BIOS Setup (Intel® W790 Series)

Some of the BIOS settings are available only when the motherboard chipset and the CPU/memory used support the feature. For more information about Intel® CPUs' unique features, please visit Intel's website.

Whether the system will work stably with the overclock/overvoltage settings you made is dependent on your overall system configurations. Incorrectly doing overclock/overvoltage may result in damage to CPU, chipset, or memory and reduce the useful life of these components. This page is for advanced users only and we recommend you not to alter the default settings to prevent system instability or other unexpected results. (Inadequately altering the settings may result in system's failure to boot. If this occurs, clear the CMOS values and reset the board to default values.)

BIOS Setup

BIOS (Basic Input and Output System) records hardware parameters of the system in the CMOS on the motherboard. Its major functions include conducting the Power-On Self-Test (POST) during system startup, saving system parameters and loading operating system, etc. BIOS includes a BIOS Setup program that allows the user to modify basic system configuration settings or to activate certain system features.

When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS to keep the configuration values in the CMOS.

To access the BIOS Setup program, press the <Delete> key during the POST when the power is turned on.

To upgrade the BIOS, use either the GIGABYTE Q-Flash or Q-Flash Plus utility.
  • Q-Flash allows the user to quickly and easily upgrade or back up BIOS without entering the operating system.
  • Q-Flash Plus allows you to update the BIOS when your system is off (S5 shutdown state). Save the latest BIOS on a USB thumb drive and plug it into the dedicated port, and then you can now flash the BIOS automatically by simply pressing the Q-Flash Plus button.
For instructions on using the Q-Flash and Q-Flash Plus utilities, please navigate to the "Unique Features" page of GIGABYTE's website and search for "BIOS Update Utilities."

> • Because BIOS flashing is potentially risky, if you do not encounter problems using the current version of BIOS, it is recommended that you not flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction.
> • It is recommended that you not alter the default settings (unless you need to) to prevent system instability or other unexpected results. Inadequately altering the settings may result in system's failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values.
> • Refer to the introductions of the battery/clear CMOS jumper/battery in user's manual or refer to the "Load Optimized Defaults" section for how to clear the CMOS values.

Startup Screen

The following startup Logo screen will appear when the computer boots.

DEL：BIOS SETUP\Q-FLASH   F12：BOOT MENU   END：Q-FLASH — Function Keys
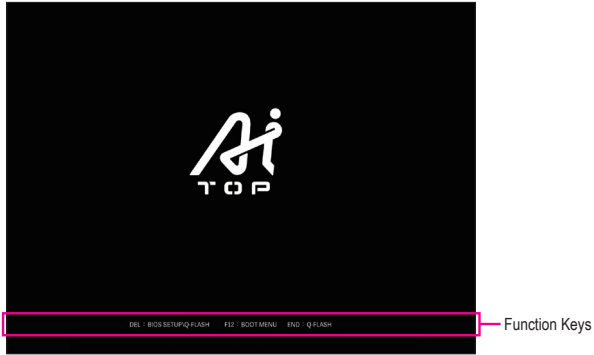
Function Keys:

<DEL>: BIOS SETUP\Q-FLASH

　　Press the <Delete> key to enter BIOS Setup or to access the Q-Flash utility in BIOS Setup.

<F12>: BOOT MENU

　　Boot Menu allows you to set the first boot device without entering BIOS Setup. In Boot Menu, use the up arrow key <↑> or the down arrow key <↓> to select the first boot device, then press <Enter> to accept. The system will boot from the device immediately.
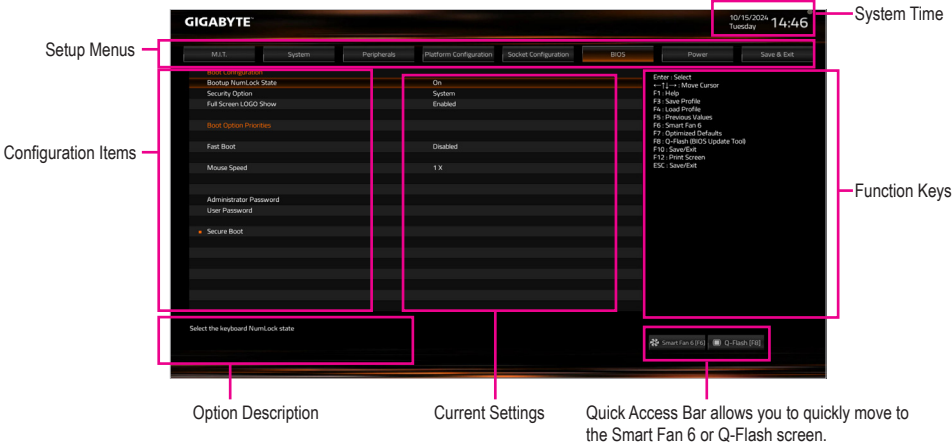
　　Note: The setting in Boot Menu is effective for one time only. After system restart, the device boot order will still be based on BIOS Setup settings.

<END>: Q-FLASH

　　Press the <End> key to access the Q-Flash utility directly without having to enter BIOS Setup first.

The Main Menu

You can press the arrow keys on your keyboard to move among the items and press <Enter> to accept or enter a sub-menu. Or you can use your mouse to select the item you want.

Labels around the screenshot:
- System Time
- Setup Menus
- Configuration Items
- Function Keys
- Option Description
- Current Settings
- Quick Access Bar allows you to quickly move to the Smart Fan 6 or Q-Flash screen.

Function Keys

<Enter>/Double Click	Execute command or enter a menu
<←><→><↑><↓>	Move the selection bar to select an configuration item
<F1>	Show descriptions of the function keys
<F3>	Save the current BIOS settings to a profile
<F4>	Load the BIOS settings from a profile created before
<F5>	Restore the previous BIOS settings for the current submenus
<F6>	Display the Smart Fan 6 screen
<F7>	Load the Optimized BIOS default settings for the current submenus
<F8>	Access the Q-Flash utility
<F10>	Save all the changes and exit the BIOS Setup program
<F12>	Capture the current screen as an image and save it to your USB drive
<Esc>	Main Menu: Exit the BIOS Setup program
	Submenus: Exit current submenu

M.I.T.
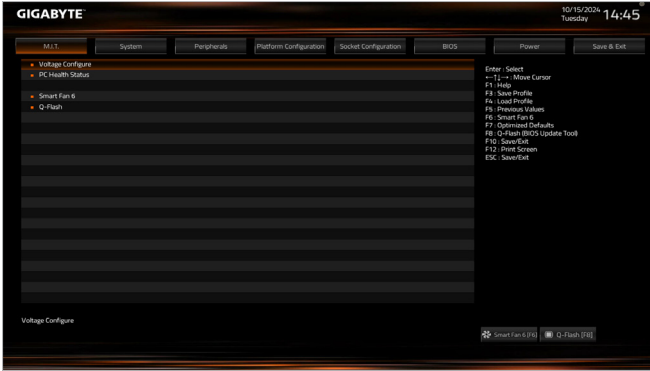
■ **Voltage Configure**
This sub-menu allows you to set CPU, chipset and memory voltages. The displayed items and values may vary depending on the CPU used.

■ **PC Health Status**
Displays the current system voltages. The displayed items and values may vary depending on the CPU used.

■ **Smart Fan 6**
Use the <F6> function key to quickly switch to this screen. This screen allows you to configure fan speed related settings for each fan header or monitor your system/CPU temperature.

☞ **TUNE ALL**
Allows you to apply the current settings to all fan headers.

☞ **Temperature**
Displays the current temperature of the selected target area.

☞ **Fan Speed**
Displays current fan/pump speeds.

☞ **Flow Rate**
Displays the flow rate of your water cooling system. Press <Enter> on **Fan Speed** to switch to this function.

☞ **Fan Speed Control**
Allows you to determine whether to enable the fan speed control function and adjust the fan speed.
▶▶ Normal   Allows the fan to run at different speeds according to the CPU temperature.
▶▶ Silent   Allows the fan to run at slow speeds.
▶▶ Manual   Allows you to drag the curve nodes to adjust fan speed. Or you can use the **EZ Tuning** feature. After adjusting the node position, press **Apply** to automatically calculate the slope of the curve.
▶▶ Full Speed   Allows the fan to run at full speeds.

☞ **Fan Control Use Temperature Input**
Allows you to select the reference temperature for fan speed control.

☙ **Temperature Interval**

    Allows you to select the temperature interval for fan speed change.

☙ **FAN/PUMP Control Mode**

    ▸ Auto   Lets the BIOS automatically detect the type of fan installed and sets the optimal control mode.

    ▸ Voltage   Voltage mode is recommended for a 3-pin fan/pump.

    ▸ PWM   PWM mode is recommended for a 4-pin fan/pump.

☙ **FAN/PUMP Stop**

    Enables or disables the fan/pump stop function. You can set the temperature limit using the temperature curve. The fan or pump stops operation when the temperature is lower than the limit.

☙ **FAN/PUMP Mode**

    Allows you to set the operating mode for the fan.

    ▸ Slope   Adjusts the fan speed linearly based on the temperature.

    ▸ Stair   Adjusts the fan speed stepwise based on the temperature.

☙ **FAN/PUMP Fail Warning**

    Allows the system to emit warning sound if the fan/pump is not connected or fails. Check the fan/pump condition or fan/pump connection when this occurs.

☙ **Load Fan Profile**

    This function allows you to load a previously saved BIOS profile without the hassles of reconfiguring the BIOS settings. Or you can select **Select File in HDD/FDD/USB** to load a profile from your storage device.
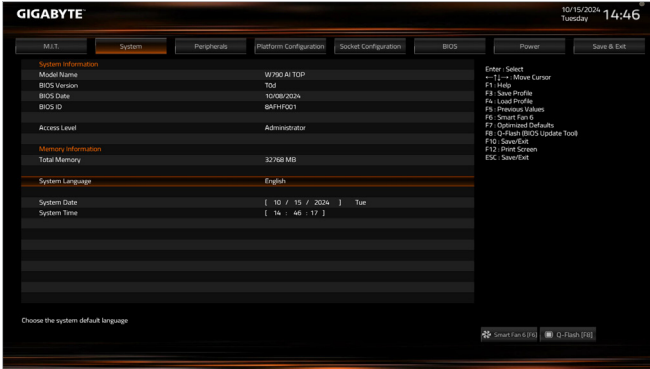
☙ **Save Fan Profile**

    This function allows you to save the current settings to a profile. You can save the profile in the BIOS or select **Select File in HDD/FDD/USB** to save the profile to your storage device.

■ **Q-Flash**

    Allows you to access the Q-Flash utility to update the BIOS or back up the current BIOS configuration.

System

This section provides information on your motherboard model and BIOS version. You can also select the default language used by the BIOS and manually set the system time.

☞ **Access Level**

Displays the current access level depending on the type of password protection used. (If no password is set, the default will display as **Administrator**.) The Administrator level allows you to make changes to all BIOS settings; the User level only allows you to make changes to certain BIOS settings but not all.

☞ **System Language**

Selects the default language used by the BIOS.

☞ **System Date**

Sets the system date. The date format is week (read-only), month, date, and year. Use <Enter> to switch between the Month, Date, and Year fields and use the <Page Up> or <Page Down> key to set the desired value.

☞ **System Time**

Sets the system time. The time format is hour, minute, and second. For example, 1 p.m. is 13:00:00. Use <Enter> to switch between the Hour, Minute, and Second fields and use the <Page Up> or <Page Down> key to set the desired value.

Peripherals

⌕ **RST_SW (MULTIKEY) (Functionality of the RST_SW Button)**
- ↠ Set this button to HW Reset   Use the button to reset your system.
- ↠ Set this button to Switch LED On/Off   Use the button to turn on/off the motherboard LEDs.
- ↠ Set this button to Enter BIOS Setup   Use the button to enter the BIOS Setup.

⌕ **LEDs in System Power On State**
Allows you to enable or disable motherboard LED lighting when the system is on.
- ↠ Off   Disables the selected lighting mode when the system is on.
- ↠ On   Enables the selected lighting mode when the system is on.

⌕ **CXL Support**
Enables or disables CXL (Compute Express Link) support.

■ **Trusted Computing**
Enables or disables Trusted Platform Module (TPM).

■ **PCI Subsystem Settings**
Allows you to configure PCI, PCI-X or PCI Express settings.

⌕ **Above 4G Decoding**
Enables or disables 64-bit capable devices to be decoded in above 4 GB address space (only if your system supports 64-bit PCI decoding). Set to **Enabled** if more than one advanced graphics card are installed and their drivers are not able to be launched when entering the operating system (because of the limited 4 GB memory address space).

⌕ **Re-Size BAR Support**
Enables or disables support for Resizable BAR.

⌕ **SR-IOV Support**
Allows you to determine whether to enable the Single Root IO Virtualization (SR-IOV) feature when a PCIe device that supports SR-IOV is installed.

- **USB Configuration**

☞ **Legacy USB Support**
Allows USB keyboard/mouse to be used in MS-DOS.

☞ **XHCI Hand-off**
Determines whether to enable XHCI Hand-off feature for an operating system without XHCI Hand-off support.

☞ **USB Mass Storage Driver Support**
Enables or disables support for USB storage devices.

☞ **Mass Storage Devices**
Displays a list of connected USB mass storage devices. This item appears only when a USB storage device is installed.

☞ **USB transfer time-out**
Allows you to set the USB transfer time-out value.

☞ **Device reset time-out**
Allows you to set the USB mass storage device Start Unit command time-out.

☞ **Device power-up delay**
Allows you to set the time the device will take before it properly reports itself to the host controller.

- **Gigabyte Utilities Downloader Configuration**

☞ **Gigabyte Utilities Downloader Configuration**
Allows you to determine whether to automatically download and install GIGABYTE Control Center after entering the operating system. Before the installation, make sure the system is connected to the Internet.

- **Network Stack Configuration**

☞ **Network Stack**
Disables or enables booting from the network to install a GPT format OS, such as installing the OS from the Windows Deployment Services server.

☞ **IPv4 PXE Support**
Enables or disables IPv4 PXE Support. This item is configurable only when **Network Stack** is enabled.

☞ **IPv4 HTTP Support**
Enables or disables HTTP boot support for IPv4. This item is configurable only when **Network Stack** is enabled.

☞ **IPv6 PXE Support**
Enables or disables IPv6 PXE Support. This item is configurable only when **Network Stack** is enabled.

☞ **IPv6 HTTP Support**
Enables or disables HTTP boot support for IPv6. This item is configurable only when **Network Stack** is enabled.

☞ **PXE boot wait time**
Allows you to configure how long to wait before you can press <Esc> to abort the PXE boot. This item is configurable only when **Network Stack** is enabled.

☞ **Media detect count**
Allows you to set the number of times to check the presence of media. This item is configurable only when **Network Stack** is enabled.

- **NVMe Configuration**
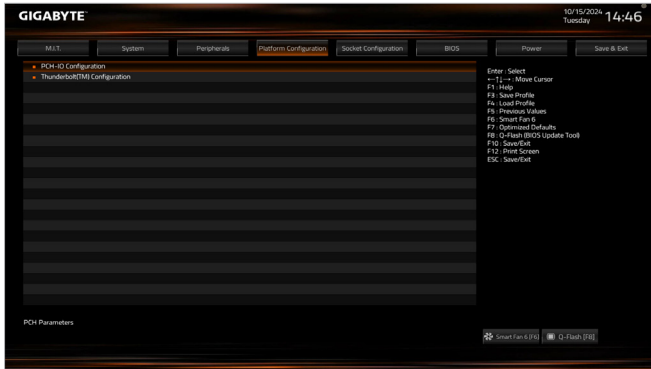 Displays information on your M.2 NVME PCIe SSD if installed.

- **All Cpu Information**
  Displays information on the installed CPU.

- **Intel(R) Ethernet Network Adapter**
  This sub-menu provides information on LAN configuration and related configuration options.

■ **Platform Configuration**

■ **PCH-IO Configuration\SATA And RST Configuration**

☞ **SATA Configuration**
Enables or disables the integrated SATA controllers.

☞ **SATA Mode Selection**
Enables or disables RAID for the SATA controllers integrated in the Chipset or configures the SATA controllers to AHCI mode.
▶▶ RAID   Enables RAID for the SATA controller.
▶▶ AHCI   Configures the SATA controllers to AHCI mode. Advanced Host Controller Interface (AHCI) is an interface specification that allows the storage driver to enable advanced Serial ATA features such as Native Command Queuing and hot plug.

☞ **SATA Test Mode**
Enables or disables SATA Test Mode.

☞ **Aggressive LPM Support**
Enables or disables the power saving feature, ALPM (Aggressive Link Power Management), for the Chipset SATA controllers.

☞ **Force SATA Gen Speed**
Allows you to set the operation mode of the SATA ports to Gen 1, Gen 2, or Gen 3.

☞ **SATA DevSlp Speed**
Allows you to determine whether to let the connected SATA device go into sleep mode.

☞ **SATA SGPIO Enable**
Enables or disables serial GPIO for the SATA controllers.

☞ **SATA Port**
Enables or disables each SATA port.

☞ **Hot plug**
Enables or disable the hot plug capability for each SATA port.

☞ **External**
Enables or disables support for external SATA devices.

☞ **Spin Up Device**
Enables or disables staggered spin-up support for SATA devices.

⟂ **SATA Device Type**
Allows you to select the type of the device connected to the SATA port.

⟂ **DITO Configuration**
Allows you to determine whether to enable DITO settings for the SATA port.

■ **PCH-IO Configuration\HD Audio Configuration**

⟂ **HD Audio**
Enables or disables the onboard audio function. If you wish to install a 3rd party add-in audio card instead of using the onboard audio, set this item to **Disabled**.

⟂ **Audio DSP**
Enables or disables the DSP feature for the onboard audio.

▶ **HD Audio Advanced Configuration**
This screen provides further adjustments to the onboard audio settings.

⟂ **AC BACK**
Determines the state of the system after the return of power from an AC power loss.
⊳⊳ Memory   The system returns to its last known awake state upon the return of the AC power.
⊳⊳ Always On   The system is turned on upon the return of the AC power.
⊳⊳ Always Off   The system stays off upon the return of the AC power.

⟂ **IOAPIC 24-119 Entries**
Enables or disables this function.

⟂ **SPD Write Disable**
Allows you to determine whether to disable SPD Write.
⊳⊳ True   Disables SPD Write.
⊳⊳ False   Enables SPD Write.

▶ **Thunderbolt(TM) Configuration**
This sub-menu provides Thunderbolt related configuration options.

⟂ **PCIE Tunneling over USB4**
Enables or disables PCIE Tunneling over USB4.

⟂ **Reserve Pcie Bus for TBT**
This item allows you to set the number of the PCIe bus reserved for Thunderbolt™ ports.

⟂ **Memory For Tbt**
Allows you to set the reserved memory for this root bridge.

⟂ **PMemory For Tbt**
Allows you to set the reserved prefetchable memory for this root bridge.

■ **Socket Configuration**
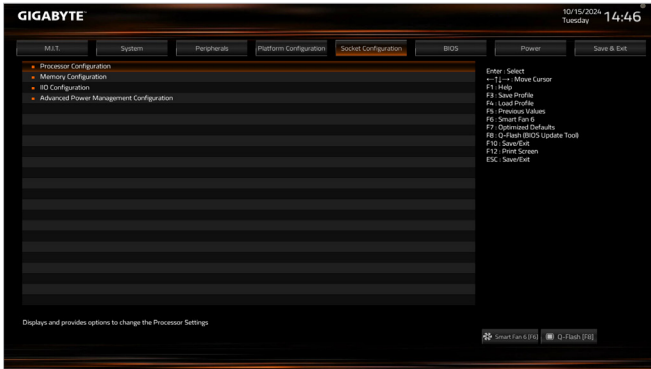
■ **Processor Configuration**
This screen provides further adjustments to the processor settings.

■ **Memory Configuration**
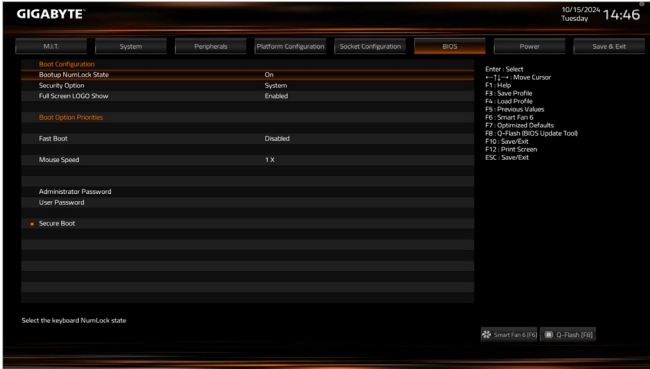This screen provides further adjustments to the memory settings.

■ **IIO Configuration**
This screen provides further adjustments to the IIC settings.

■ **Advanced Power Management Configuration**
This screen provides further adjustments to the power management settings.

BIOS

 Bootup NumLock State
Enables or disables Numlock feature on the numeric keypad of the keyboard after the POST.

 Security Option
Specifies whether a password is required every time the system boots, or only when you enter BIOS Setup.
After configuring this item, set the password(s) under the **Administrator Password/User Password** item.
▶▶ Setup   A password is only required for entering the BIOS Setup program.
▶▶ System   A password is required for booting the system and for entering the BIOS Setup program.

 Full Screen LOGO Show
Allows you to determine whether to display the GIGABYTE Logo at system startup. **Disabled** skips the GIGABYTE Logo when the system starts up.

 Boot Option Priorities
Specifies the overall boot order from the available devices. Removable storage devices that support GPT format will be prefixed with "UEFI:" string on the boot device list. To boot from an operating system that supports GPT partitioning, select the device prefixed with "UEFI:" string.
Or if you want to install an operating system that supports GPT partitioning such as Windows 11 64-bit, select the optical drive that contains the Windows 11 64-bit installation disk and is prefixed with "UEFI:" string.

 Fast Boot
Enables or disables Fast Boot to shorten the OS boot process. **Ultra Fast** provides the fastest bootup speed.

 SATA Support
▶▶ Last Boot SATA Devices Only   Except for the previous boot drive, all SATA devices are disabled before the OS boot process completes.
▶▶ All SATA Devices   All SATA devices are functional in the operating system and during the POST.
This item is configurable only when **Fast Boot** is set to **Enabled**.

 NVMe Support
Allows you to enable or disable fast boot support for NVMe devices.
This item is configurable only when **Fast Boot** is set to **Enabled**.

☞ **UFS Support**
Allows you to enable or disable fast boot support for UFS devices.
This item is configurable only when **Fast Boot** is set to **Enabled**.

☞ **USB Support**
    ▸ Disabled   All USB devices are disabled before the OS boot process completes.
    ▸ Full Initial   All USB devices are functional in the operating system and during the POST.
    ▸ Partial Initial   Part of the USB devices are disabled before the OS boot process completes.
This item is configurable only when **Fast Boot** is set to **Enabled**.

☞ **NetWork Stack Driver Support**
    ▸ Disable Link   Disables booting from the network.
    ▸ Enabled   Enables booting from the network.
This item is configurable only when **Fast Boot** is set to **Enabled**.

☞ **Redirection Support**
Allows you to enable or disable redirection support.
This item is configurable only when **Fast Boot** is set to **Enabled**.

☞ **Mouse Speed**
Allows you to set the mouse cursor movement speed.

☞ **Administrator Password**
Allows you to configure an administrator password. Press <Enter> on this item, type the password, and then press <Enter>. You will be requested to confirm the password. Type the password again and press <Enter>. You must enter the administrator password (or user password) at system startup and when entering BIOS Setup. Differing from the user password, the administrator password allows you to make changes to all BIOS settings.

☞ **User Password**
Allows you to configure a user password. Press <Enter> on this item, type the password, and then press <Enter>. You will be requested to confirm the password. Type the password again and press <Enter>. You must enter the administrator password (or user password) at system startup and when entering BIOS Setup. However, the user password only allows you to make changes to certain BIOS settings but not all. To cancel the password, press <Enter> on the password item and when requested for the password, enter the correct one first. When prompted for a new password, press <Enter> without entering any password. Press <Enter> again when prompted to confirm.
NOTE: Before setting the User Password, be sure to set the Administrator Password first.

■ **Secure Boot**
Allows you to enable or disable Secure Boot and configure related settings.

Power
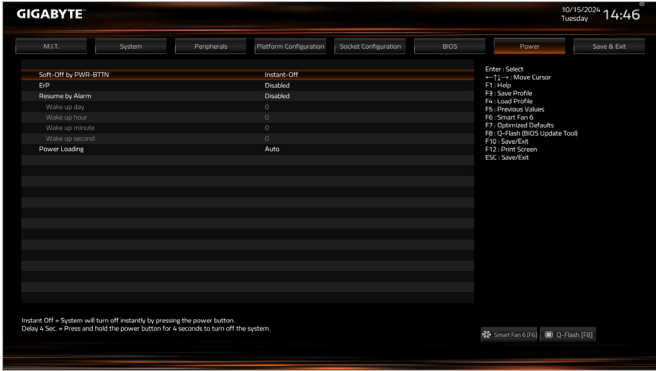
 Soft-Off by PWR-BTTN
Configures the way to turn off the computer in MS-DOS mode using the power button.
▶ Instant-Off   Press the power button and then the system will be turned off instantly.
▶ Delay 4 Sec.   Press and hold the power button for 4 seconds to turn off the system. If the power
                  button is pressed for less than 4 seconds, the system will enter suspend mode.

 ErP
Determines whether to let the system consume least power in S5 (shutdown) state.
Note: When this item is set to **Enabled**, the Resume by Alarm function becomes unavailable.

 Resume by Alarm
Determines whether to power on the system at a desired time.
If enabled, set the date and time as following:
▶ Wake up day: Turn on the system at a specific time on each day or on a specific day in a month.
▶ Wake up hour/minute/second: Set the time at which the system will be powered on automatically. Set
the time at which the system will be powered on automatically.
Note: When using this function, avoid inadequate shutdown from the operating system or removal of the
AC power, or the settings may not be effective.

 Power Loading
Enables or disables dummy load. When the power supply is at low load, a self-protection will activate causing
it to shutdown or fail. If this occurs, please set to **Enabled**. **Auto** lets the BIOS automatically configure this
setting.

Save & Exit
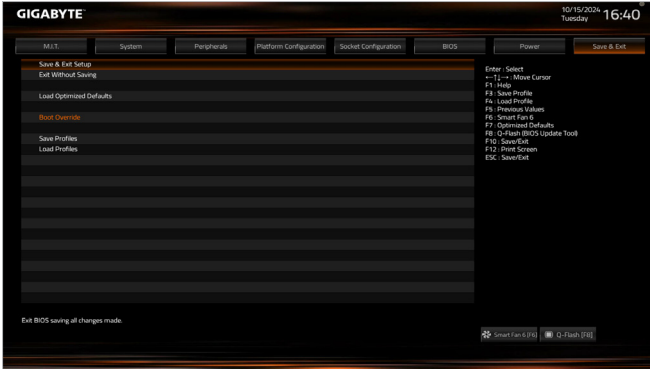
 Save & Exit Setup
Press <Enter> on this item and select **Yes**. This saves the changes to the CMOS and exits the BIOS Setup program. Select **No** or press <Esc> to return to the BIOS Setup Main Menu.

 Exit Without Saving
Press <Enter> on this item and select **Yes**. This exits the BIOS Setup without saving the changes made in BIOS Setup to the CMOS. Select **No** or press <Esc> to return to the BIOS Setup Main Menu.

 Load Optimized Defaults
Press <Enter> on this item and select **Yes** to load the BIOS factory default settings. The BIOS defaults settings help the system to operate in optimum state. Always load the Optimized defaults after updating the BIOS or after clearing the CMOS values.

 Boot Override
Allows you to select a device to boot immediately. Press <Enter> on the device you select and select **Yes** to confirm. Your system will restart automatically and boot from that device.

 Save Profiles
This function allows you to save the current BIOS settings to a profile. You can create up to 8 profiles and save as Setup Profile 1~ Setup Profile 8. Press <Enter> to complete. Or you can select **Select File in HDD/FDD/USB** to save the profile to your storage device.

 Load Profiles
If your system becomes unstable and you have loaded the BIOS default settings, you can use this function to load the BIOS settings from a profile created before, without the hassles of reconfiguring the BIOS settings. First select the profile you wish to load and then press <Enter> to complete. You can select **Select File in HDD/FDD/USB** to input the profile previously created from your storage device or load the profile automatically created by the BIOS, such as reverting the BIOS settings to the last settings that worked properly (last known good record).