

# BIOS User Guide

B360GT5S

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## 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

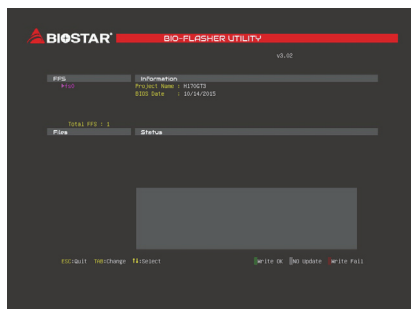
#### ► Note

- » 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.

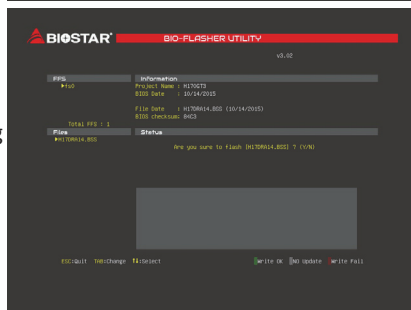
#### Updating BIOS with BIOSTAR BIOS-FLASHER

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.

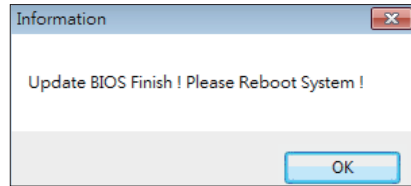


6. Select the proper BIOS file, and a message asking if you are sure to flash the BIOS file. Click "Yes" to start updating BIOS.





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



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.

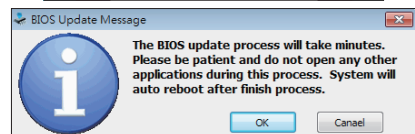
### **BIOS Update Utility (through a BIOS file)**

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.

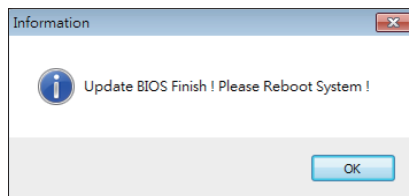


5. Choose the location for your BIOS file in the system. Please select the proper BIOS file, and then click on “Open”. It will take several minutes, please be patient.





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

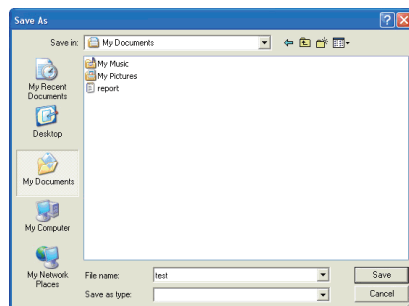


7. While the system boots up and the full screen logo shows up, press <DEL> key to enter BIOS setup.

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.

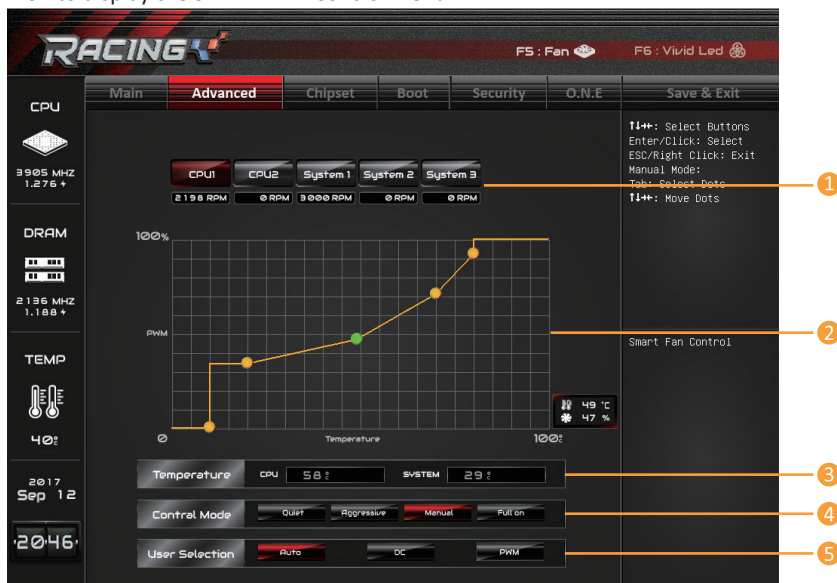
In the UEFI BIOS setup utility, you will see **General Help** description at the top right corner, and this is providing a brief description of the selected item. **Navigation Keys** for that particular menu are at the bottom right corner, and you can use these keys to select item and change the settings.

### 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.*

## SMART FAN Control

Press <F5> to display the SMART FAN Control menu.



1. **CPU1/2 RPM & SYSTEM1/2/3 RPM:** 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.
5. **User Selection:** Sets the fan property controls the actual selection operation.
  - **Auto:** Allows you to adjust the Automatic detection Mode.
  - **DC:** Allows you to adjust the Direct Current (DC) Mode.
  - **PWM:** Allows you to adjust the Pulse Width Modulation (PWM) 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.

## VIVID LED Control

Press <F6> to display the VIVID LED Control menu.



1. **LED SPARKLE:** Allows to you choose sparkle of the LEDs.

- **Permanent:** LEDs are constantly lit.
- **Breath:** LEDs gradually flash on and off.
- **Shine:** LEDs flash at a specific frequency.
- **OFF:** Allows you to enable or disable VIVID LED of a single item.

2. **LED COLOR:**

- **Auto:** LEDs will Automatically change the Color Palette and LED Brightness.
- » If you select Auto mode, the Color Palette and LED Brightness Bar will disabled.

- **Default:** All the setting are back to default.

3. **LED Type:** Select the LED lighting blocks.

- **RGB Header 1:** The header 1 LED illumination. (RGB LED Device)
  - **RGB Header 2:** The header 2 LED illumination. (RGB LED Device)
  - **RGB Audio:** The RGB Audio LED illumination. (On board LED or VIVID LED ARMOR)
- » This item will no support LED COLOR function.
- **System:** System LED illuminations. (MOSFET Heatsink LED, Southbridge Heatsink LED)

4. **ON/OFF:** To enable or disable VIVID LED function.

5. **Color Palette:** Allows to you choose specific color of the LEDs.

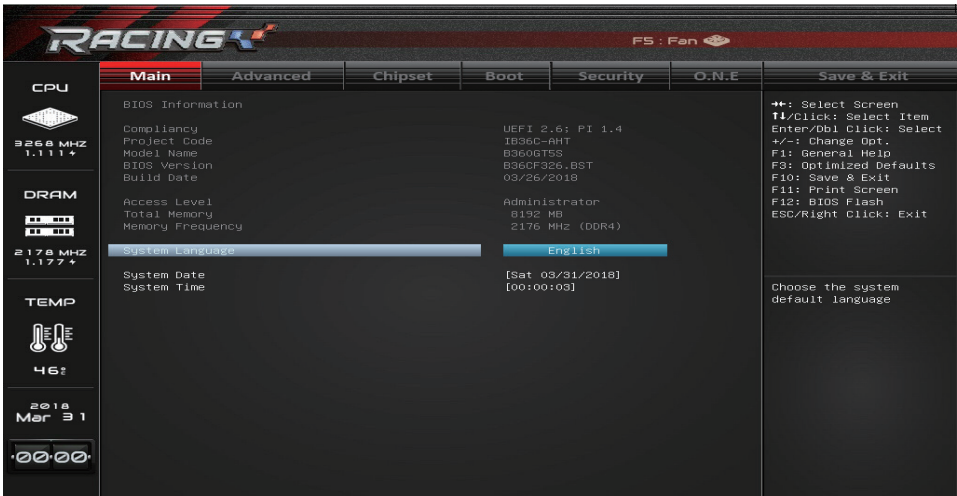
6. **LED Brightness Bar:** Allows you to adjust the LED brightness.

### 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

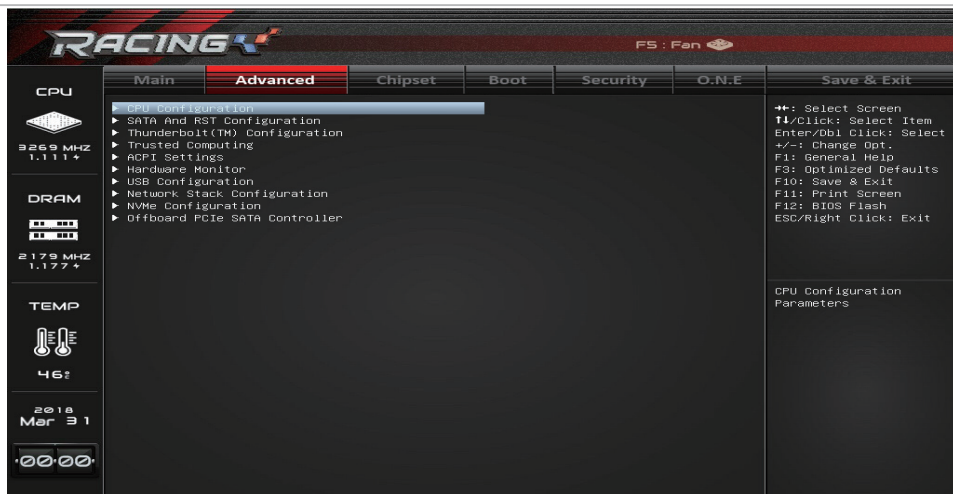
Set the system internal clock.

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

**Software Guard Extensions (SGX)**

This item enables or disables Software Guard Extensions (SGX).

Options: Software Controlled (Default) / Enabled / Disabled

**PRMRR Size**

This item allows you to set the PRMRR Size.

Options: INVALID (Default) / 32MB / 64MB / 128MB

**Overclocking Lock**

This item enables or disables Overclocking Lock (BIT 20) in FLEX\_RATIO(194) MSR.

Options: Disabled (Default) / Enabled

**Hardware Prefetcher**

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

Options: Enabled (Default) / Disabled

**Adjacent Cache Line Prefetch**

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

Options: Enabled (Default) / Disabled

**Intel (VMX) Virtualization Technology**

The item allows you to enable or disable Intel (VMX) Virtualization Technology, when enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Options: Enabled (Default) / Disabled

**Active Processor Cores**

This item allows you to set up number of cores to enable in each processor package.

Options: All (Default) / 1 / 2 / 3 / 4 / 5

**Hyper-Threading**

This item enables for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and disables for other OS(OS not optimized for Hyper-Threading Technology).

Options: Enabled (Default) / Disabled

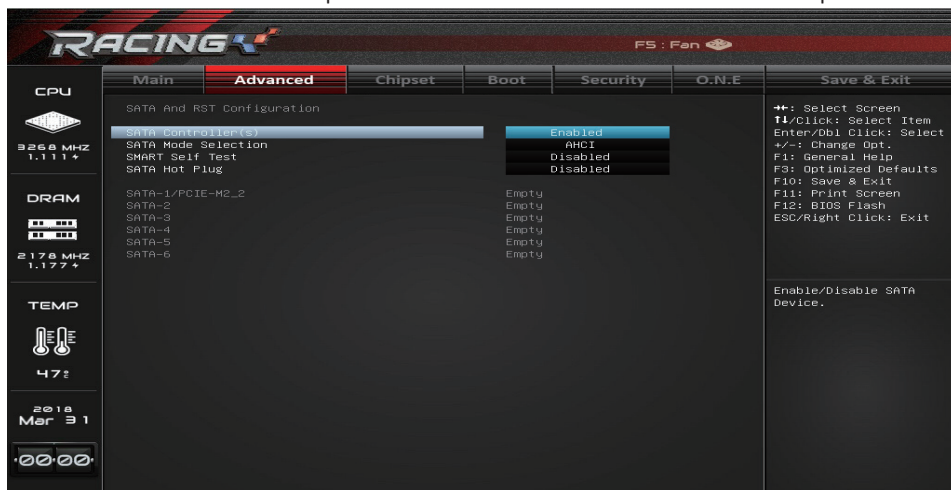
**AES**

This item enables or disables AES (Advanced Encryption Standard).

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

### SATA Mode Selection

This item determines how SATA controller(s) operate.

Options: AHCI (Default) / Intel RST Premium With Intel Optane System Acceleration

### SMART Self Test

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

Options: Disabled (Default) / Enabled

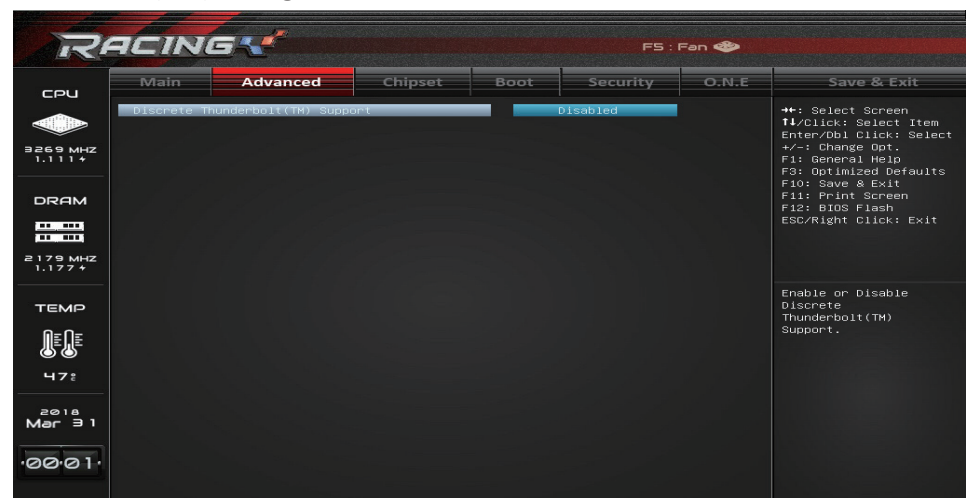
### SATA Hot Plug

This item Designates SATA port as Hot Pluggable.

Options: Disabled (Default) / Enabled



# Thunderbolt(TM) Configuration



## Discrete Thunderbolt(TM)

This item enables or disables Discrete Thunderbolt(TM) Support.  
Options: Disabled (Default) / Enabled

## Trusted Computing



## 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.  
Options: Enabled (Default) / Disabled

### **SHA-1 PCR Bank**

This item enables or disables SHA-1 PCR Bank.

Options: Enabled (Default) / Disabled

### **SHA256 PCR Bank**

This item enables or disables SHA256 PCR Bank.

Options: Enabled (Default) / Disabled

### **Pending operation**

This item schedule an operation for the security device.

Options: None (Default) / TPM Clear

» *Note: Your computer will reboot during restart in order to change state of security device.*

### **Platform Hierarchy**

This item enables or disables Platform Hierarchy.

Options: Enabled (Default) / Disabled

### **Storage Hierarchy**

This item enables or disables Storage Hierarchy.

Options: Enabled (Default) / Disabled

### **Endorsement Hierarchy**

This item enables or disables Endorsement Hierarchy.

Options: Enabled (Default) / Disabled

### **TPM2.0 UEFI Spec Version**

This item allows you to select the TCG2 Spec Version Support. TCG\_1\_2: the compatible mode for Win8/ Win10; TCG\_2: Support new TCG2 protocol and event format for Win10 or later.

Options: TCG\_2 (Default) / TCG\_1\_2

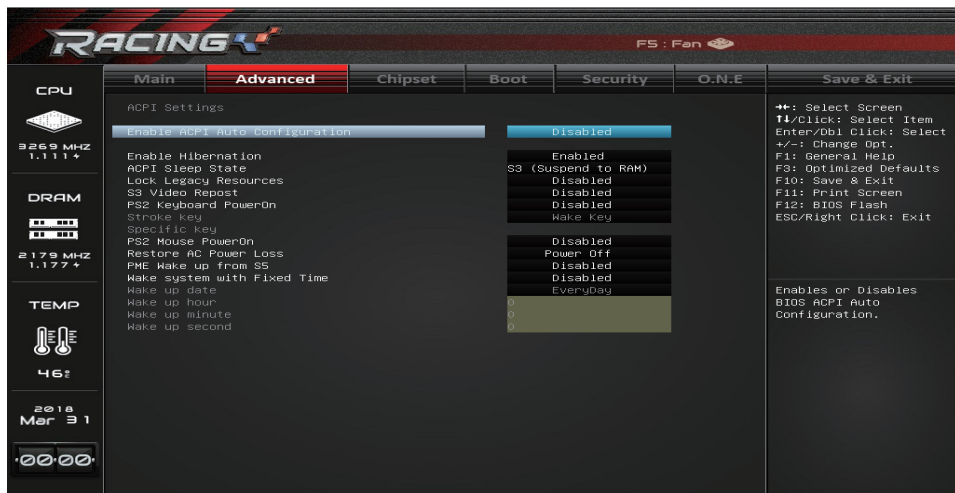
### **Physical Presence Spec Version**

This item select to tell O.S. to support PPI Spec Version 1.2 or 1.3.

Options: 1.3 (Default) / 1.2

» *Note some HCK tests might not support 1.3.*

## 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 (OS/S4 sleep state). This option may not be effective with some OSs.

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 (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. On enabling, Video Option ROM will be dispatched during S3 resume.

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

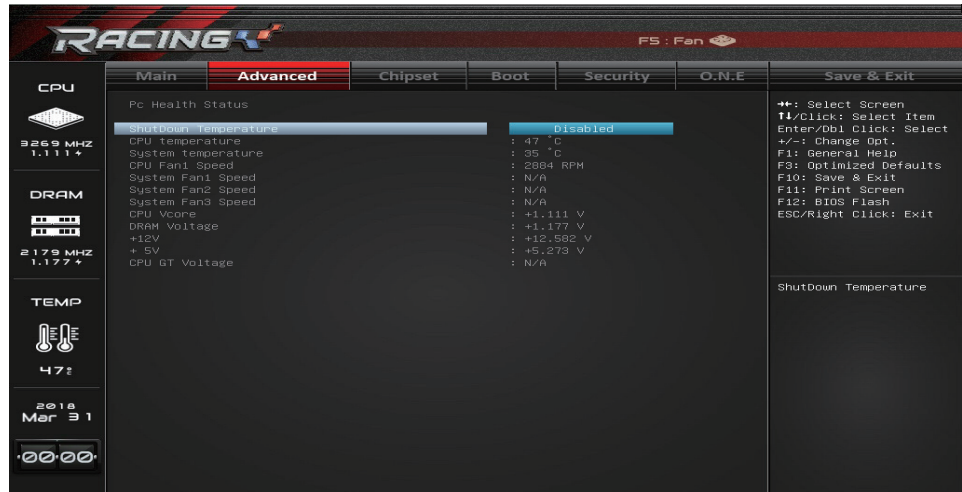
**Wake up date**

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.

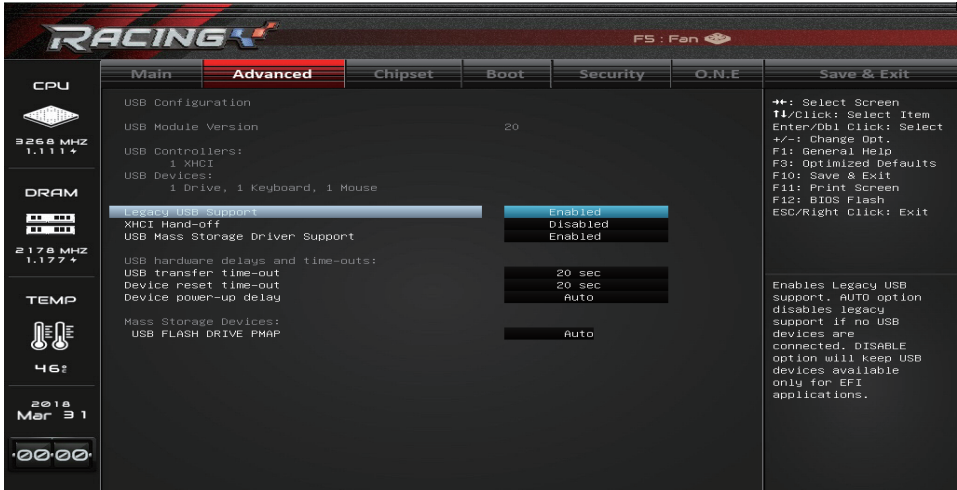
**H/W Monitor**



**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

# 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

## 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

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.  
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.

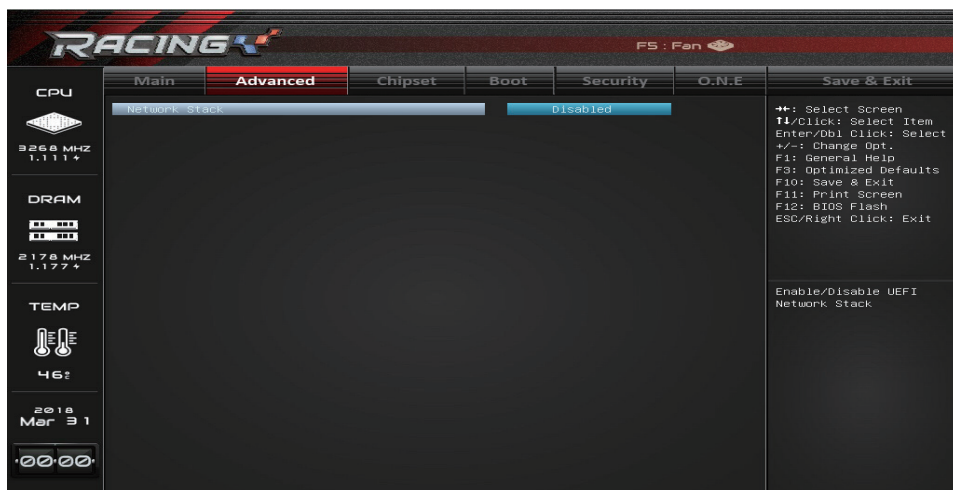
Options: 5 (Default)

### USB FLASH DRIVE PMAP

This item 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.

Options: Auto (Default) / Floppy / Forced FDD / Hard Disk / CD-ROM

## 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 PXE boot support will not be available.

Options: Disabled (Default) / Enabled

#### IPv4 HTTP Support

This item enables or disables IPv4 HTTP Boot Support. If disabled IPV4 HTTP boot support will not be available.

Options: Disabled (Default) / Enabled

#### IPv6 PXE Support

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

Options: Disabled (Default) / Enabled

### IPv6 HTTP Support

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

Options: Disabled (Default) / Enabled

### IPSEC Certificate

This item enables or disables IPSEC certificate for Ikev.

Options: Enabled (Default) / Disabled

### PXE boot wait time

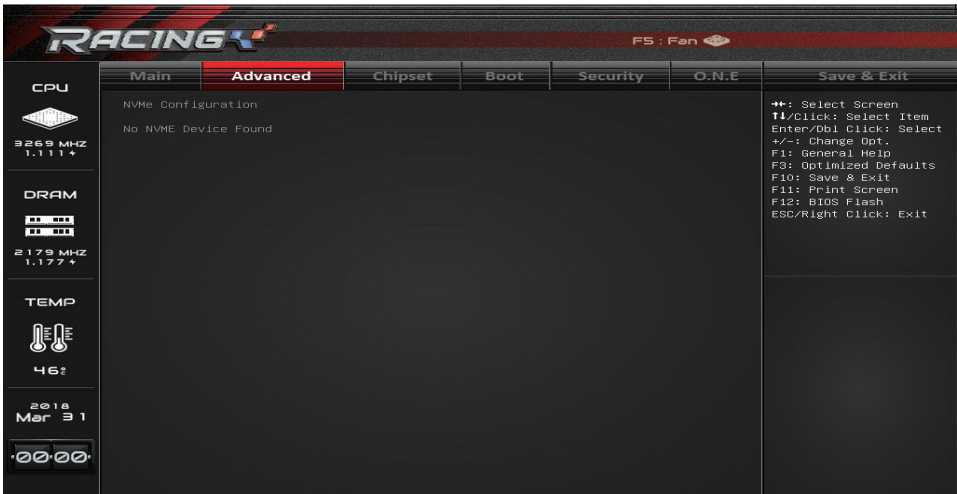
Wait time to press ESC key to abort the PXE boot.

### Media detect count

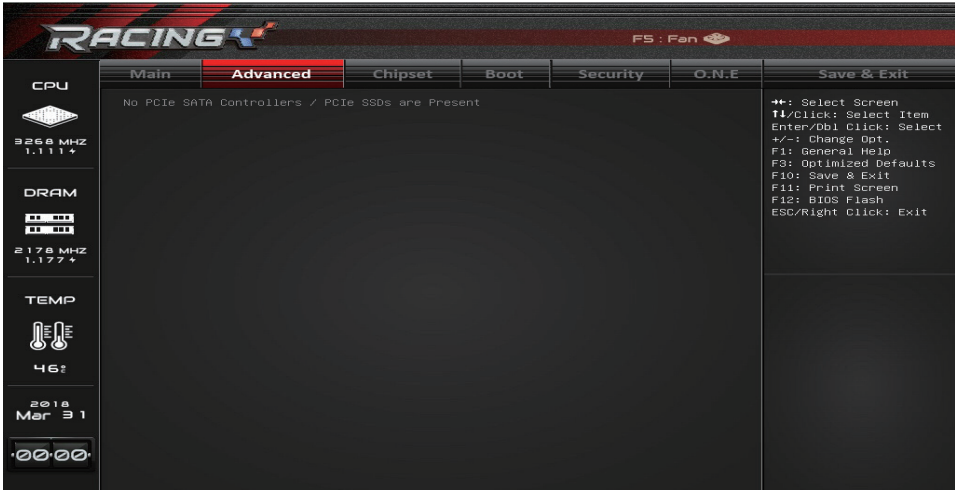
Number of times presence of media will be checked.

## NVMe Configuration

The item shows NVMe controller and driver information.



Offboard PCIe SATA Controller



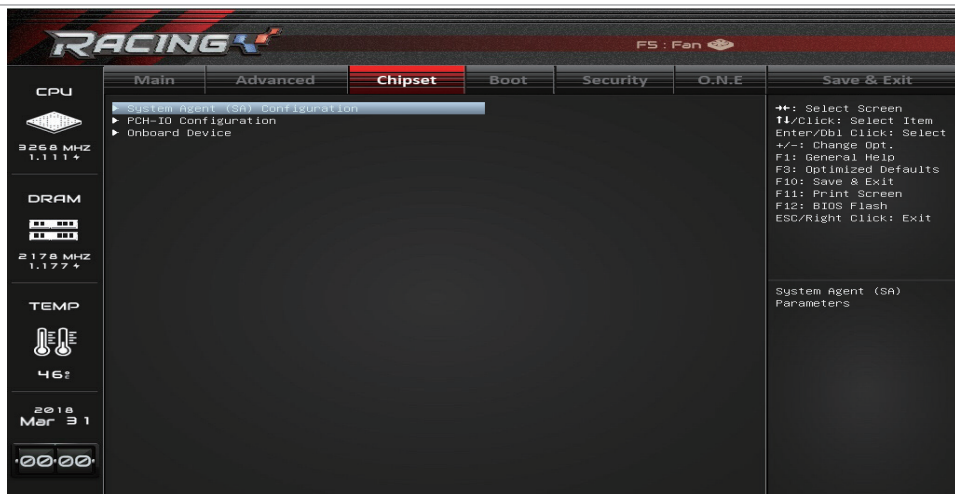


### 3. Chipset Menu

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.

Options: Auto (Default) / Enabled / Disabled

### 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 select the GTT Size.

Options: 8MB (Default) / 2MB / 4MB

### Aperture Size

This item selects Aperture Size.

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

» *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.

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 Memory Mapped IO BIOS assignment. This is enabled automatically when Aperture Size is set to 2048MB.

Options: Disabled (Default) / Enabled

### RC6 (Render Standby)

This item enables or disables check to enable render standby support.

Options: Enabled (Default) / Disabled

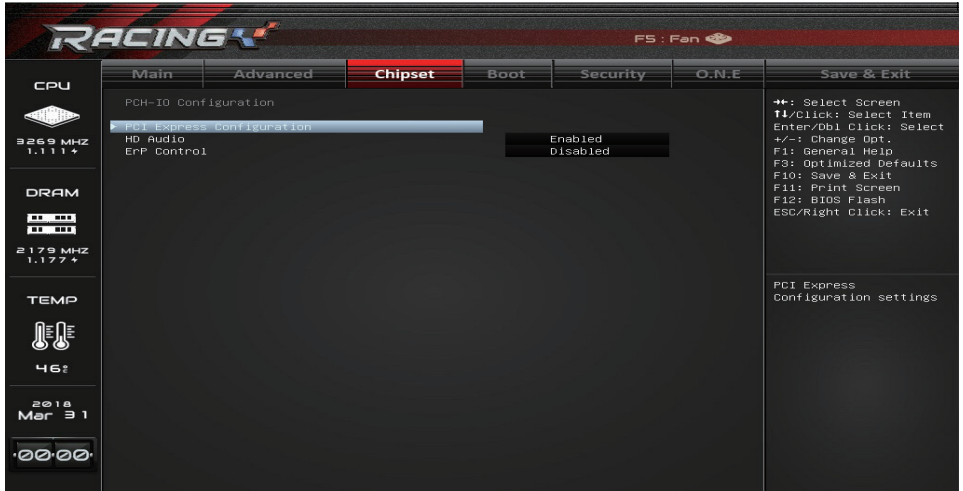
### PEX16\_1

### MAX Link Speed

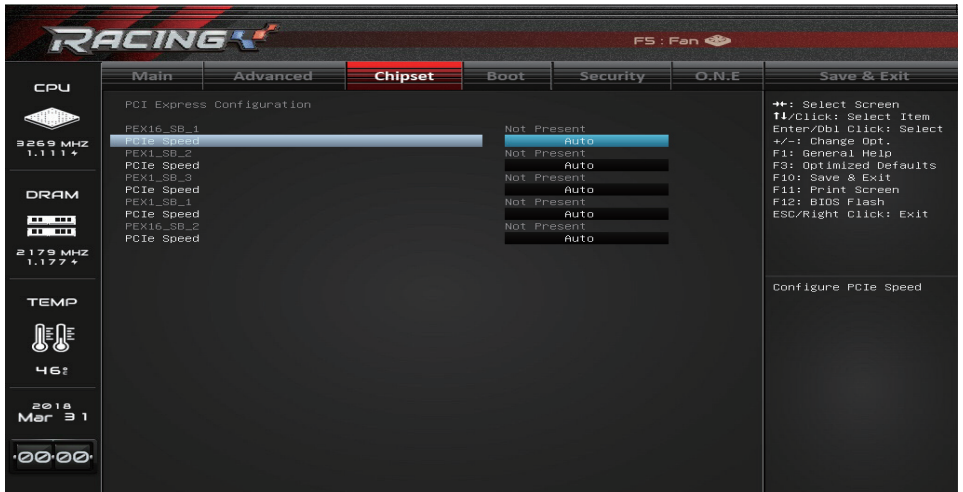
Configure PEX16\_1 Max Speed.

Options: Auto (Default) / Gen1 / Gen2 / Gen3

## PCH-IO Configuration



## PCI Express Configuration



PEX16\_SB\_1 / PEX1\_SB\_2 / PEX1\_SB\_3 / PEX1\_SB\_1 / PEX16\_SB\_2

Options: Auto(Default) / Gen1 / Gen2 / Gen3

## HD Audio

Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled.

Enabled = HDA will be unconditionally enabled. Auto = HDA will be enabled if present, disabled otherwise.

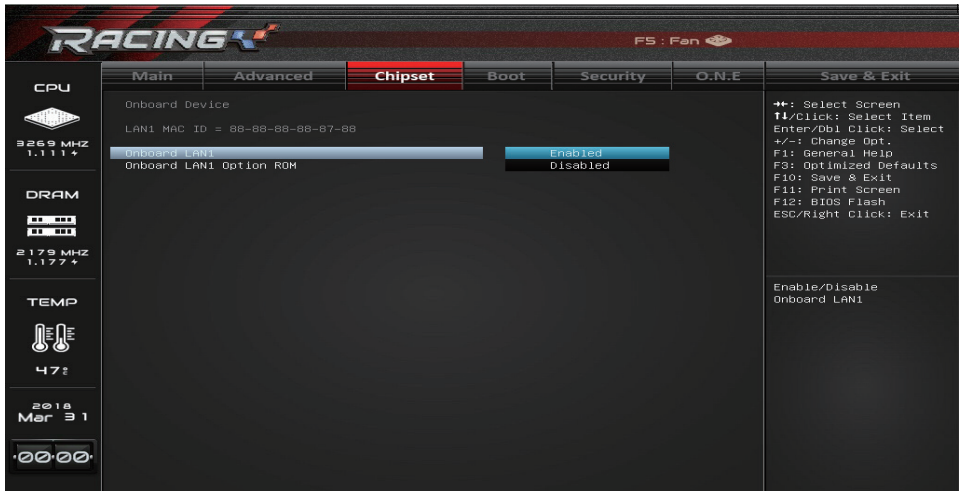
Options: Enabled (Default) / Disabled / Auto

## ErP Control

When ErP is enabled, the system will meet ErP requirement.

Options: Disabled (Default) / Enabled in S4-S5

## Onboard Device



### Onboard LAN1

This item enables or disables Onbaord LAN1.

Options: Enabled (Default) / Disabled

### Onboard LAN1 Option ROM

This item enables or disables Onbaord LAN1 Option ROM.

Options: Disabled (Default) / Enabled

## 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.

Options: 1 (Default)

### Bootup NumLock State

This item selects the keyboard NumLock state.

Options: On (Default) / Off

### Full Screen Logo Display

This item enables or disables 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 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.

Options: Disabled (Default) / Enabled

#### 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, all SATA devices will be available in OS and Post.

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

### **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 OS.

Options: EFI Driver (Default) / Auto

### **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.

Options: Full Initial (Default) / Disabled / Partial Initial

### **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 Disabled, 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: Disabled (Default) / Enabled

---

### **Note**

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

---

### **Boot option filter**

This option controls Legacy/ UEFI ROMs priority.

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**

Determines OpROM execution policy for devices other than Network, Storage, or Video.

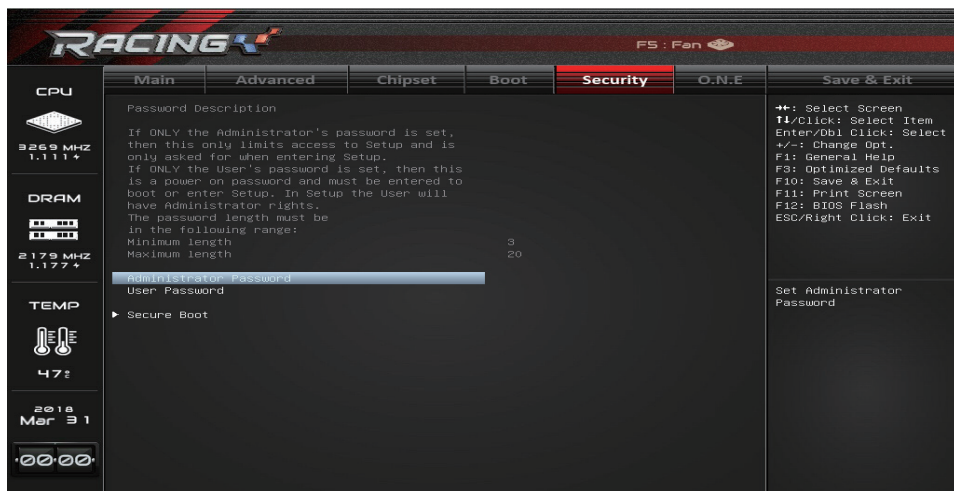
Options: UEFI (Default) / Legacy / Do not launch

**New Boot Option Policy**

It controls the placement of newly detected UEFI boot options.

Options: Default (Default) / Place First / Place Last

## 5. Security Menu



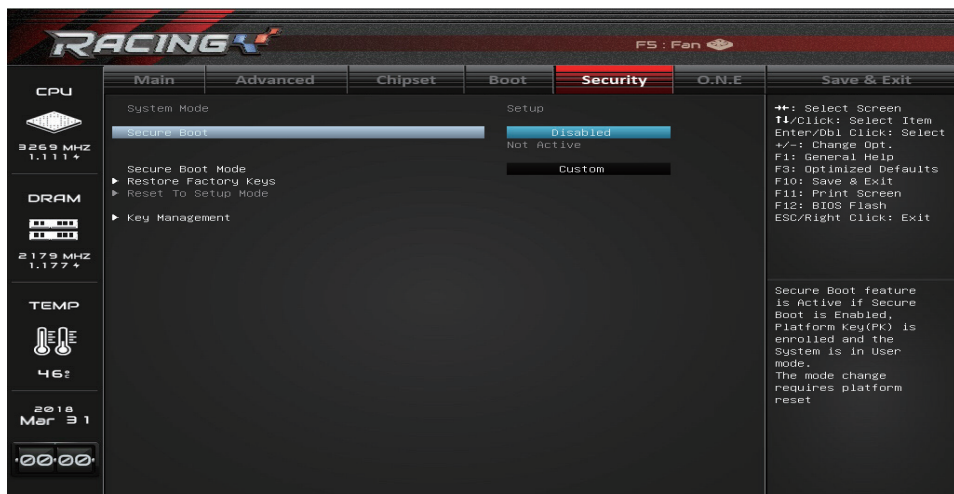
### Administrator Password

This item sets Administrator Password.

### User Password

This item sets User Password.

### Secure Boot Menu





# Secure Boot Mode

Customizable Secure Boot mode: In Custom mode Secure Boot Policy variables can be configured by a physically present user without full authentication.  
Options: Custom (Default) / Standard

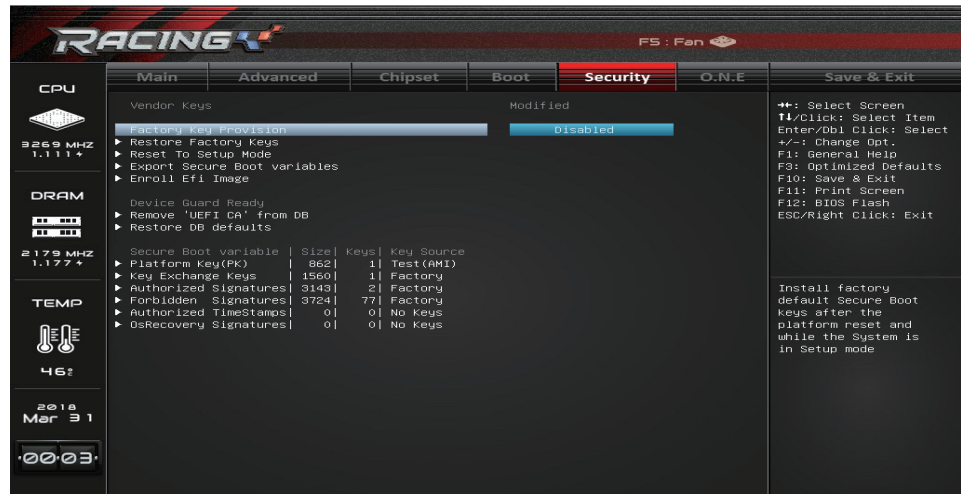
# Restore Factory Keys

Force System to User Mode. Configure NVRAM to contain OEM-defined factory default Secure Boot Keys.

# Restore To Setup Mode

Delete NVRAM content of all UEFI Secure Boot Key databases.

# Key Management



# Factory Key Provision

Allow to provision factory default Keys on next re-boot only when system in setup mode.  
Options: Disabled (Default) / Enabled

# Restore Factory Keys

Force System to User Mode. Configure NVRAM to contain OEM-defined factory default Secure Boot Keys.

# Restore To Setup Mode

Delete NVRAM content of all UEFI Secure Boot Key databases.

# 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

Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).

**Remove 'UEFI CA' from DB**

Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db).

**Restore DB defaults**

Restore DB variable to factory defaults.

**Platform Key (PK)**

Options: Details / Export / Update / Delete

**Key Exchange Keys**

Options: Details / Export / Update / Append / Delete

**Authorized Signatures**

Options: Details / Export / Update / Append / Delete

**Forbidden Signatures**

Options: Details / Export / Update / Append / Delete

**Authorized Timestamps**

Options: Update / Append

**OsRecovery Signatures**

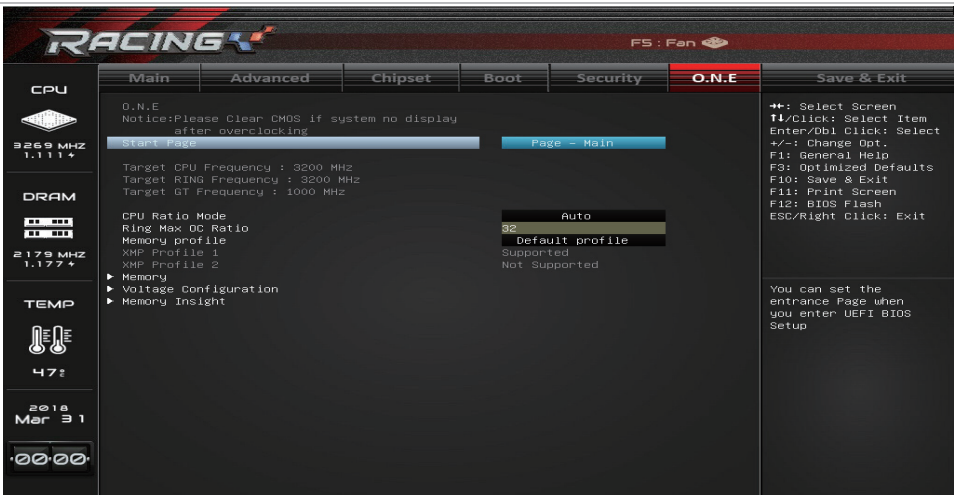
Options: Update / Append

# 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

## Note

- » The following items appear only when you set the CPU Ratio Mode function to [All Cores & Fixed]

## Core Max OC Ratio

This item sets the maximum OC Ratio for the CPU Core.

## Note

- » The following items appear only when you set the CPU Ratio Mode function to [Per Core]

## 1/ 2/ 3/ 4/ 5/ 6-Core Ratio Limit Override

This item 1/ 2/ 3/ 4/ 5/ 6 - Core Ratio Limit with range of (Max Non-Turbo Ratio - 83).

## Ring Max OC Ratio

This sets the maximum overclocking ratio for the Ring Domain.

## Memory Profile

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

Options: Default profile (Default) / Custom profile / XMP profile 1

---

### Note

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

---

## Memory Reference Clock

This item allow you to set Memory Reference Clock.

Options: 133 (Default) / 100

## Memory Ratio

Automatic or the frequency will equal ratio times reference clock. Set to Auto to recalculate memory timings listed below.

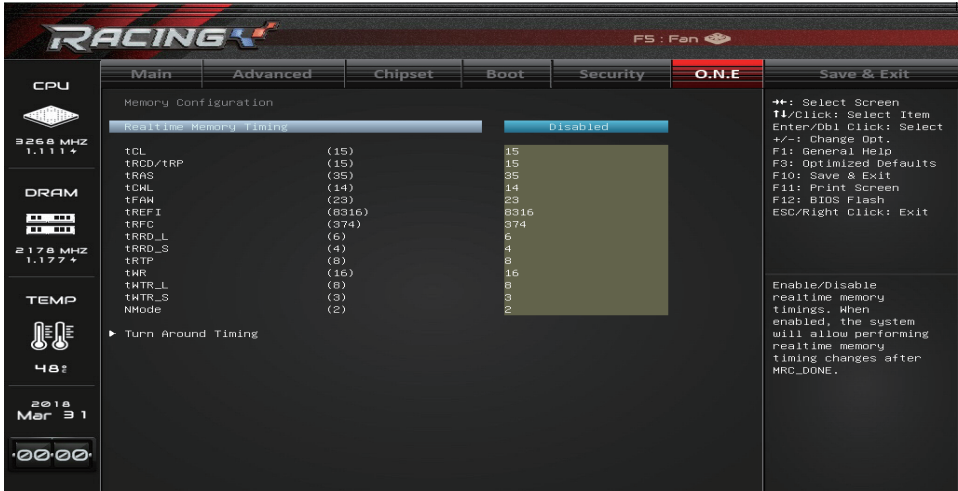
Options: Auto (Default)

## QCLK Odd Ratio

Adds 133 or 100 MHz to QCLK frequency, depending on RefClk.

Options: Disabled (Default) / Enabled

# Memory Timing Configuration



## Realtime Memory Timing

This item enables or disables realtime memory timings. When enabled, the system will allow performing realtime memory timing changes after MRC\_DONE.

Options: Disabled (Default) / Enabled

### 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 RAS Active Time, 0: AUTO, max: 64

Options: Auto (Default)

### tCWL

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

Options: Auto (Default)

### tFAW

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

Options: Auto (Default)

### tREFI

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

Options: Auto (Default)

### tRFC

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

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: 16

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: 16

Options: Auto (Default)

### tRTP

This item allows you to select Min Internal Read to Precharge Delay Time. Shall be set to half of tWR value, 0: AUTO, max: 15. DDR4 legal values: 5, 6, 7, 8, 9, 10, 12

Options: Auto (Default)

### 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

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: 16

Options: Auto (Default)

### tWTR\_S

This item allows you to select Min Internal Write to Read Command Delay Time, Different Bank Group, 0: AUTO, max: 16

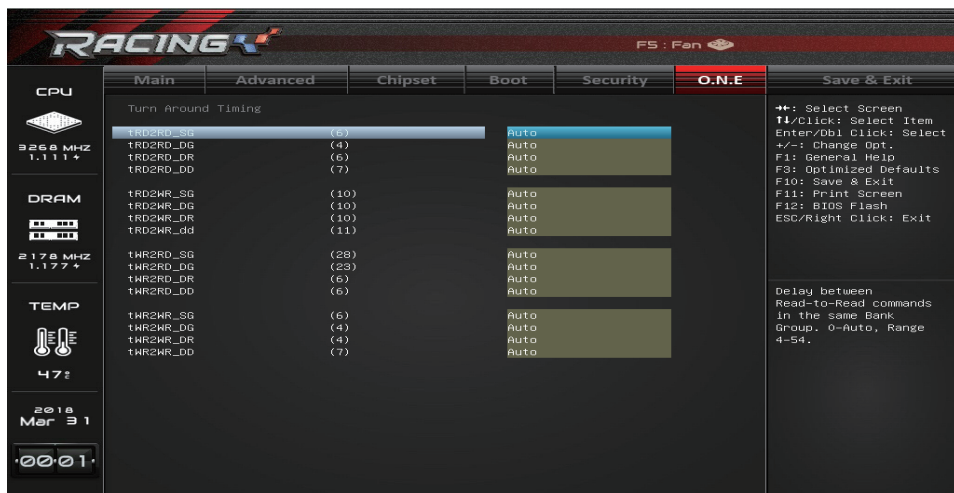
Options: Auto (Default)

### NMode

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

Options: Auto (Default)

## Turn Around Timing



The screenshot shows the BIOS O.N.E. (One-Step BIOS) menu. The 'Main' tab is selected, and the 'Turn Around Timing' section is expanded. The settings are as follows:

Item	Value	Options
tRRD_L_SG	(6)	Auto
tRRD_L_DG	(4)	Auto
tRRD_L_DR	(6)	Auto
tRRD_L_DD	(7)	Auto
tRRD_S_SG	(10)	Auto
tRRD_S_DG	(10)	Auto
tRRD_S_DR	(10)	Auto
tRRD_S_DD	(11)	Auto
tWR2RD_SG	(28)	Auto
tWR2RD_DG	(23)	Auto
tWR2RD_DR	(6)	Auto
tWR2RD_DD	(6)	Auto
tWR2MR_SG	(6)	Auto
tWR2MR_DG	(4)	Auto
tWR2MR_DR	(4)	Auto
tWR2MR_DD	(7)	Auto

On the right side of the menu, there are instructions for navigation:

- ↑↓: Select Screen
- ↑/Click: Select Item
- Enter/DB1 Click: Select
- +/-: Change Opt.
- F1: General Help
- F8: Optimized Defaults
- F10: Save & Exit
- F11: Print Screen
- F12: BIOS Flash
- ESC/Right Click: Exit

At the bottom right, there is a note: "Delay between Read-to-Read commands in the same Bank Group. 0=Auto, Range 4-54."

**tRD2RD\_SG**

This item delay between Read-to-Read commands in the same Bank Group, Range 4-54.

Options: Auto (Default)

**tRD2RD\_DG**

This item delay between Read-to-Read commands in different Bank Group for DDR4. All other DDR technologies should set this equal to SG. 0-Auto, Range 4-54.

Options: Auto (Default)

**tRD2RD\_DR**

This item delay between Read-to-Read commands in different Ranks. 0-Auto, Range 4-54.

Options: Auto (Default)

**tRD2RD\_DD**

This item delay between Read-to-Read commands in different DIMMs. 0-Auto, Range 4-54.

Options: Auto (Default)

**tRD2WR\_SG**

This item delay between Read-to-Write commands in the same Bank Group. 0-Auto, Range 4-54.

Options: Auto (Default)

**tRD2WR\_DG**

This item delay between Read-to-Write commands in different Bank Group for DDR4. All other DDR technologies should set this equal to SG. 0-Auto, Range 4-54.

Options: Auto (Default)

**tRD2WR\_DR**

This item delay between Read-to-Write commands in different Ranks. 0-Auto, Range 4-54.

Options: Auto (Default)

**tRD2WR\_dd**

This item delay between Read-to-Write commands in different DIMMs. 0-Auto, Range 4-54.

Options: Auto (Default)

**tWR2RD\_SG**

This item delay between Write-to-Read commands in the same Bank Group. 0-Auto, Range 4-86.

Options: Auto (Default)

**tWR2RD\_DG**

This item delay between Write-to-Read commands in different Bank Group for DDR4. All other DDR technologies should set this equal to SG. 0-Auto, Range 4-54.

Options: Auto (Default)

**tWR2RD\_DR**

This item delay between Write-to-Read commands in different Ranks. 0-Auto, Range 4-54.

Options: Auto (Default)

**tWR2RD\_DD**

This item delay between Write-to-Read commands in different DIMMs. 0-Auto, Range 4-54.

Options: Auto (Default)

**tWR2WR\_SG**

This item delay between Write-to-Write commands in the same Bank Group. 0-Auto, Range 4-54.

Options: Auto (Default)

**tWR2WR\_DG**

This item delay between Write-to-Write commands in different Bank Group for DDR4. All other DDR technologies should set this equal to SG. 0-Auto, Range 4-54.

Options: Auto (Default)

## tWR2WR DR

This item delay between Write-to-Write commands in different Ranks. 0-Auto, Range 4-54.

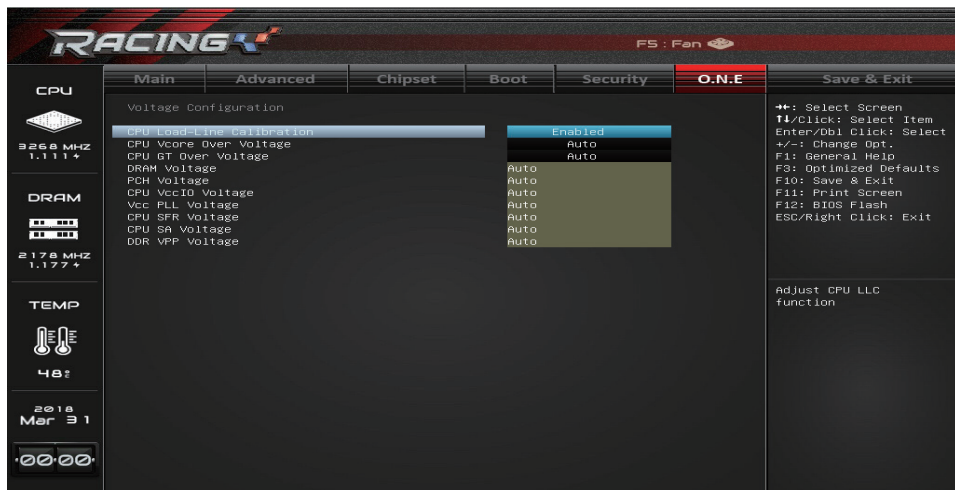
Options: Auto (Default)

## tWR2WR DD

This item delay between Write-to-Write commands in different DIMMs. 0-Auto, Range 4-54.

Options: Auto (Default)

## Voltage Configuration



## CPU Load-Line Calibration

This item adjust CPU LLC 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

Options: 1.130V (Default), Range: 1.000V-2.1000V

**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

## CPU GT Over Voltage

This item sets CPU GT Over Voltage.

Options: Auto (Default) / Override / Adaptive



**Note**

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

**CPU GT Adjust Voltage**

Options: 0.800V (Default), Range: 0.600V-1.500V

**Note**

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

**CPU GT Offset Prefix**

Options: + (Default) / -

**CPU GT Offset Voltage**

Options: Auto (Default), Range: 0.0V-0.635V

**DRAM Voltage**

This item sets DRAM Voltage (1.0V~2.200V), default 1.200V.

Options: Auto (Default)

**PCH Voltage**

This item sets PCH Voltage (1.00V~1.400V), default 1.060V.

Options: Auto (Default)

**CPU VccIO Voltage**

This item sets CPU High Frequency I/O Logic power supply (0.800V~CPU VSA Voltage), default 0.969V.

Options: Auto (Default)

**Vcc PLL Voltage**

This item sets VCC PLL OC Voltage (1.0V~2.400V), default 1.227V.

Options: Auto (Default)

**CPU SFR Voltage**

This item sets CPU SFR Voltage (1.0V~1.800V), default 1.070V.

Options: Auto (Default)

**CPU SA Voltage**

This item sets CPU System Agent Power Supply (0.900V~1.800V), default 1.063V.

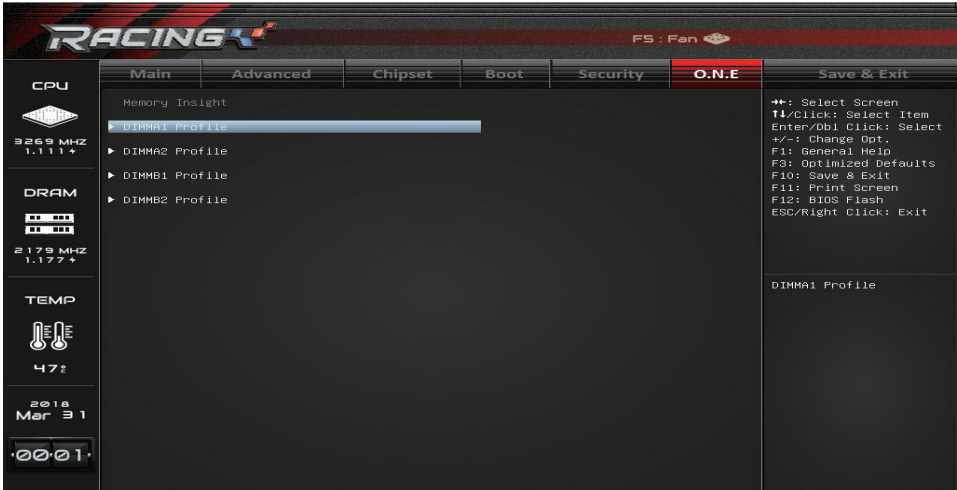
Options: Auto (Default)

**DDR VPP Voltage**

This item sets DRAM Activating Power Supply (2.375V~3.0V), default 2.500V.

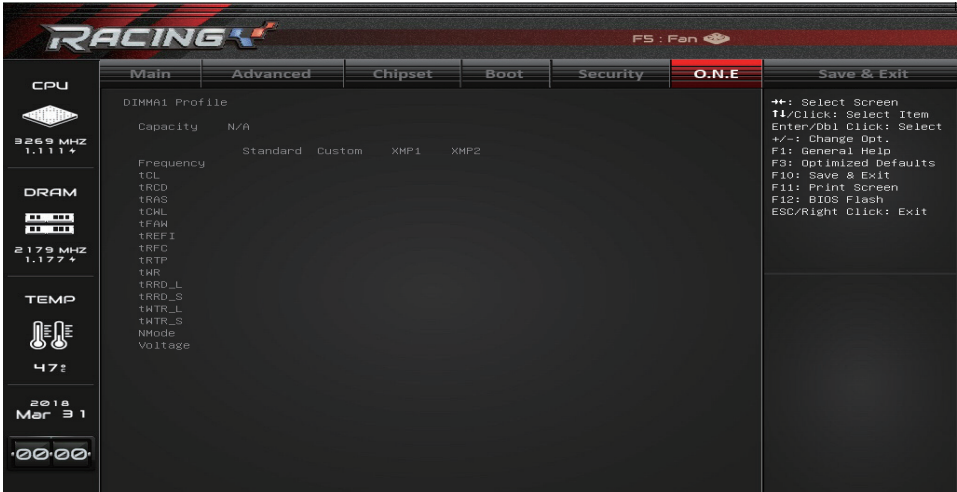
Options: Auto (Default)

# Memory Insight



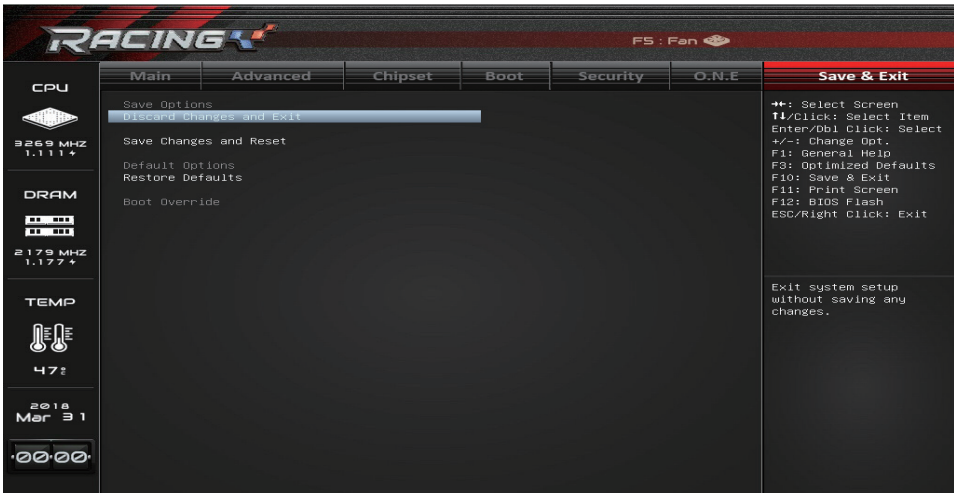
## DIMM Profile

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

Restore/Load Default values for all the setup options.