

**B150-PLUS**



# 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 components, 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 be exposed to moisture.
- 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. It includes descriptions of the switches, jumpers, and connectors on the motherboard.
- **Chapter 2: BIOS information**  
This chapter discusses changing system settings through the BIOS Setup menus. Detailed descriptions for 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 completing a task.



**CAUTION:** Information to prevent damage to the components when completing 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 (+).

## Package contents

Check your motherboard package for the following items.

<b>Motherboard</b>	ASUS B150-PLUS motherboard
<b>Cables</b>	2 x Serial ATA 6.0 Gb/s cables
<b>Accessories</b>	1 x I/O Shield 1 x M.2 screw package
<b>Application DVD</b>	Support DVD
<b>Documentation</b>	User Guide



If any of the above items is damaged or missing, contact your retailer.

## B150-PLUS specifications summary

<b>CPU</b>	LGA1151 socket for Intel® 6th Generation Core™ i7 / i5 / i3, Pentium®, and Celeron® processors Supports Intel® 14nm CPU Supports Intel® Turbo Boost Technology 2.0* * The Intel® Turbo Boost Technology 2.0 support depends on the CPU types. ** Refer to <a href="http://www.asus.com">www.asus.com</a> for Intel® CPU support list.
<b>Chipset</b>	Intel® B150 Chipset
<b>Memory</b>	4 x DIMM, max. 64GB, DDR4 2133 MHz, non-ECC, un-buffered memory Dual-channel memory architecture Supports Intel® Extreme Memory Profile (XMP) * Hyper DIMM support is subject to the physical characteristics of individual CPUs. Please refer to Memory QVL for details. ** Refer to <a href="http://www.asus.com">www.asus.com</a> for the Memory QVL (Qualified Vendors List). *** The maximum memory frequency varies per processor.
<b>Graphics</b>	Integrated Graphics Processor - Intel® HD Graphics support - Supports DVI-D with maximum resolution of 1920 x 1200 @ 60Hz - Supports RGB with maximum resolution of 1920 x 1200 @ 60Hz - Maximum shared memory of 1024MB
<b>Multi-GPU support</b>	Supports AMD CrossFireX™ Technology
<b>Expansion slots</b>	1 x PCI Express 3.0/2.0 x16 slot (@ x16 mode) 1 x PCI Express 3.0/2.0 x16 slot (max @ x4 mode) 2 x PCI Express 3.0/2.0 x1 slots 3 x PCI slots
<b>Storage</b>	Intel® B150 Chipset - 1 x 16Gb/s M.2 Socket 3 with M key, type 2242/2260/2280 storage devices support (both PCIE & SATA mode)* - 6 x SATA 6.0 Gb/s connectors (gray) * (1) When an M.2 device is not installed, PCIE x1 and SATA6G_1 ports are enabled. (2) When an M.2 device in PCIE mode is installed, PCIE x1 slots are disabled and SATA6G_1 port is enabled. (3) When an M.2 device in SATA mode is installed, the M.2 device uses the SATA6G_1 bandwidth. Both SATA6G_1 and PCIE x1 ports are disabled.

(continued on the next page)

## B150-PLUS specifications summary

<b>Audio</b>	<p>Realtek® ALC887 8-channel High Definition Audio CODEC</p> <ul style="list-style-type: none"> <li>- Supports Jack-Detection and Front Panel Jack-Retasking</li> </ul> <p><b>Gaming Audio</b></p> <ul style="list-style-type: none"> <li>- LED illuminated design: Brighten up your build with the gorgeous illuminated audio trace path.</li> <li>- Audio shielding: Ensures precision analog/digital separation and greatly-reduced multi-lateral interference.</li> <li>- Dedicated audio PCB layers: Separate layers for left and right channels to guard the quality of sensitive audio signals.</li> <li>- Premium Japanese-made audio capacitors: Provide warm, natural, and immersive sound with exceptional clarity and fidelity.</li> </ul>
<b>LAN</b>	<p>Realtek® 8111 Series Gigabit LAN controller</p>
<b>USB</b>	<p>Intel® B150 Chipset</p> <ul style="list-style-type: none"> <li>- 1 x 5Gb/s USB Type C port (@back panel) supports 3A power output</li> <li>- 4 x USB 3.0/2.0 ports (2 ports at mid-board; 2 ports at the back panel, blue)</li> <li>- 6 x USB 2.0/1.1 ports (2 ports at mid-board; 4 ports at the back panel)</li> </ul>
<b>ASUS special features</b>	<p><b>Extreme Stability</b></p> <p><b>ASUS 5X PROTECTION II</b></p> <ul style="list-style-type: none"> <li>- ASUS LANGuard - 2.5 higher surge tolerance</li> <li>- ASUS Overvoltage Protection - World-class circuit-protection power design</li> <li>- ASUS DIGI +VRM - 6 Phase digital power design</li> <li>- ASUS DRAM Overcurrent Protection - Prevents damage from short circuit</li> <li>- ASUS Stainless Steel Back I/O - 3x corrosion-resistance for greater durability</li> </ul> <p><b>Superb Performance</b></p> <p><b>ASUS EPU</b></p> <ul style="list-style-type: none"> <li>- EPU</li> </ul> <p><b>PC Cleaner</b></p> <ul style="list-style-type: none"> <li>- Fast and easy way to get rid of unnecessary junk files</li> </ul> <p><b>UEFI BIOS</b></p> <ul style="list-style-type: none"> <li>- Most advanced options with fast response time</li> </ul> <p><b>USB 3.0 Boost</b></p> <ul style="list-style-type: none"> <li>- Featuring speedy USB 3.0 transmission</li> </ul> <p><b>Gaming Scenario</b></p> <p><b>Audio Features</b></p> <ul style="list-style-type: none"> <li>- Audio that roars on the battlefield</li> </ul> <p><b>Media Streamer</b></p> <ul style="list-style-type: none"> <li>- Pipe music or movies from your PC to a smart TV</li> <li>- Media Streamer app for portable smartphone/tablet, supporting iOS 7 and Android 4.0 system</li> </ul>

(continued on the next page)

## B150-PLUS specifications summary

<b>ASUS special features</b>	<p><b>ASUS Exclusive Features</b></p> <ul style="list-style-type: none"> <li>- USB 3.0 Boost featuring USB 3.0 transmission</li> <li>- ASUS Ai Charger</li> <li>- ASUS AI Suite 3</li> </ul> <p><b>EZ DIY</b></p> <p><b>Push Notice</b></p> <ul style="list-style-type: none"> <li>- Monitor your PC status with smart devices in real time</li> </ul> <p><b>UEFI BIOS EZ Mode</b></p> <ul style="list-style-type: none"> <li>- Featuring friendly graphics user interface</li> <li>- ASUS CrashFree BIOS 3</li> <li>- ASUS EZ Flash 3</li> </ul> <p><b>Q-Design</b></p> <ul style="list-style-type: none"> <li>- ASUS Q-DIMM</li> <li>- ASUS Q-Slot</li> </ul>
<b>ASUS quiet thermal solution</b>	<p><b>Quiet Thermal Design</b></p> <ul style="list-style-type: none"> <li>- ASUS Fan Xpert 2+</li> <li>- Stylish Fanless Design: PCH heatsink</li> </ul>
<b>Rear panel I/O ports</b>	<ul style="list-style-type: none"> <li>1 x PS/2 combo port</li> <li>1 x 5Gb/s USB Type C port</li> <li>2 x USB 3.0/2.0 ports</li> <li>4 x USB 2.0/1.1 ports</li> <li>1 x D-Sub port</li> <li>1 x DVI port</li> <li>1 x LAN (RJ-45) port</li> <li>3 x 8-channel audio I/O ports*</li> </ul> <p>* Use a chassis with HD audio module in the front panel to support an 8-channel audio output</p>
<b>Internal connectors</b>	<ul style="list-style-type: none"> <li>1 x USB 3.0/2.0 connector supports additional 2 USB 3.0/2.0 ports (19-pin)</li> <li>1 x USB 2.0/1.1 connector supports additional 2 USB 2.0/1.1 ports</li> <li>6 x SATA 6.0 Gb/s connectors (gray)</li> <li>1 x CPU Fan connector</li> <li>1 x COM header</li> <li>2 x Chassis fan connectors</li> <li>1 x Front panel audio connector (AAFP)</li> <li>1 x S/PDIF Out connector</li> <li>1 x 24-pin EATX power connector</li> <li>1 x 8-pin EATX 12V power connector</li> <li>1 x Clear CMOS</li> <li>1 x System panel connector</li> </ul>

(continued on the next page)



## B150-PLUS specifications summary

<b>BIOS features</b>	128Mb Flash ROM, UEFI AMI BIOS, PnP, DMI 3.0, WfM2.0, SM BIOS 3.0, ACPI 5.0, Multi-language BIOS, ASUS EZ Flash 3, CrashFree BIOS 3, F6 Qfan Control, F3 My Favorites, Quick Note, Last Modified log, F12 PrintScreen, and ASUS DRAM SPD (Serial Presence Detect) memory information
<b>Manageability</b>	WfM 2.0, DMI 3.0, WOL by PME, PXE
<b>Support DVD</b>	Drivers ASUS utilities EZ Update Anti-virus software (OEM version)
<b>Operating System Support</b>	Windows® 10 (64-bit) Windows® 8.1 (64-bit) Windows® 7 (64-bit/32-bit)* * Please refer to ASUS official website and download "Windows® 7 Installation Guide" and "EZ Installer" to install Windows® 7.
<b>Form factor</b>	ATX form factor: 12"x 8.6" (30.5cm x 21.8cm)



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Specifications are subject to change without notice.

---



# Product introduction

# 1

## 1.1 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 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.
- 

## 1.2 Motherboard overview

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



---

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

---

### 1.2.1 Placement direction

When installing the motherboard, 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.

### 1.2.2 Screw holes

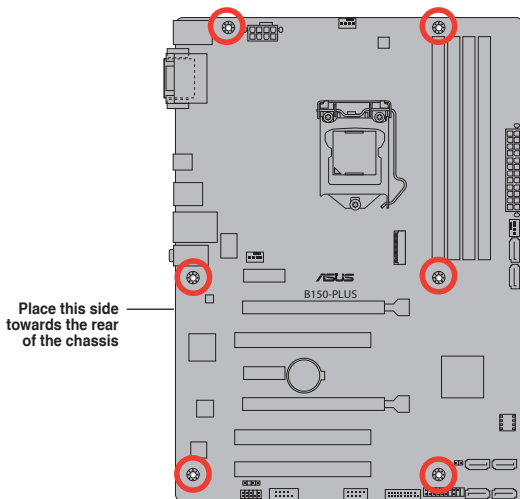
Place six screws into the holes indicated by circles to secure the motherboard to the chassis.



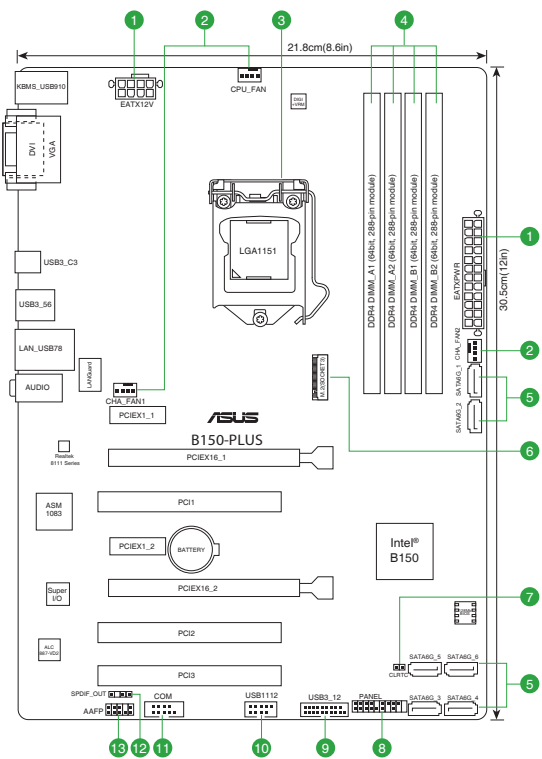
---

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

---



## 1.2.3 Motherboard layout

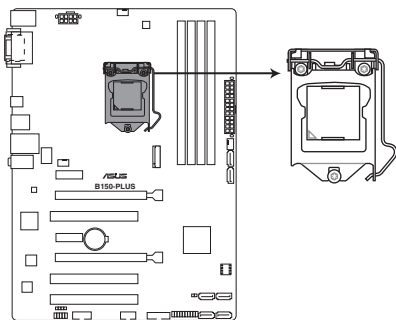


## 1.2.4 Layout contents

Connectors/Jumpers/Slots/LED	Page
1. ATX power connectors (24-pin EATXPWR, 8-pin EATX12V)	1-17
2. CPU, chassis fan connectors (4-pin CPU_FAN, 4-pin CHA_FAN1~2)	1-15
3. Intel® LGA1151 CPU socket	1-3
4. DDR4 DIMM slots	1-7
5. Intel® B150 Serial ATA 6.0 Gb/s connector (7-pin SATA6G_1~6)	1-20
6. M.2 Socket 3	1-20
7. Clear RTC RAM (2-pin CLRTC)	1-12
8. System panel connector (20-5 pin PANEL)	1-19
9. USB 3.0 connector (20-1 pin USB3_12)	1-16
10. USB 2.0 connector (10-1 pin USB112)	1-16
11. Serial port connector (10-1 pin COM)	1-15
12. Digital audio connector (4-1 pin SPDIF_OUT)	1-18
13. Front panel audio connector (10-1 pin AAFP)	1-18

## 1.3 Central Processing Unit (CPU)

This motherboard comes with a surface mount LGA1151 socket designed for the 6th Generation Intel® Core™ i7 / Core™ i5 / Core™ i3, Pentium® and Celeron® processors.



**B150-PLUS CPU socket LGA1151**

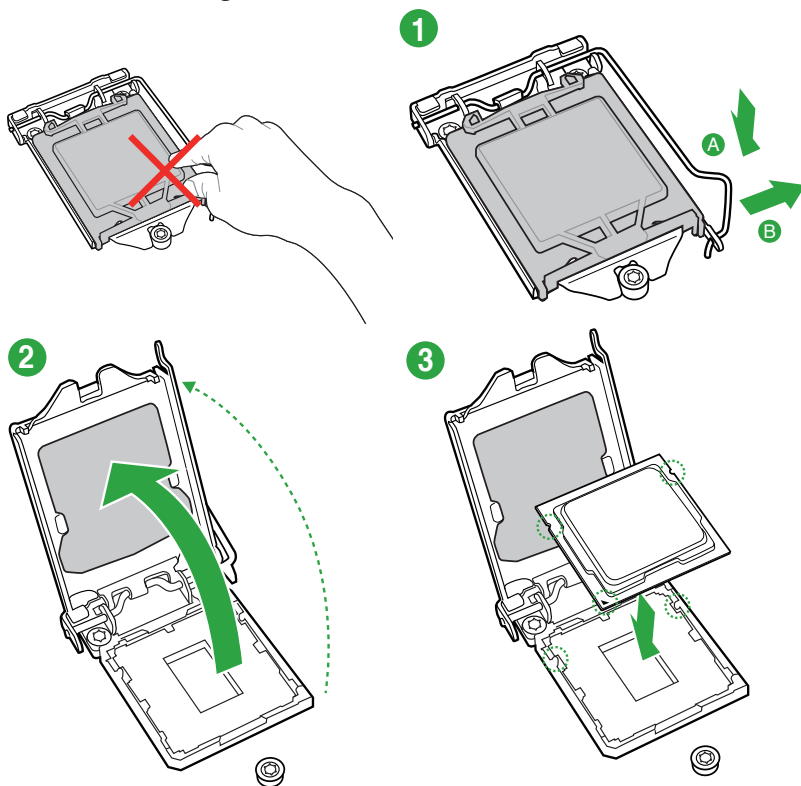


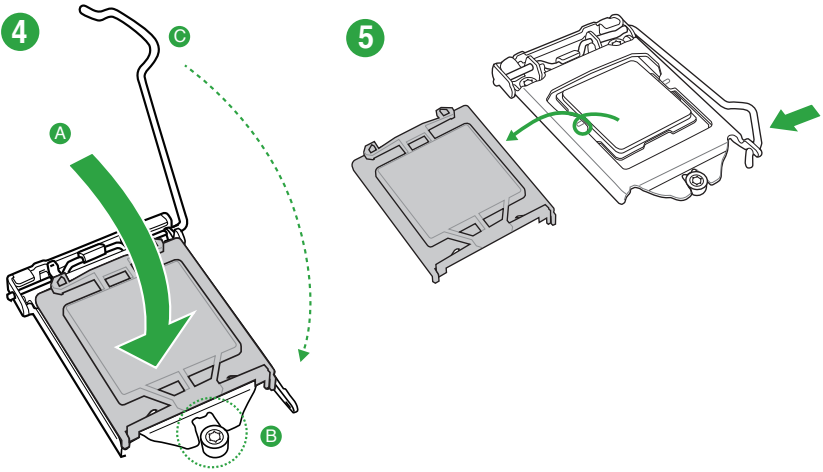
Unplug all power cables before installing the CPU.



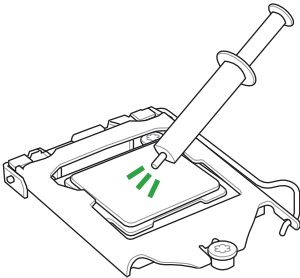
- Ensure that you install the correct CPU designed for the LGA1151 socket only. DO NOT install a CPU designed for LGA1150, LGA1155 and LGA1156 sockets on the LGA1151 socket.
- Upon purchase of the motherboard, ensure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components.
- 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 LGA1151 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.

### 1.3.1 Installing the CPU



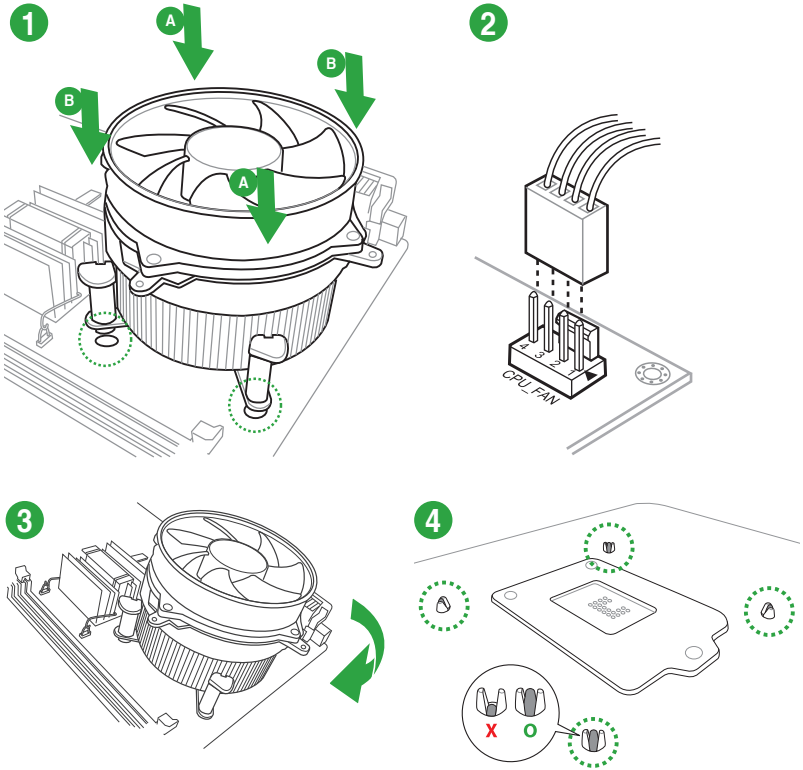


### 1.3.2 CPU heatsink and fan assembly installation

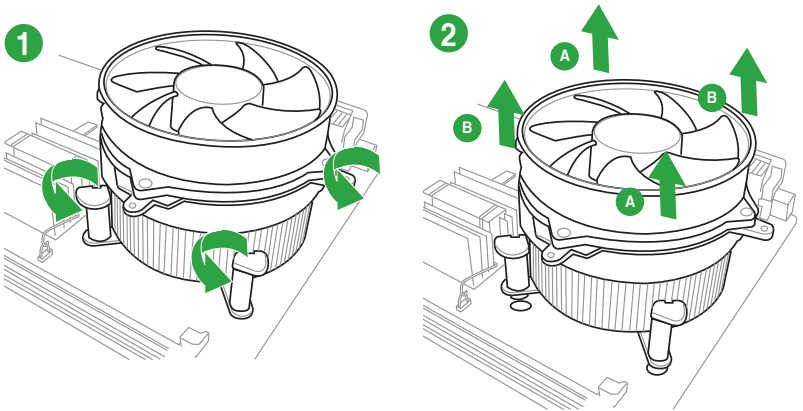


Apply the Thermal Interface Material to the CPU heatsink and CPU before you install the heatsink and fan if necessary.

### To install the CPU heatsink and fan assembly



### To uninstall the CPU heatsink and fan assembly





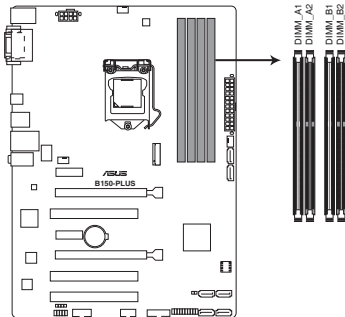
## 1.4 System memory

### 1.4.1 Overview

This motherboard comes with two Double Data Rate 4 (DDR4) Dual Inline Memory Module (DIMM) sockets. A DDR4 module is notched differently from a DDR, DDR2, or DDR3 module. DO NOT install a DDR, DDR2, or DDR3 memory module to the DDR4 slot.



According to Intel® CPU spec, DIMM voltage below 1.35 V is recommended to protect the CPU.

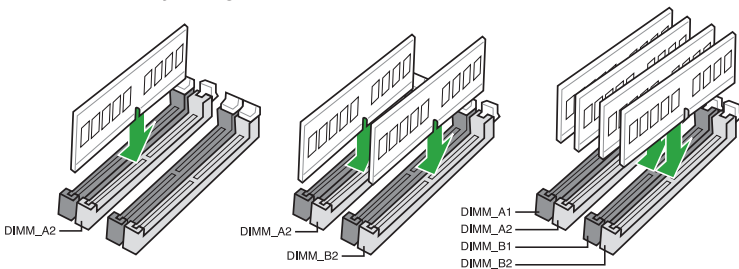


**B150-PLUS 288-pin DDR4 DIMM sockets**

### 1.4.2 Memory configurations

You may install 2 GB, 4 GB, 8 GB, and 16 GB unbuffered non-ECC DDR4 DIMMs into the DIMM sockets. You can refer to the recommended memory population below.

#### Recommended memory configurations





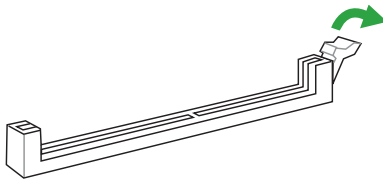
- 
- You may install varying memory sizes in Channel A and Channel B. The system maps the total size of the lower-sized channel for the dual-channel configuration. Any excess memory from the higher-sized channel is then mapped for single-channel operation.
  - Due to the memory address limitation on 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 3 GB system memory if you are using a 32-bit Windows® OS.
    - Install a 64-bit Windows® OS if you want to install 4GB or more on the motherboard.
    - For more details, refer to the Microsoft® support site at <http://support.microsoft.com/kb/929605/en-us>.
- 

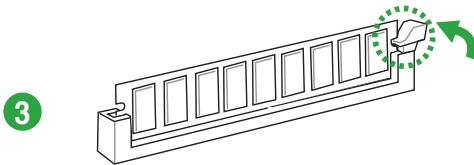
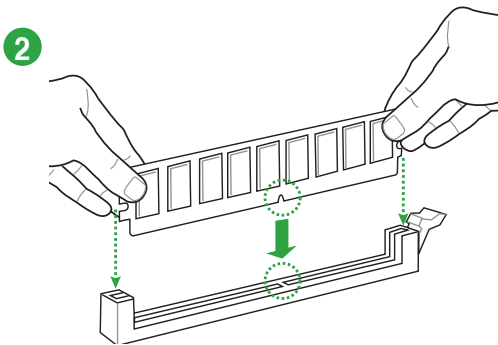


- The default memory operation frequency is dependent on its Serial Presence Detect (SPD), which is the standard way of accessing information from a memory module. Under the default state, some memory modules for overclocking may operate at a lower frequency than the vendor-marked value. To operate at the vendor-marked or at a higher frequency, refer to section **2.5 Ai Tweaker menu** for manual memory frequency adjustment.
  - Always install the DIMMS with the same CAS Latency. For an optimum compatibility, we recommend that you install memory modules of the same version or data code (D/C) from the same vendor. Check with the vendor to get the correct memory modules.
  - Visit the ASUS website at [www.asus.com](http://www.asus.com) for the latest QVL.
- 

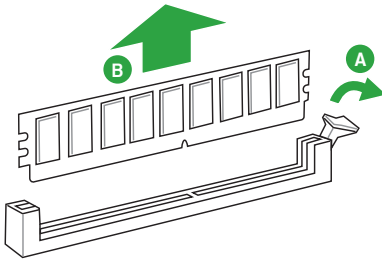
### 1.4.3 Installing a DIMM

1





To remove a DIMM



## 1.5 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.

---

### 1.5.1 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.

### 1.5.2 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.

---

### 1.5.3 PCI Express 3.0/2.0 x1 slots

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

### 1.5.4 PCI Express 3.0/2.0 x16 slots

This motherboard has PCI Express 3.0/2.0 x16 slots that support PCI Express 3.0/2.0 x16 graphic cards complying with the PCI Express specifications.

VGA configuration	PCI Express operating mode	
	PCIe 3.0/2.0 x16_1 (gray)	PCIe 2.0 x16_2
Single VGA/PCIe card	x16 (Recommended for single VGA card)	N/A
Dual VGA/PCIe card	x16	x4



- In single VGA card mode, use the PCIe 3.0/2.0 x16\_1 slot (gray) for a PCI Express x16 graphics card to get better performance.
- We recommend that you provide sufficient power when using multiple graphics cards.
- Connect a chassis fan to the motherboard connector labeled CHA\_FAN1/2 when using multiple graphics cards for better thermal environment.

## 1.5.5 PCI slots

The PCI slots support LAN cards, SCSI cards, USB cards, and other cards that comply with PCI specifications.

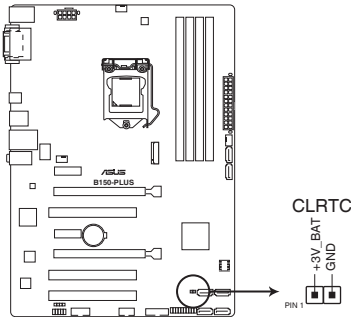
### IRQ assignments for this motherboard

	A	B	C	D
PCIEx16_1	shared	–	–	–
PCIEx16_2	shared	–	–	–
PCIEx1_1	shared	–	–	–
PCIEx1_2	–	shared	–	–
PCI1	–	–	shared	–
PCI2	–	–	–	shared
PCI3	shared	–	–	–
8111 Series LAN Controller	–	–	–	shared
HD Audio	shared	–	–	–
SATA Controller	shared	–	–	–
XHCI	shared	–	–	–

## 1.6 Headers

### 1. Clear RTC RAM (2-pin CLRRTC)

This header 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.



**B150-PLUS Clear RTC RAM**

#### To erase the RTC RAM:

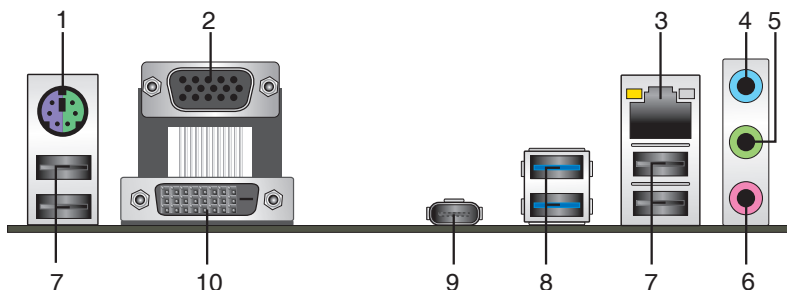
1. Turn OFF the computer and unplug the power cord.
2. Use a metal object such as a screwdriver to short the two pins.
3. Plug the power cord and turn ON the computer.
4. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.



- 
- If the steps above do not help, remove the onboard battery and short the two pins 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.
-

## 1.7 Connectors

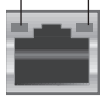
### 1.7.1 Rear panel connectors



1. **PS/2 Mouse/Keyboard combo port.** This port connects to a PS/2 mouse or PS/2 keyboard.
2. **Video Graphics Adapter (VGA) port.** This 15-pin port is for a VGA monitor or other VGA-compatible devices.
3. **LAN (RJ-45) port.** These ports allow Gigabit connection to a Local Area Network (LAN) through a network hub.

#### LAN port LED indications

Activity/Link LED		Speed LED	
Status	Description	Status	Description
Off	No link	OFF	10Mbps connection
Orange	Linked	ORANGE	100Mbps connection
Orange (Blinking)	Data activity	GREEN	1Gbps connection
Orange (Blinking then steady)	Ready to wake up from S5 mode	—	—



ACT/LINK LED    SPEED LED

LAN port

4. **Line In port (light blue).** This port connects to the tape, CD, DVD player, or other audio sources.
5. **Line Out port (lime).** This port connects to a headphone or a speaker. In the 4.1, 5.1, and 7.1-channel configurations, the function of this port becomes Front Speaker Out.
6. **Microphone port (pink).** This port connects to a microphone.



Refer to the audio configuration table on the next page for the function of the audio ports in 2.1, 4.1, 5.1, or 7.1-channel configuration.

## Audio 2.1, 4.1, 5.1, or 7.1-channel configuration

Port	Headset 2.1-channel	4.1-channel	5.1-channel	7.1-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 a 7.1-channel audio output:

Use a chassis with HD audio module in the front panel to support a 7.1-channel audio output.

- 7. USB 2.0 ports.** These 4-pin Universal Serial Bus (USB) ports are for USB 2.0/1.1 devices.
- 8. USB 3.0 ports.** These 9-pin Universal Serial Bus (USB) ports are for USB 3.0/2.0 devices.



- We strongly recommend that you connect USB 3.0 devices to USB 3.0 ports for faster and better performance from your USB 3.0 devices.
- Due to the design of the Intel® 100 series chipset, all USB devices connected to the USB 2.0 and USB 3.0 ports are controlled by the xHCI controller. Some legacy USB devices must update their firmware for better compatibility.

- 9. 5Gb/s Type C USB port.** This Universal Serial Bus (USB) Type C port is for Type C USB mobile or peripheral devices.
- 10. 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.



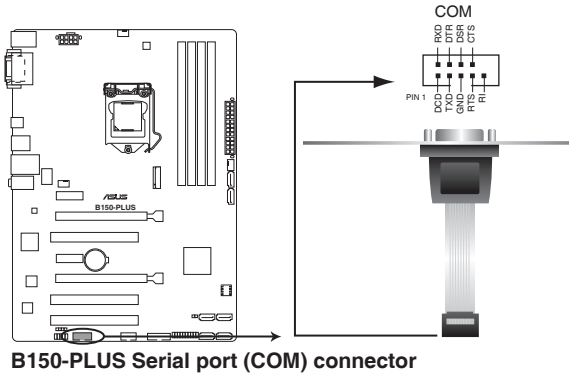
Multi-VGA output supports up to three displays under Windows® OS environment, two displays under BIOS, and one display under DOS.



## 1.7.2 Internal connectors

### 1. Serial port connector (10-1 pin COM)

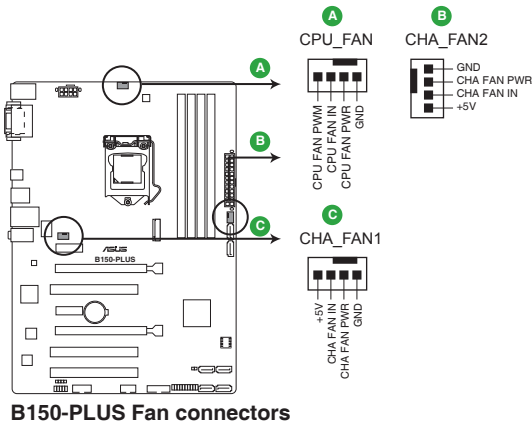
This connector is for a serial (COM) port. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.



The COM module is purchased separately.

### 2. CPU and chassis fan connectors (4-pin CPU\_FAN, 4-pin CHA\_FAN 1/2)

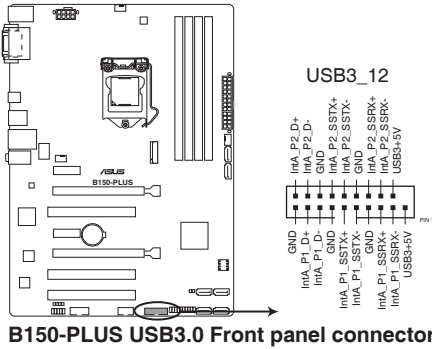
Connect the fan cables to the fan connectors on the motherboard, ensuring that the black wire of each cable matches the ground pin of the connector



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 1A (12 W) fan power.

### 3. USB 3.0 connector (20-1 pin USB\_12)

This connector allows you to connect a USB 3.0 module for additional USB 3.0 front or rear panel ports. With an installed USB 3.0 module, you can enjoy all the benefits of USB 3.0 including faster data transfer speeds of up to 5 Gbps, faster charging time for USB-chargable devices, optimized power efficiency, and backward compatibility with USB 2.0.



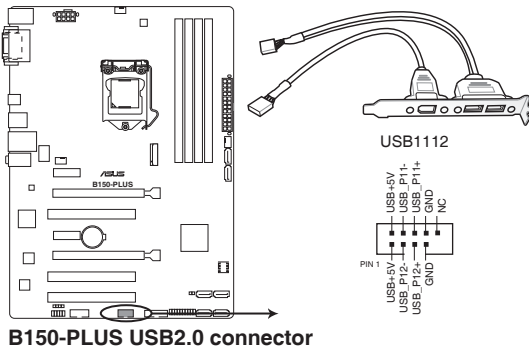
**B150-PLUS USB3.0 Front panel connector**



The USB 3.0 module is purchased separately.

### 4. USB 2.0 connector (10-1 pin USB112)

This connector is for the USB 2.0 port. Connect the USB module cable to this connector, then install the module to a slot opening at the back of the system chassis. This USB connector complies with USB 2.0 specifications and supports up to 480Mbps connection speed.



**B150-PLUS USB2.0 connector**



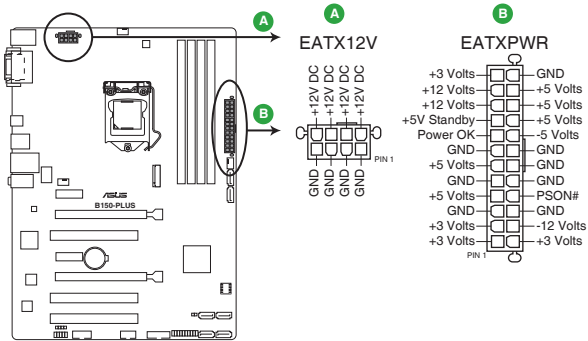
Never connect a 1394 cable to the USB connector. Doing so will damage the motherboard!



The USB 2.0 module is purchased separately.

## 5. ATX power connectors (24-pin EATXPWR, 8-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.



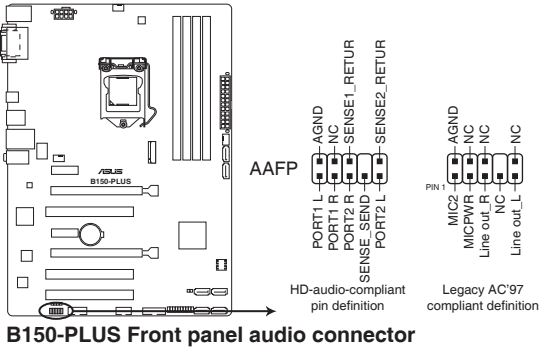
**B150-PLUS ATX power connectors**



- 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/8-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 or when you intend to install additional devices. The system may become unstable or may not boot up if the power is inadequate.

## 6. 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.



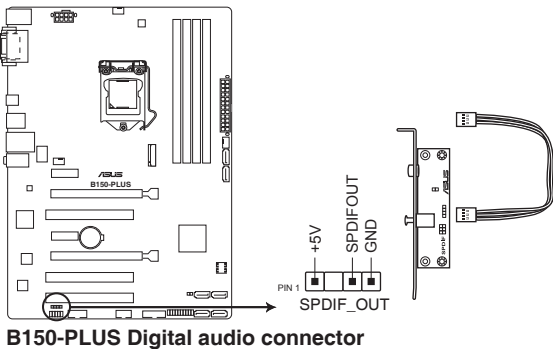
**B150-PLUS Front panel audio connector**



- 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].

## 7. Digital audio connector (4-1 pin SPDIF\_OUT)

This connector is for an additional Sony/Philips Digital Interface (S/PDIF) port. Connect the S/PDIF Out module cable to this connector, then install the module to a slot opening at the back of the system chassis.



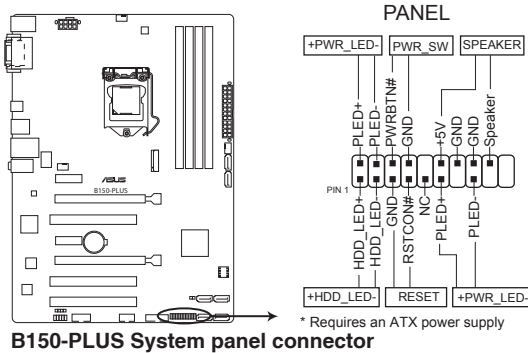
**B150-PLUS Digital audio connector**



The S/PDIF module is purchased separately.

## 8. System panel connector (20-5 pin PANEL)

This connector supports several chassis-mounted functions.



- **System power LED (4-pin +PWR\_LED-)**

This 4-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 +HDD\_LED-)**

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

- **System warning speaker (4-pin SPEAKER)**

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

- **ATX power button/soft-off button (2-pin PWR\_SW)**

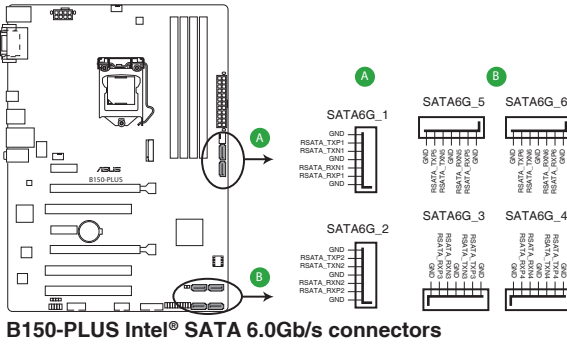
This connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the operating system settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

- **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.

**9. Intel® B150 Serial ATA 6.0Gb/s connectors (7-pin SATA6G\_1~6)**

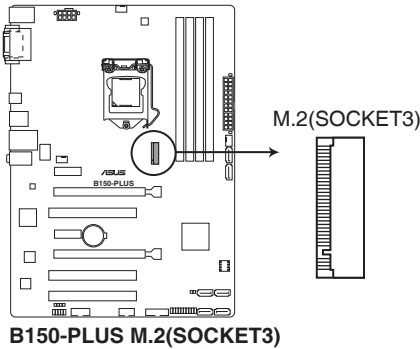
These connectors connect to Serial ATA 6.0 Gb/s hard disk drives via Serial ATA 6.0 Gb/s signal cables.



When using hot-plug and NCQ, set the **SATA Mode Selection** item in the BIOS to [AHCI].

**10. M.2 socket 3**

This socket allows you to install an M.2 (NGFF) SSD module.



This socket supports M Key and 2242/2260/2280 storage devices.



The M.2 (NGFF) SSD module is purchased separately.

## 1.8 Software support

### 1.8.1 Installing an operating system

This motherboard supports Windows® 7 (32-bit / 64-bit), Windows® 8.1 (64-bit) and Windows® 10 (64-bit) 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.

### 1.8.2 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](http://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 lists of the unique features of your ASUS motherboard. Click the **Driver**, **Utilities**, **Manual**, or **Special** tabs to display their respective menus.



The following screen is for reference only.

Click an icon to display a tab

Driver	Status	Available Version	Installed Version	Restart
Special Offers				
<input checked="" type="checkbox"/> Google Chrome Browser	Not installed	38.0.2125.92	None	No
<input checked="" type="checkbox"/> Driver				
<input checked="" type="checkbox"/> Intel Chipset Driver	Not installed	10.1.1.7	None	No
<input checked="" type="checkbox"/> Realtek Audio Driver	Not installed	6.0.1.7576	None	No
<input checked="" type="checkbox"/> Intel Graphics Accelerator Driver	Not installed	10.18.15.4274	None	No
<input checked="" type="checkbox"/> Realtek LAN Driver	Outdated	10.2.703.2015	9.1.401.2015	No
<input checked="" type="checkbox"/> Management Engine Interface	Not installed	11.0.0.1160	None	No
<input checked="" type="checkbox"/> Intel Rapid Storage Technology Driver so...	Not installed	14.6.0.1029	None	No
<input checked="" type="checkbox"/> APPP Utility	Not installed	1.0.030	None	No
<input checked="" type="checkbox"/> Norton Security	Not installed	22.5.1.7	None	No

Tick an item and click Install to install it

Click to install



If Autorun is NOT enabled in your computer, browse the contents of the Support DVD to locate the file Setup.exe in the root folder. Double-click the Setup.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 EZ Update

EZ Update is a utility that allows you to automatically update your motherboard's softwares, drivers and the BIOS version easily. With this utility, you can also manually update the saved BIOS and select a boot logo when the system goes into POST.

To launch EZ Update, click **EZ Update** on the AI Suite 3 main menu bar.

The screenshot shows the ASUS EZ Update utility window. The window title is "ASUS EZ Update". The main content area contains instructions: "EZ Update allows you to manage and update the latest ASUS motherboard drivers, softwares and BIOS from the internet. With this utility, you can also manually update the saved BIOS and select a boot logo when the system goes into POST." Below this, there are two sections: "Check updates from internet:" with a "Check Now" button, and "Manually update Boot logo or BIOS:" with a "Select a downloaded BIOS file then click 'My Logo' or 'BIOS Update'" and a file selection button. On the right side, there is a "Current BIOS" section with details: "Model Name: B150-PLUS", "Version: 0301", "Release Date: 09/15/2015", and a "Selected BIOS" section. Annotations with red arrows point to the "Check Now" button, the file selection button, the "My Logo" or "BIOS Update" button, and the "Update" button at the bottom right.

Click to automatically update your motherboard's driver, software and firmware

Click to find and select the BIOS from file

Click to select a boot logo

Click to update the BIOS



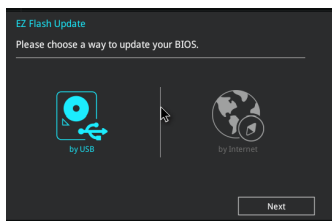
EZ Update requires an Internet connection either through a network or an ISP (Internet Service Provider).

## 2.1.2 ASUS EZ Flash 3

The ASUS EZ Flash 3 feature allows you to update the BIOS without using an OS-based utility.



- Ensure that you load the BIOS default settings to ensure system compatibility and stability. Select the **Load Optimized Defaults** item under the Exit menu. See section **2.10 Exit Menu** for details.
- Check your Internet connection before updating the BIOS via the Internet.



### To update the BIOS using EZ Flash 3:

1. Enter the **Advanced Mode** of the BIOS setup program. Go to the **Tool** menu to select **ASUS EZ Flash 3 Utility** and press <Enter> to enable it.
2. Follow the steps below to update the BIOS via USB or Internet.

#### Via USB

- a) Insert the USB flash disk that contains the latest BIOS file to the USB port, then select **by USB**.
- b) Press <Tab> to switch to the **Drive** field.
- c) Press the Up/Down arrow keys to find the USB flash disk that contains the latest BIOS, and then press <Enter>.
- d) Press <Tab> to switch to the **Folder Info** field.
- e) Press the Up/Down arrow keys to find the BIOS file, and then press <Enter> to perform the BIOS update process.

#### Via the Internet

- a) Select **by Internet**.
  - b) Press the Left/Right arrow keys to select an Internet connection method, and then press <Enter>.
  - c) Follow the onscreen instructions to complete the update.
3. Reboot the system when the update process is done.



- ASUS EZ Flash 3 supports USB devices, such as a USB flash disk, 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 **B150PLUS.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](http://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 3 utility automatically.
4. The system requires you to enter BIOS Setup to recover BIOS settings. 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

ASUS BIOS Updater allows you to update the BIOS in DOS environment.



The screen captures used in this section are for reference only and may not be exactly the same as actually shown on your computer screen.

### Before updating BIOS

- Prepare the motherboard support DVD and a USB flash drive.
- Download the latest BIOS file and BIOS Updater from <http://support.asus.com> and save them in your USB flash drive.



NTFS is not supported under FreeDOS environment. Ensure that your USB flash drive is in single partition and in FAT32/16 format.

- Turn off the computer.
- Ensure that your computer has a DVD optical drive.

## Booting the system in DOS environment

### To boot the system in DOS:

1. Insert the USB flash drive with the latest BIOS file and BIOS Updater to the USB port.
2. Boot your computer then press <F8> to launch the select boot device screen.
3. When the select boot device screen appears, insert the Support DVD into the optical drive then select the optical drive as the boot device.

```
Please select boot device:
↑ and ↓ to move selection
ENTER to select boot device
ESC to boot using defaults
-----
P2: ST3808110AS (76319MB)
aigo miniking (250MB)
UEFI: (FAT) ASUS DRW-2014L1T(4458MB)
P1: ASUS DRW-2014L1T(4458MB)
UEFI: (FAT) aigo miniking (250MB)
Enter Setup
```

4. When the booting message appears, press <Enter> within five (5) seconds to enter FreeDOS prompt.

```
ISOLINUX 3.20 2006-08-26 Copyright (C) 1994-2005 H. Peter Anvin
A Bootable DVD/CD is detected. Press ENTER to boot from the DVD/CD.
If no key is pressed within 5 seconds, the system will boot next priority
device automatically. boot:
```

5. On the FreeDOS prompt, type **d:** then press <Enter> to switch the disk from Drive C (optical drive) to Drive D (USB flash drive).

```
Welcome to FreeDOS (http://www.freedos.org) !
C: /> d:
D: />
```

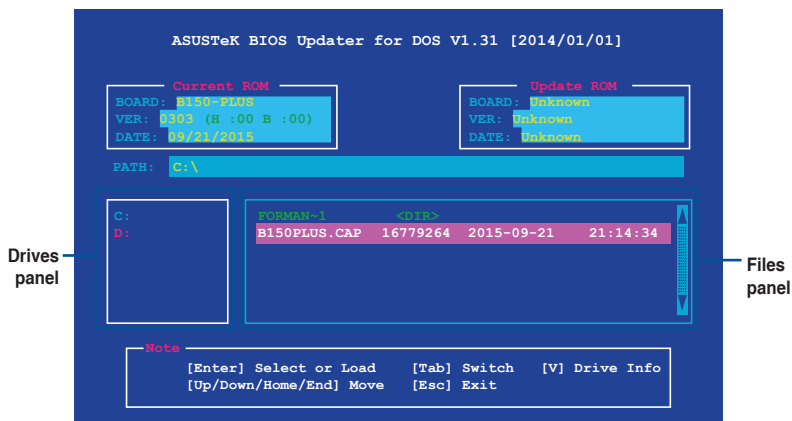
## Updating the BIOS file

### To update the BIOS file:

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

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

2. On the BIOS Updater screen, press <Tab> to switch from Files panel to Drives panel then select **D:**.



3. Press <Tab> to switch from Drives panel to Files panel then press <Up/Down or Home/End> keys to select the BIOS file and press <Enter>.
4. After the BIOS Updater checks the selected BIOS file, select **Yes** to confirm the BIOS update.




---

The BIOS Backup feature is not supported due to security regulations.

---

5. Select **Yes** then press <Enter>. When BIOS update is done, press <ESC> to exit BIOS Updater.
6. Restart your computer.




---

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

---




---

Ensure to load the BIOS default settings to ensure system compatibility and stability. Select the **Load Optimized Defaults** item under the **Exit BIOS menu**. See section **2.10 Exit Menu** for details.

---

## 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> or <F2> during the Power-On Self Test (POST). If you do not press <Delete> or <F2>, 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 you 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](http://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 or press hotkey F5. See section 2.10 **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 1.6 **Headers** 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**. Press <F7> to change between the two modes.

## 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, fan profile and boot device priority. To access the Advanced Mode, click **Advanced Mode(F7)** or press <F7>.



The default screen for entering the BIOS setup program can be changed. Refer to the **Setup Mode** item in section 2.8 **Boot menu** for details.

Displays the CPU/motherboard temperature, CPU voltage output, CPU/chassis fan speed, and SATA information

Selects the display language of the BIOS setup program

Information  
B150-PLUS BIOS Ver. 0303  
Genuine Intel(R) CPU 0000 @ 2.60Ghz  
Speed: 2600 MHz  
Memory: 4096 MB (DDR4 2133MHz)

DRAM Status  
DIMM\_A1: N/A  
DIMM\_A2: N/A  
DIMM\_B1: SK Hynix 4096MB 2133MHz  
DIMM\_B2: N/A

X.M.P.  
Disabled

FAN Profile  
CPU FAN 1942 RPM  
CHA2 FAN N/A

CPU Temperature 36°C  
CPU Core Voltage 1.120 V  
Motherboard Temperature 31°C

SATA Information  
SATA6G\_1: N/A  
SATA6G\_2: N/A  
SATA6G\_3: N/A  
SATA6G\_4: N/A  
SATA6G\_5: N/A  
SATA6G\_6: N/A

EZ System Tuning  
Click the icon to specify your preferred system settings for a power-saving system environment.  
Quiet  
Performance  
Energy Saving  
Normal

Boot Priority  
Choose one and drag the items. Switch all

Default(F5) Save & Exit(F10) Advanced Mode(F7) Search on FAQ

Displays the CPU Fan's speed. Click the button to manually tune the fans

Loads optimized default settings

Saves the changes and resets the system

Shows the bootable devices

Search on FAQs  
Displays the Advanced mode menus

Selects the boot device priority



The boot device options vary depending on the devices you 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 **EzMode(F7)** or press <F7>.

The screenshot shows the ASUS UEFI BIOS Utility in Advanced Mode. The interface is dark-themed with blue accents. At the top, there is a menu bar with options: My Favorites, Main, Ai Tweaker (selected), Advanced, Monitor, Boot, Tool, and Exit. Below the menu bar, there are system status indicators: date (01/01/2014), time (00:55), language (English), and function keys (MyFavorite(F3), Q-Fan Control(F6), Quick Note(F9), Hot Keys). The main area is divided into several sections:

- Configuration fields:** A list of settings on the left, including CPU Core Ratio (set to Auto), BCLK Frequency, DRAM Odd Ratio Mode, DRAM Frequency, EPU Power Saving Mode, CPU SVID Support, and DRAM Timing Control. A sub-menu item 'DIGI+ VRM' is expanded to show 'Internal CPU Power Management'.
- General help:** A help box at the bottom left provides instructions for the CPU Core Ratio setting: '[Auto]: The system will adjust all core ratios automatically. [Sync All Cores]: Configure a core ratio limit to synchronize all cores. [Per Core]: Configure the core ratio limit per core.'
- Hardware Monitor:** A panel on the right displays real-time system data:
 

CPU	
Frequency	Temperature
2600 MHz	36°C
BCLK	Core Voltage
100.0 MHz	1.120 V
Ratio	
26x	
Memory	
Frequency	Voltage
2133 MHz	1.200 V
Capacity	
4096 MB	
Voltage	
+12V	+5V
11.904 V	5.160 V
+3.3V	
3.328 V	
- Footer:** Includes 'Last Modified', 'EzMode(F7) [→]' (with a right arrow icon), and 'Search on FAQ'.

Red lines and boxes highlight these specific areas, with labels: 'Menu bar', 'Language', 'MyFavorite', 'Q-Fan control', 'Quick Note', 'Hot Keys', 'Sub-menu item', 'General help', 'Configuration fields', 'Last modified settings', 'Scroll bar', 'Search on FAQs', 'Menu items', 'Goes back to EZ Mode', and 'Displays the CPU temperature and memory voltage output'.



## Menu bar

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

<b>My Favorites</b>	For saving the frequently-used system settings and configuration
<b>Main</b>	For changing the basic system configuration
<b>Ai Tweaker</b>	For changing the overclocking settings
<b>Advanced</b>	For changing the advanced system settings
<b>Monitor</b>	For displaying the system temperature, power status, and changing the fan settings
<b>Boot</b>	For changing the system boot configuration
<b>Tool</b>	For configuring options for special functions
<b>Exit</b>	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 (My Favorites, Ai Tweaker, Advanced, Monitor, Boot, Tool, and Exit) on the menu bar have their respective menu items.

## 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>.

## Language

This button above the menu bar contains the languages that you can select for your BIOS. Click this button to select the language that you want to display in your BIOS screen.

## MyFavorite (F3)

This button above the menu bar shows all BIOS items in a Tree Map setup. Select frequently-used BIOS settings and save it to MyFavorites menu.



---

Refer to section **2.3 My Favorites** for more information.

---

## Q-Fan Control (F6)

This button above the menu bar displays the current settings of your fans. Use this button to manually tweak the fans to your desired settings.

## Search on FAQ

Move your mouse over this button to show a QR code. Scan this QR code with your mobile device to connect to the ASUS BIOS FAQ web page. You can also scan the QR code below.



## Quick Note (F9)

This button above the menu bar allows you to key in notes of the activities that you have done in BIOS.



- The Quick Note function does not support the following keyboard functions: delete, cut, copy and paste.
- You can only use the alphanumeric characters to enter your notes.

## Hot keys

This button above the menu bar contains the navigation keys for the BIOS setup program. Use the navigation keys to select items in the menu and change the settings.

## 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.

## General help

At the top right corner of the menu screen is a brief description of the selected item. Use <F12> key to capture the BIOS screen and save it to the removable storage device.

## 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.

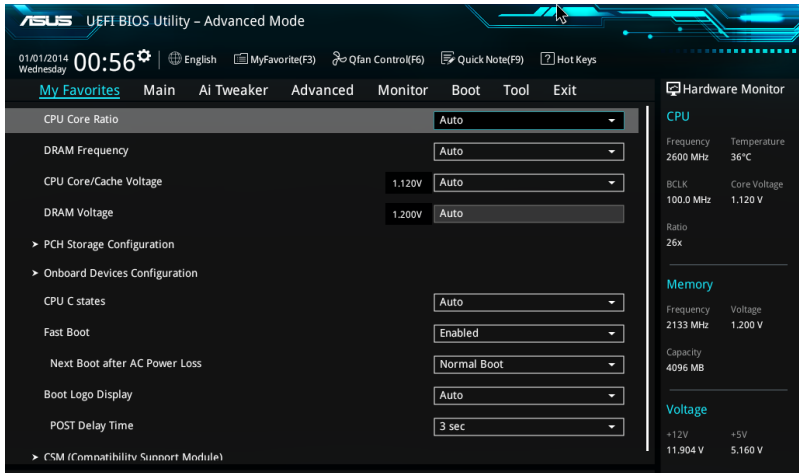
A configurable field is highlighted when selected. To change the value of a field, select it and press <Enter> to display a list of options.

## Last Modified button

This button shows the items that you last modified and saved in BIOS Setup.

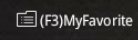
## 2.3 My Favorites

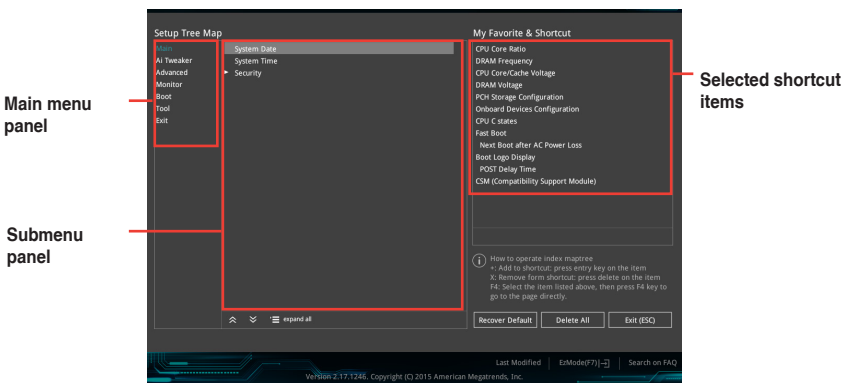
MyFavorites is your personal space where you can easily save and access your favorite BIOS items.



### Adding items to My Favorites

To add BIOS items:

1. Press <F3> on your keyboard or click  from the BIOS screen to open Setup Tree Map screen.
2. On the Setup Tree Map screen, select the BIOS items that you want to save in MyFavorites screen.



3. Select an item from main menu panel, then click the submenu that you want to save as favorite from the submenu panel and click **+**.

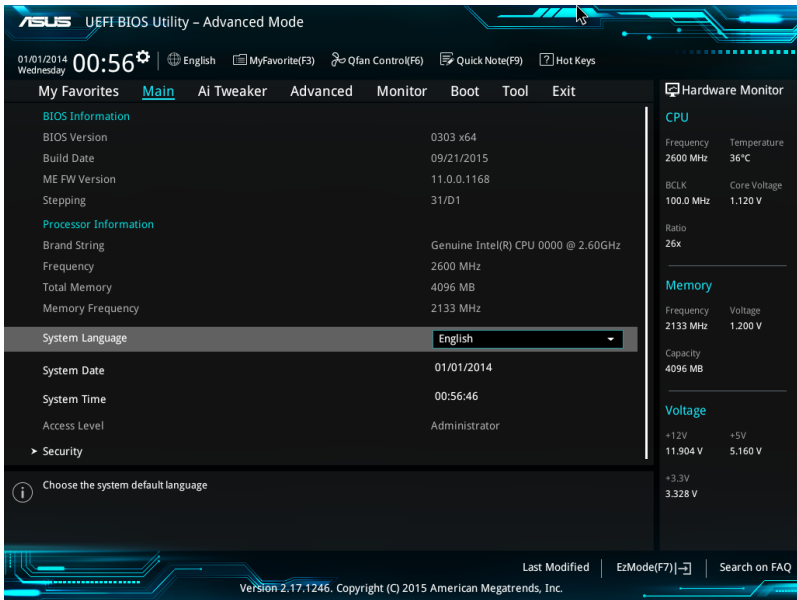
You cannot add the following items to My Favorite items:

- User-managed items such as language and boot order

4. Click **Exit (ESC)** or press <esc> key to close Setup Tree Map screen.
5. Go to My Favorites menu to view the saved BIOS items.

## 2.4 Main menu

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



## 2.5 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.

Scroll down to display other BIOS items.

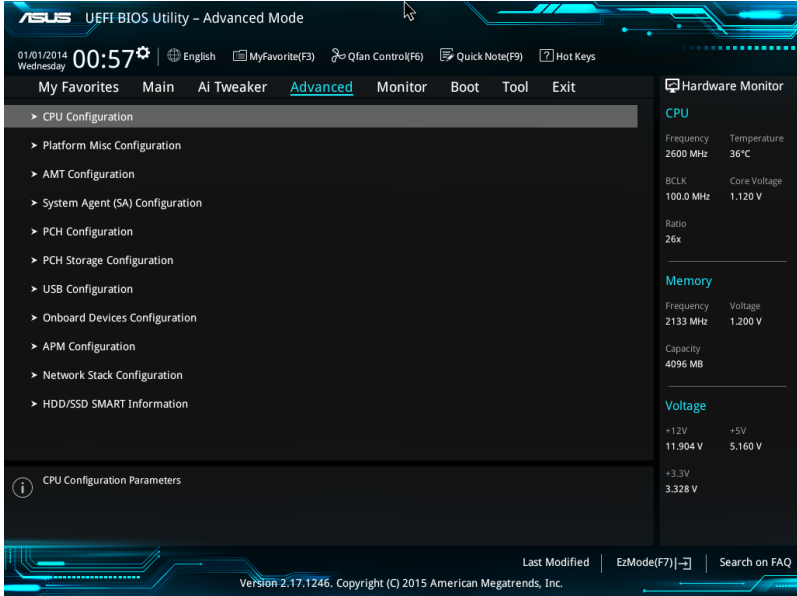
The screenshot shows the ASUS UEFI BIOS Utility in Advanced Mode, specifically the Ai Tweaker menu. The interface is dark-themed with blue accents. At the top, it displays the date (01/01/2014), time (00:55), and language (English). The main menu includes options like My Favorites, Main, Ai Tweaker (selected), Advanced, Monitor, Boot, Tool, and Exit. The Ai Tweaker menu is expanded, showing various settings for CPU Core Ratio, BCLK Frequency, DRAM Odd Ratio Mode, DRAM Frequency, EPU Power Saving Mode, CPU SVID Support, and DRAM Timing Control. A Hardware Monitor section on the right provides real-time data for CPU (Frequency: 2600 MHz, Temperature: 36°C, BCLK: 100.0 MHz, Core Voltage: 1.120 V, Ratio: 26x) and Memory (Frequency: 2133 MHz, Voltage: 1.200 V, Capacity: 4096 MB). A Voltage section shows +12V (+5V), 11.904 V (5.160 V), and +3.3V (3.328 V). At the bottom, there is a footer with 'Version 2.17.1246. Copyright (C) 2015 American Megatrends, Inc.' and a search bar for FAQ.

## 2.6 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.



## 2.7 Monitor menu

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

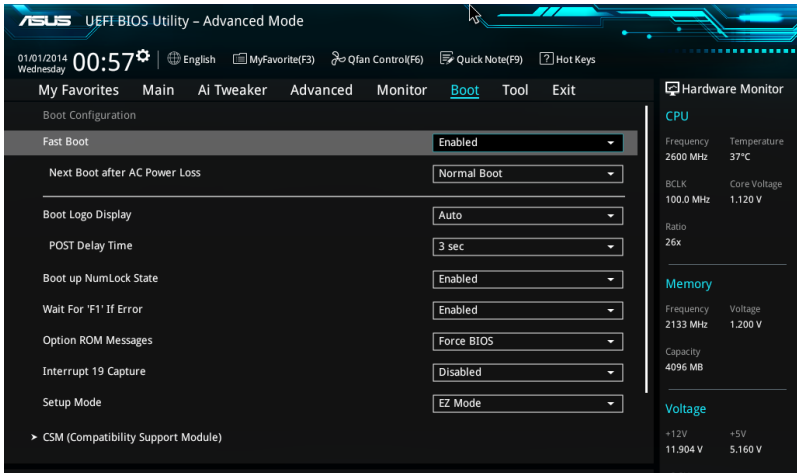
Scroll down to display the other BIOS items.



## 2.8 Boot menu

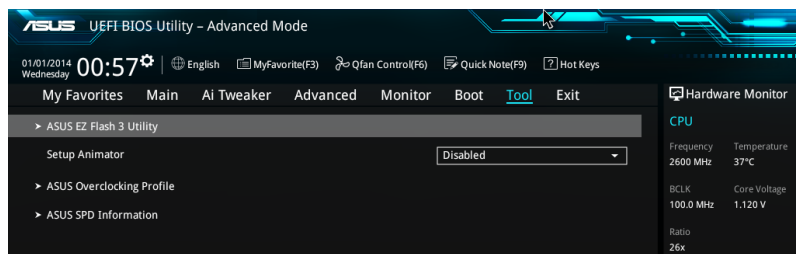
The Boot menu items allow you to change the system boot options.

Scroll down to display the other BIOS items.



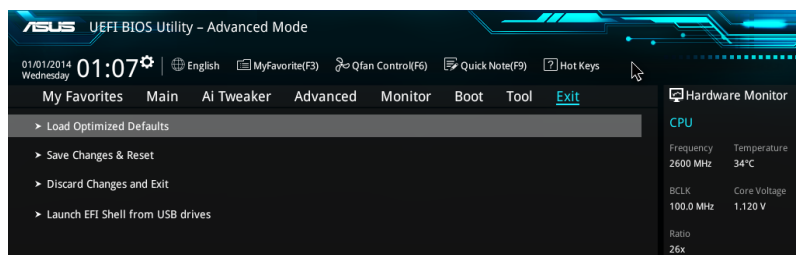
## 2.9 Tool menu

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



## 2.10 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.





# 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 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.



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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.

## 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

### Class B ITE

この装置は、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が、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。

VCCI-B

## KC: Korea Warning Statement

**B급 기기 (가정용 방송통신기자재)**

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

## 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>.



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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.

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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.

## Regional notice for California



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**WARNING!** This product may contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Wash hands after handling.

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**Polski** Firma ASUSTek Computer Inc. niniejszym oświadcza, że urządzenie to jest zgodne z zasadniczymi wymogami i innymi właściwymi postanowieniami powiązanych dyrektyw. Pełny tekst deklaracji zgodności UE jest dostępny pod adresem: [www.asus.com/support](http://www.asus.com/support)

**Português** A ASUSTek Computer Inc. declara que este dispositivo está em conformidade com os requisitos essenciais e outras disposições relevantes das Diretivas relacionadas. Texto integral da declaração da UE disponível em: [www.asus.com/support](http://www.asus.com/support)

**Română** ASUSTek Computer Inc. declară că acest dispozitiv se conformează cerințelor esențiale și altor prevederi relevante ale directivelor conexe. Textul complet al declarației de conformitate a Uniunii Europene se găsește la: [www.asus.com/support](http://www.asus.com/support)

**Srpski** ASUSTek Computer Inc. ovim izjavljuje da je ovaj uređaj u saglasnosti sa osnovnim zahtevima i drugim relevantnijim odredbama povezanih Direktiva. Pun tekst EU deklaracije o usaglasjenosti je dostupan da adres: [www.asus.com/support](http://www.asus.com/support)

**Slovensky** Spoločnosť ASUSTek Computer Inc. týmto vyhlasuje, že toto zariadenie vyhovuje základným požiadavkám a ostatým príslušným ustanoveniam príslušných smerníc. Celý text vyhlásenia o zhode pre štáty EÚ je dostupný na adrese: [www.asus.com/support](http://www.asus.com/support)

**Slovenščina** ASUSTek Computer Inc. izjavlja, da je ta naprava skladna z bistvenimi zahtevami in drugimi ustreznimi določbami povezanih direktiv. Celotno besedilo EU-izjave o skladnosti je na voljo na spletnem mestu: [www.asus.com/support](http://www.asus.com/support)

**Español** Por la presente, ASUSTek Computer Inc. declara que este dispositivo cumple los requisitos básicos y otras disposiciones pertinentes de las directivas relacionadas. El texto completo de la declaración de la UE de conformidad está disponible en: [www.asus.com/support](http://www.asus.com/support)

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## ASUS contact information

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Online contact <http://eu-rma.asus.com/sales>

#### **Technical Support**

Telephone +49-2102-5789555  
Support Fax +49-2102-959911  
Online support <http://qr.asus.com/techserv>

# DECLARATION OF CONFORMITY

Per FCC Part 2 Section 2. 1077(a)



**Responsible Party Name:** Asus Computer International

**Address:** 800 Corporate Way, Fremont, CA 94539.

**Phone/Fax No:** (510)739-3777/(510)608-4555

hereby declares that the product

**Product Name :** Motherboard

**Model Number :** B150-PLUS

Conforms to the following specifications:

FCC Part 15, Subpart B, Unintentional Radiators

## Supplementary Information:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Representative Person's Name : Steve Chang / President

A handwritten signature in blue ink that reads "Steve Chang". The signature is written in a cursive style and is placed over a light blue rectangular background.

Signature :

Date : Oct. 21, 2015

Ver. 140331