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CE

Dichiarazione di conformità sintetica
Ai sensi dell'art. 2 comma 3 del D.M. 275 del 30/10/2002
Si dichiara che questo prodotto è conforme alle normative vigenti e soddisfa i requisiti essenziali richiesti dalle direttive 2004/108/CE, 2006/95/CE e 1999/05/CE quando ad esso applicabili

Short Declaration of conformity
We declare this product is complying with the laws in force and meeting all the essential requirements as specified by the directives 2004/108/CE, 2006/95/CE and 1999/05/CE whenever these laws may be applied

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Chapter 1: Introduction

1.1 Before You Start

Thank you for choosing our product. Before you start installing the motherboard, please make sure you follow the instructions below:

- Prepare a dry and stable working environment with sufficient lighting.
- Always disconnect the computer from power outlet before operation.
- Before you take the motherboard out from anti-static bag, ground yourself properly by touching any safely grounded appliance, or use grounded wrist strap to remove the static charge.
- Avoid touching the components on motherboard or the rear side of the board unless necessary. Hold the board on the edge, do not try to bend or flex the board.
- Do not leave any unfastened small parts inside the case after installation. Loose parts will cause short circuits which may damage the equipment.
- Keep the computer from dangerous area, such as heat source, humid air and water.
- The operating temperatures of the computer should be 0 to 45 degrees Celsius.
- To avoid injury, be careful of:
  Sharp pins on headers and connectors
  Rough edges and sharp corners on the chassis
  Damage to wires that could cause a short circuit

1.2 Package Checklist

- Serial ATA Cable x4
- User's Manual x1
- Fully Setup Driver DVD x1

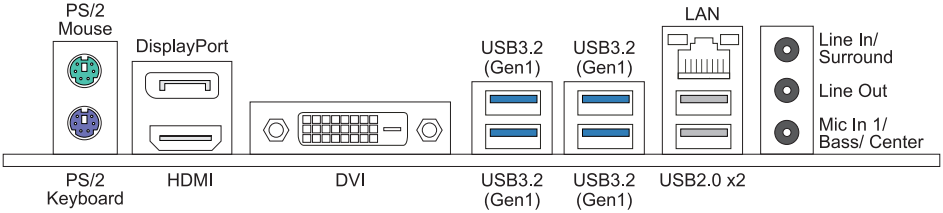
Note

» *The package contents may be different due to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.*

1.3 Specifications

Specifications	
CPU Support	Socket 1200 for 10th Gen Intel® Core™, Pentium and Celeron processors * 10th Generation Intel® Core™ Processor Family only support 400-Series. * Please refer to www.biostar.com.tw for CPU support list.
Chipset	INTEL® B460
Memory	Supports Dual Channel DDR4 2133/ 2400/ 2666/ 2933 4x DDR4 DIMM Memory Slot, Max. Supports up to 128 GB Memory Each DIMM supports non-ECC 4/8/16/32GB DDR4 module * Please refer to www.biostar.com.tw for Memory support list.
Storage	6x SATA III Connector (6Gb/s) 1x M.2 (M Key) Socket (PCIE-M2_1): Supports M.2 Type 2242/ 2260/ 2280 SSD module Supports PCI-E 3.0 x4 (32Gb/s) - NVMe/ AHCI SSD & SATA III (6Gb/s) SSD 1x M.2 (M Key) Socket (PCIE-M2_2): Supports M.2 Type 2242/ 2260/ 2280 SSD module Supports PCI-E 3.0 x4 (32Gb/s) SSD - NVMe/ AHCI SSD Supports Intel® Optane Technology * When using SATA SSD module on PCIE-M2_1 slot, the SATA_3U connector will be disabled.
LAN	Intel i219V 10/ 100/ 1000 Mb/s auto negotiation, Half / Full duplex capability
Audio Codec	ALC1150 7.1 Channels, High Definition Audio, Hi-Fi(Front)
USB	8x USB 3.2(Gen1) port (4 on rear I/Os and 4 via internal headers) 6x USB 2.0 port (2 on rear I/Os and 4 via internal headers)
Expansion Slots	3x PCIe 3.0 x1 Slot 1x PCIe 3.0 x16 Slot (x4) 1x PCIe 3.0 x16 Slot (x16)
Rear I/Os	1x PS/2 Keyboard 1x PS/2 Mouse 1x DP Port 1x HDMI Port 1x DVI-D Port 4x USB 3.2 (Gen1) Port 2x USB 2.0 Port 1x LAN port 3x Audio Jack
Internal I/Os	6x SATA III Connector (6Gb/s) 2x USB 2.0 Header (each header supports 2 USB 2.0 ports) 2x USB 3.2 (Gen1) Header (each header supports 2 USB 3.2 (Gen1) ports) 1x 8-Pin Power Connector 1x 24-Pin Power Connector 1x CPU Fan Connector 1x CPU water cooling connector (CPU_OPT) 2x System Fan Connector 1x Front Panel Header 1x Front Audio Header 1x Clear CMOS Header 1x COM Port Header 1x TPM Header 2x LED Header (5V) 1x LED Header (12V)
Form Factor	ATX Form Factor, 305 mm x 244 mm
OS Support	Windows 10(64bit) * Biostar reserves the right to add or remove support for any OS with or without notice.

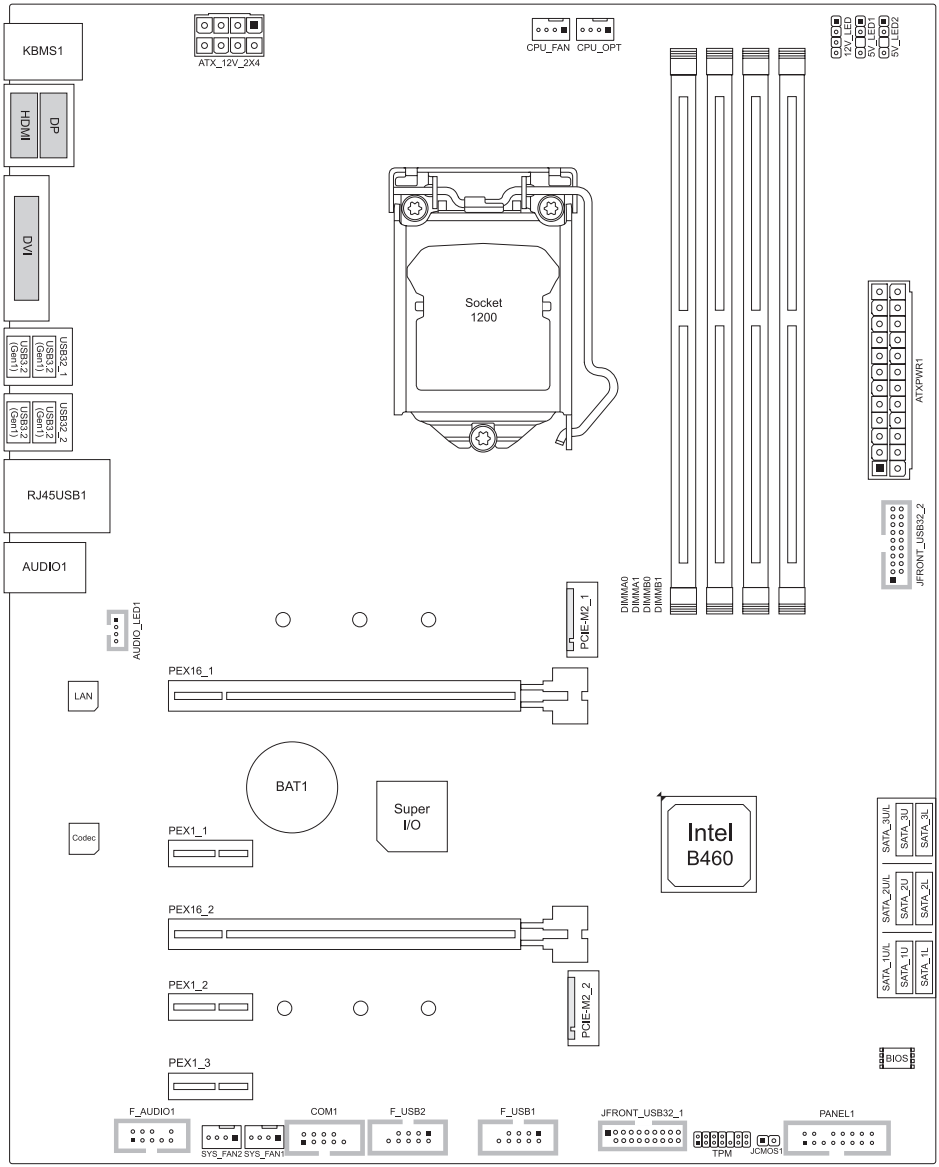
1.4 Rear Panel Connectors



Note

- » *DP/ HDMI/ DVI-D ports only work with an Intel® integrated Graphics Processor.*
- » *Maximum resolution*
  DP: 4096 x 2160 @60Hz
  HDMI: 4096 x 2160 @30Hz, compliant with HDMI 1.4
  DVI-D: 1920 x 1200 @60Hz
- » *When using the front HD audio jack and plug in the headset / microphone , the rear sound will be automatically Disabled.*
- » *The mainboard supports two onboard display outputs at same time and the display output configuration can be selected in Intel graphics driver utility.*

1.5 Motherboard Layout



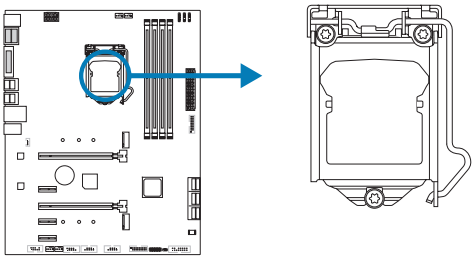
Note

» ■ *represents the 1st pin.*

Chapter 2: Hardware installation

2.1 Install Central Processing Unit (CPU)

Step 1: Locate the CPU socket on the motherboard

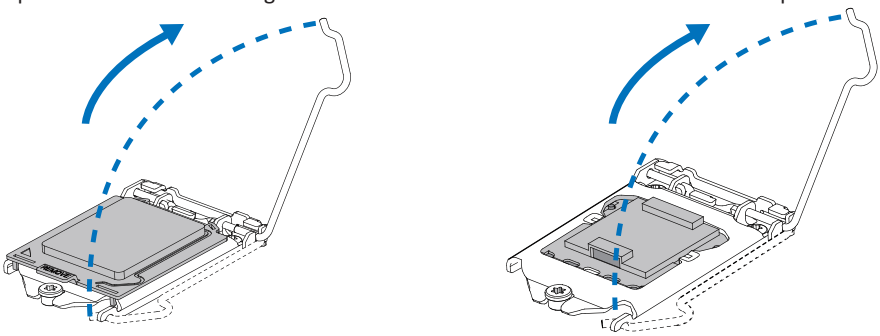


Note

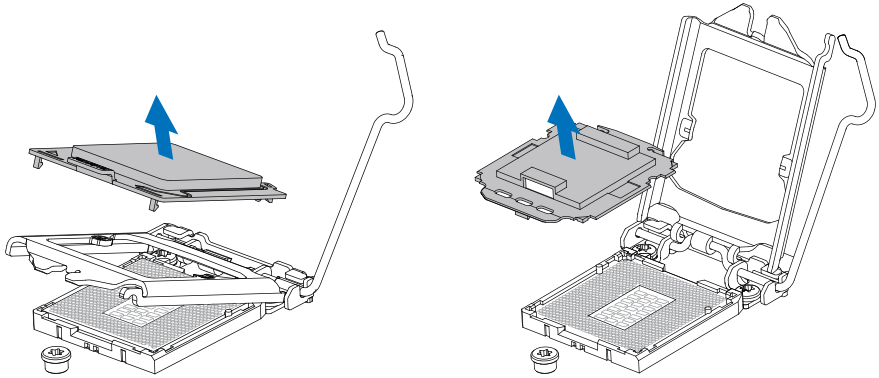
» *Remove pin cap before installation, and make good preservation for future use. When the CPU is removed, cover the pin cap on the empty socket to ensure pin legs won't be damaged.*

» *The motherboard might equip with two different types of pin cap. Please refer below instruction to remove the pin cap.*

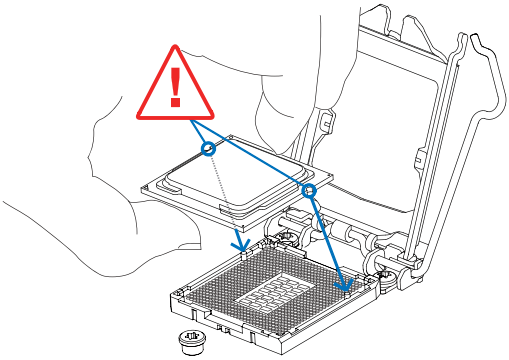
Step 2: Pull the socket locking lever out from the socket and then raise the lever up.



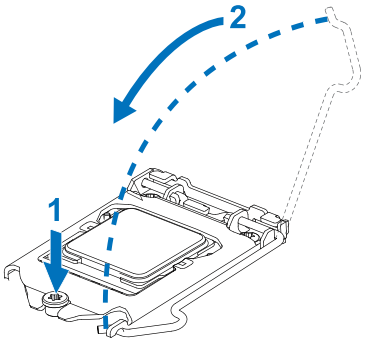
Step 3: Remove the Pin Cap.



Step 4: Hold processor with your thumb and index fingers, oriented as shown. Align the notches with the socket. Lower the processor straight down without tilting or sliding the processor in the socket.



Step 5: Hold the CPU down firmly, and then lower the lever to locked position to complete the installation.

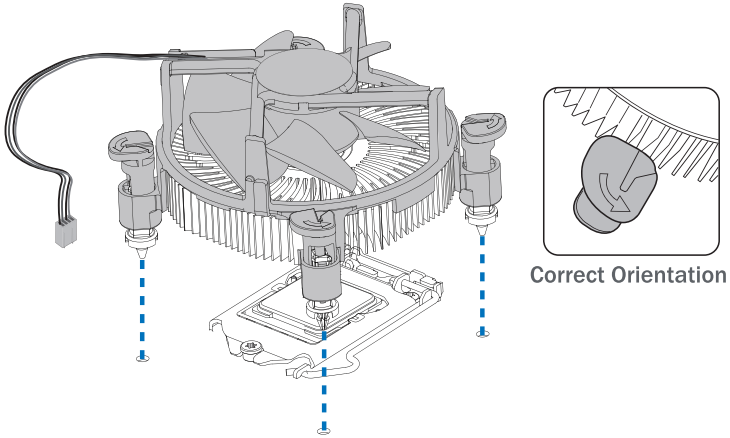


Note

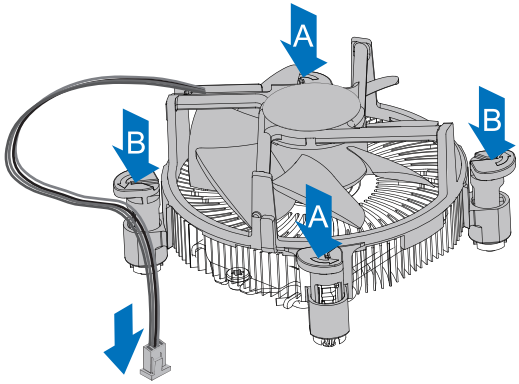
» *Ensure that you install the correct CPU designed for LGA1200 socket.*
» *The CPU fits only in one correct orientation. Do not force the CPU into the socket to prevent damaging the CPU.*

2.2 Install a Heatsink

Step 1: Place the CPU fan assembly on top of the installed CPU and make sure that the four fasteners match the motherboard holes. Orient the assembly and make the fan cable is closest to the CPU fan connector.



Step 2: Press down two fasteners at one time in a diagonal sequence to secure the CPU fan assembly in place. As each fastener locks into position a click should be heard.



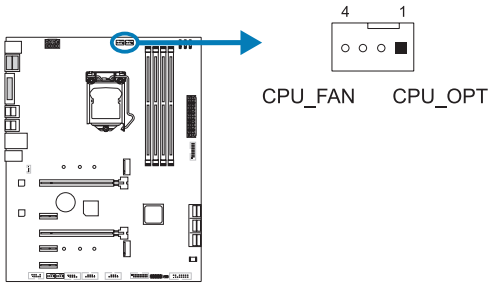
Note

» *Apply the thermal interface material on the CPU before heatsink installation, if necessary.*
» *Do not forget to connect the CPU fan connector.*
» *For proper installation, please kindly refer to the installation manual of your CPU heatsink.*

2.3 Connect Cooling Fans

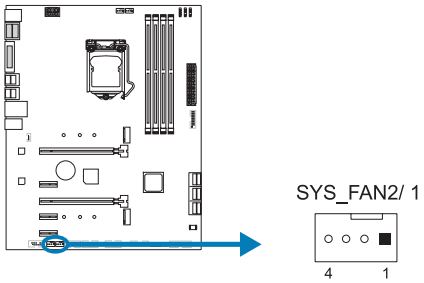
These fan headers support cooling-fans built in the computer. The fan cable and connector may be different according to the fan manufacturer.

CPU_FAN/ CPU_OPT: CPU Fan Header



Pin	Assignment
1	Ground
2	+12V
3	FAN RPM rate sense
4	AI Fan Control (By Fan)

SYS_FAN1/ SYS_FAN2: System Fan Header



Pin	Assignment
1	Ground
2	+12V
3	FAN RPM rate sense
4	AI Fan Control (By Fan)

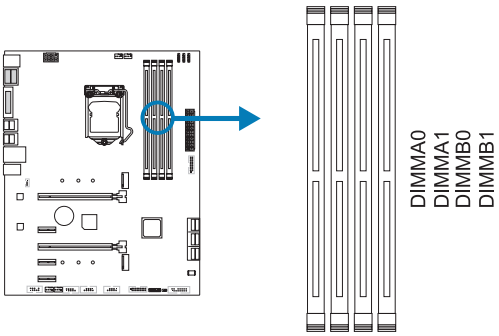
Note

» *CPU_FAN, CPU_OPT, SYS_FAN1/ SYS_FAN2 support 4-pin and 3-pin head connectors. When connecting with wires onto connectors, please note that the red wire is the positive and should be connected to pin#2, and the black wire is Ground and should be connected to pin#1(GND).*

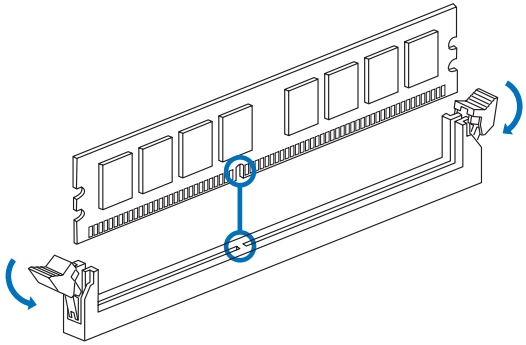
» *CPU Fan Header (CPU_OPT): Support water cooling fan and CPU fan.*

2.4 Install System Memory

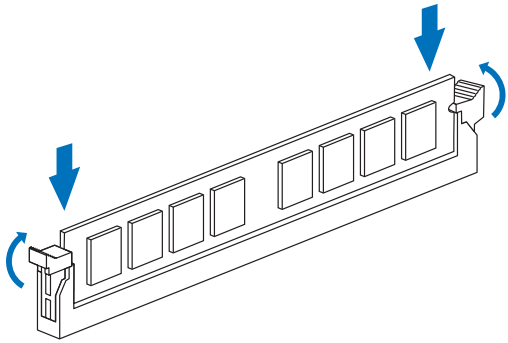
DDR4 Modules



Step 1: Unlock a DIMM slot by pressing the retaining clips outward. Align a DIMM on the slot such that the notch on the DIMM matches the break on the slot.



Step 2: Insert the DIMM vertically and firmly into the slot until the retaining clips snap back in place and the DIMM is properly seated.



Note

» *If the DIMM does not go in smoothly, do not force it. Pull it all the way out and try again.*

Memory Capacity

DIMM Socket Location	DDR4 Module	Total Memory Size
DIMMA0	4GB/8GB/16GB/32GB	Max is 128GB.
DIMMA1	4GB/8GB/16GB/32GB	
DIMMB0	4GB/8GB/16GB/32GB	
DIMMB1	4GB/8GB/16GB/32GB	

Dual Channel Memory Installation

Please refer to the following requirements to activate Dual Channel function:
Install memory module of the same density in pairs, shown in the table.

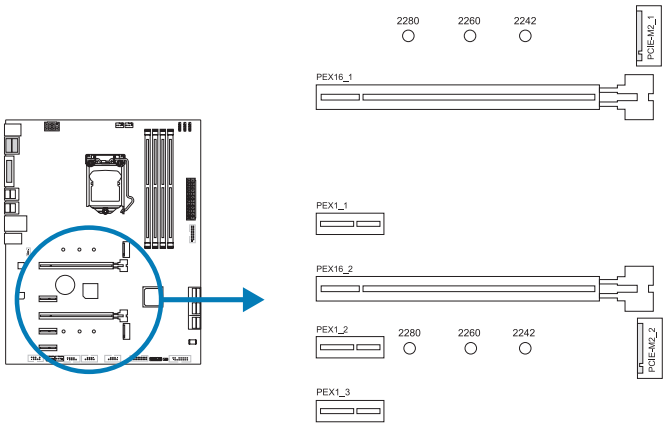
Dual Channel Status	DIMMA0	DIMMA1	DIMMB0	DIMMB1
Enabled	O	X	O	X
Enabled	X	O	X	O
Enabled	O	O	O	O

(O means memory installed, X means memory not installed.)

Note

» *When installing more than one memory module, we recommend to use the same brand and capacity memory on this motherboard.*

2.5 Expansion Slots



PEX16_1: PCI-Express Gen3 x16 Slot (x16)

- PCI-Express 3.0 compliant.
- Theoretical maximum bandwidth using two slots simultaneously is 16GB/s for each slot, a total of 32GB/s.

PEX16_2: PCI-Express Gen3 x16 Slot (x4)

- PCI-Express 3.0 compliant.
- Theoretical maximum bandwidth using two slots simultaneously is 4GB/s for each slot, a total of 8GB/s.

PEX1_1/ PEX1_2/ PEX1_3: PCI-Express Gen3 x1 Slots

- PCI-Express 3.0 compliant.
- Data transfer bandwidth up to 1GB/s per direction; 2GB/s in total

PCIE-M2_1/ PCIE-M2_2: M.2 (M Key) Socket

- The M.2 slot supports M.2 Type 2242/2260/2280 SSD module. When installing M.2 SSD module, please place the screw and hex pillar to correct position.
- **PCIE-M2_1:**
  Support M.2 SATA III (6.0 Gb/s) module and M.2 PCI Express module up to Gen3 x4 (32Gb/s) - NVMe/ AHCI SSD.
- **PCIE-M2_2:**
  Supports M.2 PCI Express module up to Gen3 x4 (32Gb/s) - NVMe/ AHCI SSD.
  Supports Intel® Optane Technology.

Note

» *When using SATA SSD module on PCIE-M2_1 slot, the SATA_3U connector will be disabled.*

Install an Expansion Card

You can install your expansion card by following steps:

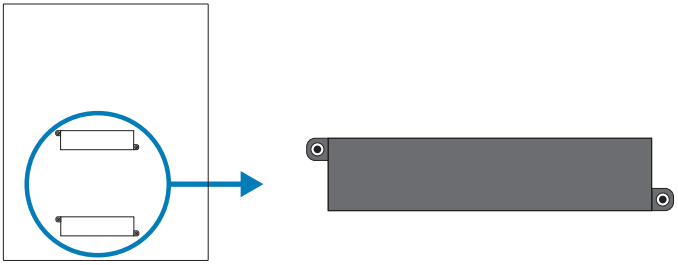
- Read the related expansion card's instruction document before install the expansion card into the computer.
- Remove your computer's chassis cover, screws and slot bracket from the computer.
- Place a card in the expansion slot and press down on the card until it is completely seated in the slot.
- Secure the card's metal bracket to the chassis back panel with a screw. (This step is only for installing a VGA card.).
- Replace your computer's chassis cover.
- Power on the computer, if necessary, change BIOS settings for the expansion card.
- Install related driver for the expansion card.

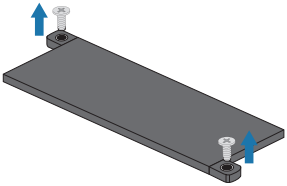
Note

» *Please be note that you will need to use M2 type screwdriver if you want to install or uninstall the screw. It is recommended not to use a screwdriver that does not meet the specifications, otherwise the screw may be damaged.*

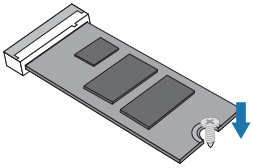
Install M.2 COOLING Heatsink

Steps of Removing the M.2 COOLING Heatsink:

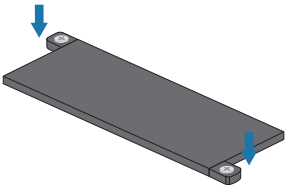




Step 1:
Before inserting the M.2 SSD card, loosen the two screws on the edge of the heat sink, and then remove the heat sink.



Step 2:
Insert M.2 SSD card onto the M.2 slot and screw it onto the motherboard.



Step 3:
After installing the M.2 SSD card, place the M.2 COOLING Heatsink over the M.2 slot and fasten the screws to fix the heatsink onto the motherboard.

Note

» *Please follow the installation instructions of M.2 COOLING Heatsink and remove the M.2 COOLING Heatsink to install the M.2 SSD card onto your motherboard.*

2.6 Jumper & Switch Setting

The illustration shows how to set up jumpers. When the jumper cap is placed on pins, the jumper is “close”, if not, that means the jumper is “open”.

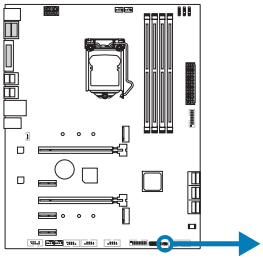
Pin opened

Pin closed

Pin 1-2 closed

JCMOS1: Clear CMOS Jumper

The jumper allows users to restore the BIOS safe setting and the CMOS data. Please carefully follow the procedures to avoid damaging the motherboard.



Pin 1-2 Open: Normal Operation (Default)

Pin 1-2 Short: Clear CMOS data

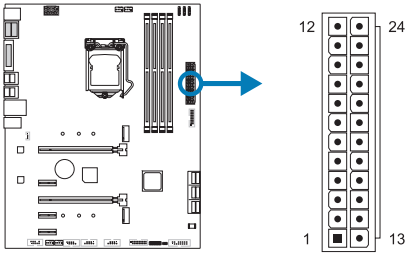
Clear CMOS Procedures:

1. Remove AC power line.
2. Set the jumper to “Pin 1-2 short”, you can use a metal object like a screwdriver to touch the two pins.
3. Wait for five seconds.
4. After clearing the CMOS values, be sure the jumper is “Pin 1-2 open”.
5. Power on the AC.
6. Load Optimal Defaults and save settings in CMOS.

2.7 Headers & Connectors

ATXPWR1: ATX Power Source Connector

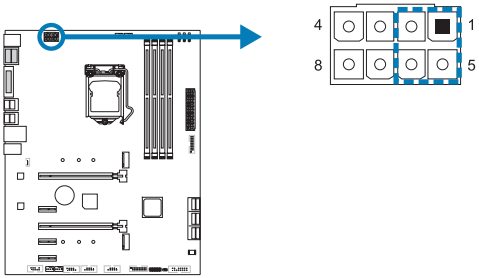
For better compatibility, we recommend to use a standard ATX 24-pin power supply for this connector. Make sure to find the correct orientation before plugging the connector.



Pin	Assignment	Pin	Assignment
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	Ground	3	Ground
16	PS_ON	4	+5V
17	Ground	5	Ground
18	Ground	6	+5V
19	Ground	7	Ground
20	NC	8	PW_OK
21	+5V	9	Standby Voltage+5V
22	+5V	10	+12V
23	+5V	11	+12V
24	Ground	12	+3.3V

ATX_12V_2X4: ATX Power Source Connector

The connector provides +12V to the CPU power circuit. If the CPU power plug is 4-pin, please plug it into Pin 1-2-5-6 of ATX_12V_2X4.



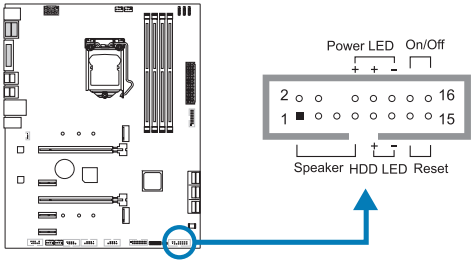
Pin	Assignment
1	+12V
2	+12V
3	+12V
4	+12V
5	Ground
6	Ground
7	Ground
8	Ground

Note

- » *Before you power on the system, please make sure that both ATXPWR1 and ATX_12V_2X4 connectors have been plugged-in.*
- » *Insufficient power supplied to the system may result in instability or the peripherals not functioning properly. Use of a PSU with a higher power output is recommended when configuring a system with more power-consuming devices.*

PANEL1: Front Panel Header

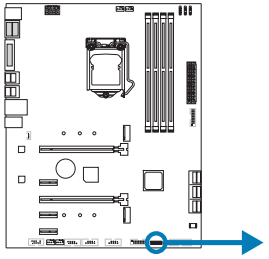
This 16-pin header includes Power-on, Reset, HDD LED, Power LED, and speaker connection.

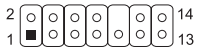


Pin	Assignment	Function	Pin	Assignment	Function
1	+5V	Speaker Connector	2	N/A	N/A
3	N/A		4	N/A	
5	N/A		6	N/A	N/A
7	Speaker		8	Power LED (+)	Power LED
9	HDD LED (+)	Hard drive LED	10	Power LED (+)	
11	HDD LED (-)		12	Power LED (-)	
13	Ground	Reset button	14	Power button	Power-on button
15	Reset control		16	Ground	

TPM: Trusted Platform Module Header

This header allows you to store cryptographic keys that protect information.

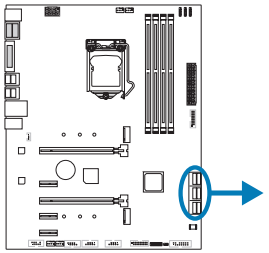


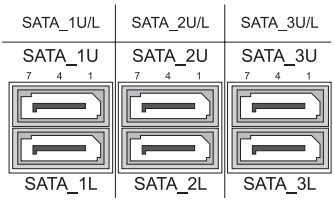


Pin	Assignment	Pin	Assignment
1	F_LAD0	2	+3V
3	F_LAD1	4	+3V
5	F_LAD2	6	TPM_24MHZ
7	F_LAD3	8	GND
9	L_FRAME_N	10	NC
11	SER_IRQ	12	PLTRST_N
13	CLK_RUN_N	14	+3V3_DUAL

SATA_1U/ SATA_1L/ SATA_2U/ SATA_2L/ SATA_3U/ SATA_3L: Serial ATA Connectors

These connectors connect to SATA hard disk drives via SATA cables.





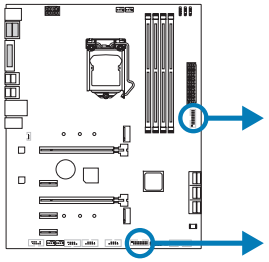
Pin	Assignment
1	Ground
2	TX+
3	TX-
4	Ground
5	RX-
6	RX+
7	Ground

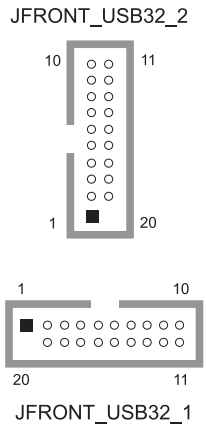
Note

» *When using SATA SSD module on PCIE-M2_1 slot, the SATA_3U connector will be disabled.*

JFRONT_USB32_1/ JFRONT_USB32_2: Header for USB 3.2 (Gen1) Ports at Front Panel

This header allows user to add additional USB ports on the PC front panel, and also can be connected with a wide range of external peripherals.

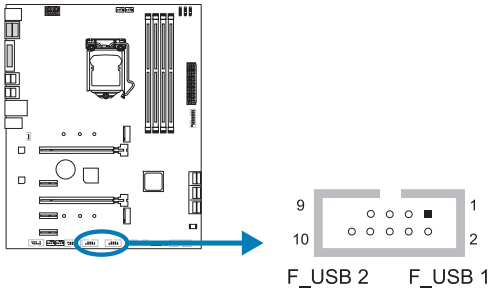




Pin	Assignment	Pin	Assignment
1	VBUS0	11	D2+
2	SSRX1-	12	D2-
3	SSRX1+	13	Ground
4	Ground	14	SSTX2+
5	SSTX1-	15	SSTX2-
6	SSTX1+	16	Ground
7	Ground	17	SSRX2+
8	D1-	18	SSRX2-
9	D1+	19	VBUS1
10	ID	20	Key

F_USB1/ F_USB2: Header for USB 2.0 Ports at Front Panel

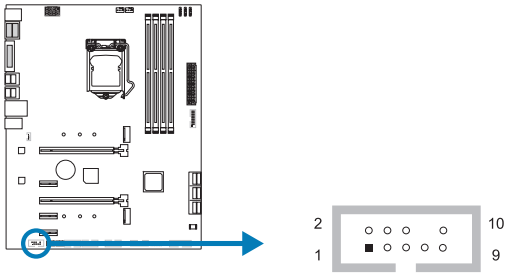
This header allows user to add additional USB ports on the PC front panel, and also can be connected with a wide range of external peripherals.



Pin	Assignment
1	+5V (fused)
2	+5V (fused)
3	USB-
4	USB-
5	USB+
6	USB+
7	Ground
8	Ground
9	Key
10	NC

F_AUDIO1: Front Panel Audio Header

This header allows user to connect the chassis-mount front panel audio I/O which supports HD and AC'97 audio standards.



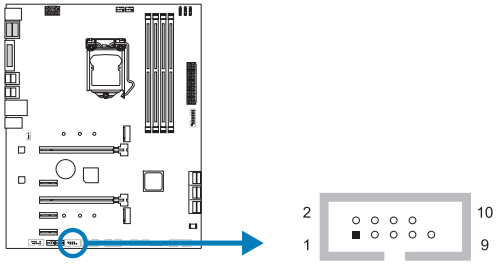
HD Audio		AC'97	
Pin	Assignment	Pin	Assignment
1	Mic Left in	1	Mic In
2	Ground	2	Ground
3	Mic Right in	3	Mic Power
4	GPIO	4	Audio Power
5	Right line in	5	RT Line Out
6	Jack Sense	6	RT Line Out
7	Front Sense	7	Reserved
8	Key	8	Key
9	Left line in	9	LFT Line Out
10	Jack Sense	10	LFT Line Out

Note

- » *It is recommended that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high definition audio capability.*
- » *Please try to disable the "Front Panel Jack Detection" if you want to use an AC'97 front audio output cable. The function can be found via O.S. Audio Utility.*

COM1: Serial Port Header

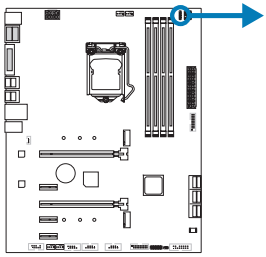
The motherboard has a serial port header for connecting RS-232 Port.

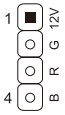


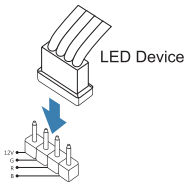
Pin	Assignment
1	Carrier detect
2	Received data
3	Transmitted data
4	Data terminal ready
5	Signal ground
6	Data set ready
7	Request to send
8	Clear to send
9	Ring indicator
10	Key

12V_LED: RGB LED Device (5050 SMD) Header

This header providers 12V power and RGB control pins for RGB LED Device (5050 SMD).





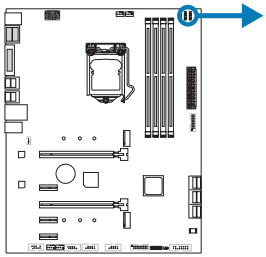


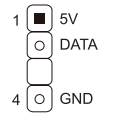
RGB LED Device Header
(12V_LED)

Pin	Cable Color	Assignment
1	12V (Black)	VCC12
2	G (Green)	LED_GREEN
3	R (Red)	LED_RED
4	B (Blue)	LED_BLUE

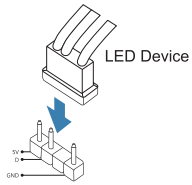
5V_LED1/ 5V_LED2: Addressable RGB LED Device (WS2818B) Header

This header providers 5V power and Data control pins for ARGB LED Device (WS2818B).





5V_LED1/ 2



Addressable RGB LED Device Header
(5V_LED)

Pin	Assignment
1	VCC5
2	Data
3	N/A
4	GND

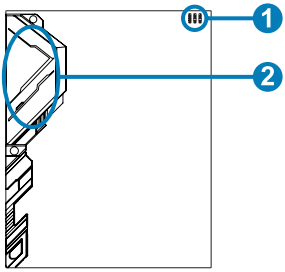
Note

- » *Ensure proper pin connecting to your LED device, wrong connection may damage your LED device or motherboard.*
- » *The 12V_LED connector supports to 5050 RGB LED strips with the maximum power rating of 3A (12V).*
- » *The 5V_LED connector supports up to 300 LEDs WS2818B individually Addressable RGB LED strips with the maximum power rating of 3A (5V).*
- » *Please use the Vivid LED DJ software to control the LEDs. For detailed software setting information, refer to chapter 3.3 .*

2.8 LEDs

LEDs

Below LEDs are controlled by RACING GT EVO program. Please refer to Chapter 3.3 for more detail software setting.



1. RGB LED Header (5V/ 12V)
2. ARMOR GEAR LED

Chapter 3: UEFI BIOS & Software

3.1 UEFI BIOS Setup

- The BIOS Setup program can be used to view and change the BIOS settings for the computer. The BIOS Setup program is accessed by pressing the <DEL> key after the Power-On Self-Test (POST) memory test begins and before the operating system boot begins.
- For further information of setting up the UEFI BIOS, please refer to the UEFI BIOS Manual on our website.

3.2 BIOS Update

The BIOS can be updated using either of the following utilities:

- BIOSTAR BIO-Flasher: Using this utility, the BIOS can be updated from a file on a hard disk, a USB drive (a flash drive or a USB hard drive), or a CD-ROM.
- BIOSTAR BIOS Update Utility: It enables automated updating while in the Windows environment. Using this utility, the BIOS can be updated from a file on a hard disk, a USB drive (a flash drive or a USB hard drive), or a CD-ROM, or from the file location on the Web.

BIOSTAR BIO-Flasher

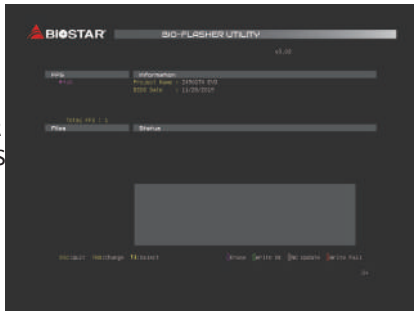
Note

» *This utility only allows storage device with FAT32/16 format and single partition.*
» *Shutting down or resetting the system while updating the BIOS will lead to system boot failure.*

Updating BIOS with BIOSTAR BIO-Flasher

1. Go to the website to download the latest BIOS file for the motherboard.
2. Then, copy and save the BIOS file into a USB flash (pen) drive.(Only supported FAT/FAT32 format)
3. Insert the USB pen drive that contains the BIOS file to the USB port.
4. Power on or reset the computer and then press <F12> during the POST process.

5. After entering the POST screen, the BIO-FLASHER utility pops out. Choose <fs0> to search for the BIOS file.



6. Select the proper BIOS file, and a message asking if you are sure to flash the BIOS file. Click “Yes” to start updating BIOS.

7. A dialog pops out after BIOS flash is completed, asking you to restart the system. Press the <Y> key to restart system.

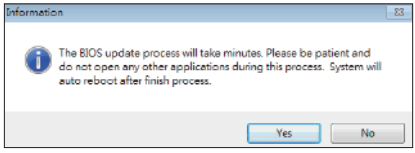
8. While the system boots up and the full screen logo shows up, press <DEL> key to enter BIOS setup.
After entering the BIOS setup, please go to the <Save & Exit>, using the <Restore Defaults> function to load Optimized Defaults, and select <Save Changes and Reset> to restart the computer. Then the BIOS Update is completed.

BIOS Update Utility (through the Internet)

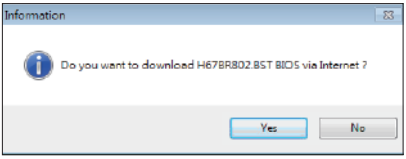
1. Installing BIOS Update Utility from the DVD Driver.
2. Please make sure the system is connected to the internet before using this function.

3. Launch BIOS Update Utility and click the “Online Update” button on the main screen.

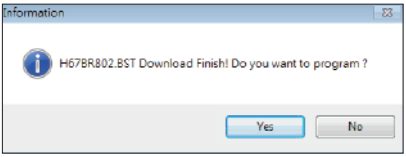
4. An open dialog will show up to request your agreement to start the BIOS update. Click “Yes” to start the online update procedure.



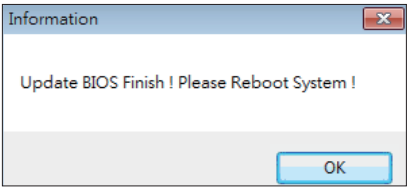
5. If there is a new BIOS version, the utility will ask you to download it. Click “Yes” to proceed.



6. After the download is completed, you will be asked to program (update) the BIOS or not. Click “Yes” to proceed.



7. After the updating process is finished, you will be asked you to reboot the system. Click “OK” to reboot.



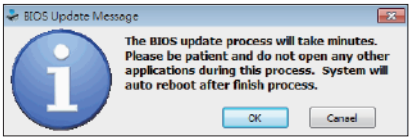
8. While the system boots up and the full screen logo shows up, press <DEL> key to enter BIOS setup.
After entering the BIOS setup, please go to the <Save & Exit>, using the <Restore Defaults> function to load Optimized Defaults, and select <Save Changes> and <Reset> to restart the computer. Then, the BIOS Update is completed.

BIOS Update Utility (through a BIOS file)

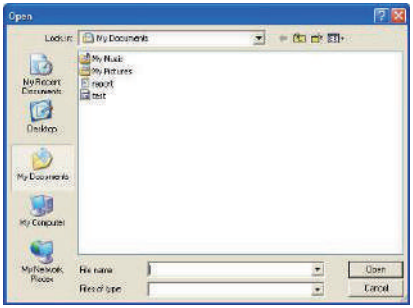
1. Installing BIOS Update Utility from the DVD Driver.
2. Download the proper BIOS from http://www.biostar.com.tw/

3. Launch BIOS Update Utility and click the “Update BIOS” button on the main screen.

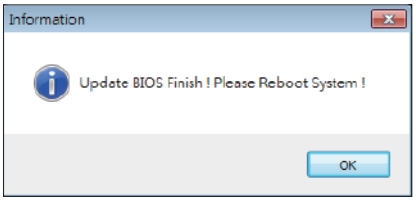
4. A warning message will show up to request your agreement to start the BIOS update. Click “OK” to start the update procedure.



5. Choose the location for your BIOS file in the system. Please select the proper BIOS file, and then click on “Open”. It will take several minutes, please be patient.



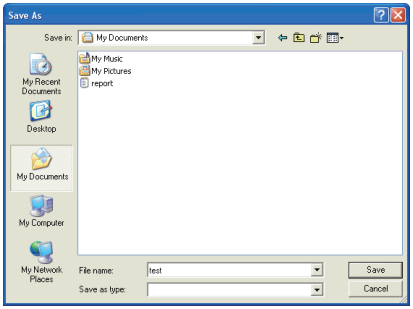
6. After the BIOS Update process is finished, click on “OK” to reboot the system.



7. While the system boots up and the full screen logo shows up, press <DEL> key to enter BIOS setup.
After entering the BIOS setup, please go to the <Save & Exit>, using the <Restore Defaults> function to load Optimized Defaults, and select <Save Changes and Reset> to restart the computer. Then, the BIOS Update is completed.

Backup BIOS

Click the Backup BIOS button on the main screen for the backup of BIOS, and select a proper location for your backup BIOS file in the system, and click “Save”.



3.3 Software

Installing Software

1. Insert the Setup DVD to the optical drive. The driver installation program would appear if the Auto-run function has been enabled.
2. Select Software Installation, and then click on the respective software title.
3. Follow the on-screen instructions to complete the installation.

Launching Software

After the installation process is completed, you will see the software icon showing on the desktop. Double-click the icon to launch it.

Note

» *All the information and content about following software are subject to be changed without notice. For better performance, the software is being continuously updated.*

» *The information and pictures described below are for your reference only. The actual information and settings on board may be slightly different from this manual.*

BIOScreen Utility

This utility allows you to personalize your boot logo easily. You can choose BMP as your boot logo so as to customize your computer.

Please follow the step-by-step instructions below to update boot logo:

- Load Image: Choose the picture as the boot logo.
- Transform: Transform the picture for BIOS and preview the result.
- Update Bios: Write the picture to BIOS Memory to complete the update.

RACING GT EVO

RACING GT EVO is an easy-to-use program that integrates several BIOSTAR utilities and allows users to configure these utilities simultaneously and seamlessly.

Note

» *Menu contents of RACING GT EVO will be different slightly, depending on different motherboard of users' computers.*

» *When the software is installed or removed, restart your computer.*

System Information

This System Information tab provides you an overview of the basic system information.

1. Clocks: Shows core speed, multiplier and bus speed.

2. Motherboard: Shows motherboard information.

3. Processor: Shows CPU information.

4. Memory: Shows memory information.

» *Click on different memory slot buttons to get the memory information.*

SmartEAR

Smart EAR allows you to control system volume and adjust impedance setting (Low/High Gain) to optimize your headphone performance. You can easily enjoy high-quality and awesome sound.

Requirements:

1. A chassis with front audio output jacks
2. An earphone or a headphone
3. Windows 7 (32/64bit)/ 8.1(64bit)/ 10(64bit) operation system

Installation Guide:

1. Make sure the front audio cable of the chassis connected to the front audio header of the motherboard properly.
2. Install the RACING GT EVO program from the driver DVD.
3. Connect the earphone or headphone to the front audio jack of the chassis or audio lineout port of rear I/Os.

» *If you want to use an AC'97 front audio output cable, please disable the "Front Panel Jack Detection" setting. This setting can be found via O.S. Audio Utility.*

1. Volume Control Knob: The volume can be finely adjusted by turning the knob either clockwise or anti-clockwise to increase or decrease system volume accordingly.

2. Mute: To disable system sound.

3. High/Low Gain Switch: Keep the gain switch to low for low impedance headphone and set to high for high impedance headphone.

GT Touch

GT Touch allows you to adjust Normal, ECO and Sport mode when running RACING GT EVO program in Windows environment.

1. Normal Mode: It balances energy consumption and system performance.
2. ECO Mode: It saves energy by slightly reducing system performance.
3. Sport Mode: It provides the highest level of system performance.

Vivid LED DJ

Vivid LED DJ can adjust your color scheme of Racing ARMOR , RGB LED Device.

1. LED COMMANDER: Allows you to select the LED mode.

- **Default :** Default LED illuminations. (Blue light)
- **RAZER :** Allows you to connect to the RAZER app to sync the motherboard lights.

» *When using RAZER mode, turn off RACING GT Software and LED illumination will return to the default state.*

» *RAZER mode is to achieve LED illumination synchronization through the connection with RAZER software.*

» *RAZER software must be installed to use RAZER mode. RAZER ICON will appear after the software is installed.*

» *When using RAZER mode, it must be used with RAZER related devices and peripheral devices.*

» *RAZER related information please go to RAZER official website download.*

- **RGB Sync :** Allows you to synchronize the LED Type item settings.

2. LED Type: Select the LED lighting blocks.

- **System :** System LED illuminations. (Racing ARMOR)
- **12V LED :** The 12V LED illumination. (12V_LED Device)
- **5V LED :** The 5V LED illumination. (5V_LED Device)
- **Memory Sync :** The RGB Audio LED illumination. (Memory LED)

3. ON/OFF: To enable or disable VIVID LED function.

4. ON/OFF: Allows you to enable or disable LED of a single item.

5. Color Palette: Allows to you choose specific color of the LEDs.

6. LED Brightness Bar: Allows you to adjust the LED brightness.

7. Auto: LEDs will Automatically change the Color Palette and LED Brightness.

» *If you select Auto mode, the Color Pallette and LED Brightness Bar will disabled.*

8. LED SPARKLE: Allows to you choose sparkle of the LEDs.

- **Permanent:** LEDs are constantly lit.
- **Shine:** LEDs flash at a specific frequency.
- **Breath:** LEDs gradually flash on and off.
- **Shine & Music:** LEDs will flash according the music played on your system.

» *Please make sure your speaker or earphone is properly connected to audio jack before using RACING GT EVO program.*

- **Meteor:** LEDs slide at a specific frequency.
- **Wave:** LEDs are presented in a water wave rhythm.
- **Starry sky:** LEDs flicker at a specific rhythm.
- **Lightning:** LEDs flash and slide at a specific frequency.
- **Rainbow:** LEDs lights to dazzling colorful rhythm.
- **Aurora:** LEDs shows soft light and flickers lightly.

9. High/Low Speed Switch: Allows you to control the flicker speed.

Note

» *With VIVID LED DJ users can control the four LED light zones independently with different flashing modes (LED SPARKLE).*

A.I Fan

A.I FAN utility smartly allows PC users to have more customizability of fan operating modes and automatically detects different temperatures to make fan operating at defined speed for optimal cooling performance.

1. Temperature: Shows the current CPU and system temperature.

2. CPU FAN/ CPU OPT RPM & SYSTEM1/2/3 RPM: Click button to set the status value of CPU and system fan.

» *Display items, please focus on the actual motherboard.*

3. Default: Restore defaults your changes value of a single item.

4. PWM/ Temperature Panel: According to the fan PWM value corresponding to CPU and system temperature to adjust the fan speed.

» *Allows you to adjust according to your preferences.*

5. User Selection: Sets the fan property controls the actual selection operation.

- **Auto:** Allows you to adjust the Automatic detection Mode.
- **DC:** Allows you to adjust the Direct Current (DC) Mode.
- **PWM:** Allows you to adjust the Pulse Width Modulation (PWM) Mode.

6. Control Mode: Allows you to control mode of the fans.

- **Quiet:** Enable Quiet mode.
- **Aggressive:** Enable Aggressive mode.
- **Manual:** Enable Manual mode.
- **Full on:** Enable Full On mode.

H/W Monitor

The HW Monitor tab allows you to monitor hardware voltage, fan speed, and temperature.

1. CPU Temperature/System Temperature: Shows the current CPU and system temperature.

2. Fan: Shows the current fans' speed.

3. Voltage: Shows the current voltages of CPU and memory.

OC/OV

The OC/OV tab allows you to save or load the OC/OV setting profiles, change system frequency and voltage settings.

1. OC: Allows you to adjust overclocking profile values.
2. OV: Allows you to adjust voltage profile values.
3. Default: Restore defaults your changes.
4. Apply: Apply your changes.
5. Load: Load the profile values from the file.
6. Save: Store the profile values for future use.

Note

» *Not all types of CPU perform above overclock setting ideally; the difference will be based on the selected CPU model.*
» *Overclock is an optional process, but not a "must-do" process; it is not recommended for inexperienced users. Therefore, we will not be responsible for any hardware damage which may be caused by overclocking. We also would not guarantee any overclocking performance.*

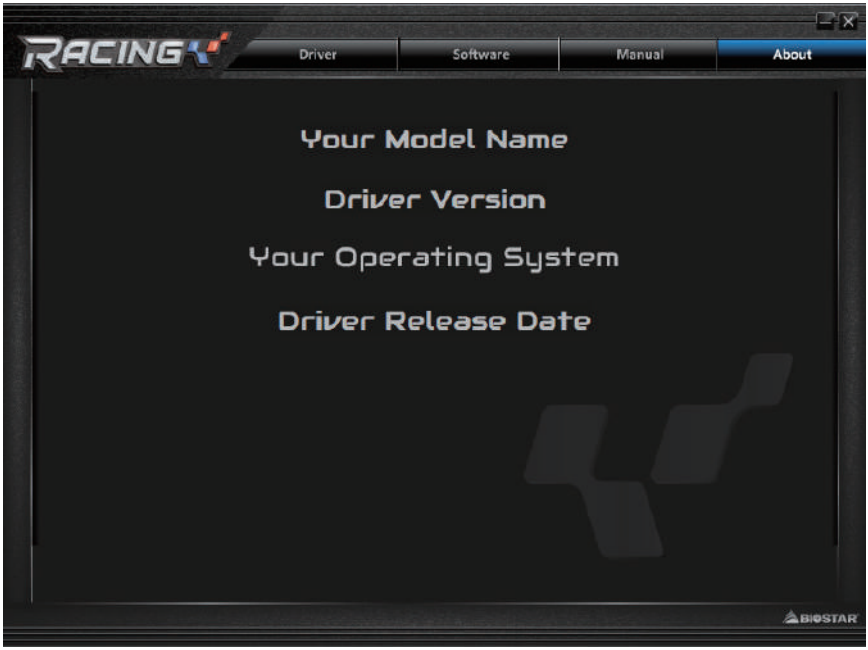
About

The About menu to display the Racing GT EVO Utility version information.

Chapter 4: Useful help

4.1 Driver Installation

After you installed your operating system, please insert the Fully Setup Driver DVD into your optical drive and install the driver for better system performance.
You will see the following window after you insert the DVD



The setup guide will auto detect your motherboard and operating system.

A. Driver Installation

To install the driver, please click on the Driver icon. The setup guide will list the compatible driver for your motherboard and operating system. Click on each device driver to launch the installation program.

B. Software Installation

To install the software, please click on the Software icon. The setup guide will list the software available for your system, click on each software title to launch the installation program.

C. Manual

Aside from the paperback manual, we also provide manual in the Driver DVD. Click on the Manual icon to browse for available manual.

Note

- *If this window didn't show up after you insert the Driver DVD, please use file browser to locate and execute the file SETUP.EXE under your optical drive.*
- *You will need Acrobat Reader to open the manual file. Please download the latest version of Acrobat Reader software from http://get.adobe.com/reader/*
- *The motherboard used in the illustrations may not resemble the actual board. these illustrations are for reference only.*

4.2 AMI BIOS Beep Code

Boot Block Beep Codes

Number of Beeps	Description
Continuing	Memory sizing error or Memory module not found

POST BIOS Beep Codes

Number of Beeps	Description
1	Success booting.
8	Display memory error (system video adapter)

4.3 AMI BIOS post code

Code	Description
10	PEI Core is started
11	Pre-memory CPU initialization is started
15	Pre-memory North Bridge initialization is started
19	Pre-memory South Bridge initialization is started
2B	Memory initialization. Serial Presence Detect (SPD) data reading
2C	Memory initialization. Memory presence detection
2D	Memory initialization. Programming memory timing information
2E	Memory initialization. Configuring memory
2F	Memory initialization (other).
31	Memory Installed
32	CPU post-memory initialization is started
33	CPU post-memory initialization. Cache initialization
34	CPU post-memory initialization. Application Processor(s) (AP) initialization
35	CPU post-memory initialization. Boot Strap Processor (BSP) selection
36	CPU post-memory initialization. System Management Mode (SMM) initialization
37	Post-Memory North Bridge initialization is started
3B	Post-Memory North Bridge initialization (North Bridge module specific)
4F	DXE IPL is started
60	DXE Core is started
F0	Recovery condition triggered by firmware (Auto recovery)
F1	Recovery condition triggered by user (Forced recovery)
F2	Recovery process started
F3	Recovery firmware image is found
F4	Recovery firmware image is loaded
E0	S3 Resume is stared (S3 Resume PPI is called by the DXE IPL)
E1	S3 Boot Script execution
E2	Video repost
E3	OS S3 wake vector call
60	DXE Core is started
61	NVRAM initialization
62	Installation of the South Bridge Runtime Services
63	CPU DXE initialization is started
68	PCI host bridge initialization
69	North Bridge DXE initialization is started
6A	North Bridge DXE SMM initialization is started

Code	Description
70	South Bridge DXE initialization is started
71	South Bridge DXE SMM initialization is started
72	South Bridge devices initialization
78	South Bridge DXE Initialization (South Bridge module specific)
79	ACPI module initialization
90	Boot Device Selection (BDS) phase is started
91	Driver connecting is started
92	PCI Bus initialization is started
93	PCI Bus Hot Plug Controller Initialization
94	PCI Bus Enumeration
95	PCI Bus Request Resources
96	PCI Bus Assign Resources
97	Console Output devices connect
98	Console input devices connect
99	Super IO Initialization
9A	USB initialization is started
9B	USB Reset
9C	USB Detect
9D	USB Enable
A0	IDE initialization is started
A1	IDE Reset
A2	IDE Detect
A3	IDE Enable
A4	SCSI initialization is started
A5	SCSI Reset
A6	SCSI Detect
A7	SCSI Enable
A8	Setup Verifying Password
A9	Start of Setup
AB	Setup Input Wait
AD	Ready To Boot event
AE	Legacy Boot event
AF	Exit Boot Services event
B0	Runtime Set Virtual Address MAP Begin
B1	Runtime Set Virtual Address MAP End
B2	Legacy Option ROM Initialization
B3	System Reset
B4	USB hot plug
B5	PCI bus hot plug
B6	Clean-up of NVRAM
B7	Configuration Reset (reset of NVRAM settings)

4.4 Troubleshooting

Probable	Solution
1. There is no power in the system. Power LED does not shine; the fan of the power supply does not work 2. Indicator light on keyboard does not shine.	1. Make sure power cable is securely plugged in. 2. Replace cable. 3. Contact technical support.
System is inoperative. Keyboard lights are on, power indicator lights are lit, and hard drives are running.	Using even pressure on both ends of the DIMM, press down firmly until the module snaps into place.
System does not boot from a hard disk drive, but can be booted from optical drive.	1. Check cable running from disk to disk controller board. Make sure both ends are securely plugged in; check the drive type in the standard CMOS setup. 2. Backing up the hard drive is extremely important. All hard disks are capable of breaking down at any time.
System only boots from an optical drive. Hard disks can be read, applications can be used, but system fails to boot from a hard disk.	1. Back up data and applications files. 2. Reformat the hard drive. Re-install applications and data using backup disks.
Screen message shows “Invalid Configuration” or “CMOS Failure.”	Review system’s equipment. Make sure correct information is in setup.
System cannot boot after user installs a second hard drive.	1. Set master/slave jumpers correctly. 2. Run SETUP program and select correct drive types. Call the drive manufacturers for compatibility with other drives.

CPU Overheated

If the system shutdown automatically after power on system for seconds, that means the CPU protection function has been activated.

When the CPU is over heated, the motherboard will shutdown automatically to avoid a damage of the CPU, and the system may not power on again.

In this case, please double check:
1. The CPU cooler surface is placed evenly with the CPU surface.
2. CPU fan is rotated normally.
3. CPU fan speed is fulfilling with the CPU speed.

After confirmed, please follow steps below to relief the CPU protection function.
1. Remove the power cord from power supply for seconds.
2. Wait for seconds.
3. Plug in the power cord and boot up the system.

Or you can:
1. Clear the CMOS data. (See “Close CMOS Header: JCMOS1” section)
2. Wait for seconds.
3. Power on the system again.

4.5 Intel® Optane™ Technology (powered by 3D XPoint memory)

With Intel® Optane™ technology you can unleash the power of your processor instead of it working at a fraction of its power. Eliminating that bottleneck requires better storage memory that is fast, inexpensive, and non-volatile. Intel® Optane technology has the potential to revolutionize big data, high-performance computing, virtualization, storage, cloud, gaming, and many other applications.

Features and Benefits :

- Massive in-memory data base
- Fast system recovery
- Low latency
- High endurance

Reqirement for Intel® Optane Introduction :

- Intel® Optane Memory or Storage.
- Intel® 10th core CPU.
- Install Intel® Optane Memory or Storage in the port that supports Intel® Optane technology. (Reference Page 4 for detail)
- Install Intel® Rapid Storage Technology Driver and follow the instructions to enable Intel® Optane Technology.
- In some cases, Intel Optane Technology will not be available if UEFI OS is not installed.