BIOS User Guide

INTEL H610 STANDARD Series

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BIOS Update

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

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

BIOSTAR BIO-Flasher

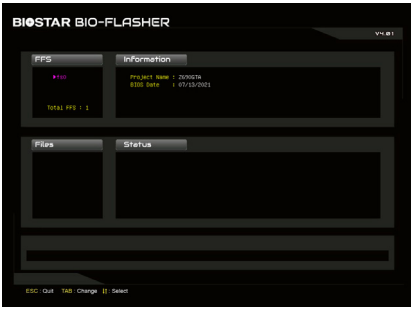
Note

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

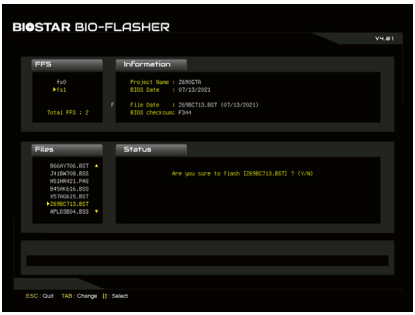
Updating BIOS with BIOSTAR BIO-Flasher

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

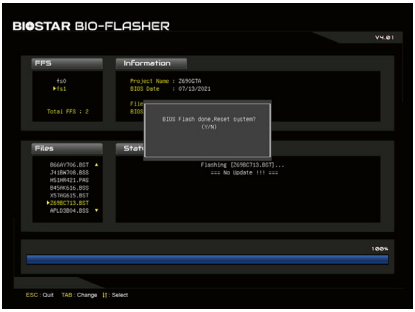
5. After entering the POST screen, the BIO-FLASHER utility pops out. Choose <fs0> to search for the BIOS file.



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



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



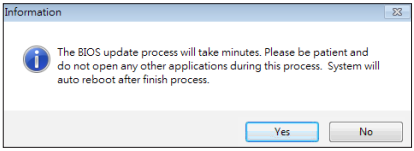
8. While the system boots up and the full screen logo shows up, press <DEL> key to enter BIOS setup.
After entering the BIOS setup, please go to the <Save & Exit>, using the <Restore Defaults> function to load Optimized Defaults, and select <Save Changes and Reset> to restart the computer. Then the BIOS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

BIOS Update Utility (through the Internet)

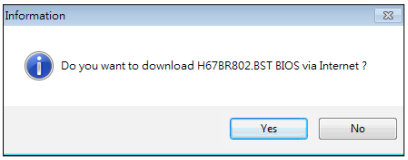
1. Installing BIOS Update Utility from the DVD Driver.
2. Please make sure the system is connected to the internet before using this function.

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

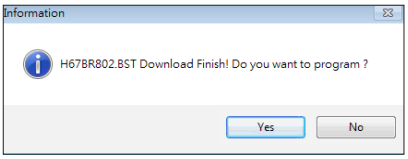
4. An open dialog will show up to request your agreement to start the BIOS update. Click "Yes" to start the online update procedure.



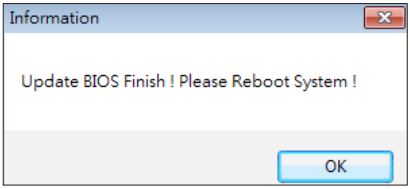
5. If there is a new BIOS version, the utility will ask you to download it. Click "Yes" to proceed.



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



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



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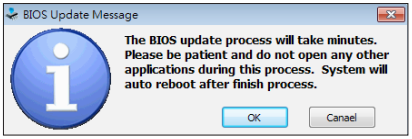
After entering the BIOS setup, please go to the <Save & Exit>, using the <Restore Defaults> function to load Optimized Defaults, and select <Save Changes> and <Reset> to restart the computer. Then, the BIOS Update is completed.

BIOS Update Utility (through a BIOS file)

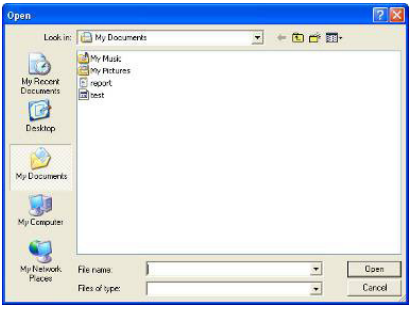
1. Installing BIOS Update Utility from the DVD Driver.
2. Download the proper BIOS from http://www.biostar.com.tw/

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

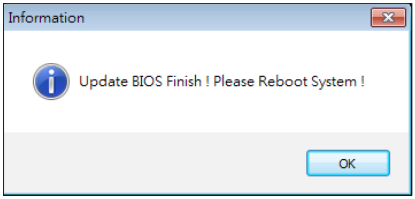
4. A warning message will show up to request your agreement to start the BIOS update. Click “OK” to start the update procedure.



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



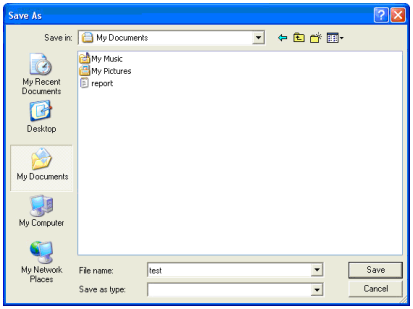
6. After the BIOS Update process is finished, click on “OK” to reboot the system.



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

Backup BIOS

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



UEFI BIOS Setup

Introduction

The purpose of this manual is to describe the settings in the AMI UEFI BIOS Setup program on this motherboard. The Setup program allows users to modify the basic system configuration and save these settings to NVRAM.

UEFI BIOS determines what a computer can do without accessing programs from a disk. This system controls most of the input and output devices such as keyboard, mouse, serial ports and disk drives. BIOS activates at the first stage of the booting process, loading and executing the operating system. Some additional features, such as virus and password protection or chipset fine-tuning options are also included in UEFI BIOS.

The rest of this manual will to guide you through the options and settings in UEFI BIOS Setup.

Plug and Play Support

This AMI UEFI BIOS supports the Plug and Play Version 1.0A specification.

EPA Green PC Support

This AMI UEFI BIOS supports Version 1.03 of the EPA Green PC specification.

ACPI Support

AMI ACPI UEFI BIOS support Version 1.0/2.0 of Advanced Configuration and Power interface specification (ACPI). It provides ASL code for power management and device configuration capabilities as defined in the ACPI specification, developed by Microsoft, Intel and Toshiba.

PCI Bus Support

This AMI UEFI BIOS also supports Version 2.3 of the Intel PCI (Peripheral Component Interconnect) local bus specification.

Using Setup

When starting up the computer, press **<Del>** during the **Power-On Self-Test (POST)** to enter the UEFI BIOS setup utility.

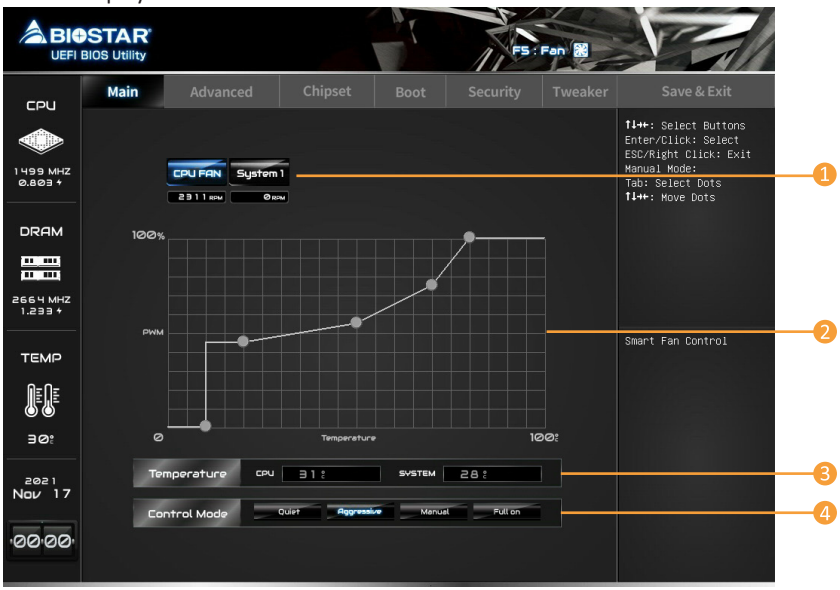
In the UEFI BIOS setup utility, you will see **General Help** description at the top right corner, and this is providing a brief description of the selected item. **Navigation Keys** for that particular menu are at the bottom right corner, and you can use these keys to select item and change the settings.

Note

- *The default UEFI BIOS settings apply for most conditions to ensure optimum performance of the motherboard. If the system becomes unstable after changing any settings, please load the default settings to ensure system's compatibility and stability. Use Load Setup Default under the Exit Menu.*
- *For better system performance, the UEFI BIOS firmware is being continuously updated. The UEFI BIOS information described in this manual is for your reference only. The actual UEFI BIOS information and settings on board may be slightly different from this manual.*
- *The content of this manual is subject to be changed without notice. We will not be responsible for any mistakes found in this user's manual and any system damage that may be caused by wrong-settings.*

A.I FAN Control

Press <F5> to display the A.I FAN Control menu.



1. CPU FAN/ System1: Click button to set the status value of CPU and system fan.

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

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

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

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

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

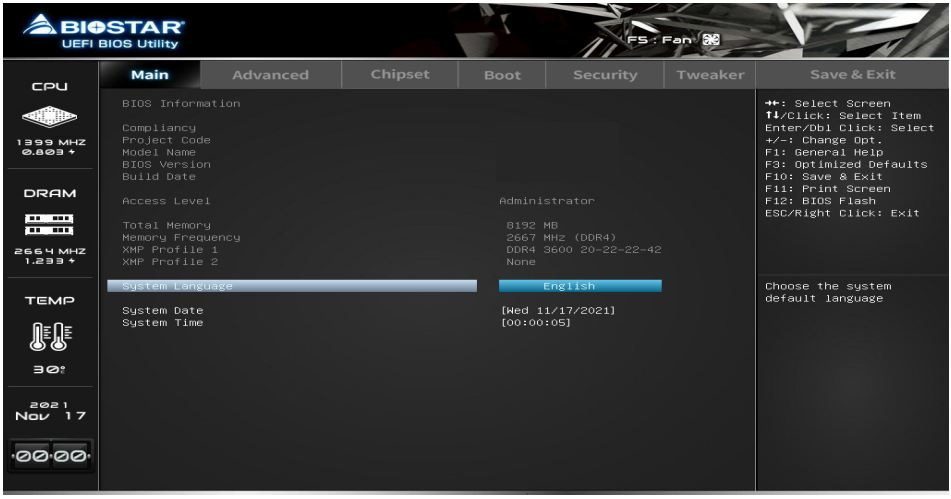
Note

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

» *Once you are finished making your selections, choose the <Save & Exit> menu to save.*

1. Main Menu

Once you enter AMI UEFI BIOS Setup Utility, the Main Menu will appear on the screen providing an overview of the basic system information.



BIOS Information

It shows system information including UEFI BIOS version, Project Code, Model Name, Build Date and etc.

Total Memory

Shows system memory size, VGA shard memory will be excluded.

Memory Frequency

Shows the system memory frequency.

System Language

Choose the system default language.

System Date

Set the system date. Note that the 'Day' automatically changes when you set the date.

System Time

Set the system internal clock.

2. Advanced Menu

The Advanced Menu allows you to configure the settings of CPU, Super I/O, Power Management, and other system devices.

Note

» *Beware of that setting inappropriate values in items of this menu may cause system to malfunction.*

CPU Configuration

This item shows CPU Information

C6DRAM

This item enables or disableds moving of DRAM contents to PRM memory when CPU is in C6 state.

Overclocking Lock

This item enables or disableds Overclocking Lock.

Hardware Prefetcher

This item to turn on/off the MLC streamer prefetcher.

Adjacent Cache Line Prefetch

This item to turn on/off prefetching of adjacent cache lines.

Intel (VMX) Virtualization Technology

This item enableds or disableds Intel Virtualization Technology. When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Hyper-Threading

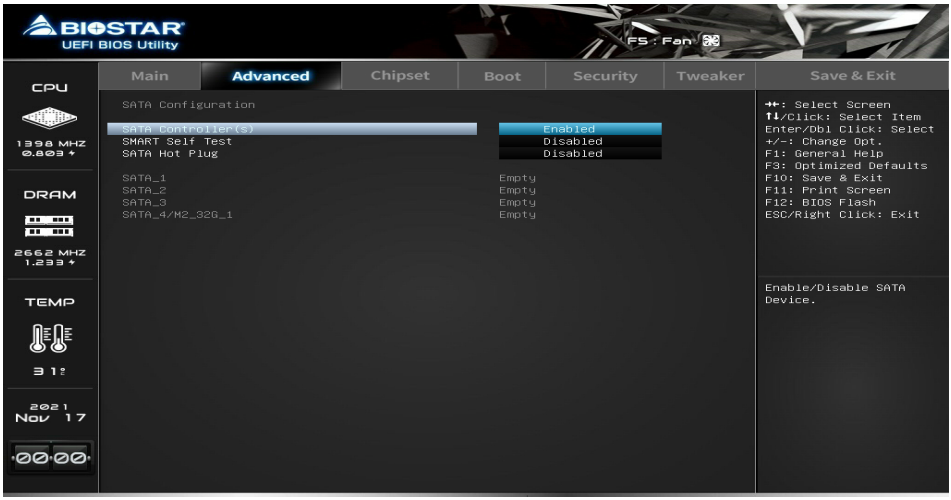
This enables or disables Hyper-Threading Technology.

AES

This item sets CPU Advanced Encryption Standard instructions.

SATA Configuration

The BIOS will automatically detect the presence of SATA devices. There is a sub-menu for each SATA device. Select a device and press <Enter> to enter the sub-menu for detailed options.



SATA Controller(s)

This item enables or disables Serial ATA Device.

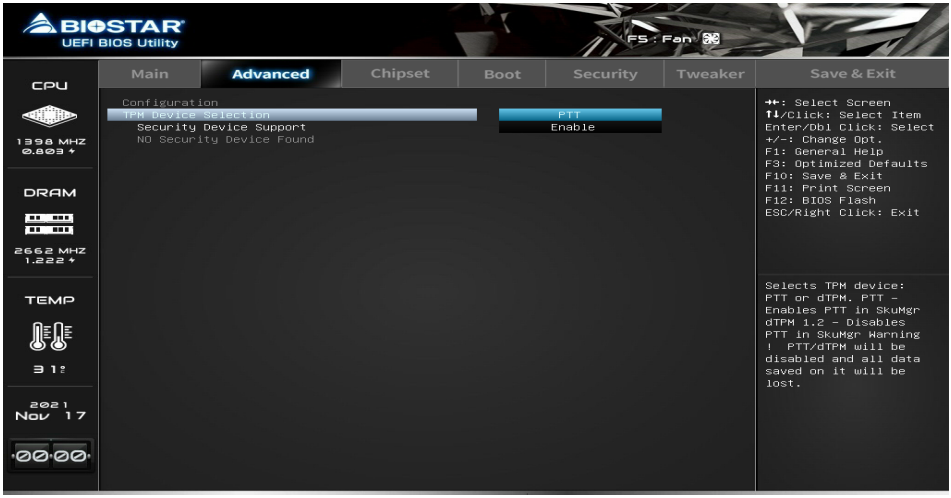
SMART Self Test

This item runs SMART Self Test on all HDDs during POST.

SATA Hot Plug

This item enables or disables designates SATA port as Hot Pluggable.

Trusted Computing



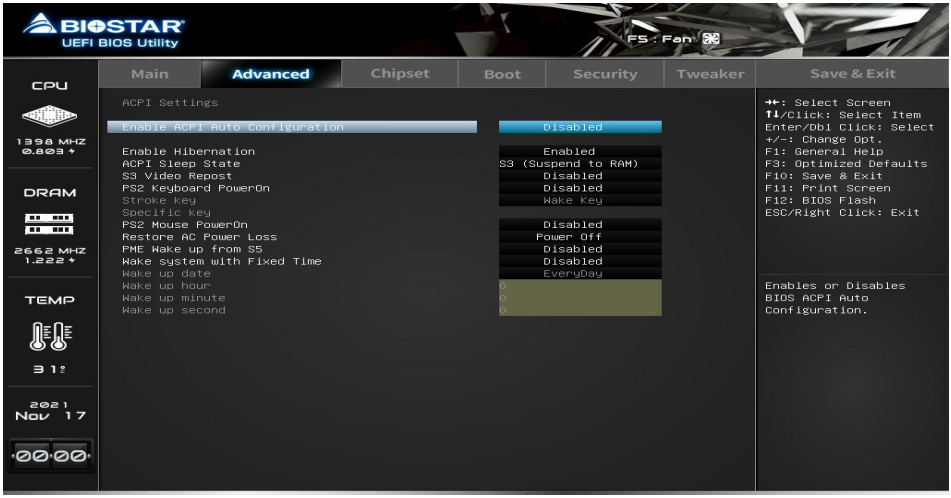
TPM Device Selection

This item allows you to select TPM Device.

Security Device Support

This item enables or disables BIOS support for security device. O.S will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

ACPI Settings



Enable ACPI Auto Configuration

This item enables or disables BIOS ACPI auto configuration function.

Enable Hibernation

This item enables or disables system ability to hibernate (0S/S4 sleep state). This option may not be effective with some OSs.

ACPI Sleep State

This item Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

S3 Video Repost

The item enables or disables S3 Video Repost. On enabling, Video Option ROM will be dispatched during S3 resume.

PS2 Keyboard PowerOn

This item allows you to control the keyboard power on function.

Stroke Keys

This item will show only when Keyboard PowerOn is set “Stroke Key.”

Specific Key

This item will show only when Keyboard PowerOn is set “Specific Key.” Press Enter to set Specific key.

PS2 Mouse PowerOn

This item allows you to control the mouse power on function.

Restore AC Power Loss

Specify what state to go to when power is re-applied after a power failure.

PME Wake up from S5

The item enables the system to wake from S5 using PME event.

Wake system with Fixed Time

This item enables or disables the system to wake on by alarm event. When this item is enabled, the system will wake on the hr::min::sec specified.

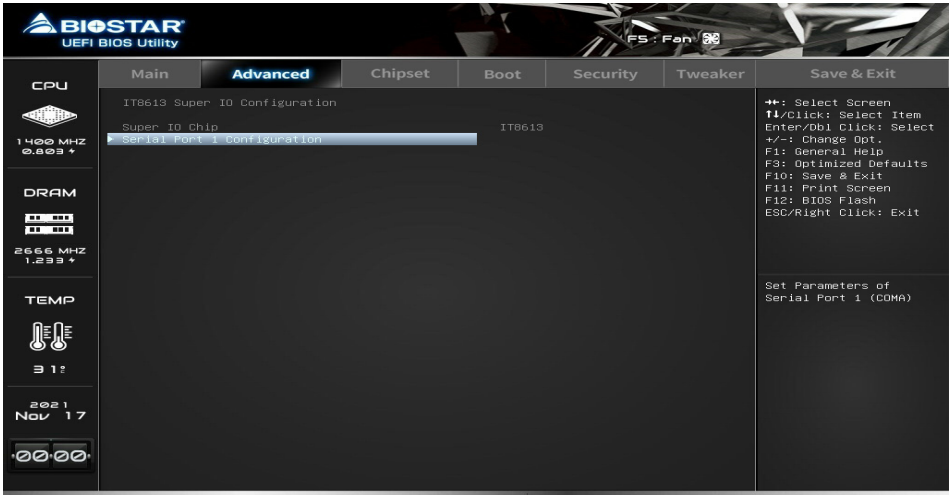
Wake up date

You can choose which date the system will boot up.

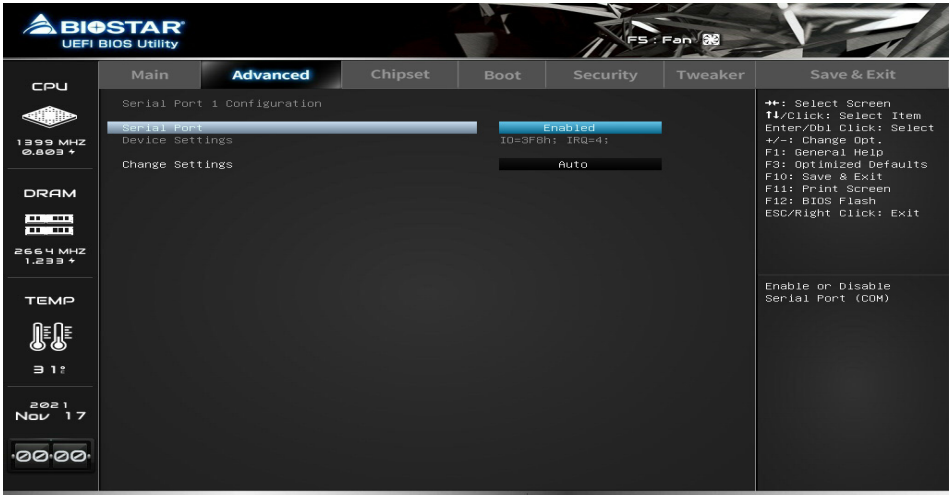
Wake up hour / Wake up minute / Wake up second

You can choose the system boot up time, input hour, minute and second to specify.

Super IO Configuration



Serial Port 1 Configuration



Serial Port

This item enables or disables serial Port.

Change Settings

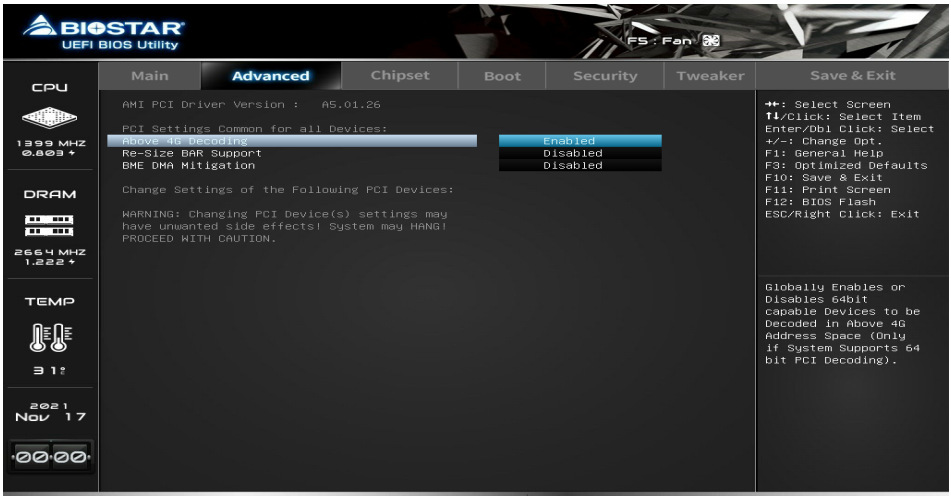
This item allows you to select an optimal settings for Super IO Device.

H/W Monitor

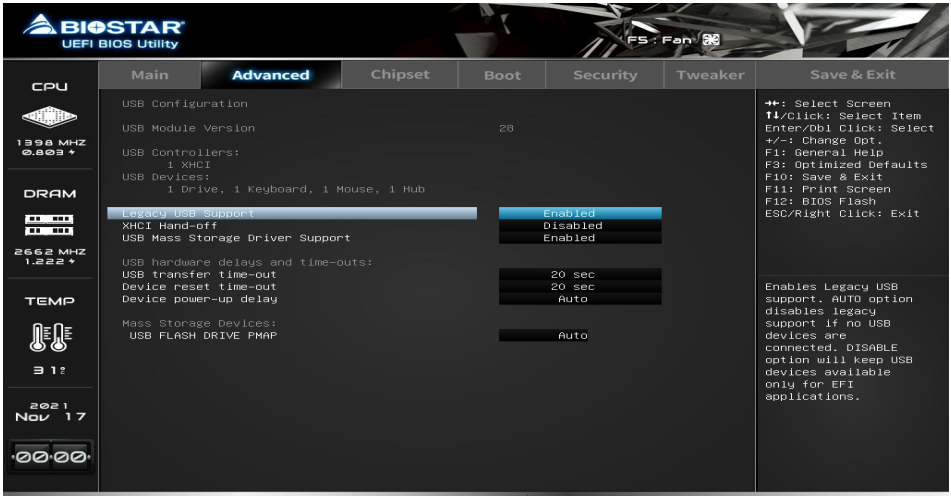
Shutdown Temperature

This item allows you to set up the CPU shutdown Temperature.

AMI Graphic Output Protocol Policy



USB Configuration



Legacy USB Support

The item allows you to enable Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.

XHCI Hand-off

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

USB Mass Storage Driver Support

The item allows you to enable or disable USB Mass Storage Driver Support.

USB transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers.

Device reset time-out

The item sets USB mass storage device Start Unit command time-out.

Device power-up delay

Maximum time the device will take before it properly reports itself to the Host Controller. “Auto” uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.

Note

» *The following items appear only when you set the Device power-up delay function to [Manual].*

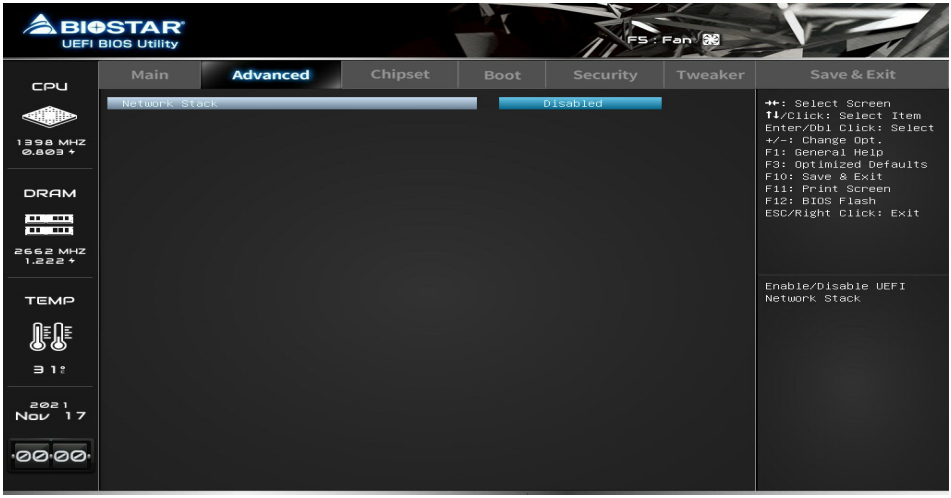
Device power-up delay in seconds

Delay range is 1 ~ 40 seconds, in one second increments.

USB FLASH DRIVE PMAP

Mass storage device emulation type. ‘AUTO’ enumerates devices according to their media format. Optical drives are emulated as ‘CDROM‘ , drives with no media will be emulated according to a drive type.

Network Stack Configuration



Network Stack

This item enables or disables UEFI network stack

Note

» *The following items appear only when you set the Network Stack function to [Enabled]*

IPv4 PXE Support

This item enables or disables IPv4 PXE Boot Support. If disabled IPv4 PXE boot support will not be available.

IPv4 HTTP Support

This item enables or disables IPv4 HTTP Boot Support. If disabled IPv4 HTTP boot support will not be available.

IPv6 PXE Support

This item enables or disables IPv6 PXE Boot Support. If disabled IPv6 PXE boot support will not be available.

IPv6 HTTP Support

This item enables or disables IPv6 HTTP Boot Support. If disabled IPv6 HTTP boot support will not be available.

PXE boot wait time

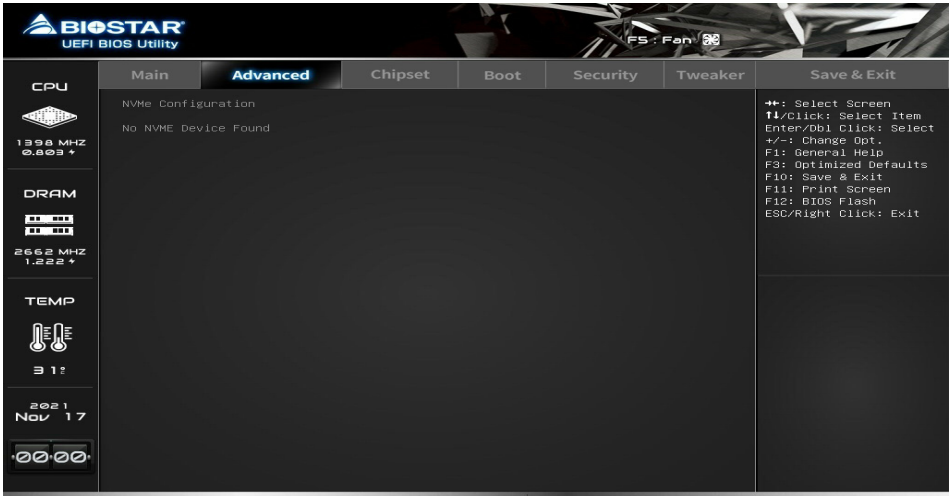
Wait time to press ESC key to abort the PXE boot.

Media detect count

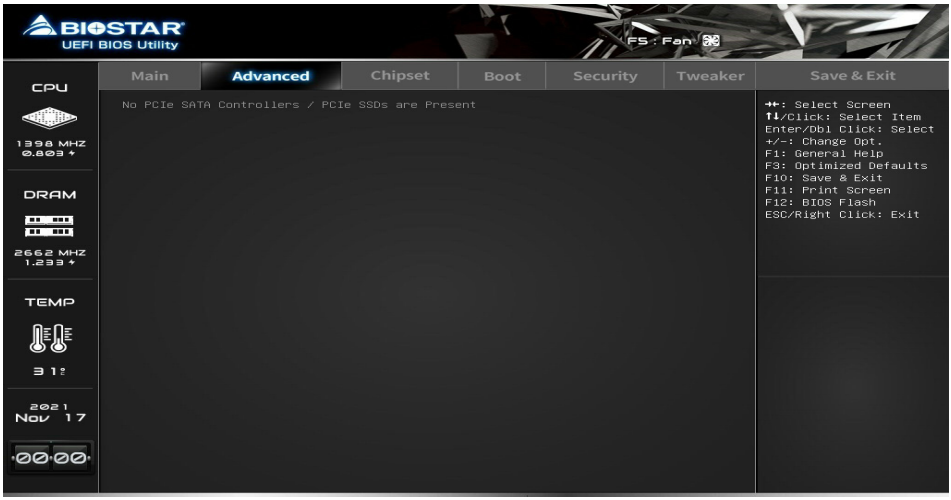
Wait time in sec to detect media.

NVMe Configuration

The item shows NVMe controller and driver information.



Offboard PCIe SATA Controller

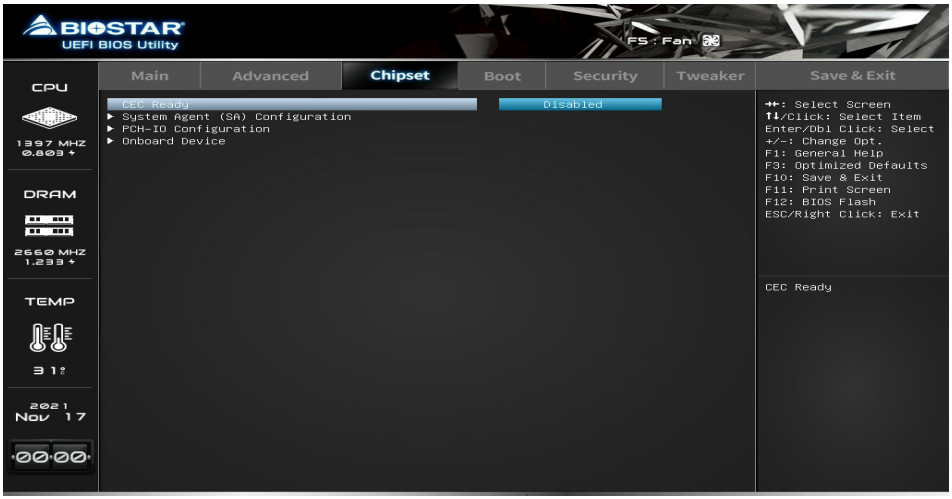


3. Chipset Menu

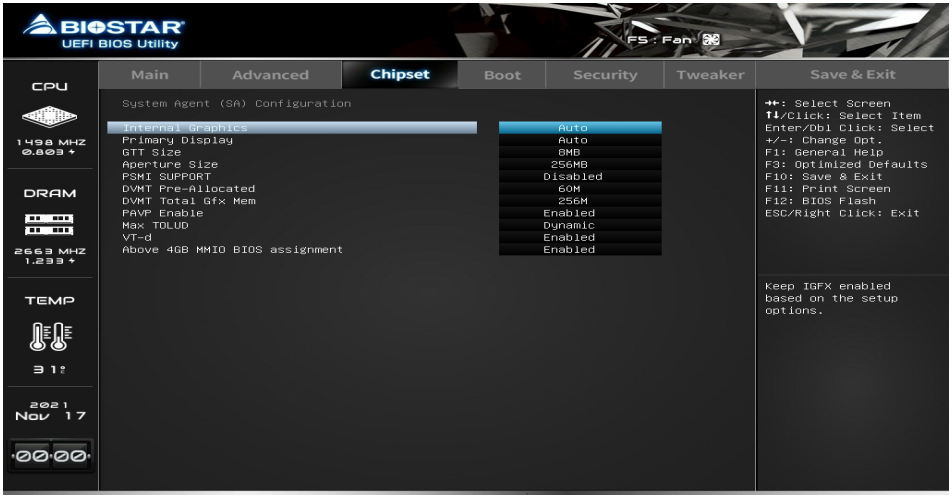
This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed of the CPU itself uses when communicating with its own special components.

Note

» *Beware of that setting inappropriate values in items of this menu may cause system to malfunction.*



System Agent (SA) Configuration



Internal Graphics

This item keeps IGFX enabled based on the setup options.

Primary Display

This item selects which of IGFX/PEG/PCI Graphics device should be Primary Display or select SG for Switchable Gfx.

GTT Size

This item selects GTT Size.

Aperture Size

This item selects Aperature Size. Note : Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.

DVMT Pre-Allocated

This item selects DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

DVMT Total Gfx Mem

This item selects DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.

PAVP Enable

This item enables or disables PAVP.

Max TOLUD

Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller.

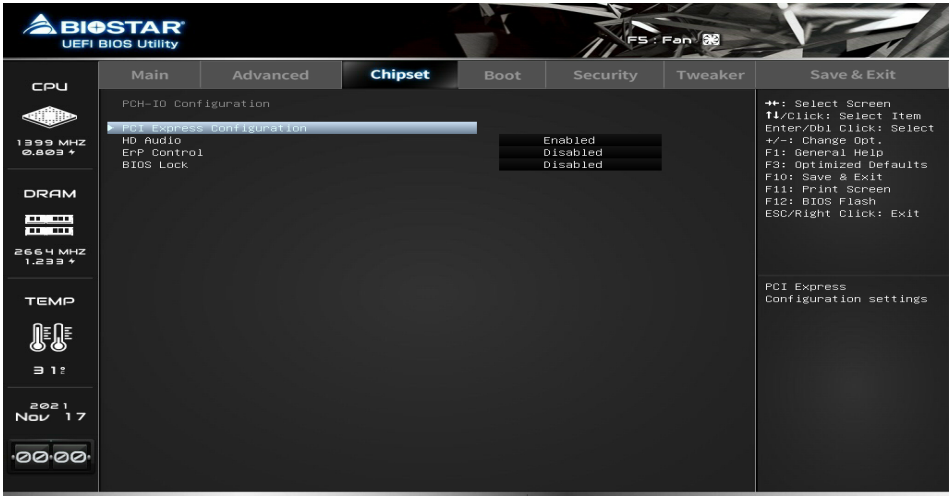
VT-d

This item enables or disables VT-d capability.

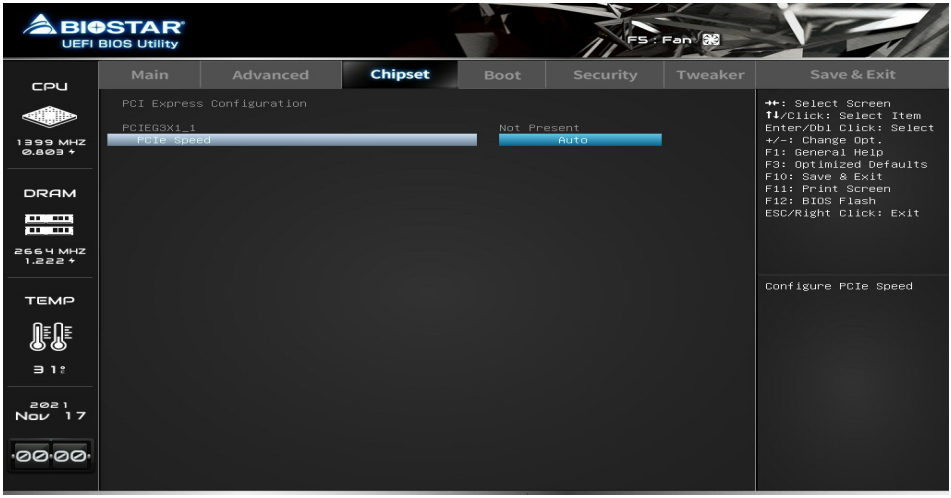
Above 4GB MMIO BIOS assignment

This item enables or disables above 4GB MemoryMappedIO BIOS assignment. This is enabled automatically when Aperture Size is set to 2048MB.

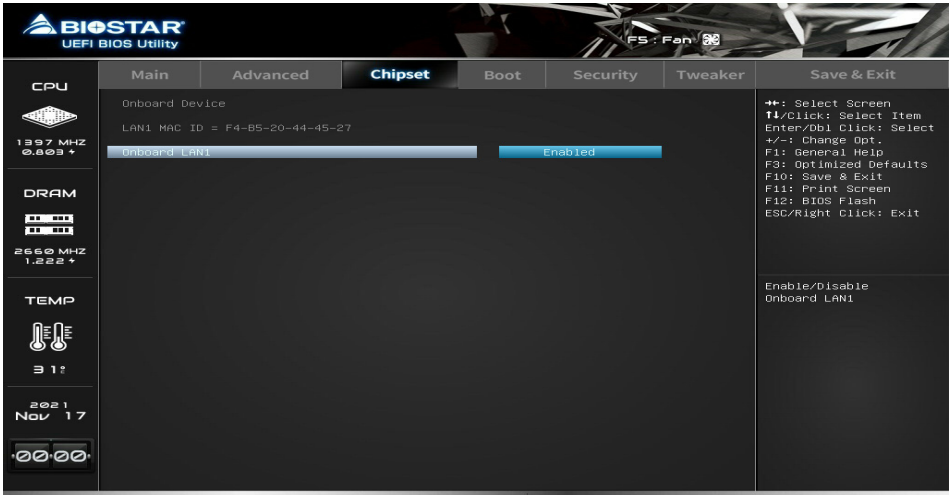
PCH-IO Configuration



PCI Express Configuration



Onboard Device



Onboard LAN1

This item enables or disables Onbaord LAN1.

4. Boot Menu

This menu allows you to setup the system boot options.

Setup Prompt Timeout

This item sets number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

Bootup NumLock State

This item selects the keyboard NumLock state.

Full Screen Logo Display

This item enable or disable Full Screen Logo Show function.

Boot Success Beep

When this item is set to Enabled, BIOS will let user know boot success with beep.

BIOS Flash protection

While enabled, it can't flash write and flash erase by SMI.

Fast Boot

This item enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

Note

» *The following items appear only when you set the Fast Boot function to [Enabled]*

SATA Support

If Last Boot HDD Only, Only last boot HDD device will be available in post. If all SATA devices, all SATA devices will be available in OS and post.

VGA Support

If Auto, only install Legacy OpRom with Legacy OS and logo would NOT be shown during post. EFI driver will still be installed with EFI OS.

USB Support

If Disabled, all USB devices will NOT be available until after OS boot. If Partial Initial, USB Mass Storage and specific USB port/device will NOT be available before OS boot. If Enabled, all USB devices will be available in OS and Post.

PS2 Devices Support

If Disabled, PS2 devices will be skipped.

Network Stack Driver Support

If Disabled, Network Stack Drivers will be skipped.

Redirection Support

If disable, Redirection function will be disabled.

CSM Support

This option enables or disables CSM support.

Note

» *The following items appear only when you set the CSM Support function to [Enabled]*

Network

This option controls the execution of UEFI and Legacy Network OpROM

Storage

This option controls the execution of UEFI and Legacy Storage OpROM

Video

This option controls the execution of UEFI and Legacy Video OpROM

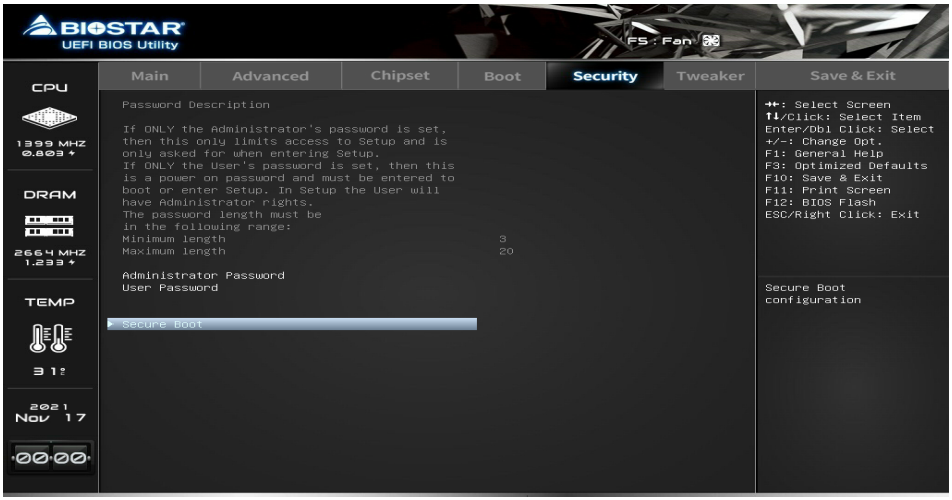
Other PCI devices

This item determines OpROM execution policy for devices other than Network, Storage, or Video.

Boot Option #1/ #2/ #3/ #4/ #5/ #6/ #7/ #8/ #9/ #10/ #11/ #12/ #13/ #14/ #15

It controls the placement of newly detected UEFI boot options.

5. Security Menu



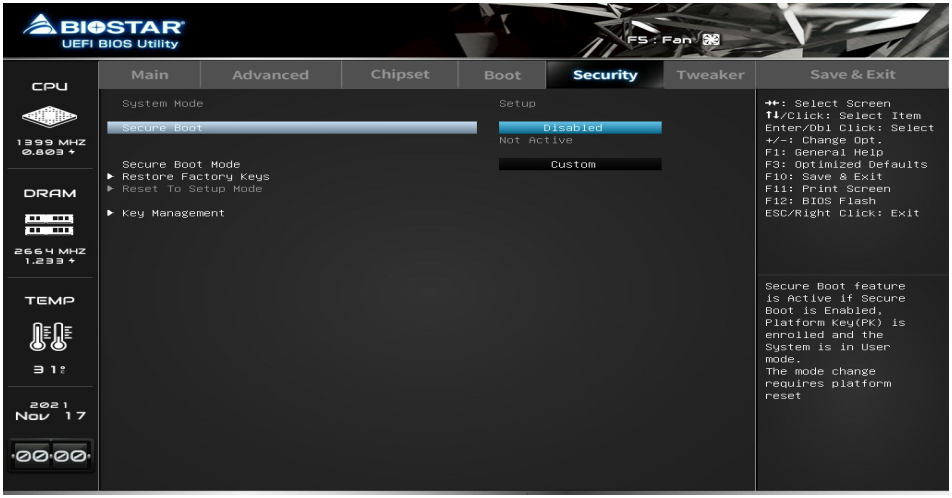
Administrator Password

This item sets Administrator Password.

User Password

This item sets User Password.

Secure Boot Menu



Secure Boot

Secure Boot feature is active if Secure Boot is enabled, Platform Key(PK) is enrolled and the system is in user mode. The mode change requires platform reset.

Secure Boot Mode

Secure Boot mode options : Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

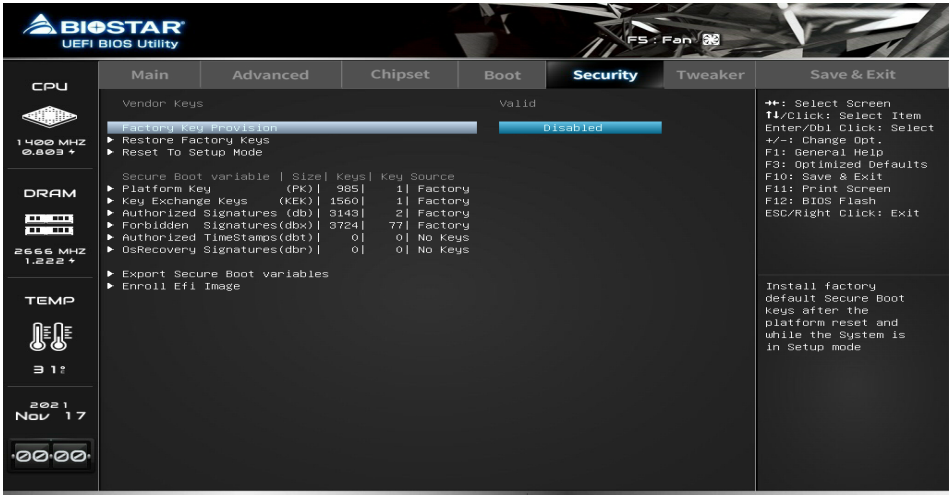
Restore Factory Keys

Force System to User Mode. Install factory default Secure Boot Key databases.

Restore To Setup Mode

Delete all Secure Boot Key databases from NVRAM.

Key Management



Factory Key Provision

This item install factory default Secure Boot Keys after the platform reset and while the system is in setup mode.

Restore Factory Keys

Force System to User Mode. Install factory default Secure Boot key databases.

Reset To Setup Mode

This item delete all Secure Boot key databases from NVRAM.

Export Secure Boot Variables

Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device.

Enroll EFI Image

This item allows the image to run in Secure Boot mode. Enroll SHA256 hash certificate of a PE image into Authorized Signature Database(db).

Platform Key (PK)

Key Exchange Keys

Authorized Signatures

Forbidden Signatures

Authorized Timestamps

OsRecovery Signatures

6. Tweaker Menu

This submenu allows you to change voltage and clock of various devices.

Note

» *We suggest you use the default setting. Changing the voltage and clock improperly may damage the device.*

» *The options and default settings might be different by RAM or CPU models.*

» *Beware of that setting inappropriate values in items of this menu may cause system to malfunction.*

- *Values in Red: Danger*
- *Values in Yellow: Warning*
- *Values in White: Normal*

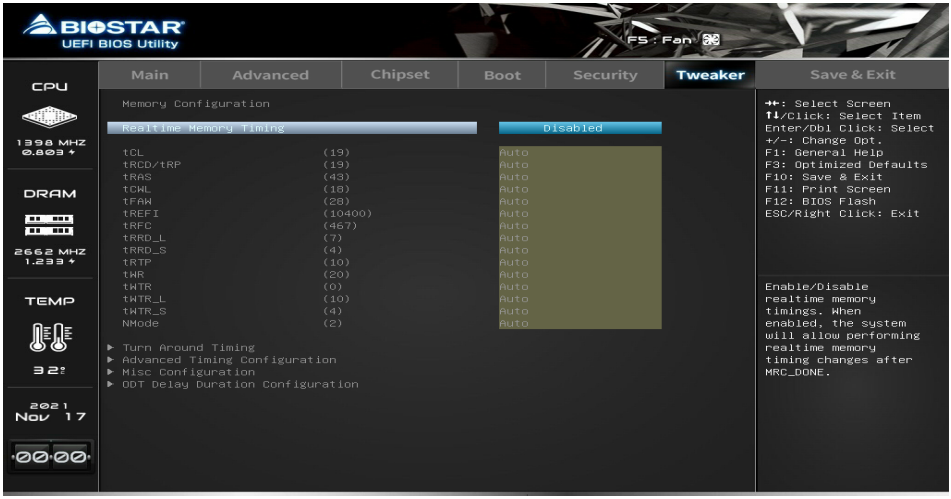
Start Page

You can set the entrance page when you enter UEFI BIOS Setup.

Memory Profile

Select DIMM timing profile. The below values start with the currently running values and don't auto populate.

Memory Timing Configuration



tCL

This item allows you to select CAS Latency, 0: AUTO, max: 31

tRCD/tRP

This item allows you to select RAS to CAS delay time and Row Prechrge delay time, 0: AUTO, max: 63

tRAS

This item allows you to select Row Active Time, 0: AUTO, max: 64

tCWL

This item allows you to select Minimum CAS Write Latency Delay, 0: AUTO, max: 20

tFAW

This item allows you to select Four Activate Window Delay Time, 0: AUTO, max: 63

tREFI

This item allows you to select Refresh Interval, 0: AUTO, max: 65535

tRFC

This item allows you to select Min Refresh Recovery Delay Time, 0: AUTO, max: 1023

tRRD_L

This item allows you to select Min Row Active to Row Active Delay Time for Same Bank Group, 0: AUTO, max: 31

tRRD_S

This item allows you to select Min Row Active to Row Active Delay Time for Different Bank Group, 0: AUTO, max: 31

tRTP

This item allows you to select Min Internal Read to Precharge Command Delay Time. 0: AUTO, max: 15. DDR4 legal values: 5, 6, 7, 8, 9, 10, 12

tWR

This item allows you to select Min Write Recovery Time, 0: AUTO, legal values: 5, 6, 7, 8, 10, 12, 14, 16, 18, 20, 24, 30, 34, 40

tWTR_L

This item allows you to select Min Internal Write to Read Command Delay Time for Same Bank Group, 0: AUTO, max: 60

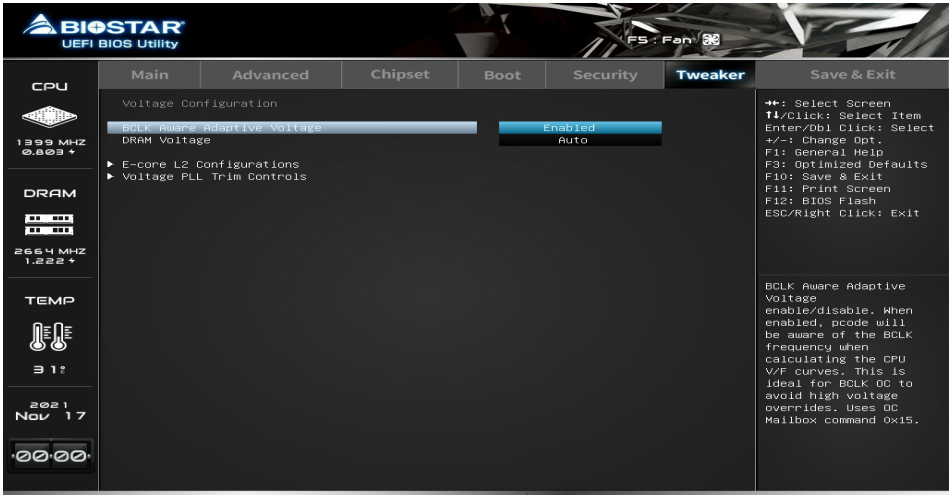
tWTR_S

This item allows you to select Min Internal Write to Read Command Delay Time for Different Bank Group, 0: AUTO, max: 28

NMode

This item allows you to select System command rate, range 0-2, 0 means auto, 1 = 1N, 2 = 2N

Voltage Configuration



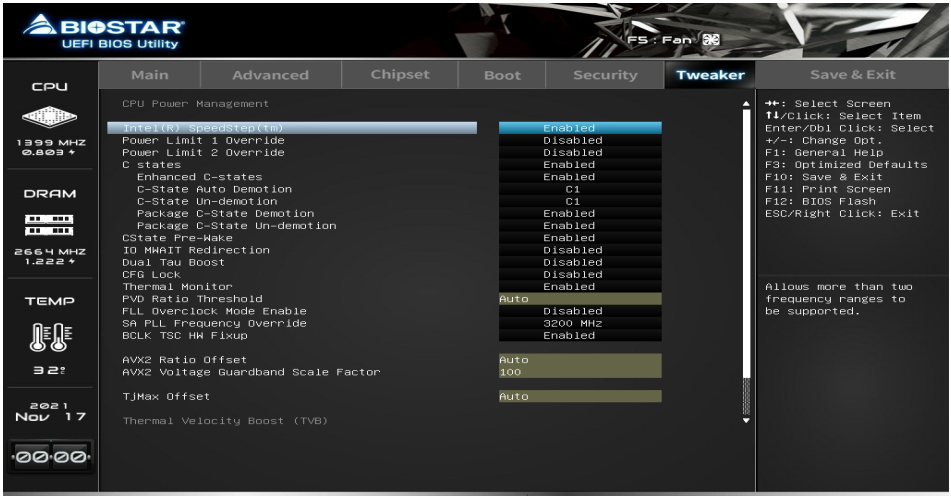
BCLK Aware Adaptive Voltage

This item enables or disables BCLK Aware Adaptive Voltage. When enabled, pcode will be aware of the BCLK frequency when calculating the CPU V/F curves. This is ideal for BCLK OC to avoid high voltage overrides.

DRAM Voltage

This item sets DRAM Over Voltage.

CPU Power Management



Intel(R) SpeedStep(tm)

This item allows more than two frequency ranges to be supported.

Power Limit 1 Override

This item enables or disables Power Limit 1 Override. If this option is disabled,BIOS will program the default values for Power Limit 1 and Power Limit 1 Time Window.

Note

» *The following items appear only when you set the Power Limit 1 Override function to [Enabled]*

Power Limit 1

This item Power Limit 1 value in Milli Watts. BIOS will round to the nearest 1/8W when programming. 0 = no custom override. For 12.50W, enter 12500.

Power Limit 2 Override

This item enables or disables Power Limit 2 Override. If this option is disabled, BIOS will program the default values for Power Limit 2.

Note

» *The following items appear only when you set the Power Limit 2 Override function to [Enabled]*

Power Limit 2

This item Power Limit 2 value in Milli Watts. BIOS will round to the nearest 1/8W when programming. If the value is 0, BIOS will program this value as 1.25*TDP. For 12.50W, enter 12500. Processor applies control policies such that the package power does not exceed this limit.

C states

This item enables or disables CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.

Enhanced C-states

This item enables or disables C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.

C-States Auto Demotion

This item sets C-State Auto Demotion.

C-States Un-demotion

This item sets C-State Un-demotion.

Package C-State Demotion

This item sets Package C state Demotion.

Package C-State Un-demotion

This item sets Package C-State Un-demotion.

CState Pre-Wake

Disable - Sets bit 30 of POWER_CTL MSR(0x1FC) to 1 to disable the Cstate Pre-Wake.

CFG Lock

This item confgire MSR 0xE2[15], CFG lock bit.

Thermal Monitor

This item enables or disables Thermal Monitor.

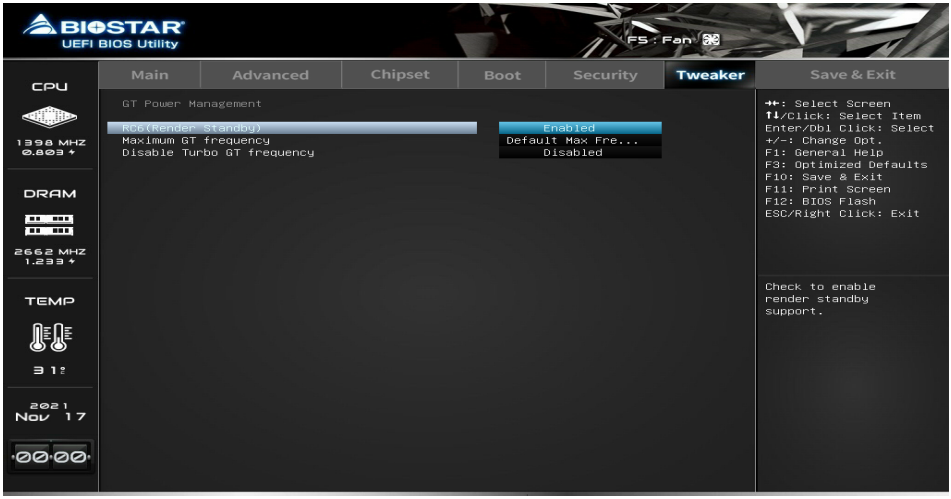
AVX2 Ratio Offset

This item AVX2 Ratio Offset. Specifies number of bins to decrease AVX ratio vs. Core Ratio. AVX is a more stressful workload, it is helpful to lower the AVX ratio to ensure maximum possible ratio for SSE workloads.

TjMax Offset

This item TjMax Offset. Specified value here is clipped by pCode to support TjMax in the range of 62 to 115 deg Celsius.

GT Power Management



RC6(Render Standby)

This item enables or disables Render Standby.

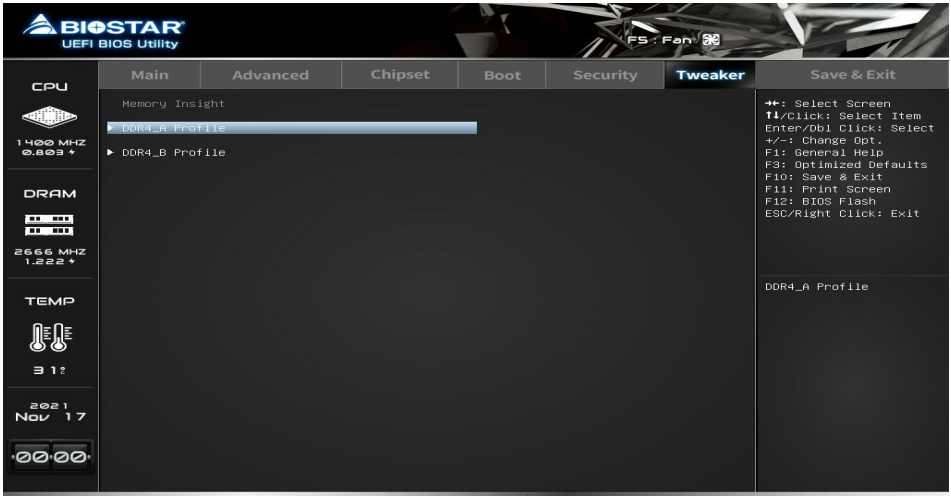
Maximum GT frequency

This item maximum GT frequency limited by te user. Value beyond the range will be clipped to min/max supported by SKU.

Disable Turbo GT frequency

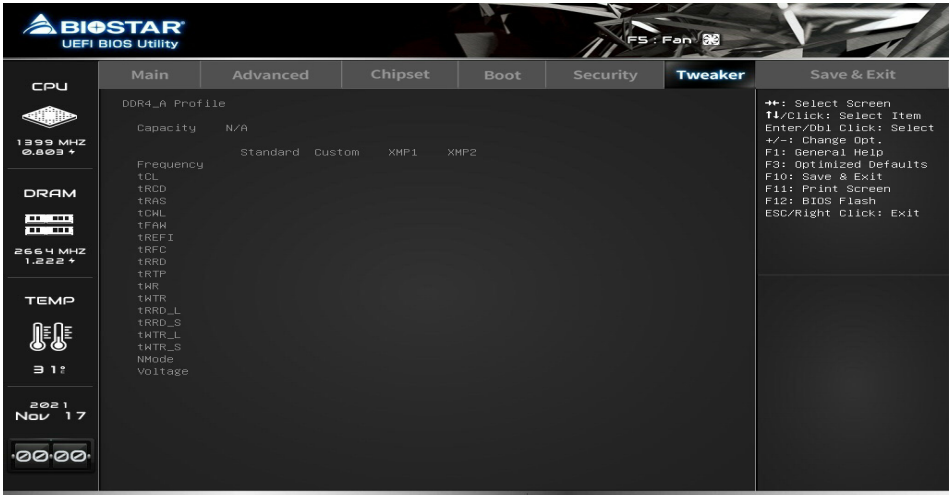
This item Disable Turbo GT frequency. Enabled: Disables Turbo GT frequency. Disabled: GT frequency is no limited.

Memory Insight



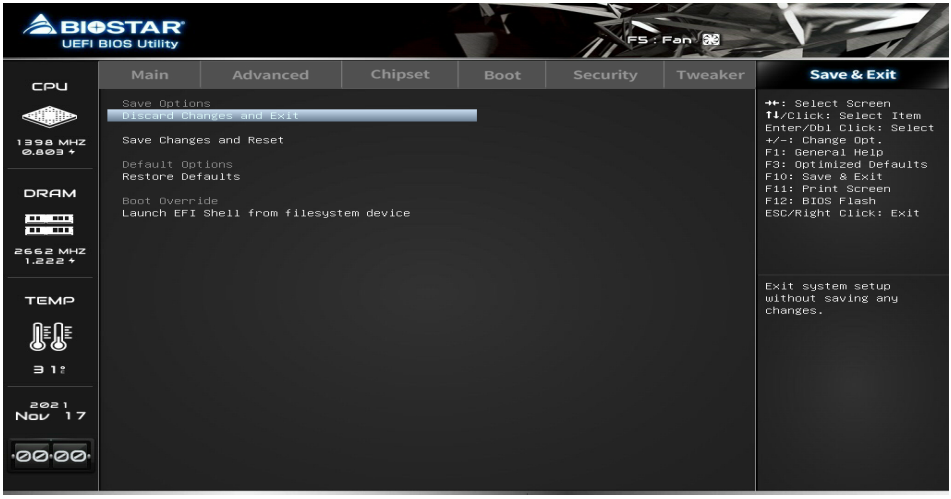
DDR4_A Profile

These items display memory information.



7. Save & Exit Menu

This menu allows you to load the optimal default settings, and save or discard the changes to the BIOS items.



Discard Changes and Exit

Abandon all changes made during the current session and exit setup.

Save Changes and Reset

Reset the system after saving the changes.

Restore Defaults

This selection allows you to reload the BIOS when problem occurs during system booting sequence. These configurations are factory settings optimized for this system.

Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices.