Configuring the X99 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 X99 Classified BIOS for your needs.

Enter the BIOS

The X99 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 X99 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 X99 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 6, 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" represent 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 X99 CLASSIFIED can support up to 128GB of RAM, and speeds up to 2667+MHz. Current Haswell-E processors are rated for up to 2133 MHz. Most memory will default to 1866 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 2667+ 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.
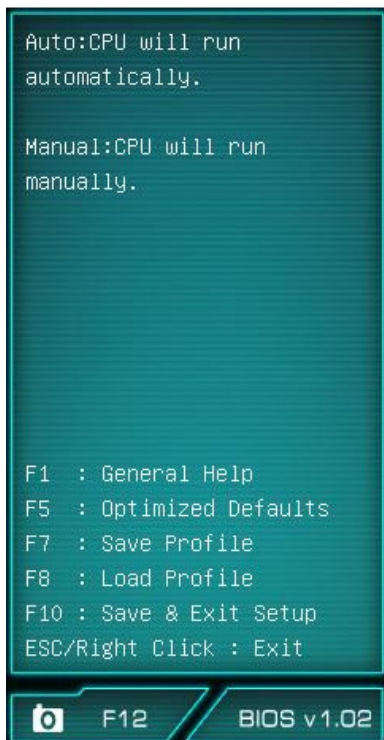
The upper portion will give you a brief explanation of a selected item. Below that are the basic commands for the BIOS. The modern UEFI (Unified Extensible Firmware Interface) BIOS GUI also allows for full navigation via mouse or the arrow keys.

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, and then press F12 and a .bmp image will be saved to the thumb drives root folder. 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

- Intel® Core™ i7-5930K CPU @3.50GHz
  This identifies the currently installed CPU model

- Target CPU Frequency
  The product of the BCLK and the Multiplier: (BCLK Frequency * BCLK Ratio) * CPU Multiplier = CPU Frequency.

- Target RING Frequency
  This is strictly a monitor; it shows the speed (frequency) that the RING is running at. The RING is the interface between iGPU, CPU cores and System Agent.

- Target CPU Frequency

  The product of the BCLK and the Multiplier: (BCLK Frequency * BCLK Ratio) * CPU Multiplier = CPU Frequency.

- CPU Die Temperature

  This will show the temperature of the processor core.
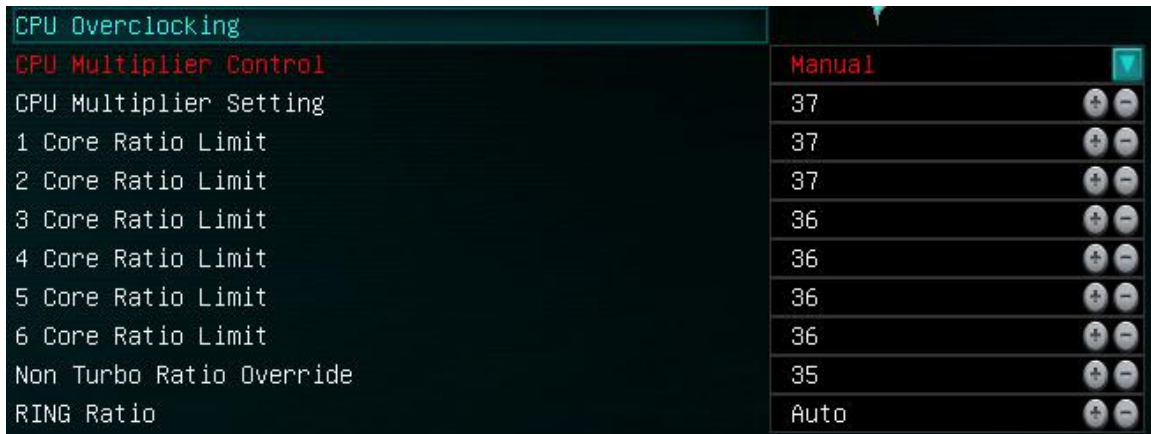
CPU Overclocking

- CPU Multiplier Control
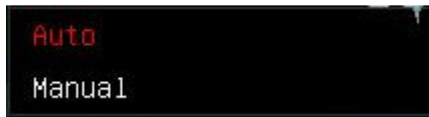
  Auto

  Manual

  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 gives you the multiplier control for all CPU ratios. The available range for the multiplier is 12-80x.

CPU Overclocking		
CPU Multiplier Control	Manual	▼
CPU Multiplier Setting	37	⊕ ⊖
1 Core Ratio Limit	37	⊕ ⊖
2 Core Ratio Limit	37	⊕ ⊖
3 Core Ratio Limit	36	⊕ ⊖
4 Core Ratio Limit	36	⊕ ⊖
5 Core Ratio Limit	36	⊕ ⊖
6 Core Ratio Limit	36	⊕ ⊖
Non Turbo Ratio Override	35	⊕ ⊖
RING Ratio	Auto	⊕ ⊖

  When under Manual, you will have 10 (that number may go up if high core count processors become available) options to adjust your overclocks with.
  - CPU Multiplier Control – This will change the base multiplier for the CPU (ratio can be set according to utilization loading, see 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 4 threaded loading
  - 5 Core Ratio Limit – Set the CPU multiplier setting for 5 threaded loading

- o   6 Core Ratio Limit – Set the CPU multiplier setting for 6 threaded loading
- o   Non Turbo Override
- o   Ring Ratio (Currently limited to a range of 8-35)

- Non Turbo Ratio Override
  This value can be set separately when Multiplier Control is at Auto.
  This is the ratio Turbo mode will have if the Turbo function is disabled. This is the highest tested stable CPU ratio (per Intel), also the ratio which is labeled on the CPU package/box.
  This also means this is the speed in which the CPU will be working at worst case (TDP load, max power), unless thermal throttling protection is enabled by the system.
  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 the 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 the BCLK to allow for higher BCLK speeds. It is usually recommended to leave this setting at AUTO.

Voltage Control

- CPU Voltage Mode

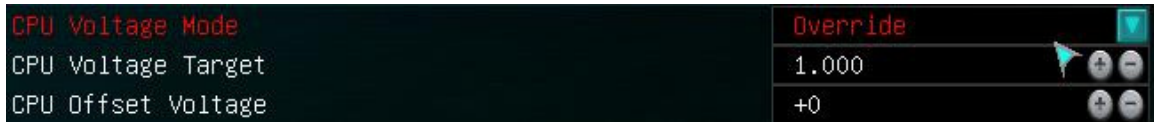 | CPU Voltage Mode | Auto |
  | --- | --- |
  | | Auto |
  | | Override |
  | | Adaptive |

  Auto/Adaptive/Override
  Auto - Leaves voltage mode at BIOS default.

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

CPU Voltage Mode	Adaptive
CPU Voltage Target	0.000
CPU Offset Voltage	+0

Override – Applies static voltage

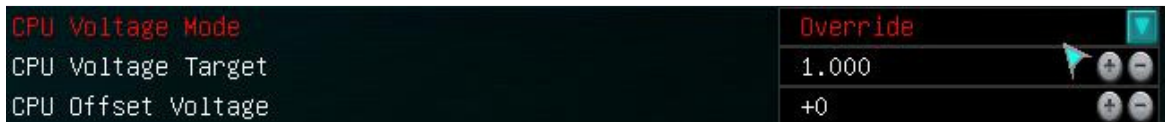| CPU Voltage Mode	Override
CPU Voltage Target	1.000
CPU Offset Voltage	+0

- RING Voltage Mode
  Auto/Adaptive/Override
  Auto – Leaves voltage mode at BIOS default
  Adaptive - Allows for manual changes in voltage but will still keep low voltage where there is less load. This is useful to keep better thermals, when high voltage is not required.

RING Voltage Mode	Adaptive
RING Voltage Target	0.000
RING Offset Voltage	+0

Override – Applies a static voltage

CPU Voltage Mode	Override
CPU Voltage Target	1.000
CPU Offset Voltage	+0

- VSA Voltage Offset
  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.

- 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 0.4V to 0.6V higher than set FIVR voltage. For example, if CPU Core Voltage is set to 1.5V for extreme OC, VIN voltage must be at lease 2.1V. Higher voltage causes higher temperatures for CPU, as efficiency is lower.

- CPU VIN VDroop

  This enables or disables Intel Spec VDroop functions for the CPU VIN. This may help to get better stability when overclocking over 4.5GHz.
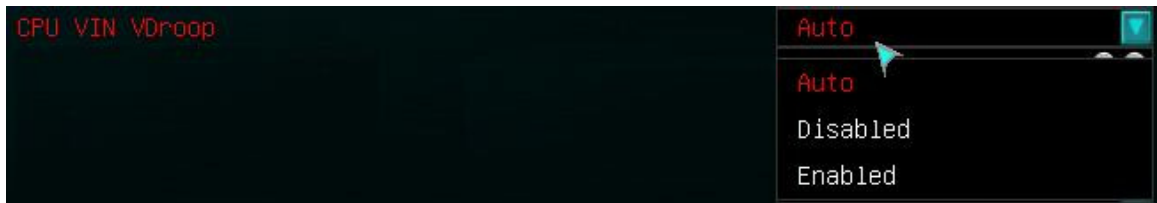
  Auto/Enable/Disable

  Auto – Adjusts itself based solely off of CPU frequency

  Enable – Uses Intel's reference VDroop settings, when under light load can help reduce temps and operating voltage.

  Disable – This disables VDroop functionality for CPU VIN, this can be helpful for stabilizing overclocks 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

  Enable/Disable

  Intel FIVR power fault protection system. It is recommended to disable this protection mechanism, when doing extreme overclocking.
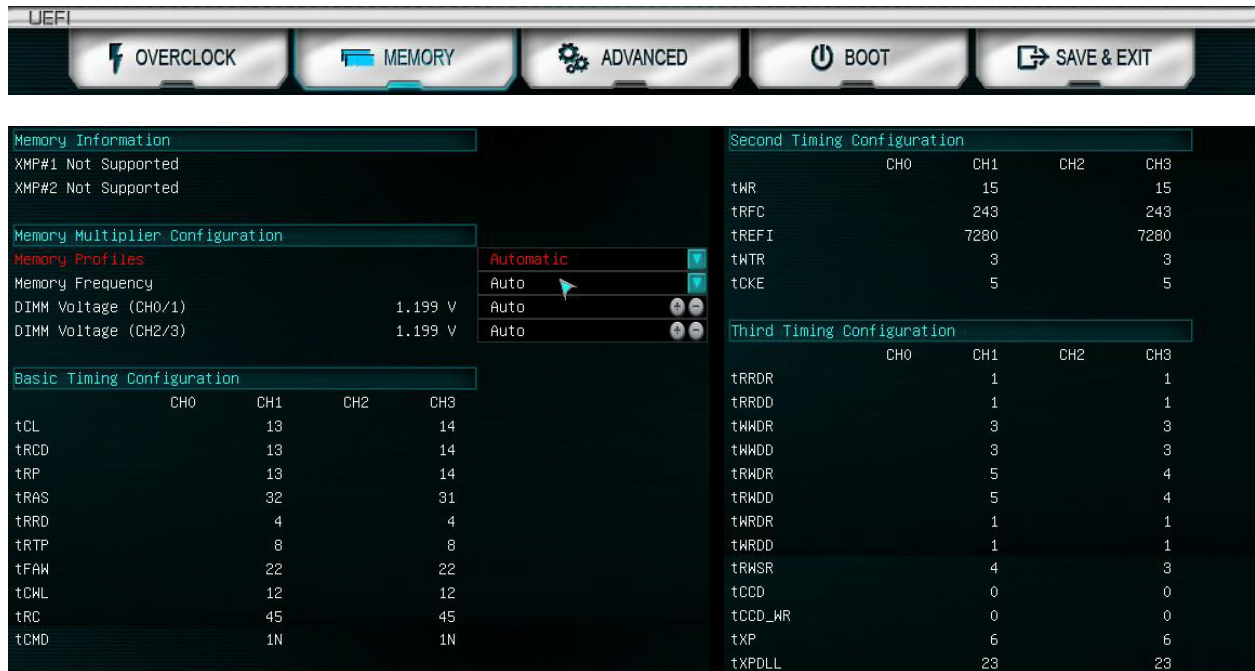
- FIVR Efficiency Enable

  Fully Integrated Voltage Regulator

FIVR Efficiency Enable	Enabled ▼
	Enabled
	Disabled

  Enable/Disable

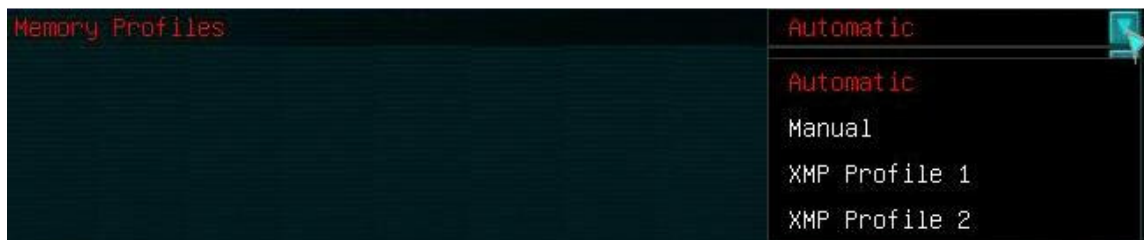 Efficiency optimized operation mode for Intel FIVR.

MEMORY

This section is strictly informational.

XMP#1 and XMP#2 will show the profiles, if available, that are supported by your RAM.

- Memory Profiles
  This is where you select between BIOS defaults, profiles hardcoded onto your RAM or assigning memory values manually.

 Automatic/Manual/XMP Profile 1/XMP Profile 2
  Automatic: This will be the default values the system detects for the memory.
  Manual: Select this option when you want full control over memory speed, voltage and latency.

XMP Profile 1: Extreme Memory Profile 1. Preset values in the memory for speed and latency.

XMP Profile 2: Extreme Memory Profile 2. Preset values in the memory for speed and latency.

- Memory Frequency
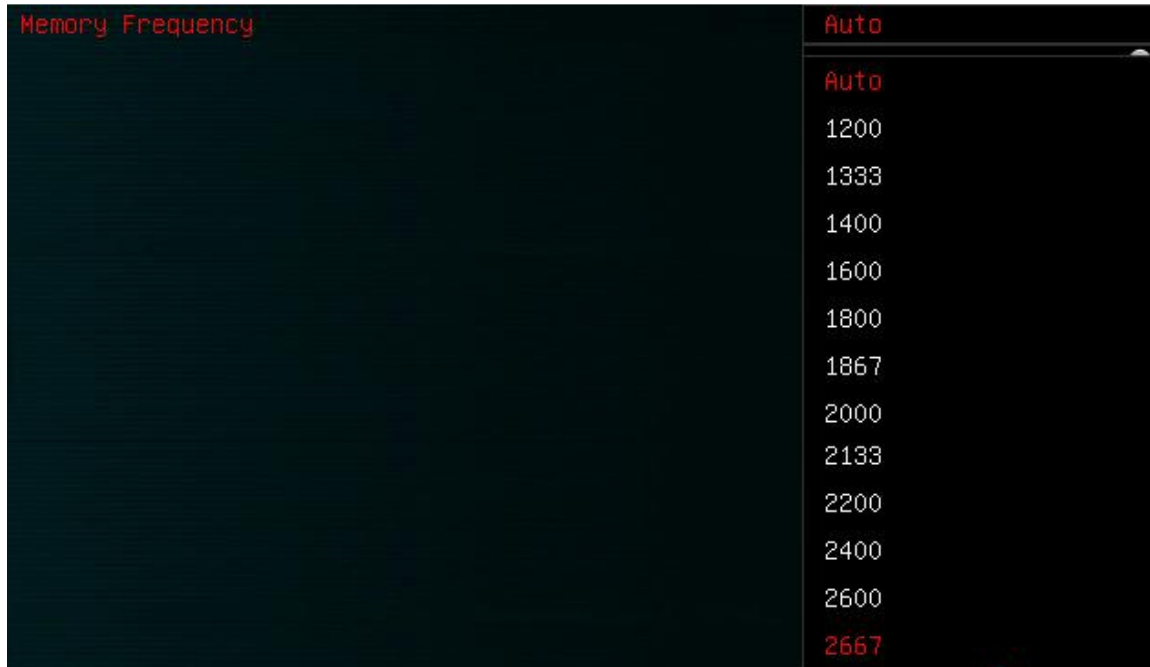
The memory controller can support memory speeds from 1200 through 2667 via multiplier adjustment. Anything above that will require BCLK adjustments.

- DIMM Voltage (CH0/1)

Voltage the system memory is running at. This will detect a default voltage, however for higher speed memory or when you are clocking your memory, you may need to increase this, and you can click in the field and enter a value manually.

Baseline range is 1.200V to 1.500V

- DIMM Voltage (CH2/3)

Voltage the system memory is running at. This will detect a default voltage, however for higher speed memory or when you are clocking your memory, you may need to increase this, and you can click in the field and enter a value manually.

Baseline range is 1.200V to 1.500V

- Memory Latency

Latency is shown and can be adjusted when Memory Profiles is set to Manual mode.

```
Basic Timing Configuration
                 CH0          CH1          CH2          CH3
tCL              15
tRCD             15
tRP              15
tRAS             36
tRRD              4
tRTP              8
tFAW             23
tCWL             14
tRC              51
tCMD             1N
```

tCL, tRCD, tRP, tRAS are the latency settings listed on a typical stick of RAM in the hyphenated section (15-15-15-36, 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 quad channel board, you will see CH0-3; if memory is not present in a specific channel related values will be hidden.

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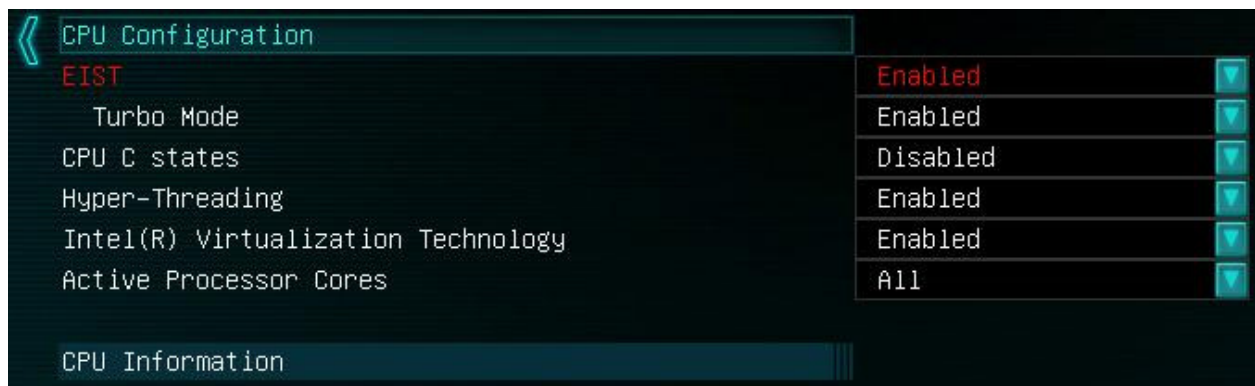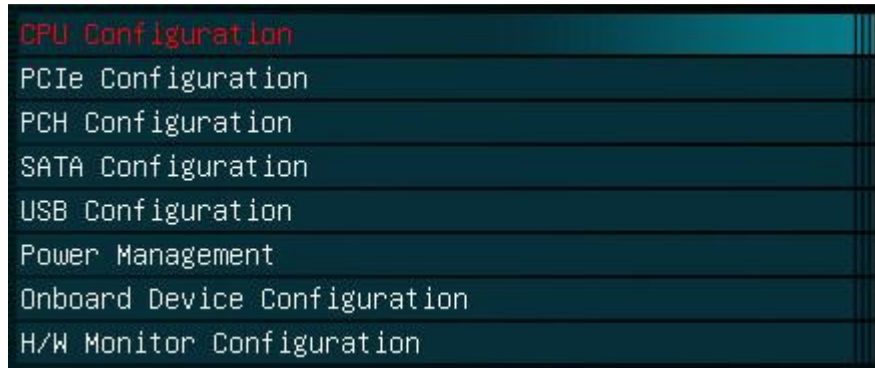
- **EIST**
  Enhanced Intel Speedstep Technology
  Enable/Disable
  Allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production, based on level of processor load.

- **Turbo Mode**
  Enable/Disable
  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).

This feature works in tandem with EIST to help optimize system performance while keeping power consumption and heat down.

- 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
  L2 cache is shrunk, when it reaches zero, CPU will go to a lower core voltage. Power consumption during C6 is nearly zero.

- Hyper Threading
  Enable/Disable
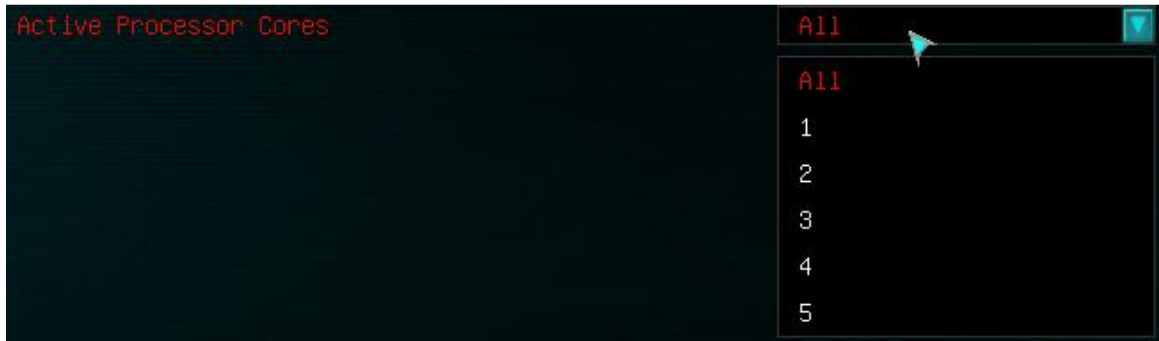 Hyper threading is processor core virtualization and functions as additional processing cores for some applications. This is also why a quad core processor shows up as 8 threads in Windows.

- Intel® Virtualization Technology
  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.
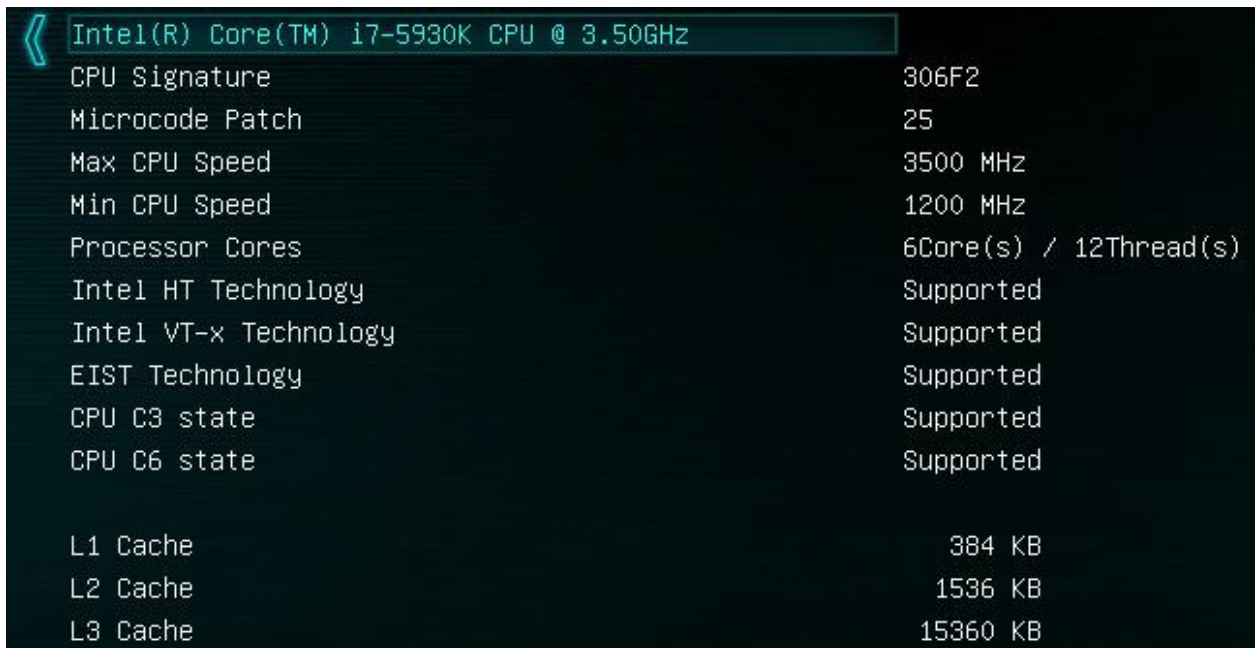
- Active Processor Cores

```
Active Processor Cores                              All          ▼

                                                    All

                                                    1

                                                    2

                                                    3

                                                    4

                                                    5
```

All/1/2/3/4/5(/6/7 if appropriate CPU is installed)

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

➢ CPU Information

```
《  Intel(R) Core(TM) i7-5930K CPU @ 3.50GHz
   CPU Signature                              306F2
   Microcode Patch                           25
   Max CPU Speed                             3500 MHz
   Min CPU Speed                             1200 MHz
   Processor Cores                           6Core(s) / 12Thread(s)
   Intel HT Technology                        Supported
   Intel VT-x Technology                      Supported
   EIST Technology                            Supported
   CPU C3 state                               Supported
   CPU C6 state                               Supported


   L1 Cache                                     384 KB
   L2 Cache                                    1536 KB
   L3 Cache                                   15360 KB
```

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 5930K, and it shows associated specs and what exactly it does and does not support.
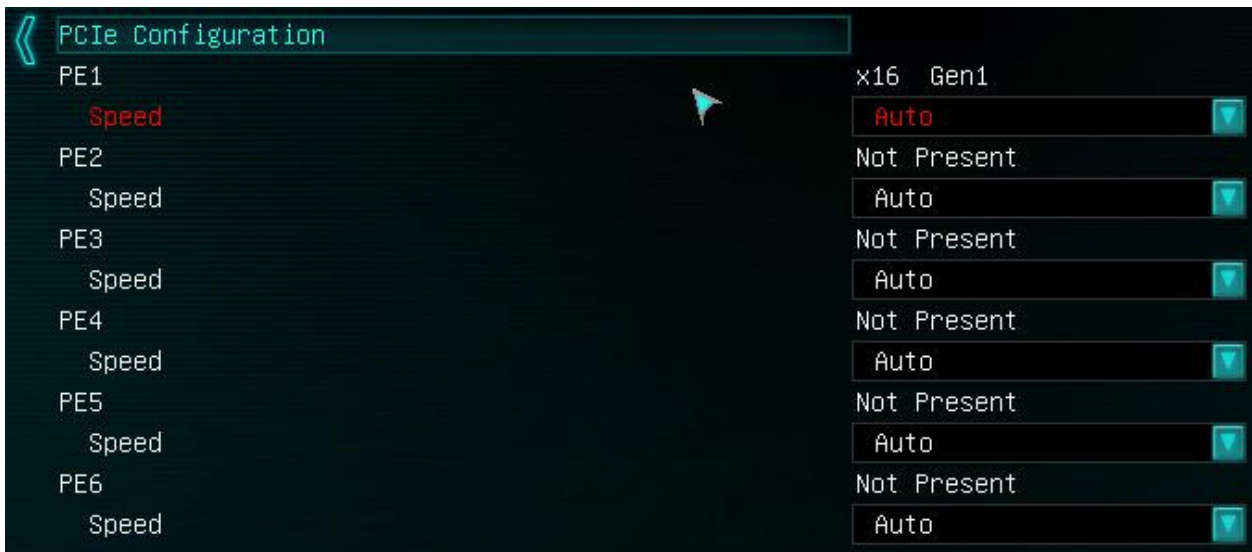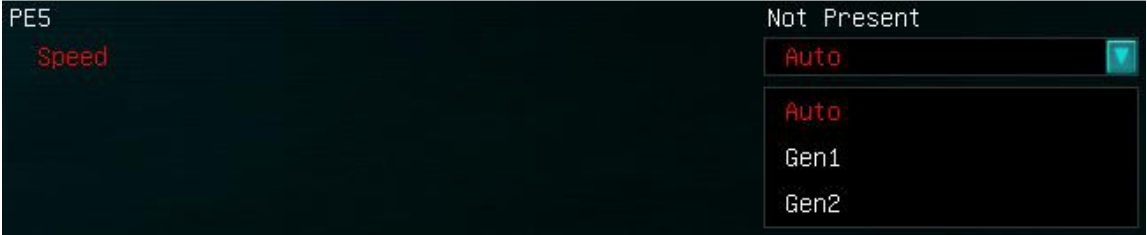
This option gives you as per slot breakdown showing how many lanes are being used by a given slot as well as what generation the PCIE device is running.

- PE1 Slot Speed
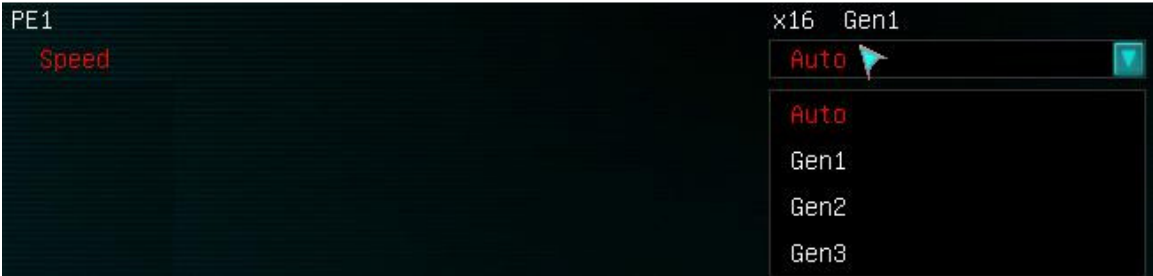
If you click on the pulldown menu that currently lists auto, this will allow you to force a specific PCIE generation, in most cases Auto should suffice.

- PE5 Slot Speed

PE5 does *NOT* have an option for Gen3, as the lanes are not supplied from CPU but PCH which is limited to Gen2.

PCH Configuration

PCH Configuration	
Intel PCH SKU Name	X99
ME FW Version	9.1.2.1010

This section is strictly informational, this shows the type of PCH (Platform Controller Hub, PCH has effectively replaced the South Bridge), 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 BIOS update.

SATA Configuration

- SATA Mode (Port 0/1/2/3/4/5)
  IDE/AHCI/RAID

SATA Configuration	
SATA Mode (Port 0/1/2/3/4/5)	AHCI
	IDE
	AHCI
	RAID

IDE - Not typically needed for modern SATA devices.

AHCI - This is a current SATA standard, offering support for NCQ (Native Command Queuing), Hot Plug. This is also needed for a modern SSD to operate to its full capabilities (RAID also supports these features).

RAID - Enables the RAID functions for the SATA controller, an array will still need to be built. Also RAID fully supports ALL AHCI functions.
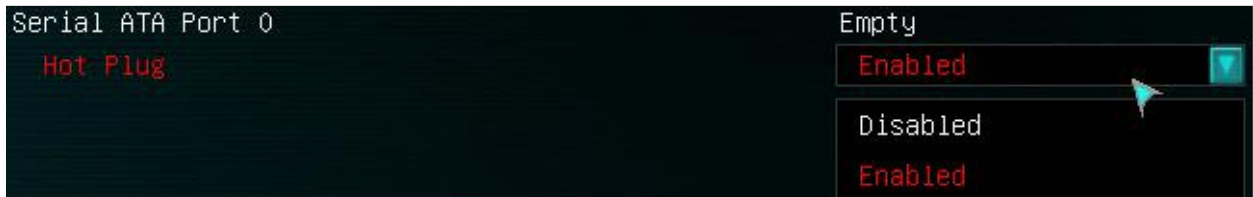
- SATA Mode (Port 6/7/8/9)
  IDE/AHCI

IDE - Not typically needed for modern SATA devices.

AHCI - This is a current SATA standard, offering support for NCQ (Native Command Queuing), Hot Plug. This is also needed for a modern SSD to operate to its full capabilities (RAID also supports these features).

- Serial ATA Port 0
    - Hot Plug

Serial ATA Port 0-9, all 10 ports will have the same information:
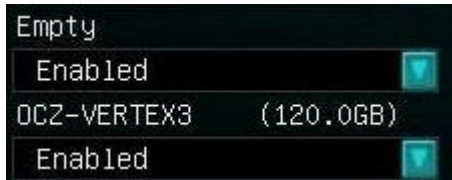
Top line will identify what, if anything is attached to the port, if nothing is attached, it will show empty. The pull-down menu is for Hot-Swap capability, and it is an enable/disable. This is recommended if you are using a drive rack of some sort.

USB Configuration

    2 Keyboards, 2 Mice, 2 Hubs

| Legacy USB Support | Enabled | ▼ |
| XHCI Mode | Smart Auto | ▼ |

USB Per-Port Setting

USB2.0 Port 1	Enabled	▼
USB2.0 Port 2	Enabled	▼
USB2.0 Port 3	Enabled	▼
USB2.0 Port 4	Enabled	▼
USB2.0 Port 5	Enabled	▼
USB2.0 Port 6	Enabled	▼
USB2.0 HDR Port 1	Enabled	▼
USB2.0 HDR Port 2	Enabled	▼
USB3.0 Port 1	Enabled	▼
USB3.0 Port 2	Enabled	▼
USB3.0 Port 3	Enabled	▼
USB3.0 Port 4	Enabled	▼
USB3.0 HDR Port 1	Enabled	▼
USB3.0 HDR Port 2	Enabled	▼

USB Configuration

    2 Keyboards, 2 Mice, 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

Legacy USB Support	Enabled	▼
	Enabled	
	Disabled	

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

- XHCI Mode
  eXtensible Host Controller Interface

XHCI Mode	Smart Auto ▼
	Smart Auto
	Enabled
	Disabled

USB Per-Port Setting

USB2.0 Port 1	Enabled ▼
USB2.0 Port 2	Enabled ▼
USB2.0 Port 3	Enabled ▼
USB2.0 Port 4	Enabled ▼
USB2.0 Port 5	Enabled ▼
USB2.0 Port 6	Enabled ▼

Enable/Disable for the rear I/O panel USB 2.0 ports.

USB2.0 HDR Port 1	Enabled ▼
USB2.0 HDR Port 2	Enabled ▼

Enable/Disable for the internal front panel USB 2.0 header.

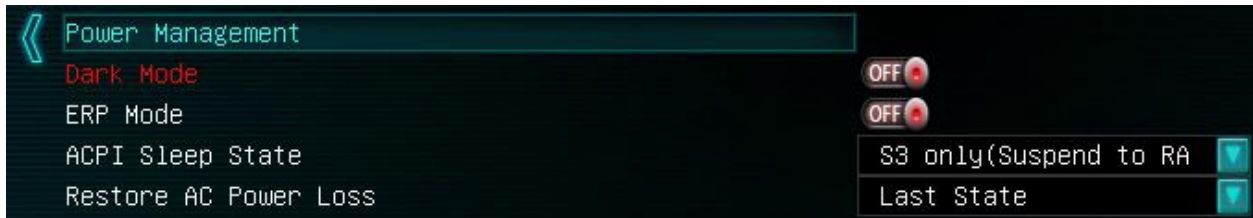| USB3.0 Port 1	Enabled ▼
USB3.0 Port 2	Enabled ▼
USB3.0 Port 3	Enabled ▼
USB3.0 Port 4	Enabled ▼

Enable/Disable for the rear I/O panel USB 3.0 ports.

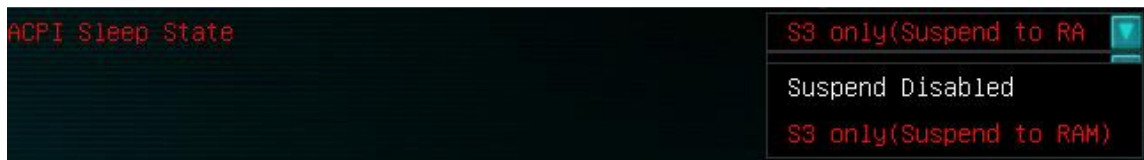| USB3.0 HDR Port 1	Enabled ▼
USB3.0 HDR Port 2	Enabled ▼

Enable/Disable for the internal front panel USB 2.0 header.

Power Management

- **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

Onboard Device Configuration

```
Onboard Device Configuration
Intel LAN 1                                    Enabled       ▼
  Wake on LAN                                  Enabled
Intel LAN 2                                    Disabled
Azalia

M.2 SOCKET1                                    Disabled      ▼
M.2 SOCKET3                                    Disabled      ▼
```

- Intel LAN 1
  Intel i217 LAN
  Enable/Disable

    o Wake on LAN
      Enable/Disable
      Enables/Disables Wake On LAN support for i217.

- Intel LAN 2
  Intel i210 LAN
  Enable/Disable

- Azalia
  Azalia audio controller
  Enable/Disable

- M.2 Socket1
  M.2 Slot E connector
  Enable/Disable
  Enabling this M.2 connector will disable USB 2.0 port 5

- M.2 Socket3
  M.2 Slot M connector
  Enable/Disable
  Enabling this M.2 connector will disable PCI-E Slot 5 (4x slot)

CPU Die Temperature		35 C
CPU Temperature		41 C
PWM Temperature		43 C
SYS Temperature		28 C

CPU Fan	2080 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	1.792 V	Auto
DIMM Voltage (CH0/1)	1.199 V	Auto
DIMM Voltage (CH2/3)	1.199 V	Auto
DIMM VPP (CH0/1)	2.528 V	Auto
DIMM VPP (CH2/3)	2.528 V	Auto
VCCIO	1.048 V	Auto
PCH 1.05V	1.040 V	Auto
PCH 1.5V	1.536 V	Auto
+12V	12.036 V	
VCC	5.003 V	
VCC3	3.344 V	
3VSB	3.408 V	

This top section is strictly live monitoring.

CPU Die Temperature – This will list the CPU core temp
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		2080 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 Smart Fan Setting

Default Fan Speed	50%	
Level 1 Temperature	30	
Level 1 Fan Speed	70%	
Level 2 Temperature	37	
Level 2 Fan Speed	80%	
Level 3 Temperature	45	
Level 3 Fan Speed	90%	
Level 4 Temperature	50	
Level 4 Fan Speed	MAX	

This is an example of a fairly aggressive fan curve, but not uncommon for overclocking or running in a warmer environment. At each Temperature Level you can manually enter any value in Celsius you want then below set what speed you want the fan to run at.

- 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 your primary CPU fan. This can be very useful when running your heatsink fans in a Push/Pull mode.

CPU Smart Fan2 Setting

CPU Temperature

CPU Temperature
PWM Temperature
SYS Temperature

You can select what you want the curve to be based off of; once this is selected you have the same controls as CPU1. Keep in mind if you are using this for a secondary CPU fan, like for a push/pull setup, it is advised to use the same types of fans then set the Smart controls to be the same for CPU Fan1 and CPU Fan2.

- CHA Fan - This is a chassis fan that is controller via PWM

CHA Smart Fan Setting

CPU Temperature ▼

CPU Temperature
PWM Temperature
SYS Temperature

You can select what you want the curve to be based off of; once this is selected you have the same controls as CPU1.

- 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 and monitoring.

CPU VIN	1.792 V	Auto
DIMM Voltage (CH0/1)	1.199 V	Auto
DIMM Voltage (CH2/3)	1.199 V	Auto
DIMM VPP (CH0/1)	2.528 V	Auto
DIMM VPP (CH2/3)	2.528 V	Auto
VCCIO	1.048 V	Auto
PCH 1.05V	1.040 V	Auto
PCH 1.5V	1.536 V	Auto
+12V	12.036 V	
VCC	5.003 V	
VCC3	3.344 V	
3VSB	3.408 V	

- CPU VIN
This is the only CPU VRM located on the motherboards PCB that is not controlled by the FIVR. This voltage must be at least 0.4V to 0.6V higher than set FIVR voltage. For example, if CPU Core Voltage is set to 1.5V for extreme OC, VIN voltage must be at lease 2.1V. Higher voltage causes higher temperatures for CPU, as efficiency is lower.
Voltage range is 1.500V to 3.050V

- DIMM Voltage (CH0/1)

  Voltage the system memory is running at. This will detect a default voltage, however for higher speed memory or when you are clocking your memory, you may need to increase this, and you can click in the field and enter a value manually.

  Voltage Range is 0.800V to 2.000V

  Standard operating voltage range is 1.200V to 1.500V

- DIMM Voltage (CH2/3)

  Voltage the system memory is running at. This will detect a default voltage, however for higher speed memory or when you are clocking your memory, you may need to increase this, and you can click in the field and enter a value manually.

  Voltage range is 0.800V to 2.000V

  Standard operating voltage range is 1.200V to 1.500V

- DIMM VPP (CH0/1)

  DIMM VPP is activation power for memory.

  Voltage range is 1.500V-2.700V

  Default is set to Auto

- DIMM VPP (CH2/3)

  DIMM VPP is activation power for memory.

  Voltage range is 1.500V-2.700V

  Default is set to Auto

- VCCIO

  The VCCIO is the voltage control for the Integrated memory Controller (IMC). In most instances this will not need to be adjusted, however if you are using large volumes of RAM and overclocking, or are going for brink overclocks of the memory this option can assist with stabilizing the system.

  Voltage Range for VCCIO is 0.800V to 1.800V

  Default is Auto

- PCH 1.05V

  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

  Voltage range is 0.700V to 1.600V

- 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)

  Voltage Range is 1.200V to 2.000V

This section is strictly live monitoring.

```
+12V                                    12.036 V
VCC                                      5.003 V
VCC3                                     3.344 V
3VSB                                     3.408 V
```

- +12V
- VCC
- VCC3
- 3VSB

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.
  Default: On

- Speaker Beep
  On/Off
  Toggles the POST beep On or Off.
  Default: On

- Quiet Boot
  On/Off
  The enables or disables the splash screen during post.
  Default: On

- 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.
  Default: On

- Boot mode select

FIXED BOOT ORDER Priorities

Boot mode select	LEGACY ▼
	LEGACY
	UEFI
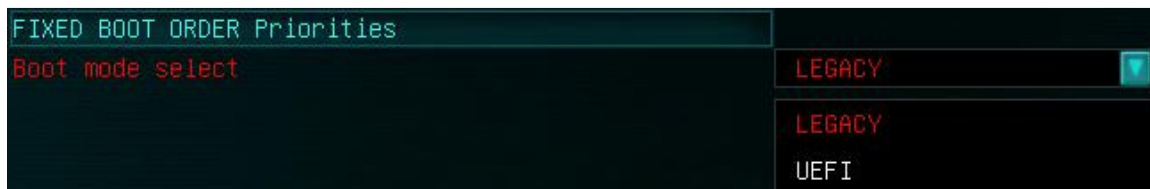
  Legacy/UEFI
  This allows you to select your boot mode, which will dictate which OS's and features you can run. Keep in mind that UEFI does have more requirements for attached hardware and partition types than Legacy does. Make sure everything in your system supports UEFI before making that selection.
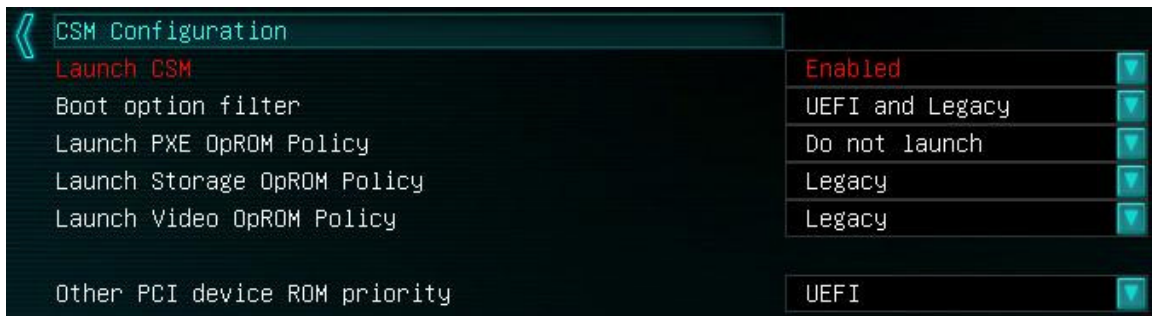 Default: Legacy

- Boot option #1-7

Boot Option #1	Hard Disk ▼
	Hard Disk
	CD/DVD
	USB Hard Disk
	USB CD/DVD
	USB Key
	USB Floppy
	Network
	Disabled
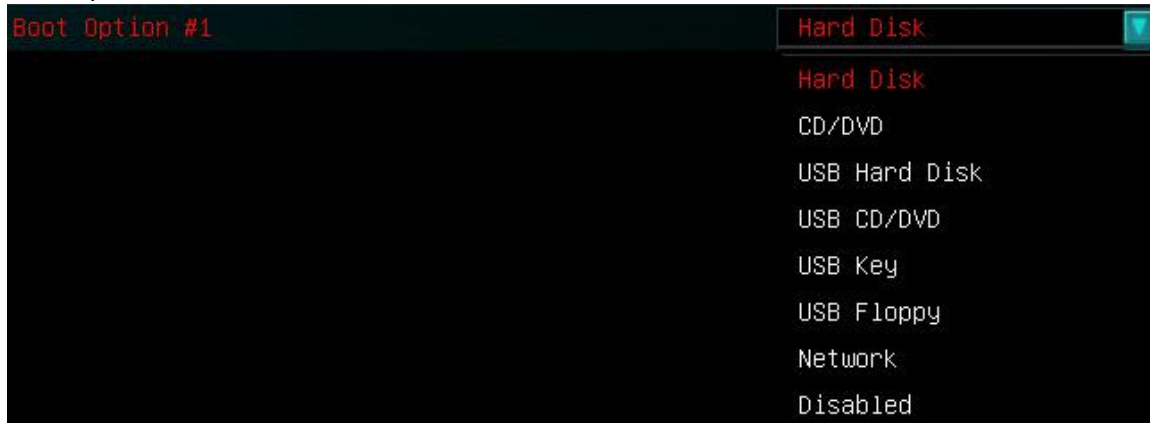
  All boot options will share the same list of devices to boot from. Use the pull down menu and select the device you with fro 1st through 7th and when the system posts, it will follow this list.
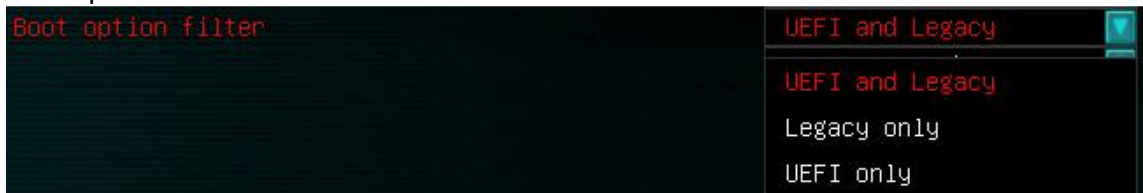
Compatibility Support Module

- Launch CSM
  Compatibility Support Module
  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.
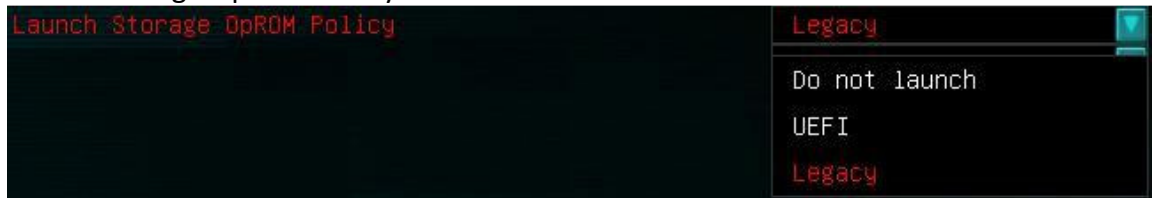 Default is Enabled

- 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.
  Default is UEFI and Legacy

- Launch PXE OpROM Policy
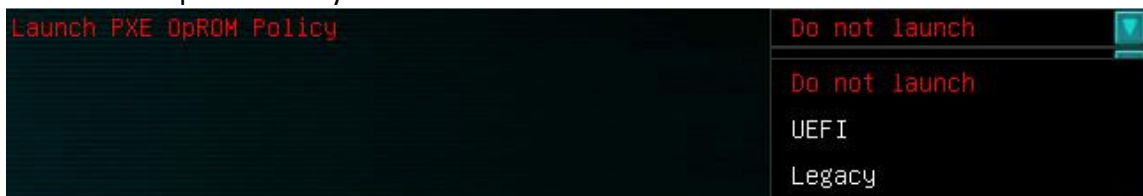
  (PXE) Preboot Execution Environment
  Defines when PXE can be launched
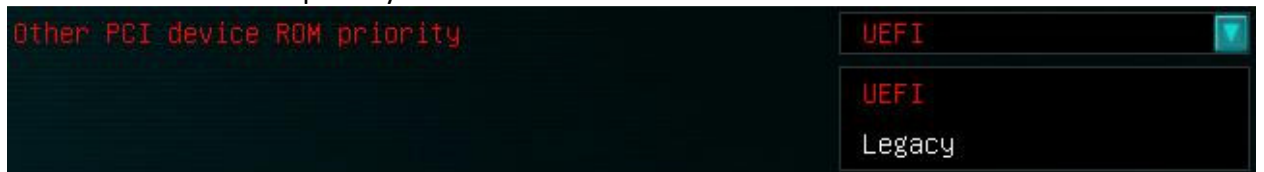 Default is Do not launch

- Launch Storage OpROM Policy

  Launch Storage OpROM Policy   Legacy ▼
                                       Do not launch
                                       UEFI
                                       Legacy

  Defines which option the Storage OpROM launches with
  Default is Legacy

- Launch Video OpROM Policy

  Launch Video OpROM Policy   Legacy ▼
                                       Do not launch
                                       UEFI
                                       Legacy

 Selects when the video OpROM is initialized

- Other PCI Device ROM priority

  Other PCI device ROM priority   UEFI ▼
                                       UEFI
                                       Legacy

  Selects the mode for NON storage/network/video OpROM's.
 Default is UEFI

```
Security

 Password Description

  If ONLY the Administrator's password is set,
  then this only limits access to Setup and is
  only asked for when entering Setup.
  If ONLY the User's password is set, then this
  is a power on password and must be entered to
  boot or enter Setup. In Setup the User will
  have Administrator rights.
  The password length must be
  in the following range:
  Minimum length                                3
  Maximum length                               20



 Administrator Password
 User Password
```

- Administrator Password
  Limits the access to the BIOS.
  3-20 characters

- User Password
  Password locks the system; it will not boot or enter BIOS without the password.
 3-20 characters

Save and Exit
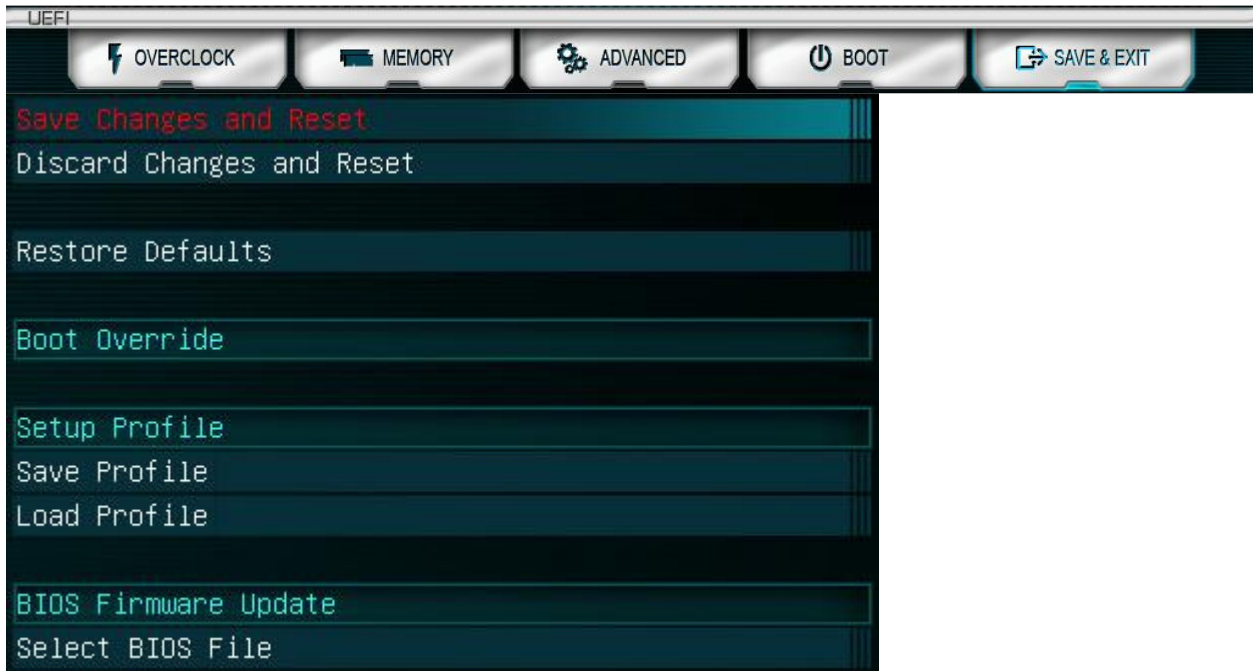
- Save Changes and Reset
  This will save whatever changes you have made to the BIOS and reboot the PC.

- 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
  Reset BIOS to factory default

- Boot Override
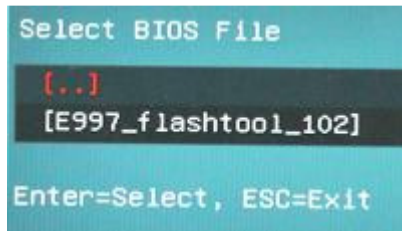 This shows the currently selected Boot device

- Save Profile
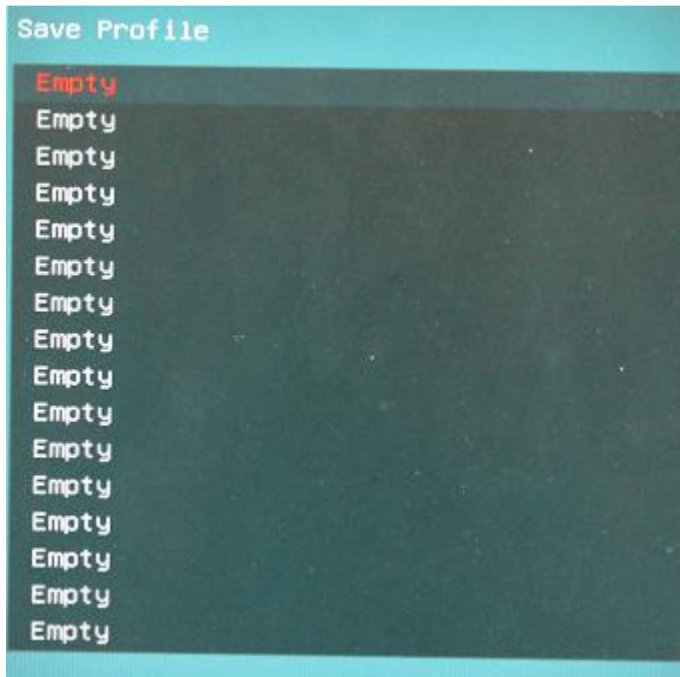
This option saves the current BIOS configuration to a profile in the BIOS.

- Load Profile
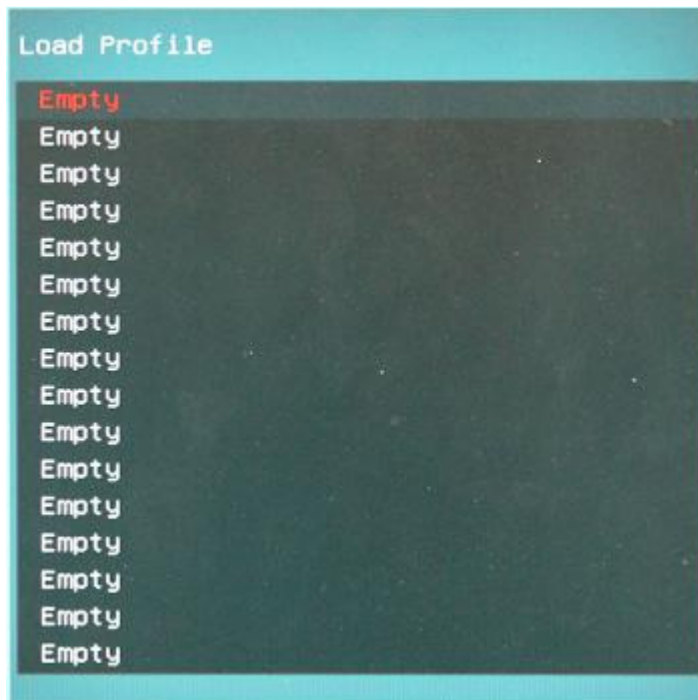
This option loads the current BIOS configuration from a saved profile in the BIOS

- Select BIOS File

This allows you to select a .bin file from a thumb drive to flash BIOS from within BIOS.

Keep in mind that the thumb drive needs to be formatted for FAT32, and cannot read NTFS in BIOS, this is needed for screenshots and BIOS flashes from within the BIOS.