COLORFUL®

Intel 600 Series BIOS

User Guide

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What is BIOS?

BIOS, or the basic input/output system, is a program that is configured by the CMOS chip on the motherboard. BIOS maintains setup parameters for each hardware device on the system and performs tasks such as Power-On Self-Test (POST), saving system settings and loading the operating system. Users can use BIOS setup programs to customize specific system parameters to make the PC work properly or perform specific tasks based on their needs.

Power to store the CMOS data is provided by the lithium battery on the motherboard, so the configurations set by the BIOS aren't lost when the power is turned off. The PC can read these settings when the power is turned back on.

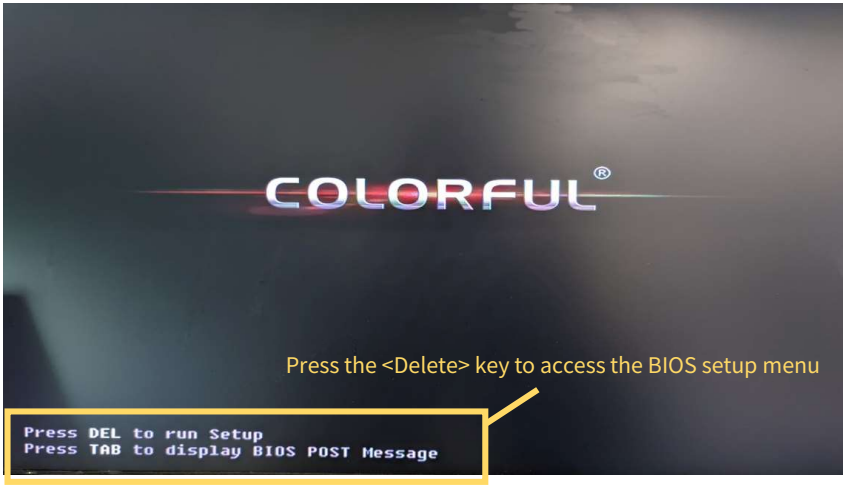
Important

- The default BIOS settings are usually sufficient for most computers. Changing the BIOS settings incorrectly may cause the system to become unstable or fail to boot. We do not recommend changing the BIOS settings unless it is necessary.
- You should not update your BIOS program if your computer is stable and normal to prevent system failure and data loss.
- You should only perform operations such as BIOS updates and setup under the guidance of a professional.

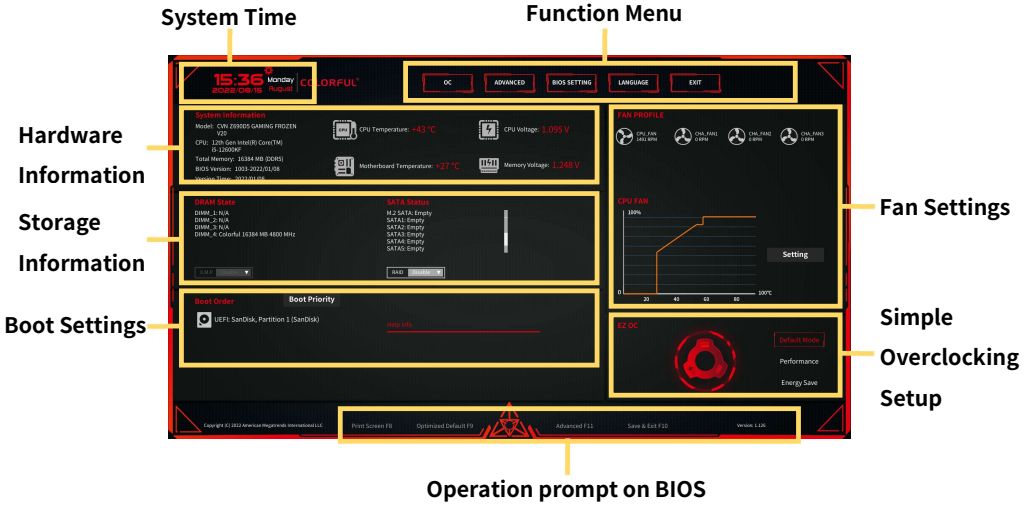
BIOS Setup

Entering BIOS

When the message: *Press DEL to run Setup* appears on the screen during the boot or reboot process, press the <Delete> key to access the BIOS setup menu.



BIOS Setting Mode

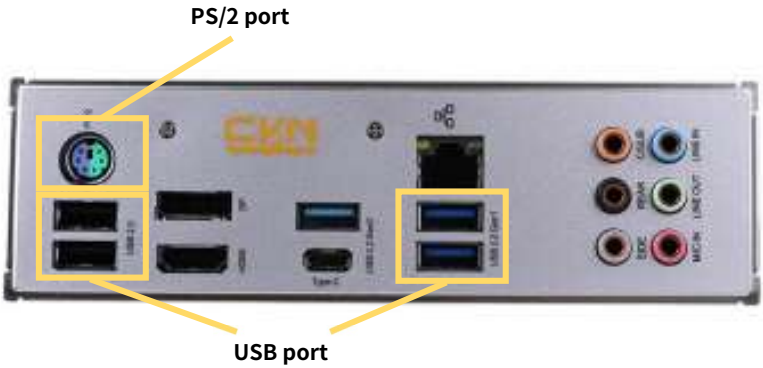


BIOS programs are updated constantly. Therefore, this BIOS program's interface may differ from the BIOS interface on your motherboard. This is for your reference only.

BIOS Operation Methods

Mouse: Plug the mouse into the USB port (or PS/2 port) on the motherboard, move the mouse pointer, and click the mouse button to access the BIOS menu.

Keyboard: Plug the keyboard into the USB port (or PS/2 port) on the motherboard and press the key on the keyboard to access the BIOS menu.

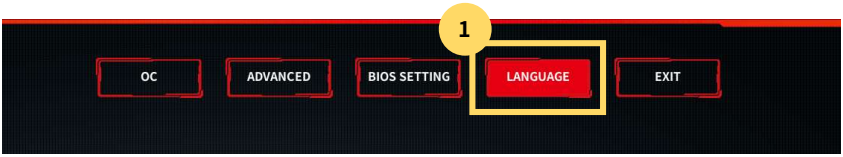


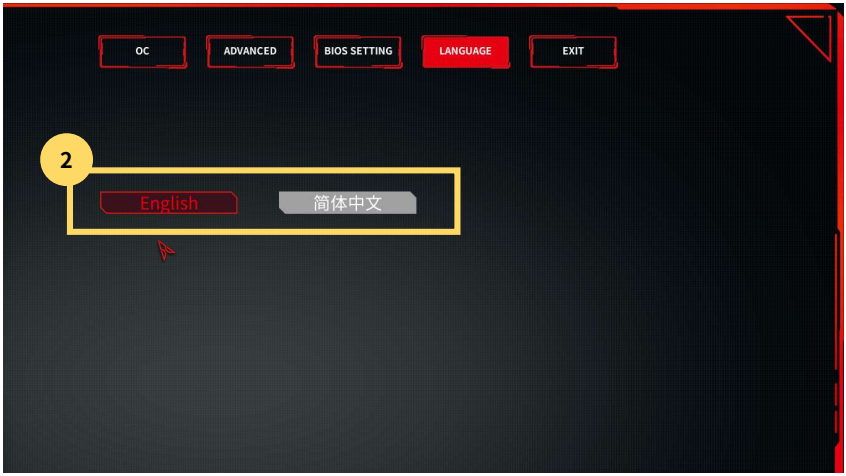
BIOS Function Keys

<←><→>	Select Left/Right
<↑><↓>	Select Up/Down
<+><->	Add/Subtract Value
<Enter>	Confirm / Enter Function List
<Esc>	Exit / Revert to the Previous Menu
<F1>	Help List
<F8>	BIOS Print Screen
<F9>	Load Optimized Defaults
<F10>	Save Settings and Exit
<F11>	Enter Advanced Mode

Language Setting

Select the Language tab in the BIOS function menu to enter the BIOS language setting menu.





Boot Order

You’ ll need to configure the boot order when installing a system or changing the system boot disk from a USB flash drive.

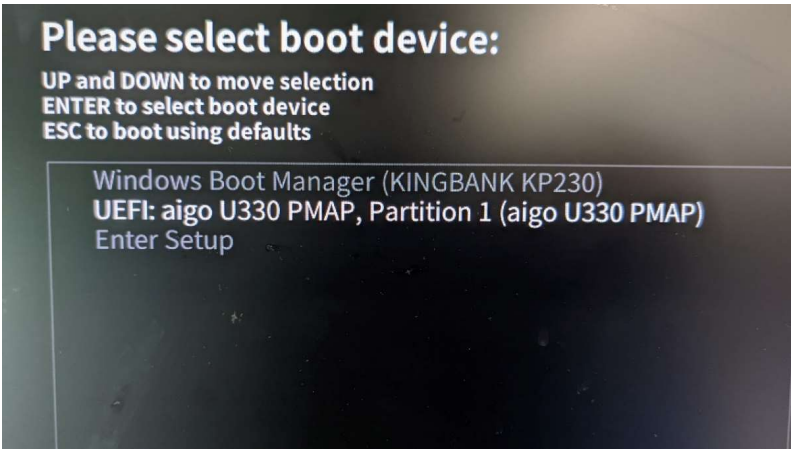
Use the following steps to configure the boot order:

Turn on or reboot the PC.

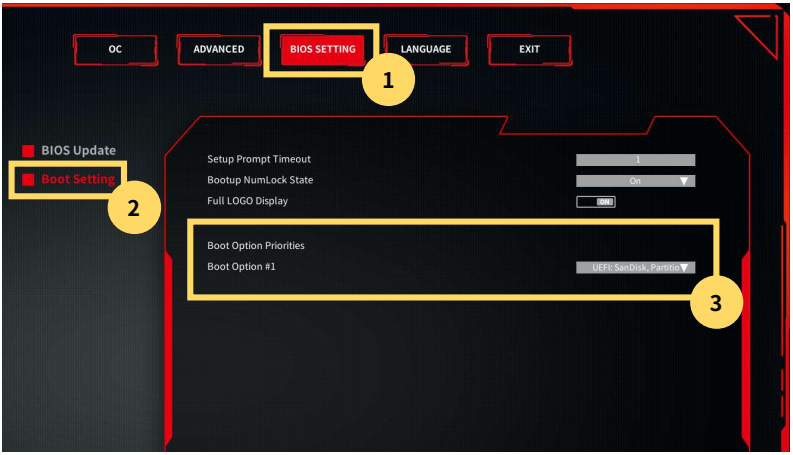
Press F11 to enter the boot device quick-switch screen.

Press UP and DOWN to move selection.

Press ENTER to select boot device.



Or on the BIOS menu, select BIOS Function ⇨ Boot Setting and set the priority of boot devices.



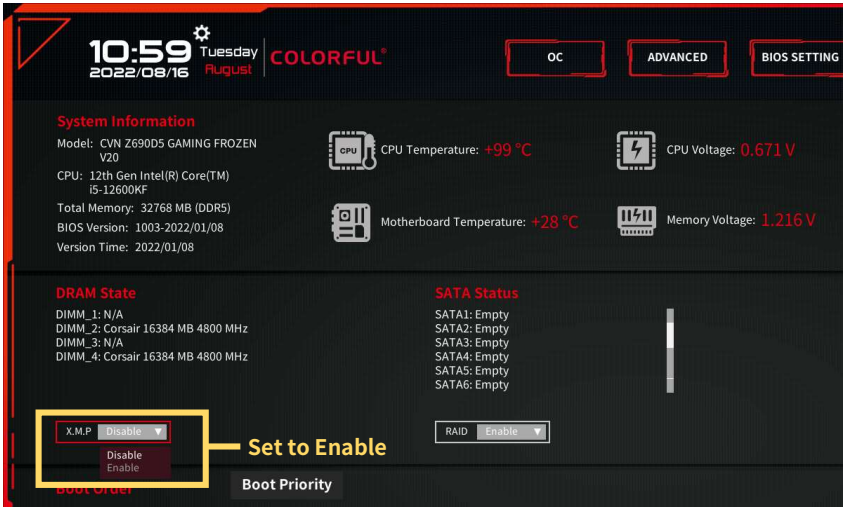
XMP

When installing memory in a system, there is a set of standardized speeds/timings your memory will run at. XMP can detect the optimal overclocking information installed in the SPD and automatically applies those changes to enhance the performance of your PC.

Enabling the XMP function can improve the performance of RAM and usually does not affect the stability of your PC. It is recommended to enable it.
Your motherboard or memory may not support this feature if the option is not available in the BIOS, or if the memory frequency or performance is not improved when it is enabled.

How to enable XMP

The X.M.P enabled option can be found in the Storage Information section of the main BIOS page. Select Enable, press F10 to save the change, then the XMP function will be activated.



OverClocking

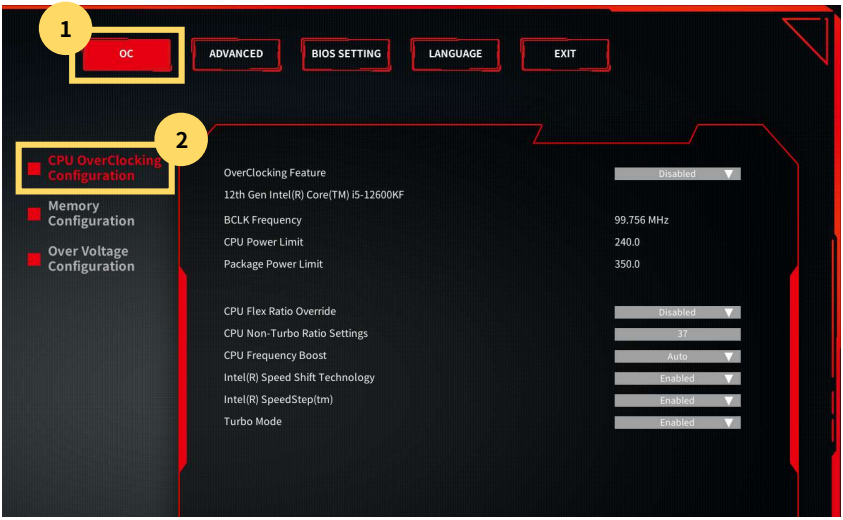
Important

- Whether the system will perform correctly at the frequency or voltage you choose depends on the overall configuration. Please note that the incorrect frequency and voltage may shorten the lifespan or cause severe damage to CPUs, chipsets, memory, power supplies, and other hardware.
- We do not recommend that you arbitrarily adjust the BIOS overclocking related options because inaccurate settings may result in system instability.
- If the system fails to boot due to incorrect overclocking settings, you can try restoring the BIOS default settings.

CPU OverClocking Configuration

This menu allows you to configure the parameters for overclocking the CPU.

Path for setting CPU overclocking: OverClock CPU⇨CPU OverClocking Configuration.



OverClocking Feature

Enable or disable the CPU OverClocking function. This function is only available when the motherboard and the CPU both support overclocking.

[Enabled] Enables CPU OverClocking function.

[Disabled] Disables CPU OverClocking function.

CPU Flex Ratio Override

Enables or disables the CPU Flex Ratio function.

[Enabled] Enables CPU Flex Ratio function.

[Disabled] Disables CPU Flex Ratio function.

CPU Non-Turbo Ratio Settings

Sets CPU Ratio after enabling CPU Flex Ratio Override. Sets the value between the CPU default minimum multiplier and the maximum Non-Turbo multiplier.

Intel® Speed Shift Technology

Enable or disable Intel® Speed Shift Technology. This feature reduces the time it takes for the processor frequency to rise, resulting in faster system response.

[Enabled] Enables Intel® Speed Shift Technology.

[Disabled] Disables Intel® Speed Shift Technology.

Intel SpeedStep®

Enable or disable Intel SpeedStep® Technology. It can reduce CPU power consumption and heat production by dynamically altering CPU frequency and core voltage based on CPU load.

[Enabled] Enables Intel SpeedStep® Technology.

[Disabled] Disables Intel SpeedStep® Technology.

Turbo Mode

Enable or disable Turbo mode. This item is only functional if the CPU supports Turbo mode.

[Enabled] Enables CPU Turbo Mode.

[Disabled] Disbales CPU Turbo Mode.

Core Max OC Ratio

Sets the maximum overclocking ratio for the CPU core. The allowable range is 0-255.

ATOM Core Max OC Ratio

Sets the maximum overclocking ratio for the ATOM core. The allowable range is 0-255.

CPU BCLK OC Frequency

Sets the overclocking frequency for the CPU BCLK. The allowable range is 1-100MHz. Modifications must be saved and restarted to take effect.

CPU Power Limit

Sets the maximum power consumption limit to CPU. If the value input is 0, it will run the default value. The unit of the value is 1/1000W. For example, the value of 12500 equals 12.5W.

Package Power Limit

Sets the maximum power supply limit to CPU. If the value input is 0, it will run the default value. The unit of the value is 1/1000W. For example, the value of 12500 equals 12.5W.

AC Loadline

Sets the CPU AC load-line value. Higher value loads the higher CPU voltage that could stabilize the system. Auto is recommended. When the value input is 0, it will run the default value.

DC Loadline

Sets the CPU DC load-line value. Higher value loads the higher CPU voltage that could stabilize the system. Auto is recommended. When the value input is 0, it will run the default value.

IA ICC Unlimited Mode

Enable or disable IA ICC Unlimited mode. Once enabled, the IA ICC maximum value will be set to the maximum ICC current of 512A.

[Enabled] Enables IA Unlimited mode.

[Disabled] Disables IA Umlimited mode.

IA ICC Max Current Limit Override

Sets max current limit override to IA voltage regulator.

TjMax Offset

Sets the maximum CPU temperature limit for BIOS.

Thermal Velocity Boost

Enables or disables the automatic voltage reduction function generated by Thermal Velocity Boost.

[Enabled] Enables Thermal Velocity Boost function.

[Disabled] Disables Thermal Velocity Boost function.

TVB Voltahe Optimizations

Enables or disables the TVB (Thermal Velocity Boost) voltage optimization for processor.

[Enabled] Enables TVB voltage optimization function.

[Disabled] Disables TVB voltage optimization function.

Ring

Ring Max OC Ratio

Sets maximum overclocking ratio for the ring.

Ring Voltage Mode

[Adaptive] Effective in Turbo mode.

[Override] Use the set ring voltage at any frequency.

Ring Extra Turbo Voltage

Sets the extra Turbo voltage for Turbo mode.

Ring Voltage Offset

Sets offset voltage to CPU ring. Setting range is 0-2000MV.

Offset Prefix

[+] Sets the ring voltage offset to positive offset.

[-] Sets the ring voltage offset to negative offset.

Ring Down Bin

[Enabled] Disable the Max Ring Ratio

[Disabled] Enable the Max Ring Ratio

Min Ring Ratio Limit

Sets the minimum ratio limit for the ring.

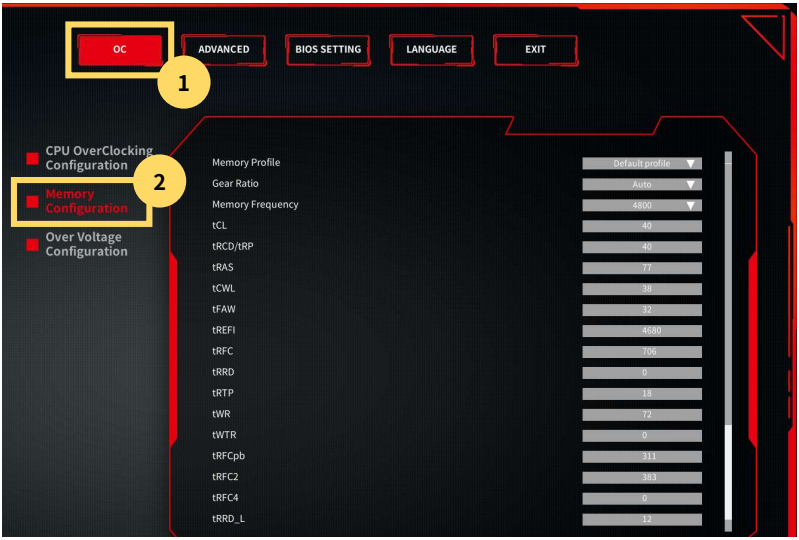
Max Ring Ratio Limit

Sets the maximum ratio limit for the ring.

Memory Configuration

Sets memory operating parameters to achieve memory overclocking.

Advanced Memory setting path: OverClocking ⇨ Advanced Memory Settings



Memory Profile

[Default Profile] Memory runs with default parameters.

[Custom Profile] Allows users to customize memory parameters such as memory frequency. The stability of will be constrained by the hardware properties of the memory.

[XMP Profile 1] XMP (Extreme Memory Profile) is the overclocking technology provided by the memory module. This item is only available when the installed memory module supports XMP.

Gear Ratio

Sets the ratio of the CPU memory controller to the memory operating frequency.

[0] Auto

[1] Gear 1. Sets the ratio of the CPU memory controller to memory operating frequency as 1:1. In this case, the memory controller works synchronously with the memory, memory efficiency are maximized and delay are minimized.

[2] Gear 2. Sets the ratio of the CPU memory controller to memory operating frequency as 2:1. This gear reduces the CPU memory controller frequency by decreasing the CPU memory operating frequency so that the memory is not limited by the memory controller, making it easier to overclock the memory.

[4] Gear 4. Sets the ratio of the CPU memory controller to memory operating frequency as 4:1. further increasing the possibility of memory overclocking.

Memory Frequency

Sets the memory frequency parameters. Memory overclocking capabilities are determined by the hardware attributes of memory. Improper settings may cause the system to fail to boot. Please proceed with caution.

tCL

Sets latency time for CAS(Column Address Strobe).

tRCD/tRP

Sets the RAS to CAS delay time.

tRAS

Sets RAS(Row Address strobe) active time.

tCWL

Sets CAS write latency time.

tFAW

Sets the time window in which four activities are allowed the same rank.

tREFI

Sets the REFI time.

tRFC

Sets the refresh to active/ refresh cycle time.

tRRD

Sets the RAS to RAS delay time.

tRTP

Sets read to precharge command delay time.

tWR

Sets the write recover time.

tWTR

Sets the write to read delay time.

tRRD_L

Sets the RAS to RAS delay time in different bank of the same rank.

tWTR_L

Sets the internal write transaction to internal read command time.

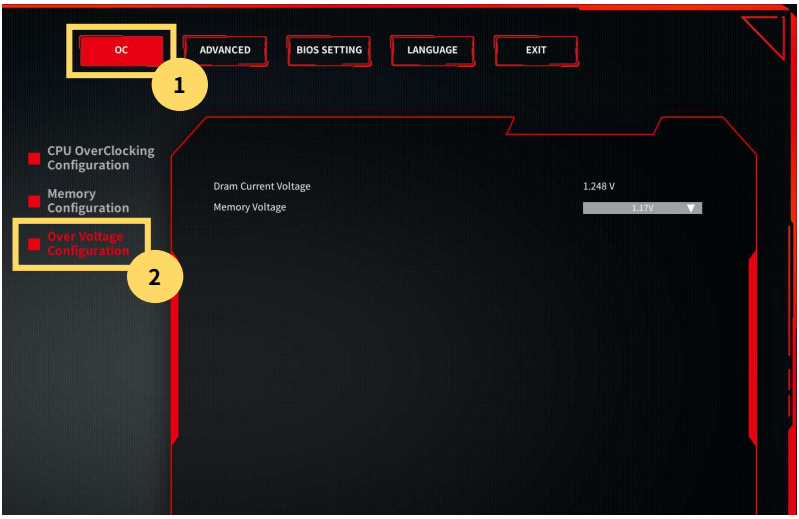
tCCD_L

Sets CCD time.

Over Voltage Configuration

Sets the operating voltage of the CPU and memory.

Path to the Over Voltage Configuration: OverClock ⇨ Over Voltage Configuration



CPU Currency Voltage

Displays the current CPU voltage value.

Offset Prefix

[+] Set the CPU voltage offset value to positive offset.

[-] Set the CPU voltage offset value to negative offset.

CPU Core Voltage Offset

[Auto] Maintain the default system status.

[Value] Set the CPU voltage offset.

CPU Core Voltage Mode

[Adaptive] Effective in Turbo mode

[Override] Voltage settings override the core voltage at all CPU frequencies.

CPU Core Voltage Target Override

Sets to provide extra core Turbo voltage when the CPU is in Turbo mode.

Atom L2 Voltage Mode

[Adaptive] Effective in Turbo mode.

[Override] Voltage settings override the atom core voltage at all CPU frequencies.

Atom L2 Extra Turbo Voltage

Sets to provide extra atom core Turbo voltage when the CPU is in Turbo mode.

Atom L2 Voltage Offset

Sets the atom core voltage offset. The value range is 0-500mV.

Offset Prefix

[+] Set the CPU atom core voltage offset value to positive offset.

[-] Set the CPU atom core voltage offset value to negative offset.

SA Voltage Mode

[Adaptive] Effective in Turbo mode.

[Override] Voltage settings override the SA voltage at all CPU frequencies.

SA Extra Turbo Voltage

Sets to provide extra SA Turbo voltage when the CPU is in Turbo mode.

SA Voltage Offset

Sets the SA voltage offset.

Offset Prefix

[+] Set the CPU SA voltage offset value to positive offset.

[-] Set the CPU SA voltage offset value to negative offset.

DRAM Current Voltage

Displays the value of the DRAM current voltage.

Memory Voltage

[Auto] Sets the DRAM voltage to default.

[Value] Set the memory voltage manually.

Advanced

Advance

Onboard Devices

Onboard LAN Controller

[Enabled] Enables onboard LAN controller chip.

[Disabled] Disables onboard LAN controller chip.

PXE Boot ROM

[Disabled] Disables PXE boot.

[UEFI] Enables UEFI mode for PEX boot.

[Legacy] Enables Legacy mode for PEX boot.

HD Audio Controller

[Enabled] Enables HD audio controller.

[Disabled] Disables HD audio controller.

HDMI Codec Control

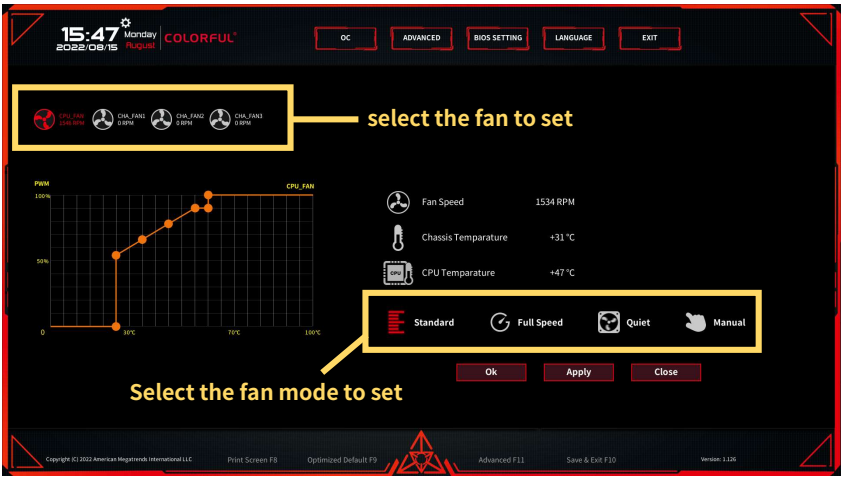
[Enabled] Enables HDMI codec control.

[Disabled] Disables HDMI codec control.

Smart FAN

CPU_Fan Configuration

To enter the Fan Configuration, press the Fan Setting on the BIOS Setup. Next, select the fan you wish to configure and switch the mode to adjust the fan speed.



CPU_Fan Mode

[Standard Mode] When the CPU temperature is below 30 degrees, the fan speed will be 0. When it is above 30 degrees, the fan speed will increase linearly with the temperature. When the CPU temperature is higher, the fan will run at full speed.

[Full Mode] The fan will run at full speed regardless of the temperature of the CPU. This configuration will keep the overall system cooler, but slightly louder.

[Quiet Mode] The fan will run at 10% speed regardless of the temperature of the CPU. This configuration is set to keep the overall system quieter with less effective cooling.

[Manual Mode] Allows the fan speed to be customized based on CPU temperature.

[T1] Set a target CPU temperature as T1.

[T2] Set a target CPU temperature as T2.

[T3] Set a target CPU temperature as T3.

[T4] Set a target CPU temperature as T4.

[Critical Temperature] Set a critical temperature.

[FD/PWM 1] Set the ratio of fan speed and T1 Temperature.

[FD/PWM 2] Set the ratio of fan speed and T2 Temperature.

[FD/PWM 3] Set the ratio of fan speed and T3 Temperature.

[FD/PWM 4] Set the ratio of fan speed and T4 Temperature.

CHA_FAN can be configured in a similar manner to CPU_FAN.

Power Management Configuration

EUP Function

Enable or disable EUP power consumption constraints when shutdown.

[Enabled] The PC shutdown power consumption complies with EUP regulations.

[Disabled] Disables EUP function.

Front USB Power

Turns on/off the front USB port standby power in the shutdown state.

[Enabled] Turns on the front USB port standby power in the shutdown state.

[Disabled] Turns off the front USB port standby power in the shutdown state.

Rear USB Power

Turns on/off the rear USB port standby power in the shutdown state.

[Enabled] Turns on the rear USB port standby power in the shutdown state.

[Disabled] Turns off the rear USB port standby power in the shutdown state.

USB KB/MS Wake-up Function

Enable or disable waking up system by USB devices.

[Enabled] USB device activation wakes up the system from hibernation mode.

[Disabled] Disables USB KB/MS Wake-up Function.

Wake By Lan

Enable or disable waking up system by LAN.

[Enabled] Wakes up the system when the LAN device is activated or an input signal is received.

[Disabled] Disables Wake By Lan function.

AC Power Loss

Sets the response state of the PC when it is powered on after it has been powered off.

[Power On] Automatically boots the PC after it is powered.

[Power Off] Keeps the PC shutdown after it is powered.

[Last State] PC returns to the previous state after it is powered.

RTC Wake

Enable or disable waking up system by RTC.

[Disabled] Disables RTC Wake function.

[Fixed Time] Sets a fixed time to wake up PC.

Wake Up Hour

Wake Up Minute

Wake Up Second

[Dynamic Time]

Wake up minute increase

ACPI Settings

Enable ACPI Auto Configuration

[OFF] Disables ACPI Auto Configuration function.

[ON] Enables ACPI Auto Configuration function.

Enable Hibernation

[OFF] Disables Hibernation function.

[ON] Enables Hibernation function.

ACPI Sleep State

[Suspend Disabled] Disables Suspend function.

[S3(Suspend to RAM)] Enables S3(Suspend to RAM)

S3 Video Report

Sets whether to display the POST interface on waking up the S3/STR from sleep mode.

CPU Configuration

CPU Flex Ratio Override

Enable or disable the CPU Flex Ratio Override function.

[Enabled] Enables the CPU Flex Ratio Override function.

[Disabled] Disabled the CPU Flex Ratio Override function.

CPU Non-Turbo Ratio Setting

Sets CPU ratio after enabling CPU Flex Ratio Override function. The value should be between the CPU default minimum ratio and the maximum non-turbo ratio.

Active Processor Cores

Set the number of enabled processor cores.

[all] Enables all cores.

[Value] Enter the number of enabled processor cores.

Active Efficient-cores

[all] Keeps default setting.

[Value] Sets the number of efficient cores manually.

Hardware Prefetcher

[Enabled] Enables CPU hardware prefetcher to prefetch data and code for level 2 cache.

[Disabled] Disables Hardware Prefetcher function.

Adjacent Cache Line Prefetch

[Enabled] Enables Adjacent Cache Line Prefetch function.

[Disabled] Disables Adjacent Cache Line Prefetch function.

Intel(VMX) Cache Virtualization Technology

Enable or disable Intel(VMX) Cache Virtualization Technology.

[Enabled] Enables Intel(VMX) Cache Virtualization technology, which allows multiple operating systems to run on different partitions of the PC at the same time. It is recommended to use it when using a virtual PC.

[Disabled] Disables Intel(VMX) Cache Virtualization Technology.

Hyper-Threading

This setting enables CPU hyperthreading, which requires support from both the CPU and operating system.

[Enabled] Enables CPU Hyper-Threading function.

[Disabled] Disables CPU Hyper-Threading function.

Intel® Speed Shift Technology

Intel Speed Shift technology allows the processor to select its best-operating frequency and voltage more quickly for optimal performance and power efficiency. Dynamically provide higher responsiveness for single-threaded transient (short-duration) workloads, such as web browsing.

[Enabled] Enables Intel® Speed Shift Technology.

[Disabled] Disables Intel® Speed Shift Technology.

AVX

Enable or disable the AVX instruction set. AVX instruction set can improve PC performance.

[Enabled] Enables AVX instruction set.

[Disabled] Disables AVX instruction set.

Intel® SpeedStep

EIST is Intel's new energy-saving technology that dynamically adjusts the CPU voltage and core frequency to reduce PC power consumption and heat.

[Enabled] Enables Intel SpeedStep.

[Disabled] Disables Intel SpeedStep.

Turbo Mode

Turbo mode allows the CPU frequency to be greater than the default specification, hence improving CPU performance. The setting takes effect only if the CPU supports turbo.

[Enabled] Enables Turbo mode.

[Disabled] Disabled Turbo mode.

C States

Enable or disable CPU to enter a low-power mode when idle.

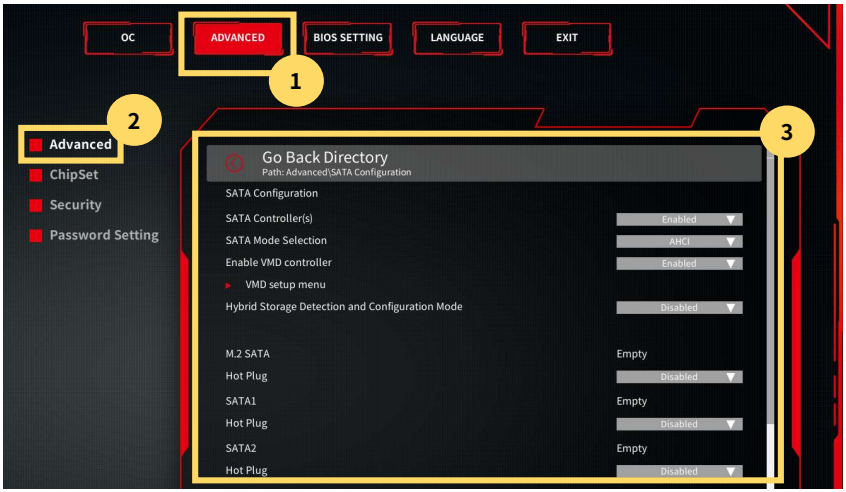
[Enabled] Enables C states. The CPU will enter the low-power mode when idle.

[Disabled] Disables C states.

SATA Configuration

This item allows you to set the functions of the SATA interface on the motherboard.

SATA setting path: Advanced⇨Advance⇨SATA Configuration



SATA Controller(s)

[Enabled] Enables the SATA controller to further configure SATA mode, RAID, hybrid storage detection, and other features.

[Disabled] Disables SATA controller.

SATA Mode Selection

AHCI (Advanced Host Controller Interface), specifies an SATA storage device as AHCI mode.

Raid Support

RAID array allows you to gather multiple disks in different levels and achieve high disk speeds, data backups, and increased data security.

[Enabled] Enables RAID function for SATA hard disk interface. RAID settings will appear in BIOS after saving and rebooting.

[Disabled] Disables RAID function.

Hybrid Storage Detection and Configuration Mode

[Enabled] Enables Hybrid Storage Detection and Configuration Mode.

[Disabled] Disables Hybrid Storage Detection and Configuration Mode.

M.2 SATA (Hot Plug)

[Enabled] Enables M.2 SATA hot plug function.

[Disabled] Disables M.2 SATA hot plug function.

SATA1 (Hot Plug)

[Enabled] Enables SATA1 hot plug function.

[Disabled] Disables SATA1 hot plug function.

SATA2 (Hot Plug)

[Enabled] Enables SATA2 hot plug function.

[Disabled] Disables SATA2 hot plug function.

SATA3 (Hot Plug)

[Enabled] Enables SATA3 hot plug function.

[Disabled] Disables SATA3 hot plug function.

SATA4 (Hot Plug)

[Enabled] Enables SATA4 hot plug function.

[Disabled] Disables SATA4 hot plug function.

SATA5 (Hot Plug)

[Enabled] Enables SATA5 hot plug function.

[Disabled] Disables SATA5 hot plug function.

SATA6 (Hot Plug)

[Enabled] Enables SATA6 hot plug function.

[Disabled] Disables SATA6 hot plug function.

USB Configuration

Legacy USB Support

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

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

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

XHCI Hand-off

Enable or disable the support for operating systems without an XHCI hand-off feature.

[Enabled] Enables XHCI hand-off function.

[Disabled] Disables XHCI hand-off function.

USB Mass Storage Driver Support

[Enabled] Enables USB mass storage driver support.

[Disabled] Disables USB mass storage driver support.

USB Transfer Time-out

Set the timeout for USB transfers.

[1 sec] Sets the USB transfer time-out as 1s.

[5 sec] Sets the USB transfer time-out as 5s.

[10 sec] Sets the USB transfer time-out as 10s.

[20 sec] Sets the USB transfer time-out as 20s.

Device Reset Time-out

Set the timeout for USB reset.

[10 sec] Sets the USB reset time-out as 10s.

[20 sec] Sets the USB reset time-out as 20s.

[30 sec] Sets the USB reset time-out as 30s.

[40 sec] Sets the USB reset time-out as 40s.

Device Power-up Delay

Set the maximum time the device will take before it properly reports itself to the Host Controller.

[Auto] Sets the device power-up delay as auto. The default is 100ms, but may be different for different Hub controllers.

[Manual] Manually adjust the device power-up delay. The value range from 1 to 40s.

Sper I/O Configuration

Serial Port

Turn on/off the serial port. For the serial port function to be activated, the corresponding hardware device must be connected to the serial port.

[ON] Turns on the serial port.

[OFF] Turns off the serial port.

Change Setting

The BIOS will optimize the IRQ if set to Auto, and you can also modify the serial port settings manually.

Trusted Computing

Security Device Support

Enable or disable the TPM function to create a key to enter the system, after the PC has booted, it will support installation and updates of Windows 11.

[Enabled] Enables TPM function.

[Disabled] Disables TPM function.

NVME Configuration

View the status of the PC’s NVME drive.

CSM Configuration

CSM Support

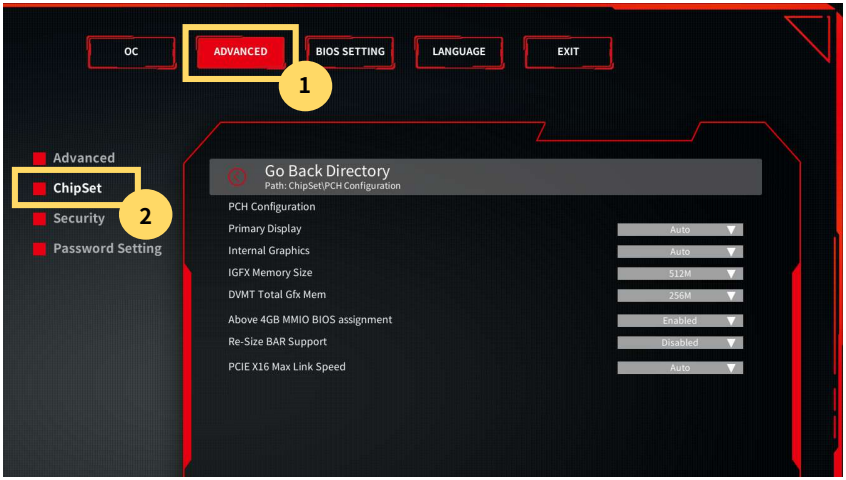
[Enabled] Enables CSM support for non-UEFI driver add-on devices and non-UEFI mode operating system. Boot entry filter, changing UEFI or Legacy boot mode can be set.

[Disabled] Disables CSM support, only use UEFI boot.

ChipSet

The PCIE interface speed, built-in graphics card, and other parameters can be set with this item.

ChipSet setting path: Advanced⇨ChipSet⇨PCH Configuration.



PCH Configuration

Primary Display

[Auto] Recognized and configured by the BIOS automatically.

[IGFX] From integrated graphics.

[PEG Slot] From discrete graphics.

[PCIE] From PCI-E.

Internal Graphics

Enable or disable the built-in internal graphics. It’s suggested to keep this enabled if your PC does not have external graphics.

[Auto] Configured by the BIOS.

[Enabled] Enables internal graphics.

[Disabled] Disables internal graphics.

IGFX Memory Size

Set the amount of display memory required by the built-in display function, such as 32M, 64M, or 128M.

DVMT Total Gfx Mem

Set the memory allocation for DVMT, 128M, 256M, or Max.

Above 4GB MMIO BIOS assignment

Enable or disable memory space above 4 GB for 64-bit devices. Insufficient memory space below 4 GB prevents the driver from starting when multiple external graphics cards are connected. This can be enabled. The function can only be enabled for 64-bit operating systems.

Re-size BAR Support

Re-Size BAR is a performance enhancement feature that allows the system to fully utilize the VRAM on the graphics card.

[Enabled] Improved graphics performance can be achieved with cards that support this feature.

[Disabled] Disables Resize BAR function.

PCIE X16 Max Link Speed

Configure the PCIE X16 lanes to better support different PCIE devices.

[Auto] Automatically configured by the BIOS.

[Gen1] Enables only PCIe Gen1.

[Gen2] Enables only PCIe Gen2.

[Gen3] Enables only PCIe Gen3.

[Gen4] Enables only PCIe Gen4.

[Gen5] Enables only PCIe Gen5.

ME Concentration

Me Write Protect

Enable or disable ME write protect function.

[Enabled] Enables ME write protect function.

[Disabled] Disables ME write protect function. FPT tool can now be used to flash ME domain.

Security

Secure Boot

The Secure Boot feature allows only certified operating systems or hardware drivers to be loaded on the motherboard, preventing malware intrusions.

[Enabled] Enables secure boot function. Usually used with newer operating systems or hardware.

[Disabled] Disables secure boot function. Allows older operating systems to be loaded.

Secure Boot Mode

Sets Secure Boot as Standard or Custom

[Standard] Use the motherboard's security key.

[Custom] Configures the Secure Boot key database with the following three options.

[Restore Factory Key] Restore the factory key.

[Reset To Setup Mode] Removes all Secure Boot key databases.

[Key Management] Key management settings for advanced users.

RAID

RAID 0: Also called data striping, it joins two or more disks in parallel to form one large disk.

Data is fragmented and stored on these disks, and RAID 0 is the fastest of all RAID levels. However, RAID 0 does not have parity. Disk striping without parity data does not have redundancy or fault tolerance. That means, if a drive fails, all data on that drive is lost.

RAID 1: Mirroring two or more sets of N disks can have a very good read speed thanks to multi-threaded operating systems. Theoretically, the read speed is equal to the multiple of the number of hard disks. When the main hard disk fails (physically), the mirror disks take over the duties of the main hard disks. There is a mirrored hard disk for backup of data. RAID 1 offers the highest level of data security of all RAID levels.

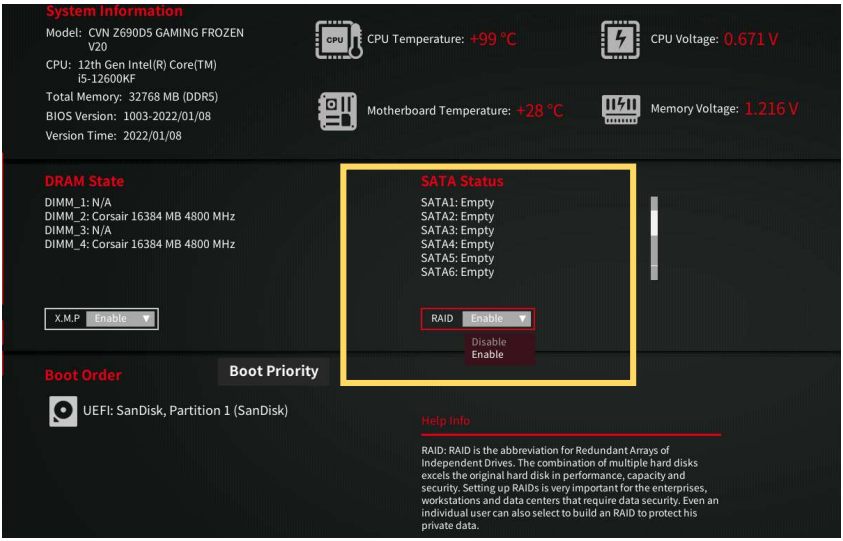
RAID 5: RAID 5 is a storage solution that balances storage performance, data security, and cost. It uses Disk Striping technology. At least three SATA disks are required to form RAID 5. RAID 5 does not store the data separately, but stores the data and corresponding parity information together in the RAID composition. In case of a damaged disk, the remaining disks, as well as the parity information, are used to recover the data.

RAID 10： Split the data and save it as a mirror image, arrange all hard disks into two groups, consider RAID 1 as the lowest level, and then treat each group of RAID 1 as a "hard disk" group to operate as RAID 0. RAID 10 makes use of the high-speed transmission rate of RAID 0, and also keeps the fault tolerance capability of RAID 1.

Create a RAID set

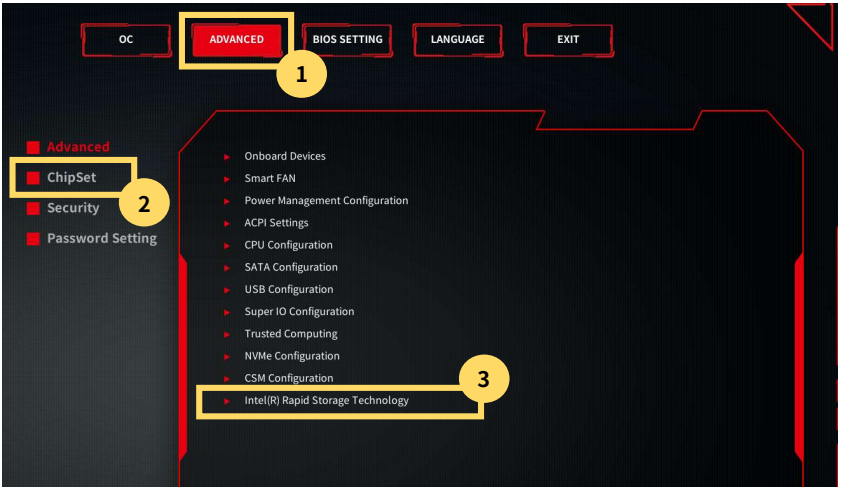
Following is a demonstration of 2 pieces of 500GB mechanical hard disks grouping into RAID 0. When RAID 0 is formed, the two pieces of disks appear as one piece in the PC operating system, and its capacity is the sum of the two pieces of disks.

1、Enables RAID in the SATA area on the BIOS menu, press F10 to save and exit.



2、Press Delete to enter the BIOS menu when the PC reboot.

RAID setting path: Advanced Mode⇨Advanced⇨Intel Rapid Storage Technology.

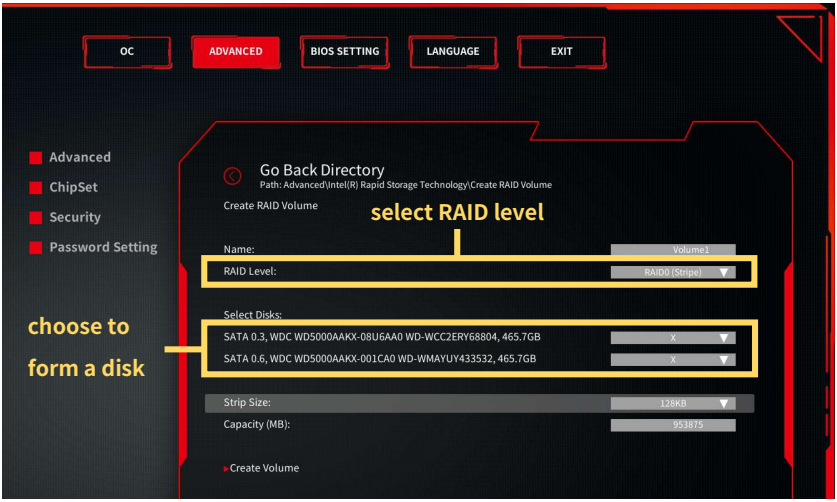


3、You can view all connected disks by opening the Intel(R) Rapid Storage Technology menu.

[Name] Specify the name of the RAID set.

[RAID Level] Select the RAID level (RAID 0, RAID 1, …).

[Select Disks] Specify the disks used for creating RAID.



The recommended value for the Strip Size option are:

RAID 0：128KB

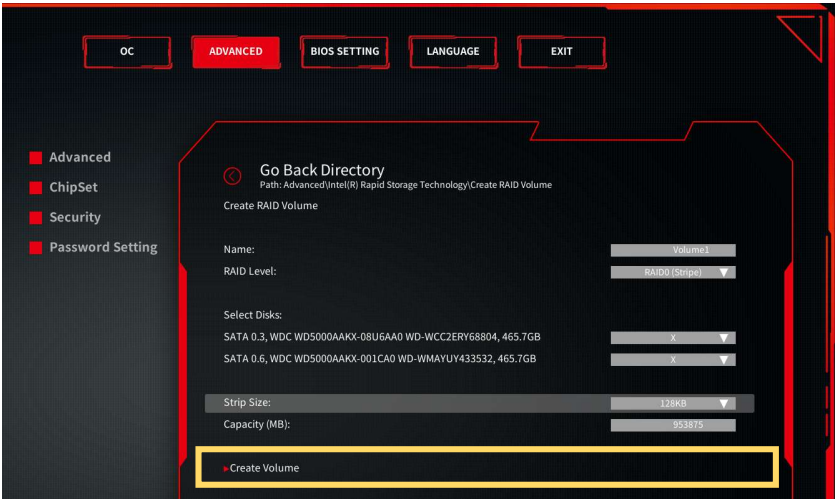
RAID 5：64KB

RAID 10：64KB

4、Specify the array capacity in the Capacity (MB) option. The default value of this option is the maximum disk capacity allowed.



5、Click the Create Volume button below to finish setting up the RAID in the BIOS.



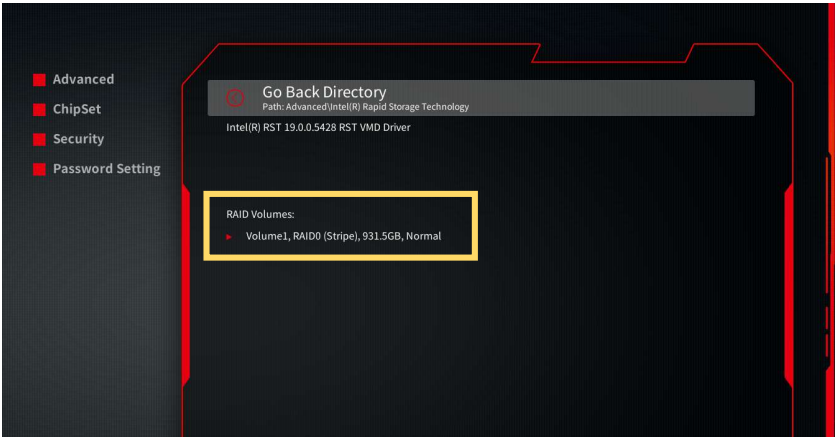
Important:

- A RAID 0, a RAID 1, a RAID 5, and a RAID 10 can be configured using the same method.
- As RAID array formation and deletion will delete all disk data, you should back up your disk data beforehand.

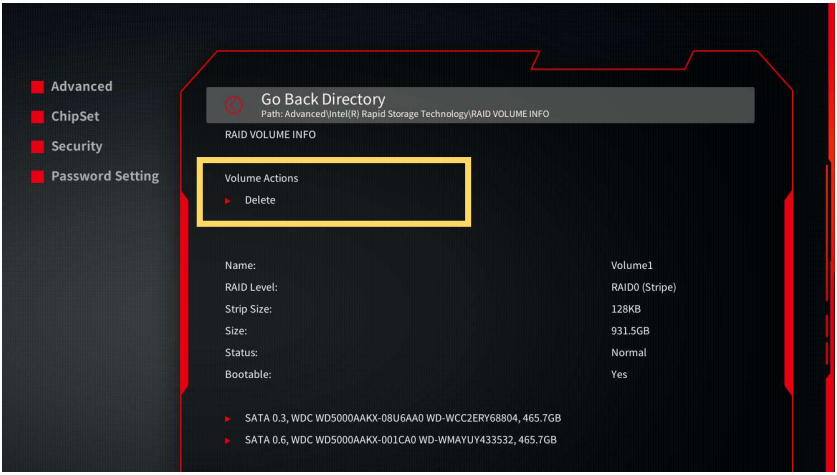
Delete RAID Array

Delete the RAID array that has been created.

1、Locate the created RAID array in the BIOS.



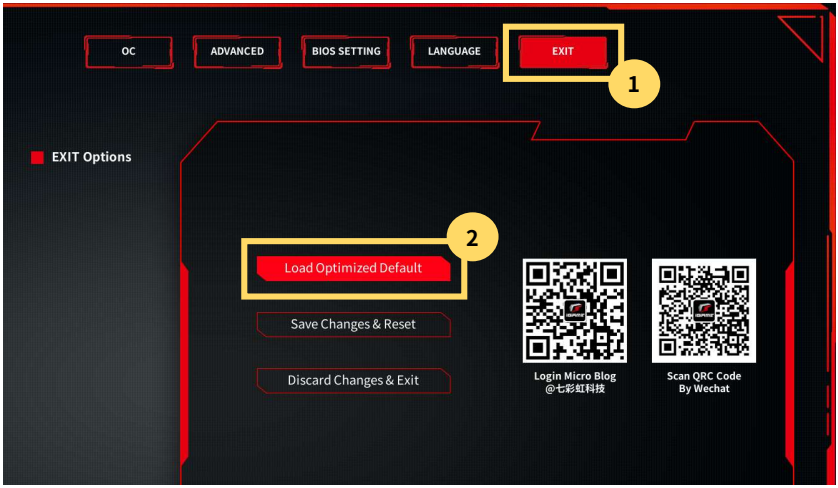
2、Click on the created array to access the detailed information, then click Delete, then press F10 to save the settings and exit, and the created RAID array can be deleted.



Restore Default BIOS Settings

By using the following methods, you can restore the BIOS default settings if the BIOS settings are incorrect and the PC is malfunctioning.

Method 1: In the BIOS menu, press Exit⇨Restore Default, and click Enter to perform the BIOS recovery procedure.



Method 2:Unplug the PC power cord, locate the motherboard CLR_COMS pin, and short the pin for 5 seconds to reset the CMOS data and restore the BIOS.

Update BIOS

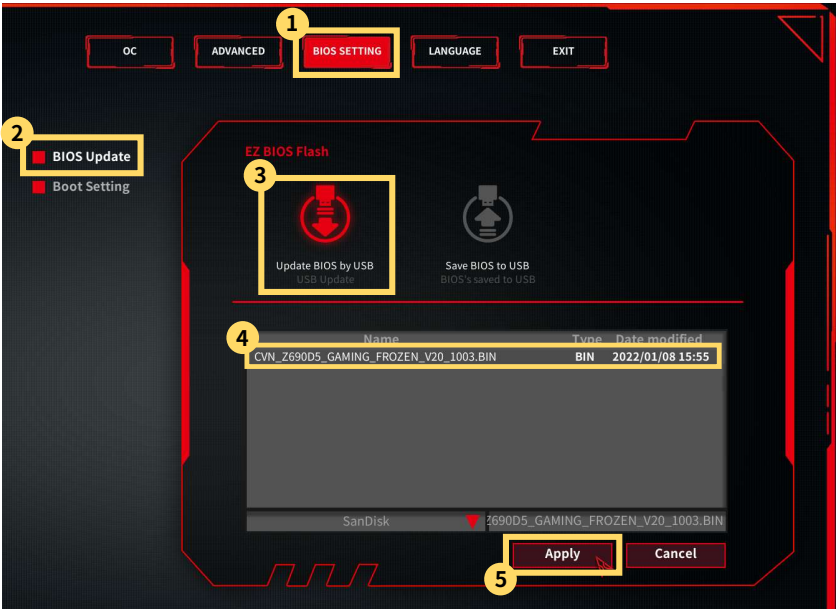
1、You can download the latest BIOS firmware upgrade package for your motherboard from the Colorful official website (https://en.colorful.cn).

2、Unzip the BIOS firmware update package, and then copy the unzipped BIOS update file to the root directory of the USB Flesh Drive.

3、Insert the USB Flesh Drive containing the BIOS update into the rear USB port of the PC.

4、Enter the BIOS setting interface by pressing the Delete key when PC booting, then select the Advanced Mode⇨Motherboard Chipset⇨ME Write Protection, disable the ME write protection, and press F10 to save and exit.

5、Enter the BIOS setup interface again, select: BIOS SETTING⇨Update Bios By USB, select the BIOS update file on the USB Flesh Drive, click Apply and follow the instructions on the page to complete the BIOS update.



Important:

• Make sure to upgrade your BIOS firmware using the same model of the motherboard as your motherboard. Different BIOS firmware cannot be mixed.

• In order to avoid hardware damage, do not shut down, reboot, or power off the PC during the BIOS update process.

Statement

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Edits

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