Unpacking

<u>Thank you for buying the MSI®</u> **2270 GAMING M3/ H270 GAMING M3/ B250 GAMING M3** motherboard. Check to make sure your motherboard box contains the following items. If something is missing, contact your dealer as soon as possible.



* These pictures are for reference only and may vary without notice.

* The packing contents may vary according to the model you purchased.

Safety Information

- The components included in this package are prone to damage from electrostatic discharge (ESD). Please adhere to the following instructions to ensure successful computer assembly.
- Ensure that all components are securely connected. Loose connections may cause the computer to not recognize a component or fail to start.
- Hold the motherboard by the edges to avoid touching sensitive components.
- It is recommended to wear an electrostatic discharge (ESD) wrist strap when handling the motherboard to prevent electrostatic damage. If an ESD wrist strap is not available, discharge yourself of static electricity by touching another metal object before handling the motherboard.
- Store the motherboard in an electrostatic shielding container or on an anti-static pad whenever the motherboard is not installed.
- Before turning on the computer, ensure that there are no loose screws or metal components on the motherboard or anywhere within the computer case.
- Do not boot the computer before installation is completed. This could cause permanent damage to the components as well as injury to the user.
- If you need help during any installation step, please consult a certified computer technician.
- Always turn off the power supply and unplug the power cord from the power outlet before installing or removing any computer component.
- Keep this user guide for future reference.
- Keep this motherboard away from humidity.
- Make sure that your electrical outlet provides the same voltage as is indicated on the PSU, before connecting the PSU to the electrical outlet.
- Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
- All cautions and warnings on the motherboard should be noted.
- If any of the following situations arises, get the motherboard checked by service personnel:
 - Liquid has penetrated into the computer.
 - The motherboard has been exposed to moisture.
 - The motherboard does not work well or you can not get it work according to user guide.
 - The motherboard has been dropped and damaged.
 - The motherboard has obvious sign of breakage.
- Do not leave this motherboard in an environment above 60°C (140°F), it may damage the motherboard.

Quick Start

Preparing Tools and Components



Intel® LGA 1151 CPU



CPU Fan



Thermal Paste



DDR4 Memory



Chassis



Power Supply Unit



SATA DVD Drive



SATA Hard Disk Drive



Graphics Card



Phillips Screwdriver



A Package of Screws



Installing DDR4 memory



Connecting the Front Panel Header



Installing the Motherboard



The picture is for reference only.



Installing SATA Drives



Installing a Graphics Card



Connecting Peripheral Devices



Connecting the Power Connectors







Power On



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Specifications

CPU	Supports 6th/7th Gen Intel® Core™ i3/i5/i7 processors, and Intel® Pentium® and Celeron® processors for Socket LGA1151					
Chipset	Intel® Z270/ H270/ B250 Chipset					
Memory	 4x DDR4 memory slots, support up to 64GB Z270 chipset + 7th Gen processors support DDR4 3800(0C)/ 3600(0C)/ 3200(0C)/ 3000(0C)/ 2800(0C)/ 2600(0C)/ 2400/ 2133 MHz Z270 chipset + 6th Gen processors support DDR4 3600(0C)/ 3200(0C)/ 3000(0C)/ 2800(0C)/ 2600(0C)/ 2400(0C)/ 2133 MHz H270/ B250 chipset + 7th Gen processors support DDR4 2400/ 2133 MHz H270/ B250 chipset + 6th Gen processors support DDR4 2400/ 2133 MHz H270/ B250 chipset + 6th Gen processors support DDR4 2133 MHz Dual channel memory architecture Supports Intel[®] Extreme Memory Profile (XMP) 					
Expansion Slots	 2x PCIe 3.0 x16 slots (supports x16/x4 mode)* 4x PCIe 3.0 x1 slots** The PCI_E4 slot will be unavailable when an M.2 SSD module has been installed in the M.2_2 slot. ** The PCI_E2 slot will be unavailable when an expansion card has been installed in the PCI_E5 slot. ** The PCI_E3 slot will be unavailable when an expansion card has been installed in the PCI_E5 slot. ** The PCI_E3 slot will be unavailable when an expansion card has been installed in the PCI_E6 slot. 1x HDMI[™] port, supports a maximum resolution of 4096x2160@30Hz(7th CPU), 4096x2160@24Hz(6th CPU), 					
Onboard Graphics	 2560x1600@60Hz 1x DVI-D port, supports a maximum resolution of 1920x1200@60Hz 					
Multi-GPU	Supports 2-Way AMD [®] CrossFire™ Technology					

	Intel® Z270/ H270/ B250 Chipset • 6x SATA 6Gb/s ports*					
	• 2x M.2 slots (Key M)					
	 Support up to PCIe 3.0 x4 and SATA 6Gb/s 					
	 Support PCIe 3.0 x4 NVMe U.2 SSD with Turbo U.2 Host Card** 					
	 M2_1 slot supports 2242/ 2260 /2280/ 22110 storage devices 					
Storago	 M2_2 slot supports 2242/ 2260 /2280 storage devices 					
Storage	Intel [®] Optane [™] Memory Ready for all M.2 slots***					
	 Supports Intel[®] Smart Response Technology for Intel Core[™] processors (optional) 					
	* M.2 and SATA ports maximum support 2x M.2 PCIe SSDs + 6x SATA HDDs. Please refer to page 33 for M.2 slots with examples of various combination possibilities.					
	** The Turbo U.2 Host Card is not included, please purchase separately.					
	*** Intel® Optane™ Technology is only supported when using 7th Gen processors. Before using Intel® Optane™ memory modules, please ensure that you have updated the drivers and BIOS to the latest version from MSI website.					
	Intel® Z270/ H270 Chipset • Supports RAID 0, RAID1, RAID 5 and RAID 10 for SATA storage devices					
RAID (optional)	 Supports RAID 0 and RAID1 for M.2 PCIe storage devices* * M.2 PCIe RAID volume can be created with M.2 GENIE. Please refer to page 42 for details about M.2 GENIE. 					
	 ASMedia[®] ASM2142 (Z270/ H270 chipset)/ ASM1142 (B250 chipset) 					
	 1x USB 3.1 Gen2 (SuperSpeed USB 10Gbps) Type-C port on the back panel 					
	 1x USB 3.1 Gen2 (SuperSpeed USB 10Gbps) Type-A port on the back panel 					
USB	 Intel[®] Z270 & H270/ B250 Chipset 					
	 8x/ 6x USB 3.1 Gen1 (SuperSpeed USB) ports (4/ 2 Type-A ports on the back panel, 4 ports available through the internal USB connector) (optional) 					
	 6x USB 2.0 (High-speed USB) ports (2 ports on the back panel, 4 ports available through the internal USB connector) 					
	Realtek [®] ALC1220 Codec					
Audio	• 7.1-Channel High Definition Audio					
	 Supports S/PDIF output 					

LAN	1x Killer™ E2500 Gigabit LAN controller					
 1x PS/2 keyboard/ mouse combo port 2x USB 2.0 Type-A ports 1x DVI-D port 1x USB 3.1 Gen2 Type-A port 1x USB 3.1 Gen2 Type-C port 4x/ 2x USB 3.1 Gen1 Type-A ports (optional) 1x HDMI[™] port 1x LAN (RJ45) port 5x OFC audio jacks 1x Optical S/PDIF OUT connector 						
Internal Connectors	 1x 24-pin ATX main power connector 1x 8-pin ATX 12V power connector 6x SATA 6Gb/s connectors 2x USB 3.1 Gen1 connectors (supports additional 4 USB 3.1 Gen1 ports) 2x USB 2.0 connectors (supports additional 4 USB 2.0 ports) 1x 4-pin CPU fan connector 1x 4-pin water pump fan connector 4x 4-pin system fan connectors 1x Front panel audio connector 2x Front panel connectors 1x LED connector 1x Chassis Intrusion connector 1x Serial connector 1x Clear CMOS jumper 					
I/O Controller	NUVOTON NCT6795D Controller Chip					
Hardware Monitor	 CPU/System temperature detection CPU/System fan speed detection CPU/System fan speed control 					
Form Factor	 ATX Form Factor 12 in. x 9.6 in. (30.4 cm x 24.3 cm) 					

BIOS Features	 1x 128 Mb flash UEFI AMI BIOS ACPI 5.0, PnP 1.0a, SM BIOS 2.8 Multi-language 				
Software	 Drivers COMMAND CENTER LIVE UPDATE 6 FAST BOOT SUPER CHARGER GAMING APP RAMDISK X-B00ST MSI SMART TOOL 				
Software	 Killer Network Manager Nahimic Audio XSplit Gamecaster V2 Intel® Extreme Tuning Utility Norton[™] Internet Security Solution Google Chrome[™] ,Google Toolbar, Google Drive SteelSeries Engine 3 CPU-Z MSI GAMING DRAGON EYE WTFast GPN* 2-Month Premium License Multi-Server Network Optimization Advanced Lag Spike & Disconnect Reduction 				

	Audio Boost 4					
	Nahimic 2					
	GAMING LAN with Killer					
	• WTFast					
	 Intel[®] Optane[™] Memory Ready 					
	• Twin Turbo M.2					
	• M.2 Genie					
	• Pump Fan					
	Smart Fan Control					
	 Mystic Light Extension (RGB) 					
	Mystic light SYNC					
	PCI-E Steel Armor					
	M.2 Steel Armor					
	 Golden Plated USB with type A+C (Z270 GAMING M3) 					
Special Features	 VR Cover (Z270 GAMING M3) 					
	 Multi GPU – CrossFire Technology 					
	• DDR4 Boost					
	 GAME Boost (Z270 GAMING M3) 					
	Lightning USB					
	• X-Boost					
	• Military Class 5					
	• 7000+ Quality Test					
	 VR Boost (Z270 GAMING M3) 					
	• VR Ready					
	• Dragon eye					
	• Xsplit					
	• RAMDisk					
	GAMING HOTKEY					
	 Click BIOS 5 					

Specification Comparison Table

	Z270 GAMING M3	H270 GAMING M3	B250 GAMING M3	
Chipest	Z270	H270	B250	
7th Gen processors support DDR4 frequency (MHz)	3800(OC), 3600(OC), 3200(OC), 3000(OC), 2800(OC), 2600(OC), 2400, 2133	2400, 2133	2400, 2133	
6th Gen processors support DDR4 frequency (MHz)	3600(OC), 3200(OC), 3000(OC), 2800(OC), 2600(OC), 2400(OC), 2133	2133	2133	
USB 3.1 Gen2 chipset	ASMedia® ASM2142	ASMedia® ASM2142	ASMedia® ASM1142	
Supports RAID	Yes	Yes	No	
Supports Intel® Smart Response Technology	Yes	No	No	
USB 3.1 Gen1 connectors on back panel	4 ports	4 ports	2 ports	

Block Diagram



Rear I/O Panel



LAN Port LED Status Table

Link/ Activity LED		1 1		Speed LED	
Status	Description		3	Status	Description
Off	No link			Off	10 Mbps connection
Yellow	Linked			Green	100 Mbps connection
Blinking	Data activity			Orange	1 Gbps connection

Audio Ports Configuration



Realtek HD Audio Manager

After installing the **Realtek HD Audio** driver, the **Realtek HD Audio Manager** icon will appear in the system tray. Double click on the icon to launch.



- **Device Selection** allows you to select a audio output source to change the related options. The **check** sign indicates the devices as default.
- **Application Enhancement** the array of options will provide you a complete guidance of anticipated sound effect for both output and input device.
- **Main Volume** controls the volume or balance the right/left side of the speakers that you plugged in front or rear panel by adjust the bar.
- Profiles toggles between profiles.
- Advanced Settings provides the mechanism to deal with 2 independent audio streams.
- Jack Status depicts all render and capture devices currently connected with your computer.
- Connector Settings configures the connection settings.

Auto popup dialog

When you plug into a device at an audio jack, a dialogue window will pop up asking you which device is current connected.



Each jack corresponds to its default setting as shown on the next page.

Audio jacks to headphone and microphone diagram



Audio jacks to stereo speakers diagram



Audio jacks to 7.1-channel speakers diagram



Overview of Components



Component Contents

Port Name	Port Type	Page
CPU_FAN1, PUMP_FAN1, SYS_FAN1~4	Fan Connectors	36
CPU_PWR1, ATX_PWR1	Power Connectors	34
CPU Socket	LGA1151 CPU Socket	28
DIMMA1, DIMMA2, DIMMB1, DIMMB2	DIMM Slots	29
JAUD1	Front Audio Connector	37
JBAT1	Clear CMOS (Reset BIOS) Jumper	38
JCI1	Chassis Intrusion Connector	37
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JFP1, JFP2	Front Panel Connectors	33
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PCI_E1~6	PCIe Expansion Slots	30
SATA1~6	SATA 6Gb/s Connectors	32

CPU Socket



Introduction to the LGA 1151 CPU

The surface of the LGA 1151 CPU has two **notches** and a **golden triangle** to assist in correctly lining up the CPU for motherboard placement. The golden triangle is the Pin 1 indicator.



A Important

- Always unplug the power cord from the power outlet before installing or removing the CPU.
- Please retain the CPU protective cap after installing the processor. MSI will deal with Return Merchandise Authorization (RMA) requests if only the motherboard comes with the protective cap on the CPU socket.
- When installing a CPU, always remember to install a CPU heatsink. A CPU heatsink is necessary to prevent overheating and maintain system stability.
- Confirm that the CPU heatsink has formed a tight seal with the CPU before booting your system.
- Overheating can seriously damage the CPU and motherboard. Always make sure the cooling fans work properly to protect the CPU from overheating. Be sure to apply an even layer of thermal paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.
- Whenever the CPU is not installed, always protect the CPU socket pins by covering the socket with the plastic cap.
- If you purchased a separate CPU and heatsink/ cooler, Please refer to the documentation in the heatsink/ cooler package for more details about installation.
- This motherboard is designed to support overclocking. Before attempting to overclock, please make sure that all other system components can tolerate overclocking. Any attempt to operate beyond product specifications is not recommended. MSI[®] does not guarantee the damages or risks caused by inadequate operation beyond product specifications.

DIMM Slots



Memory module installation recommendation



M Important

- Always insert memory modules in the DIMMA2 slot first.
- Due to chipset resource usage, the available capacity of memory will be a little less than the amount of installed.
- Based on Intel CPU specification, the Memory DIMM voltage below 1.35V is suggested to protect the CPU.
- Please note that the maximum capacity of addressable memory is 4GB or less for 32-bit Windows OS due to the memory address limitation. Therefore, we recommended that you to install 64-bit Windows OS if you want to install more than 4GB memory on the motherboard.
- Some memory may operate at a lower frequency than the marked value when overclocking due to the memory frequency operates dependent on its Serial Presence Detect (SPD). Go to BIOS and find the **Memory Try It!** to set the memory frequency if you want to operate the memory at the marked or at a higher frequency.
- It is recommended to use a more efficient memory cooling system for full DIMMs installation or overclocking.
- The stability and compatibility of installed memory module depend on installed CPU and devices when overclocking.

PCI_E1~6: PCIe Expansion Slots



Multiple graphics cards installation recommendation



<u> Important</u>

- The PCI_E4 slot will be unavailable when an M.2 SSD module has been installed in the M.2_2 slot.
- The PCI_E2 slot will be unavailable when an expansion card has been installed in the PCI_E5 slot.
- The PCI_E3 slot will be unavailable when an expansion card has been installed in the PCI_E6 slot.
- If you install a large and heavy graphics card, you need to use a tool such as MSI Gaming Series Graphics Card Bolster to support its weight to prevent deformation of the slot.
- For a single PCIe x16 expansion card installation with optimum performance, using the PCI_E1 slot is recommended.
- When adding or removing expansion cards, always turn off the power supply and unplug the power supply power cable from the power outlet. Read the expansion card's documentation to check for any necessary additional hardware or software changes.

M2_1~2: M.2 Slots (Key M)



🔨 Important

- Intel[®] RST only supports PCIe M.2 SSD with UEFI ROM.
- Intel[®] Optane[™] Memory Ready for all M.2 slots.

Installing M.2 module

- 1. Remove the screw from the base screw.
- 2. Remove the base screw.
- 3. Tighten the base screw into the hole of the distance to the M.2 slot as the length your M.2 module.
- Insert your M.2 module into the M.2 slot at a 30-degree angle.
- Put the screw in the notch on the trailing edge of your M.2 module and tighten it into the base screw.



SATA1~6: SATA 6Gb/s Connectors

These connectors are SATA 6Gb/s interface ports. Each connector can connect to one SATA device.





M Important

- The SATA1 / SATA6 port will be unavailable when an M.2 SATA SSD module has been installed in the M.2_1/ M.2_2 slot.
- Please do not fold the SATA cable at a 90-degree angle. Data loss may result during transmission otherwise.
- SATA cables have identical plugs on either sides of the cable. However, it is recommended that the flat connector be connected to the motherboard for space saving purposes.

Slot	Available SATA connectors & PCIe slots						
M2_1	PCIe	SATA	PCIe	SATA	PCle	SATA	
M2_2	PCIe	PCle	SATA	SATA	—	—	
SATA1	\checkmark	—	\checkmark	—	\checkmark	—	
SATA2	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	
SATA3	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	
SATA4	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	
SATA5	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	
SATA6	\checkmark	\checkmark	_		\checkmark	\checkmark	
PCI_E4	—	_	—		\checkmark	\checkmark	

M.2, SATA & PCIe combination table

(SATA: M.2 SATA SSD, PCIe: M.2 PCIe SSD, √: available, —: unavailable)

M.2 slots with examples of various combination possibilities

2xM.2 PCIe SSDs + 6xSATA HDDs



1xM.2 SATA SSD + 1xM.2 PCIe SSD + 5xSATA HDDs



2xM.2 SATA SSDs + 4xSATA HDDs



1xM.2 PCIe SSD + 6xSATA HDDs



JFP1, JFP2: Front Panel Connectors

These connectors connect to the switches and LEDs on the front panel.

	2 10 JFP1 1 9 JFP1					
	1	HDD LED +	Power LED +			
	3	HDD LED -	4	Power LED -		
	5	Reset Switch	Power Switch			
	7	Reset Switch	8	Power Switch		
	9	Reserved	10	No Pin		
1	1	Speaker -	2	Buzzer +		
JFP2	3	Buzzer -	4	Speaker +		

CPU_PWR1, ATX_PWR1: Power Connectors

These connectors allow you to connect an ATX power supply.



8 0000 5 CPU_PWR1					
1	Ground	5	+12V		
2	Ground	6	+12V		
3	Ground	7	+12V		
4	Ground	8	+12V		

	1	+3.3V	13	+3.3V
	2	+3.3V	14	-12V
	3	Ground	15	Ground
12 24	4	+5V	16	PS-0N#
	5	Ground	17	Ground
	6	+5V	18	Ground
	7	Ground	19	Ground
	8	PWR OK	20	Res
	9	5VSB	21	+5V
	10	+12V	22	+5V
	11	+12V	23	+5V
	12	+3.3V	24	Ground

M Important

Make sure that all the power cables are securely connected to a proper ATX power supply to ensure stable operation of the motherboard.

JUSB1~2: USB 2.0 Connectors

These connectors allow you to connect USB 2.0 ports on the front panel.



	2 • • • • 1	• •	10 9
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	Ground	8	Ground
9	No Pin	10	NC

M Important

- Note that the VCC and Ground pins must be connected correctly to avoid possible damage.
- In order to recharge your iPad, iPhone and iPod through USB ports, please install MSI[®] SUPER CHARGER utility.

JUSB3~4: USB 3.1 Gen1 Connectors

These connectors allow you to connect USB 3.1 Gen1 ports on the front panel.



1	Power	11	USB2.0+	
2	USB3_RX_DN	12	USB2.0-	
3	USB3_RX_DP	13	Ground	
4	Ground	14	USB3_TX_C_DP	
5	USB3_TX_C_DN	15	USB3_TX_C_DN	
6	USB3_TX_C_DP	16	Ground	
7	Ground	17	USB3_RX_DP	
8	USB2.0-	18	USB3_RX_DN	
9	USB2.0+	19	Power	
10	NC	20	No Pin	

A Important

Note that the Power and Ground pins must be connected correctly to avoid possible damage.

CPU_FAN1, PUMP_FAN1, SYS_FAN1~4: Fan Connectors

Fan connectors can be classified as PWM (Pulse Width Modulation) Mode or DC Mode. PWM Mode fan connectors provide constant 12V output and adjust fan speed with speed control signal. DC Mode fan connectors control fan speed by changing voltage. When you plug a 3-pin (Non-PWM) fan to a fan connector in PWM mode, the fan speed will always maintain at 100%, which might create a lot of noise. You can follow the instruction below to adjust the fan connector to PWM or DC Mode.



Switching fan mode and adjusting fan speed

You can switch between PWM mode and DC mode and adjust fan speed in **BIOS >** HARDWARE MONITOR.

Select PWM mode or DC mode



There are gradient points of the fan speed that allow you to adjust fan speed in relation to CPU temperature.

🕂 Important

Make sure fans are working properly after switching the PWM/ DC mode.

Pin definition of fan connectors

PWM Mode pin definition				
1	Ground	2	+12V	
3	Sense	4	Speed Control Signal	

DC Mode pin definition					
1	Ground	2	Voltage Control		
3	Sense	4	NC		
JAUD1: Front Audio Connector

This connector allows you to connect audio jacks on the front panel.



			•	10 9
1	I	MIC L	2	Ground
3	3	MIC R	4	NC
5	5	Head Phone R	6	MIC Detection
7	7	SENSE_SEND	8	No Pin
9)	Head Phone L	10	Head Phone Detection

JCI1: Chassis Intrusion Connector

This connector allows you to connect the chassis intrusion switch cable.



Normal



Trigger the chassis intrusion event

Using chassis intrusion detector

- 1. Connect the JCI1 connector to the chassis intrusion switch/ sensor on the chassis.
- 2. Close the chassis cover.
- 3. Go to BIOS > Settings > Security > Chassis Intrusion Configuration.
- 4. Set Chassis Intrusion to Enabled.
- 5. Press F10 to save and exit and then press the Enter key to select Yes.
- 6. Once the chassis cover is opened again, a warning message will be displayed on screen when the computer is turned on.

Resetting the chassis intrusion warning

- 1. Go to BIOS > Settings > Security > Chassis Intrusion Configuration.
- 2. Set Chassis Intrusion to Reset.
- 3. Press F10 to save and exit and then press the Enter key to select Yes.

JTPM1: TPM Module Connector

This connector is for TPM (Trusted Platform Module). Please refer to the TPM security platform manual for more details and usages.



2 14 • • • • • • • 1 13					
1	LPC Clock	2	3V Standby power		
3	LPC Reset	4	3.3V Power		
5	LPC address & data pin0	6	Serial IRQ		
7	LPC address & data pin1	8	5V Power		
9	LPC address & data pin2	10	No Pin		
11	LPC address & data pin3	12	Ground		
13	LPC Frame	14	Ground		

JBAT1: Clear CMOS (Reset BIOS) Jumper

There is CMOS memory onboard that is external powered from a battery located on the motherboard to save system configuration data. If you want to clear the system configuration, set the jumpers to clear the CMOS memory.



•• Keep Data (default)



Clear CMOS/ Reset BIOS

Resetting BIOS to default values

- 1. Power off the computer and unplug the power cord
- 2. Use a jumper cap to short JBAT1 for about 5-10 seconds.
- 3. Remove the jumper cap from JBAT1.
- 4. Plug the power cord and power on the computer.

JLED1: RGB LED connector

These connectors allow you to connect the 5050 RGB LED strips.





- This connector supports 5050 RGB color LED strips with the maximum power rating
 of 3A (12V). Please keeping the LED strip shorter than 2 meters to prevent dimming.
- Always turn off the power supply and unplug the power cord from the power outlet before installing or removing the LED strip.
- Please use GAMING APP to control the extended LED strip.

JCOM1: Serial Port Connector

This connector allows you to connect the optional serial port with bracket.



2 10 1 9					
1	DCD	2	SIN		
3	SOUT	4	DTR		
5	Ground	6	DSR		
7	RTS	8	CTS		
9	RI	10	No Pin		

Onboard LEDs

EZ Debug LED

These LEDs indicate the debug status of the motherboard.



- **CPU** indicates CPU is not detected or fail.
- DRAM indicates DRAM is not detected or fail.
- **VGA** indicates GPU is not detected or fail.
- **BOOT** indicates the booting device is not detected or fail.

XMP LED

This LED indicates the XMP (Extreme Memory Profile) mode is enabled.



PCIe x16 slot LEDs

These LED indicate the PCIe x16 slots status.



LED Color	PCIe slot status
Red	x16 mode
White	x8, x4, x1 mode

DIMM LEDs

These LED indicate the memory modules are installed.



BIOS Setup

The default settings offer the optimal performance for system stability in normal conditions. You should **always keep the default settings** to avoid possible system damage or failure booting unless you are familiar with BIOS.

A Important

- BIOS items are continuously update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be for reference only. You could also refer to the HELP information panel for BIOS item description.
- The pictures in this chapter are for reference only and may vary from the product you purchased.

Entering BIOS Setup

Please refer the following methods to enter BIOS setup.

- Press Delete key, when the Press DEL key to enter Setup Menu, F11 to enter Boot Menu message appears on the screen during the boot process.
- Use MSI FAST BOOT application. Click on GO2BIOS button and choose OK. The system will reboot and enter BIOS setup directly.



Click on GO2BIOS

Function key

- F1: General Help
- F2: Add/ Remove a favorite item
- F3: Enter Favorites menu
- F4: Enter CPU Specifications menu
- F5: Enter Memory-Z menu
- F6: Load optimized defaults
- F7: Switch between Advanced mode and EZ mode
- F8: Load Overclocking Profile
- F9: Save Overclocking Profile
- F10: Save Change and Reset*
- F12: Take a screenshot and save it to USB flash drive (FAT/ FAT32 format only).

* When you press F10, a confirmation window appears and it provides the modification information. Select between Yes or No to confirm your choice.

Resetting BIOS

You might need to restore the default BIOS setting to solve certain problems. There are several ways to reset BIOS:

- Go to BIOS and press **F6** to load optimized defaults.
- Short the Clear CMOS jumper on the motherboard.

M Important

Be sure the computer is off before clearing CMOS data. Please refer to the **Clear CMOS** jumper section for resetting BIOS.

Updating BIOS

Updating BIOS with M-FLASH

Before updating:

Please download the latest BIOS file that matches your motherboard model from MSI website. And then save the BIOS file into the USB flash drive.

Updating BIOS:

- 1. Press Del key to enter the BIOS Setup during POST.
- 2. Insert the USB flash drive that contains the update file into the computer.
- Select the M-FLASH tab and click on Yes to reboot the system and enter the flash mode.
- 4. Select a BIOS file to perform the BIOS update process.
- 5. After the flashing process is 100% completed, the system will reboot automatically.

Updating the BIOS with Live Update 6

Before updating:

Make sure the LAN driver is already installed and the Internet connection is set properly.

Updating BIOS:

- 1. Install and launch MSI LIVE UPDATE 6.
- 2. Select BIOS Update.
- 3. Click on Scan button.
- 4. Click on Download icon to download and install the latest BIOS file.
- Click Next and choose In Windows mode. And then click Next and Start to start updating BIOS.
- 6. After the flashing process is 100% completed, the system will restart automatically.

EZ Mode

At EZ mode, it provides the basic system information and allows you to configure the basic setting. To configure the advanced BIOS settings, please enter the Advanced Mode by pressing the **Setup Mode switch** or **F7** function key.



• GAME BOOST switch - click on it to toggle the GAME BOOST for OC.

A Important

Please don't make any changes in OC menu and don't load defaults to keep the optimal performance and system stability after activating the GAME BOOST function.

- XMP switch click on the inner circle to enable/ disable the X.M.P. (Extreme Memory Profile). Switch the outer circle to select the X.M.P. profile. This switch will only be available if the X.M.P. supported memory module is installed.
- Setup Mode switch press this tab or the F7 key to switch between Advanced mode and EZ mode.
- Screenshot click on this tab or the F12 key to take a screenshot and save it to USB flash drive (FAT/ FAT32 format only).
- Search click on this tab or the Ctrl+F keys and the search page will show. It allows you to search by BIOS item name, enter the item name to find the item listing. Move the mouse over a blank space and right click the mouse to exit search page.

A Important

In search page, only the F6, F10 and F12 function keys are available.

- Language allows you to select the language of BIOS setup.
- System information shows the CPU/ DDR speed, CPU/ MB temperature, MB/ CPU type, memory size, CPU/ DDR voltage, BIOS version and build date.
- Boot device priority bar you can move the device icons to change the boot priority. The boot priority from high to low is left to right.

- Information display click on the CPU, Memory, Storage, Fan Info and Help buttons on left side to display related information.
- Function buttons enable or disable the LAN Option ROM, M.2 Genie, HD audio controller, AHCI, RAID, CPU Fan Fail Warning Control and BIOS Log Review by clicking on their respective button.
 - M.2 GENIE is an user-friendly and easiest way to build the M.2 SSDs in RAID 0 automatically. If you using M.2 PCIe SSDs with M.2 GEINE function can greatly improves read and write performances for many applications. You just need to click on the M.2 GENIE button to build the RAID 0 volume for M.2 SSDs. After the RAID 0 volume creating is done, the system will reboot and you can start to install the operating system.

A Important

- Please note that you must install M.2 SSDs of the same model and type in the M.2 slots to create the RAID 0 volume.
- During windows setup, the RAID driver may be required and you can find the RAID driver in MSI Driver Disc.
- You can use **MSI SMART TOOL** to build the Windows[®] 7/8.1/10 installation drive that includes RAID driver.
- If your system currently boots to M.2 SSD RAID and you delete the RAID volume in the UEFI BIOS, your system will become un-bootable.
- **M-Flash** click on this button to display the **M-Flash** menu that provides the way to update BIOS with a USB flash drive.
- Hardware Monitor click on this button to display the Hardware Monitor menu that allows you to manually control the fan speed by percentage.
- Favorites press the Favorites tab or the F3 key to enter Favorites menu. It allows you to create personal BIOS menu where you can save and access favorite/ frequently-used BIOS setting items.
 - **Default HomePage** allows you to select a BIOS menu (e.g. SETTINGS, OC...,etc) as the BIOS home page.
 - Favorite1~5 allows you to add the frequently-used/ favorite BIOS setting items in one page.
 - To add a BIOS item to a favorite page (Favorite 1~5)
 - Move the mouse over a BIOS item not only on BIOS menu but also on search page.
 - 2. Right-click or press F2 key.
 - 3. Choose a favorite page and click on OK.
 - To delete a BIOS item from favorite page
 - 1. Move the mouse over a BIOS item on favorite page (Favorite 1~5)
 - 2. Right-click or press F2 key.
 - 3. Choose Delete and click on OK.

Advanced Mode

Press ${\bf Setup}\ {\bf Mode}\ {\bf switch}\ {\rm or}\ {\bf F7}$ function key can switch between EZ Mode and Advanced Mode in BIOS setup.



Menu display

- GAME BOOST switch/ XMP switch/ Setup Mode switch/ Screenshot/ Favorites/ Language/ System information/ Boot device priority bar - please refer to the descriptions of EZ Mode Overview section.
- BIOS menu selection the following options are available:
 - SETTINGS allows you to specify the parameters for chipset and boot devices.
 - **OC** allows you to adjust the frequency and voltage. Increasing the frequency may get better performance.
 - M-FLASH provides the way to update BIOS with a USB flash drive.
 - OC PROFILE allows you to manage overclocking profiles.
 - HARDWARE MONITOR allows you to set the speeds of fans and monitor voltages of system.
 - BOARD EXPLORER provides the information of installed devices on this motherboard.
- Menu display provides BIOS setting items and information to be configured.

SETTINGS

12	Settings	HOTNEY I S	(mark)
SETTINGS	> System Status > Advanced > Boot > Security > Save & Exit		Save/load BIOS settings OC PROFILE
Overflocking settings OC			Montoning and fan control HARDWARE MONITOR
Use USE to flash/save BIOS M-FLASH			Display motherboard Information BOARD EXPLORER

System Status

System Date

Sets the system date. Use tab key to switch between date elements.

The format is <day> <month> <date> <year>.

<day></day>	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
<month></month>	The month from Jan. through Dec.
<date></date>	The date from 1 to 31 can be keyed by numeric function keys.
<year></year>	The year can be adjusted by users.

System Time

Sets the system time. Use tab key to switch between time elements. The time format is <hour> <minute> <second>.

SATA PortX

Shows the information of connected SATA device.

<u> Important</u>

If the connected SATA device is not displayed, turn off computer and re-check SATA cable and power cable connections of the device and motherboard.

System Information

Shows detailed system information, including CPU type, BIOS version, and Memory (read only).

DMI Information

Shows system information, desktop Board Information and chassis Information. (Read only).

Advanced

PCI Subsystem Settings

Sets PCI, PCI express interface protocol and latency timer. Press **Enter** to enter the sub-menu.

PEG X - Max Link Speed [Auto]

Sets PCI Express protocol of PCIe x16 slots for matching different installed devices.

- [Auto] This item will be configured automatically by BIOS.
- [Gen1] Enables PCIe Gen1 support only.
- [Gen2] Enables PCIe Gen2 support only.

[Gen3] Enables PCIe Gen3 support only.

PCI Latency Timer [32]

Sets latency timer of PCI interface device.

[Options: 32, 64, 96, 128, 160, 192, 224, 248 PCI Bus clocks]

Above 4G Decoding [Disabled]

Enables or disables 64-bit capable devices to be decoded in above 4G address space. It is only available if the system supports 64-bit PCI decoding.

ACPI Settings

Sets ACPI parameters of onboard power LED behaviors. Press $\ensuremath{\textbf{Enter}}$ to enter the submenu.

Power LED [Blinking]

Sets shining behaviors of the onboard Power LED.

[Dual Color] The power LED turns to another color to indicate the S3 state.

[Blinking] The power LED blinks to indicate the S3 state.

Integrated Peripherals

Sets integrated peripherals' parameters, such as LAN, HDD, USB and audio. Press **Enter** to enter the sub-menu.

Onboard LAN Controller [Enabled]

Enables or disables the onboard LAN controller.

LAN Option ROM [Disabled]

Enables or disables the legacy network Boot Option ROM for detailed settings. This item will appear when **Onboard LAN Controller** is enabled.

[Enabled] Enables the onboard LAN Boot ROM.

[Disabled] Disables the onboard LAN Boot ROM.

Network Stack [Disabled]

Sets UEFI network stack for optimizing IPv4 / IPv6 function.

[Enabled] Enables UEFI network stack.

[Disabled] Disables UEFI network stack.

Ipv4 PXE Support [Enabled]

When **Enabled**, the system UEFI network stack will support Ipv4 protocol. This item will appear when **Network Stack** is enabled.

[Enabled] Enables the Ipv4 PXE boot support.

[Disabled] Disables the Ipv4 PXE boot support.

Ipv6 PXE Support [Enabled]

When **Enabled**, the system UEFI network stack will support Ipv6 protocol. This item will appear when **Network Stack** is enabled.

[Enabled] Enables the Ipv6 PXE boot support.

[Disabled] Disables the Ipv6 PXE boot support.

SATA Mode [AHCI Mode]

Sets the operation mode of the onboard SATA controller.

[AHCI Mode] Specify the AHCI mode for SATA storage devices. AHCI (Advanced Host Controller Interface) offers some advanced features to enhance the speed and performance of SATA storage device, such as Native Command Queuing (NCQ) and hot-plugging.

[RAID Mode] Enables RAID function for SATA storage devices.

M2_1/M2_2-RST Pcie Storage Remapping [Disabled]

Enables or disables Intel Rapid Storage Technology for M.2 PCIe devices.

M.2 Genie [Disabled]

Enables or disables M.2 storage to build RAID volume.

SATAx Hot Plug [Disabled]

Allows user to enable or disable the SATA hot plug support.

[Enabled] Enables hot plug support for the SATA ports.

[Disabled] Disables hot plug support for the SATA ports.

HD Audio Controller [Enabled]

Enables or disables the onboard High Definition Audio controller.

HPET [Enabled]

Enables or disables the HPET (High Precision Event Timers) support.

Intel Serial I/O [Disabled]

Enables or disables the supported devices to transfer data with Intel serial protocol.

Integrated Graphics Configuration

Adjusts integrated graphics settings for optimum system. Press **Enter** to enter the sub-menu.

Initiate Graphic Adapter [PEG]

Selects a graphics device as the primary boot device.

[IGD] Integrated Graphics Display.

[PEG] PCI-Express Graphics Device.

Integrated Graphics Share Memory [64M]

Selects a fixed amount of system memory allocated to the onboard graphics. This item will appear when IGD Multi-Monitor is enabled.

IGD Multi-Monitor [Disabled]

Enables or disables the multi-screen output from integrated graphics and external graphics card. This item appears when Initiate Graphic Adapter set to PEG.

[Enabled] Enables multi-screen function for both integrated and external graphics cards.

[Disabled] Disables this function.

USB Configuration

Sets the onboard USB controller and device function. Press **Enter** to enter the submenu.

USB Controller [Enabled]

Enables or disables all USB controller.

XHCI Hand-off [Diasbled]

Enables or disables XHCI hand-off support for the operating system without XHCI hand-off feature.

Legacy USB Support [Enabled]

Sets Legacy USB function support.

- [Auto] The system will automatically detect if any USB device is connected and enable the legacy USB support.
- [Enabled] Enable the USB support under legacy mode.

[Disabled] The USB devices will be unavailable under legacy mode.

USB Speed Optimization [Auto]

Enables or Disables the USB speed optimization. If set to Auto, BIOS will optimize the USB speed automatically.

Super IO Configuration

Sets system Super I/O chip parameters including LPT and COM ports. Press <Enter> to enter the sub-menu.

Serial (COM) Port x Configuration

Sets detailed configuration of serial(COM) port x. Press <Enter> to enter the submenu.

Serial (COM) Port x [Enabled]

Enables or disables serial (COM) port x.

Serial (COM) Port x Settings [Auto]

Sets serial port x (COM). If set to Auto, $\,$ BIOS will optimize the IRQ automatically or you can set it manually.

Power Management Setup

Sets system Power Management of EuP2013 and AC Power Loss behaviors. Press ${\bf Enter}$ to enter the sub-menu.

EuP 2013 [Disabled]

Enables or disables the system power consumption according to EuP2013 regulation.

[Enabled] Optimize the system power consumption according to EuP 2013 regulation. It will not support S4 & S5 wake up by USB, PCI and PCIe devices.

[Disabled] Disables this function.

Restore after AC Power Loss [Power Off]

Sets the system behaviors while encountering the AC power loss.

- [Power Off] Leaves the system in power off state after restoring AC power.
- [Power On] Boot up the system after restoring AC power.
- [Last State] Restores the system to the previous state (power on/ power off) before AC power loss.

System Power Fault Protection [Disabled]

Enables or disables the system to boot up when detecting abnormal voltage input.

[Enabled] Protect the system from unexpected power operation and remain the shut down status.

[Disabled] Disables this function.

Windows OS Configuration

Sets Windows OS detailed configuration and behaviors. Press **Enter** to enter the submenu.

Windows 8.1/ 10 WHQL Support [Disabled]

Enables the supports for Windows 8.1/10 or disables for other operating systems. Before enabling this item, make sure all installed devices & utilities (hardware & software) should meet the Windows 8.1/10 requirements.

[Enabled] The system will switch to UEFI mode to meet the Windows equirement.

[Disabled] Disables this function.

MSI Fast Boot [Disabled]

MSI Fast Boot is the fastest way to boot the system. It will disable more devices to speed up system boot time which is faster than the boot time of **Fast Boot**.

[Enabled] Enables the MSI Fast Boot function to speed up booting time. And the following **Fast Boot** field will be disabled and fixed.

[Disabled] Disables MSI Fast Boot.

/ Important

When MSI Fast Boot is enabled, you can use **MSI FAST BOOT** application to enter BIOS setup if needed. Please refer **Entering BIOS Setup** section for details.

Fast Boot [Enabled/ windows 8.1/ 10, Disabled/ windows7]

Enables or disables the fast boot feature for Windows 8.1/10. This item will only be available when **MSI Fast Boot** is disabled.

[Enabled] Enables the Fast Boot configuration to accelerate system boot time.

[Disabled] Disables the Fast Boot configuration.

Internal GOP Configuration

Manages the onboard Graphics Output Protocol (GOP). Press **Enter** to enter the sub-menu. This sub-menu will appear when **Windows 8.1/ 10 WHQL Support** is enabled.

Secure Boot

Sets the Windows secure boot to prevent the unauthorized accessing. Press **Enter** to enter the sub-menu. This sub-menu will appear when **Windows 8.1/ 10 WHQL Support** is enabled.

Secure Boot Support [Disabled]

Enables or disables secure boot support.

[Enabled] Enables the secure boot function and allow you to set the secure boot settings.

[Disabled] Disables this function.

Secure Boot Mode [Standard]

Selects the secure boot mode. This item is to select how the secure boot keys be loaded. This item appears when **Secure Boot Support** is enabled.

[Standard] The system will automatically load the secure keys from BIOS.

[Custom] Allows user to configure the secure boot settings and manually load the secure keys.

Key Management

Manages the secure boot keys. Press <Enter> to enter the sub-menu. This submenu will appear when **Secure Boot Mode** sets to **Custom**.

Wake Up Event Setup

Sets system wake up behaviors for different sleep modes. Press **Enter** to enter the sub-menu.

Wake Up Event By [BIOS]

Selects the wake up event by BIOS or operating system.

[BIOS]	Activates the following items, set wake up events of these items.
[0S]	The wake up events will be defined by OS.

Resume By RTC Alarm [Disabled]

Disables or enables the system wake up by RTC Alarm.

[Enabled] Enables the system to boot up on a scheduled time/ date.

[Disabled] Disables this function.

Date (of month) Alarm/ Time (hh:mm:ss) Alarm

Sets RTC alarm date/ Time. If Resume By RTC Alarm is set to [Enabled], the system will automatically resume (boot up) on a specified date/hour/minute/second in these fields (using the + and - keys to select the date & time settings).

Resume By PCI-E Device [Disabled]

Enables or disables the wake up function of installed PCI-E expansion cards, integrated LAN controllers or USB devices which are supported by third party integrated chips.

[Enabled] Enables the system to be awakened from the power saving modes when activity or input signal of PCIe device is detected.

[Disabled] Disables this function.

Resume by USB Device [Disabled]

Enables or disables the system wake up by USB devices.

[Enabled] Enables the system to be awakened from sleep state when activity of USB device is detected.

[Disabled] Disables this function.

Resume From S3/S4/S5 by PS/2 Mouse [Disabled]

Enables or disables the system wake up by PS/2 mouse.

- [Enabled] Enables the system to be awakened from S3/ S4/ S5 state when activity of PS/2 mouse is detected.
- [Disabled] Disables this function.

Resume From S3/S4/S5 by PS/2 Keyboard [Disabled]

Enables or disables the system wake up by PS/2 keyboard.

- [Any Key] Enables the system to be awakened from S3/ S4/ S5 state when activity of any key on PS/2 keyboard is detected.
- [Hot Key] Enables the system to be awakened from S3/ S4/ S5 state when activity of hot key on PS/2 keyboard is detected.
- [Disabled] Disables this function.

Hot Key [Ctrl+Space]

Selects a combination of keys as a hot key to wake the system. This item appears when you set the Resume From S3/S4/S5 by PS/2 Keyboard to ${\rm Hot}~{\rm Key}.$

Boot

Sets the sequence of system boot devices.

Full Screen Logo Display [Enabled]

Enables or disables to show the full screen logo while system POST.

[Enabled] Shows the logo in full screen.

[Disabled] Shows the POST messages.

GO2BIOS [Disabled]

Allows system to enter BIOS setup directly by pressing the Power button for 4 sec pon bootup.

[Enabled] The system boots straight to the BIOS setup by long pressing the power button about 4 seconds when the system is off.

[Disabled] Disables this function.

Bootup NumLock State [On]

Select the keyboard NumLock state upon bootup.

Info Block effect [Unlock]

Sets the state of Help information block.

[Unlock] Sliding effect.

[Lock] Fix the **Help** information block on the screen.

AUTO CLR_CMOS [Disabled]

Enables or disables the CMOS data to be resumed automatically when the booting process hang-up over 5 seconds.

Boot Mode Select [LEGACY+UEFI]

Sets the system boot mode from legacy or UEFI architecture depending on OS installation requirement. This item will become un-selectable and will be configured automatically by BIOS when **Windows 8.1/ 10 WHQL Support** is enabled.

 [UEFI]
 Enables UEFI BIOS boot mode support only.

 [LEGACY+UEFI]
 Enables both Legacy BIOS boot mode and UEFI BIOS boot mode.

FIXED BOOT ORDER Priorities

Sets device priority for system boot.

Boot Option Priorities

These items are used to prioritize the installed boot devices.

Security

Administrator Password

Sets administrator password for system security. User has full rights to change the BIOS items with administrator password. After setting the administrator password, the state of this item will show "Installed".

User Password

Sets User Password for system security. User has limited rights to change the BIOS items with user password. This item will be available when administrator password is set. After setting the user password, the state of this item will show "Installed".

Password Check [Setup]

Selects a condition that will request the password.

[Setup] A password will be requested for entering the BIOS Setup.

[Boot] A password will be requested for booting the system.

Password Clear [Enabled]

Enables or disables the clear CMOS behavior to clear a set password.

[Enabled] The password will be erased after clear CMOS.

[Disabled] The password will always be kept.

A Important

When selecting the Administrator / User Password items, a password box will appear on the screen. Type the password then press <Enter>. The password typed now will replace any previous set password from CMOS memory. You will be prompted to confirm the password. You may also press <Esc> to abort the selection.

To clear a set password, press <Enter> when you are prompted to enter a new password. A message will confirm the password is being disabled. Once the password is disabled, you can enter the setup and OS without authorization.

Trusted Computing

Sets TPM (Trusted Platform Module) function.

Security Device Support [Disabled]

Enables or disables the TPM function to build the endorsement key for accessing the system.

Chassis Intrusion Configuration

Press <Enter> to enter the sub-menu.

Chassis Intrusion [Disabled]

Enables or disables recording messages when the chassis is opened. This function is ready for the chassis equips a chassis intrusion switch.

[Enabled] Once the chassis is opened, the system will record and issue a warning message.

[Reset] Clear the warning message. After clearing the message, please return to **Enabled** or **Disabled**.

[Disabled] Disables this funcion.

Save & Exit

Discard Changes and Exit

Exit BIOS setup without saving any change.

Save Changes and Reboot

Save all changes and reboot the system.

Save Changes

Save current changes.

Discard Changes

Discard all changes and restore to the previous values.

Restore Defaults

Restore or load all default values.

Boot Override

The installed bootable devices will appear on this menu, you can select one of them to be the boot device.

0C

0 7	Overclocking	Þ	KOTKEY I 5		(FO
	OC Explore Mode Beta Runner	[Normal] [Disabled]		Voltage CPU Core:	
	CPU Setting CPU Ratio	Auto		1.088V CPU 10: 0.952V	
SETTINGS	Adjusted CPU Frequency Ring Ratio	3400MHz Auto		System 5V: 5.040V System 12V:	
	GT Ratio Adjusted GT Frequency Stating	Auto 1150MHz		12.096V DRAM: 1.200V	E.
ос	CPU BCLK Setting CPU Base Clock (MHz) > Clockgen Features	100.00			
	DRAM Setting DRAM Frequency Adjusted DRAM Frequency	[Auto]			
11/4 11/20 to Auch Known BIOC	Memory Try It ! Advanced DRAM Configuration	[Disabled]		11: Move : Group Jump	
M-FLASH				+/-: Value F1: General Help	

A Important

- Overclocking your PC manually is only recommended for advanced users.
- Overclocking is not guaranteed, and if done improperly, it could void your warranty or severely damage your hardware.
- If you are unfamiliar with overclocking, we advise you to use GAME BOOST function for easy overclocking.

OC Explore Mode [Normal]

Enables or disables to show the normal or expert version of OC settings.

[Normal] Provides the regular OC settings in BIOS setup.

[Expert] Provides the advanced OC settings for OC expert to configure in BIOS setup.

Note: We use * as the symbol for the OC settings of Expert mode.

Beta Runner [Disabled]

Beta function or feature for DIY attempt only.

CPU Ratio Apply Mode [All Core]*

Sets applied mode for CPU ratio. This item only appears when a CPU that supports **Turbo Boost** is installed.

[All Core] Activate the **CPU Ratio** field. All CPU cores will run the same CPU ratio that be set in **CPU Ratio**.

[Per Core] Activate the **X-Core Ratio Limit** field. Sets each CPU core ratio separately in **X-Core Ratio Limit**.

CPU Ratio [Auto]

Sets the CPU ratio that is used to determine CPU clock speed. This item can only be changed if the processor supports this function.

1/2/3/4-Core Ratio Limit [Auto]*

Allows you to set the CPU ratios for different number of active cores. These items only appear when a CPU that support this function is installed.

Adjusted CPU Frequency

Shows the adjusted CPU frequency. Read-only.

CPU Ratio Mode [Dynamic Mode]*

Selects the CPU Ratio operating mode. This item will appear when you set the CPU ratio manually.

 [Fixed Mode]
 Fixes the CPU ratio.

 [Dynamic Mode]
 CPU ratio will be changed dynamically according to the CPU loading.

CPU Ratio Offset When Running AVX [Auto]

Sets a offset value to lower the CPU core ratio. It could be helpful for heat dissipation when running AVX instruction set. If set to Auto, BIOS will configure this setting automatically. This item appears when the installed CPU supports this function.

Ring Ratio [Auto]

Sets the ring ratio. The valid value range depends on the installed CPU.

Adjusted Ring Frequency

Shows the adjusted Ring frequency. Read-only.

GT Ratio [Auto]

Sets the integrated graphics ratio. The valid value range depends on the installed CPU.

Adjusted GT Frequency

Shows the adjusted integrated graphics frequency. Read-only.

Misc Setting*

Press Enter, + or - key to open or close the following 3 items related to CPU features.

EIST [Enabled]*

Enables or disables the Enhanced Intel® SpeedStep Technology.

[Enabled] Enables the EIST to adjust CPU voltage and core frequency dynamically. It can decrease average power consumption and average heat production.

[Disabled] Disables EIST.

Intel Turbo Boost [Enabled]*

Enables or disables the Intel $^{\otimes}$ Turbo Boost. This item appears when the installed CPU supports this function.

[Enabled] Enables this function to boost CPU performance automatically above rated specifications when system request the highest performance state.

[Disabled] Disables this function.

Enhanced Turbo [Auto]*

Enables or disables Enhanced Turbo function for all CPU cores to boost CPU performance. This item appears when the installed CPU supports this function.

- [Auto] This setting will be configured automatically by BIOS.
- [Enabled] All CPU cores would be increased to maximum turbo ratio.

[Disabled] Disables this function.

CPU Base Clock (MHz) [Default]

Sets the CPU Base clock. You may overclock the CPU by adjusting this value. Please note that overclocking behavior and stability is not guaranteed. This item appears when a CPU that support this function is installed.

CPU Base Clock Apply Mode [Auto]*

Sets the applying mode for adjusted CPU base clock.

[Auto] This setting will be configured automatically by BIOS.

[Next Boot] CPU will run the adjusted CPU base clock at next boot.

[Immediate] CPU runs the adjusted CPU base clock immediately.

Extreme Memory Profile (X.M.P.) [Disabled]

X.M.P. (Extreme Memory Profile) is the overclocking technology by memory module. Please enable XMP or select a profile of memory module for overclocking the memory. This item will be available when the memory modules that support X.M.P. is installed.

DRAM Reference Clock [Auto]*

Sets the DRAM reference clock. The valid value range depends on the installed CPU. This item appears when a CPU that supports this adjustment is installed.

DRAM Frequency [Auto]

Sets the DRAM frequency. Please note the overclocking behavior is not guaranteed.

Adjusted DRAM Frequency

Shows the adjusted DRAM frequency. Read-only.

Memory Try It ! [Disabled]

It can improve memory compatibility or performance by choosing optimized memory preset.

DRAM Timing Mode [Link]

Selects the memory timing mode.

[Link] Allows user to configure the DRAM timing for all memory channel. [Unlink] Allows user to configure the DRAM timing for respective memory.

[UnLink] Allows user to configure the DRAM timing for respective memory channel.

Advanced DRAM Configuration

Press **Enter** to enter the sub-menu. User can set the memory timing for each/ all memory channel. The system may become unstable or unbootable after changing memory timing. If it occurs, please clear the CMOS data and restore the default settings. (Refer to the Clear CMOS jumper/ button section to clear the CMOS data, and enter the BIOS to load the default settings.)

Memory Fast Boot [Auto] *

Enables or disables the initiation and training for memory every booting.

[Auto] The setting will be configured automatically by BIOS.

[Enabled] System will completely keep the archives of first intiation and training for memory. So the memory will not be initialed and trained when booting to accelerate the system booting time.

[Disabled] The memory will be initialed and trained every booting.

DigitALL Power

Press Enter to enter the sub-menu. Controls the digital powers related to CPU PWM.

CPU Loadline Calibration Control [Auto]

The CPU voltage will decrease proportionally according to CPU loading. Higher load-line calibration could get higher voltage and good overclocking performance, but increase the temperature of the CPU and VRM. If set to **Auto**, BIOS will configure this setting automatically.

CPU Over Voltage Protection [Auto]

Sets the voltage limit for CPU over-voltage protection. If set to **Auto**, BIOS will configure this setting automatically. Higher voltage provides less protection and may damage the system.

CPU Under Voltage Protection [Auto]

Sets the voltage limit for CPU under-voltage protection. If set to **Auto**, BIOS will configure this setting automatically. Higher voltage provides less protection and may damage the system.

CPU Over Current Protection [Auto]

Sets the current limit for CPU over-current protection. If set to **Auto**, BIOS will configure this setting automatically.

CPU Switching Frequency [Auto]

Sets the PWM working speed to stabilize CPU Core voltage and minimize ripple range. Increasing the PWM working speed will cause higher temperature of MOSFET. So please make sure a cooling solution is well-prepared for MOSFET before you increase the value. If set to **Auto**, BIOS will configure this setting automatically.

CPU VRM Over Temperature Protection [Enabled]

Enables or disables the CPU VRM over temperature protection.

CPU GT Loadline Calibration Control [Auto]

The voltage of the GPU embeeded in CPU will decrease proportionally according to GPU loading. Higher load-line calibration could get higher voltage and good overclocking performance, but increase the temperature of the CPU and VRM.

CPU GT Over Voltage Protection [Auto]

Sets the voltage limit for CPU GT over-voltage protection. If set to **Auto**, BIOS will configure this setting automatically. Higher voltage provides less protection and may damage the system.

CPU GT Under Voltage Protection [Auto]

Sets the voltage limit for CPU GT under-voltage protection. If set to **Auto**, BIOS will configure this setting automatically. Higher voltage provides less protection and may damage the system.

CPU GT Over Current Protection [Auto]

Sets the current limit for CPU GT over-current protection. If set to **Auto**, BIOS will configure this setting automatically.

CPU GT Switching Frequency [Auto]

Sets the PWM working speed to stabilize CPU GT voltage and minimize ripple range. Increasing the PWM working speed will cause higher temperature of MOSFET. So please make sure a cooling solution is well-prepared for MOSFET before you increase the value. If set to **Auto**, BIOS will configure this setting automatically.

CPU GT VRM Over Temperature Protection [Enabled]

Enables or disables the CPU GT VRM for over-temperature protection. The CPU GT frequency may be throttled when VRM temperature over the specified value.

CPU Core/ GT Voltage Mode [Auto]*

Sets the CPU Core/ GT voltage mode.

[Auto]	This setting will be configured automatically by BIOS.
[Adaptive Mode]	Sets the adaptive voltage automatically for optimizing the system performance.
[Override Mode]	Allows you to set the voltage manually.
[Offset Mode]	Allows you to set the offset voltage and select the voltage offset mode.
[Adaptive + Offset]	Sets the adaptive voltage automatically and allows you to set the offset voltage.
[Override + Offset]	Allows you to set the voltage and the offset voltage manually.

CPU Voltages control [Auto]

These options allow you to set the voltages related to CPU. If set to **Auto**, BIOS will set these voltages automatically or you can set it manually.

DRAM Voltages control [Auto]

These options allow you to set the voltages related to memory. If set to **Auto**, BIOS will set these voltages automatically or you can set it manually.

PCH Voltages control [Auto]

These options allow you to set the voltages related to PCH. If set to **Auto**, BIOS will set these voltages automatically or you can set it manually.

CPU Memory Changed Detect [Enabled]*

Enables or disables the system to issue a warning message during boot when the CPU or memory has been replaced.

[Enabled] The system will issue a warning message during boot and then you have to load the default settings for new devices.

[Disabled] Disables this function and keeps the current BIOS settings.

OC Quick View Timer [3 Sec]*

Sets the duration of OC setting values showed on the screen. If set to Disabled, BIOS will not show the variations of OC setting.

CPU Specifications

Press **Enter** to enter the sub-menu. This sub-menu displays the information of installed CPU. You can also access this information menu at any time by pressing [F4]. Read only.

CPU Technology Support

Press **Enter** to enter the sub-menu. The sub-menu shows the key features of installed CPU. Read only.

MEMORY-Z

Press **Enter** to enter the sub-menu. This sub-menu displays all the settings and timings of installed memory. You can also access this information menu at any time by pressing [F5].

DIMMx Memory SPD

Press **Enter** to enter the sub-menu. The sub-menu displays the information of installed memory. Read only.

CPU Features

Press Enter to enter the sub-menu.

Hyper-Threading [Enabled]

Intel Hyper-Threading technology treats the multi cores inside the processor as multi logical processors that can execute instructions simultaneously. In this way, the system performance is highly improved. This item appears when the installed CPU supports this technology.

[Enable] Enables Intel Hyper-Threading technology.

[Disabled] Disables this item if the system does not support HT function.

Active Processor Cores [All]

Allows you to select the number of active CPU cores.

Limit CPUID Maximum [Disabled]

Enables or disables the extended CPUID value.

[Enabled] BIOS limits the maximum CPUID input value to circumvent boot problems with older operating system that do not support the processor with extended CPUID value.

[Disabled] Use the actual maximum CPUID input value.

Intel Virtualization Tech [Enabled]

Enables or disables Intel Virtualization technology.

[Enabled] Enables Intel Virtualization technology and allows a platform to run multiple operating systems in independent partitions. The system can function as multiple systems virtually.

[Disabled] Disables this function.

Intel VT-D Tech [Disabled]

Enables or disables Intel VT-D (Intel Virtualization for Directed I/O) technology.

Hardware Prefetcher [Enabled]

Enables or disables the hardware prefetcher (MLC Streamer prefetcher).

- [Enabled] Allows the hardware prefetcher to automatically pre-fetch data and instructions into L2 cache from memory for tuning the CPU performance.
- [Disabled] Disables the hardware prefetcher.

Adjacent Cache Line Prefetch [Enabled]

Enables or disables the CPU hardware prefetcher (MLC Spatial prefetcher).

[Enabled] Enables adjacent cache line prefetching for reducing the cache latency time and tuning the performance to the specific application.

[Disabled] Enables the requested cache line only.

CPU AES Instructions [Enabled]

Enables or disables the CPU AES (Advanced Encryption Standard-New Instructions) support. This item appears when a CPU supports this function.

Intel Adaptive Thermal Monitor [Enabled]

Enables or disables the Intel adaptive thermal monitor function to protect the CPU from overheating.

[Enabled] Throttles down the CPU core clock speed when the CPU is over the adaptive temperature.

[Disabled] Disables this function.

Intel C-State [Auto]

Enables or disables the Intel C-state. C-state is a processor power management technology defined by ACPI.

- [Auto] This setting will be configured automatically by BIOS.
- [Enabled] Detects the idle state of system and reduce CPU power consumption accordingly.

[Disabled] Disable this function.

C1E Support [Disabled]

Enables or disables the C1E function for power-saving in halt state. This item appears when **Intel C-State** is enabled.

[Enabled] Enables C1E function to reduce the CPU frequency and voltage for power-saving in halt state.

[Disabled] Disables this function.

Package C State limit [Auto]

This item allows you to select a CPU C-state level for power-saving when system is idle. The options of C-state depend on the installed CPU. This item appears when **Intel C-State** is enabled.

CFG Lock [Enabled]

Lock or un-lock the MSR 0xE2[15], CFG lock bit.

[Enabled]	Locks the CFG loo	k bit.
-----------	-------------------	--------

[Disabled] Un-locks the CFG lock bit.

EIST [Enabled]

Enables or disables the Enhanced Intel[®] SpeedStep Technology. This item will appear when **OC Explore Mode** is set to **Normal**.

[Enabled]	Enables the EIST to adjust CPU voltage and core frequency
	dynamically. It can decrease average power consumption and
	average heat production.

[Disabled] Disables EIST.

Intel Turbo Boost [Enabled]

Enables or disables the Intel[®] Turbo Boost. This item is for **Normal mode** and appears when a CPU that support Turbo Boost is installed.

[Enabled] Enables this function to boost CPU performance automatically over specification when system request the highest performance state.

[Disabled] Disables this function.

Long Duration Power Limit (W) [Auto]

Sets the long duration TDP power limit for CPU in Turbo Boost mode.

Long Duration Maintained (s) [Auto]

Sets the maintaining time for Long duration power Limit(W).

Short Duration Power Limit (W) [Auto]

Sets the short duration TDP power limit for CPU in Turbo Boost mode.

CPU Current Limit (A) [Auto]

Sets maximum current limit of CPU package in Turbo Boost mode. When the current is over the specified value, the CPU will automatically reduce the core frequency for reducing the current.

FCLK Frequency [Auto]

Set FCLK Frequency for early power on. Lower FCLK frequency may help you to set higher base clock frequency.

DMI Link Speed [Auto]

Sets DMI speed.

SW Guard Extensions (SGX) [Software Control]

Enables or disables Intel SGX.

M-FLASH

M-FLASH provides the way to update BIOS with a USB flash drive. Please down-load the latest BIOS file that matches your motherboard model from MSI website, save the BIOS file into your USB flash drive. And then follow the steps below to update BIOS.

- 1. Insert the USB flash drive that contains the update file into the computer.
- 2. Click on **M-FLASH** tab, a demand message will be prompted. Click on **Yes** to reboot and enter the flash mode.



The system will enter the flash mode and a file selection menu will appear after rebooting.

File Path : fs0:\					
Drive		File			
FSO: General USB /		2015/07/0112:34:56 2015/07/0212:34:56 2015/07/0412:34:56 2015/07/0412:34:56 2015/07/0612:34:56 2015/07/0612:34:56 2015/07/0612:34:56 2015/07/0912:34:56 2015/07/0912:34:56	< DIR > < DIR >	BIOSFILE01 BIOSFILE02 BIOSFILE03 BIOSFILE04 BIOSFILE05 BIOSFILE07 BIOSFILE08 BIOSFILE09 BIOSFILE09 BIOSFILE10	÷
[Current BIOS] [Selected BIOS]	Model Name: Model Name: N/A		Build Date Build Date		

- 4. Select a BIOS file to perform the BIOS update process.
- 5. After the flashing process is 100% completed, the system will reboot automatically.

OC PROFILE

3 3	OC Profiles	HOTINY I S	NFO P
Motherboard settings SETTINGS OC	Operational Potente 1 Overstocking Potente 1 Overstocking Potente 2 Overstocking Potente 3 Overstocking Potente 4 Overstocking Potente 5 Overstocking Pote		Voltage CPU Core: 1088v CPU ID: 351cm 304 551cm 304 551cm 304 12,064v DRAM: 12,004
Une USB to Austr/Save BOS M-FLASH			1 : Move Enter: Select +/: Value ESC: Exit F1: General Help

Overclocking Profile 1/ 2/ 3/ 4/ 5/ 6

Overclocking Profile 1/ 2/ 3/ 4/ 5/ 6 management. Press <Enter> to enter the submenu.

Set Name for Overclocking Profile 1/2/3/4/5/6

Name the current overclocking profile.

Save Overclocking Profile 1/2/3/4/5/6

Save the current overclocking profile.

Load Overclocking Profile 1/2/3/4/5/6

Load the current overclocking profile.

Clear Overclocking Profile 1/2/3/4/5/6

Clear the current overclocking profile.

OC Profile Load from ROM

Load OC profile from BIOS ROM.

OC Profile Save to USB

Save OC profile to the USB flash drive. The USB flash drive should be FAT/ FAT32 format only.

OC Profile Load from USB

Load OC profile from the USB flash drive. The USB flash drive should be FAT/ FAT32 format only.

HARDWARE MONITOR

Hardware Monitor	د 🛣 د Fan	Control				A	bout Help	x	
	CPU 1 754RPM	PUMP 1	System 1 ORPM	System 2 ORPM	System 3 ORPM	System 4			– Temperature & Speed
CPU Fan1 step up time 0.113 CPU Fan1 step up time 10.13 CPU Fan1 step down time 10.13	Smart Fa 1007212 007104 007104 007170 007170 00714 00714 0071 0071	in Mode	/	<u>,</u> /	•	7000 8300 9000 4200 2000 2000 2100 2100 1400 700	85°C/185°F/ 70°C/158°F/ 55°C/131°F/ 40°C/104°F/	100% 63% 38% 13%	Fan Manage
	100100			All Full Spe	ed(F) Al	ि (त्राम्स) I Set Default(D) All Set Ca	ncel(C)	Setting Buttons
1.056 1.000 CPU Core CPU I/O	1.64 PU SA	18 A	5.040 System/5V	System	12.192 //12V E	1.2 DRAM	0.008]	Voltage display

Temperature & Speed

Shows the current CPU temperature, system temperature and fans' speeds.

- Fan Manage
 - **PWM** allows you to select the PWM mode for fan operation.
 - **DC** allows you to select the DC mode for fan operation.
 - Fan step up/ down time allows you to set the period of fan step up/ down.
 - Smart Fan Mode field allows you to drag the gradient points to configure the fan target values for Smart Fan mode. Smart Fan can control the fan speed automatically depending on the CPU temperature to keep it with in a specific range. If the current CPU temperature reaches to the target value, the Smart Fan function will be activated.

🕂 Important

- The changing will achieve after you save the changes and reboot the system.
- Make sure fans are working properly after switching the PWM/ DC mode.

Settings Buttons

- All Full Speed configures all fans to run at full operating speed.
- All Set Default configures all fans to run at default operating speed.
- All Set Cancel discards current changes and restores previous operating fan speeds.

Voltage display

Shows the current voltages of CPU, system and memory.

Software Description

Please download and update the latest utilities and drivers.

Installing Windows® 7/8.1/10

- 1. Power on the computer.
- 2. Insert the Windows[®] 7/ 8.1/ 10 disc into your optical drive.

Note: Due to chipset limitation, during the Windows 7 installation process, USB optical drives or USB flash drives are not supported. You can use **MSI Smart Tool** to install Windows[®] 7.

- 3. Press the **Restart** button on the computer case.
- For windows 8.1/10, skip this step. For Windows 7, access the BIOS menu SETTING > Advanced > Windows OS Configuration > Windows 7 Installation and set the item to enabled, save changes and restart.

Note: It is suggested to plug in your USB Keyboard/ USB Mouse to the leftmost USB port when installing Windows[®] 7.

- Press F11 key during the computer POST (Power-On Self Test) to get into Boot Menu.
- 6. Select your optical drive from the Boot Menu.
- 7. Press any key when screen shows **Press any key to boot from CD or DVD...** message.
- 8. Follow the instructions on the screen to install Windows[®] 7/8.1/10.

Installing Drivers

- 1. Start up your computer in Windows[®] 7/ 8.1/ 10.
- 2. Insert MSI[®] Driver Disc into your optical drive.
- 3. The installer will automatically appear and it will find and list all necessary drivers.
- 4. Click Install button.
- The software installation will then be in progress, after it has finished it will prompt you to restart.
- 6. Click **OK** button to finish.
- 7. Restart your computer.

Installing Utilities

Before you install utilities, you must complete drivers installation.

- 1. Insert MSI[®] Driver Disc into your optical drive.
- 2. The installer will automatically appear.
- 3. Click Utilities tab.
- 4. Select the utilities you want to install.
- 5. Click Install button.
- 6. The utilities installation will then be in progress, after it has finished it will prompt you to restart.
- 7. Click OK button to finish.
- 8. Restart your computer.

COMMAND CENTER

COMMAND CENTER is an user-friendly software and exclusively developed by MSI, helping users to adjust system settings and monitor status under OS. With the help of COMMAND CENTER, making it possible to achieve easier and efficient monitoring process and adjustments than that under BIOS. In addition, the COMMAND CENTER can be a server for mobile remote control application.



Profile Buttons



- **Default** load the default values for the current feature.
- Apply apply your changes.
- Save store values in the file with individual file extension.
- Load load the values from the file.

/ Important

Every time you shut down the system, the configured setting will be restored to the factory default. If you want to use the saved settings, you have to load it every time by clicking the **Load** and **Apply** buttons.

CPU Frequency

CPU Frequency control panel allows you to change CPU Ratio and Base clock. You can see the current frequency of each CPU core on the top of the panel.



CPU Fan

CPU Fan control panel provides **Smart mode** and **Manual Mode**. You can switch the control mode by clicking the **Smart Mode** and **Manual Mode** buttons on the top of the CPU Fan control panel.

- Manual Mode allows you to manually control the CPU fan speed by percentage.
- Smart Mode a linear fan speed control feature. The control panel contains 4 dots allows you to drag and adjust the Smart Speed slopes. The fan speed will be changed along these lines with CPU temperature. The white dot will create strip chart in real time.
- System Fan Button to open the system fan control panel in new window.
- Fan Tune Button to automatically optimize the smart fan setting.

CPU Voltage

CPU Voltage control panel allows you to control the CPU voltage.

DRAM Frequency & DRAM Voltage

- **DRAM Frequency** Shows the DRAM clock, ratio and frequency.
- **DRAM Voltage** Allows you to adjust the DRAM voltage. The risky values are displayed in red.



Manual Mode



Smart Mode





IGP Frequency & GT Voltage

- IGP Frequency Allows you to adjust the IGP ratio, and shows the IGP clock, ratio and frequency.
- **GT Voltage** Allows you to adjust the GT voltage. The risky values are displayed in red.



GAME BOOST

GAME BOOST provides a specified CPU frequency for overclocking the CPU.



Option Buttons - Advanced

When click the Advanced button, The Voltage, Fan and DRAM icons will appear.



- Voltage allows you to adjust advanced voltage values of CPU and chipset.
- Fan allows you to control the system fans speed.
- DRAM shows the current Advanced DRAM parameters, and allows you to change the settings by selecting values from the drop-down menu on the right hand side.
- Sensor allows you to monitor your motherboard temperature and fan speed with the virtual thermal image. You can drag and drop the fan icons to new locations. When you press the **Cooling** button, all fans will run at full speed.

Option Buttons - Setting

When click the **Setting** button, The **Record**, **Warning** and **Mobile Control** icons will appear.



- **Record** allows you to monitor the status of voltage, fan speed and temperature in real time.
 - To filter record charts, select the check box next to the items.
 - When click the **Play** button, the chart pane will start to show the recording chart. If you want to check the value of a specific spot on chart, please move the orange vertical line to the spot.
 - History Record stores the data and names with date and time.
 - To make a history record: Select items and click the **Record** button. When finished, click the **Record** button again. The data will be stored in the drop-down menu.
 - To load a record, click the drop-down menu and select one from the list.
 - To delete a record, select the record that you want to delete, and click the **Trash Can** icon.

• Warning - contains fields of voltage, fan speed and temperature for you to set the threshold values. When system detects the status over your settings, a warning message will pop-up.



- Mobile Control is only available for the motherboard with the built-in WiFi module. It allows you to enable/disable the COMMAND CENTER Remote Server. Please refer to the instruction on the Mobile Control control panel.
- To start remote control: (optional)
- 1. Download and install MSI® COMMAND CENTER APP to your mobile device.
- 2. Enable COMMAND CENTER Remote Server on the Mobile Control panel.
- 3. Enable SoftAP Management.
- 4. Enter SSID and Password, and then click the Apply button.
- 5. Activate Wi-Fi[®] on your mobile device and connect to SoftAP with the SSID.
- 6. Run MSI[®] COMMAND CENTER APP on your mobile device.
- Find the IP address on the SoftAP Management Setting area, and enter the IP address on your MSI[®] COMMAND CENTER APP to link your system.
- 8. Press **Refresh** on the **MSI® COMMAND CENTER** APP to verify that monitoring and OC functions are working properly.

Option Buttons - Information

When click the **Information** button, The **Motherboard**, **CPU**, **Memory** and **HW monitor** icons will appear.



You can click the icons to open the related information.

Gadget Mode

COMMAND CENTER provides a gadget mode to monitor the system status. You can switch between gadget mode and full mode by clicking the arrow icon n on the top left.

- To arrange gadgets:
- Click the Spanner icon on the Gadget mode, a configuration panel will slide out.
- 2. Select the check box next to the items.
- 3. Click the Close button.



LIVE UPDATE 6

LIVE UPDATE 6 is an application for the MSI® system to scan and download the latest drivers, BIOS and utilities. With LIVE UPDATE 6, you don't need to search the drivers on websites, and don't need to know the models of motherboard and graphics cards. LIVE UPDATE 6 will download the appropriate drivers automatically.

	Live update History				Setting	System	n information			
	O Manual scan		Automatic scan		an 🔿 BIOS Upd			Download Options		
	MB driver	Mist unlity								
	туре	Item		Current Ver.	Online Ver	Size				
	MB driver	Drivers		20,19,15,4331	20,19,15.4360	128 MB	<u>4 🖬 🕤</u>			
	MB driver	Drivers.		Not installed	6.0.1.7885	254 MB	4 🖬			
	MB driver	Drivers		Not installed	10.1.1.9	2.75 MB	4 B	Download List		
	MB driver	Drivers		Not installed	11.0.6.1194	116 MB	<u>4</u> 🗉	Downtodd Eist		
	MB driver	Drivers		Not installed	4.0.44	134 MB	<u>4</u> E			
	MB driver	Drivers		Not installed	30.63.1519.7	2.77 MB	<u>∔</u> 🗉 🗤			
				Scan	Down	oad	Total installer	Scan / Download / Total — Installer button		
1000	Information									
								— System Information		
Ope Mot Seri	herboard BIOS v ial Number		Graphics Graphics	card model card 830S version						

There are **Live Update, History, Setting** and **System Information** tabs at the top. You can click the tab to switch the control panel.

- Live Update When you launch LIVE UPDATE 6, you will see the Live update tab at first. This tab allows you to select files to download. You can also read the relevant information by clicking the information icon also read the relevant.
- History shows the downloading history.
- Setting allows you to specify the frequency that LIVE UPDATE 6 remind you to update.
- System Information displays the information of the system.
- FAQ shows Frequently Asked Questions.
- Online Help shows Online Help information.

Updating The System

This section describes how to update your system with LIVE UPDATE 6. Please follow the steps below: _____

		O Manual sca	'n	Automati	: scan	O BIOS Up	date	
)_		🖂 M8 driver	MSL ubility	Distantial sectory				
	5	Туре	Item		Gurrent Ver.	Online Ver.	Size	
		MB driver	Drivers		20.19.15.4331	20.19.15.4360	128 MB	4 E
		MB driver	Drivers		Not installed	6.0,1.7885	254 MB	4 B
		MB driver	Drivers		Not installed	10.1.1.9	2.75 MB	4.0
		MB driver	Drivers		Not installed	11.0.6.1194	116 MB	4 B
		MB driver	Drivers		Not installed	4.0.44	134 MB	4 8
		MB driver	Drivers		Not installed	30 63 1519 7	2.77 MB	± ₽
)—	+							
) – (
- 1. Select the Live Update tab.
- Choose Automatic scan, system will automatically scan all the items and search for the latest update files. Or you can choose Manual scan and select the items you wish to scan.
- Click the Scan button at the bottom. It may take several moments to complete the process.
- 4. When the download list appears, please select the items you intend to update.
- 5. Click Download button at the bottom.
- 6. When Save Path prompt, you can specify a download directory.



When downloading you will see the screen below. It may take several moments to complete the process.

Туре	Item	Latest Ver.	Size	Download
MSI utility	MSI utility	1.0.1.5	1.52 MB	46 %
MSI utility	MSI utility	1.2.026	3.21 MB	

8. To install the applications, simply unpack the packages and install.

Total Installer

Total Installer is a convenient feature to simplify frequent installing procedure. To use Total Installer:

	O Manual sca	n	Automatic scan		O BIOS UP	idate		
•	Туре	Item	Cur	rent Ver.	Online Ver.	Size		
	MB driver	Drivers	20.1	9,15,4331	20.19.15.4360	128 MB		p.
	MB driver	Drivers	Not	installed	6.0.1.7885	254 MB	4	P
	MB driver	Drivers	Not	installed	10.1.1.9	2.75 MB	4	P
	MB driver	Drivers	Not	installed	11.0.6.1194	116 MB	4	P
	MB driver	Drivers	Not	installed	4.0.44	134 MB	4	P
	MB driver	Drivers	Not	installed	30.63.1519.7	2.77 MB	4	P

- 1. Scan updates in Live Update tab.
- 2. Check the Select All check-box you intend to update.
- 3. Click the **Total Installer** button. LIVE UPDATE 6 will automatically install them.
- 4. When prompted, click OK to complete the Total Installer procedure
- 5. Reboot your system.

GAMING APP

GAMING APP is an application designed to quickly control your system for improving gaming performance.



- Setting Button allows you to run GAMING APP when Windows starts.
- Information Button shows the information of this application.
- CPU Frequency shows the current CPU frequency.
- Control Mode Buttons
 - **OC Mode** enables Game Boost function to automatically overclock the CPU.
 - Gaming Mode automatically optimize the CPU ratio and the GPU clock.
 - Silent Mode reverts the CPU ratio and GPU clock to the default values.
- Gaming Function Buttons allows you to use LED Effect, OSD, Eye Rest and Dragon Eye functions.
- Peripheral Device Function Buttons allows you to set the Gaming Hotkey, Mouse Master and VR Ready functions.
- **Remote Control Setting** is only available for the motherboard with the built-in WiFi module or with an external WiFi home router. It allows you to set up a set of **Name** and **Password** to link the android device the motherboard. Please refer to the following instructions to complete the remote control setting.
- 1. Download and install the MSI® GAMING APP to your android device.
- 2. Set up a set of Name and the Password on the Remote Control Setting panel, and then click the Apply button.
- Activate Wi-Fi[⊕] on your android device and connect it to the wireless network of the motherboard.
- 4. Run MSI® GAMING APP on your android device.
- Press the Remote Control Setting icon on the MSI® GAMING APP to find the paired device Name you set on the Remote Control Setting panel.
- 6. Enter the Password you set on the Remote Control Setting panel.
- Finally, you can use the MSI[®] GAMING APP to control the aspect of your motherboard with the android device.

LED

LED function allows you to control LED lights on your motherboard.



- LED ON/OFF allows you too turn ON/ OFF the LED Effect function.
- LED Area Selection separately controls each segment of LEDs on your motherboard and graphics cards.
- LED effects switches LEDs on or off.
- Styles select the LED style from the drop-down list.
- Extend LED allows you to turn ON/ OFF the Extend LED Effects.
 - Extend LED Effects select the extend LED strip effects.
- LED color allows you change the LED color.
- Apply Button applies the Styles settings to LEDs.

OSD Setting Panel

Use the OSD setting panel to specify information within on-screen display (OSD).



• Apply Button - allows you to accept selections.

Eye Rest

Eye Rest allows you to optimize the display on your monitor.



- **EyeRest** reduces blue-light of your LED backlit screen, in order to protect your eyes.
- Gaming automatically increase contrast ratio of your screen.
- Movie automatically increase dynamic contrast ratio of your screen.
- **Customize** allows you to adjust gamma, contrast and color balance for your screen.
- Default loads the default settings.

VR Ready

VR Ready can automatically detects VR devices connected to the system. When enabled, it can provide the right advice to make sure your system is VR Ready.



- VR ON/ OFF -enables or disables VR device support.
- **Applications** appears when you turn on the VR support. It allows you to close some applications to optimize the system for better VR experience.

Gaming Hotkey

Gaming Hotkey provides instant control of the system through user defined hotkeys.

Ca	ategories Toggle	Gaming Hotkey ON/OFF 🛛	٦
	Gaming Hotkey		×
	Macro Genie Win	dows Keys Login Keys MSI Smart Keys	
Hotkey Manager 🛛	F11 CPU base dock + CPU base dock - GAME BOOST	Canney AFP Control Live Update Control Live U	Bios
		- A	ppty
	MSI Smart F9	Gaming Mode	T
Current Hotkeys	MSI Smart F11	CPU base clock +	ŵ
	Hotkeys F7	Down, Right+Down, Right, Down, Right+Down, Right, = (100ms)	W
	Hotkeys F6	Down, Left+Down, Left, [ŵ
	Hotkeys F5	Down, Right+Down, Right, 0	w
		Show All ¥	

- Gaming Hotkey ON/OFF allows you to turn ON/OFF the Gaming Hotkey function.
- Categories Toggle allows you to toggle over the Hotkey categories.
 - Macro Genie provides the keyboard and mouse macro record function and allows you to define the hotkeys for the macro recorder.
 - 1. Click on the **Record** button to start the keyboard and mouse macro recorder.
 - 2. Click on the Stop button to stop the recorder.
 - 3. Key-in a file name and set-up the parameter for the macro.
 - 4. Finally, click on the **Save** button to save the recorded macro.
 - Windows Keys allows you to define hotkeys to replace Windows default keyboard shortcuts.
 - Login Keys provides hotkey login function.
 - MSI Smart Keys allows you to define hotkeys for MSI Smart Keys.
- Hotkey Manager allows you to create, edit and delete hotkeys.
- Current Hotkeys shows all existing hotkeys.

/ Important

- The Caps Lock, Num Lock, Scroll Lock, Window Home, Application and BackSpace keys can not be used as Hotkeys.
- Some key combinations are reserved for use by Microsoft Windows and can not be assigned as a hotkey.

Mouse Master

Mouse Master provides mouse macro function. You can also use it to change DPI of your mouse.



- **Delay Time** allows you to input delay time and click the **Add** button to insert a delay in the macro.
- Macro Hot Key allows you to assign a hotkey from A to Z to activate the macro.
- Mouse Action assigns mouse actions to the macro.
 - New captures the mouse coordinate and add to the macro.
 - Left add a left-click to the macro.
 - Middle add a middle-click to the macro.
 - Right add a right-click to the macro.
- Action List shows the actions of the current macro.
- Edit Buttons there 3 buttons for editing the macro.
 - Run activates the macro.
 - Delete removes the selected action from the macro.
 - Clear removes all actions from the macro.
- Load Button allows you to load a macro.
- Save Button allows you to save the macro to a file.
- DPI Setting allows you select the mouse DPI from the drop-down menu.
- Default Button reverts to the default DPI setting.
- **DPI Hot Key** allows you to assign a hotkey from A to Z to activate the DPI setting. Please note that you muse hold the hotkey to keep the DPI setting. When you release the hotkey, the DPI setting will be reverted to default.
- Test Area allows you to test the mouse movement.
- Clear Button clears the test area.

RAMDISK

RAMDISK creates a virtual RAM drive using the available memory in your computer, the performance of the RAMDISK is faster than an SSD and hard drive. RAMDISK allows you to store any temporary information on it. Furthermore, using the RAMDISK will extend your SSD's life by sparing it from excessive reading and writing.

Creating a RAM Disk

When **RAMDISK** is started, it will create a default RAM disk. If you want to change settings, refer to following instructions.



- Setting specify Letter, Name, Size and Format of the RAM disk.
- **Option** select browser temporary files to save/load on the RAM disk. You can also add software files to improve reading speed.
- **Backup** specify backup and restore settings to prevent data loss. All files will be lost each time the RAMDISK is stopped if you do not backup.
 - Browse Button set the path to the image file.
 - Backup Right Now Button manually backup files.
 - **Restore On Boot** check this box to have the image file loaded automatically when RAMDISK starts.
 - Auto Backup check this box to backup automatically over a period of time.
- Apply Button allows you to apply changes.
- Management shows RAMDISK information and allows you to delete files. Remove the RAM disk



X-BOOST

The MSI **X-BOOST** allows you to select the system performance mode to meet your current system environment or supports faster storage access speed. Most of the external storage and memory cards can also benefit this feature.

Easy

In **Easy** page, you can select one system performance mode to meet the current system environment.



- **Performance mode** moves over the mouse to any one of performance mode and click on the **ON** button to enable it.
- **Performance information** displays the system performance diagram of enabled mode.
- Setting enables or disables Run X-BOOST when windows starts.

Advance

In Advance page, you can enable the USB SPEED UP and/or the STORAGE BOOST.



- USB SPEED UP supports speed up the data transfer rates of the USB storage devices.
- STORAGE BOOST supports faster access speed to storage device.
- Device information displays the information and current transfer rates/ access spepds of USB/ storage devices.
- Setting enables or disables Run X-BOOST when windows starts.

M Important

- Please note that, you can only select one of the Easy and Advance to execute as the MSI X-BOOST function.
- The improved transfer rate/ access speed will vary with the USB/ storage device.

MSI SMART TOOL

MSI SMART TOOL is a convenient tool that can help you to create your Windows installation USB flash drive with USB 3.0 drivers, and it can also create a software RAID.

Main menu

After installing and activating MSI SMART TOOL, it will display a main menu for you to choose **Win7 Smart Tool** or **Software RAID**. Note that the Software RAID is only available when your system equipped with at least 3 hard-disk drives (1 system disk and 2 data disks).

WIN7 SMART TOOL

Before you can create your Windows installation USB flash drive, you' ll need to have your Windows Installation DVD or ISO file, and also have a minimum of a 8GB USB flash drive to create your installer. Be sure to backup files on the USB drive, this process will erase it.

MSi 4	ипя вфаят тооц	♠ ×
Step 1 : Choose sour O Source folder	ce folder.	88
Add USB drivers		
Step 2 : Choose stora O USB storage	age device.	- C
O ISO destination	C1	ä
M.2 Genie		
	Copyright © 2015 Micro-Star INT'L CO., LTD. All rights reserved.	Start

To create the Windows installation USB drive:

Step1. Choose source folder

- In the Source folder box, type the name and path of your Windows ISO file, or click Browse button and select the file from the dialog box. (This option will copy all Windows installation files and USB 3.0 drivers)
- If you already have the Windows Installation USB flash drive and just want to add USB 3.0 drivers on it, you can choose **Add USB drivers.**

Step2. Choose Storage device

- Choose USB storage and select your USB flash drive in the drop-down list. In case the USB flash drive is not listed, click the Refresh Drive button.
- If you want to install Windows on the PCIe M.2 RAID that was created by BIOS > M.2 Genie (please refer to BIOS Setup Section for details), check the M.2 Genie checkbox to copy iRST drivers to the USB flash drive.
- Click Start.

A Important

You can also create an installer ISO image file by selecting the **ISO destination** in Step2, and then burn it onto the DVD. However, this method does not support **M.2** *Genie*.

SOFTWARE RAID

This utility allows you to create a software RAID in Windows system.



To create a software RAID:

- 1. Use checkboxs to select the disks you want included in your RAID.
- 2. Choose Speed Up or Backup for RAID type.
 - Speed Up = RAID0
 - Backup = RAID1
- 3. Click Start.
- 4. When prompt Finish!, click OK.



Software RAID can't includ the system disk.

DRAGON EYE

DRAGON EYE is an application allows you to watch a game guide, tutorial, live match or tournament stream while playing a game. In the game, you can use hotkeys to control / adjust the window of video.



- **On / Off Switch** enables or disables Dragon Eye during your gaming sessions. Switch it on before you launch the game in order to watch video while playing.
- Video List allows you to select the video you want to watch, and also add videos or channels to the list. You simply paste the URL of your video or stream into the input bar and hit the +. Then your video or stream will be in the list and you can select it to view it with Dragon Eye.
- Size Settings allows you to select the size of the Dragon Eye video content displayed on-screen when you' re playing a game. There are three options available:
 - WQVGA (Small 400×240)
 - HVGAW (Medium 640×360)
 - WVGA (Large 768×480)
- **Position Settings** allows you to select where the Dragon Eye video needs to be displayed on screen. This way you can control where you want your video in-game, so you can place it on a place where no important game information is.
- **Help** If you want to watch the video tutorial for Dragon Eye or want to see if your game is supported, press this button and the help window will be shown.
- **Transparency Settings** allows you to set the transparency of your Dragon Eye video.
 - 0 = opaque | 100 = transparent.
- Hotkeys Information In this information screen you can find the hotkeys for Dragon Eye. There are three hotkeys:
 - Alt+F9 switches mouse focus between video window and game itself. (Direct interface to adjust progress bar, volume and other settings of video during the game)
 - Alt+F10 turns on/off video window .
 - Alt+F11 adjusts transparency of video clip.

NOTE: To customize hotkey, simply select the hotkey icon and then press the keys combination you want to use as a hotkey.

Killer Control Center

The Killer Control Center software installs with the Killer LAN driver. Once installed, the Killer Control Center icon shows on system tray (the right bottom corner of the screen). Mouse right click on the tray icon to show the application window.

In case no icon is shown on the system tray, it is possible to activate Killer Control Center manually by double clicking **Killer Control Center icon** on the desktop.



- **Overview** displays network traffic on your system in the form of a speed-o-meter at the top. And also list all applications/domains that are passing traffic.
- **Apps** displays currently using network bandwidth applications.
- Wifi Analyzer shows the Wireless network around you.
- Settings allows you to setup bandwidth. And also shows your ethernet setting information.

Configuring Bandwidth

Before using the Killer network for the first time, you should configure default Internet upload and download speed.

To configure bandwidth:

- 1. Select the **Settings** page in Killer Control Center.
- 2. Enter a value into the Download Speed field.
- 3. Enter a value into the Upload Speed field.
- 4. Check **OK** to allow the Killer Control Center to manage the bandwidth.

Nahimic 2

Nahimic 2 is designed to offer the best audio experience it contains 6 audio effects, 3 microphone effects, HD Audio Recorder2 and Sound Tracker.

Installation and Update

Nahimic 2 is included in the audio driver. If you need to install it or update it, please use the **Driver Disc** with your motherboard or download the driver from MSI's official website.

Audio Tab

From this tab, you can access all of Nahimic 2's audio effects, audio profiles and settings.



- **Display & Volume** displays the type of audio rendering device currently being used as output, as well as its current volume.
 - Mute mutes the current audio output device.
 - **Device properties** allows you to change the format, sample rate, bit rate and the channel gain of the current device (if these options are available for the current device). Clicks on this button and a device properties panel will show.
- **Profiles** allows you to adjust the 6 audio effects to your current listening experience.
 - Gaming allows you to choose an audio profile to fit your gaming experience.
 - Multimedia allows you to choose an audio profile to fit your everyday experience.
- Audio Effects allows you to separately control any of the 6 audio effects.
 - Bass Boost increases the energy in low frequencies up to +12 dB.
 - Virtual Surround
 - **Gaming and Movies** virtualizes the multichannel audio stream and downmixes it in order to retrieve a multichannel listening experience over your stereo headphones or speakers.
 - Music expands the stereo for a wider sound stage.
 - **Reverb** increases the feeling of space by applying different types of reverbs corresponding to different room sizes.
 - Treble Enhancer Increases the energy in high frequencies up to +12 dB.

- Smart Loudness maintains a constant volume for all elements of the audio experience to making them all sound softer, balanced or louder.
- Voice Clarity boosts the speech in movies, video games and incoming communication from +0 through +12 dB (0 to 100%).
- Reset Button restores the current profile to its default values.
- **On/Off Button** allows you to turn on and off all Nahimic 2's effects in one click.
- EQ Profile Page by clicking the arrow button, you can also access a second page that contains the x10 bands EQ and EQ profiles.



- EQ Profiles allows you to choose between 6 EQ profiles to fit your audio experience
- Custom EQ Profile you can change the x10 bands of the Custom EQ profile so as to make it fit your current needs.
- x10 bands EQ x10 bands EQ, from 32Hz to 16KHz.

Microphone Tab

From this tab, you can access all of Nahimic 2's microphone effects and settings.



- **Display & Volume** displays the type of audio recording device currently being used as input, as well as its current volume.
 - Mute mutes the current device.

- Device properties allows you to boost the volume and modify the left/ right balance of microphone. Clicks on this button and a device properties panel will show.
- **Microphone Loopback** turns the microphone loopback On/Off. In order to avoid any feedback (Larsen effect).
- Microphone Effects allows you to separately control any of the 3 microphone effects.
 - Voice Shaper applies a filter to the voice.
 - Voice Leveler levels the volume of your voice in order to avoid any saturation and maintains a constant and clear communication. Voice Leveler can be adjusted with a 0 to 100% slider.
 - Noise Reduction removes the remaining sound that the Noise Gate has left on top of your words and sentences.

HD Audio Recorder 2

From this tab, you can access the audio launchpad and HD Audio Recorder 2 settings.



- Audio Launchpad effects allows streamers to use prerecorded sounds during a livestream. These sounds can also be heard by viewers. This tool will allow you to create your true audio identity. That way, your livestreams will be more personal and animated. The Audio Launchpad is one of the fresh new features of Nahimic 2. As it's a feature designed for broadcasters, we included it in the HD Audio Recorder 2 page.
 - Pad Properties every pad can be customized by clicking the properties button that will appear in its bottom right when hovering over it with your mouse. On the Pad Properties panel you can choose:
 - The sound assigned to each pad.
 - The keyboard hotkey assigned to each pad.
 - The color assigned to each pad.
 - Config 1, 2 & 3 allows you to prepare 3 completely different configurations so as to adapt the Launchpad to the content you are streaming. Each configuration has 6 customizable pads. The 3 configurations are independent, meaning Config 1 cannot be used at the same time than Config 3.

• Control Page - by clicking the arrow button, you can access the control page.



- Audio Launchpad ON/OFF switches the Audio Launchpad on or off.
- HD Audio Recorder 2 The HD Audio Recorder 2 is, by default, automatically launched when a XSplit Gamecaster 2 recording session is detected. The launch of the HD Audio Recorder 2 enables HD audio processing over an XSplit Gamecaster 2 recording without any need for adjustments. The HD Audio Recorder supports XSplit Gamecaster 2.
- Pop-up message ON/OFF switches the pop-up message on or off.

Sound Tracker

The Sound Tracker is an FPS oriented feature that provides a visual indication localizing the source of the strongest sound while in a game. The Sound Tracker captions the 5.1 and 7.1 sound streams processed by your audio system, and is displayed in all applications and games using DirectX 9, 9c, 10 and 11. Please remember Sound Tracker is only available if you are using an audio device that supports Nahimic 2 effects.



- ON / OFF button and hotkey switches the Sound Tracker on or off.
- Hotkey use the CTRL + SHIFT + S to turn ON / OFF the Sound Tracker.
- 7.1 Audio Test launch a 7.1 audio sample allowing you to preview how the radar will react in your game.
- **Transparency** allows you to adjust the transparency of the Sound Tracker, making it look more or less discrete.
- Scale allows you to adjust the scale of the Sound Tracker, making it look bigger or smaller.

XSplit Gamecaster V2

XSplit Gamecaster is the newest product from SplitmediaLabs, the creators of XSplit Broadcaster, the world's most popular streaming application.

XSplit Gamecaster was designed to provide gamers with the simplest and most uncomplicated way to create high quality gameplay recordings and live streams. By utilizing the revolutionary in-game overlay, streamlined encoding, and social network features, you'll be sharing your gameplay to your family, friends, and followers in no time!

System Requirement

- Hardware specifications:
 - For HD 720p Recording/Streaming Core i5 CPU or equivalent
 - For HD 1080p Recording/Streaming Core i7 CPU or equivalent
 - 4 GB RAM minimum
 - 8 GB free hard disk space
 - GeForce/Radeon Class Graphics card, minimum Direct X hardware level 10.1
- Software specifications:
 - Windows[®] 7 SP1 32bit/ 64bit, Windows[®] 8.1 32bit/ 64bit
 - .NET Framework 3.5
 - DirectX 10.1 or better

Logging

After installing and activating XSplit Gamecaster V2, it will display a login dialogue. If you already have an account and password, fill your email and password into the form and click the **Login** button.

	New XSplit user?	Privacy Policy
*• • ·		
	[mail	
It Gamecaster		
sion 2.8.1607,2031		
	Register now	-
	or connect using	f 🗾

<u> Important</u>

When starting XSplit Gamecaster V2 on select MSI[®] gaming laptops, all-in ones or on machines that contain select MSI[®] motherboards or graphics cards, you will receive a free 6 month XSplit premium license that you can apply to an existing free account or to a new account. If you already have an XSplit account with a personal or premium license, then you can instead add 6 months to your license duration.

Registering an Account

If you don't have an XSplit account yet, click **Register now** on the login dialogue. When the user registration form appears, complete all the fields.

Learning stream and record

Refer to the Start page of XSplit Gamecaster V2 to learn how to stream and record your gameplay.



Tool Tip

When you click the question mark next to a feature name on the panel, a tooltip will show, describing the particular function of that item.



Inside the XSplit Gamecaster Overlay



- 1. Streaming/Recording Buttons Press Stream to start live streaming or Record to start recording.
- 2. Microphone/System Sound Control Pressing the microphone or system sound button will enable or disable the microphone or system sound.
- Webcam Controls To enable webcam controls, you must first select a camera/ webcam in the Settings Tab. Once you have selected a webcam, you can activate it by clicking on its icon in the XSplit Gamecaster V2 overlay.
- 4. Twitch Chat Controls If you' ve signed in to your Twitch.tv account, you' ll see a Twitch icon in the overlay. When you click on this icon, a window will open. This window is XSplit Gamecaster' s integrated chat system.

- Share Button If you authorize your Facebook, Twitter, and/or Google+ accounts, you can quickly share your stream URL and status update within the overlay.
- Annotations This feature of XSplit Gamecaster V2 allows you to draw directly onto your game play. You can activate annotation mode by clicking on the pencil button in the overlay.

Accounts Tab

- Live Streaming allows you to stream to a variety of live streaming services such as YouTube, Twitch, Ustream, Dailymotion, Niconico and also allows for custom RTMP streaming.
- Video Sharing allows you to directly upload recordings to YouTube from within the software.
- Social Network allows you to share your live stream or YouTube links to friends & followers on Google+, Facebook, and Twitter. To allow XSplit Gamecaster to post on your desired social network, click on the Authorize To Post On... button of your desired social network and enter your username and password to authorize.

🔀 XSplit Gam	ecaster - Settings						_ 0 ×
🏫 Start	🔎 Accounts	🖧 Settings	Screenshots	₽ Recordings	н	ello	
CAMERA		GAME	CAPTURE				
	<u>e</u>		STREAM SETTINGS RECORD SETTINGS SCREENSHOTS				
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(پ		EXTRA	s				
		BRB G	RAPHICS 🍈	✓ En All	able BRB Graphics ow audio in BRB Mode	O. CUSTOMIZE ·	
		USERI	USERNAME DISPLAY		Be Right Back!		
					NF Crowled Hole Split right con		

Settings Tab

- Stream Settings The default setting is Automatic mode. In Automatic mode, your stream settings are automatically determined by XSplit Gamecaster based on your computer and internet resources (this includes resolution, bitrate, codec, but frame is always set to 30). You can change to a different resolution by clicking on the dropdown arrow.
- Record Settings The default setting for recording is Original Resolution. This
 refers to the resolution of the game that's been set inside the game's video/
 graphics settings. You can change to a different resolution by clicking on the dropdown arrow.

- Microphone Settings In this region, you can select your desired microphone. What
 is shown in the list depends on what you have connected to your PC. If you don't
 see your desired device in the list, please make sure that it is detected and it is not
 disabled in your recording devices list in the Windows[®] Sound Menu (Start > Control
 Panel > Sound > Recording).
- Camera Settings In this region, you can select your desired camera. What is shown in the list depends on the cameras you have connected to your PC (Control Panel > Device Manager > Imaging Devices).
- BRB Graphics (Be-Right-Back Graphics) BRB Graphics are activated when you alt-tab or minimize your game. BRB Graphics will not work in Console Viewer mode. You can enter the BRB Graphics editor by clicking on the gear icon next to the BRB Graphics preview.

Recordings Tab

- Arranging Recordings In the Recordings Tab, you can view your recordings as thumbnails or in a listed format by clicking on the of the window. You can sort your recordings by name, date, length, and size by right clicking in the Recordings Tab.
- Opening Recordings Folder To open your recordings folder in Windows® Explorer, click on Open Folder.
- **Changing Recordings Location** To change the location of where your videos will be saved, click on the recordings folder location.
- Uploading video recordings to YouTube To upload to YouTube, you must first authorize your account in the Accounts Tab. After you have authorized your account, click on a recording and then click on the YouTube logo in the bottom right corner. A window will open and you will be able to fill out the title, description, category, tags, privacy, and you will be able to choose to allow or disallow embedding. Once you have entered the details for YouTube, press the Upload Now button.
- Sharing on Social Media Once a video has been uploaded, you can share the YouTube link on any social media accounts you have connected to XSplit Gamecaster. Simply click on the icon of the social media site you wish to share, and a window will appear where you can enter some details about your post before publishing your link. When you are done entering the details of your post, click Share Video to post it to your selected social media account.

Intel[®] Extreme Tuning Utility

Intel[®] Extreme Tuning Utility (Intel XTU) is a simple overclocking software for you to tune, test and monitor your system.



Views Settings Help

Monitoring 🔍 Settings 🛛 🔞 Help

- Views toggles to switche between Monitoring and Show All view.
- Settings opens the General Settings window.
- Help displays the help content for Intel XTU in a separate window.
- Navigation lists all of the major functions of Intel XTU.
 - System Information shows the details about your system.
 - App-Profile Pairing tunes automatically based on active application.
 - Manual Tuning changes system settings in a free form.
 - Stress Test tests the stability of your system.
 - Benchmarking analyzes and compares your system's performance against other system profiles.
 - Profiles manages sets of system settings.
- **Tuning Controls** displays the controls for changing the system settings in manual tuning. For stress tests and profiles, this area displays the settings for these features.
- **System Table** displays information about the current system settings and a summary of your changes.
- System Graphs shows measured system values over a period of time. The system graphs update live as changes are detected in the system. You can customize the system graphs to show the data you need for your overclocking strategy in the system graphs preferences.
- System Monitors shows the range of the value, averages, and the current value. The monitors change color if the monitored values fall into warning or critical zones.

SteelSeries Engine 3

SteelSeries Engine 3 is a unified platform built to support all of SteelSeries products. It can deploy your saved device settings automatically when switching between your favorite games or applications.

After installation the SteelSeries Engine background processes will start and the interface will open automatically.



- My Gear all of your SteelSeries devices in one place.
 - Device Cards all of your SteelSeries devices are easily accessible from the My Gear tab, regardless of type, connection status, or which applications they are assigned to.
- Library quickly set up your configurations to autolaunch with an application.
 - Application Configuration you can choose to have configurations deploy automatically whenever you use a specific game or application. Add any number of applications to your library and SteelSeries Engine 3 will seamlessly change the configurations of your devices as you switch between them.

Configuration Windows

Configuration Windows are unique to their devices and each of them includes a collapsible **Configuration List Panel** of all the configurations for that device. You can create a new configuration by selecting the **New** button at the bottom of the Configuration List Panel.



Configuring Your Devices

You can custom configurations for SteelSeries devices in their Configuration Windows. The top left displays the name of the configuration you are viewing, the body features widgets for customizing various functions of the device, and at the bottom are Save/ Revert buttons, a Live Preview toggle, and a button to open/close the collapsible Configuration List Panel.

Widgets	Widgets Toggle	Widgets
DEFAULT	New York, - 1	
4.050		Handhailte an Airthean Airthea
		Incist of the Incist
Configuration W	indows Toggle Live Preview Re	evert/ Save Button

- Widgets allow you to customize a certain aspect of your device.
- Widgets Toggle allows you to toggle Widgets .
- Configuration Windows Toggle allows you to toggle the Configuration Windows.
- Live Preview gives you the full experience of your configuration's look, feel, and sound while you are editing it.
- Revert/ Save Button configuration changes are not written to the database until you select Save. This gives you freedom to experiment, knowing that you can select Revert to undo changes.

Tool Tip

When you click the question mark next to a feature name on the panel, a tooltip will show, describing the particular function of that item.



Question Mark

CPU-Z

 $\ensuremath{\mathsf{CPU-Z}}$ is an utility that gathers information on some of the main devices of your system.

CPU-Z _ X					
CPU Cache	s Mainboard Mem	ory SPD	Graphics Bend	n About	
Processor -					
Name	Intel Cor	re i5 6400	67 4 0	IG G SERIES	
Code Name	Skylake	Max TDP	65.0 W	<u> </u>	
- Package	Socket 1	1151 LGA		2. m	
Technology	14 nm Core V	oltage 0	.752 V		
Specification	Intel(R) Core	(TM) i5-6400	CPU @ 2.70GHz (ES)	
Family	6 Mo	odel E	Stepping	3	
Ext. Family	6 Ext. M	odel 5E	Revision	R0	
Instructions	MMX, SSE, SSE2, SSE AES, AVX, AVX2, FMA	E3, SSSE3, S A3	SE4.1, SSE4.2, EM	164T, VT-x,	
Clocks (Core	#0)	Caches -			
Core Speed	798.2 MHz	L1 Data	4 x 32 KBytes	8-way	
Multiplier	x 8.0 (8 - 33)	L1 Inst.	4 x 32 KBytes	8-way	
Bus Speed	99.8 MHz	Level 2	4 x 256 KBytes	4-way	
Rated FSB		Level 3	6 MBytes	12-way	
Selection	Processor #1	Cor	es 4 Thre	ads 4	
Version 1.75.0		Vali	date	ок	

- CPU Tab shows processor name, code name, package, specification, instructions sets, core speed and cache levels.
- Caches Tab shows extended information related to the cache capabilities.
- Mainboard Tab shows motherboard manufacturer, model name, chipset, BIOS version and graphic interface.
- Memory Tab shows memory type, memory size, channels, memory frequency.
- **SPD Tab** shows specifications relating to each memory module connected to the motherboard, including the size, type and frequency.
- Graphics Tab shows GPU name, code name, core speed, memory size, and memory type.
- Bench Tab allows you to run either a benchmark or a stress test on your processor.
- About Tab shows the CPU-Z version, Windows version, DirectX version and allows you to save the report file.

RAID Configuration (optional)

Below are the different types of a RAID.

- **RAID 0** breaks the data into blocks which are written to separate hard drives. Spreading the hard drive I/O load across independent channels greatly improves I/O performance.
- **RAID 1** provides data redundancy by mirroring data between the hard drives and provides enhanced read performance.
- **RAID 5** provides data striping at the byte level and also stripe error correction information. This results in excellent performance and good fault tolerance.
- **RAID 10** uses four hard drives to create a combination of RAID 0 and 1 by forming a RAID 0 array from two RAID 1 arrays.

	RAID 0	RAID 1	RAID 5	RAID 10
Minimum # drives	2	2	3	4
Data protection	None	Excellent	Excellent	Excellent
Read performance	Excellent	ок	Good	OK
Write performance	Excellent	Good	ОК	Good
Capacity utilization	100%	50%	67%~(1-1/n)	50%

RAID level comparison

Using Intel[®] Rapid Storage Technology Option ROM

First, you need to set the **SATA mode** to **RAID** in BIOS to create, delete and reset RAID volumes. To enter the IRST Option ROM, reboot and press **Ctrl + I** keys to enter the IRST Option ROM during the POST, the following window will appear.

	[MA	IN MENU]
1. Create F	AID Volume	A. Recovery Volume Options
2. Delete R	AID Volume	5. Acceleration Options
3. Reset Dis	ks to Non-RAID	6. Exit
	DISK / VOLUM	IE INFORMATION]
RAID Volumes :		
None defined.		
Physical Devices :		
Port Device Model	Serial #	Size Type/Status (Vol ID)
1 XXXX-XXXXXX		XXX.XGB Non-RAID Disk
2 XXXX-XXXXXX		XXX.XGB Non-RAID Disk
[↑↓] - Seleci	[ESC] - Exit	[ENTER] - Select Menu

M Important

The following procedure is only available with a newly-built system or if you are reinstalling your OS. It should not be used to migrate an existing system to RAID.

Creating s RAID Volume

 Select option Create RAID Volume and press Enter key. The following screen appears.

		VOLUME MENU]	
	Name :	Volume0	
	RAID Level :	RAID1(Mirror)	
	Disks :	Select Disks	
	Strip Size :	N/A	
	Capacity :	XXX.X GB	
	Sync :	N/A Overta Matema	
		Create Volume	
	-	r HELP 1	
	RAID 1 : Mirror	s data (redundancy).	
[↑↓] - Change	[TAB] - Next	[ESC] - Previous Menu	[ENTER] - Select

- 2. Specify a RAID Volume name and then press the **Tab** or **Enter** key to go to the next field
- Use the ↑↓ ←→ arrow keys to select the RAID level best suited to your usage model in RAID Level.
- 4. In the Disk field, press Enter key and use Space key to select the disks you want to create for the RAID volume, then click Enter key to finish selection. This field will become available according to the selected RAID level.
- 5. Select the strip size for the RAID array by using the ↑ upper arrow or ↓ down arrow keys to scroll through the available values, and pressing the Enter key to select and advance to the next field. The available values range from 4KB to 128 KB in power of 2 increments. The strip size should be chosen based on the planned drive usage. Here are some typical values: RAID0 -128KB / RAID10 - 64KB / RAID5 - 64KB.
- 6. Select the capacity of the volume in the **Capacity** field. The default value is the maximum volume capacity of the selected disks.

A Important

Since you want to create two volumes, this default size (maximum) needs to be reduced. Type in a new size for the first volume. As an example: if you want the first volume to span the first half of the two disks, re-type the size to be half of what is shown by default. The second volume, when created, will automatically span the remainder of two hard drives.

7. Go to the **Create Volume** field and press **Enter**, a WARNING message will appear for you to confirm if you are sure to create the RAID volume. Press **Y** to continue.

Removing a RAID Volume

Here you can delete the RAID volume, but please be noted that all data on RAID drives will be lost.

M Important

If your system currently boots to RAID and you delete the RAID volume in the IRST Option ROM, your system will become unbootable.

Select option **Delete RAID Volume** from the main menu screen and press **Enter** key to select a RAID volume for deletion. Then press **Delete** key to delete the selected RAID volume. The following screen appears.



Press **Y** key to accept the volume deletion.

Resetting Disks to Non-RAID

Select option **Reset Disks to Non-RAID** from the main menu screen and press **Enter** to delete the RAID volume and remove any RAID structures from the drives. Use the **Space** key to select the disks and press **Enter** key. A confirmation sentence will appear below, and then press **Y** key to accept the selection

Γ			[MAIN MENU]	
	1.	Create RAID Volume		olume Options
		Resetting R to a non-R/	AID disk will remove its RAID structures and AID disk.	revert it
N			: Resetting a disk causes all data on the disk to (This does not apply to Recovery volumes)	be lost.
P	Por	t Drive Model Serial	# Size Status	
. P	1	XXXX-XXXXXXXX	XXXXXXXXXXXXXXX XXXXX	B Member Disk
1 2	2	XXXX-XXXXXXXXXX	XXXXXXXXXXXXXXX XXXXXG	B Member Disk
			Select the disks that should be rese	t.
		[↑↓] - Previous/ Next	[SPACE] - Selects [ENTER] - Selection Comp	lete
	1	↑11-Select	[ESC] - Exit [ENTE	R1 - Select Menu



- You will lose all data on the RAID drives and any internal RAID structures when you perform this operation.
- Possible reasons to Reset Disks to Non-RAID could include issues such as incompatible RAID configurations or a failed volume or failed disk.

Recovery Volume Options

Select option **Recovery Volume Options** from the main menu screen and press **Enter** to change recovery volume mode. The following screen appears:



Recovery mode will change from Continuous Update to On-Request after you enable **Only Recovery Disk** or **Only Master Disk**.

Degraded RAID Array

A RAID 1, RAID 5 or RAID 10 volume is reported as degraded when one of its hard drive members fails or is temporarily disconnected, and data mirroring is lost. As a result, the system can only utilize the remaining functional hard drive member. To re-establish data mirroring and restore data redundancy, refer to the procedure below that corresponds to the current situation.

raie ID 0) Volumes Name Volume0	Level RAID 1(Min	ror)	Strip N/A	Size XXX.XGB	Status Degraded	Bootable Yes				
Phys	ical Disks:										
Port	Device Model		Serial #			Size	Туре	/Status(Vol ID)			
	XXXXXXXXXXXXX		XXXXXXXXXXXXXX			XXX.XGB					
2	XXXXXXXXXXXXXX		XXXXXXXXXXXXXX			XXX.XGB					
Press <ctrl-i> to enter Configuration Utility.</ctrl-i>											

Missing Hard Drive Member

- 1. Power off.
- 2. Reconnect the hard drive.

3. Reboot to Windows[®]; the rebuild will occur automatically.

Failed Hard Drive Member

- 1. Power off.
- 2. Replace the failed hard drive with a new one that is of equal or greater capacity.
- 3. Reboot the system to IRST Option ROM by press Ctrl + I keys during the POST.
- 4. Select the port of the destination disk for rebuilding, and then press Enter.



- 5. Exit IRST Option ROM, reboot to Windows®.
- 6. When prompted to rebuild the RAID volume, click Yes.
- The Intel® Rapid Storage Technology application will be launched. Right-click the new hard drive and select Rebuild to this Disk. The Rebuild Wizard will be launched which will guide you through the process of rebuilding to the new hard drive.



M.2 PCIe SSD RAID

You can create M.2 PCIe SSD RAID volume with UEFI BIOS.

Creating a M.2 PCIe SSD RAID Volume

- 1. Access the BIOS setup
- 2. Switch to Advanced Mode by pressing F7 key.
- 3. Go to Settings > Advanced > Windows OS Configuration.
- 4. Set Windows 8.1/10 WHQL Support to Enabled.
- 5. Go to Settings > Advanced > Integrated Peripherals.

Setting\Advanced\Integrated Peripherals	
SATA Configuration	
SATA Mode	[RAID Mode]
M2_1 Pcie Storage Remapping	[Enabled]
M2_2 Pcie Storage Remapping	[Enabled]

- 6. Set SATA Mode to RAID Mode.
- 7. Set both M2_1 Pcie Storage Remapping and M2_2 Pcie Storage Remapping to Enabled.
- 8. Press F10 to save and exit and then press the Enter key to select Yes.
- 9. Reboot the system and access the BIOS setup again.
- 10. Switch to Advanced Mode by pressing F7 key.
- 11. Go to Settings > Advanced > Intel(R) Rapid Storage Technology.
- 12. Select Create RAID Volume and press Enter key.

Create RAID Volume	
Name:	Volume1
RAID Level:	[RAID0(Stripe)]
Select Disks:	
PCIe, XXXXX XXXXXXXXXXX, XXXGB	[X]
PCIe, XXXXX XXXXXXXXXXX, XXXGB	[X]
Strip Size:	[XXKB]
Capacity (MB):	XXXXXX

- **13.** Enter in a volume name.
- 14. Select the RAID level.
- 15. Use Space key to select the both PCIe SSDs.
- If creating RAID 0, select the Strip Size; it is recommended that it be left at the default value.
- 17. Go to the Create Volume field and press Enter.

Removing a M.2 PCIe SSD RAID Volume

Here you can delete the M.2 PCIe SSD RAID volume, but please be noted that all data on M.2 PCIe SSDs will be lost.

M Important

If your system currently boots to M.2 PCIe SSD RAID and you delete the RAID volume in the UEFI BIOS, your system will become unbootable.

To remove the M.2 PCIe SSD RAID volume:

- 1. Access the BIOS setup.
- 2. Switch to Advanced Mode by pressing F7 key.
- 3. Go to Settings > Advanced > Intel(R) Rapid Storage Technology.
- 4. Select a RAID volume and press Enter key.
- 5. Go to the Delete field and press Enter. The following screen appears

\RA	ID VOLUME INFO\ a	
	Delete	
	Delete the RAID volume? ALL DATA ON VOLUME WILL BE LOST!	
>	Yes	
>	No	

6. Go to the Yes field and press Enter key to accept the volume deletion.

Troubleshooting

Before sending the motherboard for RMA repair, try to go over troubleshooting guide first to see if your got similar symptoms as mentioned below.

The power is not on.

- Connect the AC power cord to an electrical outlet securely.
- Check if all ATX power connectors like ATX_PWR1, CPU_PWR1 are connected from the power supply to the motherboard?
- Some power supply units have a power button on the rear side, make sure the button is turned on.
- Check if the power switch cable is connected to JFP1 pin header properly.
- Verify the Clear CMOS jumper JBAT1 is set to Keep DATA.
- Test with another known working power supply of equal or greater wattage.

The power is on, but no signal to monitor

- Connect the monitor power cord to a electrical outlet securely.
- Make sure the monitor is turned on.
- Select different inputs on the monitor.
- If 3 long beeps are heard, remove all memory modules and try to install only one memory module in the DIMMA2 slot first and then restart the computer.
- If 1 long 2 short beeps are heard, remove and reinstall the graphics card and then restart the computer.
- Test with another known working graphics card.

The computer does not boot after updating the BIOS

- Clear the CMOS.
- Use the secondary BIOS to bootup the system (Only for motherboard with Dual BIOS)

Lost BIOS password

• Clear the CMOS, but that will cause you to lose all customized settings in the BIOS.

There is no audio

- Adjust the volume.
- Connect the speakers/headphones to audio ports on the motherboard rear IO panel.
- Remove secondary speakers/ headphones, HDMI cables, USB audio devices.
- Test with another known working speaker or headphone.

There is no network

- Make sure the network chipset driver has been installed.
- Verify if the network cable is properly connected and make sure the LAN port LEDs are properly illuminated.
- Verify your TCP/IP settings.
- Restart or reset your router.
- Test with another known working LAN cable.

The USB device is not working

- Make sure your USB drive driver has been installed.
- Verify if USB device is listed in Windows[®] Device Manager.
- Connect the USB device to other USB port on the motherboard rear IO panel.

Regulatory Notices

FCC Compliance Statement

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- · Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into 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.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



Tested to comply with FCC standards FOR HOME OR OFFICE USE

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.

CE Conformity

Hereby, Micro-Star International CO., LTD declares that this device is in compliance with the essential safety requirements and other relevant provisions set out in the European Directive.

Battery Information

European Union:



Batteries, battery packs, and

accumulators should not be disposed of as unsorted household waste. Please use the public collection system to return, recycle, or treat them in compliance with the local regulations.

California, USA:



The button cell battery may contain perchlorate material and requires special handling when recycled or disposed of in California.

CAUTION: There is a risk of explosion, if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.

Chemical Substances Information

In compliance with chemical substances regulations, such as the EU REACH Regulation (Regulation EC No. 1907/2006 of the European Parliament and the Council), MSI provides the information of chemical substances in products.

WEEE (Waste Electrical and Electronic Equipment) Statement

ENGLISH

To protect the global environment and as an environmentalist, MSI must remind you that...

Under the European Union ("EU") Directive on Waste Electrical and Electronic Equipment, Directive 2002/96/ EC, which takes effect on August 13,



2005, products of "electrical and electronic equipment" cannot be discarded as municipal wastes anymore, and manufacturers of covered electronic equipment will be obligated to take back such products at the end of their useful life. MSI will comply with the product take back requirements at the end of life of MSI-branded products that are sold into the EU. You can return these products to local collection points.