BIOS User Guide

TB250-BTC PRO / TB250-BTC+

BIOSTAR®

WWW.BIOSTAR.COM.TW

BIOS Update

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

- BIOSTAR BIOS 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 BIOS 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.*

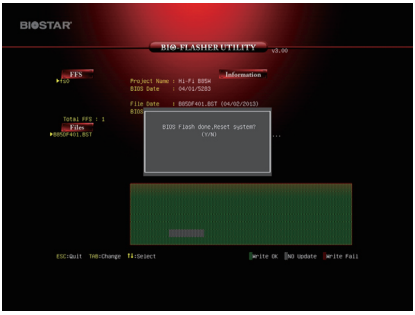
Updating BIOS with BIOSTAR BIOS Flasher

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 BIOS-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.



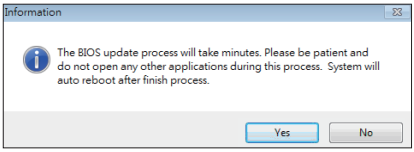
8. While the system boots up and the full screen logo shows up, press <DEL> key to enter BIOS setup.
After entering the BIOS setup, please go to the <Save & Exit>, using the <Restore Defaults> function to load Optimized Defaults, and select <Save Changes and Reset> to restart the computer. Then the BIOS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

BIOS Update Utility (through the Internet)

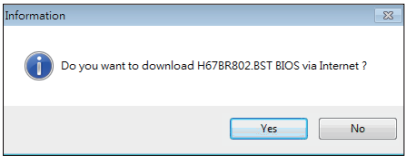
1. Installing BIOS Update Utility from the DVD Driver.
2. Please make sure the system is connected to the internet before using this function.

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

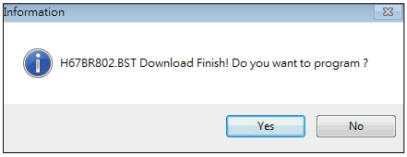
4. An open dialog will show up to request your agreement to start the BIOS update. Click "Yes" to start the online update procedure.



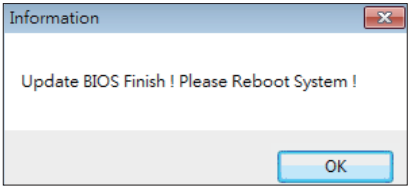
5. If there is a new BIOS version, the utility will ask you to download it. Click "Yes" to proceed.



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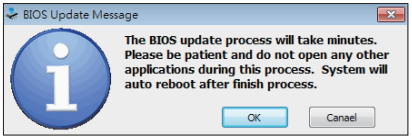
After entering the BIOS setup, please go to the <Save & Exit>, using the <Restore Defaults> function to load Optimized Defaults, and select <Save Changes> and <Reset> to restart the computer. Then, the BIOS Update is completed.

BIOS Update Utility (through a BIOS file)

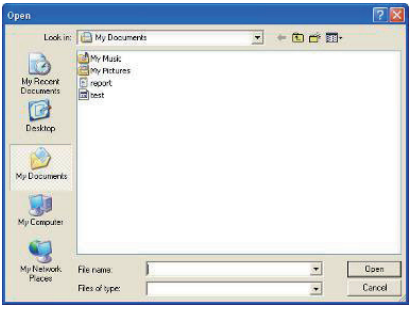
1. Installing BIOS Update Utility from the DVD Driver.
2. Download the proper BIOS from http://www.biostar.com.tw/

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

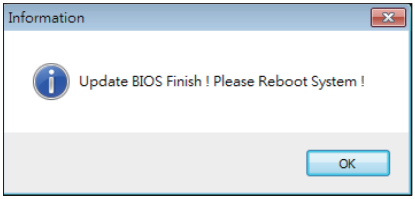
4. A warning message will show up to request your agreement to start the BIOS update. Click “OK” to start the update procedure.



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.



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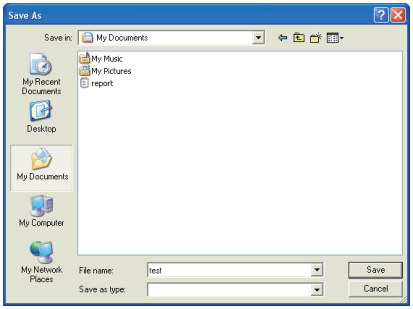
After entering the BIOS setup, please go to the <Save & Exit>, using the <Restore Defaults> function to load Optimized Defaults, and select <Save Changes and Reset> to restart the computer. Then, the BIOS Update is completed.

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.

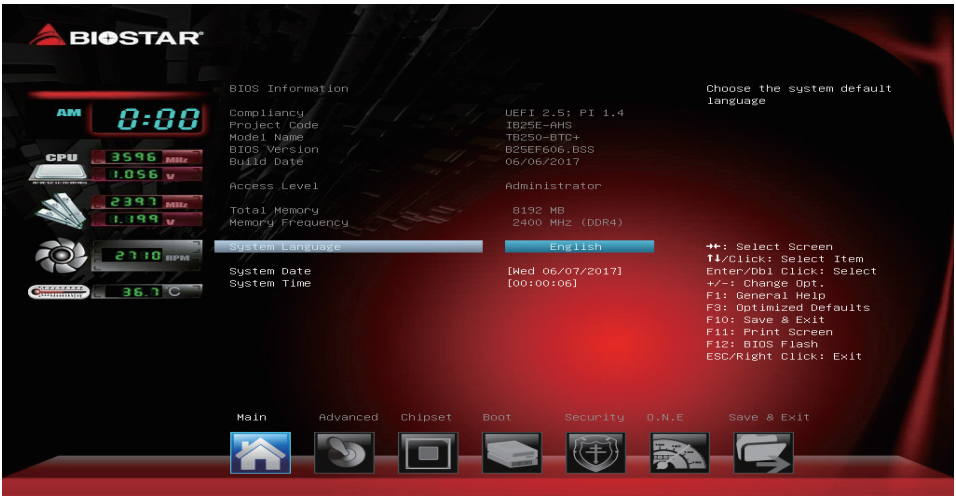
In the UEFI BIOS setup utility, you will see **General Help** description at the top right corner, and this is providing a brief description of the selected item. **Navigation Keys** for that particular menu are at the bottom right corner, and you can use these keys to select item and change the settings.

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.*

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

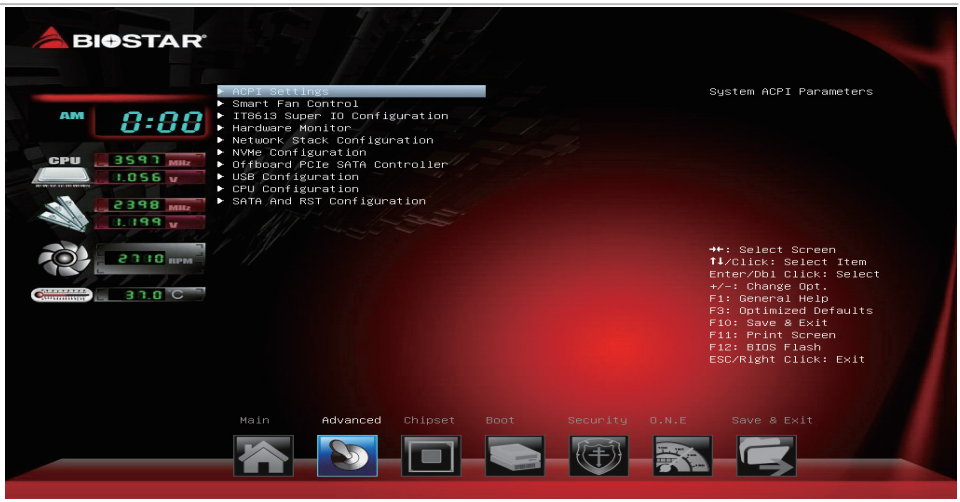
Set the system internal clock.

2. Advanced Menu

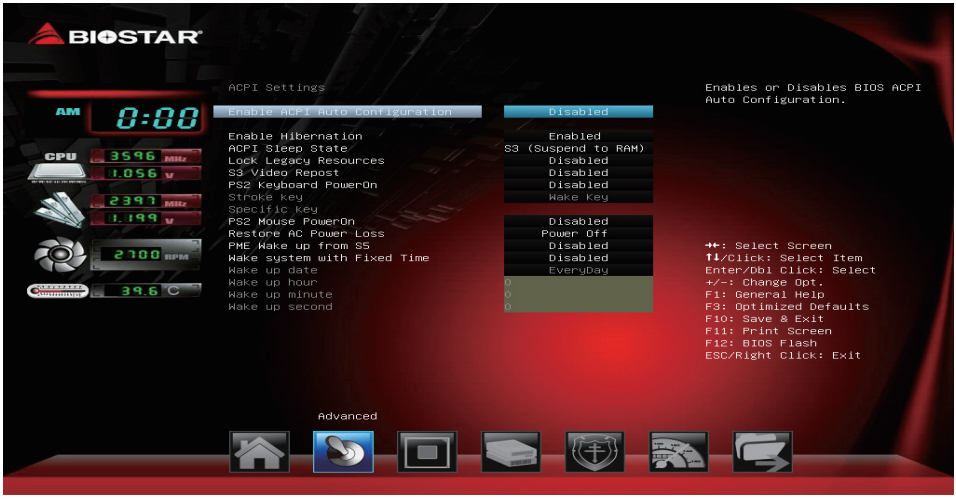
The Advanced Menu allows you to configure the settings of CPU, Super I/O, Power Management, and other system devices.

Note

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



ACPI Settings



Enable ACPI Auto Configuration

This item enables or disables BIOS ACPI auto configuration function.
Options: Disabled (Default) / Enabled

Enable Hibernation

This item enables or disables system ability to hibernate (0S/S4 sleep state). This option may be not effective with some OS.
Options: Enabled (Default) / Disabled

ACPI Sleep State

This item selects the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
Options: S3 only (Suspend to RAM) (Default) / Suspend Disabled

Lock Legacy Resources

The item enables or disables Lock of Legacy Resources.
Options: Disabled (Default) / Enabled

S3 Video Repost

The item enables or disables S3 Video Repost.
Options: Disabled (Default) / Enabled

PS2 Keyboard PowerOn

This item allows you to control the keyboard power on function.
Options: Disabled (Default) / Any Key / Stroke Key / Specific Key

Stroke Keys
This item will show only when Keyboard PowerOn is set “Stroke Key.”
Options: Wake Key (Default) / Power Key / Ctrl+F1 / Ctrl+F2 / Ctrl+F3 / Ctrl +F4 / Ctrl+F5 / Ctrl+F6

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.
Options: Disabled (Default) / Enabled

Restore AC Power Loss

Specify what state to go to when power is re-applied after a power failure.
Options: Power Off (Default) / Power On / Last State

PME Wake up from S5

The item enables the system to wake from S5 using PME event.
Options: Disabled (Default) / Enabled

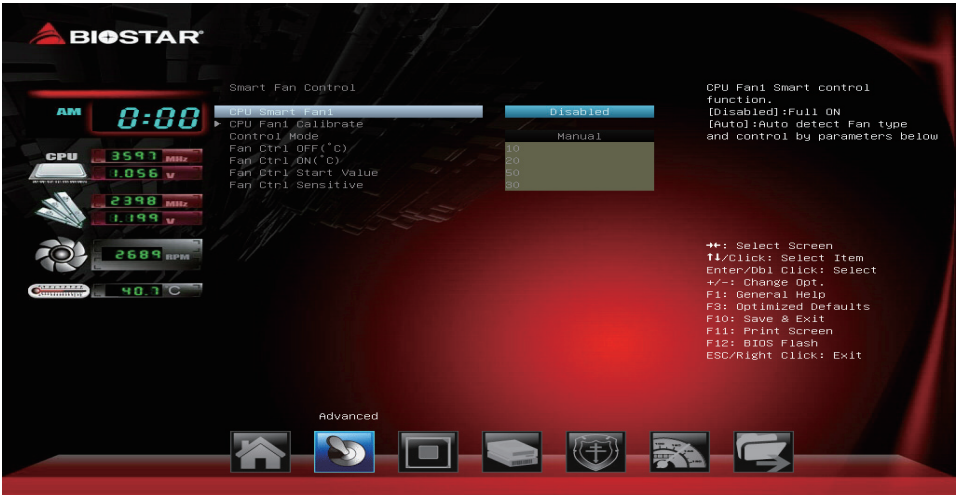
Wake system with Fixed Time

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.
Options: Disabled (Default) / Enabled

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.

SMART FAN Control



CPU Smart Fan1

This item allows you to control the CPU Smart Fan function.
Options: Disabled (Default) / Auto

Note

» *The following items appear only when you set the Smart Fan function to [Auto].*

CPU Fan1 Calibrate

Press [ENTER] to calibrate CPU Fan speed.

Control Mode

This item provides several operation modes of the fan.
Options: Manual (Default) / Quiet / Aggressive

Fan Ctrl OFF(°C)

When CPU temperature is lower than this value, the CPU fan will keep lowest RPM.
Options: 10 (°C) (Default)

Fan Ctrl On(°C)

When CPU temperature is higher than this value, the CPU fan controller will turn on.
Options: 20 (°C) (Default)

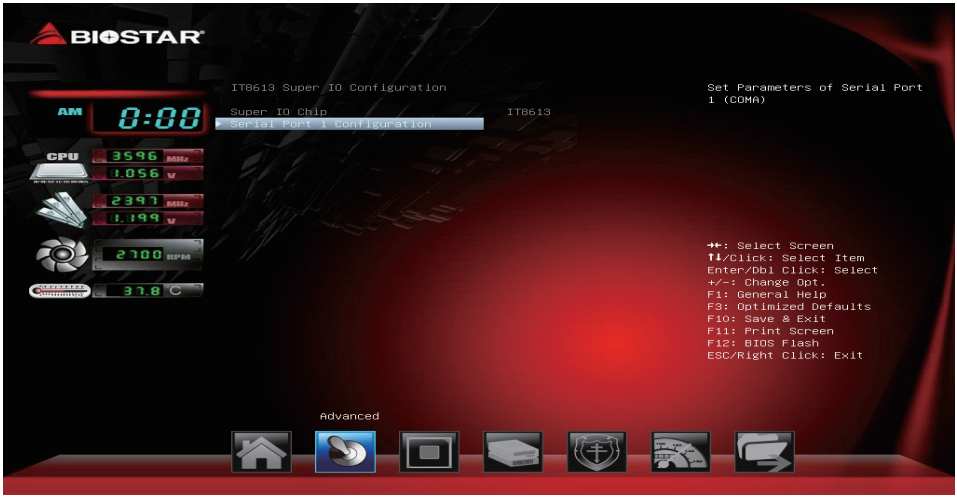
Fan Ctrl Start Value

This item sets CPU FAN Start Speed Value.
Options: 50 (Default)

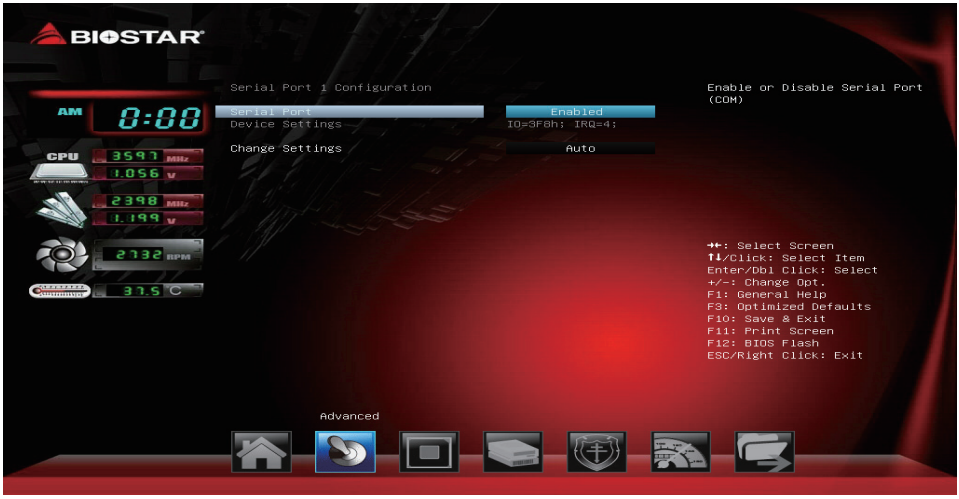
Fan Ctrl Sensitive

The bigger the numeral is, the higher the FAN speed is.
Options: 30 (Default)

Super IO Configuration



Serial Port 1 Configuration



Serial Port

This item enables or disables Serial Port (COM).

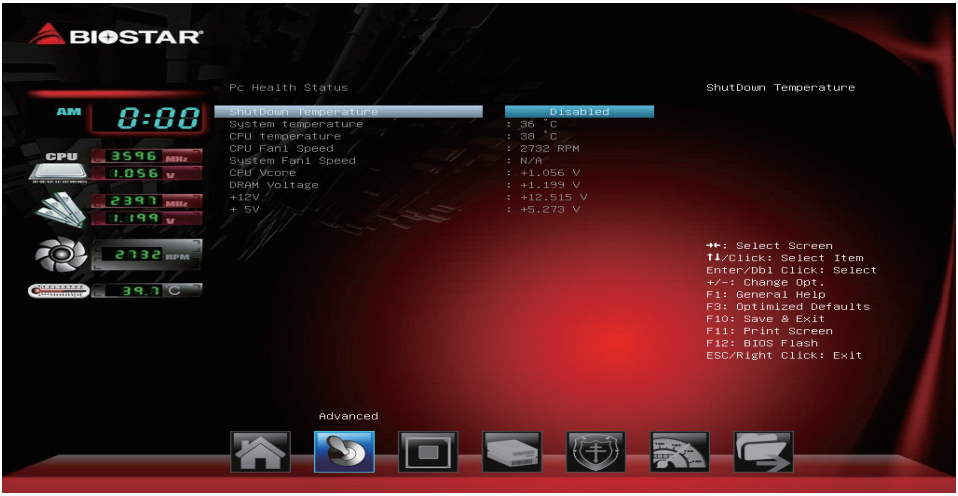
Options: Enabled (Default) / Disabled

Change Settings

This item selects an optimal setting for Super IO device.

Options: Auto (Default) / IO=3F8h; IRQ=4 / IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12 / IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12

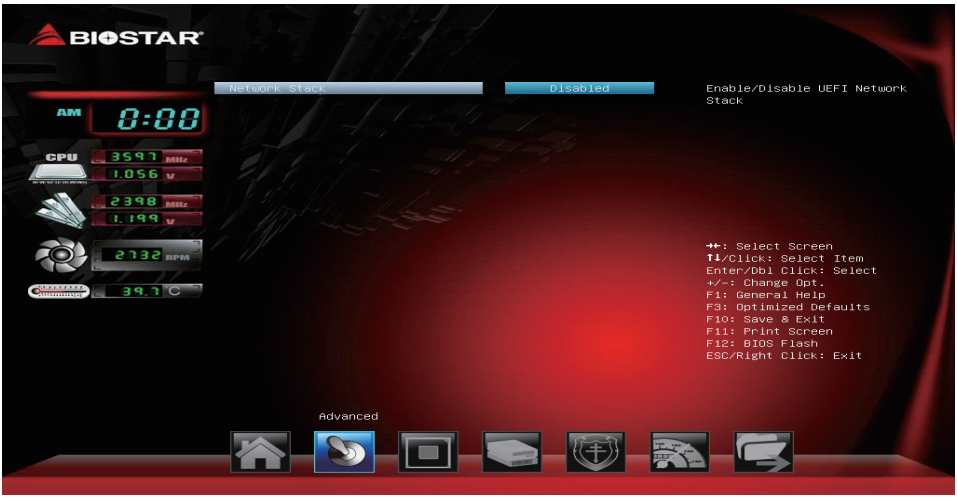
H/W Monitor



Shutdown Temperature

This item allows you to set up the CPU shutdown Temperature.
Options: Disabled (Default) / 70°C/158°F / 75°C/167°F / 80°C/176°F / 85°C/185°F / 90°C/194°F

Network Stack Configuration



Network Stack

This item enables or disables UEFI network stack
Options: Disabled (Default) / Enabled

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 booth option will not be created.
Options: Disabled (Default) / Enabled

IPv4 HTTP Support
This item enables or disables IPv4 HTTP Boot Support. If disabled IPV4 HTTP boot option will not be created.
Options: Disabled (Default) / Enabled

IPv6 PXE Support
This item enables or disables IPv6 PXE Boot Support. If disabled IPv6 booth option will not be created.
Options: Disabled (Default) / Enabled

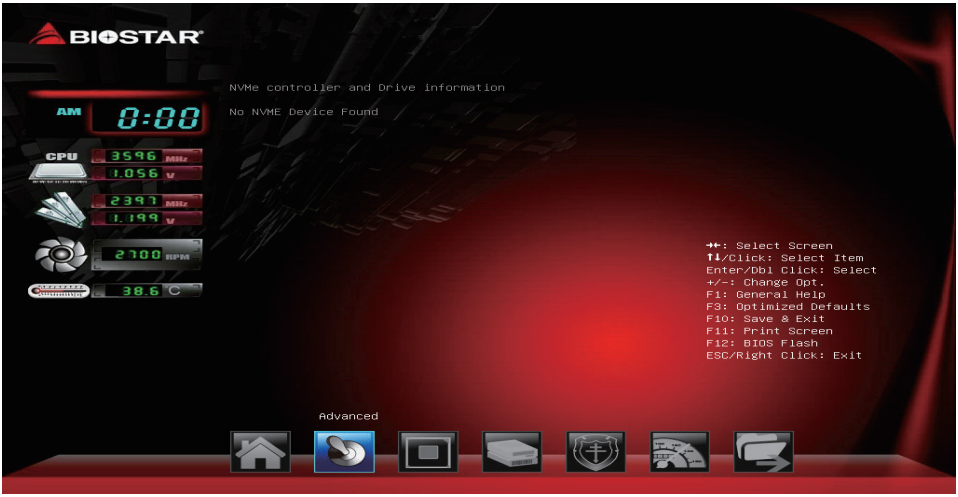
IPv6 HTTP Support
This item enables or disables IPv6 HTTP Boot Support. If disabled IPv6 HTTP boot option will not be created.
Options: Disabled (Default) / Enabled

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

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.
Options: Enabled (Default) / Disabled / Auto

XHCI Hand-off

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
Options: Disabled (Default) / Enabled

USB Mass Storage Driver Support

The item allows you to enable or disable USB Mass Storage Driver Support.
Options: Enabled (Default) / Disabled

Port 60/64 Emulation

The item allows you to enable or disable I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.
Options: Enabled (Default) / Disabled

USB transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers.
Options: 20 sec (Default) / 1 sec / 5 sec / 10 sec

Device reset time-out

The item sets USB mass storage device Start Unit command time-out.
Options: 20 sec (Default) / 10 sec / 30 sec / 40 sec

Device power-up delay

"Auto" uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.
Options: Auto (Default) / Manual

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.
Options: 5 (Default)

CPU Configuration

This item shows CPU Information

C6DRAM

This item enables or disables moving of DRAM contents to PRM memory when CPU is in C6 state.
Options: Disabled (Default) / Enabled

SW Guard Extensions (SGX)

This item enables or disables Software Guard Extensions (SGX).
Options: Software Controlled (Default) / Enabled / Disabled

Note

» *The following items appear only when you set the SW Guard Extensions function to [Enabled].*

PRMRR Size

This item allows you to set the PRMRR Size.
Options: 128MB (Default) / INVALID PRMRR / 32MB / 64MB

Overclocking Lock

This item enables or disables Overclocking Lock.
Options: Disabled (Default) / Enabled

Hardware Prefetcher

This item allows you to turn on / off the MLC streamer prefetcher.
Options: Enabled (Default) / Disabled

Adjacent Cache Line Prefetch

This item allows you to turn on / off prefetching of adjacent cache lines.
Options: Enabled (Default) / Disabled

Intel (VMX) Virtualization Technology

This item allows you to set Intel Virtualization Technology function. When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Options: Enabled (Default) / Disabled

Active Processor Cores

This item number of cores to enable in each processor package.
Options: All (Default) / 1 / 2 / 3

Hyper-Threading

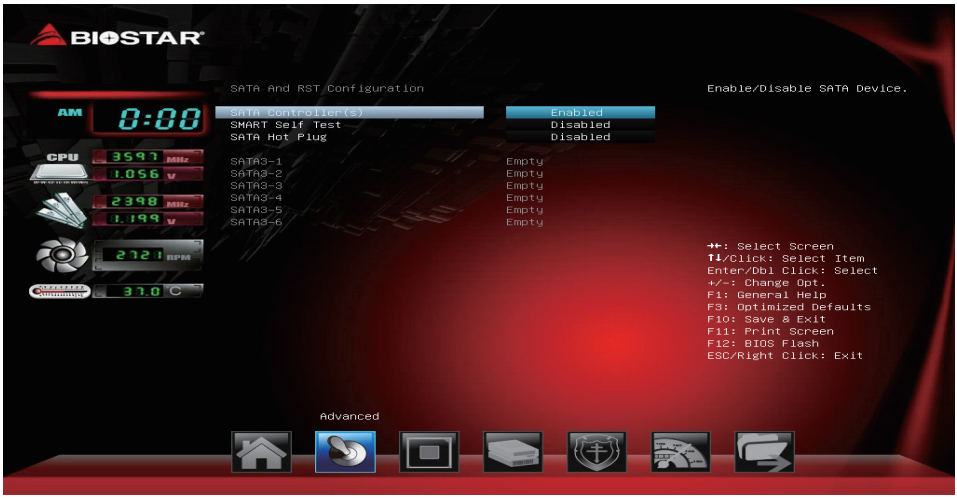
This item allows you to set up Hyper-Threading. Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology), Disabled for other OS (OS not optimized for Hyper-Threading Technology).
Options: Enabled (Default) / Disabled

AES

This item enables or disables CPU Advanced Encryption Standard instructions.
Options: Enabled (Default) / Disabled

SATA and RST 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/disables Serial ATA Device.
Options: Enabled (Default) / Disabled

SMART Self Test

This item runs SMART Self Test on all HDDs during POST.
Options: Disabled (Default) / Enabled

SATA Hot Plug

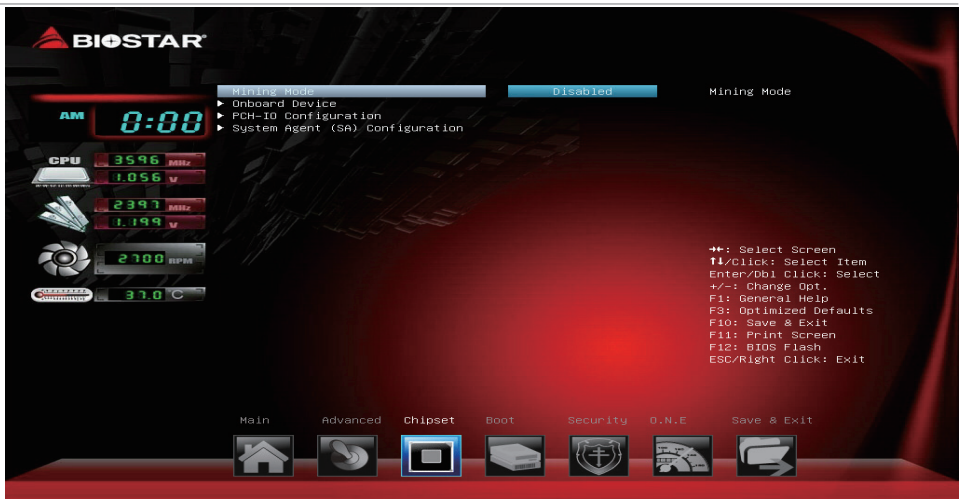
This item enables/disables SATA port as Hot Pluggable.
Options: Disabled (Default) / Enabled

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.*

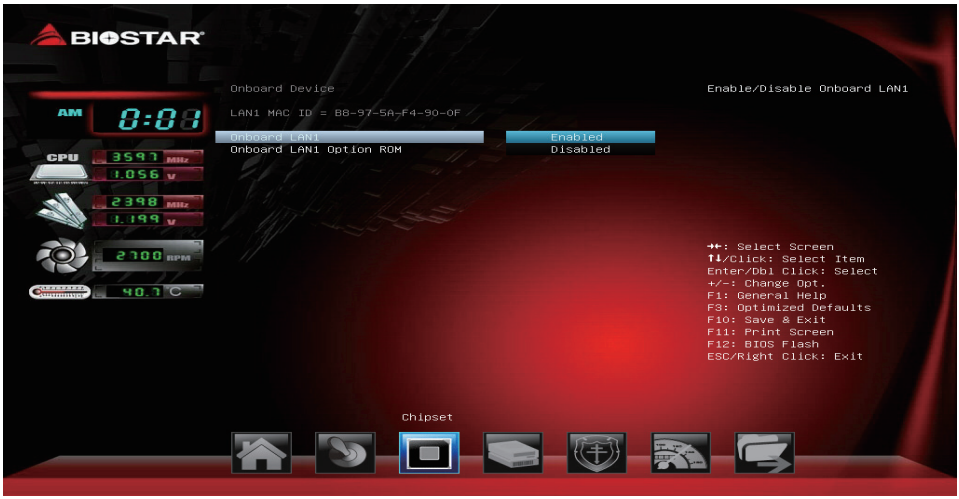


Miner Mode

This item enables or disables the Miner Mode.

Options: Disabled (Default) / Enabled

Onboard Device



Onboard LAN1
This item enables/disables Onbaord LAN1.
Options: Enabled (Default) / Disabled

Onboard LAN1 Option ROM
This item enables/disables Onboard LAN1 Option ROM.
Options: Disabled (Default) / Enabled

PCH-IO Configuration

PCI Express Configuration

PEX1_1/ PEX1_2/ PEX1_3/ PEX1_11/ PEX1_4/ PEX1_5/ PEX1_6
Options: Auto(Default) / Gen1 / Gen2 / Gen3

» *PEX1_1/ PEX1_2/ PEX1_3/ PEX1_4/ PEX1_5/ PEX1_6/ PEX1_11 only for TB250-BTC+*
PEX1_1/ PEX1_2/ PEX1_3/ PEX1_4/ PEX1_5/ PEX1_6/ PEX1_7/ PEX1_8/ PEX1_9/ PEX1_10/ PEX1_11 only for TB250-BTC PRO

HD Audio

Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled. Enabled = HDA will be enabled.
Options: Auto (Default) / Disabled / Enabled

ErP Control

When ErP is enabled, the system will meet ErP requirement.
Options: Disabled (Default) / Enabled in S4-S5

System Agent (SA) Configuration

Internal Graphics

This item keeps IGD enabled based on the setup options.
Options: Auto (Default) / Disabled / Enabled

Primary Display

This item selects which of IGFX/PEG/PCI Graphics device should be Primary Display or select SG for Switchable Gfx.
Options: Auto (Default) / IGFX / PEG / PCI / SG

GTT Size

This item selects GTT Size.
Options: 8MB (Default) / 4MB / 2MB

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.
Options: 256MB (Default) / 128MB / 512MB / 1024MB / 2048MB / 4096MB

DVMT Pre-Allocated

This item selects DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.
Options: 32M (Default) / 0M / 64M / 4M / 8M / 12M / 16M / 20M / 24M / 28M / 32M/F7 / 36M / 40M / 44M / 48M / 52M / 56M / 60M

DVMT Total Gfx Mem

This item selects DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.
Options: 256MB (Default) / 128MB / MAX

PAVP Enable

This item enables or disables PAVP.
Options: Enabled (Default) / Disabled

Max TOLUD

Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller.
Options: Dynamic (Default) / 1 GB / 1.25 GB / 1.5 GB / 1.75 GB / 2 GB / 2.25 GB / 2.5 GB / 2.75 GB / 3 GB / 3.25 GB / 3.5GB

VT-d

This item enables or disables VT-d capability.
Options: Enabled (Default) / Disabled

Above 4GB MMIO BIOS assignment

This item enables or disables above 4GB MemoryMappedIO BIOS assignment. This is disabled automatically when Aperture Size is set to 2048MB.
Options: Disabled (Default) / Enabled

RC6 (Render Standby)

This item enables or disables render standby support.
Options: Enabled (Default) / Disabled

PEX16_1

MAX Link Speed

Configure PEX16_1 Max Speed.
Options: Auto (Default) / Gen1 / Gen2 / Gen3

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.
Options: 1 (Default)

Bootup NumLock State

This item selects the keyboard NumLock state.
Options: On (Default) / Off

Full Screen Logo Display

This item allows you to enable/disable Full Screen Logo Show function.
Options: Enabled (Default) / Disabled

Boot Success Beep

When this item is set to Enabled, BIOS will let user know boot success with beep.
Options: Enabled (Default) / Disabled

BIOS Flash protection

While enabled, it can't flash write and flash erase by SMI.
Options: Enabled (Default) / Disabled

Fast Boot

This item allows you to enable/disable boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.
Options: Disabled (Default) / Enabled

Note

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

SATA Support
Options: All Sata Devices (Default) / Last Boot HDD Only

VGA Support
If Auto, only install Legacy OpRom with Legacy OS and logo would NOT be shown during post. EFI driver will still installed with EFI.
Options: EFI Driver (Default) / Auto

USB Support
If Disabled, all USB devices will NOT be available until after OS boot. If Partial Initial, specific USB port/device will NOT be available before OS boot. If Enabled, all USB devices will be available in OS and Post.
Options: Partial Initial (Default) / Full Initial / Disabled

PS2 Devices Support
If Disabled, PS2 devices will be skipped.
Options: Enabled (Default) / Disabled

Network Stack Driver Support
If Disabled, Network Stack Drivers will be skipped.
Options: Disabled (Default) / Enabled

Redirection Support

If disable, Redirection function will be disabled.
Options: Disabled (Default) / Enabled

GateA20 Active

Upon Request – GA20 can be disabled using BIOS services. Always – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB
Options: Upon Request (Default) / Always

Option ROM Messages

This item sets the display mode for Option ROM.
Options: Force BIOS (Default) / Keep Current

CSM Support

This option enables or disables CSM support.
Options: Enabled (Default) / Disabled

Boot option filter

This option controls what devices system can boot to.
Options: UEFI and Legacy (Default) / Legacy only / UEFI only

Network

This option controls the execution of UEFI and Legacy PXE OpROM
Options: Legacy (Default) / UEFI / Do not launch

Storage

This option controls the execution of UEFI and Legacy Storage OpROM
Options: Legacy (Default) / UEFI / Do not launch

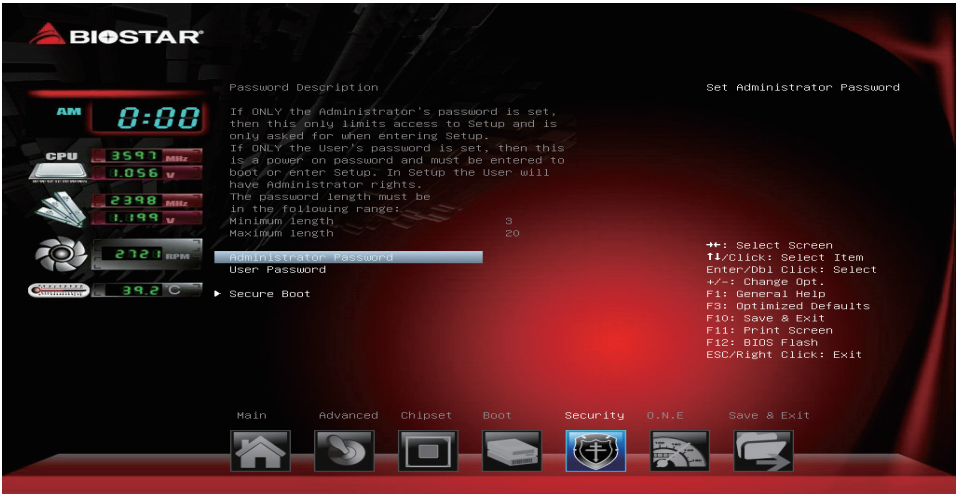
Video

This option controls the execution of UEFI and Legacy Video OpROM
Options: Legacy (Default) / UEFI / Do not launch

Other PCI device

For PCI devices other than Network, Mass storage or video defines which OpROM to launch.
Options: UEFI (Default) / Legacy / Do not launch

5. Security Menu



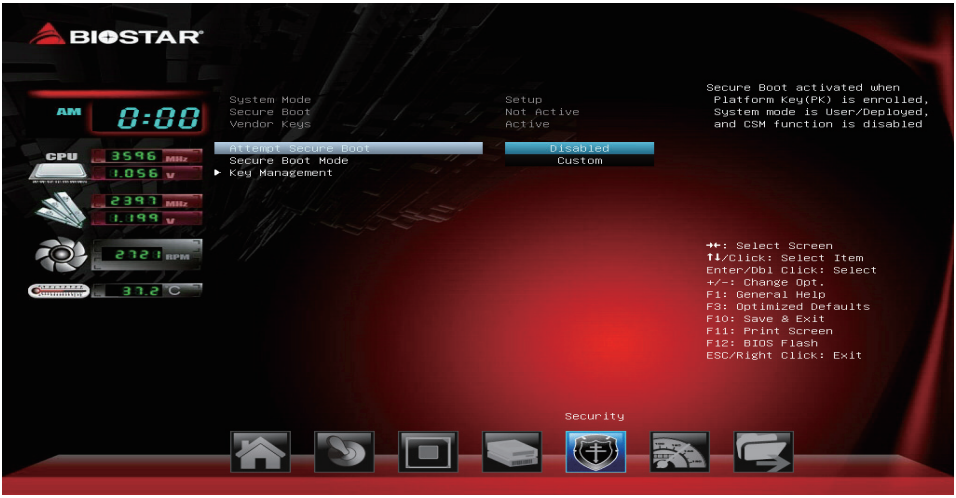
Administrator Password

This item sets Administrator Password.

User Password

This item sets User Password.

Secure Boot Menu



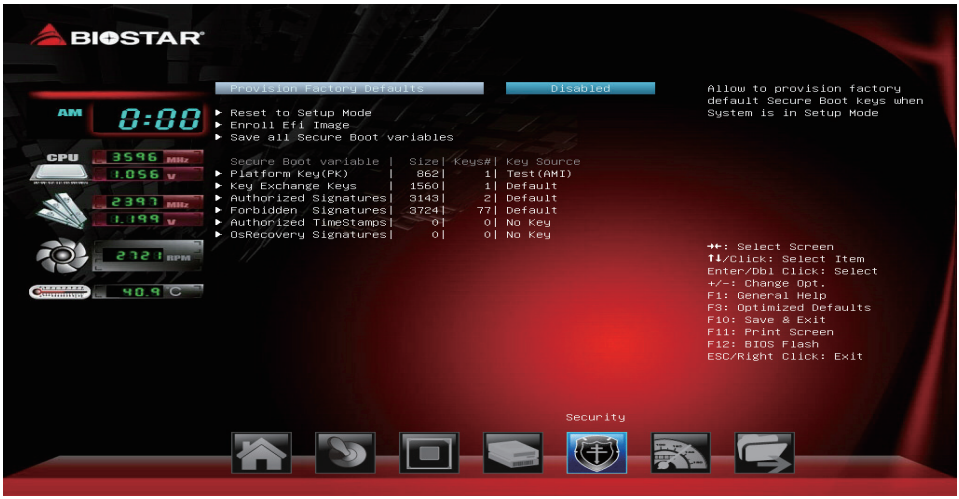
Attempt Secure Boot

Secure Boot can be enabled if 1. System running in user mode with enrolled Platform Key(PK) 2.CSM function is disabled.
Options: Disabled (Default) / Enabled

Secure Boot Mode

Secure Boot mode selector. 'Custom' mode enables users to change Image Execution policy and manage Secure Boot Keys.
Options: Custom (Default) / Standard

Key Management



Provision Factory Defaults
Install factory default Secure Boot Keys when system is in setup mode.
Options: Disabled (Default) / Enabled

Install Factory Default Keys
Force System to User Mode - install all Factory Default Keys. Change takes effect after reboot.

Enroll Efi Image
This item allow you to set the image to run in Secure Boot mode. Enroll SHA256 hash of the binary into Authorized Signature Database (db).

Save all Secure Boot Variables
Save NVRAM content of Secure Boot Variables to the files (EFI_SIGNATURE_LIST data format) in root folder on a target file system device.

Platform Key (PK)
Save Key to File – Allows you save key to PK file.
Set new Key – Allows you set new PK file.
Erase Key – Allows you erase PK file.

Key Exchange Keys
Save Key to File – Allows you save key to KEK file.
Set new Key – Allows you set new KEK file.
Append Key – Allows you append Var to KEK.
Erase Key – Allows you erase KEK file.

Authorized Signatures
Save Key to File – Allows you save key to DB file.
Set new Key – Allows you set new DB file.
Append Key – Allows you append Var to DB.
Erase Key – Allows you erase DB file.

Forbidden Signature
Save Key to File – Allows you save key to DBK file.
Set new Key – Allows you set new DBK file.
Append Key – Allows you append Var to DBX.
Erase Key – Allows you erase DBK file.

Authorized Timestamps
Set new Key – Allows you set new DBT file.
Append Key – Allows you append Var to DBT.

OsRecovery Signatures
Set new Key – Allows you set new file.
Append Key – Allows you append Var to the file.

6. O.N.E Menu

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

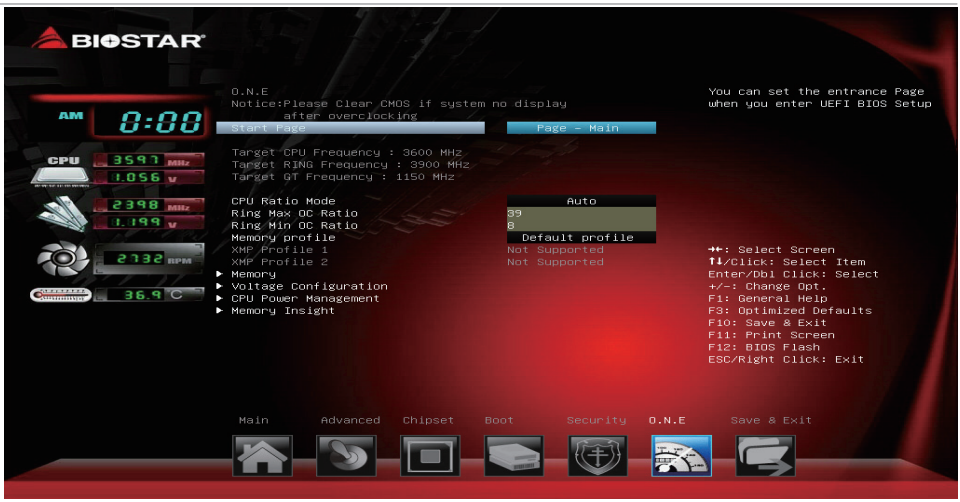
Note

» *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.
Options: Page – Main (Default) / Page – Advanced / Page – Chipset / Page – Boot / Page – Security / Page –O.N.E / Page – Save & Exit

CPU Ratio Mode

This item sets CPU Ratio Mode.
Options: Auto (Default) / ALL Cores / Per Core / Fixed

Ring Max OC Ratio

This sets the maximum overclocking ratio for the Ring Domain.
Options: 39 (Default)

Ring Min OC Ratio

This sets the minimum overclocking ratio for the Ring Domain.
Options: 8 (Default)

Memory Profile

Select DIMM timing profile. The blow values start with the current running values and don't auto populate.
Options: Default profile (Default) / Custom profile

Note

» *The following items appear only when you set the Memory Profile function to [Custom profile]*

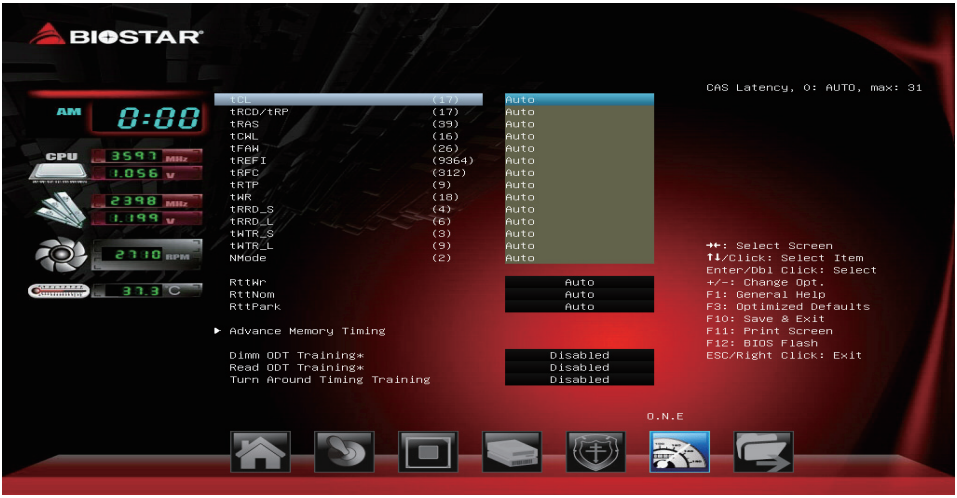
Memory Ratio

Automatic or the frequency will equal ratio times reference clock. Set to Auto to recalculate memory timings listed below.
Options: Auto (Default) / DDR4 800MHz / DDR4 1066Mhz / DDR4 1333Mhz / DDR4 1600Mhz / DDR4 1866MHz / DDR4 2133MHz / DDR4 2400MHz

QCLK Odd Ratio

Adds 133 or 100 MHz to QCLK frequency, depending on ReClk.
Options: Disabled (Default) / Enabled

Memory Timing Configuration



tCL
This item allows you to select CAS Latency, 0: AUTO, max: 31
Options: Auto (Default)

tRCD/tRP
This item allows you to select RAS to CAS delay time and Row Prechrge delay time, 0: AUTO, max: 63
Options: Auto (Default)

tRAS
This item allows you to select Row Active Time, 0: AUTO, max: 64
Options: Auto (Default)

tCWL
This item allows you to select Minimum CAS Write Latency Range, 0: AUTO, max: 20
Options: Auto (Default)

tFAW
This item allows you to select Four Active Window Delay, 0: AUTO, max: 63
Options: Auto (Default)

tREFI
This item allows you to select Maximum tREFI time,, 0: AUTO, max: 65535
Options: Auto (Default)

tRFC
This item allows you to select Minimum Refresh Recovery Time, 0: AUTO, max: 1023
Options: Auto (Default)

tRTP
This item allows you to select Read to Precharge Delay, 0: AUTO, max: 15. DDR4 legal values: 5, 6, 7, 8, 9, 10, 12
Options: Auto (Default)

tWR
This item allows you to select Internal Write to Read Command Delay, 0: AUTO, legal values: 5, 6, 7, 8, 10, 12, 14, 16, 18, 20, 24
Options: Auto (Default)

tRRD_S
This item allows you to select Min Row Active to Row Active Delay Time, Different Bank Group, 0: AUTO, max: 10
Options: Auto (Default)

tRRD_L
This item allows you to select Min Row Active to Row Active Delay Time, Same Bank Group, 0: AUTO, max: 15
Options: Auto (Default)

tWTR_S
This item allows you to select Min Internal Write to Read Command Delay Time, Differnet Bank Group, 0: AUTO, max: 4
Options: Auto (Default)

tWTR_L
This item allows you to select Min Internal Write to Read Command Delay Time, Same Bank Group, 0: AUTO, max: 11
Options: Auto (Default)

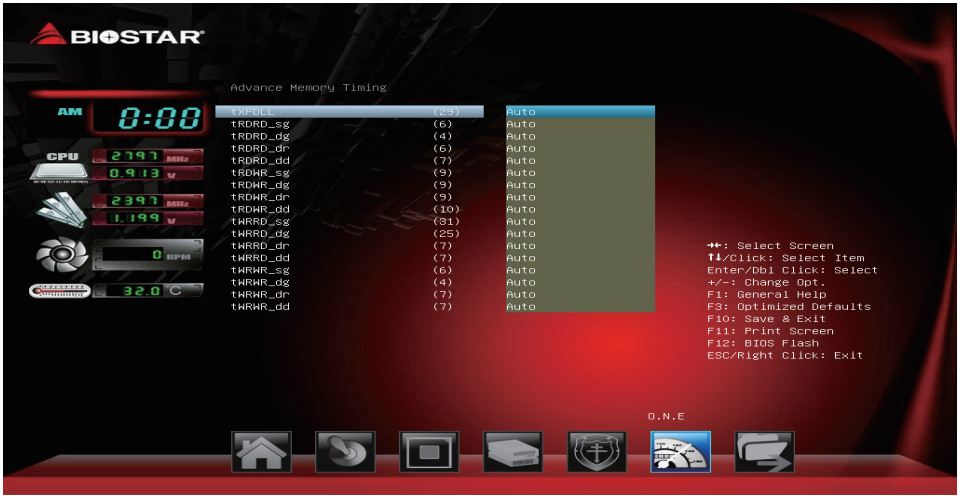
NMode
This item allows you to select System command tate, range 0-2, 0 = auto, 1 = 1N, 2 = 2N
Options: Auto (Default)

RttWr
Options: Auto (Default) / Disabled / RZQ/1 / RZQ/2 / RZQ/3 / Hi-Z

RttNom
Options: Auto (Default) / Disabled / RZQ/1 / RZQ/2 / RZQ/3 / RZQ/4 / RZQ/5 / RZQ/6 / RZQ/7

RttPark
Options: Auto (Default) / Disabled / RZQ/1 / RZQ/2 / RZQ/3 / RZQ/4 / RZQ/5 / RZQ/6 / RZQ/7

Advance Memory Timing



Dimm ODT Training*

Dimm On-Die Termination Training
Options: Disabled (Default) / Enabled

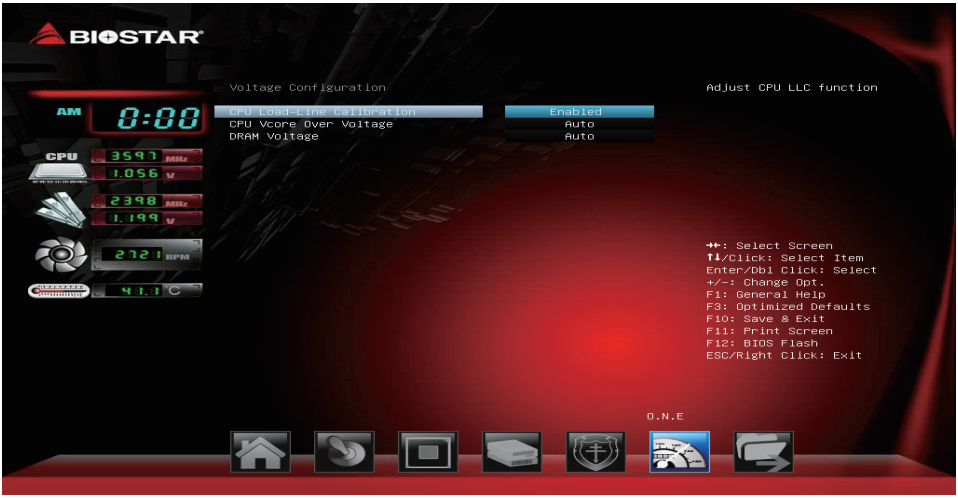
Read ODT Training*

Read On-Die Termination Training
Options: Disabled (Default) / Enabled

Turn Around Timing Training

Turn Around Timing Training
Options: Disabled (Default) / Enabled

Voltage Configuration



CPU Load-Line Calibration

This item sets CPU Load-Line Calibration function.
Options: Enabled (Default) / Disabled

CPU Vcore Over Voltage

This item sets CPU Vcore Over Voltage.
Options: Auto (Default) / Override / Adaptive

Note

» *The following items appear only when you set the CPU Vcore Over Voltage to [Override]*

CPU Vcore Adjust Voltage
Range: 1.000V-2.100V

Note

» *The following items appear only when you set the CPU Vcore Over Voltage to [Adaptive]*

CPU Vcore Offset Prefix
Options: + (Default) / -

CPU Vcore Offset Voltage
Options: Auto (Default), Range: 0.0V-0.635V

DRAM Voltage

This item sets DRAM Over Voltage.
Options: Auto (Default) / 1.20V / 1.35V

CPU Power Management

Intel(R) SpeedStep(tm)

This item allows more than two frequency ranges to be supported.
Options: Enabled (Default) / Disabled

Power Limit 1 Override

This item enables or disables Power Limit 1 Override, BIOS will program the default values for Power Limit 1 and Power Limit 1 Time Window.
Options: Disabled (Default) / Enabled

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.
Options: Enabled (Default) / Disabled

C states

This item enables or disables CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
Options: Auto (Default) / Enabled / Disabled

Enhanced C-states

This item enables or disables C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.
Options: Enabled (Default) / Disabled

C-states Auto Demotion

This item sets C-State Auto Demotion.
Options: C1 and C3 (Default) / C1 / C3/ Disabled

C-states Un-demotion

This item sets C-State Un-demotion.
Options: C1 and C3 (Default) / C1 / C3/ Disabled

Package C state Demotion

This item sets Package C state Demotion.
Options: Disabled (Default) / Enabled

Package C state Un-demotion

This item sets Package C state Un-demotion.
Options: Disabled (Default) / Enabled

CState Pre-Wake

Disable - Sets bit 30 of POWER_CTL MSR(0x1FC) to 1 to disable the Cstate Pre-Wake.
Options: Enabled (Default) / Disabled

Package C State limit

This item sets Package C State Limit.
Options: Auto (Default) / C0/C1 / C2 / C3 / C6 / C7 / C7s / C8 / C9 / C10 / Cpu Default

CFG lock

This item sets MSR 0xE2[15], CFG lock bit.
Options: Enabled (Default) / Disabled

RSR

This item enables or disables Reliability Stress Restrictor (RSR) feature.
Options: Enabled (Default) / Disabled

AC Loadline

AC Loadline defined in 1/100 m0hms. A value of 100=1.00 m0hm, and 1255 =12.55 m0hm. Range is 0-6249 (0-62.49 m0hms). 0=AUTO/HW default.
Options: Auto (Default)

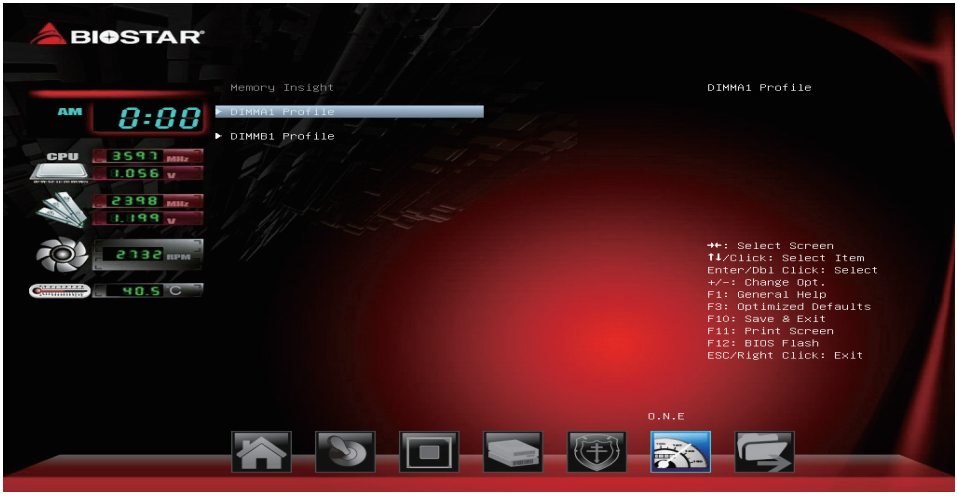
DC Loadline

DC Loadline defined in 1/100 m0hms. A value of 100=1.00 m0hm, and 1255 =12.55 m0hm. Range is 0-6249 (0-62.49 m0hms). 0=AUTO/HW default.
Options: Auto (Default)

FCLK Frequency for Early Power On

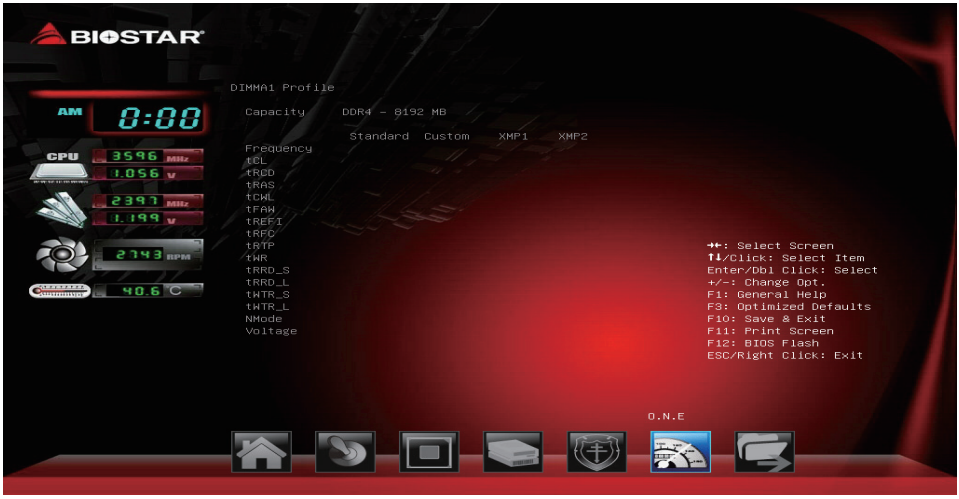
This item can take values of 400MHz, 800MHz and 1GHz (1GHz not supported for ULTULX SKUs).
Options: Auto (Default)

Memory Insight



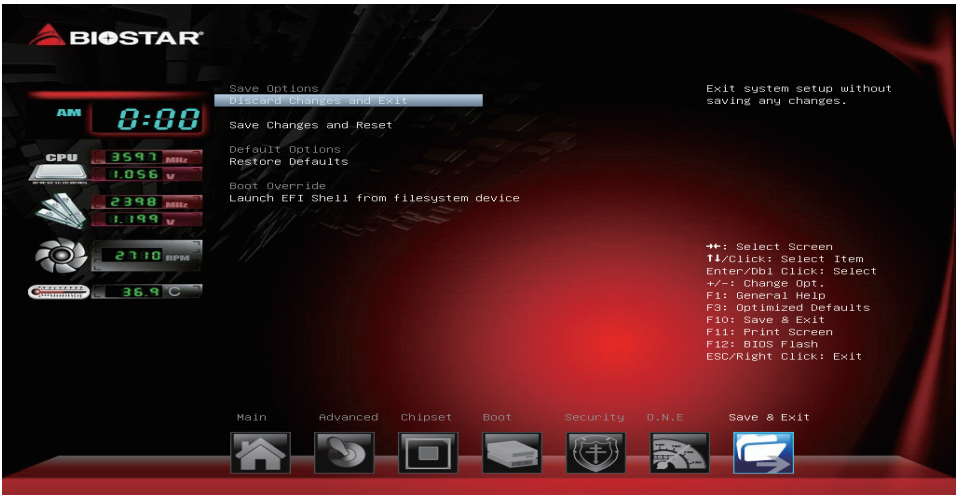
DIMM Profile

These items display memory information.



7. 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

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