

# Configuring the Z97 Classified BIOS

This supplementary manual explains the different menus and selections within the BIOS and provides a description of the different options enabling you to configure the Z97 Classified BIOS for your needs.

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## Enter the BIOS

The Z97 Classified features a UEFI BIOS, allowing for full mouse and keyboard support to streamline configuration. The BIOS enables you to use the base configuration of the motherboard to set preferences for features and configure the board to perform optimally.

Follow the basic steps below to enter your BIOS.

1. Power on the computer
2. Press the Del / Delete key when the message “Press Del to enter BIOS” appears on screen.
  - a. In some instances, the Z97 Classified can complete the POST sequence before the video card fully initializes and prevent you from seeing the POST screen and the prompt for entering the BIOS, which may cause you to miss the opportunity to enter the BIOS. In these instances, please repeatedly press the Del/Delete button for a few seconds following the power on.

The Z97 Classified has 3 separate BIOS's, toggled via the BIOS select switch. EVGA STRONGLY recommends that you leave at least one BIOS unmodified to ensure that you have a failsafe point that allows you to boot is an error occurs.

## Header and Margin

The header and right margin are permanent fixtures in the BIOS. The header gives a general overview of hardware installed, basic temperatures and voltages.



In the center above the EVGA logo, is basic CPU information. There is the overall CPU clock speed shown in GHz (Gigahertz). Above that the CPU Multiplier times Base Clock (BCLK) which is how clock speed is derived. Adjacent to the CPU Clock there is a small outline of a chip and a number inside of it, the number in this case 4, is the number of physical cores in the CPU. HT indicates that Hyper Threading is enabled.

On the left, basic memory information is displayed at the top. The 8 small blue circles above “Memory” represents the memory slots. The number in the circle indicates the memory size per slot. If there is no number present, then that specific slot is not populated, or perhaps the DIMM present may be malfunctioning or incorrectly installed.

Below “MEMORY” is the total RAM size and the memory frequency. The Z97 Classified can support up to 32GB of RAM, and speeds up to 2666+MHz. Current Haswell processors are rated for up to 1600 MHz. Most memory will default to 1333 MHz and this will need to be set manually to the manufacturers spec or to XMP if the memory supports it. Although this board is rated for 2666+MHz, there are many factors that can limit your overclocking ability such as memory controller in the CPU, among others.

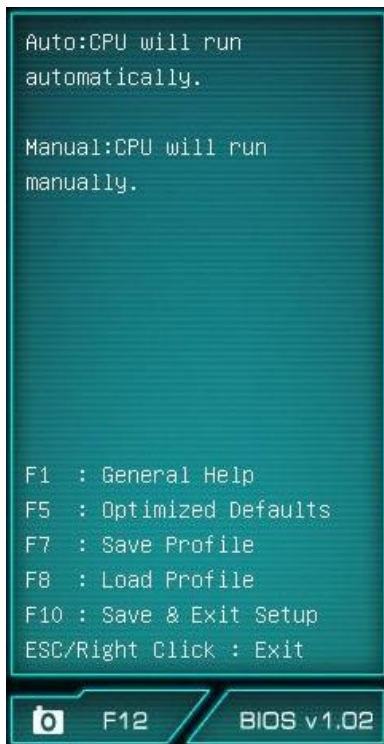
Bottom left section shows current voltages for Processor (CPU VCore) and the Memory (VDIMM).

The PCI-Express Breakdown is on the upper right. From the center out is the uppermost PCI-E slot to the lower slots. The lower row of blue circles will show what PCIe generation the slot is running at. The PCIe generation options are 1.0 2.0 and 3.0. The upper circles indicate the PCIe lane count for the corresponding slot. PCIe lane count options are 1, 4, 8, or 16.

The VRM and CPU temperatures are located below the PCI-E information. These are the 2 most critical items on the motherboard requiring thermal monitoring. Keep in mind, however, that these temperatures are at idle and do not necessarily reflect the temperature you may see either in Windows or within an application under load. Temperatures are displayed in Celsius which is the industry standard.

Below the header are the 5 buttons that will bring you to specific BIOS menus and these will be covered in the sections below.

The right Margin is the help legend, and gives a brief description of the current item you have selected.



The upper portion will give you a brief explanation of a selected item. Below that are the basic commands for the BIOS. The modern UEFI (Unified Extensible Firmware Interface) BIOS GUI also allows for full navigation via mouse or the arrow keys.

The lower portion of this section contains icons for saving screen shots of the BIOS and listing the current version of the BIOS. The F12 key can be used to save screen shots of the BIOS to a USB storage drive. To use this feature, a pre-formatted thumb drive must be plugged into one of the USB headers, then press F12 and a .bmp image will be saved to the thumb drives root folder, the file will be saved as a number, the breakdown is 2 digit year/ 2 digit month/ two digit day/ 6 digit time; leave you with a file name such as 140501083416, meaning 2014/May/1<sup>st</sup>/8:34:16. This may be used to easily share BIOS

configurations, or to visually back up settings prior to doing a BIOS update to quickly and easily set original values back into the BIOS after the flash is completed.

The BIOS version listed is the current version flashed of the ROM image, and will automatically update every time the new BIOS is flashed.

Reference for the different bullet points:

- Setting
- Sub menu
- Preset Configurations (like XMP)

## Overclock

The screenshot shows the UEFI BIOS interface with the 'OVERCLOCK' menu selected. The menu is divided into several sections: CPU status, CPU Overclocking, BCLK Overclocking, and Voltage Control. Each section contains various settings that can be adjusted or set to 'Auto'.

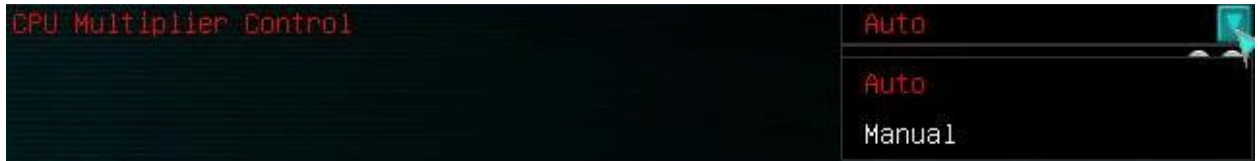
Section	Setting	Value	Control
CPU Status	Intel(R) Core(TM) i7-4770K CPU @	3.50GHz	
	Target CPU Frequency	3500 MHz	
	CPU Die Temperature	46/39/36/36 C	
CPU Overclocking	CPU Multiplier Control	Auto	Dropdown
	Non Turbo Ratio Override	35	Buttons (+/-)
BCLK Overclocking	BCLK Frequency Setting	100.00	Buttons (+/-)
	PEG/DMI Ratio	Auto	Dropdown
	Voltage Control		
Voltage Control	CPU Voltage Mode	1.020/1.013/1.013/1.013 V	Auto (Dropdown)
	RING Voltage Mode	1.067 V	Auto (Dropdown)
	VSA Offset Voltage	0.800 V	Auto (Buttons +/-)
	IOA Offset Voltage		Auto (Buttons +/-)
	IOD Offset Voltage	1.007 V	Auto (Buttons +/-)
	CPU VIN	1.773 V	Auto (Buttons +/-)
	CPU VIN Vdroop		Auto (Dropdown)
	PCH 1.05V	1.040 V	Auto (Buttons +/-)
	PCH 1.5V	1.528 V	Auto (Buttons +/-)
	FIVR Faults Enable		Auto (Dropdown)
	FIVR Efficiency Enable		Auto (Dropdown)

Intel(R) Core(TM) i7-4770K CPU @ 3.50GHz

- Target CPU Frequency  
This will show the CPU frequency on next reboot ((BCLK x BCLK Ratio)x CPU Multiplier))
- CPU Die Temperature  
This will show the temperature of each core.

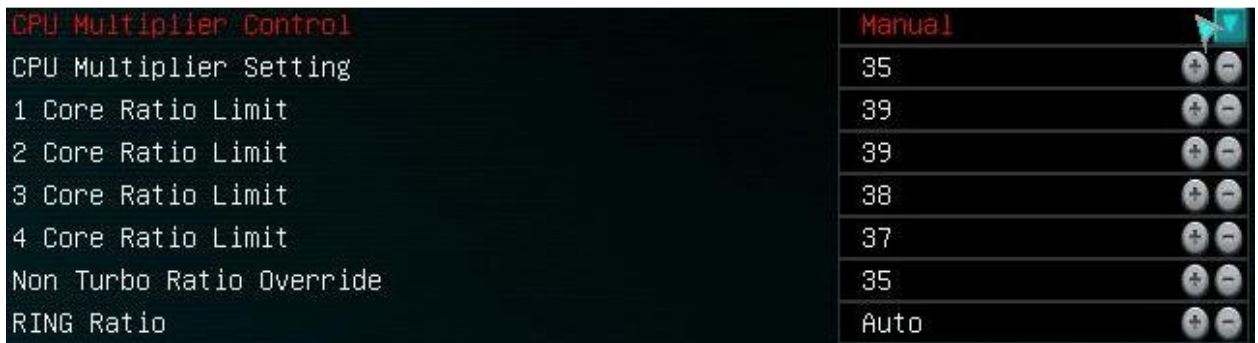
## CPU Overclocking

- CPU Multiplier Control  
Auto/Manual



Auto – This will run the CPU at default multiplier, and its only variances will be done dynamically by Turbo Mode and Speed Step.

Manual – This give you multiplier control for all CPU ratios. The available range for multiplier is from 8-80x.



When under Manual, you will have 7 options to adjust your overclock with.

- CPU Multiplier Setting – This will change the base multiplier for the CPU (ratio can be set according to utilization loading, see settings below)
- 1 Core Ratio Limit – Set the CPU multiplier setting for single threaded loading
- 2 Core Ratio Limit – Set the CPU multiplier setting for 2 threaded loading
- 3 Core Ratio Limit – Set the CPU multiplier setting for 3 threaded loading
- 4 Core Ratio Limit – Set the CPU multiplier setting for full CPU loading
- Non Turbo Ratio Override
- RING Ratio (currently limited to a range of 8-39)

- Non Turbo Ratio Override\*

This value can be set separately when Multiplier control is still set to Auto.

That is the ratio the CPU will have if Turbo function is disabled. This is the highest tested stable CPU ratio (per Intel), also the ratio which is labeled on CPU package/box.

This also means that is a speed on which CPU will be working at worst case (TDP load, max power), unless thermal throttling protection kick in.

Having this setting is useful when pushing for high BCLK, as this is also usually speed on which BIOS is posting.

## BCLK Overclocking

- **BCLK Frequency Setting**  
Base clock frequency adjustment, this can be adjusted in 0.05 MHz increments, this can be adjusted by clicking the +/- keys or by typing in the value directly.  
Adjusting this value may result in connectivity loss from various installed peripherals or pre-attached components, as their interface speeds will change as well.
- **PEG/DMI Ratio**  
AUTO 5/5 5/4 5/3 5/2  
Ratio adjustment between PCIE strap and BCLK to allow for higher BVCLK speeds. It is usually recommended to leave this setting on AUTO.

## Voltage Control

- **CPU Voltage Mode**  
Auto/Adaptive/Override

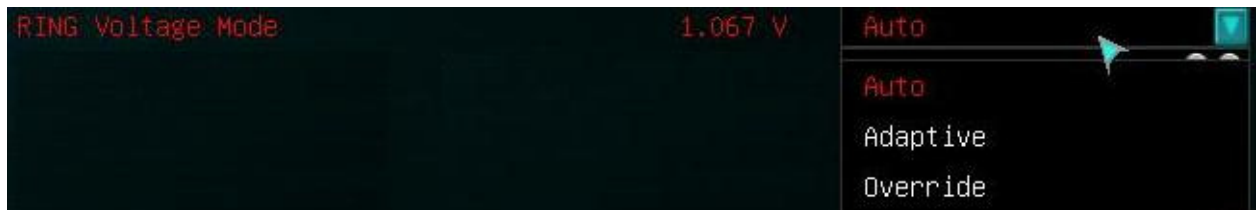


Auto – Leaves voltage mode at BIOS default

Adaptive – Allows for manual changes in voltages but will still keep low voltage where there is less load. This is useful to keep better thermals, when high voltage not required.

Override – Applies a static voltage

- **RING Voltage Mode**  
Auto/Adaptive/Override



Auto – Leaves voltage mode at BIOS default

Adaptive – Allows for manual changes in voltages but will still keep low voltage where there is less load. This is useful to keep better thermals, when high voltage not required.

Override – Applies a static voltage



- **VSA Offset Voltage**  
Voltage System Agent  
VSA Offset Voltage increases the voltage threshold of the CPU Integrated memory controller (IMC) and system control unit (SCU) voltage. High memory speeds over 2666 or BCLK overclocking may need increasing of this voltage. Auto will adjust voltage depending on memory frequency, or the values may be entered manually or scroll through the options with the +/- keys.
- **IOA Offset Voltage**  
Input/Output Analog voltage  
By increasing this voltage may help for overclocking memory/pushing BCLK. Some CPUs may be unstable if this voltage is set too low or too high.
- **IOD Offset Voltage**  
Input/Output Digital voltage  
By increasing this voltage may help for overclocking memory/pushing BCLK. Some CPUs may be unstable if this voltage is set too low or too high.
- **CPU VIN**  
CPU Voltage Input  
This is the only CPU VRM located on the motherboards PCB that is not controlled by the FIVR. This voltage must be at least 0.4-0.6V higher than set FIVR voltage. For example, if CPU Core voltage set to 1.5V for extreme OC, VIN voltage must be set at least 2.1V. Higher voltage cause higher temperatures for CPU, as efficiency is lower.
- **CPU VIN VDroop**  
Enable/Disable  
This enables or disables Intel Spec VDroop functions for the CPU VIN. This may help to get better stability when overclocking over 4.5GHz.
- **PCH 1.05V**  
Platform Controller Hub  
PCH serves as a south bridge for modern Intel Chipsets  
1.05v is the base voltage core for the PCH core domain.
- **PCH 1.5V**  
Platform Controller Hub  
PCH serves as a south bridge for modern Intel Chipsets  
1.5v adjustments control the voltage for the PCH I/O and the IVR (Input Voltage Range).

- FIVR Faults Enable  
Fully Integrated Voltage Regulator  
Auto/Enable/Disable  
Intel FIVR power fault protection system. It is recommended to disable this protection mechanism when doing extreme overclocking.
- FIVR Efficiency Enable  
Fully Integrated Voltage Regulator  
Auto/Enable/Disable  
Efficiency optimized operation mode for Intel FIVR. This may cause instability during extreme overclocking.

# Memory

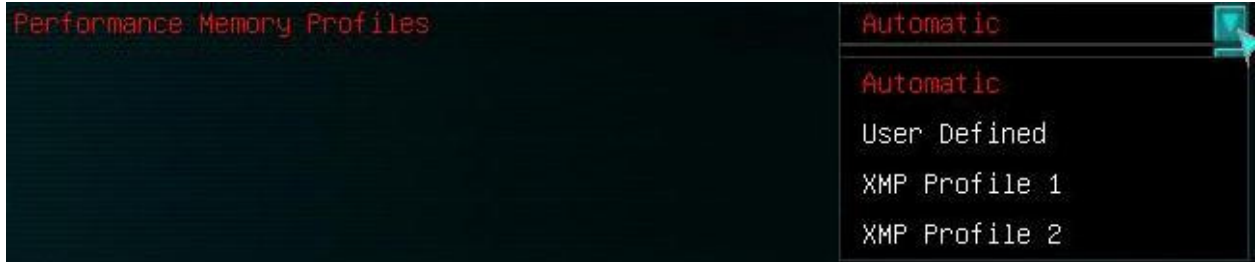


## Memory Information

This will show the XMP#1 and XMP#2 specs if supported, or state that it is not supported like it does above for XMP#2.

## Memory Multiplier Configuration

- Performance Memory Profiles



Automatic – Will default to loose timings, and the default speed and voltage for the memory controller. In most instances that will be 1333MHz at 1.5 volts.

User Defined – This option allows you full control of your memory settings. It is recommended to manually set all settings to manufacturer default at first and test for stability, then adjust from there.

XMP Profile 1 – This will enable all settings hardcoded from your memory for Extreme Memory Profile 1 to the BIOS controls. If present, this is prebuilt into the memory from the memory manufacturer.

XMP Profile 2 - This will enable all settings hardcoded from your memory for Extreme Memory Profile 1 to the BIOS controls. If present, this is prebuilt into the memory from the memory manufacturer.

- Memory Frequency Limiter

This option selects the upper limit of the memory speed.

The theoretical range of memory speed (not all memory kits, or all CPU's will be able to attain these values) is 800Mhz to 2933Mhz.

- DIMM Voltage

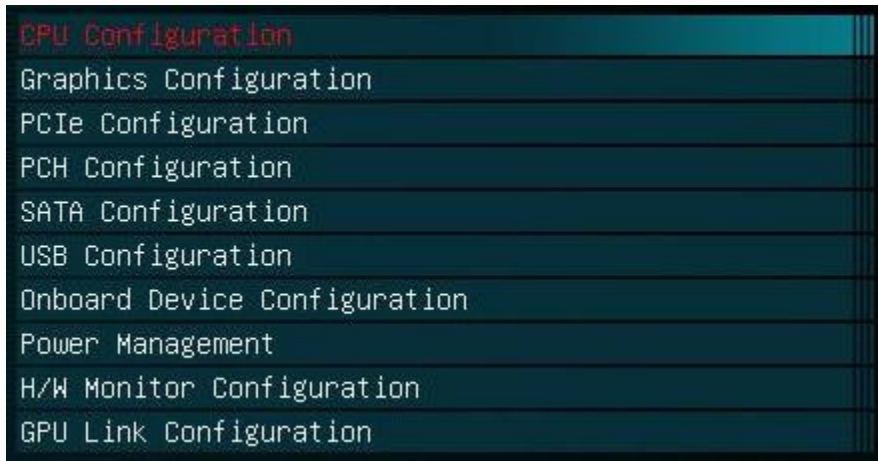
This setting allows you to enter a static memory voltage. It is recommended that you set the DIMM voltage to the manufacturer recommend specs and test before making further adjustments. You can also leave this value at Auto and the BIOS will attempt to set it correctly based off of the detected specs of the DIMM.

## Basic Timing Configuration

This section will display the basic memory timing information. You can alter these settings by setting Performance Memory Profiles to “User Defined”.

tCL, tRCD, tRP, tRAS are the latency settings listed on a typical stick of RAM in the hyphenated section (9-9-9-24, for example). Those numbers on the RAM are entered, usually in top to bottom order. There are many additional latencies available to adjust below these. However, these all involve memory controls and are not used in most cases. Because this is a dual channel board, you will see CHA-B; if memory is not present in a specific channel related values will be hidden.

## Advanced



- EIST  
 Enhanced Intel Speedstep Technology  
 Enable/Disable  
 This option allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production, based on level of processor load.
  - Turbo Mode  
 Enable/Disable

This allows the CPU to dynamically adjust frequency to accommodate higher than average processor load to maintain peak performance. (In essence, low level overclocking built into the CPU).

- CPU C States

Enable/Disable

This can open the options to use C1 and C3.

- Enhanced C1 State

Enable/Disable

Core clock is off. The processor is not executing instructions, but can return to an executing state almost instantaneously.

- CPU C3 Report

Enable/Disable

Clock generator is off. The processor does not need to keep its cache coherent, but maintains other states.

- CPU C6 report

Enable/Disable

Clock generator is off. The processor does not need to keep its cache coherent, but maintains other states.

- CPU C7 report

Enable/Disable

The processor enters the package C7 low power state when all cores are in the C7 state and the L3 cache is completely flushed. The last core to enter the C7 state begins to shrink the L3 cache until the entire L3 cache has been emptied. This allows for further power savings.

- Hyper Threading

Enable/Disable

Hyper threading is processor core virtualization and functions as additional processing cores . Processor units which are not utilized are shared between two virtual threads to accept more parallel workload. This is also why a quad core processor shows up as 8 threads in Windows.

- Intel® Virtualization Technology

Enable/Disable

Hardware based virtualization built into the CPU, used in conjunction with virtualization software to create multiple virtual environments/ virtual PC's within a single PC.

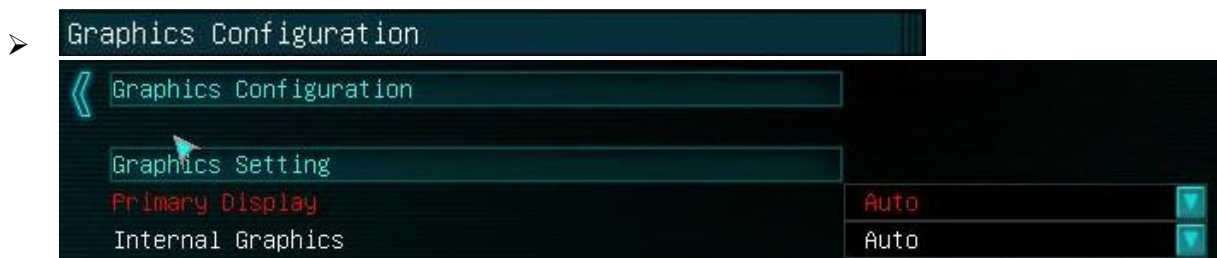
- Active Processor Cores

All/1/2/3

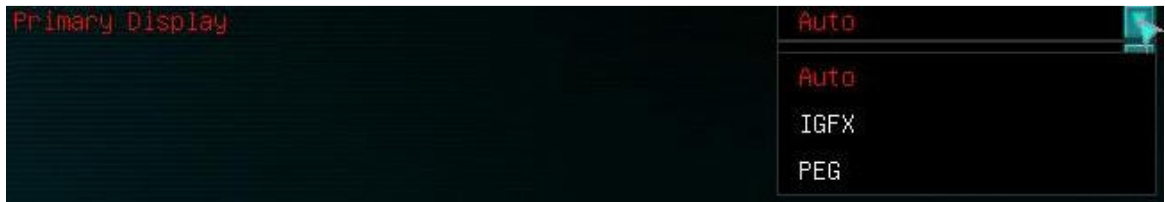
This setting allows the selection of the number of processor cores to enable and make available for use.



This section does not have any settings or adjustments whatsoever. This section provides a fairly in depth overview of the installed CPU, in the case of this test system, it is a 4770k, and shows its associated specs and what exactly it does and does not support.

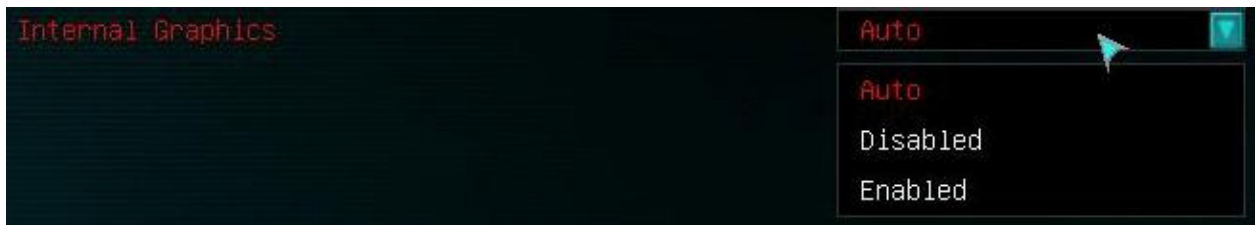


- Primary Display



Auto – Allows BIOS to activate the appropriate display  
 IGFX – Integrated graphics on the CPU  
 PEG – PCI-E graphics card

- Internal Graphics



Auto/Internal/Disable

This toggles the integrated video on the CPU to Enable/Disable or to a auto value where the BIOS will determine if it is needed.



This screen will give you a pre slot breakdown showing how many lanes are being used by a given slot as well as what generation the PCIe device is running.





If you click on the pulldown menu that currently lists auto, this will allow you to force a specific PCIe generation, in most cases Auto should suffice.



The top section is strictly informational, this shows the type of PCH (Platform Controller Hub, PCH has effectively replaced the South Bridge), PCH Revision ID and the ME (Management Engine) firmware revision, this is not something readily changeable by the user, however from time to time there may be an update to this as needed as part of a overall BIOS update.

- Intel® Rapid Start Technology  
On/Off  
Intel® Rapid Start Technology enables systems to quickly resume from deep sleep in about 6 seconds.
- Intel® Smart Connect Technology  
On/Off  
While your computer is asleep, Intel Smart Connect Technology wakes the system periodically and re-establishes network connectivity. This enables your applications that receive data from the Internet and update.



- SATA Mode Selection

IDE/AHCI/RAID



IDE – Legacy Controller Mode, typically needed on modern SATA devices

AHCI – Advanced Host Controller Interface.

This setting offers features such as NCQ (Native Command Queuing) and Hotswap. Also required for an SSD to operate to its capabilities (RAID will also work for this).

RAID – Redundant Array if Inexpensive Disks

RAID is a means of combining multiple physical hard disks or SSD's into a single logical drive for data protection through redundancy or for a pure speed increase. RAID also offers ALL functions of AHCI, and in general enabling RAID mode in the BIOS is a safe setting to provide the most options for your controller and any potential expansions you may make.

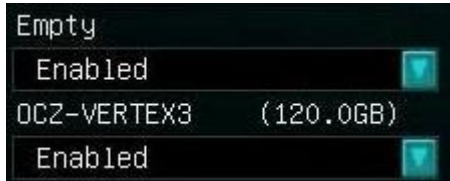
- SMART Self Test

Self-Monitoring, Analysis and Reporting Technology

On/Off

SMART is a technology for predicting imminent failures of a HDD/SSD. This does not guarantee that a drive will fail, or it not alerting does not mean there is no possibility of failure. SMART has several internal tests it runs, and when the drive deviates from set parameters a SMART alert is given to let you know of a POTENTIAL problem.

Serial ATA Port 0-5, all 6 ports will have the same information:



Top line will identify what, if anything is attached to the port, if nothing is attached, it will show empty.

The pull-down menu is for Hot-Swap capability, and it is an enable/disable. This is recommended if you are using a drive rack of some sort.



1 Drive, 1 Keyboard, 1 Mouse, 2 Hubs

This identifies all currently attached USB devices. These are fairly generic descriptions; USB thumb drives can often be labeled the same as USB HDD's as just "Drive". Also, many Keyboards

with a USB header on them will show up as a hub or hubs, macro pads and console controllers will typically detect as keyboard AND mouse devices both, so please bear in mind that this is not a literal list with hardware ID's.

- Legacy USB Support

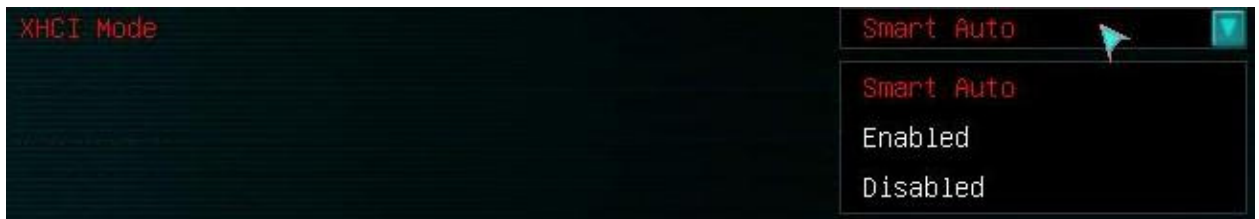


Enable/Disable

If this is disabled it will only support EFI compliant USB devices.

- XHCI Mode

eXtensible Host Controller Interface



Smart Auto/Enabled/Disabled

The most current mode for USB with several new features for functionality and power saving. The XHCI architecture was designed to support all USB speeds, including SuperSpeed (5 Gbit/s) and future speeds, under a single driver stack.

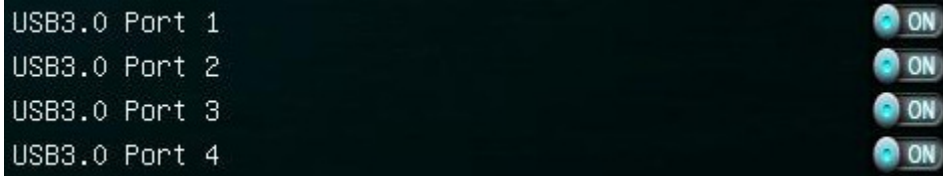
### USB Per-Port Setting



On/Off options for the rear I/O panel USB 2.0 ports.



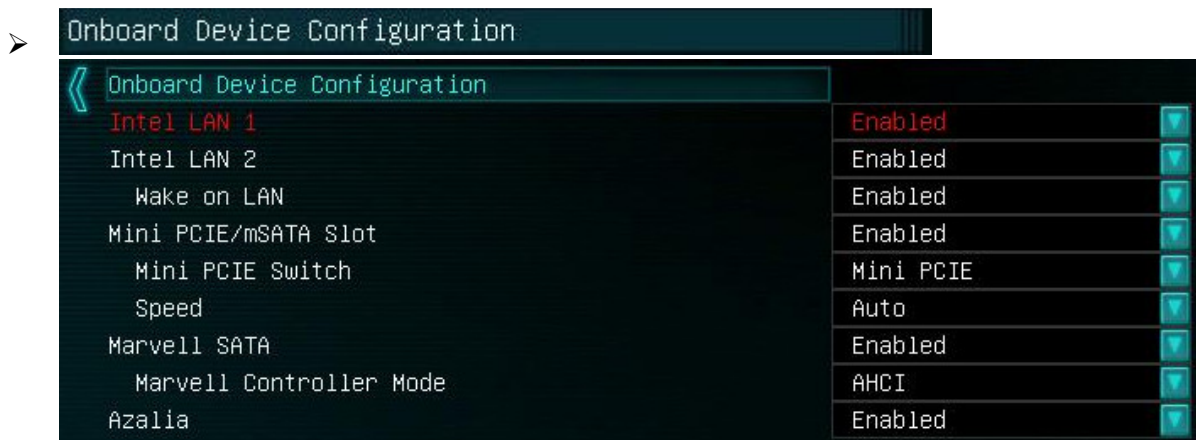
On/Off options for the internal front panel USB 2.0 Header



On/Off options for the rear I/O panel USB 3.0 ports.



On/Off options for the internal front panel USB 3.0 Header



- Intel LAN 1
  - Intel i210 LAN
  - Enable/Disable
- Intel LAN 2
  - Intel i217 LAN
  - Enable/Disable
    - Wake on LAN
      - Enable/Disable
      - This allows the PC to be powered on remotely via LAN
- Mini PCIE/mSATA Slot
  - Enable/Disable
  - This is the control setting for the Mini PCIE/mSATA slot on the motherboard.

- Mini PCIE Switch



#### mSATA/Mini PCIE

This is the selector for what mode the small form factor slot runs on, either mSATA or Mini PCIE

- Speed



#### Auto/Gen1/Gen2

Mode/Speed selection for the mSATA/Mini PCIE slot.

Auto – Allows the slot to auto-detect the device and select the appropriate mode

Gen1 – Forces the slot to run in Gen1 mode.

Gen2 – Forces the slot to run in Gen2 mode.

- Marvell SATA

Enable/Disable

This enables/disables the secondary SATA controller (not PCH native)

- Marvell Controller Mode

AHCI/RAID

AHCI – Advanced Host Controller Interface.

This setting offers features such as NCQ (Native Command Queuing) and Hotswap. Also required for an SSD to operate to its capabilities (RAID will also work for this).

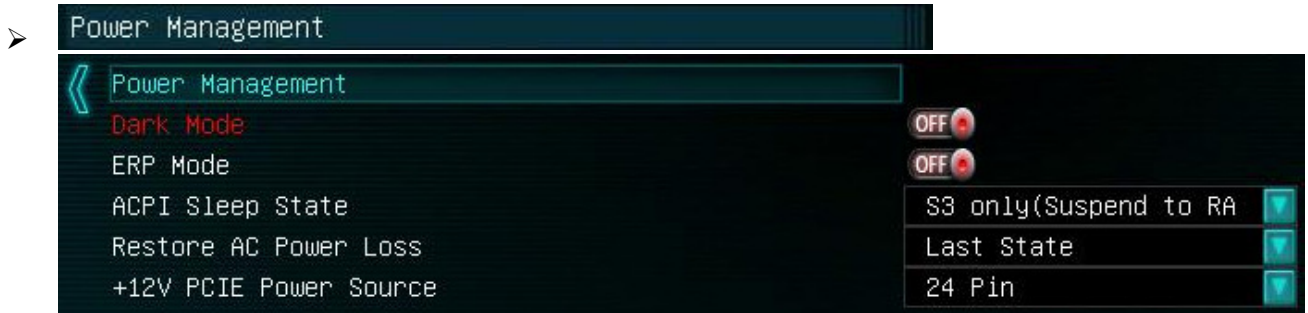
RAID – Redundant Array of Inexpensive Disks

RAID is a means of combining multiple physical hard disks or SSD's into a single logical drive for data protection through redundancy or for a pure speed increase. RAID also offers ALL functions of AHCI, and in general enabling RAID mode in the BIOS is a safe setting to provide the most options for your controller and any potential expansions you may make.

- Azalia

Enable/Disable

This enables or disables the integrated audio controller.



- **Dark Mode**  
On/Off  
This will allow all of the lights, LEDs, Indicators, etc, to be disabled making the board completely dark.
- **ERP Mode**  
Energy Related Products  
On/Off  
European Union standardization for energy and energy savings.

- **ACPI Sleep State**



S3 only (Suspend to RAM)/Suspend disabled  
Option to disable sleep altogether or enable only S3 sleep state.

- **Restore AC Power Loss**



These are the options in the event the motherboard detects an inbound AC power loss  
Power Off – This will leave the system powered off until turned back on by the user  
Power On – When power is restored the PC will restart normally  
Last State – Will default to whatever state the PC was last in during the loss to AC power

- +12v PCIE Power Source



This is the selector for additional inbound power for the PCIE slots.

24 pin – This selection will pull all motherboard originated power through the 24 pin slot

6 pin – This selection will utilize the 6 pin supplemental connector on the lower left edge of the motherboard



H/W Monitor Configuration

H/W Monitor Configuration

CPU Die Temperature		41/39/35/39 C
CPU Temperature		45 C
PWM Temperature		32 C
SYS Temperature		34 C
CPU Fan	2702 RPM	SMART
CPU Smart Fan Setting		
CPU Fan2	N/A	SMART
CPU Smart Fan2 Setting		
CHA Fan	N/A	SMART
CHA Smart Fan Setting		
SYS Fan1	N/A	MAX
SYS Fan2	N/A	MAX
PWR Fan	N/A	MAX
AUX Fan	N/A	MAX
CPU VIN	1.773 V	Auto
DIMM Voltage	1.493 V	Auto
PCH 1.05V	1.040 V	Auto
PCH 1.5V	1.528 V	Auto
VSM VTT	0.760 V	
+12V	11.962 V	
VCC	4.961 V	
VCC3	3.248 V	
3VSB	3.376 V	
IA Core 1 Voltage	1.013 V	
IA Core 2 Voltage	1.013 V	
IA Core 3 Voltage	1.013 V	
IA Core 4 Voltage	1.013 V	
ID Voltage	1.007 V	
GT Voltage	0.000 V	
Ring Voltage	1.067 V	
VSA Voltage	0.800 V	

This top section is strictly live monitoring.

H/W Monitor Configuration	
CPU Die Temperature	41/39/35/39 C
CPU Temperature	45 C
PWM Temperature	32 C
SYS Temperature	34 C

CPU Die Temperature – This will list the temps for each specific core

CPU Temperature – This is the socket temp

PWM Temperature – This is the temperature of the PWM MOSFET's

SYS Temperature – This is ambient case temp derived from an onboard thermal sensor.

The section below is for fan controls.

CPU Fan	2702 RPM	SMART	⊕ ⊖
CPU Smart Fan Setting			
CPU Fan2	N/A	SMART	⊕ ⊖
CPU Smart Fan2 Setting			
CHA Fan	N/A	SMART	⊕ ⊖
CHA Smart Fan Setting			
SYS Fan1	N/A	MAX	⊕ ⊖
SYS Fan2	N/A	MAX	⊕ ⊖
PWR Fan	N/A	MAX	⊕ ⊖
AUX Fan	N/A	MAX	⊕ ⊖

**ALL FAN HEADERS ON THIS MOTHERBOARD HAVE A MAXIMUM POWER LIMIT OF 1 AMP @ 12 VOLTS, OR 12 WATTS, ANY MORE THAN THIS WILL LIKELY DAMAGE THE BOARD AND CAUSE PERMANENT FAILURE OF THE FAN HEADER. IF YOU NEED TO RUN A HIGH CAPACITY FAN, OR A PUMP THAT PULLS MORE THAN 1 AMP/12 WATTS, PLEASE USE A MOLEX CONNECTER FROM YOUR POWER SUPPLY, OR IF CONTROLLING THIS DEVICE IS NECESSARY, PLEASE LOOK TO A FAN CONTROLLER.**

- CPU Fan – This is a PWM controlled fan, you can either set a static value through PWM, or you can leave it in “Smart” mode where it will auto adjust based on detected temps.
- CPU Fan2 – This is a PWM controlled fan, you can either set a static value through PWM, or you can leave it in “Smart” mode where it will auto adjust based on detected temps. This is labeled as CPU Fan2 as it used the same temp detection as “CPU Fan” so it will ramp up and down in unison with the primary CPU fan. This can be very useful when running your heatsink fans in a push/Pull mode.

- CHA Fan – This is a chassis fan that is controlled via PWM
- All following fans, SYS Fan 1&2, PWR Fan and AUX Fan are all controlled by adjusting voltage input, not through PWM.

The section below handles Voltage adjustments

CPU VIN	1.773 V	Auto	⬆️ ⬇️ ⬆️
DIMM Voltage	1.493 V	Auto	⬆️ ⬇️ ⬆️
PCH 1.05V	1.040 V	Auto	⬆️ ⬇️ ⬆️
PCH 1.5V	1.528 V	Auto	⬆️ ⬇️ ⬆️

- CPU VIN  
CPU Voltage Input (1.500v – 3.050v)  
This is the only CPU VRM located on the motherboards PCB that is not controlled by the FIVR
- DIMM Voltage (1.200v – 2.300v)  
This is the voltage control for your memory, it is recommended to start by setting this voltage to match the voltage stated on the label of your memory.
- PCH 1.05V (0.700v – 1.600v)  
Platform Controller Hub  
PCH serves as a south bridge for modern Intel Chipsets  
1.1v is the base voltage core for the PCH core domain.
- PCH 1.5V (0.700v – 1.600v)  
Platform Controller Hub  
PCH serves as a south bridge for modern Intel Chipsets  
1.5v adjustments control the voltage for the PCH I/O and the IVR (Input Voltage Range).

The final section below is just a voltage monitor, this can be watched to see the specific voltages of those components listed, none of the values are adjustable here, and this is strictly for monitoring purposes.



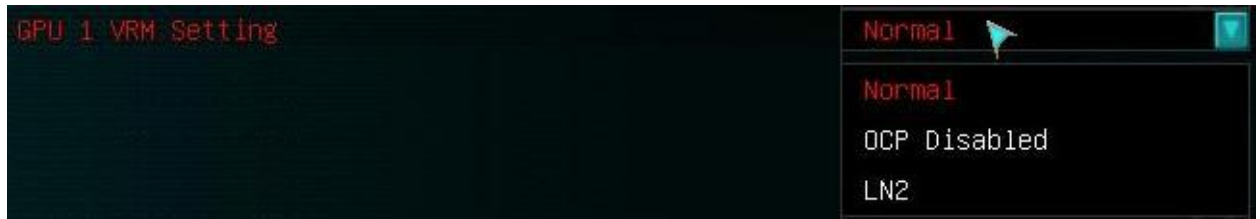
GPU Link requires using video card(s) that support GPU link and connecting it to the motherboard, and this will allow you to push voltages above and beyond what is changeable through Precision, however this is ONLY accessible through the BIOS at this time.

There are 4 GPU link settings, all options and ranges are identical, this is strictly for adjusting up to 4 video cards individually.

GPU 1 Link Setting	
GPU 1 Vgpu Voltage	Auto
GPU 1 Vmem Voltage	Auto
GPU 1 Vaux Voltage	Auto
GPU 1 VRM Setting	Normal

- GPU 1 Vgpu Voltage  
Voltage range is 1.000v – 2.000v  
This is an adjustment for the GPU core itself
- GPU 1 Vmem Voltage  
Voltage range is 1.000v – 2.500v  
This is the adjustment for the RAM on the video card

- GPU 1 Vaux Voltage  
Voltage range is 0.700v – 1.500v  
This is adjustment for PEX/PLL voltage on the video card.
- GPU 1 VRM Setting



Normal – Leave all BIOS settings on the card at reference.

OCP Disabled – This disables OCP to assist with voltage increase that come with doing heavy overclocking on VGA.

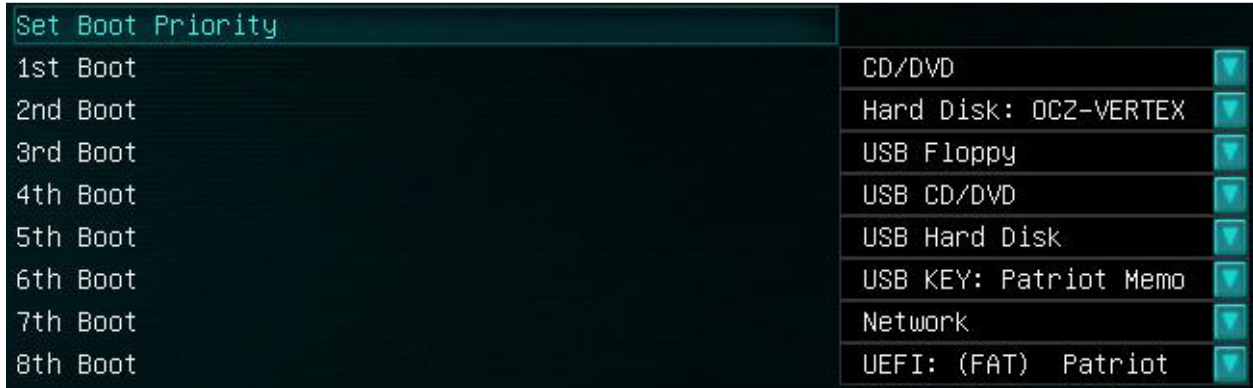
LN2 – This has several tweaks to the BIOS that are specific for running VGA at sub-zero temperatures.

## Boot



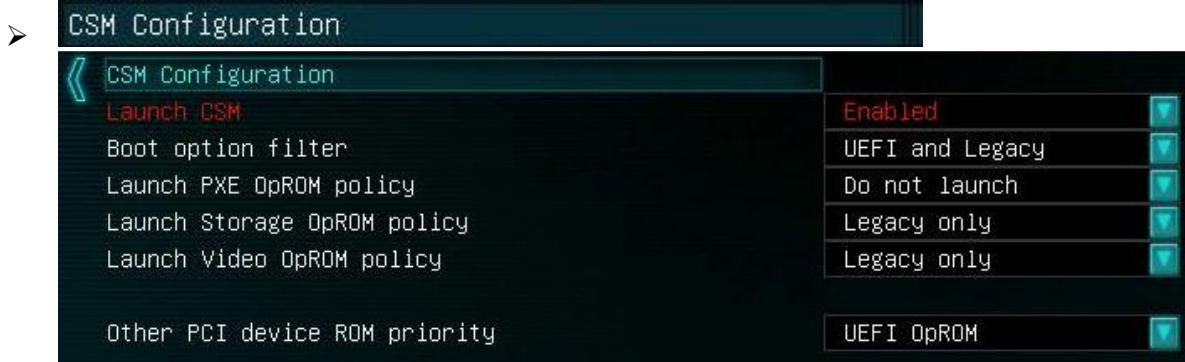
- **Bootup NumLock State**  
On/Off  
This sets the NumLock on your keyboard to on or off when powered on; this allows the use of the number function on the 10 key pad on the keyboard.
- **Speaker Beep**  
On/Off  
Toggles the POST beep On or Off.

- Quiet Boot  
On/Off  
This enables or disables the splash screen during post.
- Fast Boot  
On/Off  
Enabling Fast boot will make the initial post/boot slightly faster by bypassing the boot device check and using last boot HDD.



All boot options will share the same list of devices to boot from. Use the pull down menu and select the device you wish to use for 1<sup>st</sup> through 8<sup>th</sup> and when the system posts, it will follow this list.





- Launch CSM**  
 Enable/Disable  
 CSM translates the information generated under the EFI environment into the information required by the legacy environment and makes the legacy BIOS services available for booting to the operating system and for use in runtime.

- Boot option filter**

Allows you to select which boot methodology you wish to use, as you can setup a HDD/SSD to boot in UEFI mode rather than legacy.

- Launch PXE OpRom policy**

Defines when the PXE can be launched.

- Launch Storage OpRom policy**



- Launch Video OpRom policy



Selects when the video OpRom is initialized

- Other PCI device ROM priority



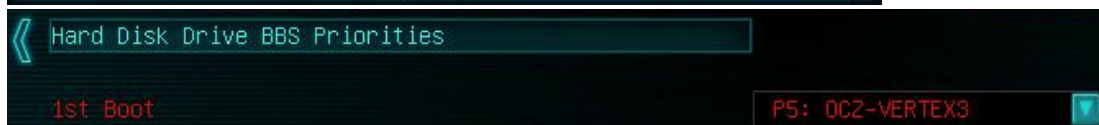
Some PCIE devices have encryption. It will use the OpROM to check some data.

➤ Security



- Administrator Password  
3-20 characters  
This limits the access to the BIOS.
- User Password  
3-20 characters  
Password will lock the system and will not allow it to boot or enter setup without a password.

➤ Hard Disk Drive BBS Priorities



If you have more than one hard drive installed on your PC, this pulldown will show all attached devices. The drive selected here will be the drive represented in the boot order options on page 32.

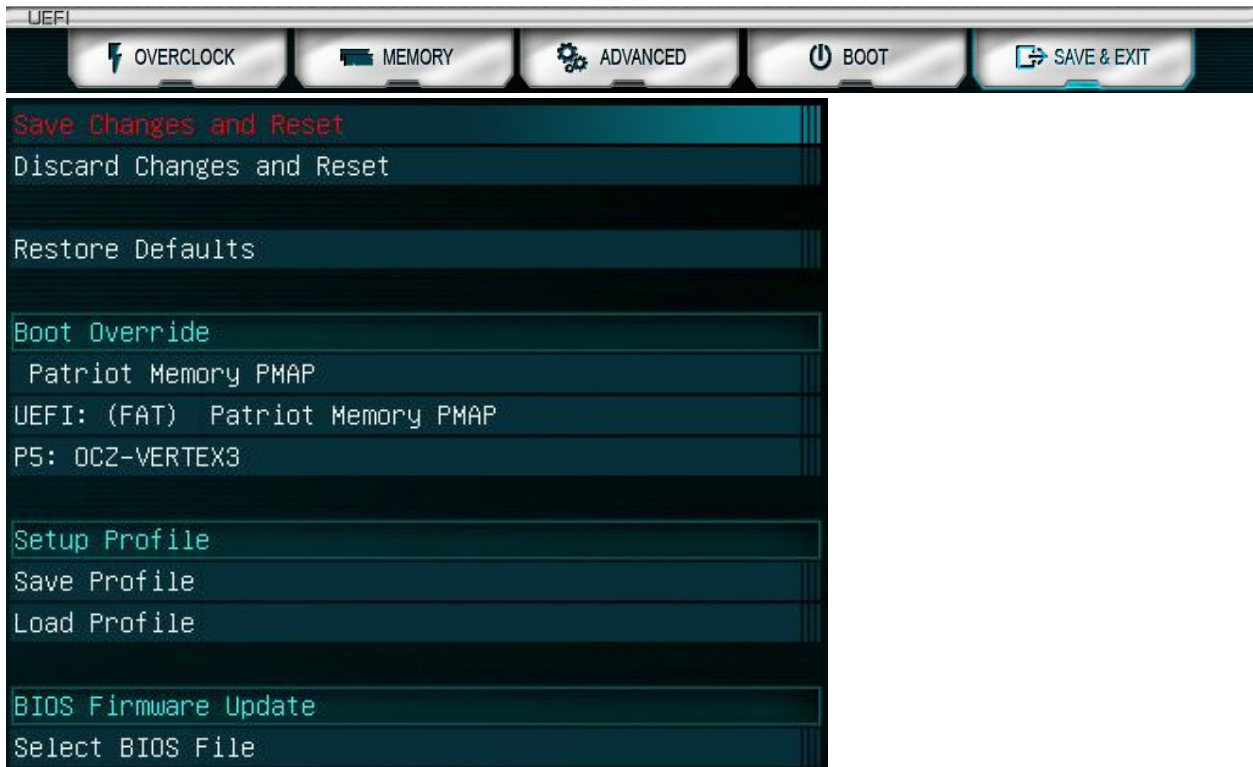


If you have more than one USB drive installed on your PC, this pulldown will show all attached devices. The drive selected here will be the drive represented in the boot order options on page 32.



If you have more than one USB drive installed on your PC, this pulldown will show all attached devices. The drive selected here will be the drive represented in the boot order options on page 32.

## Save and Exit



- **Save Changes and Reset**  
This will save whatever changes you have made in the BIOS and reboot the PC.
- **Discard Changes and Reset**  
This will not save any changes made and regress the settings to the state they were in when you entered the BIOS initially.
- **Restore Defaults**  
Resets BIOS to factory defaults
- **Boot Override**  
This is the selected main boot device
- **Save Profile**  
This option saves current BIOS configuration to a profile in BIOS.
- **Load Profile**  
This option loads current BIOS configuration from a saves profile in BIOS.
- **Select BIOS file**  
This allows you to select a .bin file from a thumb drive to flash BIOS from within BIOS.