IMBA-H61A

Industrial Motherboard

Copyright Notice

Acknowledgments

Contents

Contents

Chapter 1

Product overview

1.1 Package contents

Check your industrial motherboard package for the following items.

- ☑ 1 x Industrial Motherboard
- ☑ 2 x Serial ATA 3.0Gb/s cables
- ☑ 1 x I/O Shield
- ☑ 1 x Support DVD (Drivers and manual)
- ☑ 1 x COM Port cable

> If any of the above items is damaged or missing, contact your distributor or sales representative immediately.

1.2 Features

- Intel® Socket 1155 For 3rd/2nd Generation Core™ i7 / Core™ i5 / Core™ i3 / Pentium® / Celeron® Processors
- Two 240-pin Dual Channel DDR3 1333 / 1066 /800 MHz DIMM slots supporting up To 16GB of non-ECC unbuffered memory
- Graphics multi-display: VGA x 1, DVI x 1
- 10/100/1000Base-TX Ethernet x 2
- SATA 3.0 Gb/s x 4, USB2.0 x 9, COM x 6
- PCI Express[x16] x 1, PCI Express[x1] x 2, PCI Express Mini-card x1, PCI x4
- Onboard parallel port connection

1.3   Specifications

SYSTEM	
Form factor	ATX Form Factor
CPU	LGA1155 socket for Intel® 3rd/2nd Generation Core™ i7 / Core™ i5 / Core™ i3 / Pentium® / Celeron® processors
	Supports Intel® 22nm / 32nm CPU
	Supports Intel® Turbo Boost Technology 2.0
	• **The Intel® Turbo Boost Technology 2.0 support depends on the CPU types.**
Memory	2 x DIMM (8GB per DIMM), max. 16GB, DDR3 1333 / 1066 / 800MHz
	Dual-channel memory architecture
Chipset	Intel® H61 Express Chipset
I/O Chipset	NCT6776F
Ethernet	Realtek® 8111F, 10/100/1000Base-TX
	2 x RJ-45 ports
BIOS	64Mb Flash ROM, UEFI AMI BIOS, PnP, DMI 2.0, SM BIOS, ACPI 2.0a
Manageability	WOL/WOR by LAN, PXE
OS	Windows® XP 32-bit, Windows® 7 32/64-bit, Windows® 8 32/64-bit
H/W Status Monitor	Monitors CPU/system temperature
	Monitors Vcore, 5V/VBAT/12V
	Monitors CPU/chassis fan speed
Expansion slot	1 x PCI Express 2.0 x16 slot
	2 x PCI Express 2.0 x1 slot
	4 x PCI slots
	1 x PCI Express Mini-card
Battery	Lithium battery
Power requirement	1 x 24-pin ATX connector
	1 x 4-pin ATX 12V power connector
Fan	1 x 4-pin CPU fan
	2 x 4-pin Chassis fan
Board size	12" x 9.6" (305mm x 244mm)
Gross weight	1.45 lb (0.66 Kg)
Operating temperature	32oF~140oF (0oC~60oC)
Storage temperature	-40oF~176oF (-40oC~80oC)
Operating humidity	0%~90% relative humidity, non-condensing
EMI	CE, FCC

(continued on the next page)

DISPLAY	
Chipset	Intel® Graphics Media Accelerator
Resolution	Up to 1920x1200@60Hz for VGA
	Up to 1920x1200@60Hz for DVI
Output interface	1 x VGA port
	1 x DVI port
I/O	
Storage	4 x SATA 3.0Gb/s ports
Serial port	1 x RS232 DB-9 connector (COM1)
	1 x RS232/422/485 on rear I/O (COM2)
	4 x RS232 box header (COM3~COM6)
USB	9 x USB2.0 ports (5 ports at mid-board, 4 ports at rear panel)
DIO	1x 8-bit Digital I/O interface (optional)
LPT	1 x LPT connector
TPM	1 x TPM header (TPM/FW3.19)
RTC	Internal RTC
Keyboard/Mouse	2 x PS/2 Keyboard/Mouse connector
Audio	Realtek® ALC887 7.1-channel high definition audio CODEC
	3 x audio jacks (Line-in, Mic-in, Line-out)
Ethernet	2 x RJ-45 ports on rear I/O
Display	1 x VGA port on rear I/O
	1 x DVI port on rear I/O
Others	1 x Front panel connector (Pin header)
	1 x CMOS jumper

Specifications are subject to change without notice.

Chapter 2

Motherboard information

2.1   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 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

This motherboard comes with two standby power LEDs that light 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.

SB_PWR1

ON
Standby Power

OFF
Standby Power Off

SB_PWR2

ON
Main Power

OFF
Main Power Off

IMBA-H61A Onboard LED
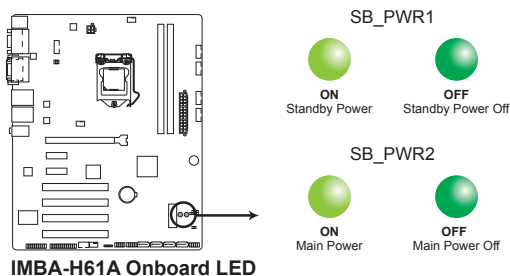
2.2 Motherboard layout

Place eight 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.
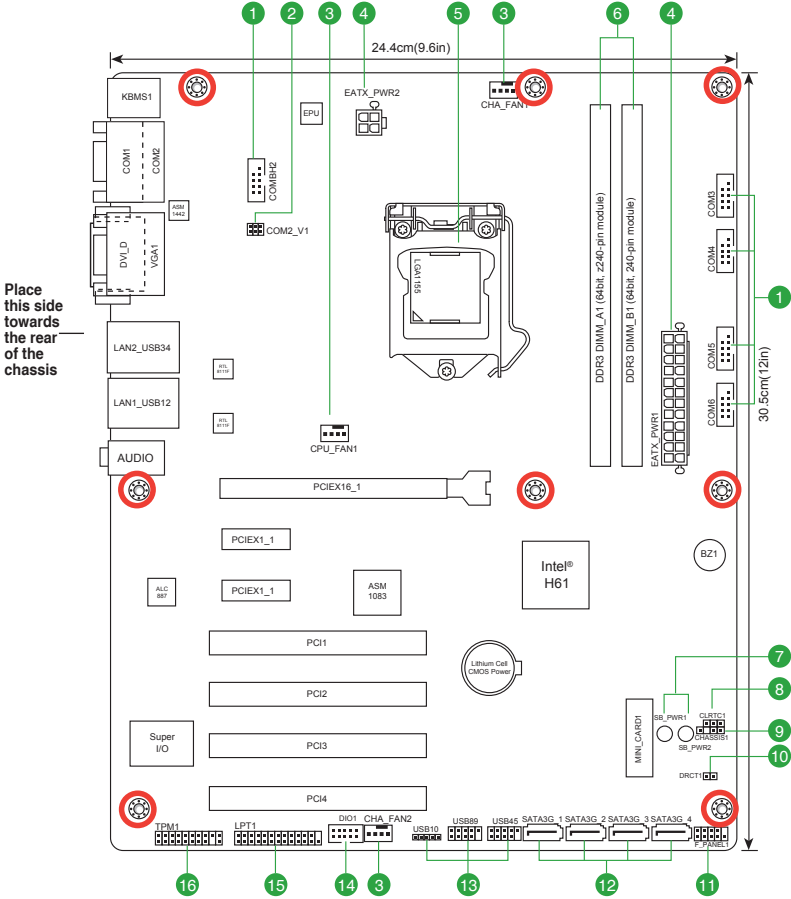
Connectors/Jumpers/Slots	Page
1. Serial port connectors (10-1 pin COMBH2, COM3~6)	21
2 COM2_V1 Ring/+5V/+12V selection (6-pin)	13
3. CPU and chassis fan connectors (4-pin CPU_FAN, 4-pin CHA_FAN)	17
4. ATX power connectors (24-pin EATXPWR, 4-pin EATX12V)	16
5. Intel® LGA1155 CPU socket	6
6. DDR3 DIMM slots	11
7. Standby Power LEDs (SB_PWR1/2)	1
8. Clear RTC RAM (3-pin CLRTC)	12
9. Chassis intrusion connector (4-1 pin CHASSIS1)	20
10. Direct connector (2-pin DRCT1)	22
11. System panel connector (10-1 pin F_PANEL)	18
12. Intel® H61 Serial ATA 3.0Gb/s connectors (7-pin SATA3G_1~4)	19
13. USB 2.0 connectors (10-pin USB89, USB45; 5-pin USB10)	20
14. Digital I/O connector (10-pin DIO1)	21
15. LPT connector (26-1 pin LPT)	17
16. TPM connector (20-1 pin TPM1)	19

2.3   Screw size

2.3.1   Component side
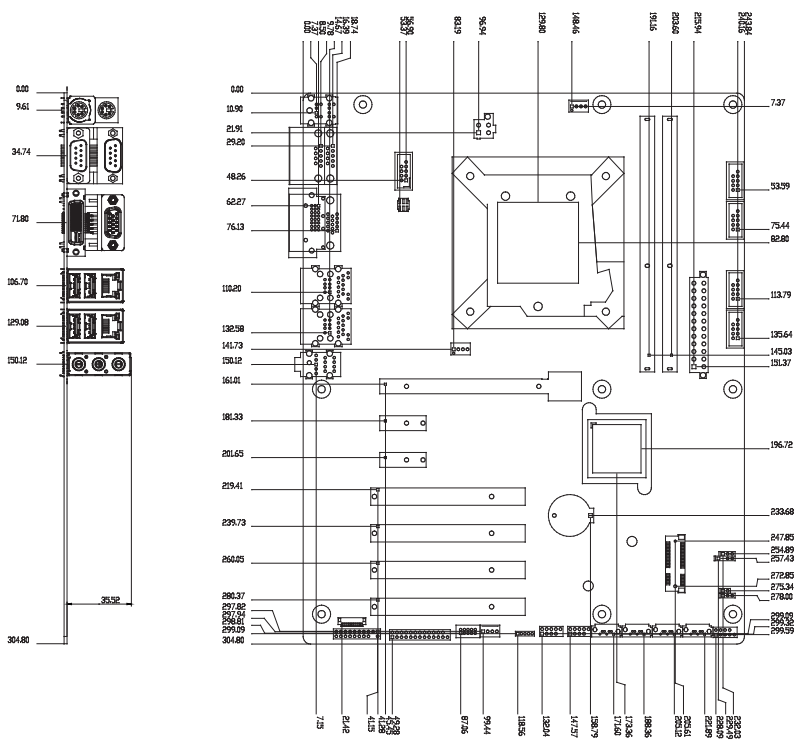
2.3.2 Solder side
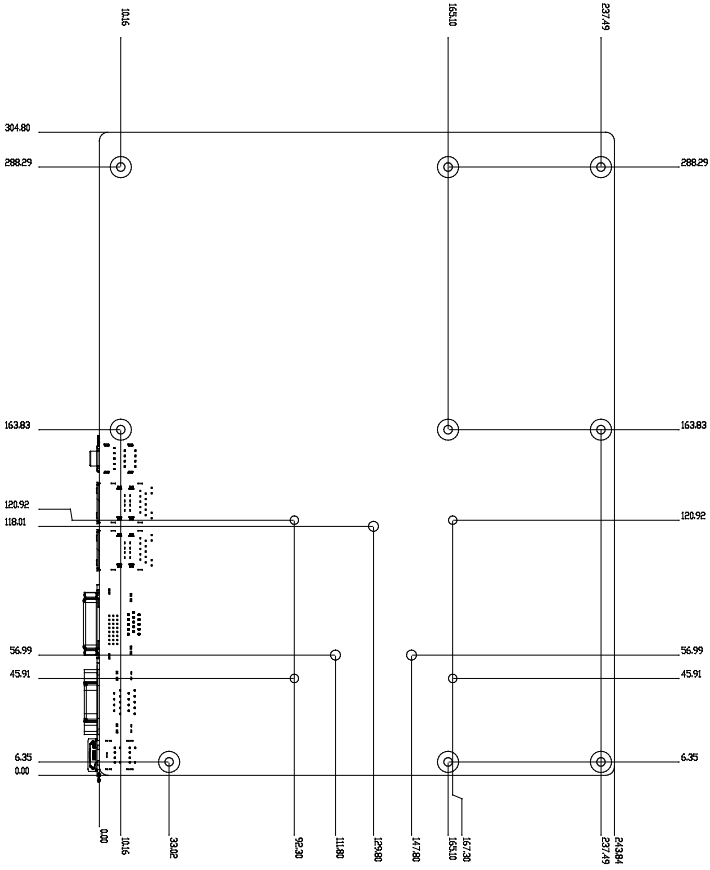
2.4 Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA1155 socket designed for the Intel® 3rd/2nd Generation Core™ i7 / Core™ i5 / Core™ i3 / Pentium® / Celeron® processors.
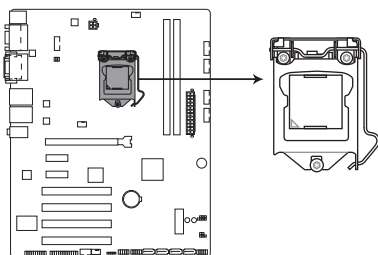
IMBA-H61A CPU socket LGA1155

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. The manufacturer will shoulder the cost of repair only if the damage is shipment/transit-related.

- Keep the cap after installing the motherboard. The manufacturer 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.

2.4.1   Installing the CPU

⚠️ The LGA1156 CPU is incompatible with the LGA1155 socket. DO NOT install a LGA1156 CPU on the LGA1155 socket.
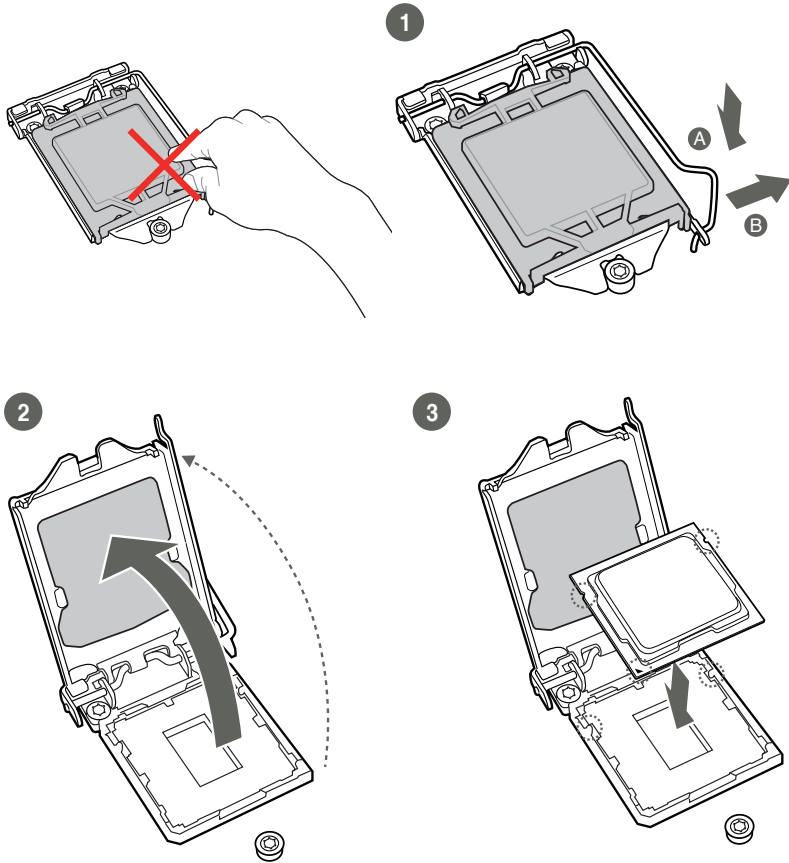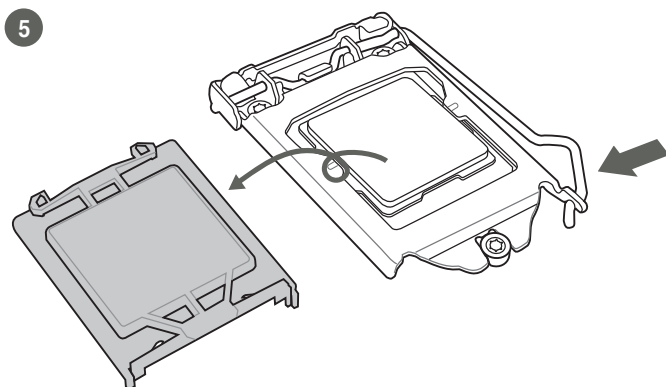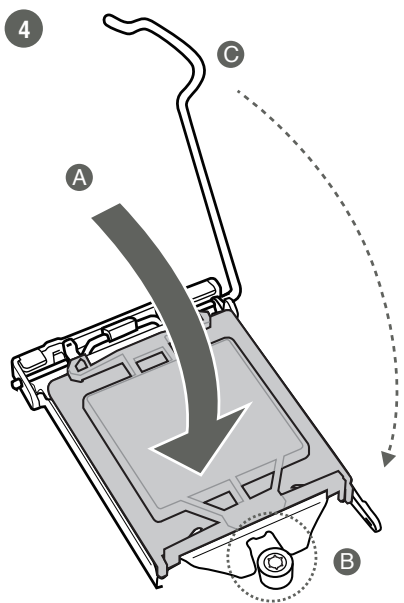
2.4.2   CPU heatsink and fan assembly installation
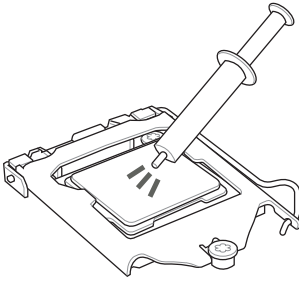
Apply the Thermal Interface Material to the CPU heatsink and CPU before you install the heatsink and fan if necessary.

To install the CPU heatsink and fan assembly
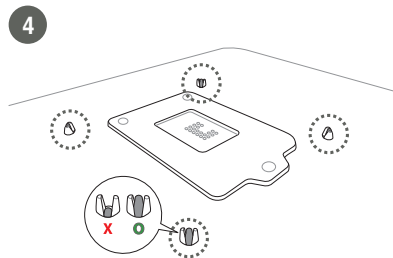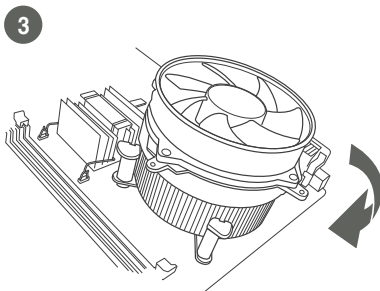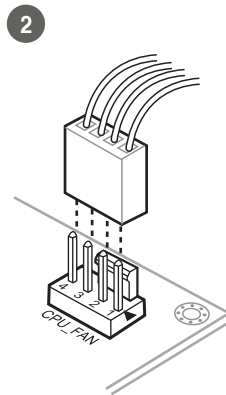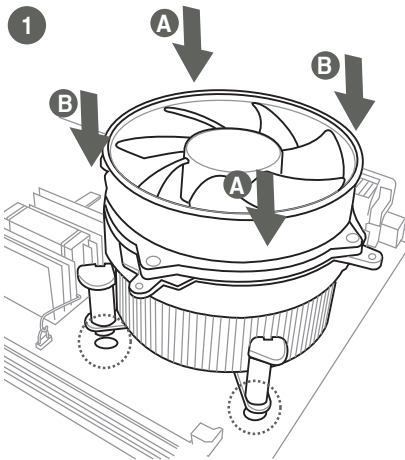
To uninstall the CPU heatsink and fan assembly
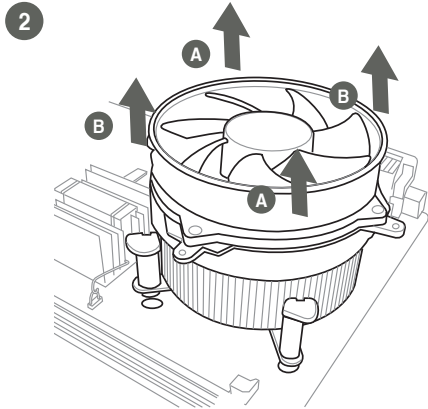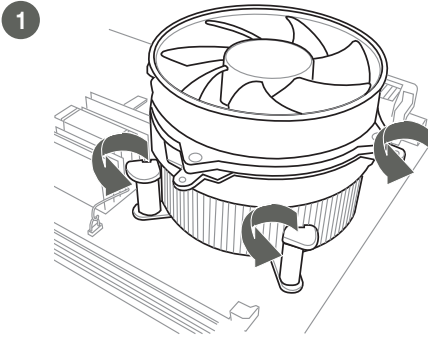
2.5   System memory

Installing a DIMM
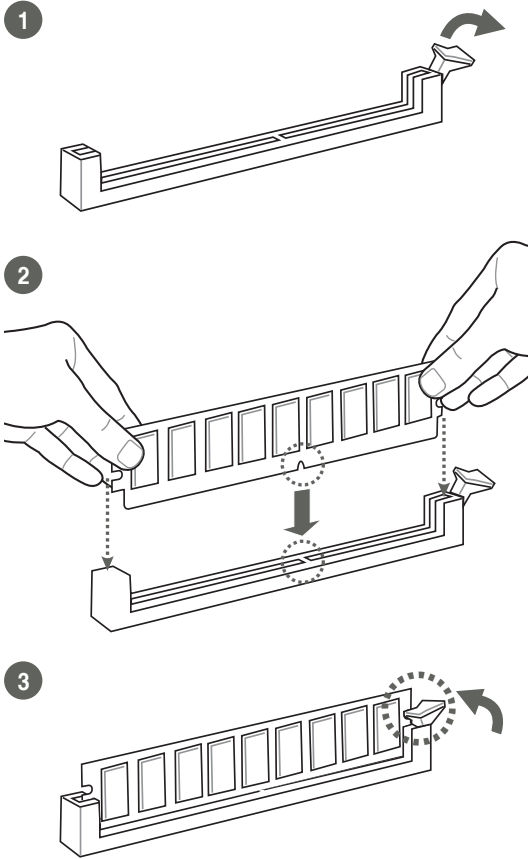
To remove a DIMM
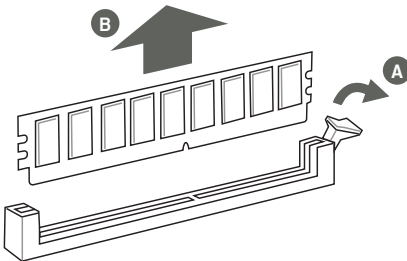
2.6 Jumpers

1. Clear RTC RAM (CLRTC)

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.
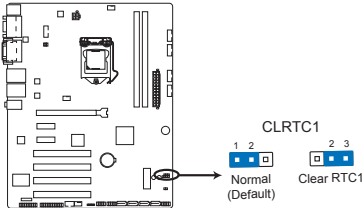
IMBA-H61A Clear RTC RAM

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 **<Del>** key during the boot process and enter BIOS setup to reenter data.

Never remove the cap from the CLRTC jumper default position except when clearing the RTC RAM. 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 so the BIOS can automatically reset parameter settings to default values.

2. COM2_V Ring/+5V/+12V selection (6-pin)
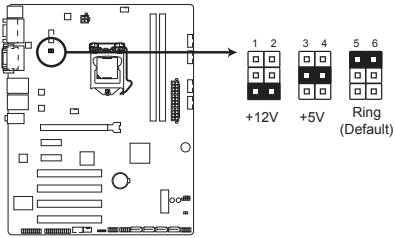
IMBA-H61A COM2_V1 Ring/+5V/+12V Selection

Setting	Pins
+12V	1-2
+5V	3-4
Ring (Default)	5-6

2.7 Connectors

2.7.1 Rear panel connectors
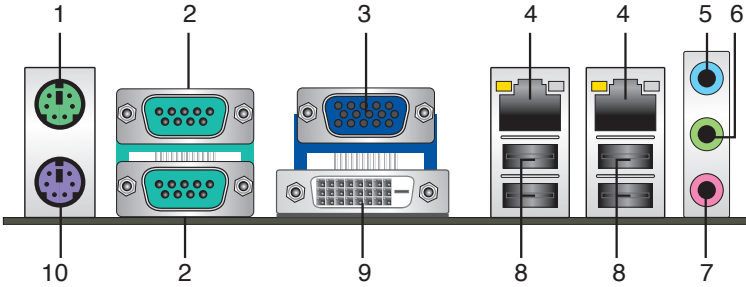
1. **PS/2 Mouse port (green).** This port is for a PS/2 mouse.

2. **Serial ports.** These ports connect a modem, or other devices that conform with serial specification.

3. **Video Graphics Adapter (VGA) port.** This 15-pin port is for a VGA monitor or other VGA-compatible devices.

4. **LAN (RJ-45) ports.** These ports allow 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

ACT/LINK LED		SPEED LED	
Status	Description	Status	Description
OFF	No link	OFF	10 Mbps connection
ORANGE	Linked	ORANGE	100 Mbps connection
BLINKING	Data activity	GREEN	1 Gbps connection

Activity Link LED   Speed LED

LAN port
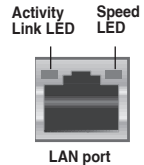
5. **Line In port (light blue).** This port connects to the tape, CD, DVD player, or other audio sources.

6. **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.

7. **Microphone port (pink).** This port connects to a microphone.

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

Audio 2, 4, 6, 8-channel configuration

Port	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

8. **USB 2.0 ports.** These four 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0/1.1 devices.

9. **DVI-D port.** This port is for any DVI-D compatible device. DVI-D can't be converted to output RGB Signal to CRT and isn't compatible with DVI-I.

10. **PS/2 Keyboard port (purple).** This port is for a PS/2 keyboard.

2.7.2   Internal connectors

1.   ATX power connectors (24-pin EATXPWR, 4-pin EATX12V)

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.

EATX_PWR2

| GND | +12V DC |
| GND | +12V DC |

PIN 1

EATX_PWR1

+3 Volts	GND
+12 Volts	+5 Volts
+12 Volts	+5 Volts
+5V Standby	+5 Volts
Power OK	-5 Volts
GND	GND
+5 Volts	GND
GND	GND
+5 Volts	PSON#
GND	GND
+3 Volts	-12 Volts
+3 Volts	+3 Volts

PIN 1
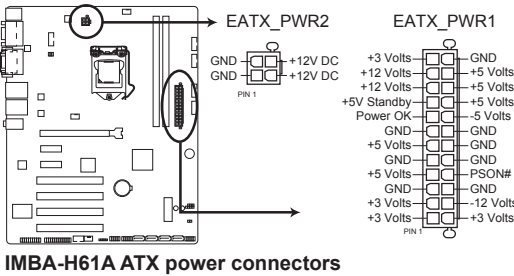
IMBA-H61A ATX power connectors

- 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.

2. CPU and chassis fan connectors (4-pin CPU_FAN, 4-pin CHA_FAN1/2)

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.

IMBA-H61A Fan connectors
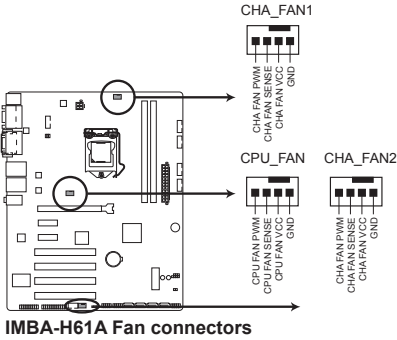
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan connectors!

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

3. LPT connector (26-1 pin LPT)

The LPT (Line Printing Terminal) connector supports devices such as a printer. LPT is standardized as IEEE 1284, which is the parallel port interface on IBM PC-compatible computers.

IMBA-H61A Parallel Port Connector
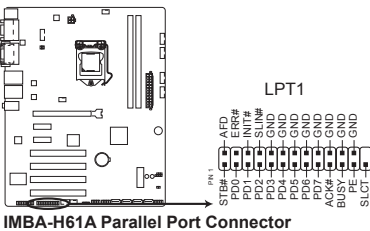
4. **System panel connector (10-1 pin F_PANEL)**

   This connector supports several chassis-mounted functions.

   F_PANEL1

   IMBA-H61A System panel connector
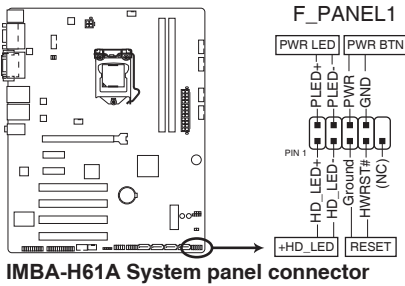
- **System power LED (2-pin PLED)**

  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.

5. Intel® H61 Serial ATA 3.0Gb/s connectors (7-pin SATA3G_1~3)

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.

IMBA-H61A Intel® SATA 3.0Gb/s connectors
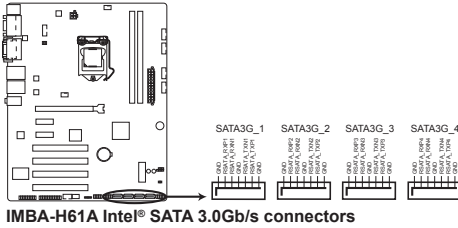
- You must install Windows® XP Service Pack 3 or later version before using Serial ATA hard disk drives.

- Due to H61 Chipset limitations, AHCI Mode only works on Windows® Vista/Windows® 7. Please use IDE Mode on Windows® XP.

- To configure the SATA type in BIOS, click **Advanced** tab > **SATA Configuration** > **SATA Mode Selection**. See section **3.4.3 SATA Configuration** for details.

- When using hot-plug and NCQ, set the **SATA Mode Selection** item in the BIOS to [AHCI]. See section **3.4.3 SATA Configuration** for details.

6. TPM connector (20-1 pin TPM1)

This connector supports a Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

IMBA-H61A TPM connector
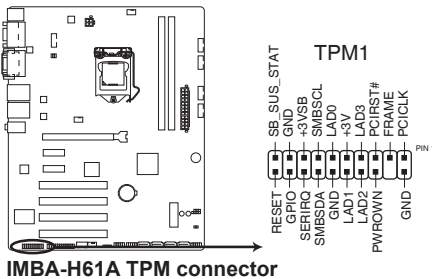
7. **USB 2.0 connectors (10-1 pin USB89, USB45; 5-pin USB10)**

   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.

IMBA-H61A Front USB 2.0 Header connectors
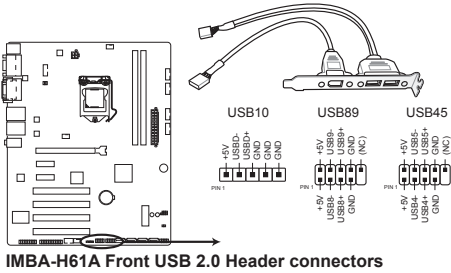
Never connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!

The USB module cable is purchased separately.

8. **Chassis intrusion connector (4-1 pin CHASSIS1)**

   This connector is for a chassis-mounted intrusion detection sensor or switch. Connect one end of the chassis intrusion sensor or switch cable to this connector. The chassis intrusion sensor or switch sends a high-level signal to this connector when a chassis component is removed or replaced. The signal is then generated as a chassis intrusion event.

   By default, the pins labeled "Intruder" are shorted with a jumper cap. Remove the jumper caps only when you intend to use the chassis intrusion detection feature.

IMBA-H61A Chassis intrusion connector
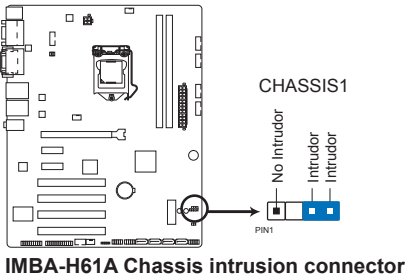
9. Serial port connectors (10-1 pin COM1/2, COM3~6)

These connectors are for serial (COM) ports. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.

IMBA-H61A Serial port connectors
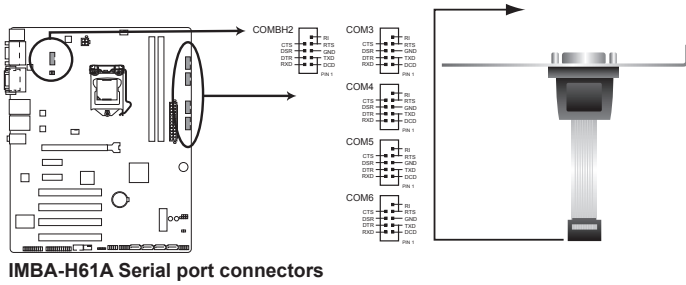
The COM module is purchased separately.

10. Digital I/O connector (10-pin DIO1)

This connector includes 8 I/O lines. All of the Digital I/O lines are programmable and each I/O pin can be individually programmed to support various devices.

IMBA-H61A DIO connector
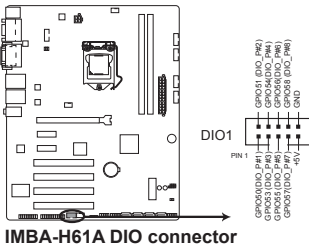
11. Direct connector (2-pin DRCT)

This connector is for the chassis-mounted button that supports the DirectKey function. Connect the button cable that supports DirectKey from the chassis to this connector on the motherboard.
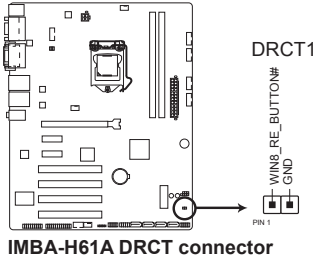
IMBA-H61A DRCT connector

Chapter 3

BIOS setup

3.1 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>**+**<Del>** 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>+<Del> 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 default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select any of the load default settings under the Save & Exit Menu. See section **3.8 Save & Exit Menu**.
>
> • Ensure that a USB mouse is connected to your motherboard if you want to use the mouse to control the BIOS setup program.
>
> • The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.

3.2   BIOS menu screen

Back button | Menu bar | Pop-up window | General help

Menu items | Configuration fields | Navigation keys

Menu bar

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

Main   For changing the basic system configuration.

Advanced   For changing the advanced system 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.

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.

3.3   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.

3.3.1   System Language [English]

Allows you to choose the BIOS language version from the options. Configuration options: [English]

3.3.2   System Date [Day xx/xx/xxxx]

Allows you to set the system date.

3.3.3   System Time [xx:xx:xx]

Allows you to set the system time.

3.3.4   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 **2.6 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**.

3.4 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.

3.4.1 Trusted Computing

This item appears only when a TPM module is connected to the motherboard and allows you to change TPM settings.

TPM Support [Disabled]

Allows you to enable or disable TPM support. Configuration options: [Disabled] [Enabled]

3.4.2 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.

Hyper-threading [Enabled]

This item will only appear if an Intel® processor supporting Hyper-Threading is installed on the motherboard.

Intel® Hyper-Threading Technology allows a hyper-threading processor to appear as two logical processors to the operating system, allowing the operating system to schedule two threads or processes simultaneously.

[Enabled]   Two threads per activated core are enabled.

[Disabled]   Only one thread per activated core is enabled.

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.

3.4.3   PCH Configuration

High Precision Timer [Enabled]

Allows you to enable or disable the High Precision Event Timer.
Configuration options: [Enabled] [Disabled]

3.4.4   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 [AHCI]

Allows you to set the SATA configuration.

[Disabled]   Disables the SATA controller.

[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.

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. 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]

3.4.5 System Agent Configuration

Memory Remap Feature [Enabled]

Enables or disables the memory remap feature. Configuration options: [Enabled] [Disabled]

Graphics Configuration

Primary Display [Auto]

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

iGPU Memory [Auto]

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

Render Standby [Enabled]

Allows you to enable Intel Graphics Render Standby support to reduce the power consumption for iGPU while the system is idle. Configuration options: [Disabled] [Enabled]

iGPU Multi-Monitor [Disabled]

Allows you to enable or disable iGPU Multi-Monitor support for add-on graphics devices. The iGPU shared memory size will be fixed at 64MB. Configuration options: [Disabled] [Enabled]

3.4.6 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**.

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.

3.4.7   SIO GPIO

GPIO 1~8 [Input]

Allows you to configure the digital signal of the GPIO (General Purpose Input/Output) pins 1~8. Configuration options: [Input] [Output High] [Output Low]

3.4.8   Onboard Devices Configuration

HD Audio Controller [Enabled]

[Enabled]   Enables the High Definition Audio Controller.

[Disabled]   Disables the controller.

Realtek LAN1 Controller [Enabled]

[Enabled]   Enables the Realtek LAN controller 1.

[Disabled]   Disables the controller.

Realtek LAN1 PXE OPROM [Disabled]

This item appears only when you set the **Realtek LAN1 Controller** item to [Enabled] and allows you to enable or disable the PXE OptionRom of the Realtek LAN controller 1. Configuration options: [Enabled] [Disabled]

Realtek LAN2 Controller [Enabled]

[Enabled]   Enables the Realtek LAN controller 2.

[Disabled]   Disables the controller.

Realtek LAN2 PXE OPROM [Disabled]

This item appears only when you set the **Realtek LAN2 Controller** item to [Enabled] and allows you to enable or disable the PXE OptionRom of the Realtek LAN controller 2. Configuration options: [Enabled] [Disabled]

RS Mode [RS232]

Allows you to configure the serial communications standard of serial port (COM) 2. Configuration options: [RS232] [RS422] [RS485]

3.4.9   APM

AT/ATX Power Type [ATX Mode]

Changing the AT/ATX Power Type will directly affect the **Restore AC Power Loss** setting. Configuration options: [AT Mode] [ATX Mode]

Restore AC Power Loss [Power Off]

This item will not be available when **AT/ATX Power Type** is changed to AT Mode.

[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 Status]   The system goes into either off or on state, whatever the system state was before the AC power loss.

Power On By PCIE/PCI [Disabled]

[Disabled]   Disables the PCIE/PCI devices to generate a wake event.

[Enabled]   Enables the PCIE/PCI devices to generate a wake event.

Power On By Ring [Disabled]

[Disabled]   Disables Ring to generate a wake event.

[Enabled]   Enables Ring 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.

RTC Alarm Date (Days)

This item appears only when you set the previous item to [Enabled] and allows you to select RTC alarm time (days). When you set the time to zero, the RTC alarms everyday. Use <+> and <-> keys to adjust the time.

- Hour / - Minute / - Second

Allows you to set the RTC alarm time. Use <+> and <-> keys to adjust the time.

3.4.10 Network Stack

Network Stack [Disabled]

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

Ipv4 PXE Support [Enabled]

This item appears only when you set the Network Stack item to [Enabled]. When this item is disabled, the IPV4 PXE boot option will not be created. Configuration options: [Disabled] [Enabled]

Ipv6 PXE Support [Enabled]

This item appears only when you set the Network Stack item to [Enabled]. When this item is disabled, the IPV6 PXE boot option will not be created. Configuration options: [Disabled] [Enabled]

3.5 Monitor menu

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

3.5.1 CPU Temperature / MB Temperature [xxxºC/xxxºF]

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.

3.5.2   CPU / Chassis Fan Speed [xxxx RPM] or [Ignore] / Chassis Fan 2 Speed

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.

3.5.3   CPU Q-Fan Control [Enabled]

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

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

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.

3.5.4   Chassis Q-Fan Control [Enabled]

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

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

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.

3.5.5   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.

3.6 Boot menu

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

3.6.1 Full Screen Logo [Enabled]

[Enabled]   Enables the full screen logo display feature.

[Disabled]   Disables the full screen logo display feature.

Post Report [5 sec]

This item appears only when the Full Screen Logo item is set to [Disabled] and allows you to set the waiting time for the system to display the post report. Configuration options: [1 sec] [2 sec] [3 sec] [4 sec] [5 sec] [6 sec] [7 sec] [8 sec] [9 sec] [10 sec] [Until Press ESC]

3.6.2 Post Delay Time [3 sec]

Allows you to set the POST Report wait time. This configuration only functions in Normal Boot mode. Configuration options: [0 sec] [1 sec] [2 sec] [3 sec] [4 sec] [5 sec] [6 sec] [7 sec] [8 sec] [9 sec] [10 sec]

3.6.3 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].

3.6.4 Wait for 'F1' If Error [Disabled]

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

3.6.5 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.

3.6.6 CSM (Compatibility Support Module)

This option controls whether or not CSM (Compatibility Support Module) will be launched.

Launch CSM [Enabled]

[Enabled]   For better compatibility, enable the CSM to fully support the non-UEFI driver add-on devices, or the Windows UEFI mode.

[Disabled]   Disable the CSM to fully support the Windows Security Update and Security Boot.

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]

3.6.7 Boot Option Priorities

These items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.

> • To select boot device during system startup, press <F8> after the first screen appears.
>
> • To access Windows OS in Safe Mode, press <F8> after POST.

3.6.8 Boot Override

These items displays the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system. Click an item to start booting from the selected device.

3.7 Tools menu

The Tools menu items allow you to configure options for special functions. Select an item then press <Enter> to display the submenu.
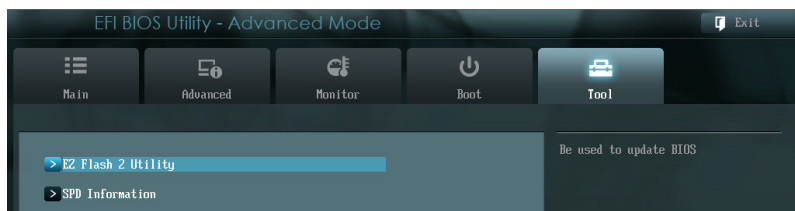
3.7.1 EZ Flash 2 Utility

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

3.7.2 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]

3.8   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.

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.

Appendix

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 A 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.

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.

电子信息产品污染控制标示：图中之数字为产品之环保使用期限。仅指电子信息产品中含有的有毒有害物质或元素不致发生外泄或突变从而对环境造成污染或对人身、财产造成严重损害的期限。

有毒有害物质或元素的名称及含量说明标示：

部件名称	有害物质或元素					
	铅(Pb)	汞(Hg)	镉(Cd)	六价铬(Cr(VI))	多溴联苯(PBB)	多溴二苯醚(PBDE)
印刷电路板及其电子组件	×	○	○	○	○	○
外壳	×	○	○	○	○	○
外部信号连接头及线材	×	○	○	○	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。

×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求，然该部件仍符合欧盟指令 2002/95/EC 的规范。

备注：此产品所标示之环保使用期限，系指在一般正常使用状况下。