots, ensure that the drivers support “Share IRQ” or that the cards do not need IRQ assignments. Otherwise, conflicts will arise between the two PCI groups, making the system unstable and the card inoperable.

1.6.3 PCI Express x1 slot

This motherboard supports PCI Express 2.0 x1 network cards, SCSI cards, and other cards that comply with the PCI Express specifications.

1.6.4 PCI Express x16 slot

This motherboard has a PCI Express 3.0/2.0 x16 slot (at 16x mode) that supports PCI Express 2.0 x16 graphic cards complying with the PCI Express specifications.

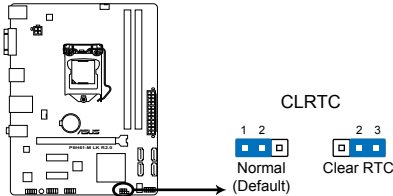


Intel® 3rd generation Core™ processors support PCIe 3.0.

1.7 Jumpers

Clear RTC RAM (3-pin CLRRTC)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.



P8H61-M LK R2.0 Clear RTC RAM

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5-10 seconds, then move the cap back to pins 1-2.
3. Plug the power cord and turn ON the computer.
4. Hold down the key during the boot process and enter BIOS setup to re-enter data.



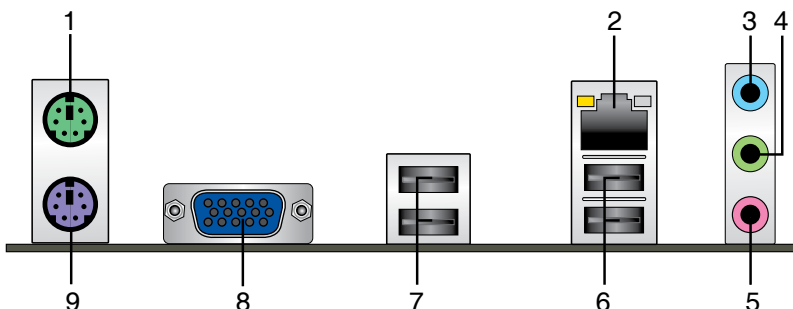
Except when clearing the RTC RAM, never remove the cap on CLRRTC jumper default position. Removing the cap will cause system boot failure!



- If the steps above do not help, remove the onboard battery and move the jumper again to clear the CMOS RTC RAM data. After clearing the CMOS, reinstall the battery.
 - You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the CPU Parameter Recall (C.P.R.) feature. Shut down and reboot the system, then the BIOS automatically resets parameter settings to default values.
-

1.8 Connectors

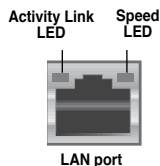
1.8.1 Rear panel connectors



1. **PS/2 Mouse port (green).** This port is for a PS/2 mouse.
2. **LAN (RJ-45) port.** This port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications.

LAN port LED indications

Activity/Link LED		Speed LED	
Status	Description	Status	Description
OFF	No link	OFF	10Mbps connection
ORANGE	Linked	ORANGE	100Mbps connection
BLINKING	Data activity	GREEN	1Gbps connection



3. **Line In port (light blue).** This port connects to the tape, CD, DVD player, or other audio sources.
4. **Line Out port (lime).** This port connects to a headphone or a speaker. In the 4, 6, and 8-channel configurations, the function of this port becomes Front Speaker Out.
5. **Microphone port (pink).** This port connects to a microphone.



Refer to the audio configuration table below for the function of the audio ports in 2, 4, 6, or 8-channel configuration.

Audio 2, 4, 6, or 8-channel configuration

Port	Headset 2-channel	4-channel	6-channel	8-channel
Light Blue (Rear panel)	Line In	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
Lime (Rear panel)	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink (Rear panel)	Mic In	Mic In	Bass/Center	Bass/Center
Lime (Front panel)	—	—	—	Side Speaker Out



To configure an 8-channel audio output:

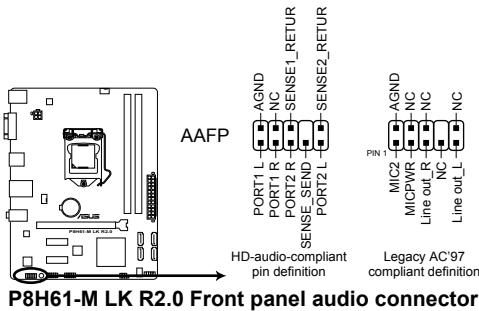
Use a chassis with HD audio module in the front panel to support an 8-channel audio output.

- 6. **USB 2.0 ports 1 and 2.** These two 4-pin Universal Serial Bus (USB) ports are for USB 2.0/1.1 devices.
- 7. **USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are for USB 2.0/1.1 devices.
- 8. **Video Graphics Adapter (VGA) port.** This 15-pin port is for a VGA monitor or other VGA-compatible devices.
- 9. **PS/2 Keyboard port (purple).** This port is for a PS/2 keyboard.

1.8.2 Internal connectors

1. Front panel audio connector (10-1 pin AAFP)

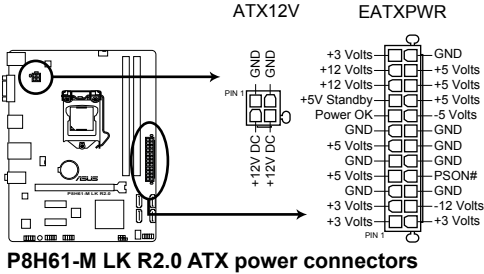
This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC'97 audio standard. Connect one end of the front panel audio I/O module cable to this connector.



- We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability.
- If you want to connect a high-definition front panel audio module to this connector, set the **Front Panel Type** item in the BIOS setup to **[HD]**. If you want to connect an AC'97 front panel audio module to this connector, set the item to **[AC97]**. By default, this connector is set to **[HD]**. See section **2.5.6 Onboard Devices Configuration** for details.

2. ATX power connectors (24-pin EATXPWR, 4-pin ATX12V)

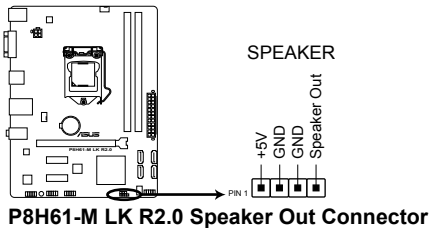
These connectors are for ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.



- For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12 V Specification 2.0 (or later version) and provides a minimum power of 350 W.
- DO NOT forget to connect the 4-pin ATX +12V power plug. Otherwise, the system will not boot up.
- We recommend that you use a PSU with higher power output when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.
- If you are uncertain about the minimum power supply requirement for your system, refer to the Recommended Power Supply Wattage Calculator at <http://support.asus.com/PowerSupplyCalculator/PSCalculator.aspx?SLanguage=en-us> for details.

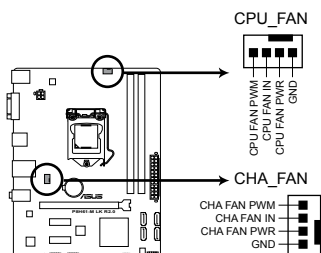
3. Speaker connector (4-pin SPEAKER)

The 4-pin connector is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.



4. CPU and chassis fan connectors (4-pin CPU_FAN, 4-pin CHA_FAN)

Connect the fan cables to the fan connectors on the motherboard, ensuring that the black wire of each cable matches the ground pin of the connector.



P8H61-M LK R2.0 Fan connectors



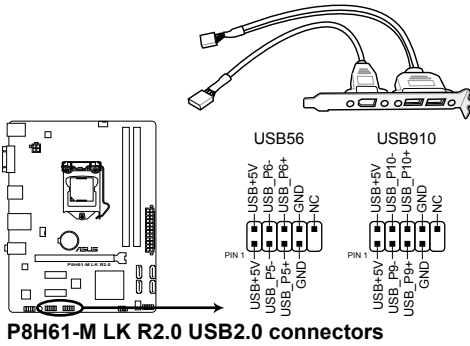
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan connectors!



- The CPU_FAN connector supports a CPU fan of maximum 2A (24 W) fan power.
 - Only the 4-pin CPU fan and Chassis fan support ASUS FanXpert feature.
-

5. USB connectors (10-1 pin USB56, USB910)

These connectors are for USB 2.0 ports. Connect the USB module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.



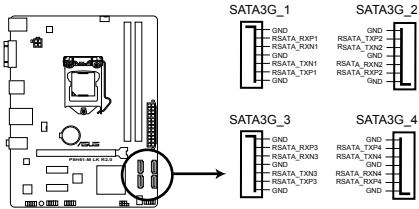
Never connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!



The USB module cable is purchased separately.

6. Intel® H61 Serial ATA 3.0Gb/s connectors (7-pin SATA3G_1~4)

These connectors connect to Serial ATA 3.0 Gb/s hard disk drives and optical drives via Serial ATA 3.0 Gb/s signal cables.



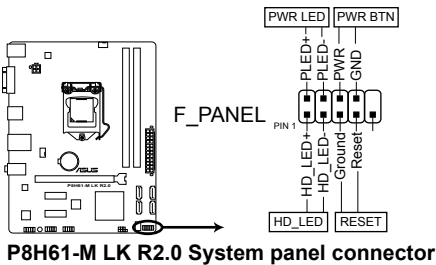
P8H61-M LK R2.0 SATA 3.0Gb/s connectors



- You must install Windows® XP Service Pack 3 or later version before using Serial ATA hard disk drives.
- Due to H61 Chipset limitation, AHCI Mode only works on Windows® Vista/Windows® 7. Please use IDE Mode on Windows® XP.
- [IDE] is the default SATA type Using Windows® XP, there is no need to change the SATA type.
- To configure the default SATA type in BIOS, click **Advanced Mode > Advanced tab > SATA Configuration > SATA Mode Selection**.
- When using hot-plug and NCQ, set the **SATA Mode Selection** item in the BIOS to [AHCI]. See section **2.5.3 SATA Configuration** for details.

10. System panel connector (10-1 pin PANEL)

This connector supports several chassis-mounted functions.



- **System power LED (2-pin PLED)**

This 2-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **Hard disk drive activity LED (2-pin +HDLED)**

This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.

- **ATX power button/soft-off button (2-pin PWRBTN)**

This 2-pin connector is for the system power button.

- **Reset button (2-pin RESET)**

This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

1.9 Software support

1.9.1 Installing an operating system

This motherboard supports Windows® XP / Vista / 7 Operating Systems (OS). Always install the latest OS version and corresponding updates to maximize the features of your hardware.



- Motherboard settings and hardware options vary. Refer to your OS documentation for detailed information.
- Ensure that you install Windows® XP Service Pack 3 or later versions / Windows® Vista Service Pack 1 or later versions before installing the drivers for better compatibility and system stability.

1.9.2 Support DVD information

The Support DVD that comes with the motherboard package contains the drivers, software applications, and utilities that you can install to avail all motherboard features.



The contents of the Support DVD are subject to change at any time without notice. Visit the ASUS website at www.asus.com for updates.

To run the Support DVD

Place the Support DVD into the optical drive. If Autorun is enabled in your computer, the DVD automatically displays the Specials screen which contains the unique features of ASUS motherboard. Click Drivers, Utilities, Make Disk, Manual, and Contact tabs to display their respective menus.



The following screen is for reference only.



Click an icon to display Support DVD/motherboard information

Click an item to install



If Autorun is NOT enabled in your computer, browse the contents of the Support DVD to locate the file ASSETUP.EXE from the BIN folder. Double-click the ASSETUP.EXE to run the DVD.

BIOS information

2

2.1 Managing and updating your BIOS



Save a copy of the original motherboard BIOS file to a USB flash disk in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update utility.

2.1.1 ASUS Update utility

The ASUS Update is a utility that allows you to manage, save, and update the motherboard BIOS in Windows® environment.



-
- ASUS Update requires an Internet connection either through a network or an Internet Service Provider (ISP).
 - This utility is available in the support DVD that comes with the motherboard package.
-

Installing ASUS Update

To install ASUS Update:

1. Place the support DVD in the optical drive. The **Specials** menu appears.
2. Click the **Utilities** tab, then click **AI Suite II**.
3. Follow the onscreen instructions to complete the installation.



Quit all Windows® applications before you update the BIOS using this utility.

Updating the BIOS

To update the BIOS:

1. From the Windows® desktop, click **Start > Programs > ASUS > AI Suite II > AI Suite II X.XX.XX** to launch the AI Suite II utility. The AI Suite II Quick Bar appears.
2. Click **Update** button from the Quick Bar, and then click **ASUS Update** from the popup menu. The **ASUS Update** main screen appears. From the list, select either of the following methods:

Updating from the Internet

- a. Select **Update BIOS from the Internet**, then click **Next**.
- b. Select the ASUS FTP site nearest you to avoid network traffic, then click **Next**.
- c. From the FTP site, select the BIOS version that you wish to download then click **Next**.



The ASUS Update utility is capable of updating itself through the Internet. Always update the utility to avail all its features.

Updating from a BIOS file

- a. Select **Update BIOS from file**, then click **Next**.
 - b. Locate the BIOS file from the **Open** window, then click **Open**.
3. Follow the onscreen instructions to complete the updating process.

2.1.2 ASUS EZ Flash 2

The ASUS EZ Flash 2 feature allows you to update the BIOS without using an OS-based utility.



Before you start using this utility, download the latest BIOS file from the ASUS website at www.asus.com.

To update the BIOS using EZ Flash 2:

1. Insert the USB flash disk that contains the latest BIOS file to the USB port.
2. Enter the **Advanced Mode** of the BIOS setup program. Go to the **Tool** menu to select **ASUS EZ Flash 2 Utility** and press <Enter> to enable it.
3. Press <Tab> to switch to the **Drive** field.
4. Press the Up/Down arrow keys to find the USB flash disk that contains the latest BIOS, and then press <Enter>.
5. Press <Tab> to switch to the **Folder Info** field.
6. Press the Up/Down arrow keys to find the BIOS file, and then press <Enter> to perform the BIOS update process. Reboot the system when the update process is done.



-
- This function supports USB flash disks with FAT 32/16 format and single partition only.
 - DO NOT shut down or reset the system while updating the BIOS to prevent system boot failure!
-

2.1.3 ASUS CrashFree BIOS 3 utility

The ASUS CrashFree BIOS 3 is an auto recovery tool that allows you to restore the BIOS file when it fails or gets corrupted during the updating process. You can restore a corrupted BIOS file using the motherboard support DVD or a USB flash drive that contains the updated BIOS file.



-
- Before using this utility, rename the BIOS file in the removable device into **H61MLKR.CAP**.
 - The BIOS file in the support DVD may not be the latest version. Download the latest BIOS file from the ASUS website at www.asus.com.
-

Recovering the BIOS

To recover the BIOS:

1. Turn on the system.
2. Insert the support DVD to the optical drive or the USB flash drive that contains the BIOS file to the USB port.
3. The utility automatically checks the devices for the BIOS file. When found, the utility reads the BIOS file and enters ASUS EZ Flash 2 utility automatically.
4. The system requires you to enter BIOS Setup to recover BIOS setting. To ensure system compatibility and stability, we recommend that you press <F5> to load default BIOS values.



DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!

2.1.4 ASUS BIOS Updater

The ASUS BIOS Updater allows you to update BIOS in DOS environment. This utility also allows you to copy the current BIOS file that you can use as a backup when the BIOS fails or gets corrupted during the updating process.



The succeeding utility screens are for reference only. The actual utility screen displays may not be same as shown.

Before updating BIOS

1. Prepare the motherboard support DVD and a USB flash drive in FAT32/16 format and single partition.
2. Download the latest BIOS file and BIOS Updater from the ASUS website at <http://support.asus.com> and save them on the USB flash drive.

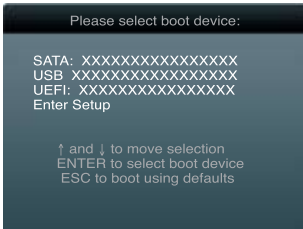


NTFS is not supported under DOS environment. Do not save the BIOS file and BIOS Updater to a hard disk drive or USB flash drive in NTFS format.

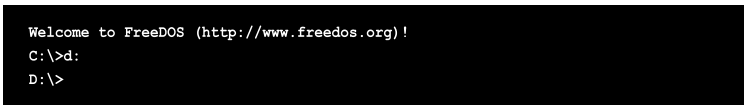
3. Turn off the computer and disconnect all SATA hard disk drives (optional).

Booting the system in DOS environment

1. Insert the USB flash drive with the latest BIOS file and BIOS Updater to the USB port.
2. Boot your computer. When the ASUS Logo appears, press <F8> to show the **BIOS Boot Device Select Menu**. Insert the support DVD into the optical drive and select the optical drive as the boot device.



3. When the Make Disk menu appears, select the FreeDOS command prompt item by pressing the item number.
4. At the FreeDOS prompt, type d: and press <Enter> to switch the disk from Drive C (optical drive) to Drive D (USB flash drive).



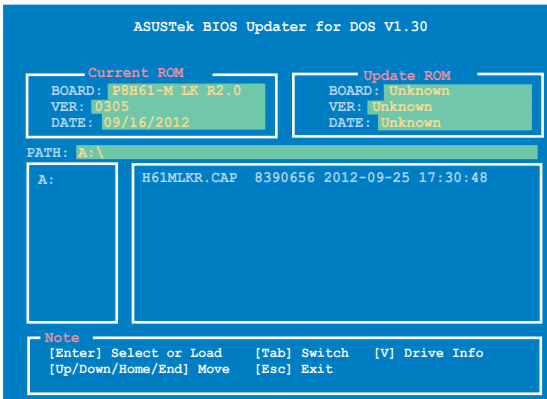
Updating the BIOS file

To update the BIOS file using BIOS Updater:

1. At the FreeDOS prompt, type **bupdater /pc /g** and press <Enter>.

```
D:\>bupdater /pc /g
```

2. The BIOS Updater screen appears as below.



3. Press <Tab> to switch between screen fields and use the <Up/Down/Home/End> keys to select the BIOS file and press <Enter>. BIOS Updater checks the selected BIOS file and prompts you to confirm BIOS update.



4. Select Yes and press <Enter>. When BIOS update is done, press <ESC> to exit BIOS Updater. Restart your computer.



DO NOT shut down or reset the system while updating the BIOS to prevent system boot failure!



- For BIOS Updater version 1.30 or later, the utility automatically exits to the DOS prompt after updating BIOS.
 - Ensure to load the BIOS default settings to ensure system compatibility and stability. Select the Load Optimized Defaults item under the Exit menu. Refer to section **2.9 Exit menu** for details.
 - Ensure to connect all SATA hard disk drives after updating the BIOS file if you have disconnected them.
-

2.2 BIOS setup program

Use the BIOS Setup program to update the BIOS or configure its parameters. The BIOS screens include navigation keys and brief online help to guide you in using the BIOS Setup program.

Entering BIOS Setup at startup

To enter BIOS Setup at startup:

- Press <Delete> during the Power-On Self Test (POST). If you do not press <Delete>, POST continues with its routines.

Entering BIOS Setup after POST

To enter BIOS Setup after POST:

- Press <Ctrl>+<Alt>+ simultaneously.
- Press the reset button on the system chassis.
- Press the power button to turn the system off then back on. Do this option only if you failed to enter BIOS Setup using the first two options.



Using the power button, reset button, or the <Ctrl>+<Alt>+ keys to force reset from a running operating system can cause damage to your data or system. We recommend to always shut down the system properly from the operating system.



-
- The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
 - Visit the ASUS website at www.asus.com to download the latest BIOS file for this motherboard.
 - Ensure that a USB mouse is connected to your motherboard if you want to use the mouse to control the BIOS setup program.
 - If the system becomes unstable after changing any BIOS setting, load the default settings to ensure system compatibility and stability. Select the **Load Optimized Defaults** item under the Exit menu. See section 2.9 **Exit Menu** for details.
 - If the system fails to boot after changing any BIOS setting, try to clear the CMOS and reset the motherboard to the default value. See section 1.7 **Jumpers** for information on how to erase the RTC RAM.
-

BIOS menu screen

The BIOS setup program can be used under two modes: **EZ Mode** and **Advanced Mode**. You can change modes from the **Exit** menu or from the Exit/Advanced Mode button in the EZ Mode/Advanced Mode screen.

EZ Mode

By default, the EZ Mode screen appears when you enter the BIOS setup program. The EZ Mode provides you an overview of the basic system information, and allows you to select the display language, system performance mode and boot device priority. To access the Advanced Mode, click Exit/Advanced Mode, then select Advanced Mode.



The default screen for entering the BIOS setup program can be changed. Refer to the **Setup Mode** item in section 2.7 **Boot menu** for details.

The screenshot shows the ASUS UEFI BIOS EZ Mode interface. Key elements include:

- Language:** English (top right)
- Exit/Advanced Mode:** Button (top right)
- System Info:** P8H61-M LK R2.0/ASUS, BIOS Version: 6307, CPU Type: Intel Core i5-2500, GPU: 15-2500, CPU @ 3.30GHz, Speed: 3300 MHz, Total Memory: 4096 MB (DDR3 1333MHz)
- Temperature:** CPU: 45.877/45.875, MB: 40.877/41.875
- Voltage:** CPU: 1.150V, 5V: 5.160V, 12V: 12.000V, 3.3V: 3.300V
- Fan Speed:** CPU_FAN: 1500RPM, CHA_FAN: 875RPM
- Q-Fan Control:** Quiet, Performance, Energy Saving, Standard, Normal, ASUS Optimal modes
- Boot Priority:** Shows boot device icons (Hard Disk, DVD-ROM) and a text prompt: "Use the mouse to drag or keyboard to navigate to decide the boot priority."
- Buttons:** Standard (F2), Advanced Mode (F7), Boot Menu (F8), Default (F9)

Labels and their corresponding functions:

- Selects the display language of the BIOS setup program** (points to English)
- Clicks to display all fan speeds if available** (points to Fan Speed)
- Displays the CPU/motherboard temperature, CPU/5V/3.3V/12V voltage output, CPU/chassis fan speed** (points to Temperature and Voltage)
- Exits the BIOS setup program without saving the changes, saves the changes and resets the system, or enters the Advanced Mode** (points to Exit/Advanced Mode)
- Selects the boot device priority** (points to Boot Priority)
- Displays the Advanced mode functions** (points to Advanced Mode (F7))
- Power Saving mode** (points to Energy Saving)
- Normal mode** (points to Standard)
- ASUS Optimal mode** (points to ASUS Optimal)
- Selects the Advanced mode functions** (points to Quiet)
- Displays the system properties of the selected mode on the right hand side** (points to the fan speed and temperature gauges)
- Selects the boot device priority** (points to Boot Menu (F8))
- Loads optimized default** (points to Default (F9))



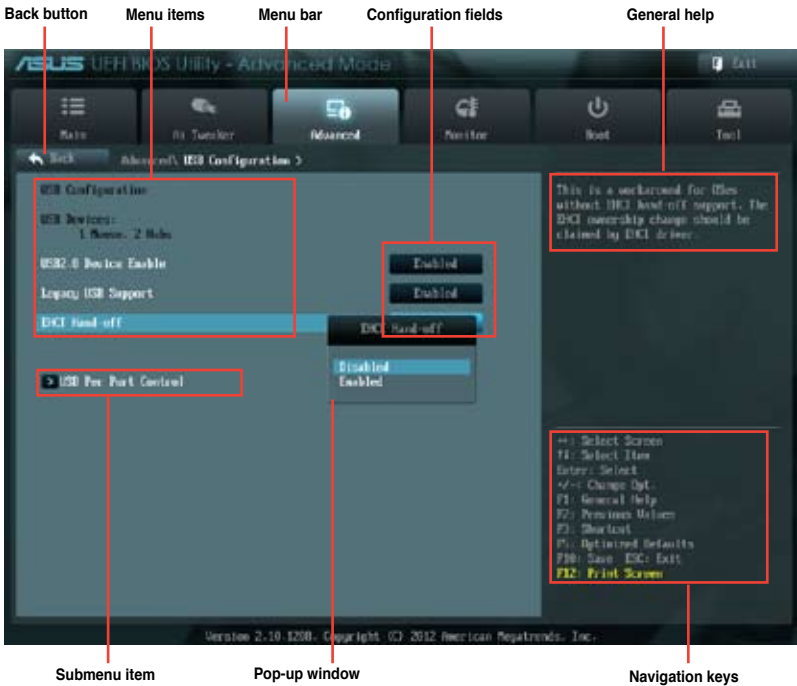
- The boot device options vary depending on the devices you installed to the system.
- The **Boot Menu(F8)** button is available only when the boot device is installed to the system.

Advanced Mode

The Advanced Mode provides advanced options for experienced end-users to configure the BIOS settings. The figure below shows an example of the **Advanced Mode**. Refer to the following sections for the detailed configurations.



To access the EZ Mode, click **Exit**, then select **ASUS EZ Mode**.



Menu bar

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

Main	For changing the basic system configuration
Ai Tweaker	For changing the overclocking settings
Advanced	For changing the advanced system settings
Monitor	For displaying the system temperature, power status, and changing the fan settings
Boot	For changing the system boot configuration
Tool	For configuring options for special functions
Exit	For selecting the exit options and loading default settings

Menu items

The highlighted item on the menu bar displays the specific items for that menu. For example, selecting **Main** shows the Main menu items.

The other items (Ai Tweaker, Advanced, Monitor, Boot, Tool, and Exit) on the menu bar have their respective menu items.

Back button

This button appears when entering a submenu. Press <Esc> or use the USB mouse to click this button to return to the previous menu screen.

Submenu items

A greater than sign (>) before each item on any menu screen means that the item has a submenu. To display the submenu, select the item and press <Enter>.

Pop-up window

Select a menu item and press <Enter> to display a pop-up window with the configuration options for that item.

Scroll bar

A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen. Press the Up/Down arrow keys or <Page Up> / <Page Down> keys to display the other items on the screen.

Navigation keys

At the bottom right corner of the menu screen are the navigation keys for the BIOS setup program. Use the navigation keys to select items in the menu and change the settings.

General help

At the top right corner of the menu screen is a brief description of the selected item.

Configuration fields

These fields show the values for the menu items. If an item is user-configurable, you can change the value of the field opposite the item. You cannot select an item that is not user-configurable.

A configurable field is highlighted when selected. To change the value of a field, select it and press <Enter> to display a list of options.

2.3 Main menu

The Main menu screen appears when you enter the Advanced Mode of the BIOS Setup program. The Main menu provides you an overview of the basic system information, and allows you to set the system date, time, language, and security settings.



2.3.1 System Language [English]

Allows you to choose the BIOS language version from the options. Configuration options: [English] [Français] [Deutsch] [简体中文] [繁體中文] [日本語] [Español] [Русский]

2.3.2 System Date [Day xx/xx/xxxx]

Allows you to set the system date.

2.3.3 System Time [xx:xx:xx]

Allows you to set the system time.

2.3.4 Security

The Security menu items allow you to change the system security settings.



- If you have forgotten your BIOS password, erase the CMOS Real Time Clock (RTC) RAM to clear the BIOS password. See section 1.7 **Jumpers** for information on how to erase the RTC RAM.
- The **Administrator** or **User Password** items on top of the screen show the default **Not Installed**. After you set a password, these items show **Installed**.

Administrator Password

If you have set an administrator password, we recommend that you enter the administrator password for accessing the system. Otherwise, you might be able to see or change only selected fields in the BIOS setup program.

To set an administrator password:

1. Select the **Administrator Password** item and press <Enter>.
2. From the **Create New Password** box, key in a password, then press <Enter>.
3. Confirm the password when prompted.

To change an administrator password:

1. Select the **Administrator Password** item and press <Enter>.
2. From the **Enter Current Password** box, key in the current password, then press <Enter>.
3. From the **Create New Password** box, key in a new password, then press <Enter>.
4. Confirm the password when prompted.

To clear the administrator password, follow the same steps as in changing an administrator password, but press <Enter> when prompted to create/confirm the password. After you clear the password, the **Administrator Password** item on top of the screen shows **Not Installed**.

User Password

If you have set a user password, you must enter the user password for accessing the system. The **User Password** item on top of the screen shows the default **Not Installed**. After you set a password, this item shows **Installed**.

To set a user password:

1. Select the **User Password** item and press <Enter>.
2. From the **Create New Password** box, key in a password, then press <Enter>.
3. Confirm the password when prompted.

To change a user password:

1. Select the **User Password** item and press <Enter>.
2. From the **Enter Current Password** box, key in the current password, then press <Enter>.
3. From the **Create New Password** box, key in a new password, then press <Enter>.
4. Confirm the password when prompted.

To clear the user password, follow the same steps as in changing a user password, but press <Enter> when prompted to create/confirm the password. After you clear the password, the **User Password** item on top of the screen shows **Not Installed**.

2.4 Ai Tweaker menu

The Ai Tweaker menu items allow you to configure overclocking-related items.



Be cautious when changing the settings of the Ai Tweaker menu items. Incorrect field values can cause the system to malfunction.



The configuration options for this section vary depending on the CPU and DIMM model you installed on the motherboard.



Target CPU Speed : xxxxMHz

Displays the target CPU speed.

Target DRAM Speed : xxxxMHz

Displays the target DRAM speed.

2.4.1 CPU bus speed : DRAM speed ratio mode [Auto]

Allows you to set the CPU bus speed to DRAM speed ratio mode.

- [Auto] DRAM speed is set to the optimized settings.
- [100:133] The CPU bus speed to DRAM speed ratio is set to 100:133.
- [100:100] The CPU bus speed to DRAM speed ratio is set to 100:100.

2.4.2 Memory Frequency [Auto]

Allows you to set the memory operating frequency. Configuration options: [Auto] [DDR3-800MHz][DDR3-1066MHz][DDR3-1333MHz][DDR3-1400MHz][DDR3-1600MHz][DDR3-1800MHz][DDR3-1866MHz][DDR3-2000MHz][DDR3-2133MHz][DDR3-2200MHz][DDR3-2400MHz][DDR3-2600MHz][DDR3-2666MHz][DDR3-2800MHz][DDR3-2933MHz][DDR3-3000MHz][DDR3-3200MHz]



Selecting a very high memory frequency may cause the system to become unstable! If this happens, revert to the default setting.

2.4.3 iGPU Max. Frequency [Auto]

Allows you to set the iGPU maximum frequency. The values range from xxxxMHz (by CPU) to 3000MHz with a 50Mhz interval. Use <+>/<-> to adjust the value.

2.4.4 DRAM Timing Control

The sub-items in this menu allow you to set the DRAM timing control features. Use the <+> and <-> keys to adjust the value. To restore the default setting, type [auto] using the keyboard and press <Enter>.



Changing the values in this menu may cause the system to become unstable! If this happens, revert to the default settings.

2.4.5 CPU Power Management

The sub-items in this menu allow you to set the CPU ratio and features.

CPU Ratio [Auto]

Allows you to manually adjust the maximum non-turbo CPU ratio. Use <+> and <-> keys or the numeric keypad to adjust the value. The valid value ranges vary according to your CPU model.

Enhanced Intel® SpeedStep Technology [Enabled]

Allows you to enable or disable the Enhanced Intel® SpeedStep Technology (EIST).

[Disabled] Disables this function.

[Enabled] The operating system dynamically adjusts the processor voltage and core frequency which may result in decreased average consumption and decreased average heat production.

Turbo Mode [Enabled]

Allows you to enable your core processor's speed to run faster than the marked frequency in a specific condition. Configuration options: [Disabled] [Enabled]

[Enabled] Allows processor cores to run faster than marked frequency in specific conditions.

[Disabled] Disables this function.



The first three items appear only when you set the **Turbo Mode** items to [Enabled].

Long duration power limit [Auto]

Use the <+> and <-> keys to adjust the value.

Long duration maintained [Auto]

Use the <+> and <-> keys to adjust the value.

Short duration power limit [Auto]

Use the <+> and <-> keys to adjust the value.

Primary Plane Current Limit [Auto]

Use the <+> and <-> keys to adjust the value.

Secondary Plane Current Limit [Auto]

Use the <+> and <-> keys to adjust the value.

2.5 Advanced menu

The Advanced menu items allow you to change the settings for the CPU and other system devices.



Be cautious when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.



2.5.1 CPU Configuration

The items in this menu show the CPU-related information that the BIOS automatically detects.



The items shown in submenu may be different due to the CPU you installed.

Intel Adaptive Thermal Monitor [Enabled]

- [Enabled] Enables the overheated CPU to throttle its clock speed to cool down.
- [Disabled] Disables the CPU thermal monitor function.

Active Processor Cores [All]

Allows you to choose the number of CPU cores to activate in each processor package.
Configuration options: [All] [1] [2] [3]

Limit CPUID Maximum [Disabled]

- [Enabled] Allows legacy operating systems to boot even without support for CPUs with extended CPUID functions.
- [Disabled] Disables this function.

Execute Disable Bit [Enabled]

- [Enabled] Enables the No-Execution Page Protection Technology.
- [Disabled] Forces the XD feature flag to always return to zero (0).

Intel® Virtualization Technology [Disabled]

- [Enabled] Allows a hardware platform to run multiple operating systems separately and simultaneously, enabling one system to virtually function as several systems.
- [Disabled] Disables this function.

Hardware Prefetcher [Enabled]

- [Disabled] Disables this function.
- [Enabled] Allows you to turn on /off the Mid Level Cache (L2) streamer prefetcher.

Adjacent Cache Line Prefetch [Enabled]

- [Disabled] Disables this function.
- [Enabled] Allows a hardware platform to perform adjacent cache line prefetching.

CPU Power Management Configuration

CPU Ratio [Auto]

Allows you to set the ratio between the CPU Core Clock and the BCLK Frequency. Use <+> and <-> keys to adjust the ratio. The valid value ranges vary according to your CPU model.

Enhanced Intel SpeedStep Technology [Enabled]

Allows you to enable or disable the Enhanced Intel® SpeedStep Technology (EIST).

[Disabled] The CPU runs at its default speed.

[Enabled] The operating system controls the CPU speed.

Turbo Mode [Enabled]

Allows you to enable or disable the Intel® Turbo Mode Technology.

[Disabled] Disables this function.

[Enabled] Allows processor cores to run faster than marked frequency in specific condition.

CPU C1E [Auto]

Allows you to enable or disable the CPU C1E.

[Auto] Set this item automatically.

[Disabled] Disables this function.

[Enabled] Enables the C1E support function. This item should be enabled in order to enable the Enhanced Halt State.

CPU C3 Report [Auto]

Allows you to disable or enable the CPU C3 report to OS.

[Auto] Set this item automatically.

[Disabled] Disables this function.

[Enabled] Enables the C3 report function. This item should be enabled in order to enable the Enhanced Halt State.

CPU C6 Report [Auto]

Allows you to disable or enable the CPU C6 report to OS.

[Auto] Set this item automatically.

[Disabled] Disables this function.

[Enabled] Enables the C6 report function. This item should be enabled in order to enable the Enhanced Halt State.

2.5.2 PCH Configuration

High Precision Timer [Enabled]

Allows you to enable or disable the High Precision Event Timer.

Configuration options: [Enabled] [Disabled]

Intel® Rapid Start Technology [Disabled]

Allows you to enable or disable the Intel(R) Rapid Start Technology.

Configuration options: [Enabled] [Disabled]

Intel® Smart Connect Technology [Disabled]

ISCT Configuration [Disabled]

Allows you to enable or disable the ISCT configuration. Configuration options:

[Enabled] [Disabled]

2.5.3 SATA Configuration

While entering Setup, the BIOS automatically detects the presence of SATA devices. The SATA Port items show **Not Present** if no SATA device is installed to the corresponding SATA port.

SATA Mode Selection [IDE]

Allows you to set the SATA configuration.

- [Disabled] Disables the SATA function.
- [IDE] Set to [IDE] when you want to use the Serial ATA hard disk drives as Parallel ATA physical storage devices.
- [AHCI] Set to [AHCI] when you want the SATA hard disk drives to use the AHCI (Advanced Host Controller Interface). The AHCI allows the onboard storage driver to enable advanced Serial ATA features that increases storage performance on random workloads by allowing the drive to internally optimize the order of commands.



-
- Due to H61 Chipset limitation, AHCI Mode only works on Windows® Vista / Windows® 7. Please use IDE Mode on Windows® XP.
 - [IDE] is the default SATA type. Under Windows® XP, there is no need to change the SATA type.
-

S.M.A.R.T. Status Check [Enabled]

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a monitor system. When read/write of your hard disk errors occur, this feature allows the hard disk to report warning messages during the POST. This item appears only when you set the previous item to [IDE] or [AHCI]. Configuration options: [Enabled] [Disabled]

Hot Plug [Disabled]

This item only appears when you set the SATA Mode Selection item to [AHCI] and allows you to enable or disable the hot-plug support for each SATA port.

Configuration options: [Enabled] [Disabled]

2.5.4 System Agent Configuration

Memory Remap Feature [Enabled]

- [Enabled] Allow you to enable remapping the memory above 4GB.
- [Disabled] Disables this function.

Graphics Configuration

Primary Display [Auto]

Allows you to decide which graphics controller to use as the primary boot device. Configuration options: [Auto] [iGPU] [PCIe]

iGPU Memory [Auto]

Allows you to select the amount of system memory allocated to DVMT 5.0 used by the iGPU. Configuration options: [32M] [64M] [96M] [128M] ~ [448M] [480M] [512M] [1024M]

Render Standby [Enabled]

Allows you to enable the Intel® Graphics Render Standby support to reduce the iGPU power use when idle. Configuration options: [Disabled] [Enabled]

iGPU Multi-Monitor [Disabled]

Allows you to enable or disable the iGPU Multi-Monitor. For Lucid Virtu Universal MVP function support, set this item to [Enabled] to empower both the integrated and discrete graphic cards. The iGPU shared memory size will be fixed at 64MB.

Configuration options: [Disabled] [Enabled]

2.5.5 USB Configuration

The items in this menu allow you to change the USB-related features.



The USB Devices item shows the auto-detected values. If no USB device is detected, the item shows **None**.

Intel USB2.0 EHCI Controller [Enabled]

[Enabled] Enables the Intel USB2.0 EHCI Controller.

[Disabled] Disables the Intel USB2.0 EHCI Controller.

Legacy USB Support [Enabled]

[Enabled] Enables the support for USB devices on legacy operating systems (OS).

[Disabled] The USB devices can be used only for the BIOS setup program.

[Auto] Allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled.

EHCI Hand-off [Disabled]

[Enabled] Enables the support for operating systems without an EHCI hand-off feature.

[Disabled] Disables the function.

USB Single Port Control

USB 1/2/3/4/5/6, 9/10 [Enabled]

[Enabled] Enables USB 1/2/3/4/5/6, 9/10.

[Disabled] Disables USB 1/2/3/4/5/6, 9/10.

2.5.6 Onboard Devices Configuration

HD Audio Controller [Enabled]

[Enabled] Enables the High Definition Audio Controller.

[Disabled] Disables the controller.



The following two items appear only when you set the **HD Audio Controller** item to [Enabled].

Front Panel Type [HD]

Allows you to set the front panel audio connector (AAFP) mode to legacy AC'97 or high-definition audio depending on the audio standard that the front panel audio module supports.

- [HD] Sets the front panel audio connector (AAFP) mode to high definition audio.
- [AC97] Sets the front panel audio connector (AAFP) mode to legacy AC'97

Realtek LAN Controller [Enabled]

- [Enabled] Enables the Realtek LAN controller.
- [Disabled] Disables the controller.

Realtek PXE OPROM [Disabled]

This item appears only when you set the previous item to [Enabled] and allows you to enable or disable the PXE OptionRom of the Realtek LAN controller.

Configuration options: [Enabled] [Disabled]

2.5.7 APM

Restore AC Power Loss [Power Off]

- [Power On] The system goes into on state after an AC power loss.
- [Power Off] The system goes into off state after an AC power loss.
- [Last State] The system goes into either off or on state, whatever the system state was before the AC power loss.

Power On By PS/2 Keyboard [Disabled]

- [Disabled] Disables the Power On by a PS/2 keyboard.
- [Space Bar] Sets the Space Bar on the PS/2 keyboard to turn on the system.
- [Ctrl-Esc] Sets the Ctrl+Esc key on the PS/2 keyboard to turn on the system.
- [Power Key] Sets Power key on the PS/2 keyboard to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead.

Power On By PS/2 Mouse [Disabled]

- [Disabled] Disables the Power On by a PS/2 mouse.
- [Enabled] Enables the Power On by a PS/2 mouse. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead.

Power On By PCIE [Disabled]

- [Disabled] Disables the PCIE devices to generate a wake event.
- [Enabled] Enables the PCIE devices to generate a wake event.

Power On By RTC [Disabled]

- [Disabled] Disables RTC to generate a wake event.
- [Enabled] When set to [Enabled], the items **RTC Alarm Date (Days)** and **Hour/Minute/Second** will become user-configurable with set values.

2.5.8 Network Stack

Network Stack [Disable Link]

This item allows user to disable or enable the UEFI network stack. Configuration options: [Disable Link] [Enabled]



The following two items appear only when you set the previous item to [Enabled].

Ipv4 PXE Support [Enabled]

This item allows user to disable or enable the Ipv4 PXE Boot support. Configuration options: [Disable Link] [Enable]

Ipv6 PXE Support [Enabled]

This item allows user to disable or enable the Ipv6 PXE Boot support. Configuration options: [Disable Link] [Enable]

2.6 Monitor menu

The Monitor menu displays the system temperature/power status, and allows you to change the fan settings.



2.6.1 CPU Temperature / MB Temperature [xxx°C/xxx°F]

The onboard hardware monitor automatically detects and displays the CPU and motherboard temperatures. Select **Ignore** if you do not wish to display the detected temperatures.

2.6.2 CPU / Chassis Fan Speed [xxxx RPM] or [Ignore] / [N/A]

The onboard hardware monitor automatically detects and displays the CPU and chassis fan speeds in rotations per minute (RPM). If the fan is not connected to the motherboard, the field shows **N/A**. Select **Ignore** if you do not wish to display the detected speed.

2.6.3 CPU Voltage, 3.3V Voltage, 5V Voltage, 12V Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators. Select **Ignore** if you do not want to detect this item.

2.6.4 CPU Q-Fan Control [Enabled]

[Disabled] Disables the CPU Q-Fan control feature.

[Enabled] Enables the CPU Q-Fan control feature.

CPU Fan Speed Low Limit [200 RPM]

This item appears only when you enable the CPU Q-Fan Control feature and allows you to disable or set the CPU fan warning speed. Configuration options: [Ignore] [100 RPM] [200 RPM] [300 RPM] [400 RPM] [500 RPM]

CPU Fan Profile [Standard]

This item appears only when you enable the CPU Q-Fan Control feature and allows you to set the appropriate performance level of the CPU fan.

[Standard] Sets to [Standard] to make the CPU fan automatically adjust depending on the CPU temperature.

[Silent] Sets to [Silent] to minimize the fan speed for quiet CPU fan operation.

[Turbo] Sets to [Turbo] to achieve maximum CPU fan speed.

[Manual] Sets to [Manual] to assign detailed fan speed control parameters.



The following four items appear only when you set CPU Fan Profile to [Manual].

CPU Upper Temperature [70]

Use the <+> and <-> keys to adjust the upper limit of the CPU temperature. The values range from 20°C to 75°C.

CPU Fan Max. Duty Cycle(%) [100]

Use the <+> and <-> keys to adjust the maximum CPU fan duty cycle. The values range from 20% to 100%. When the CPU temperature reaches the upper limit, the CPU fan will operate at the maximum duty cycle.

CPU Lower Temperature [20]

Displays the lower limit of the CPU temperature.

CPU Fan Min. Duty Cycle(%) [20]

Use the <+> and <-> keys to adjust the minimum CPU fan duty cycle. The values range from 0% to 100%. When the CPU temperature is under 40°C, the CPU fan will operate at the minimum duty cycle.

2.6.5 Chassis Q-Fan Control [Enabled]

Chassis Q-Fan Control [Enabled]

[Disabled] Disables the Chassis Q-Fan control feature.

[Enabled] Enables the Chassis Q-Fan control feature.

Chassis Fan Speed Low Limit [600 RPM]

This item appears only when you enable the **Chassis Q-Fan Control** feature and allows you to disable or set the chassis fan warning speed.

Configuration options: [Ignore] [200 RPM] [300 RPM] [400 RPM] [500 RPM] [600 RPM]

Chassis Fan Profile [Standard]

This item appears only when you enable the **Chassis Q-Fan Control** feature and allows you to set the appropriate performance level of the chassis fan.

[Standard] Sets to [Standard] to make the chassis fan automatically adjust depending on the chassis temperature.

[Silent] Sets to [Silent] to minimize the fan speed for quiet chassis fan operation.

[Turbo] Sets to [Turbo] to achieve maximum chassis fan speed.

[Manual] Sets to [Manual] to assign detailed fan speed control parameters.



The following four items appear only when you set **Chassis Fan Profile** to [Manual].

Chassis Upper Temperature [70]

Use the <+> and <-> keys to adjust the upper limit of the CPU temperature. The values range from 40°C to 90°C.

Chassis Fan Max. Duty Cycle(%) [100]

Use the <+> and <-> keys to adjust the maximum chassis fan duty cycle. The values range from 60% to 100%. When the chassis temperature reaches the upper limit, the chassis fan will operate at the maximum duty cycle.

Chassis Lower Temperature [40]

Displays the lower limit of the chassis temperature.

CPU Fan Min. Duty Cycle(%) [60]

Use the <+> and <-> keys to adjust the minimum chassis fan duty cycle. The values range from 60% to 100%. When the chassis temperature is under 40°C, the chassis fan will operate at the minimum duty cycle.

2.6.6 Anti Surge Support [Enabled]

This item allows you to enable or disable the Anti Surge function.

Configuration options: [Disabled] [Enabled]

2.7 Boot menu

The Boot menu items allow you to change the system boot options.



2.7.1 Fast Boot [Enabled]

Enable or disable boot with initialization of a minimal set of devices to launch active boot option. Configuration options: [Disabled] [Enabled]



The following three items appear only when you set **Fast Boot** to [Enabled].

USB Support [Partial Initial]

- [Disabled] All USB devices will not be available until after OS boot.
- [Full Initial] All USB devices will be available in OS and during POST.
- [Partial Initial] Specific USB port/device will not be available before OS boot.

PS/2 Keyboard and Mouse Support [Auto]

- [Auto] Automatic configuration.
- [Disabled] Disables PS/2 keyboard and mouse support during POST.
- [Full Initialization] PS/2 keyboard and mouse support are enabled during POST.

Network Stack Driver Support [Disabled]

- [Disabled] The BIOS skips over the Network Stack Driver and tries to boot from the next device.
- [Enabled] Allows the BIOS to boot from the Network Stack Driver.

Next boot after AC Power Loss [Normal Boot]

- [Normal Boot] Returns to normal boot on the next boot after an AC power loss.
[Fast Boot] Accelerates the boot speed on the next boot after an AC power loss.

2.7.2 Full Screen Logo [Enabled]

- [Enabled] Enables the full screen logo display feature.
[Disabled] Disables the full screen logo display feature.



Set this item to [Enabled] to use the ASUS MyLogo 2™ feature.

Post Logo Delay Time [3 sec]

Allows you to set the waiting time for the system to display the post logo. Configuration options: [0 sec] [1 sec] [2 sec] [3 sec] [4 sec] [5 sec] [6 sec] [7 sec] [8 sec] [9 sec] [10 sec]

2.7.3 Bootup NumLock State [On]

- [On] Sets the power-on state of the NumLock to [On].
[Off] Sets the power-on state of the NumLock to [Off].

2.7.4 Wait for 'F1' If Error [Enabled]

When this item is set to [Enabled], the system waits for the F1 key to be pressed when error occurs. Configuration options: [Disabled] [Enabled]

2.7.5 Option ROM Messages [Force BIOS]

- [Force BIOS] The third-party ROM messages will be forced to display during the boot sequence.
[Keep Current] The third-party ROM messages will be displayed only if the third-party manufacturer had set the add-on device to do so.

2.7.6 Setup Mode [EZ Mode]

- [Advanced Mode] Sets Advanced Mode as the default screen for entering the BIOS setup program.
[EZ Mode] Sets EZ Mode as the default screen for entering the BIOS setup program.

2.7.7 CSM (Compatibility Support Module)

This option controls whether or not CSM will be launched.

Launch CSM [Auto]

Configuration option: [Auto] [Enabled] [Disabled]



The following four items appear only when you set **Launch CSM** to [Enabled].

Boot Device Control [UEFI and Legacy OpROM]

Configuration option: [UEFI and Legacy OpROM] [Legacy OpROM only] [UEFI only]

Boot from Network Devices [Legacy OpROM first]

Configuration option: [Legacy OpROM first] [UEFI driver first] [Ignore]

Boot from Storage Devices [Legacy OpROM first]

Configuration option: [Both, Legacy OpROM first] [Both, UEFI first] [Legacy OpROM first] [UEFI driver first] [Ignore]

Boot from PCIe/PCI Expansion Devices [Legacy OpROM first]

Configuration option: [Legacy OpROM first] [UEFI driver first]

2.7.8 Secure Boot

This option allows you to configure the Secure Boot related parameters.

OS Type [Other OS]

Configuration options: [Windows UEFI mode] [Other OS]

Secure Boot Mode [Standard]

Configuration options: [Standard] [Custom]



The following items appear when you **Secure Boot Mode** is set to **[Custom]**.

Key Management

Install default Secure Boot keys

Configuration options: [Yes] [No]

Platform Key (PK) Management***Load PK from File***

Configuration options: [Ok]

Copy PK to File

Configuration options: [Ok]

Delete PK

Configuration options: [Yes] [No]

Key Exchange Key (KEK) Management***Load KEK from File***

Configuration options: [Ok]

Copy KEK to File

Configuration options: [Ok]

Delete the KEK

Configuration options: [Yes] [No]

Append KEK from File

Configuration options: [Ok]

Database (DB) Management

Load DB from File

Configuration options: [Ok]

Copy DB to File

Configuration options: [Ok]

Delete the DB

Configuration options: [Yes] [No]

Append DB from File

Configuration options: [Ok]

DBX Management

Load DBX from File

Configuration options: [Ok]

Copy DBX to File

Configuration options: [Ok]

Delete the DBX

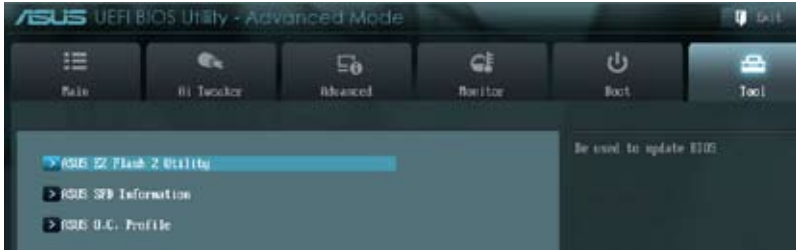
Configuration options: [Yes] [No]

Append DBX from File

Configuration options: [Ok]

2.8 Tools menu

The Tools menu items allow you to configure options for special functions. Select an item then press <Enter> to display the submenu.



2.8.1 ASUS EZ Flash 2 Utility

Allows you to run ASUS EZ Flash 2. Press [Enter] to launch the ASUS EZ Flash 2 screen.



For more details, see section 2.1.2 **ASUS EZ Flash 2**.

2.8.2 ASUS SPD Information

DIMM Slot # [DIMM_A1]

Displays the Serial Presence Detect (SPD) information of the DIMM module installed on the selected slot. Configuration options: [DIMM_A1] [DIMM_B1]

2.8.3 ASUS O.C. Profile

This item allows you to store or load multiple BIOS settings.



The **Setup Profile Status** items show **Not Installed** if no profile is created.

Save to Profile

Allows you to save the current BIOS settings to the BIOS Flash, and create a profile. Key in a profile number from one to eight, press <Enter>, and then select **Yes**.

Load from Profile

Allows you to load the previous BIOS settings saved in the BIOS Flash. Key in the profile number that saved your CMOS settings, press <Enter>, and then select **Yes**.



-
- DO NOT shut down or reset the system while updating the BIOS to prevent the system boot failure!
 - We recommend that you update the BIOS file only coming from the same memory/CPU configuration and BIOS version.
-

2.9 Exit menu

The Exit menu items allow you to load the optimal default values for the BIOS items, and save or discard your changes to the BIOS items. You can access the EZ Mode from the Exit menu.



Load Optimized Defaults

This option allows you to load the default values for each of the parameters on the Setup menus. When you select this option or if you press <F5>, a confirmation window appears. Select Yes to load the default values.

Save Changes & Reset

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved. When you select this option or if you press <F10>, a confirmation window appears. Select Yes to save changes and exit.

Discard Changes & Exit

This option allows you to exit the Setup program without saving your changes. When you select this option or if you press <Esc>, a confirmation window appears. Select Yes to discard changes and exit.

ASUS EZ Mode

This option allows you to enter the EZ Mode screen.

Launch EFI Shell from filesystem device

This option allows you to attempt to launch the EFI Shell application (shellx64.efi) from one of the available devices that have a filesystem.

Appendices

Notices

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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

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 manufacturer's 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 receiver.
- Connect the equipment to 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.



The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IC: Canadian Compliance Statement

Complies with the Canadian ICES-003 Class B specifications. This device complies with RSS 210 of Industry Canada. This Class B device meets all the requirements of the Canadian interference-causing equipment regulations.

This device complies with Industry Canada license exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil numérique de la Classe B est conforme à la norme NMB-003 du Canada. Cet appareil numérique de la Classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Cet appareil est conforme aux normes CNR exemptes de licence d'Industrie Canada. Le fonctionnement est soumis aux deux conditions suivantes :

- (1) cet appareil ne doit pas provoquer d'interférences et
- (2) cet appareil doit accepter toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité de l'appareil.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This class B digital apparatus complies with Canadian ICES-003.

VCCI: Japan Compliance Statement

VCCI Class B Statement

情報処理装置等電波障害自主規制について

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は家庭環境で使用することを目的としています。この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。

KC: Korea Warning Statement

B급 기기 (가정용 방송통신기자재)

이 기기는 가정용(B급) 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

*당해 무선설비는 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없습니다.

REACH

Complying with the REACH (Registration, Evaluation, Authorisation, and Restriction of Chemicals) regulatory framework, we published the chemical substances in our products at ASUS REACH website at <http://csr.asus.com/english/REACH.htm>.



DO NOT throw the motherboard in municipal waste. This product has been designed to enable proper reuse of parts and recycling. This symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.



DO NOT throw the mercury-containing button cell battery in municipal waste. This symbol of the crossed out wheeled bin indicates that the battery should not be placed in municipal waste.

ASUS Recycling/Takeback Services

ASUS recycling and takeback programs come from our commitment to the highest standards for protecting our environment. We believe in providing solutions for you to be able to responsibly recycle our products, batteries, other components as well as the packaging materials. Please go to <http://csr.asus.com/english/Takeback.htm> for detailed recycling information in different regions.

ASUS contact information

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Online support support.asus.com

* EUR 0.14/minute from a German fixed landline; EUR 0.42/minute from a mobile phone.

Technical Compliance Statement



For the following information

Ref. File No.: CIM1210120

Product : Motherboard
Model Number : P8H61-M LK R2.0
Brand : ASUS
Applicant : ASUSTEK Computer Inc.
Manufacturer #1 : MainTek Computer (Suzhou) Co., Ltd.
Manufacturer #2 : Dairriver Technology (Guangzhou) Inc.
Manufacturer #3 : Global Brands Manufacture Ltd.
Manufacturer #4 : First International Computer (Suzhou) Inc.
Manufacturer #5 : BOATEK ELECTRONIC CO., LTD.
Standards : FCC CFR 47 Part 15 Subpart B/Oct. 2011 and CISPR 22/1997 (Class B Limit) and ICES-003

We hereby certify that the above product has been tested by us and complied with the FCC official limits. These products might be marketed at the US accordance to FCC Rule based on the standard CFR 47 Part 2 and Part 15 Class B Equipment Regulations. The test was performed accordance to the procedures from ANSI C63.4-2009. The test data & results are issued on the test report no. EM-F1010373C.

Signature

Leon Liu Deputy General Manager
Date: Oct. 11, 2012

Test Laboratory:
AUDIX Technology Corporation, EMC Department
FCC ID: 2A0077-9
FCC OET: Dallas, TX/1004
Web Site: www.audixtech.com



NVLAP Lab Code: 200077-9

This statement is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo.

Technical Compliance Statement



Ref. No.: ACWE-RC120199 (ACWE-0120500R93)

For the following equipment

Applicant : ASUSTEK COMPUTER INC.
Manufacturer #1 : MainTek Computer (Suzhou) Co., Ltd.
Manufacturer #2 : Dairriver Technology (GZ) Inc.
Manufacturer #3 : Global Brands Manufacture Ltd.
Manufacturer #4 : First International Computer (Suzhou) Inc.
Manufacturer #5 : Bostek Electronic Co., Ltd.
Product : Motherboard
Model Number : P8H61-M LK R2.0
Brand : ASUS

We, AUDIX Technology (Wujiang) Co., Ltd. EMC Dept. hereby certify that the above products has been tested by us with the listed standards and found in compliance with the council EMC directive 2004/108/EC. It is possible to use CE marking to demonstrate the compliance with this EMC Directive. The test data & results are issued on the EMC test report No. ACWE-ET205009C.

Emission: EN 55022:2010 and AS/NZS CISPR22:2009 and EN 61000-3-3:2008
Immunity: EN 55024:2010
(IEC 61000-4-2:2008, IEC 61000-4-3:2008,
IEC 61000-4-4:2004+Corr.1:2006+Corr.2:2007, IEC 61000-4-5:2005,
IEC 61000-4-6:2008, IEC 61000-4-8:2009, IEC 61000-4-11:2004)

Oct. 11, 2012

Allen Wang / Senior Manager
AUDIX Technology (Wujiang) Co., Ltd. EMC Dept.



This statement is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo.