# ORiON

## HF-210

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# Preface

## Congratulations on purchasing your new ORION HF210 High Frequency server.

The ORION HF210 features the latest high speed server technology, including Sandy Bridge-E with Turbo and Hyperthreading features, safely overclocked by our Performance Team from 4.6 to 5.2GHz, high-speed DIMM memory and swappable hard drive bays, all in a 2U chassis designed for easy rackmounting.

## Welcome to the ORION HF210 user's guide.

This guide is intended to make you discover the machine and its specificities together with all the information related to maintenance and troubleshooting.

Because this machine is delivered Operating System free, this manual does not cover how to install ,configure, or administer the operating system on your ORION HF210 server.

# Safety Information

## Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.

- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.

- Seek professional assistance before using an adapter or extension cord. These devices could Interrupt the grounding circuit.

- If the power supply is damaged, do not try to fix it by yourself. Contact a CIARA qualified service technician.

## Operation safety

- Before adding/removing components, carefully read all the manuals that came with the package.

- Before using the product, ensure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.

- The unit is intended to be installed in a restricted access location.

- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.

- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.

- Place the product on a stable surface.

- If you encounter technical problems with the product, contact a CIARA qualified service technician.

# Chapter 1
# Technical specifications

## 1.1 ORION HF210 Specifications

**Form Factor**

2U Rackmount

**Chipset**

Intel® X79 Chipset

**Processor**

Single Intel® Core™ i7-3960X Extreme Processor (15M Cache, 6-cores) overclocked from 4.6 to 5.2GHz*

**Cooling System**

High Performance Liquid Cooled System
Close Loop and Maintenance Free
Datacenter Compliant

**Memory Capacity**

16GB (4 x 4GB)
32GB (4 x 8GB)
64GB (8 x 8GB)

**Memory type**

High Speed DIMM 1600, 1866 or 2133MHz

**Memory DIMMS Sizes Available**

4 and 8GB DIMMS

**Control buttons**

Power switch, Reset switch

**Network**

2 x Intel I210AT Gigabit LAN Controller
1 x LAN Gigabit Controller
Validated SolarFlare or Mellanox Low Latency Single and Dual Ports 10GigE Ethernet cards

**Storage controller**

Onboard Intel RSTe PCIe 9230 6Gbps controller - Support Raid 0, 1, 10
Optional LSI 9211-4i Ports 6Gbps controller - Support Raid 0, 1, 10

**Max Internal Storage**

Up to 16TB (with 3.5″ HDD)

**Hard Drive Type**

SATA : Up to 4TB
SSD : Up to 1TB

**Expansion Slots**

2 x PCIe 3.0/2.0 x16

### I/O Ports

2 x USB 3.0 connectors support additional 4 USB 3.0 ports
6 x USB 2.0 connectors support additional 4 USB 2.0 ports
1 USB 2.0 internal

### Management tools

Remote server management chip (BMC)
IPMI 2.0 Compliant
OS-independent and cross-platform web-based interface
Remote power on/off and reset
Up to 256-bit SSLv3/TLSv1 keyboard, video and mouse encryption
Built-in authentication or compatible with third-party AAA servers
Support of SSL certificate management
Logging of all important events
Web-based user interface (remote management)
Local client available for servers that do not run Java
Virtual Media support, including floppy, CD-ROM, DVD and hard drive redirection
Remote, unblocked, BIOS-level access and control

### Power Supply

770W Redundant (1+1) High Efficiency (90% - 80 Plus® Gold Certified) Power Supplies

### Environment

Operating Temperature: 10ºC to 30ºC (50º F to 86º F)
Non-operating Temperature: -40ºC to 70ºC (-40ºF to 158ºF)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5% to 95% (non-condensing)

### Dimension

26.0" (L) x 17.0" (W) x 3.5" (H)
662mm (L) x 432mm (W) x 87.8mm (H)

### Weight

30lbs
13.60 kg

### Warranty

International - 3 years warranty parts and labor 5/9 Next Business Day on-site

### OS Support

Microsoft® Windows® HPC server 2008 R2, 2012
Linux : 6.X and above

## 1.2 Motherboard Specifications

| Model Name | | **P9X79 WS/IPMI** |
|---|---|---|
| **Processor Support / System Bus** | | 1 x Socket LGA 2011<br>2nd Generation Intel Core i7 Processor for the LGA 2011 Socket<br>Intel Xeon® E5-1600 V2 processor for the LGA 2011 Socket<br>Intel Xeon E5-2600 V2 processor for the LGA 2011 Socket |
| **Core Logic** | | Intel X79 Express Chipset |
| **Memory** | Total Slots | 8 (4 channels) |
| | Capacity | Maximum up to 64GB |
| | Memory Type | DDR3 2400 (O.C.) / 2133 (O.C.) / 1866 (O.C.) / 1600 / 1333 / 1066 MHz, ECC, Non-ECC, un-buffered Memory |
| **Expansion Slots (follow SSI Location #)** | Total PCI/PCI-X/PCI-E slots | 5 |
| | Slot Location 1 | PCI-E x16 (x8 Gen3 link) |
| | Slot Location 2 | PCI-E x16 (x8 Gen3 link) |
| | Slot Location 3 | PCI-E x16 (x16 Gen3 link) (Auto switch to x8 link if slot 2 is occupied) |
| | Slot Location 4 | -- |
| | Slot Location 5 | PCI-E x16 (x8 Gen3 link) |
| | Slot Location 6 | PCI-E x16 (x16 Gen3 link) (Auto switch to x8 link if slot 5 is occupied) |
| | Slot Location 7 | -- |
| **Storage** | SATA Controller | Intel X79 Express Chipset:<br>- 2 x SATA 6Gb/s ports<br>- 4 x SATA 3Gb/s ports (supports software RAID 0, 1, 10 |
| **Networking** | LAN | 2 x Intel I210AT<br>1 x Management LAN |
| **Graphic** | VGA | Aspeed AST2300 32MB |
| **Audio** | | Realtek® ALC 1150 8-channel High Definition Audio CODEC<br>- Supports 192kHz/ 24bit BD Lossless Sound<br>- DTS Surround Sensation UltraPC II<br>- Supports Jack-Detection, Multi-Streaming,  and Front Panel Jack-Retasking<br>- Optical S/PDIF Out port at back I/O |

| Model Name | | P9X79 WS/IPMI |
|---|---|---|
| **Onboard I/O Connectors** | TPM Header | 1 |
| | PSU Connector | 24-pin ATX power connector<br>8-pin EATX 12V power connector<br>6-pin EATX 12V power connector |
| | USB Connector / Header | 1 x USB 3.0 pin header<br>2 x USB 2.0 pin header<br>1 x USB 2.0 connector (type A USB socket) |
| | Fan Header | 6 x 4 pin headers |
| | SMBus | 1 |
| | Chassis intruder | 1 |
| | COM port connector | 1 |
| | VGA Header | 1 |
| | Functional Button | 1 x MEMOK button<br>1 x PWR button<br>1 x Reset button |
| | Functional Switch | 1 x TPU switch<br>1 x EPU switch |
| | Functional Jumper | 1 x clear CMOS jumper |
| **Rear I/O Connectors** | External USB port | 2 x USB 3.0<br>6 x USB 2.0 |
| | BIOS Flashback switch | 1 |
| | RJ-45 | 2 x GbE LAN<br>1 x Management LAN |
| | Audio | 8-channel Audio I/O |
| | PS/2 KB/mouse | 1 |
| | S/PDIF Out | 1 x Optical S/PDIF Out port |

| Model Name | | P9X79 WS/IPMI |
|---|---|---|
| **ASUS Q Design** | ASUS Q-Code | ✓ |
| | ASUS Q-Shield | ✓ |
| | ASUS Q-Slot | ✓ |
| **Monitoring** | CPU Temperature | ✓ |
| | FAN RPM | ✓ |
| **Environnment** | | Operation temperature:<br>10ºC – 35ºC (50ºF – 95ºF)<br>Non operation temperature:<br>-40ºC – 70ºC (-40ºF – 158ºF)<br>Non operation humidity:<br>20% – 90% (Non condensing) |

### Intel® Socket 2011 for 2nd Generation Intel Core i7 Processor family

This motherboard supports the latest 2nd Generation Intel Core i7 Processor family in LGA2011 package, with memory and PCI Express controllers integrated to quad-channel (8 DIMMs) DDR3 memory and 40 PCI Express 2.0 lanes. This provides great graphics performance. 2nd Generation Intel Core i7 Extreme Edition Processor is one of the most powerful and energy efficient CPUs in the world.

### Intel® X79 Express Chipset

The Intel X79 Express Chipset is the latest single-chipset design that supports the new socket 2011 2nd Generation Intel Core i7 Processor family. It improves performance by utilizing serial point-to-point links, allowing for increased bandwidth and stability. Additionally,the X79 comes with 2 SATA 6Gb/s and 4 SATA 3Gb/s ports for faster data retrieval, doubling the bandwidth of current bus systems.

### PCIe 3.0 Ready

The latest PCI Express bus standard delivers improved encoding for twice the performance of current PCIe 2.0. Total bandwidth for a x16 link reaches a maximum of 32GB/s, double the 16GB/s of PCIe 2.0 (in x16 mode). PCIe 3.0 provides users unprecedented data speeds, combined with the convenience and seamless transition offered by complete backward compatibility with PCIe 1.0 and PCIe 2.0 devices. It is a must-have feature PC users aiming to improve and optimize graphics performance, as well as have the latest, most future-proof technology.

˘   * This motherboard is ready to support PCIe 3.0 specifications. Functions will be available when using PCIe 3.0-compliant devices.

### Quad-Channel DDR3 2400 (OC) / 2133 (OC) / 1866 (OC) / 1600 / 1333 / 1066 MHz Support

The motherboard supports DDR3 memory that features data transfer rates of 2400 (OC) / 2133 (OC) /1866 (OC) / 1600 / 1333 / 1066 MHz to meet the higher bandwidth requirements of the latest operating systems, 3D graphics, multimedia, and Internet applications. The quad channel DDR3 architecture quadruple the bandwidth of your system memory to boost system performance.

˘   * Due to CPU behavior, DDR3 2200/2000/1800 MHz memory module will run at DDR3 2133/1866/1600 MHz frequency as default.

### SATA 6.0 Gb/s Support

The Intel X79 Express chipset natively supports the next-generation Serial ATA (SATA) interface, delivering up to 6.0 Gb/s data transfer. ASUS provides extra SATA 6.0 Gb/s ports with enhanced scalability, faster data retrieval, and double the bandwidth of current bus systems.

## ASUS Workstation Exclusive Features

### Complete USB 3.0 Integration

ASUS facilitates strategic USB 3.0 accessibility for both the front and rear panel – 4 USB 3.0 ports in total. Experience the latest plug & play connectivity at speeds up to 10 times faster than USB 2.0. The P9X79 WS/IPMI affords greater convenience to high speed connectivity.

### Diagnosis LED

Diagnosis LED checks key components (CPU, memory, graphics card and hard drive) in sequence during bootup. If an error is found, the LED next to the relevant device will stay lit until the problem is solved. This user-friendly design provides an intuitive way to locate root problems in seconds.

### Quick Gate

Quick Gate is a vertical USB connector on the motherboard, allowing you to install USB devices directly with no messy cables. This stops important data storage devices from breaking off unexpectedly. P9X79 WS/IPMI with this unique design provides a convenient and safe way to install data and applications on your server.

## ASUS features

### New DIGI+ Power Control

### All-New Digital Power Control for both CPU and DRAM

ASUS X79 motherboards include New DIGI+ Power Control with two digital voltage regulator modules (VRMs), including an all-new DRAM controller that allows ultra-precise memory tuning in addition to CPU voltage control. This evolution of innovative, industry-leading ASUS technology provides super-accurate voltages for better efficiency, stability and performance.

### Best in class power efficiency and stability

Two critical components work perfectly together to match digital power signal (SVID) requests from the CPU, with ultra-fast sensing and response to efficiently deliver the right level of power on demand. Accurate power reduces wasteful imprecision, and provides more stable CPU Vcore voltages.

### Increased CPU and DRAM overclocking range

With programmable digital controllers onboard, users can adjust CPU and DRAM PWM voltages and frequencies for various overclocking scenarios, with accurate input through UEFI BIOS tuning or the exclusive ASUS interface. System performance can also be customized with specific CPU and DRAM power controls, including new VCCSA load line calibration for increased voltage range, greater VCCSA current capability, and up to 30% more capacitance. This proprietary design, with its precise yet flexible power adjustments, increases overclocking headroom to push performance to its full potential.

### 8+2 Phase Power Design

To fully unleash the latest Intel Ivy Bridge-E CPU´s potential, this motherboard has adopted a brand new digital 8-phase VRM power design. It delivers high power efficiency and supreme overclocking ability. Furthermore, high quality power components can effectively lower system temperature to ensure longer component lifespan. This motherboard also features an extra 2-phase power dedicated to integrated memory controller.

### TPU

Unleash your performance with ASUS' simple onboard switch or AI Suite II utility. The TPU chip offers precise voltage control and advanced monitoring through Auto Tuning and TurboV functions. Auto tuning offers a user friendly way to automatically optimize the system for fast,yet stable clock speeds, while TurboV enables unlimited freedom to adjust CPU frequencies and ratios for optimized performance in diverse situations.

### EPU

Tap into the world's first real-time PC power saving chip through a simple onboard switch or AI Suite II utility. Get total system-wide energy optimization by automatically detecting current PC loadings and intelligently moderating power consumption. This also reduces fan noise and extends component longevity.

### MemOK!

MemOK! quickly ensures memory boot compatibility. This remarkable memory rescue tool requires a mere push of a button to patch memory issues. MemOK! determines failsafe settings and dramatically improves your system boot success.

### USB 3.0 Boost

New ASUS USB 3.0 Boost technology supports UASP (USB Attached SCSI Protocol), the latest USB 3.0 standard. With USB 3.0 Boost technology, the performance of a USB device transmission speed is significantly increased up to 130% (TBD), adding to an already impressive fast USB 3.0 transfer speed. With USB 3.0 Boost technology, the system provides a user-friendly graphical interface, which spontaneously accelerates the transfer speed through USB 3.0 peripherals with an ASUS exclusive auto-detect setting.

### ASUS Fanless Design—Heat-pipe solution

The stylish heatsink offers 0dB cooling for a quiet PC environment. Attractive design enhances the look of the board and case, while temperatures in the chipset and power phase areas stay lower through high efficiency heat exchange. Combining usability and aesthetics,the stylish ASUS heatsink gives users an extremely silent and cool experience with elegant design.

### ASUS UEFI BIOS

ASUS UEFI BIOS offers the first mouse-controlled graphical BIOS designed with selectable modes, providing a user-friendly interface that goes beyond traditional keyboard-only controls. It also natively supports fully-utilized hard drives larger than 2.2TB in 64-bit operating systems.

### ASUS exclusive interface

EZ Mode displays frequently-accessed info. Users can choose system performance settings and drag and drop boot priorities. Advanced Mode for performance enthusiasts includes detailed DRAM settings via a dedicated memory info page for complete insight.

### New upgrade! Quick and easy info for enhanced system control

- F12 BIOS snapshot hotkey for sharing UEFI setup info and troubleshooting.
- New F3 Shortcut for most accessed info.
- ASUS DRAM SPD (Serial Presence Detect) Information for accessing memory info, detecting faulty DIMMs and helping with difficult POST situations.

### USB BIOS Flashback

USB BIOS Flashback offers the most convenient way to flash the BIOS ever! It allows overclockers to try new BIOS versions easily, without even entering their existing BIOS or operating system. Just plug in USB storage and push the dedicated button for 3 seconds, and the BIOS is automatically flashed using standby power. Worry-free overclocking for the ultimate convenience!

### ASUS Q-Design

ASUS Q-Design enhances your DIY experience. All of Q-Slot, Q-Code and Q-DIMM design speed up and simplify the DIY process!

### ASUS Q-Shield

The specially designed ASUS Q-Shield does without the usual "fingers" - making it convenient and easy to install. With better electric conductivity, it ideally protects your motherboard against static electricity and shields it against Electronic Magnetic Interference (EMI).

### ASUS EZ-Flash 2

ASUS EZ-Flash 2 is a user-friendly utility that allows you to update the BIOS without using a bootable floppy disk or an OS-based utility.

# Chapter 2
# Overview

## 2.1 Chassis Overview
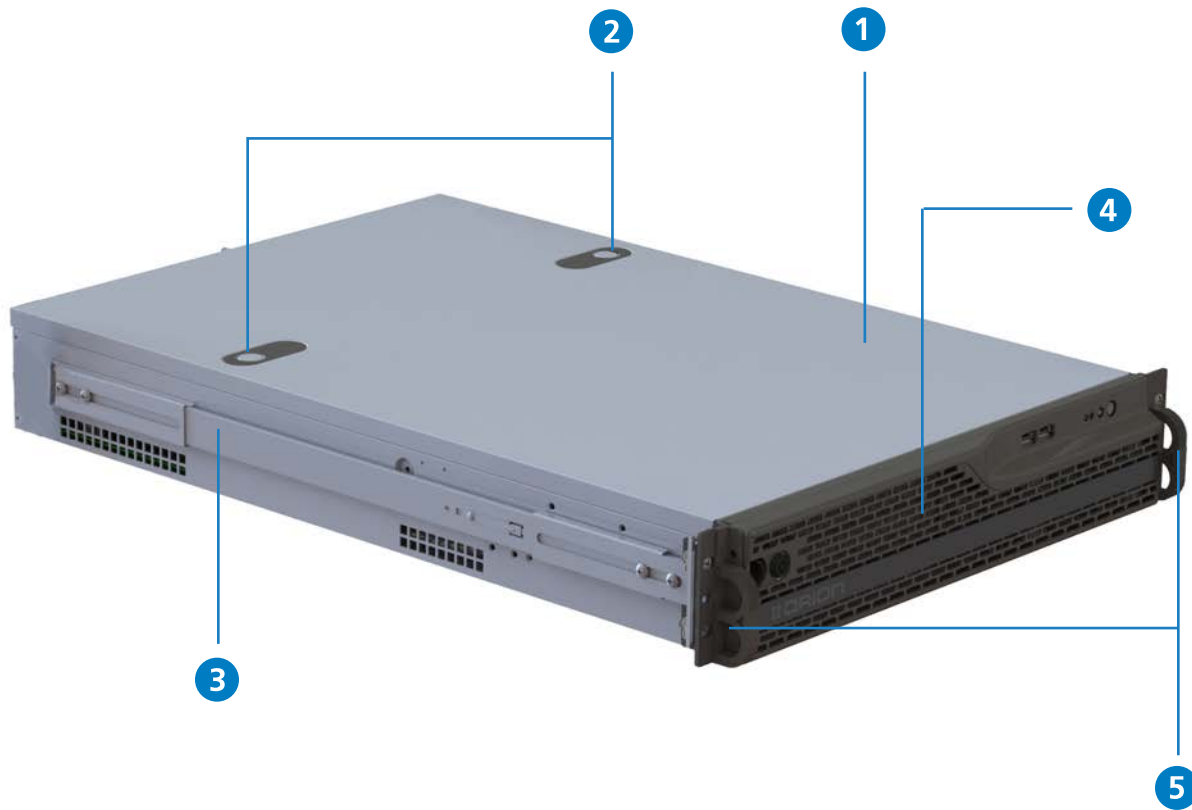


1. Top cover

2. Opening tabs

3. Rail

4. Bezel

5. Handles

Front-Panel

**With Bezel on**



| | |
|---|---|
| **1.** Handles | **5.** HDD LED |
| **2.** Opening clip | **6.** Power LED |
| **3.** Lock | **7.** Reset button |
| **4.** USB 2.0 ports | **8.** Power button |

## How to open/lock the bezel ?

To open the bezel:
1. Turn a quarter turn counter-clockwise the lock

2. Push the opening clip to the right.

Pull out the bezel.

**Without the Bezel**
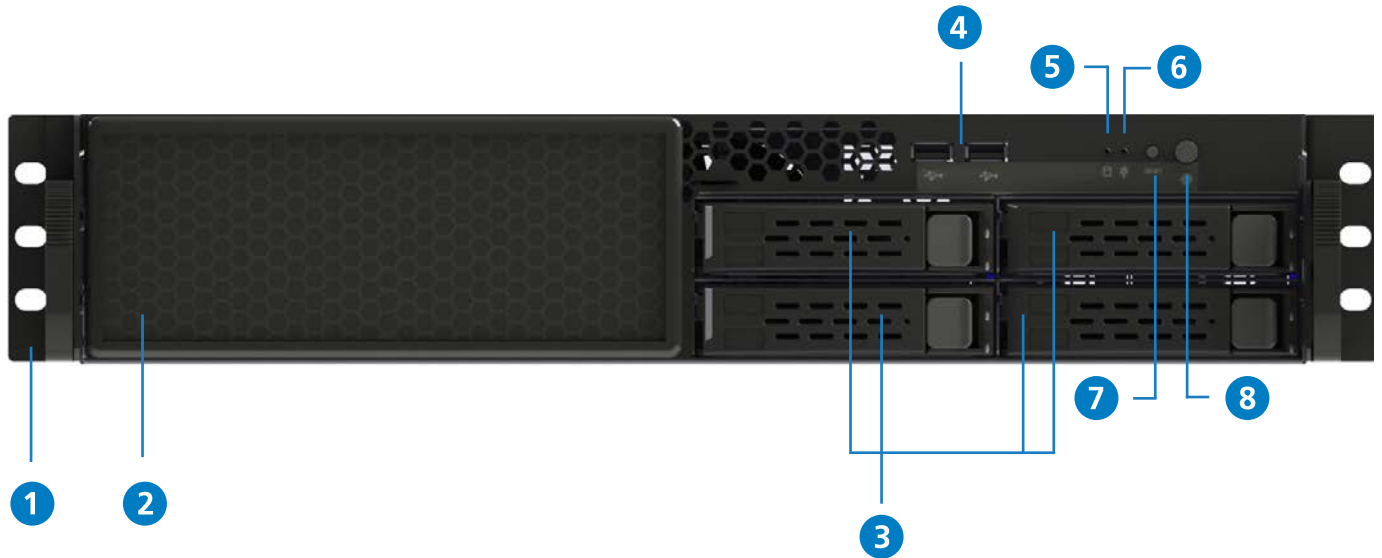


| | | | |
|---|---|---|---|
| **1.** | Rack mounting ears | **5.** | HDD LED |
| **2.** | Filter | **6.** | Power LED |
| **3.** | Hot Swap Hard Drives | **7.** | Reset button |
| **4.** | USB 2.0 ports | **8.** | Power button |

## Back Panel
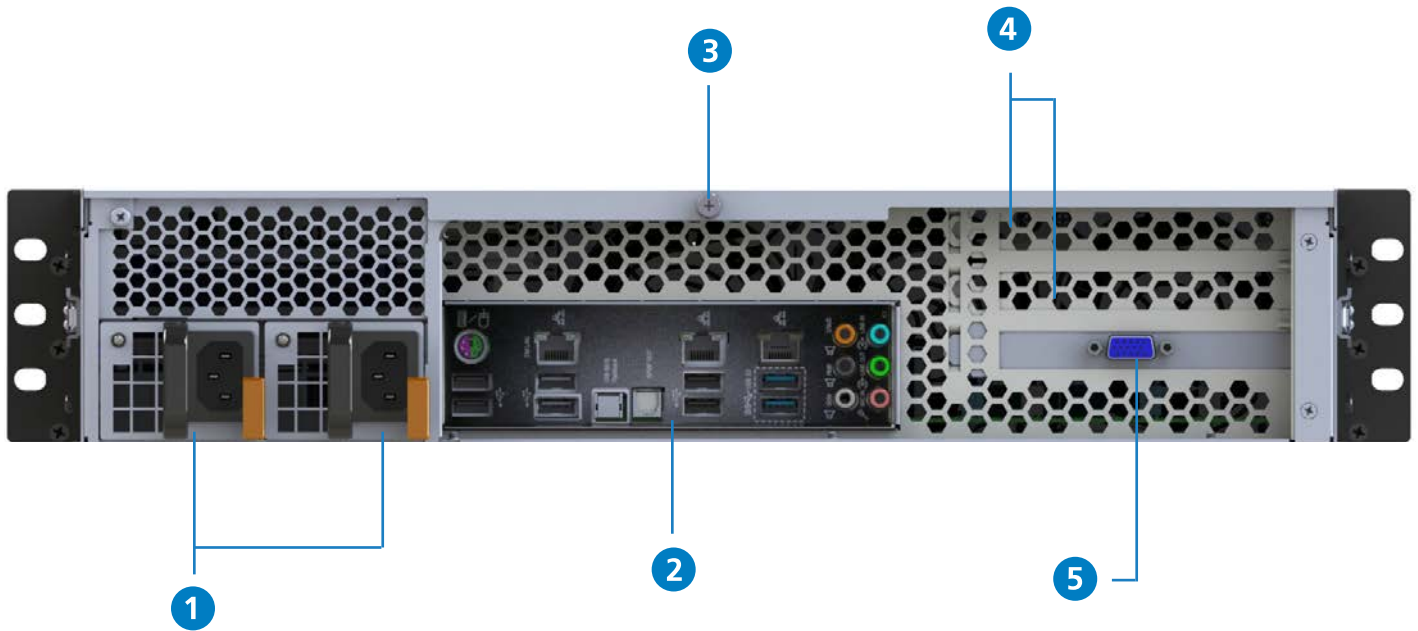


1. Power Supply Units

2. I/O Back Panel

3. Opening screw

4. PCI slots openings

5. VGA port

I/O Panel
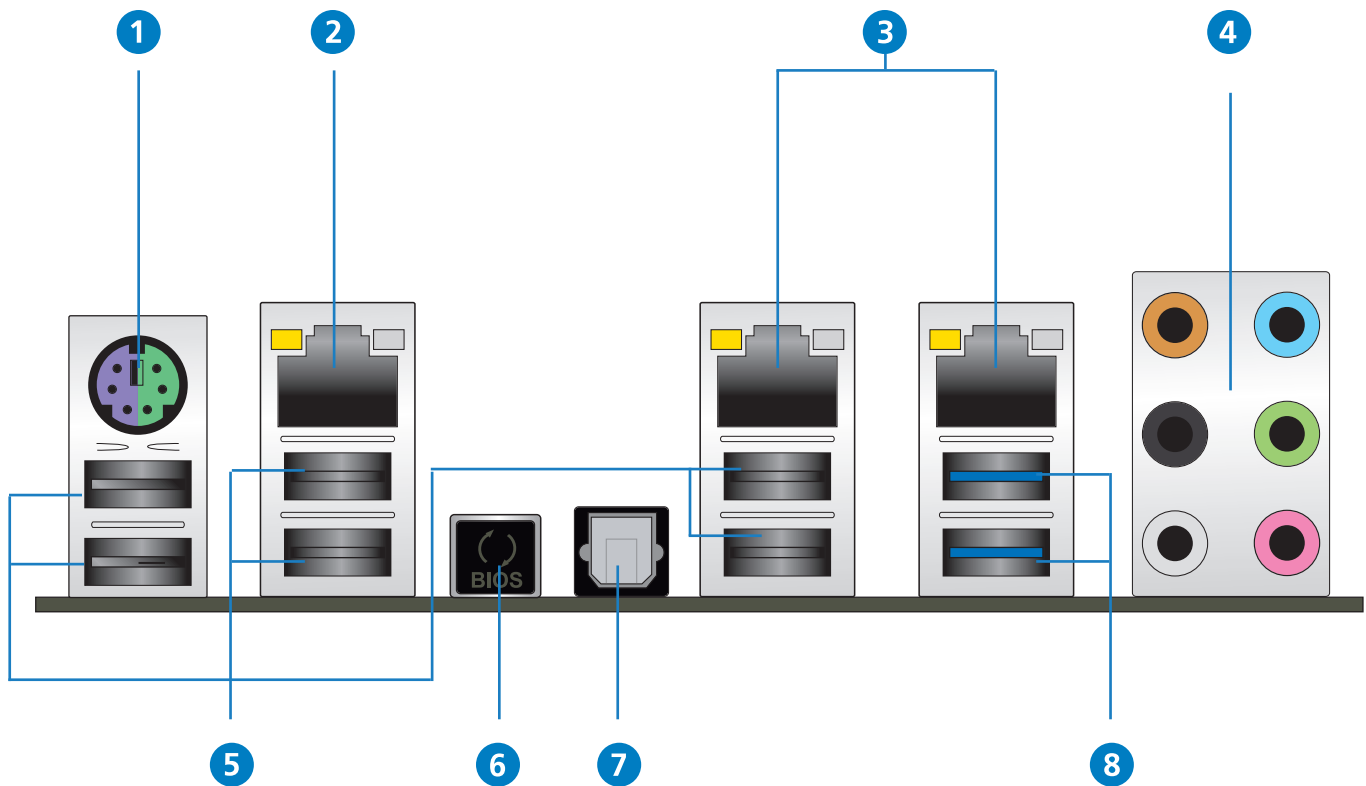


| | |
|---|---|
| **1.** PS/2 mouse and keyboard port | **5.** USB 2.0 ports |
| **2.** DM LAN port | **6.** USB BIOS Flashback button |
| **3.** LAN ports | **7.** Optical S/PDIF Out port |
| **4.** Audio I/O ports | **8.** USB 3.0 ports (Disabled by default) |

# 2.2 Motherboard Overview

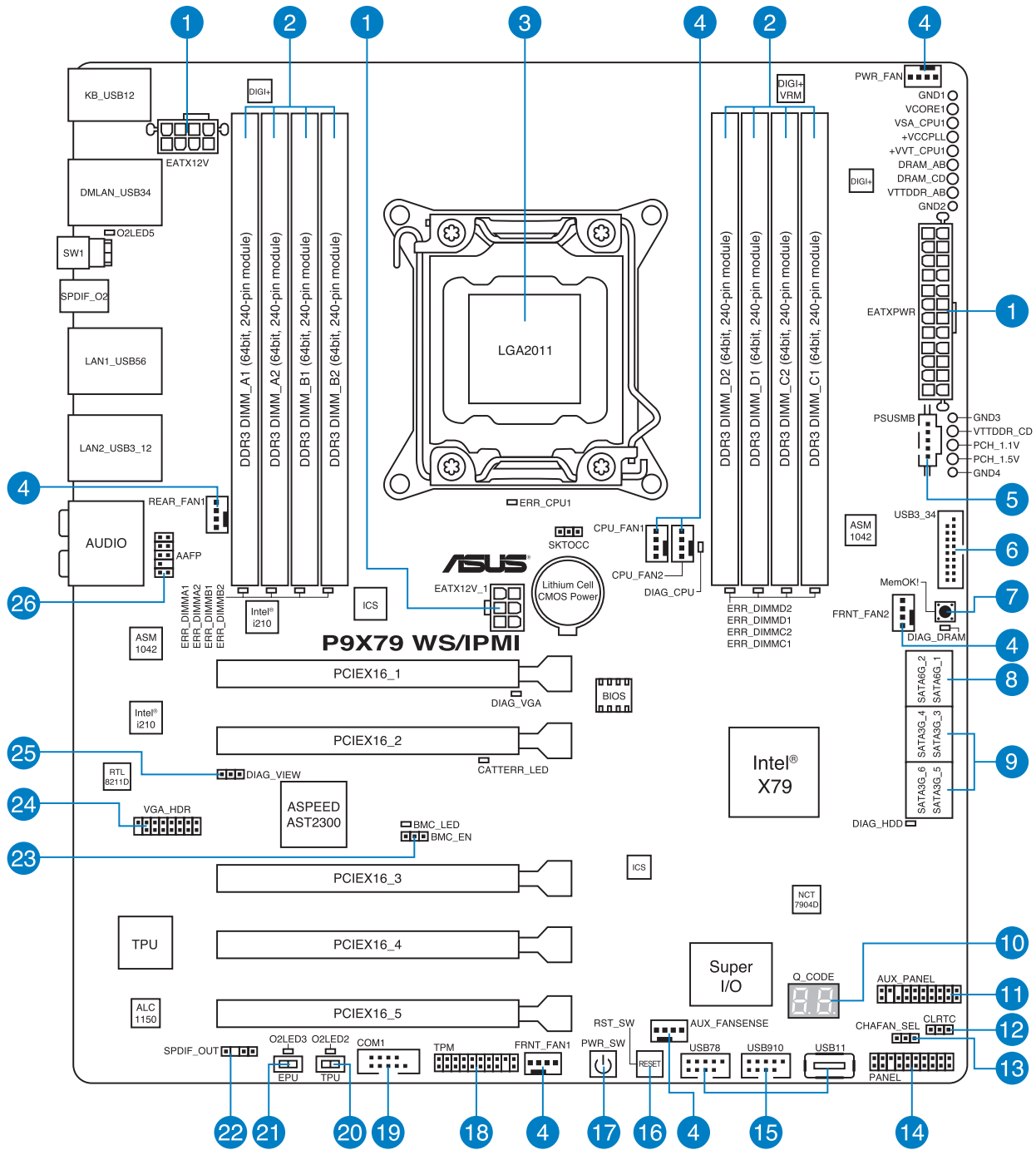| | | | |
|---|---|---|---|
| **1.** | ATX power connectors (24-pin EATXPWR; 8-pin EATX12V, 6-pin EATX12V_1) | **14.** | System panel connector (20-8 pin PANEL) |
| **2.** | DDR3 DIMM slots | **15.** | USB 2.0 connector (10-1 pin USB78; USB910; A-Type USB11) |
| **3.** | LGA2011 CPU Socket | **16.** | Reset button |
| **4.** | CPU, REAR, Power, Front, AUX FANSENSE connectors (4-pin CPU_FAN1/2; 4-pin REAR_FAN1; 4-pin PWR_FAN; 4-pin   FRNT_FAN1/2, 4-pin AUX_FANSENSE) | **17.** | Power-on button |
| **5.** | Power Supply SMBus connector (5-pin PSUSMB) | **18.** | TPM connector (20-1 pin TPM) |
| **6.** | USB 3.0 connector (20-1 pin USB3_34) | **19.** | Serial port connector (10-1 pin COM1) |
| **7.** | MemOK! switch | **20.** | TPU Switch |
| **8.** | Intel® X79 Serial ATA 6.0 Gb/s connectors (7-pin SATA6G_1–2–22   [gray]) | **21.** | EPU Switch |
| **9.** | Intel® X79 Serial ATA 3.0 Gb/s connectors (7-pin SATA3G_3–6 [blue]) | **22.** | Digital audio connector (4-1 pin SPDIF_OUT) |
| **10.** | Q-Code LED | **23.** | BMC Setting (3-pin BMC_EN) |
| **11.** | Auxiliary panel connector (20-2 pin AUX_PANEL) | **24.** | VGA connector (16-1 pin VGA_HDR) |
| **12.** | Clear RTC RAM (3-pin CLRTC) | **25.** | VGA controller setting (3-pin-DIAG_VIEW)3-pin DIAG_VIEW) DIAG_VIEW) |
| **13.** | Chassis Fan control setting (3-pin CHAFAN_SEL) | **26.** | Front panel audio connector (10-1 pin AAFP) |

## PCI Extension Slots

˘ Ensure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.
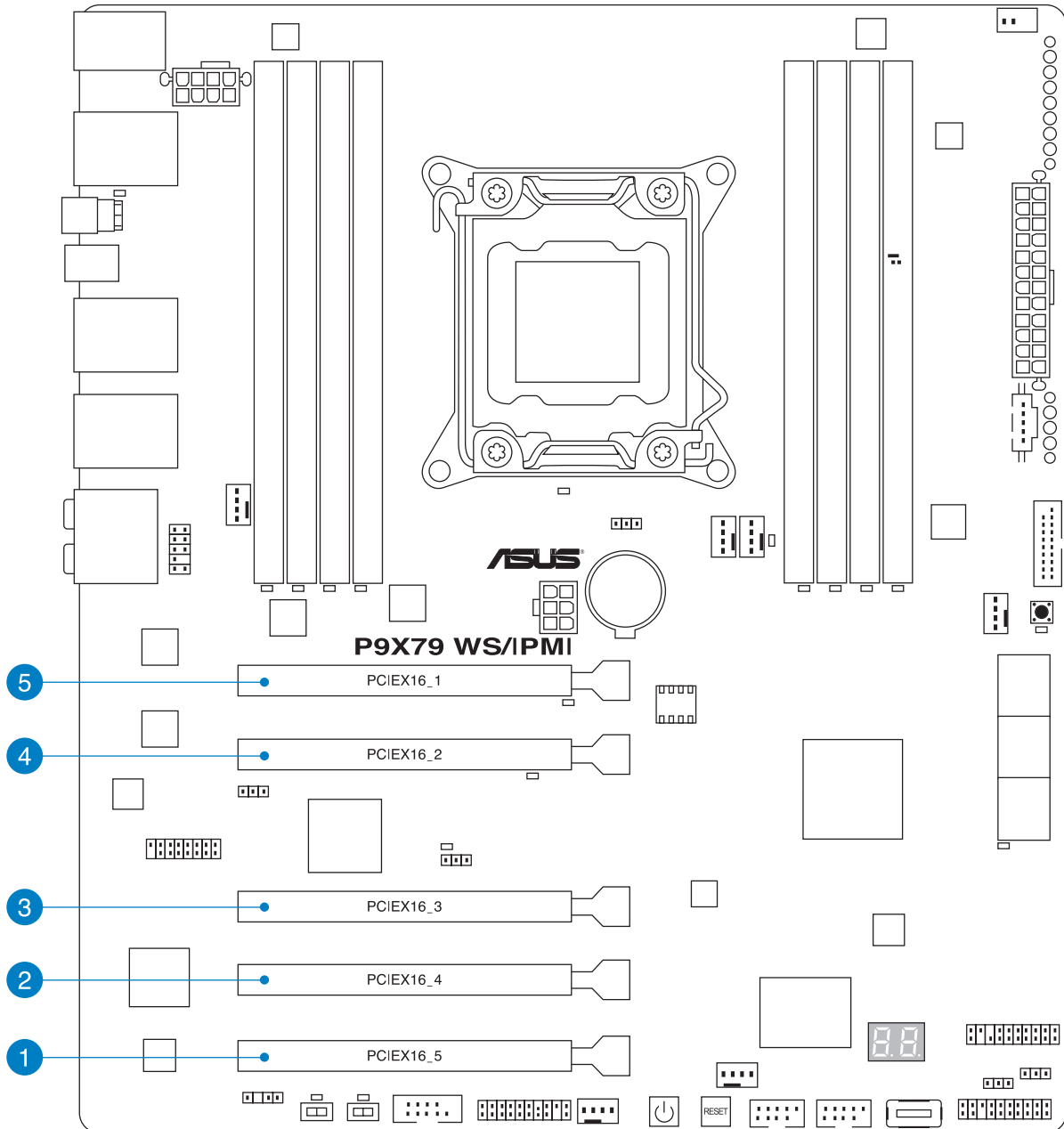


1. not available

2. not available

3. PCIe 3.0 x16 slot (x16 Gen3 Link) (Auto switch to x8 link if slot 2 is occupied)

4. not available

5. PCIe 3.0 x16 slot (x16 Gen3 Link) (Auto switch to x8 link if slot 5 is occupied)

## IRQ assignments for this motherboard

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| SMBus Controller | - | - | shared | - | - | - | - | - |
| USB 2.0 Controller 1 | - | - | - | - | - | - | - | shared |
| USB 2.0 Controller 2 | - | - | - | - | - | - | - | shared |
| High DefinitionAudio | - | - | - | - | - | - | shared | - |
| HECI | shared | - | - | - | - | - | - | - |
| SATA Controller 1 | - | - | - | - | shared | - | - | - |
| SATA Controller 2 | - | - | - | - | shared | - | - | - |
| Asmedia USB3.0 Controller 1 | shared | - | - | - | - | - | - | - |
| Asmedia USB3.0 Controller 2 | - | shared | - | - | - | - | - | - |
| LAN Controller 1 | - | - | shared | - | - | - | - | - |
| LAN Controller 2 | - | - | - | shared | - | - | - | - |
| On Board Video | - | shared | - | - | - | - | - | - |
| PCIEx16 Slot 1 | shared | shared | shared | shared | - | - | - | - |
| PCIEx16 Slot 2 | shared | shared | shared | shared | - | - | - | - |
| PCIEx16 Slot 3 | shared | shared | shared | shared | - | - | - | - |
| PCIEx16 Slot 4 | shared | shared | shared | shared | - | - | - | - |
| PCIEx16 Slot 5 | shared | shared | shared | shared | - | - | - | - |

## RAM DIMM

The motherboard comes with eight Double Data Rate 3 (DDR3) Dual Inline Memory Module (DIMM) slots.



### Recommended memory configuration



DIMM_D1

DIMM_B1
DIMM_D1

DIMM_A1
DIMM_B1
DIMM_D1
DIMM_C1

DIMM_A1
DIMM_B1
DIMM_B2
DIMM_D2
DIMM_D1
DIMM_C1

DIMM_A1
DIMM_A2
DIMM_B1
DIMM_B2
DIMM_D2
DIMM_D1
DIMM_C2
DIMM_C1
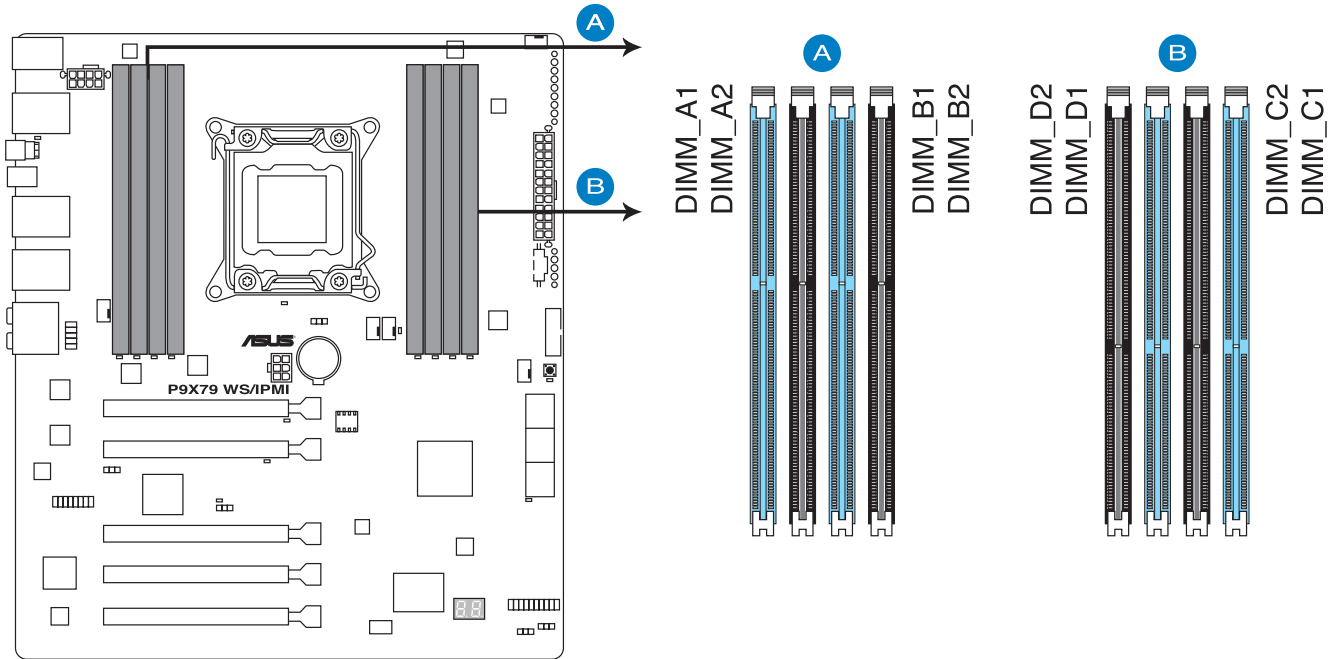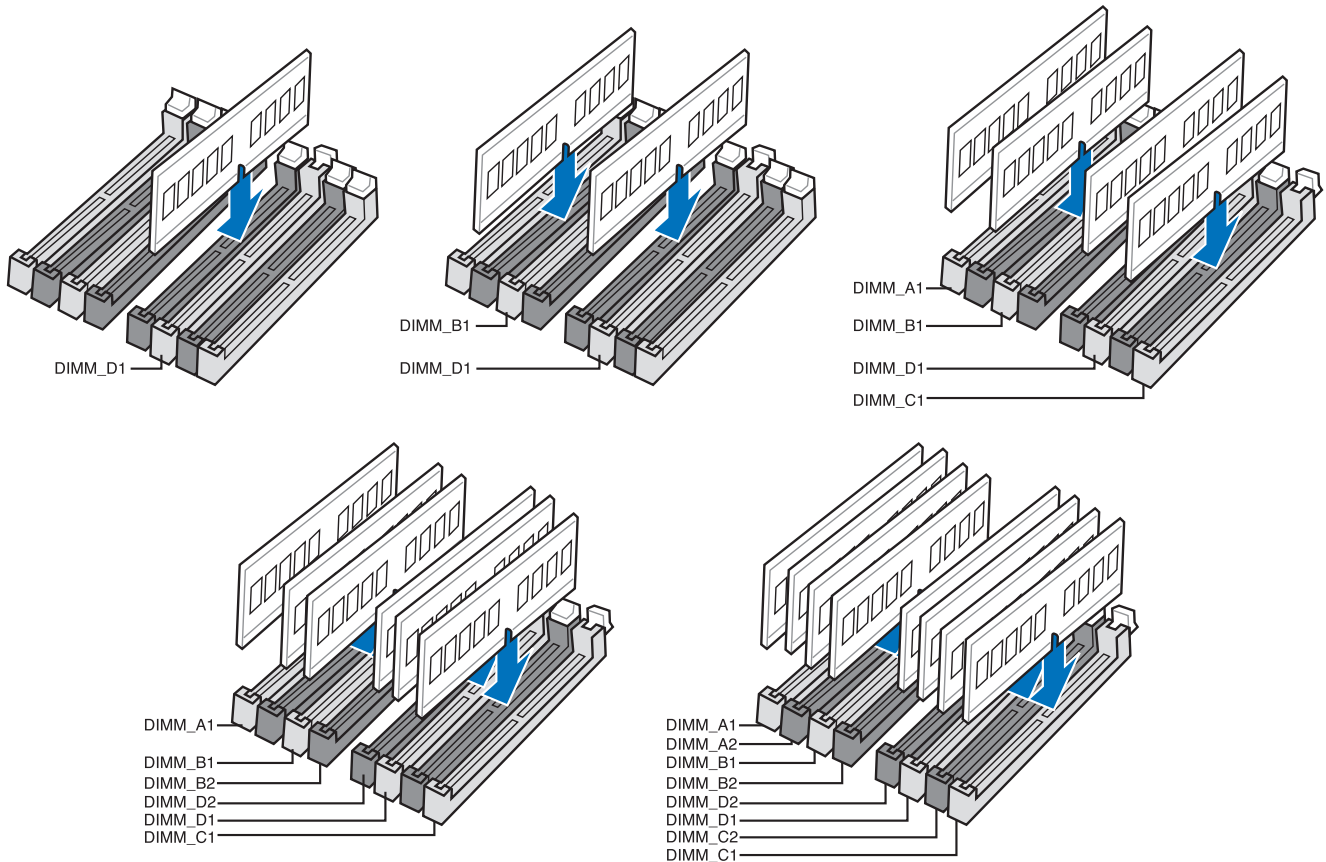
# Chapter 3
# Configuration / Setup

# 3.1 Onboard switches

Onboard switches allow you to fine-tune performance when working on a bare or open-case system. This is ideal for overclockers and gamers who continually change settings to enhance system performance.

### 1.    Power-on button

The motherboard comes with a power-on switch that allows you to power up or wake up the system. The switch also lights up when the system is plugged to a power source indicating that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component. The illustration below shows the location of the onboard power-on switch.



**P9X79 WS/IPMI**  PWR_SW
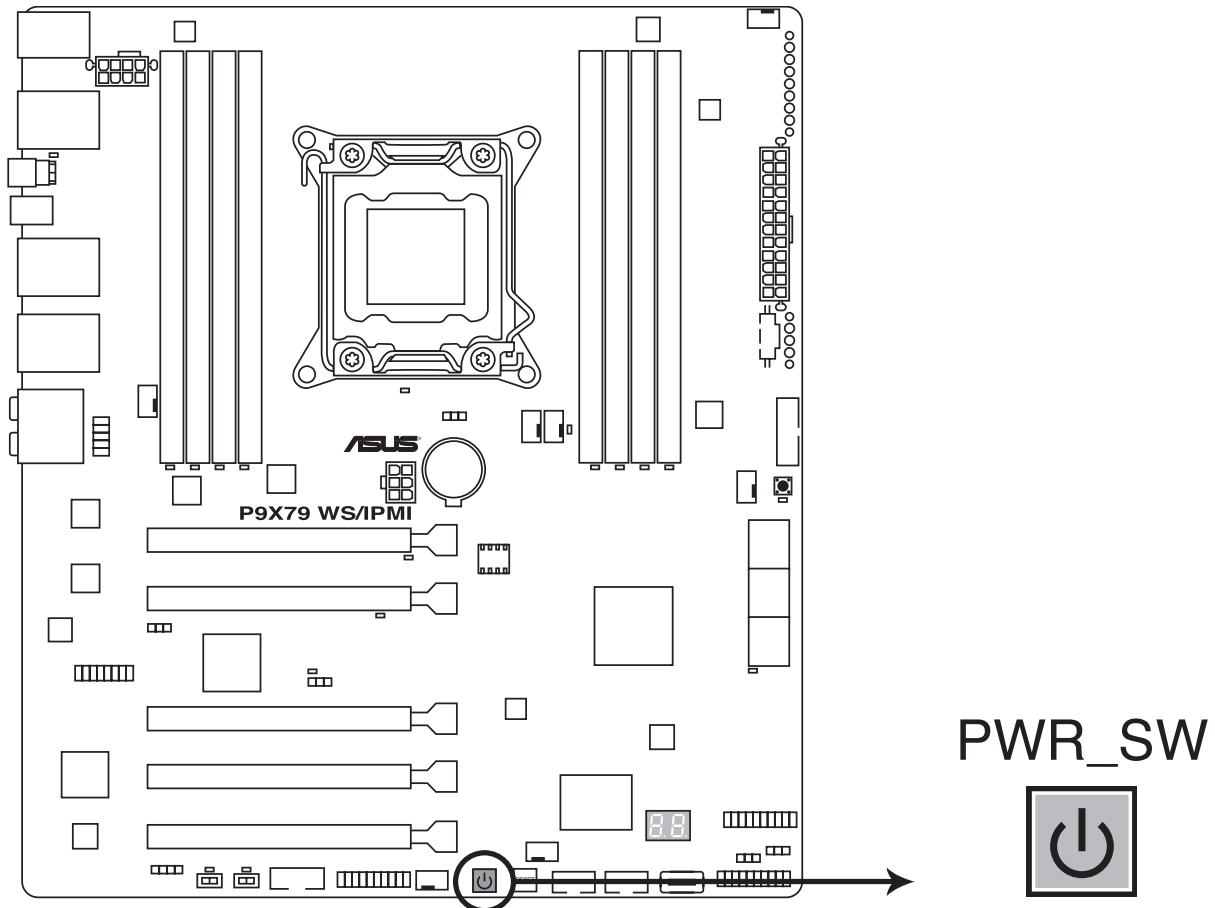
## 2.	Reset button

Press the reset switch to reboot the system.



RST_SW

RESET
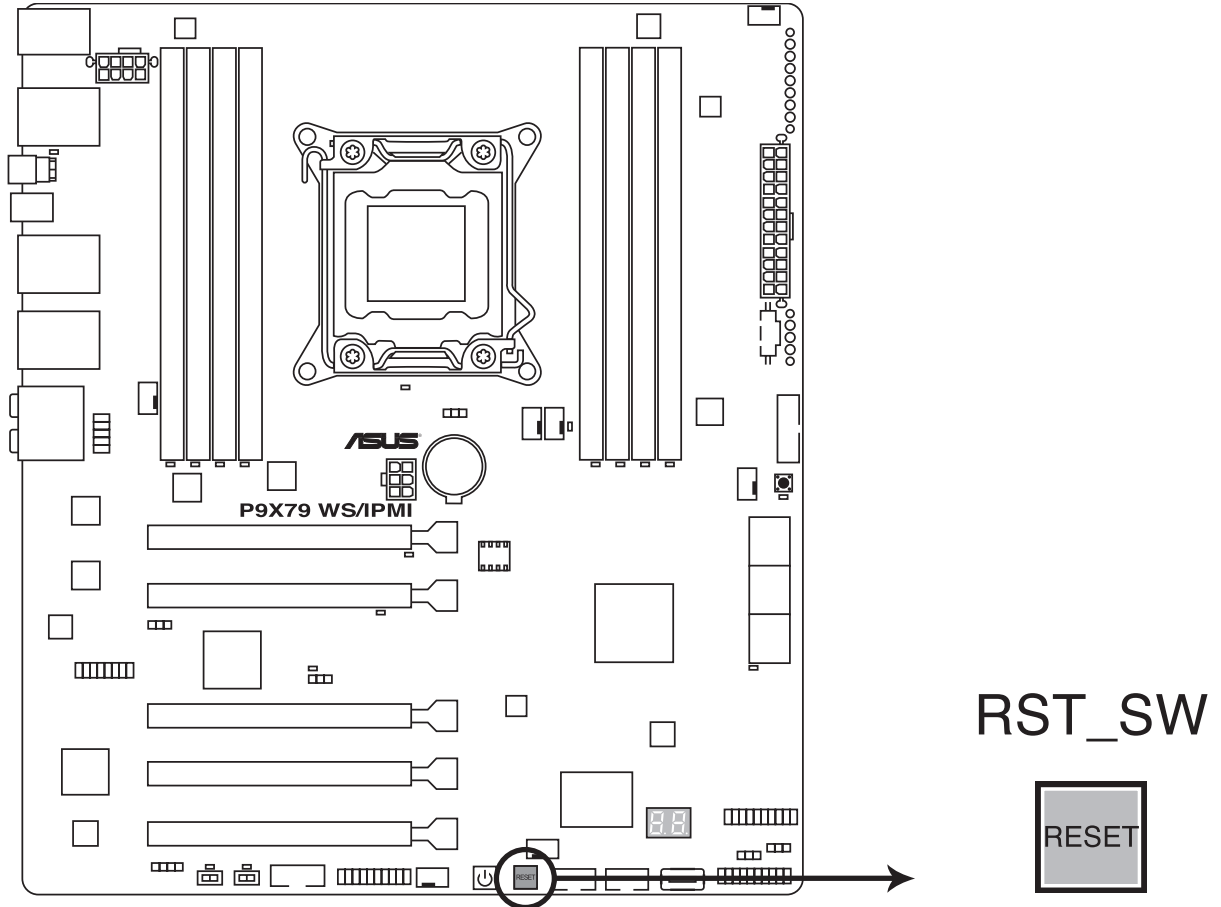
### 3. EPU switch

Turning this switch to Enable will automatically detect the current PC loadings and intelligently moderate the power consumption.



EPU

Disable
(Default)
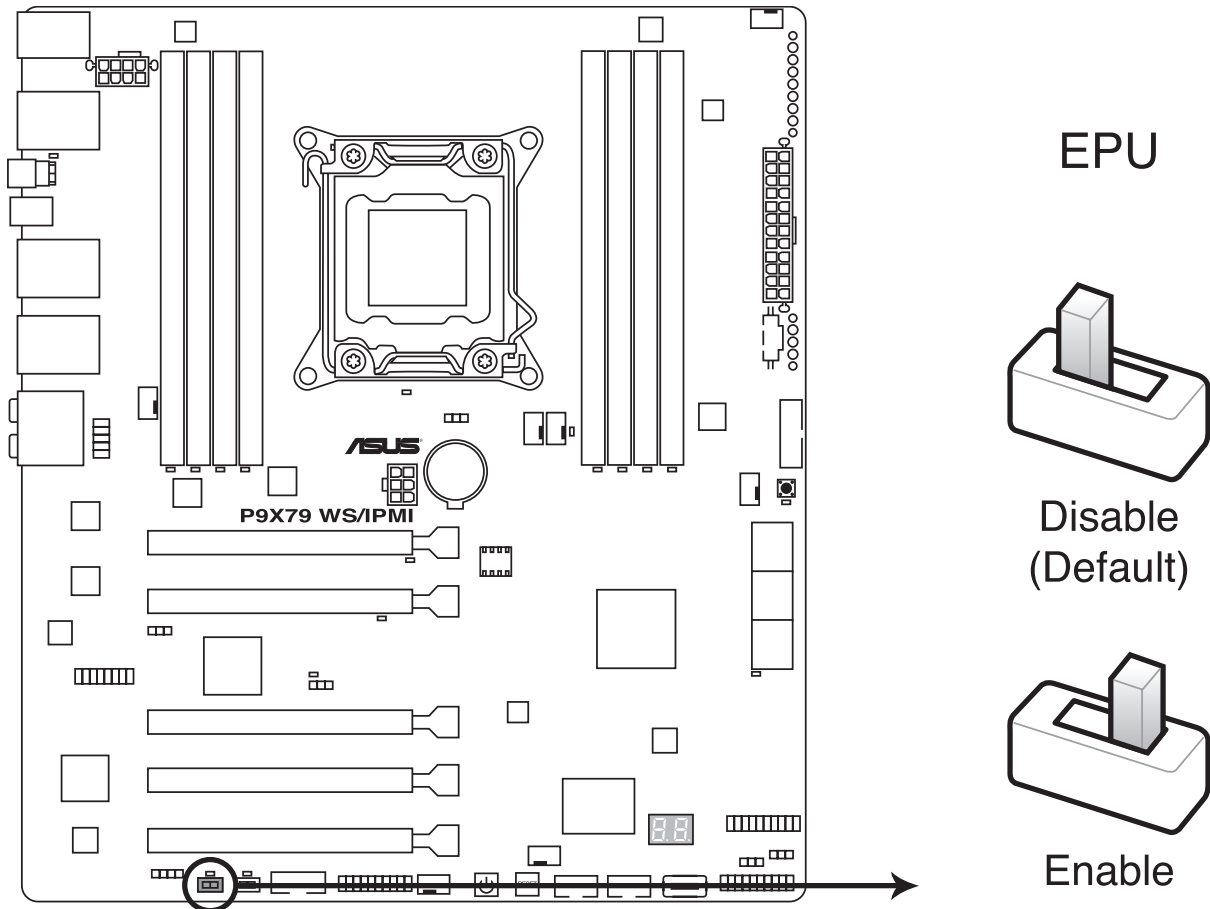
Enable

**We recommend that you do not change these settings.**
**Activating the EPU switch while running an overclocked BIOS profile could tend to performance drop.**

### 4. TPU switch

Turning this switch to Enable will automatically optimize the system for fast, yet stable clock speeds.
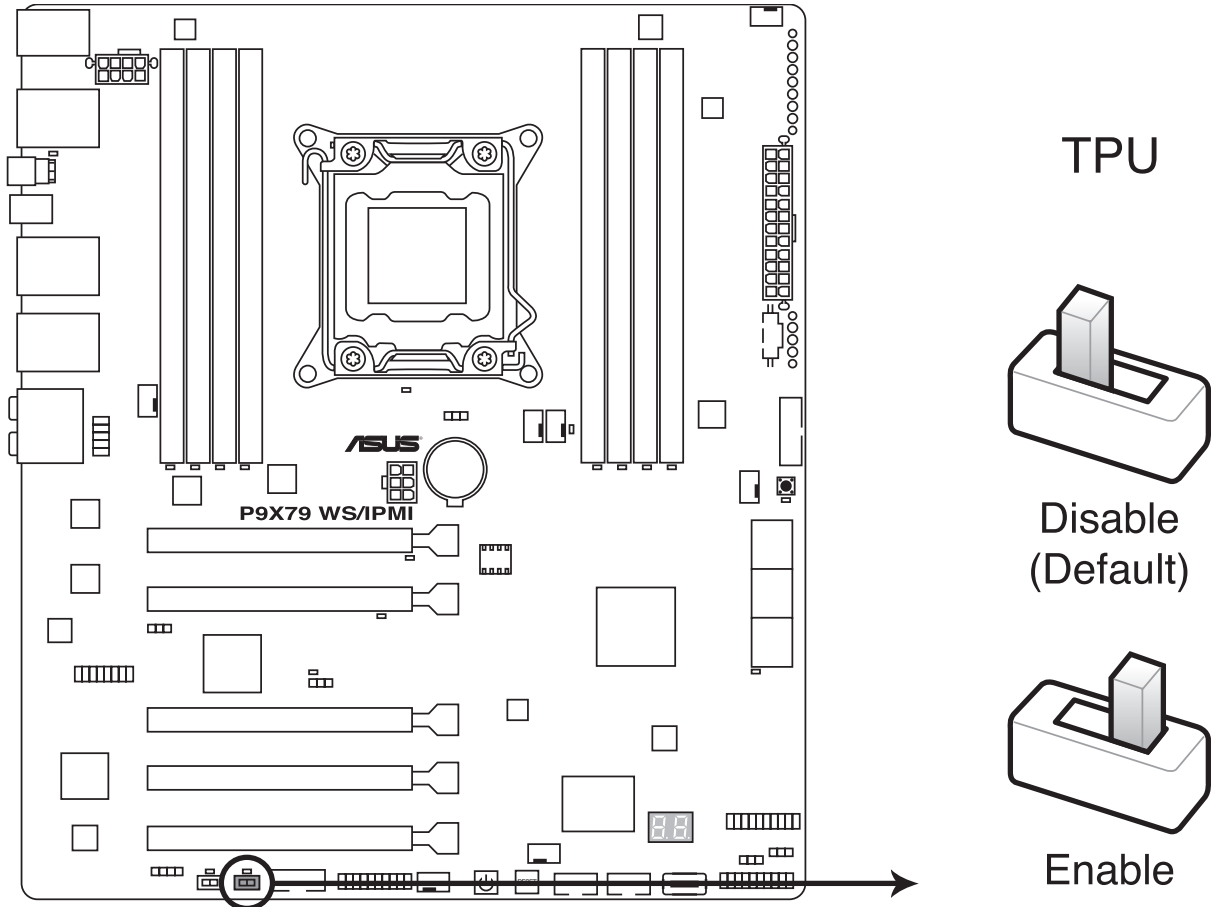


> ⚠️ **We recommend that you do not change these settings.**
> **Activating the TPU switch while running an overclocked BIOS profile could tend to performance drop.**

### 5.    MemOK! switch

Installing DIMMs that are incompatible with the motherboard may cause system boot failure, and the DIAG_DRAM near the MemOK! switch light continuously. Press and hold the MemOK! switch until the **DIAG_DRAM starts blinking to begin automatic** memory compatibility tuning for successful boot..
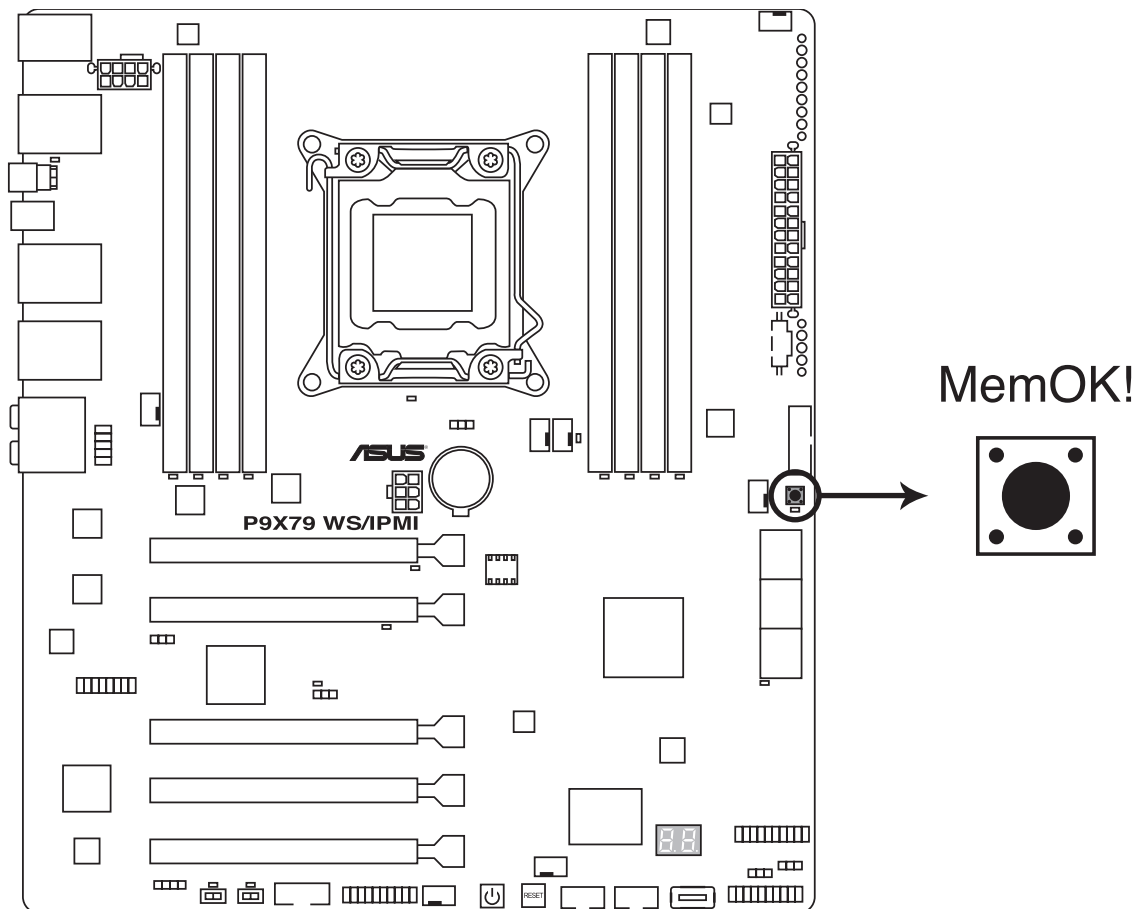
## 3.2 Knowing BIOS

BIOS (Basic Input and Output System) stores system hardware settings such as storage device configuration, overclocking settings, advanced power management, and boot device configuration that are needed for system startup in the motherboard CMOS. The custom BIOS settings apply to most conditions to ensure optimum performance.

**We recommend that you do not change the custom BIOS settings**
**Inappropriate settings of the BIOS may result to instability or failure to boot. We strongly recommend that you change the BIOS settings only with the help of a trained service personnel.**

## 3.3 BIOS setup program

A BIOS setup program is provided for BIOS item modification. When you start the computer, the system provides you with the opportunity to run this program. Press <Del> during the Power-On Self-Test (POST) to enter the Setup utility. Otherwise, POST continues with its test routines. If you wish to enter Setup after POST, press <Ctrl> + <Alt> + <Delete>, or press the reset button on the system chassis to restart the system. You can also turn the system off and then turn it back on to restart the system. Do this last option only if the first two failed.

˘ Ensure that a USB mouse is connected to your motherboard if you want to use the mouse to control the BIOS setup program.

˘ The BIOS setup program does not support bluetooth devices.

The BIOS setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various submenus and select from the available options using a keyboard or a USB mouse.

# BIOS Overview
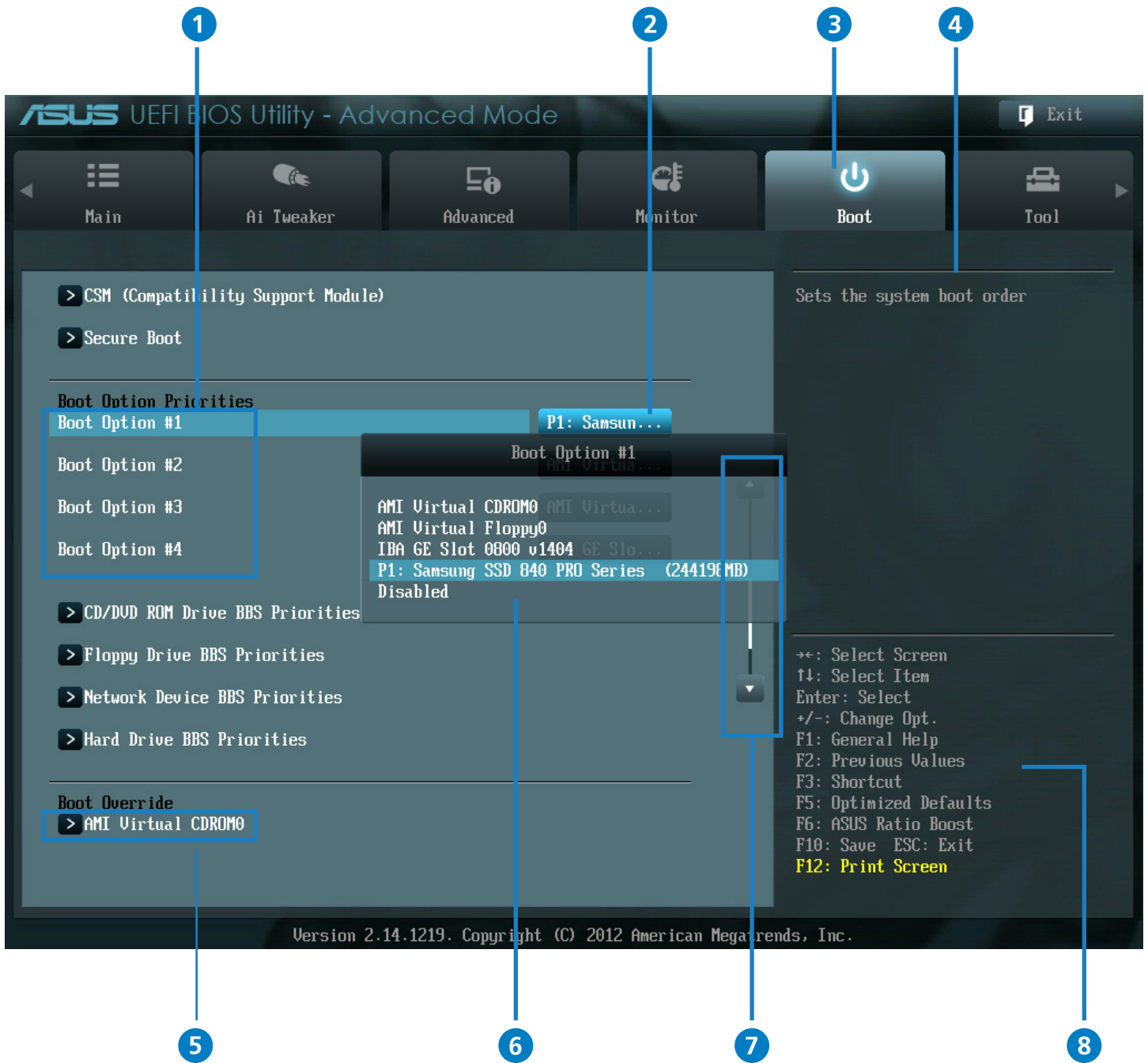


1. Menu items
2. Configuration field
3. Menu bar
4. General help
5. Submenu item
6. Pop-up window
7. Scroll bar
8. Navigation keys

### Menu bar

The menu bar on top of the screen has the following main items:

| | |
|---|---|
| Main | For changing the basic system configuration |
| Ai Tweaker | not available |
| Advanced | For changing the advanced system settings |
| Monitor | For displaying the system temperature, power status, and changing the fan settings. |
| Boot | For changing the system boot configuration |
| Tool | For configuring options for special function |
| Exit | For selecting the exit options and loading default settings |

### Menu items

The highlighted item on the menu bar displays the specific items for that menu. Fr example, selecting Main shows the Main menu items. The other items (Ai Tweaker, Advanced, Monitor, Boot, Tool, and Exit) on the menu bar have their respective menu items.

### Back button

This button appears when entering a submenu. Press <Esc> or use the USB mouse to click this button to return to the previous menu screen.

### Submenu items

A greater than sign (>) before each item on any menu screen means that the item has a submenu. To display the submenu, select the item and press <Enter>.

### Pop-up window

Select a menu item and press <Enter> to display a pop-up window with the configuration options for that item.

### Scroll bar

A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen. Press the Up/Down arrow keys or <Page Up> / <Page Down> keys to display the other items on the screen.

### Navigation keys

At the bottom right corner of the menu screen are the navigation keys for the BIOS setup program. Use the navigation keys to select items in the menu and change the settings.

### General help

At the top right corner of the menu screen is a brief description of the selected item.

### Configuration field

These fields show the values for the menu items. If an item is user-configurable, you can change the value of the field opposite the item. You cannot select an item that is not  user-configurable.
A configurable field is highlighted when selected. To change the value of a field, select it and press <Enter> to display a list of options.

## Main Menu

The Main menu screen appears when you enter the Advanced Mode of the BIOS Setup program. The Main menu provides you an overview of the basic system information, and allows you to set the system date, time, language, and security settings.

## 3.4 Advanced Menu

The Advanced menu items allow you to change the settings for the CPU and other system devices.

## CPU Configuration

The items in this menu show the CPU-related information that the BIOS automatically detects.

⚠ **We recommend that you do not change these settings.**
**Changing the CPU settings while running an overclocked BIOS profile could tend to performance drop.**



Scroll down to display the following items:



**Intel Adaptive Thermal Monitor [Enabled]**
This function includes TM1, TM2, and EMTTM.

[Disabled]       Disables the CPU thermal monitor function.
[Enabled]        Enables the overheated CPU to throttle its clock speed to cool down.

## Hyper-threading [Enabled]

The Intel Hyper-Threading Technology allows a hyper-threading processor to appear as two logical processors to the operating system, allowing the operating system to schedule two threads or processes simultaneously.

[Disabled]      Only one thread per activated core is enabled. Disabled for other OS (OS not optimized for Hyper-Threading Technology).

[Enabled]      Two threads per activated core are enabled. Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology).

## Active Processor Cores [All]

Allows you to choose the number of CPU cores to activate in each processor package.
Configuration options: [All] [1] [2] [3] [4] [5}.

## Limit CPUID Maximum [Disabled]

[Enabled]      Allows legacy operating systems to boot even without support for CPUs with extended CPUID functions.

[Disabled]      Disables this function (for Windows XP).

## Execute Disable Bit [Enabled]

[Enabled]      Enables the Non-Execution Page Protection Technology.

[Disabled]      Forces the XD feature flag to always return to zero (0).

## Intel Virtualization Technology [Enabled]

[Enabled]      Allows a hardware platform to run multiple operating systems separately and simultaneously, enabling one system to virtually function as several systems.

[Disabled]      Disables this function.

## CPU Power Management Configuration

## CPU Ratio [Auto]

Allows user to manually adjust the maximum non-turbo CPU ratio. The value will be limited to CPU-based or factory setting. Use <+> and <-> keys to adjust the ratio. The values range from 12 to 22 with a 1 interval (the valid value ranges may vary according to your CPU model).

[Values 12~20]      Presets Enhanced Intel SpeedStep Technology and Turbo Mode to [Disabled] but can be adjusted.

[Values 21~22]      Disallows configuration for Turbo Mode.

### Enhanced Intel SpeedStep Technology [Disabled]

Enhanced Intel SpeedStep Technology (EIST) allows the system operation to dynamically adjust processor voltage and cores frequency, which can result in decreased average power consumption and decreased average heat production.

[Disabled]       The CPU runs at its default speed.

[Enabled]       The operating system controls the CPU speed.

### Turbo Mode [Enabled]

This automatically allows processor cores to run faster than the base operating frequency if it's operating below power, current, and temperature specification limit

[Disabled]       Disables this function.

[Enabled]       Allows processor cores to run faster than marked frequency in specific conditions.

### CPU C1E [Disabled]

[Auto]       Set this item automatically.

[Disabled]       Disables this function.

[Enabled]       Enables the C1E support function. This item should be enabled in order to enable the Enhanced Halt State.

### CPU C3 Report [Disabled]
Allows you to disable or enable the CPU C3 report to OS.
### CPU C6 Report [Disabled]
Allows you to disable or enable the CPU C6 report to OS.

## System Agent Configuration



### PCIEX16_1/2 Link speed [GEN3]

Allows you to select the target link speed.
Configuration options: [GEN1] [GEN2] [GEN3].

### PCIEX16_3/4Link speed [GEN3]

Allows you to select the target link speed.
Configuration options: [GEN1] [GEN2] [GEN3].

### PCIEX16_5 Link speed [GEN3]

Allows you to select the target link speed.
Configuration options: [GEN1] [GEN2] [GEN3].

### Intel Xeon Phi support [Disabled]

If enable Intel Xeon Phi support, OS only support 64bit OS.
Configuration options: [Enabled] [Disabled].

## PCH Configuration
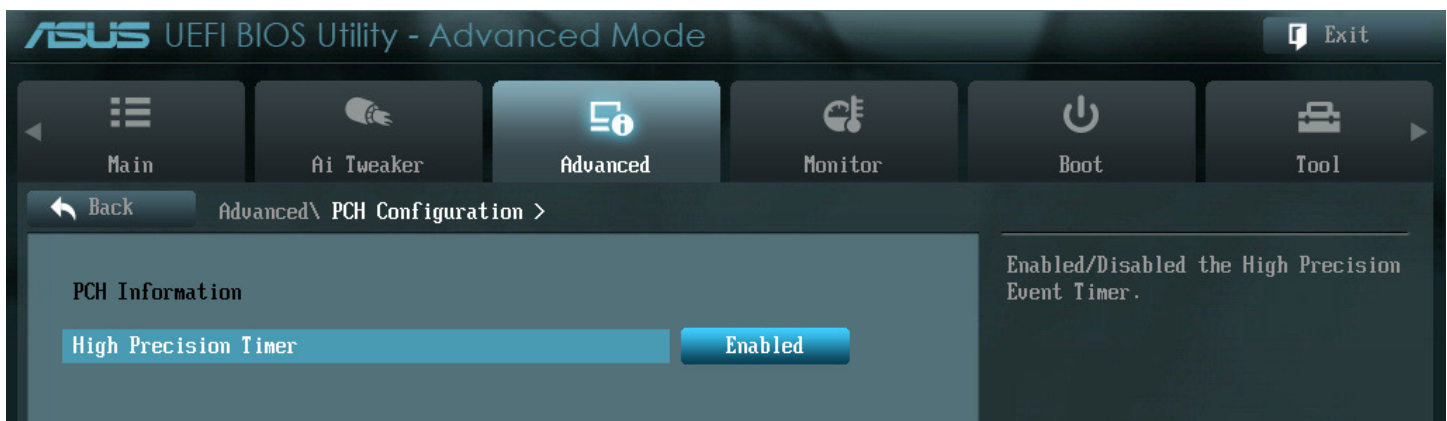


### High Precision Timer [Enabled]

Allows you to enable or disable the High Precision Event Timer.
Configuration options: [Disabled] [Enabled].

## Sata Configuration

While entering Setup, the BIOS automatically detects the presence of SATA devices. The SATA Port items show Not Present if no SATA device is installed to the corresponding SATA port.



### SATA Mode [AHCI Mode]

Allows you to set the SATA configuration.

[Disabled]       Disables the SATA function.

[IDE Mode]       Set to [IDE Mode] when you want to use the Serial ATA hard disk drives as Parallel ATA physical storage devices. Hot-plug support configurations for SATA are disallowed under this mode.

[AHCI Mode]      Set to [AHCI Mode] when you want the SATA hard disk drives to use the AHCI (Advanced Host Controller Interface). The AHCI allows the onboard storage driver to enable advanced Serial ATA features that increases storage performance on random workloads by allowing the drive to internally optimize the order of commands.

[RAID Mode]      Set to [RAID Mode] when you want to create a RAID configuration from the SATA hard disk drives.

### S.M.A.R.T. Status Check [Enabled]

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a monitor system. When read/write of your hard disk errors occur, this feature allows the hard disk to report warning messages during the POST.
Configuration options: [Disabled] [Enabled].

### SATA6G_1 (Gray)
### Hot Plug [Disabled]

This item appears only when you set the previous item to [AHCI Mode] and [RAID mode]. It allows users to enable/disable SATA Hot Plug Support.
Configuration options: [Disabled] [Enabled].

### SATA6G_2 (Gray)
### Hot Plug [Disabled]

This item appears only when you set the previous item to [AHCI Mode] and [RAID mode]. It allows users to enable/disable SATA Hot Plug Support.
Configuration options: [Disabled] [Enabled].

### SATA3G_3 (Blue)
### Hot Plug [Disabled]

This item appears only when you set the previous item to [AHCI Mode] and [RAID mode]. It allows users to enable/disable SATA Hot Plug Support.
Configuration options: [Disabled] [Enabled].

### SATA3G_4 (Blue)
### Hot Plug [Disabled]

This item appears only when you set the previous item to [AHCI Mode] and [RAID mode]. It allows users to enable/disable SATA Hot Plug Support.
Configuration options: [Disabled] [Enabled].

### SATA3G_5 (Blue)
### Hot Plug [Disabled]

This item appears only when you set the previous item to [AHCI Mode] and [RAID mode]. It allows users to enable/disable SATA Hot Plug Support.
Configuration options: [Disabled] [Enabled].

### SATA3G_6 (Blue)
### Hot Plug [Disabled]

This item appears only when you set the previous item to [AHCI Mode] and [RAID mode]. It allows user to enable/disable SATA Hot Plug Support.
Configuration options: [Disabled] [Enabed].

˘ The following two items appear only when you set the SATA Mode item to [IDE Mode].

### Serial-ATA Controller 0 [Enhanced]

Allows you to enable/disable the Serial-ATA Controller 0.
Configuration options: [Disabled] [Enhance] [Compatible].

### Serial-ATA Controller 1 [Enhanced]

Allows you to enable/disable the Serial-ATA Controller 1.
Configuration options: [Disabled] [Enhance].

### S.M.A.R.T. Status Check [Enabled]

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a monitor system. When read/write of your hard disk errors occur, this feature allows the hard disk to report warning messages during the POST.
Configuration options: [Disabled] [Enabled].

## USB Configuration

The items in this menu allow you to change the USB-related features.
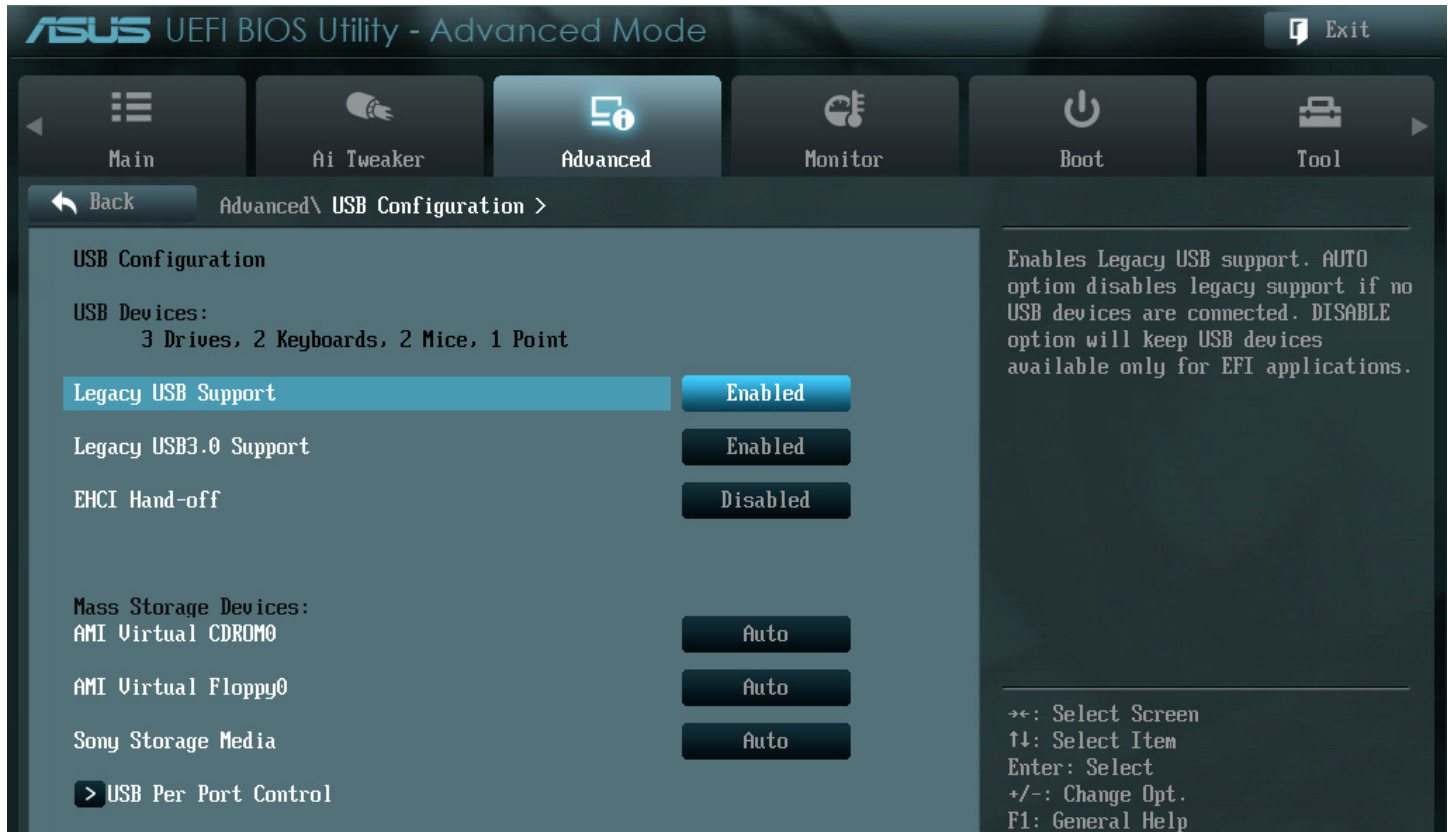


˅ The USB Devices item shows the auto-detected values. If no USB device is detected, the item shows None.

### Legacy USB Support [Enabled]

[Disabled]    The USB devices can be used only for the BIOS setup program.

[Enabled]    Enables the support for USB devices on legacy operating systems (OS).

[Auto]    Allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled.

### Legacy USB3.0 Support [Enabled]

[Disabled]    Disables the function.

[Enabled]    Enables the support for USB 3.0 devices on legacy operating systems (OS).

### EHCI Hand-off [Disabled]

[Disabled]    Disables the function.

[Enabled]    Enables the support for operating systems without an EHCI hand-off feature.

### USB Single Port Control

Allows you to enable or disable the individual USB port.

### Azalia HD Audio [Disabled]

[Disabled]          Disables the controller.

[Enabled]          Enables the High Definition Audio Controller.

### Front Panel Type [HD]

Allows you to set the front panel audio connector (AAFP) mode to legacy AC97 or high-definition audio depending on the audio standard that the front panel audio module supports.

[HD]          Sets the front panel audio connector (AAFP) mode to high definition audio.

[AC97]          Sets the front panel audio connector (AAFP) mode to legacy AC97

### SPDIF Out Type [SPDIF]

[SPDIF]          Set to [SPDIF] for SPDIF audio output.

[HDMI]          Set to [HDMI] for HDMI audio output.

### Intel I210 LAN1 Enable [Enabled]

[Disabled]        Disables the controller.
[Enabled]         Enables the Intel LAN1 controller.

### Intel I210 LAN1 OpROM [Enabled]

This item appears only when you set the previous item to [Enabled] and allows you to enable or disable the LAN1 PXE OptionRom of the Intel LAN controller.
Configuration options: [Disabled] [Enabled].

### Intel I210 LAN2 Enable [Enabled]

[Disabled]        Disables the controller.
[Enabled]         Enables the Intel LAN2 controller.

### Intel I210 LAN2 OpROM [Enabled]

This item appears only when you set the previous item to [Enabled] and allows you to enable or disable the LAN2 PXE OptionRom of the Intel LAN controller.
Configuration options: [Disabled] [Enabled].

### Asmedia USB 3.0 Controller [Disabled]

This item allows user to enable/disable Asmedia USB 3.0.
Configuration options: [Disabled] [Enabled].

### Serial Port Configuration

#### Serial Port [Disabled]

This item allows user to enable/disable Serial Port (COM).

[Disabled]         Disables configuration.
[Enabled]         Change Settings appear under [Enabled]. Select an optimal setting for Super IO device.

### Change Settings [IO=3F8h; IRQ=4]
Configuration options: [IO=3F8h; IRQ=4] [IO=2F8h; IRQ=3] [IO=3E8h; IRQ=4] [IO=2E8h; IRQ=3].

APM
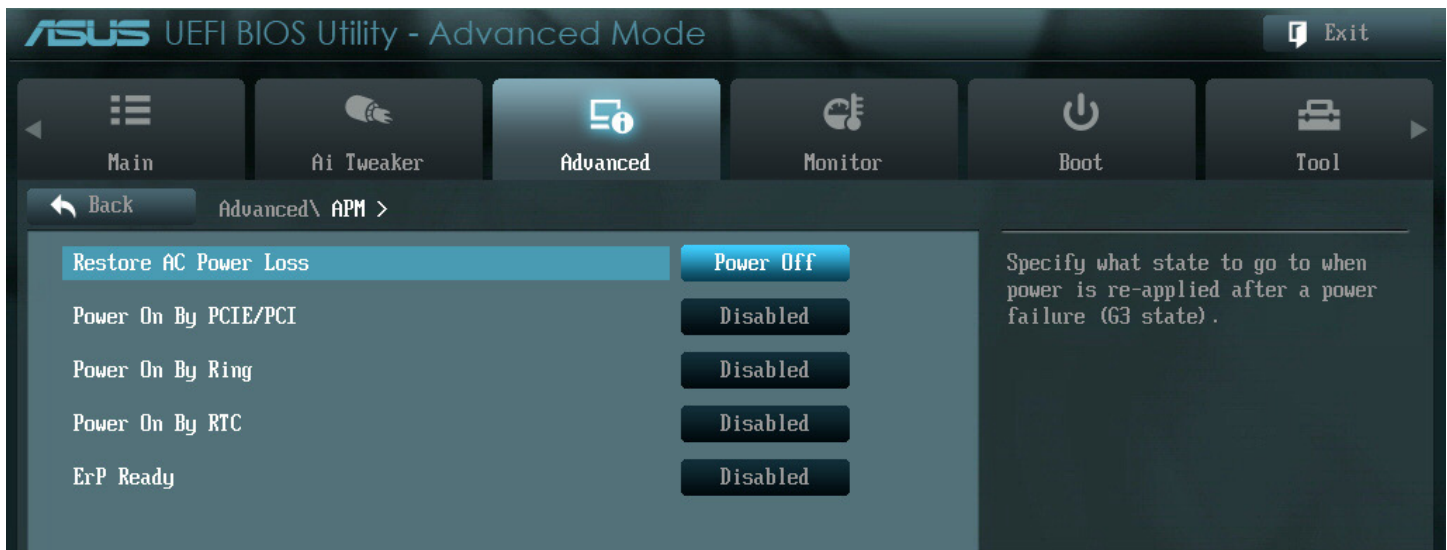


### Restore AC Power Loss [Power Off]

[Power On]      The system goes into on state after an AC power loss.
[Power Off]     The system goes into off state after an AC power loss.
[Last State]    The system goes into either off or on state, whatever the system state was before the AC power loss.

### Power On By PCIE/PCI [Disabled]

[Disabled]      Disables the PCIE devices from generating a wake event.
[Enabled]       Enables the PCIE devices to generate a wake event.

### Power On By Ring [Disabled]

[Disabled]      Disables the Ring device from generating a wake event.
[Enabled]       Enables the Ring device to generate a wake event.

### Power On By RTC [Disabled]

[Disabled]      Disables RTC from generating a wake event.
[Enabled]       When set to [Enabled], the items RTC Alarm Date (Days) and Hour/Minute/Second will become user-configurable with set values. Use <+> and <-> keys to adjust the values.

### ErP Ready [Disabled]

This item allows user to switch off some power at S5 to get the system ready for ErP requirement. When set to Enabled, all other PME options will be switched off.
Configuration options: [Disabled] [Enabled in S5].

Network Stack
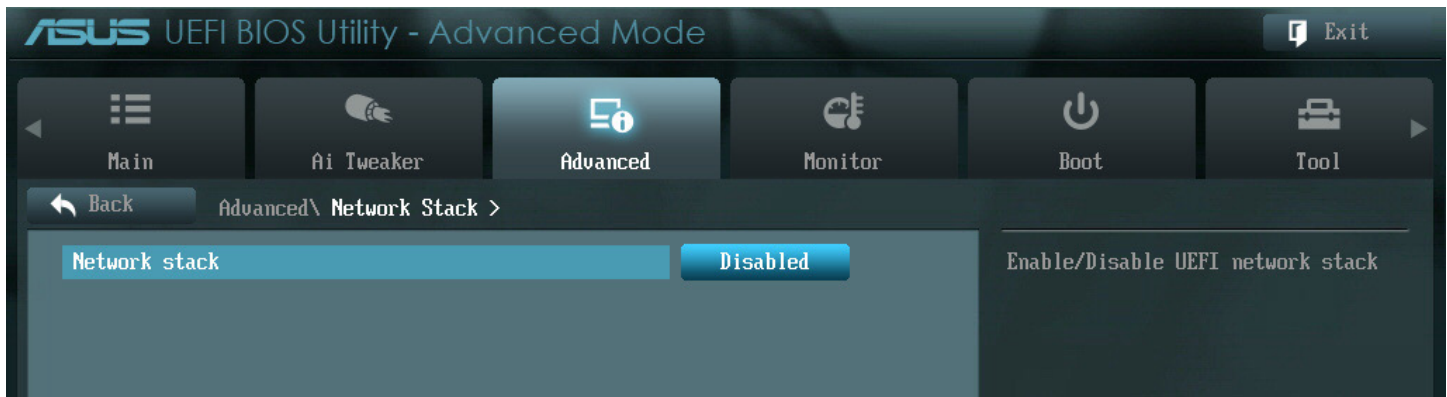


**Network Stack [Disable]**

This item allows user to disable or enable the UEFI network stack.
Configuration options: [Disabled] [Enabled].

˘ The following item appears only when you set the Network Stack to [Enabled].

**IPV4/IPV6 PXE Support [Enabled]**

Allows to enable or disable the IPV4/IPV6 PXE boot option.
Configuration options: [Disabled] [Enabled].

## 3.5 Monitor Menu

The Monitor menu displays the system temperature/power status, and allows you to change the fan settings.

| | |
|---|---|
| CPU Fan Speed Low Limit | 600 RPM |
| CPU Fan Profile | Standard |
| REAR Fan 1 Q-Fan Control | Enabled |
| REAR Fan 1 Fan Speed Low Limit | 600 RPM |
| REAR Fan 1 Fan Profile | Standard |
| FRNT Fan 1 Q-Fan Control | Enabled |
| FRNT Fan 1 Fan Speed Low Limit | 600 RPM |
| FRNT Fan 1 Fan Profile | Standard |
| FRNT Fan 2 Q-Fan Control | Enabled |
| FRNT Fan 2 Fan Speed Low Limit | 600 RPM |
| FRNT Fan 2 Fan Profile | Standard |
| CPU Voltage | +1.124 V |
| 3.3V Voltage | +3.312 V |

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Shortcut
F5: Optimized Defaults
F6: ASUS Ratio Boost
F10: Save  ESC: Exit
F12: Print Screen

Scroll down to display the following items:

| | |
|---|---|
| 5V Voltage | +5.040 V |
| 12V Voltage | +12.192 V |
| +5VSB Voltage | +5.024 V |
| +3VSB Voltage | +3.276 V |
| VBAT Voltage | +3.270 V |
| Anti Surge Support | Enabled |

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Shortcut
F5: Optimized Defaults
F6: ASUS Ratio Boost
F10: Save  ESC: Exit
F12: Print Screen

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Scroll down to display the following items:

### CPU Temperature / MB / TR1 / TR2 Temperature [xxx°C/xxx°F]

The onboard hardware monitor automatically detects and displays the CPU, motherboard, TR1, and TR2 temperatures. Select [Ignore] if you do not wish to display the detected temperatures.

### CPU Fan 1/2 Speed [xxxx RPM]or [Ignore]/ [N/A], REAR Fan Speed [xxxx RPM]or [Ignore]/ [N/A], PWR Fan Speed xxxx RPM]or Ignore]/ N/A], FRNT Fan 1/2/3/4/5/6 Speed [xxxx RPM]or [Ignore]/ [N/A]

The onboard hardware monitor automatically detects and displays the CPU, rear, power, and front fan speed in rotations per minute (RPM). If the fan is not connected to the motherboard, the field shows N/A. Select [Ignore] if you do not wish to display the detected speed.

### CPU Q-Fan Control [Disabled]

[Disabled]         Disables the CPU Q-Fan control feature.
[Enabled]          Enables the CPU Q-Fan control feature.

### CPU Fan Speed Low Limit [600 RPM]

This item appears only when you enable the CPU Q-Fan Control feature and allows you to disable or set the CPU fan warning speed in case the fan stops working.
Configuration options: [Ignore] [200 RPM] [300 RPM] [400 RPM] [500 RPM] [600 RPM].

### CPU Fan Profile [Standard]

This item appears only when you enable the CPU Q-Fan Control feature and allows you to set the appropriate performance level of the CPU fan.

[Standard]         The CPU fan will automatically adjust depending on the CPU temperature
[Silent]           Minimizes the fan speed for quiet CPU fan operation
[Turbo]            Achieves maximum CPU fan speed
[Manual]           Users can assign detailed fan speed control parameters

### CPU Upper Temperature [70] (in Celsius)

Use the <+> and <-> keys to set the upper limit of the CPU temperature. The values range from 20°C to 75°C. When the CPU temperature reaches the upper limit, CPU fan will operate at maximum duty cycle in full speed.

### CPU Fan Max. Duty Cycle (%) [100]

Use the <+> and <-> keys to adjust the maximum CPU fan duty cycle. The values range from 0% to 100%. The minimum value cannot be lower than the setting of the Min. Duty Cycle.

### CPU Lower Temperature [20] (in Celsius)

Displays the lower limit of the CPU temperature. Users can set the CPU Fan Min. Duty Cycle when CPU temperature is lower than the CPU Lower Temperature setting.

### CPU Fan Min. Duty Cycle (%) [20]

Use the <+> and <-> keys to adjust the minimum CPU fan duty cycle. The values range from 0% to 100%. When the CPU temperature is under 20°C, the CPU fan will operate at the minimum duty cycle.

### REAR Fan 1 Q-Fan Control [Disabled]

[Disabled]         Disables the REAR Q-Fan control feature.
[Enabled]          Enables the REAR Q-Fan control feature.

### REAR Fan 1 Fan Speed Low Limit [600 RPM]

This item appears only when you enable the REAR Fan 1 Q-Fan Control feature and allows you to disable or set the chassis fan warning speed in case the fan stops working.
Configuration options: [Ignore] [200 RPM] [300 RPM] [400 RPM] [500 RPM] [600 RPM].

### REAR Fan 1 Fan Profile [Standard]

This item appears only when you enable the REAR Fan 1 Q-Fan Control feature and allows you to set the appropriate performance level of the chassis fan.

[Standard]     The chassis fan will automatically adjust depending on the chassis temperature.

[Silent]     Minimizes the fan speed for quiet rear fan operation

[Turbo]     Achieves maximum rear fan speed

[Manual]     Users can assign detailed fan speed control parameters.

### REAR Fan 1 Upper Temperature [70] (in Celsius)

Use the <+> and <-> keys to set the upper limit of the REAR 1 temperature. The values range from 40°C to 90°C. When the REAR 1 temperature reaches the upper limit, REAR 1 fan will operate at maximum duty cycle in full speed.

### REAR Fan 1 Fan Max. Duty Cycle (%) [100]

Use the <+> and <-> keys to adjust the maximum REAR fan duty cycle. The values range from 60% to 100%. The minimum value cannot be lower than the setting of the Min Duty Cycle.

### REAR Fan 1 Lower Temperature [40] (in Celsius)

Displays the lower limit of the REAR 1temperature. Users can set the REAR Fan Min. Duty Cycle when REAR 1 temperature is lower than the REAR Lower Temperature setting.

### REAR Fan 1 Fan Min. Duty Cycle (%) [60]

Use the <+> and <-> keys to adjust the minimum REAR 1 fan duty cycle. The values range from 60% to 100%. When the REAR 1temperature is under 40°C, the REAR fan will operate at the minimum duty cycle.

### FRNT Fan 1 Q-Fan Control [Disabled]

[Disabled]     Disables the FRNT Fan 1 Q-Fan control feature.

[Enabled]     Enables the FRNT Fan 1 Q-Fan control feature.

### FRNT Fan 1 Fan Speed Low Limit [600 RPM]

This item appears only when you enable the FRNT Fan 1 Q-Fan Control feature and allows you to disable or set the chassis fan warning speed in case the fan stops working.
Configuration options: [Ignore] [200 RPM] [300 RPM] [400 RPM] [500 RPM] [600 RPM].

### FRNT Fan 1 Fan Profile [Standard]

This item appears only when you enable the FRNT Fan 1 Q-Fan Control feature and allows you to set the appropriate performance level of the chassis fan.

[Standard]     The chassis fan will automatically adjust depending on the chassis temperature.

[Silent]     Minimizes the fan speed for quiet rear fan operation.

[Turbo]     Achieves maximum rear fan speed.

[Manual]     Users can assign detailed fan speed control parameters.

### FRNT Fan 1 Upper Temperature [70] (in Celsius)

Use the <+> and <-> keys to set the upper limit of the FRNT 1 temperature. The values range from 40°C to 90°C. When the FRNT 1 temperature reaches the upper limit, FRNT 1 fan will operate at maximum duty cycle in full speed.

### FRNT Fan 1 Fan Max. Duty Cycle (%) [100]

Use the <+> and <-> keys to adjust the maximum FRNT fan duty cycle. The values range from 60% to 100%. The minimum value cannot be lower than the setting of the Min Duty Cycle.

### FRNT Fan 1 Lower Temperature [40] (in Celsius)

Displays the lower limit of the FRNT 1 temperature. Users can set the FRNT 1 Fan Min. Duty Cycle when FRNT 1 temperature is lower than the FRNT 1 Lower Temperature setting.

### FRNT Fan 1 Fan Min. Duty Cycle (%) [60]

Use the <+> and <-> keys to adjust the minimum FRNT 1 fan duty cycle. The values range from 60% to 100%. When the FRNT 1 temperature is under 40°C, the FRNT 1 fan will operate at the minimum duty cycle.

### FRNT Fan 2 Q-Fan Control [Disabled]

[Disabled]      Disables the FRNT Fan 2 Q-Fan control feature.

[Enabled]      Enables the FRNT Fan 2 Q-Fan control feature.

### FRNT Fan 2 Fan Speed Low Limit [600 RPM]

This item appears only when you enable the FRNT Fan 2 Q-Fan Control feature and allows you to disable or set the chassis fan warning speed in case the fan stops working.
Configuration options: [Ignore] [200 RPM] [300 RPM] [400 RPM] [500 RPM] [600 RPM].

### FRNT Fan 2 Fan Profile [Standard]

This item appears only when you enable the FRNT Fan 2 Q-Fan Control feature and allows you to set the appropriate performance level of the chassis fan.

[Standard]      The chassis fan will automatically adjust depending on the chassis temperature.

[Silent]      Minimizes the fan speed for quiet rear fan operation.

[Turbo]      Achieves maximum rear fan speed.

[Manual]      Users can assign detailed fan speed control parameters.

### FRNT Fan 2 Upper Temperature [70] (in Celsius)

Use the <+> and <-> keys to set the upper limit of the FRNT 2 temperature. The values range from 40°C to 90°C. When the FRNT 2 temperature reaches the upper limit, FRNT 2 fan will operate at maximum duty cycle in full speed.

### FRNT Fan 2 Fan Max. Duty Cycle (%) [100]

Use the <+> and <-> keys to adjust the maximum FRNT 2 fan duty cycle. The values range from 60% to 100%. The minimum value cannot be lower than the setting of the Min Duty Cycle.

### FRNT Fan 2 Lower Temperature [40] (in Celsius)

Displays the lower limit of the FRNT 2 temperature. Users can set the FRNT 2 Fan Min. Duty Cycle when FRNT 2 temperature is lower than the FRNT 2 Lower Temperature setting.

### FRNT Fan 2 Fan Min. Duty Cycle (%) [60]

Use the <+> and <-> keys to adjust the minimum FRNT 2 fan duty cycle. The values range from 60% to 100%. When the FRNT 2 temperature is under 40°C, the FRNT 2 fan will operate at the minimum duty cycle.

### CPU Voltage, 3.3V Voltage, 5V Voltage, 12V Voltage, +5VSB Voltage, +3VSB Voltage, VBAT Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators. Select [Ignore] if you do not want to detect this item.

### Anti Surge Support [Enabled]

This item allows you to enable or disable the Anti Surge function.
Configuration options: [Disabled] [Enabled].

## 3.6 Boot Menu

The Boot menu items allow you to change the system boot options.



Boot Configuration

### Fast Boot [Enabled]

[Enabled]      Select to accelerate the boot speed.
[Disabled]    Select to go back to normal boot.

### USB Support [Partial Initialization]

[Disabled]          All USB devices will not be available until OS boot up for the fastest POST time.

[Full Initialization]       All USB devices will be available during POST. This process will extend the POST time.

[Partial Initialization]    For a faster POST time, only the USB ports with keyboard and mouse connections will be detected.

### PS/2 Keyboard and Mouse Support [Auto]

Select any of these settings when PS/2 keyboard and mouse are installed. These settings only apply when Fast Boot is enabled.

[Auto]           For a faster POST time, PS/2 devices will only be available when the system boots up or rebooted when the PS/2 devices have not been reconnected or changed. If you disconnect or change PS/2 devices before restarting the system, PS/2 devices will not be available and BIOS setup program will not be accessible via PS/2 devices.

[Full Initialization]      For full system control, PS/2 devices will be available during POST at any circumstances. This process will extend POST time.

[Disabled]          For the fastest POST time, all PS/2 devices will not be available until your computer enters the operating system.

### Network Stack Driver Support [Disabled]

[Disabled]          Select to skip the network stack driver from loading during POST.

[Enabled]           Select to load the network stack driver during POST.

### Next Boot after AC Power Loss [Normal Boot]

[Normal Boot]     Returns to normal boot on the next boot after AC power loss.

[Fast Boot]        Accelerates the boot speed on the next boot after AC power loss.

### Full Screen Logo [Enabled]

[Full screen]      Enables the full screen logo display feature.

[Disabled]          Disables the full screen logo display feature.

[Auto]            Auto adjustment for windows requirements

### POST Delay Time [3 sec]

This item appears only when you set Full Screen Logo to [Enabled]. This item allows you to select the desired additional POST waiting time to easily enter the BIOS setup. You can only execute the POST delay time during Normal Boot. The values range from 1 to 10 seconds.

### Bootup NumLock State [On]

[On]             Sets the power-on state of the NumLock to [On].

[Off]            Sets the power-on state of the NumLock to [Off].

### Wait For 'F1' If Error [Enabled]

[Disabled]          Disables this function.

| [Enabled] | The system waits for the <F1> key to be pressed when error occurs. |

### Option ROM Messages [Force BIOS]

| [Force BIOS] | The third-party ROM messages will be forced to display during the boot sequence. |
| [Keep Current] | The third-party ROM messages will be displayed only if the third-party manufacturer had set the add-on device to do so. |

### Setup Mode [Advanced Mode]

| [Advanced Mode] | Sets Advanced Mode as the default screen for entering the BIOS setup program. |
| [EZ Mode] | Sets EZ Mode as the default screen for entering the BIOS setup program. |

## CSM (Compatibility Support Module)

Allows you to configure the CSM (Compatibility Support Module) items to fully support the various VGA, bootable devices and add-on devices for better compatibility.

### Launch CSM [Auto]

| [Auto] | The system automatically detects the bootable devices and the add-on devices. |
| [Enabled] | For better compatibility, enable the CSM to fully support the non- UEFI driver add-on devices or the Windows® UEFI mode. |
| [Disabled] | Disable the CSM to fully support the non-UEFI driver add-on devices or the Windows® UEFI mode. |

### Boot Devices Control [UEFI and Legacy OpROM]

Allows you to select the type of devices that you want to boot.
Configuration options: [UEFI and Legacy OpROM] [Legacy OpROM only] [UEFI only].

### Boot from Network Devices [Legacy OpROM first]

Allows you to select the type of network devices that you want to launch.
Configuration options: [Legacy OpROM first] [UEFI driver first] [Ignore].

### Boot from Storage Devices [Legacy OpROM first]

Allows you to select the type of storage devices that you want to launch.
Configuration options: [Both, Legacy OpROM first] [Both, UEFI first] [Legacy OpROM first] [UEFI driver first] [Ignore].

### Boot from PCIe Expansion Devices [Legacy OpROM first]

Allows you to select the type of PCIe expansion devices that you want to launch.
Configuration options: [Legacy OpROM first] [UEFI driver first].

### Secure Boot

Allows you to configure the Windows® Secure Boot settings and manage its keys to protect the system from unauthorized access and malwares during POST.
OS Type [Windows UEFI mode]

| [Windows UEFI Mode] | Allows you to select your installed operating system. Execute the Microsoft® Secure Boot check. Only select this option when booting on Windows® UEFI mode or other Microsoft® Secure Boot compliant OS. |
| [Other OS] | Get the optimized function when booting on Windows® non-UEFI mode, Windows® Vista/ Windows® XP, or other Microsoft® Secure Boot non compliant OS. Microsoft® Secure Boot only supports Windows® UEFI mode. |

**Key Management**

This item appears only when you set OS Type to [Windows UEFI Mode]. It allows you to manage the Secure Boot keys.

**Clear Secure Boot keys**

This item appears only when you load the default Secure Boot keys. This item allows you to clear all default Secure Boot keys.

**Save Secure Boot Keys**

Allows you to save the PK (Platform Keys) to a USB storage device.

**PK Management**

The Platform Key (PK) locks and secures the firmware from any permissible changes. The system verifies the PK before your system enters the OS.

**Delete PK**

Allows you to delete the PK from your system. Once the PK is deleted, all the system's Secure Boot keys will not be active.
Configuration options: [Yes] [No]

**Load PK from File**

Allows you to load the downloaded PK from a USB storage device.
Configuration options: [Yes] [No]

˘ The PK file must be formatted as a UEFI variable structure with time-based authenticated variable.

**KEK Management**

The KEK (Key-exchange Key or Key Enrollment Key) manages the Signature database (db) and Revoked Signature database (dbx).

˘ The PK file must be formatted as a UEFI variable structure with time-based authenticated variable.

**Delete the KEK**

Allows you to delete the KEK from your system.
Configuration options: [Yes] [No]

**Load KEK from File**

Allows you to load the downloaded KEK from a USB storage device.
Configuration options: [Yes] [No]

**Append KEK from File**

Allows you to load the additional KEK from a storage device for an additional db and dbx loaded management.
Configuration options: [Yes] [No]

˘ The KEK file must be formatted as a UEFI variable structure with time-based authenticated variable.

**DB Management**

The db (Authorized Signature database) lists the signers or images of UEFI applications, operating system loaders, and UEFI drivers that you can load on the single computer.

**Delete the db**

Allows you to delete the db file from your system.
Configuration options: [Yes] [No]

**Load db from File**

Allows you to load the downloaded db from a USB storage device.
Configuration options: [Yes] [No]

**Append db from File**

Allows you to load the additional db from a storage device so that more images can be loaded securely.

Configuration options: [Yes] [No]

˅    The db file must be formatted as a UEFI variable structure with time-based authenticated variable.

### DBX Management

The dbx (Revoked Signature database) lists the forbidden images of db items that are no longer trusted and cannot be loaded.

#### Delete the dbx

Allows you to delete the dbx file from your system.
Configuration options: [Yes] [No]

#### Load dbx from File

Allows you to load the downloaded dbx from a USB storage device.
Configuration options: [Yes] [No]

#### Append dbx from File

Allows you to load the additional dbx from a storage device so that more db's images cannot be loaded.
Configuration options: [Yes] [No]

˅    The dbx file must be formatted as a UEFI variable structure with time-based authenticated variable.

### Boot Option Priorities

These items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.

˅    To access Windows OS in Safe Mode, press <F8 > after POST (Windows 8 not supported).

˅    To select the boot device during system startup, press <F8> when ASUS Logo appears.

### Boot Override

These items displays the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system. Click an item to start booting from the selected device.

## 3.7 Tools Menu

The Tools menu items allow you to configure options for special functions. Select an item then press <Enter> to display the submenu.
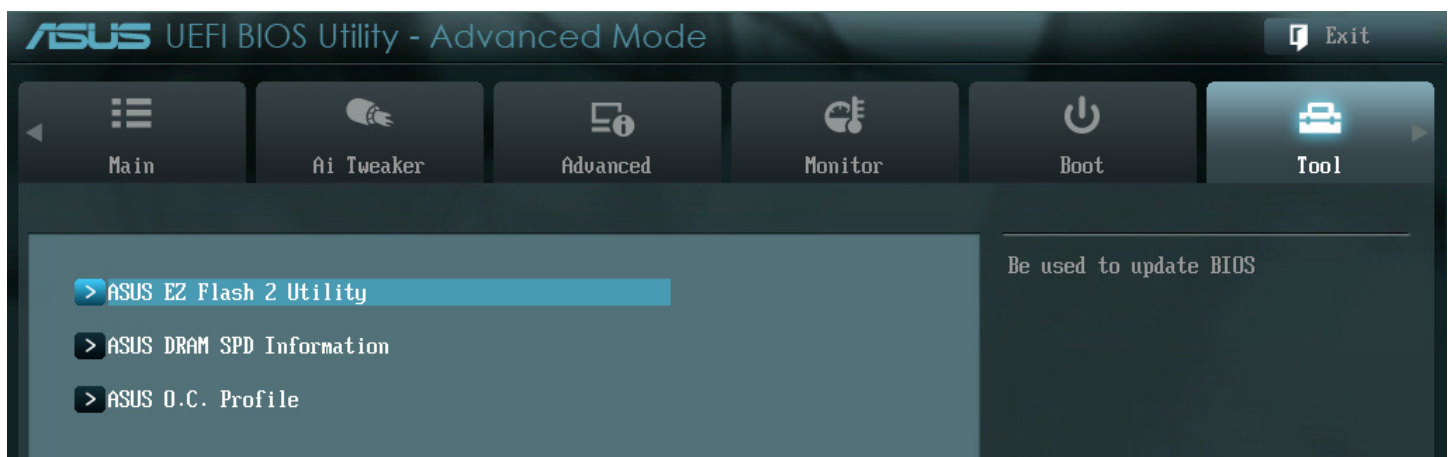
### ASUS EZ Flash 2 Utility

Allows you to run ASUS EZ Flash 2 Utility to update BIOS. When you press <Enter>, a confirmation message appears. Use the left/right arrow key to select between [Yes] or [No], then press <Enter> to confirm your choice.

### ASUS DRAM SPD Information

This menu shows information on the DIMM slots.

OK:            DRAM is working fine.

N/A:           DRAM is not installed.

Abnormal:     DRAM error.



### ASUS O.C. Profile

This item allows you to store or load multiple BIOS settings.

**Label**

Allows you to input the label of setup profile.

**Save to Profile**

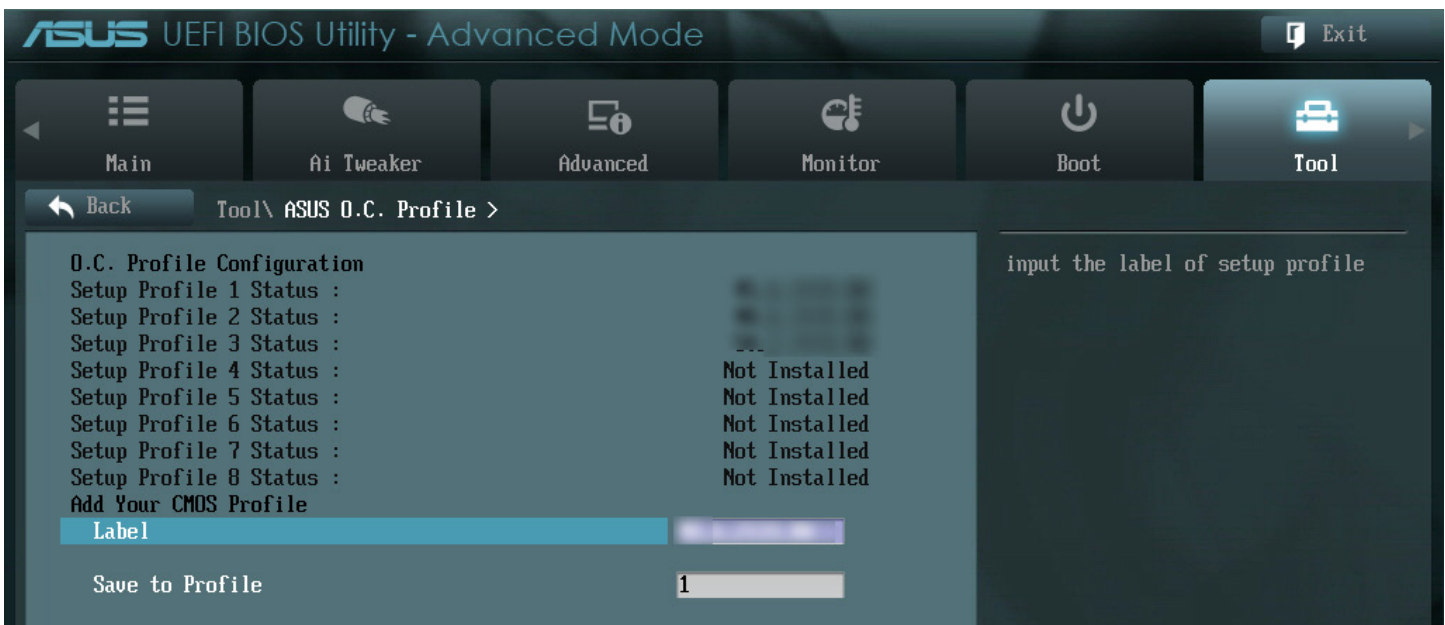Allows you to save the current BIOS settings to the BIOS Flash, and create a profile. Key in a profile number from one to eight, or use <+> and <-> keys to adjust the number. Press <Enter>, and then select Yes.

**Load from Profile**

Allows you to load the previous BIOS settings saved in the BIOS Flash. Key in the profile number that saved your BIOS settings, or use <+> and <-> keys to adjust the number. Press <Enter>, and then select Yes.

˘ DO NOT shut down or reset the system while updating the BIOS to prevent the system boot failure!

˘ We recommend that you update the BIOS file only coming from the same memory/CPU configuration and BIOS version.

## 3.8 Server Mgmt menu

The Server Mgmt menu displays the server management status, and allows you to change the settings.

˘ The Server Mgmt menu appears only when you install ASMB card on the motherboard.
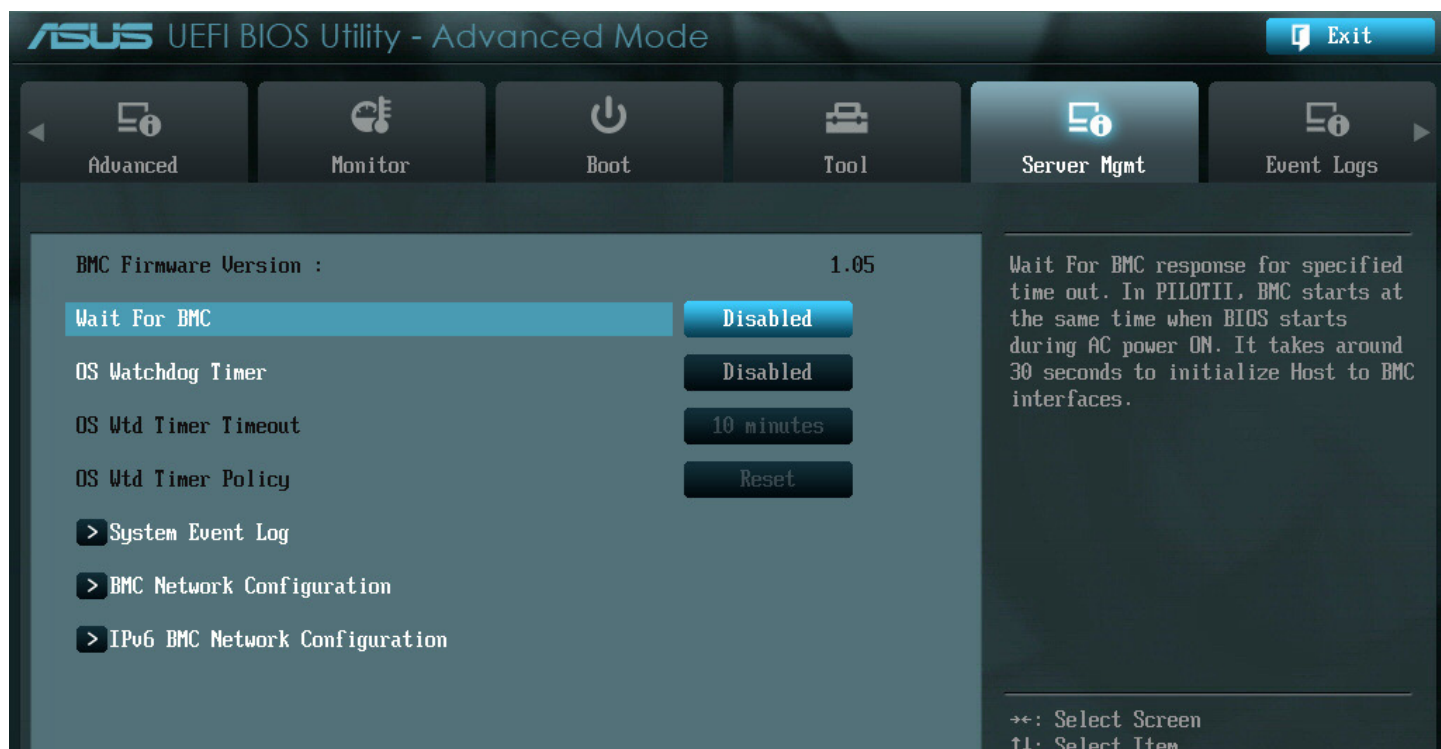


**Wait For BMC [Disabled]**

Wait For BMC response for specified time out. In PILOTII, BMC starts at the same time when BIOS starts during AC power ON. It takes around 30 seconds to initialize Host to BMC interfaces Configuration options: [Enabled] [Disabled]

**O/S Watchdog Timer [Disabled]**

If enabled, starts a BIOS timer which can only be shut off by Intel Management Software after the OS loads. Helps determine that the OS successfully loaded or follows the O/S Boot Watchdog TImer Policy. Configuration options: [Enabled] [Disabled]

## O/S Wtd Timer Timeout [10 minutes]

Allows you to configure the length of the O/S Boot Watchdog Timer. Not available if O/S Boot Watchdog Timer is disabled. Configuration options: [5 minutes] [10 minutes] [15 minutes] [20 minutes]

## O/S Wtd Timer Policy [Reset]

Allows you to configure how the system should respond if the OS Boot Watchdog Timer expires. Not available if O/S Boot Watchdog Timer is disabled. Configuration options: [Do Nothing] [Reset] [Power Down]

### System Event Log
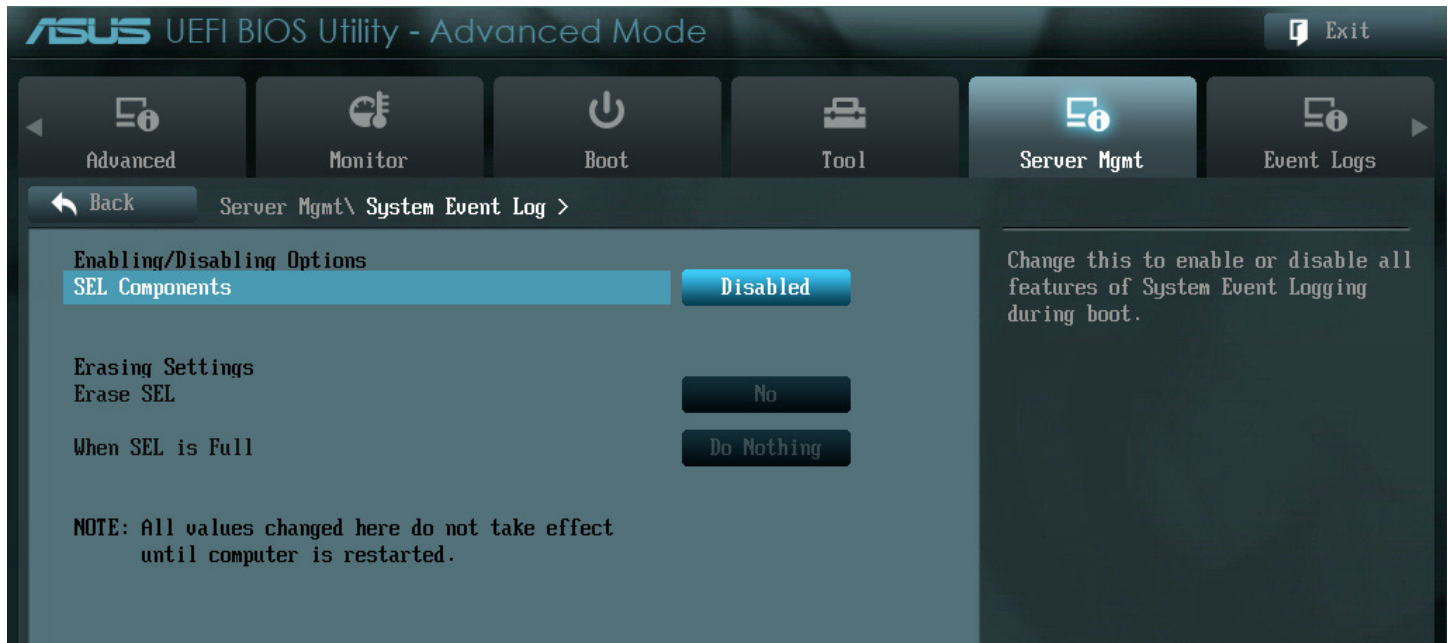


## SEL Components [Disabled]

Allows you to enable or disable all features of system Event Logging during boot.
Configuration options: [Disabled] [Enabled]

> ˘ The following items appears only when you set SEL Components to [Enabled].
>
> ˘ All values changed here do not take effect until computer is restarted.

## Erase SEL [No]

Allows you to choose options for erasing SEL.
Configuration options: [No] [Yes, On next reset] [Yes, On every reset]

## When SEL is Full [Do Nothing]

Allows you to choose options for reactions to a full SEL.
Configuration options: [Do Nothing] [Erase Immediately]

BMC network configuration



**Configuration Address source [Previous State]**

Select to configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.

Configuration options: [Previous State] [Static Mode] [DHCP Mode]

> ˇ The following items appear only when you set Configuration Address source to [Static Mode].

Station IP address [0.0.0.0]

Allows you to key in Station IP address.

Subnet mask [0.0.0.0]

Allows you to key in Subnet mask.

Gateway IP address [0.0.0.0]

Allows you to key in Gateway IP address.

## IPv6 BMC network configuration



### Configuration Address source [Previous State]

Select to configure LAN channel parameters statically or dynamically(by BIOS or BMC).
Configuration options: [Previous State] [Static Mode] [DHCP Mode]

ˇ  The following items appear only when you set Configuration Address source to [Static Mode].

Station IP address [0.0.0.0]

Allows you to key in Station IP address.
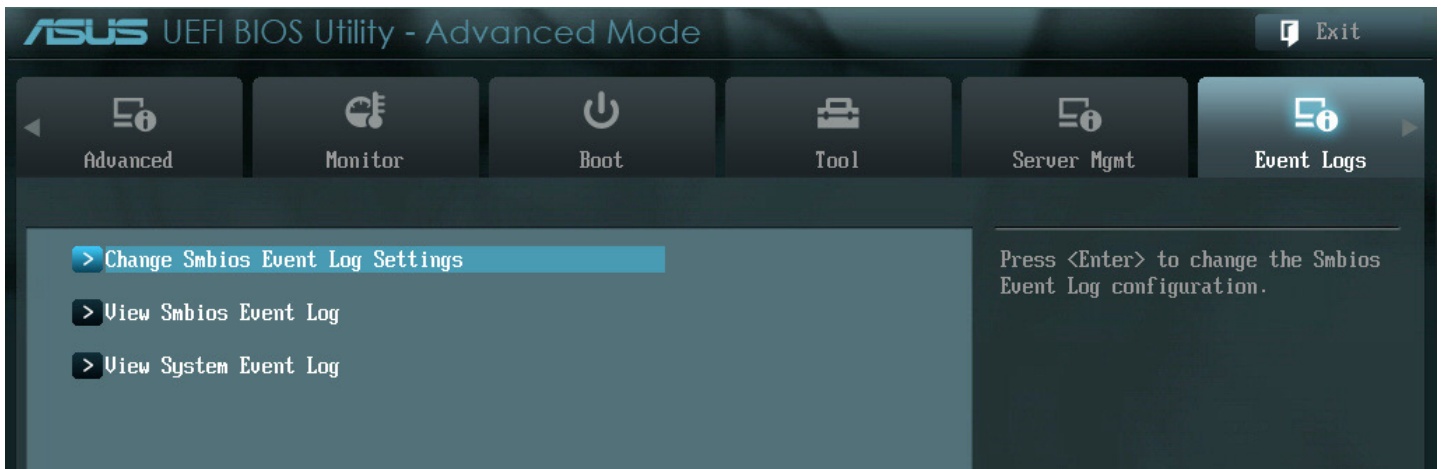
Subnet mask [0.0.0.0]

Allows you to key in Subnet mask.

Gateway IP address [0.0.0.0]

Allows you to key in Gateway IP address.

## 3.9 Event Logs menu

The Event Logs allows you to change or view the event log settings.



### Change Smbios Event Log Settings

Press <Enter> to change the Smbios Event Log configuration.

### Enabling/Disabling Options
### Smbios Event Log [Enabled]

Change this to enable or disable all features of Smbios Event Logging during boot.
Configuration options: [Disabled] [Enabled]

### Erasing Settings
### Erase Event Log [No]

Choose the options for erasing Smbios Event Log. Erasing is done prior to any logging activation during reset.
Configuration options: [No] [Yes, Next reset] [Yes, Every reset]

### When Log is Full [Do Nothing]

Allows you to choose the options for reactions to a full Smbios Event Log.
Configuration options: [Do Nothing] [Erase Immediately]

### Smbios Event Log Standard Settings
### Log System Boot Event [Disabled]

Allows you to choose the options to enable/disable logging of System boot event.
Configuration options: [Enabled] [Disabled]

### MECI [1]

Mutiple Event Count Increment (MECI). The number of occurrences of a duplicate event that must pass before the multiple-event counter associated with the log entry is updated, specified as a numeric value ranging from 1 to 33.

### METW [60]

Mutiple Event Time Windows (METW). The number of minutes that must pass between duplicate log entries that utilize a multiple-event counter. The value ranges from 0 to 99 minutes.

### Custom Option
### Log OEM Codes [Enabled]

Enables or disables the logging of EFI Status Codes as OEM Codes (if not already converted to legacy).
Configuration options: [Disabled] [Enabled]

### Convert OEM Codes [Disabled]

Enables or disables the converting of EFI Status Codes to Standard Smbios Types (Not all may be translated).
Configuration options: [Disabled] [Enabled]

### View Smbios Event Log

Press <Enter> to view all smbios event logs.

### View System Event Log

Press <Enter> to view all system event logs.

## 3.10 Exit menu

The Exit menu items allow you to load the optimal default values for the BIOS items, and save or discard your changes to the BIOS items. You can access the EZ Mode from the Exit menu.
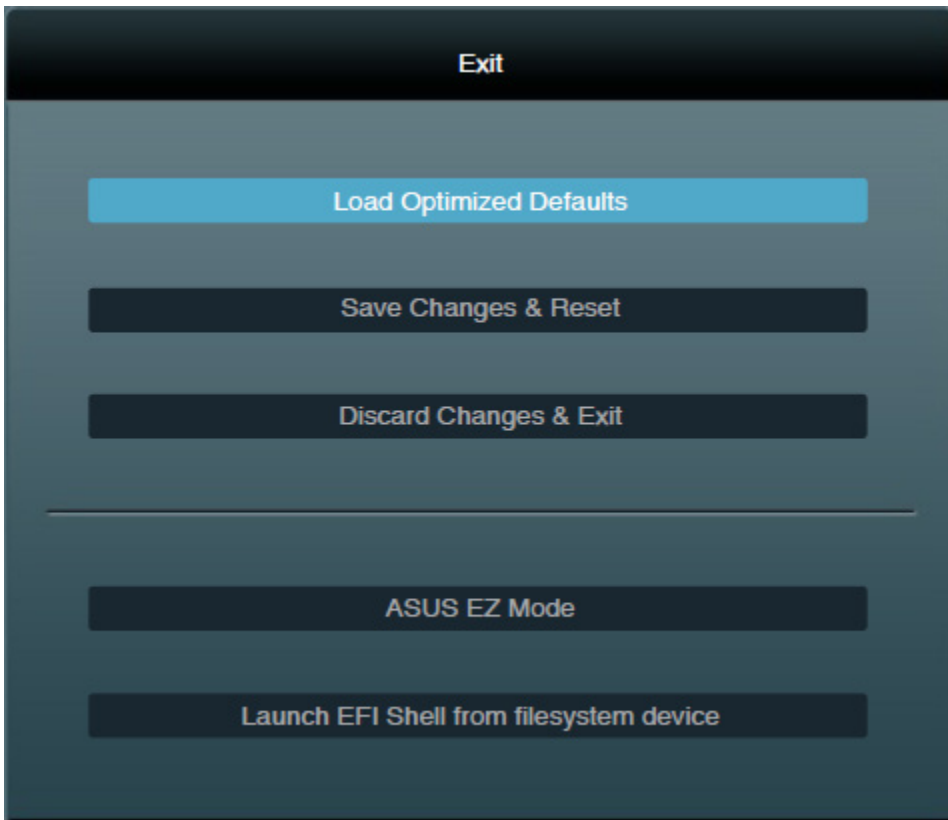


### Load Optimized Defaults

This option allows you to load the default values for each of the parameters on the Setup menus. When you select this option or if you press <F5>, a confirmation window appears. Select Yes to load the default values.

### Save Changes & Reset

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved. When you select this option or if you press <F10>, a confirmation window appears. Select Yes to save changes and exit.

### Discard Changes & Exit

This option allows you to exit the Setup program without saving your changes. When you select this option or if you press <Esc>, a confirmation window appears. Select Yes to discard changes and exit.

### ASUS EZ Mode

This option allows you to enter the EZ Mode screen.

### Launch EFI Shell from filesystem device

This option allows you to attempt to launch the EFI Shell application (shellx64.efi) from one of the available file system devices.

## 3.11 Updating BIOS

The CIARA technologies DMS website publishes the latest BIOS versions to provide enhancements on system stability, compatibility, or performance. However, BIOS updating is potentially risky. If there is no problem using the current version of BIOS, DO NOT manually update the BIOS. Inappropriate BIOS updating may result in the system's failure to boot. Carefully follow the instructions of this chapter to update your BIOS if necessary.

˘ Visit the CIARA technologies website (www.ciaratech.com/myciara) to download the latest BIOS ROM file for this motherboard.

The following utilities allow you to manage and update the motherboard BIOS setup program.

1. ASUS EZ Flash 2: Updates the BIOS using a USB flash drive.

2. ASUS CrashFree BIOS 3: Restores the BIOS using the motherboard support DVD or a USB flash drive when the BIOS file fails or gets corrupted.

3. ASUS BIOS Updater: Updates and backups the BIOS in DOS environment using the motherboard support DVD and a USB flash disk drive.

Refer to the corresponding sections for details on these utilities.

˘ Save a copy of the original motherboard BIOS file to a USB flash disk in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update or BIOS Updater utilities.

BIOS Update

**To update the BIOS:**

1. Insert a FAT formatted USB key containing the BIOS from your specific machine (for more information visit www.ciaratech/support-home-en.html.com ) in the ORION HF210

2. While the system booting, hit "del". The following screen will appear. Hit "ESC" to access the BIOS.

3. Once in the BIOS, the Main tab will be displayed.



4. Using the arrow key on your keyboard, navigate to the tab "Tool". Select "ASUS EZ Flash 2 Utility" and hit "Enter".
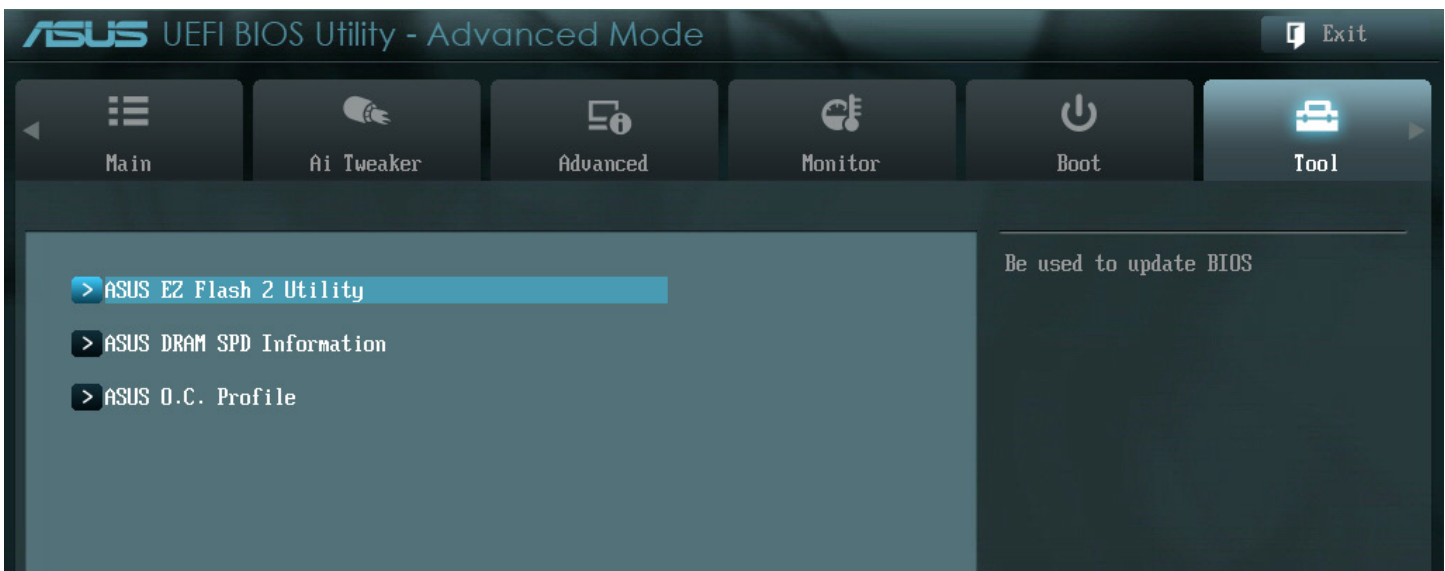
5. Select the BIOS that want to update and hit enter.



6. A popup will open asking if you want to read this file. Select Ok.
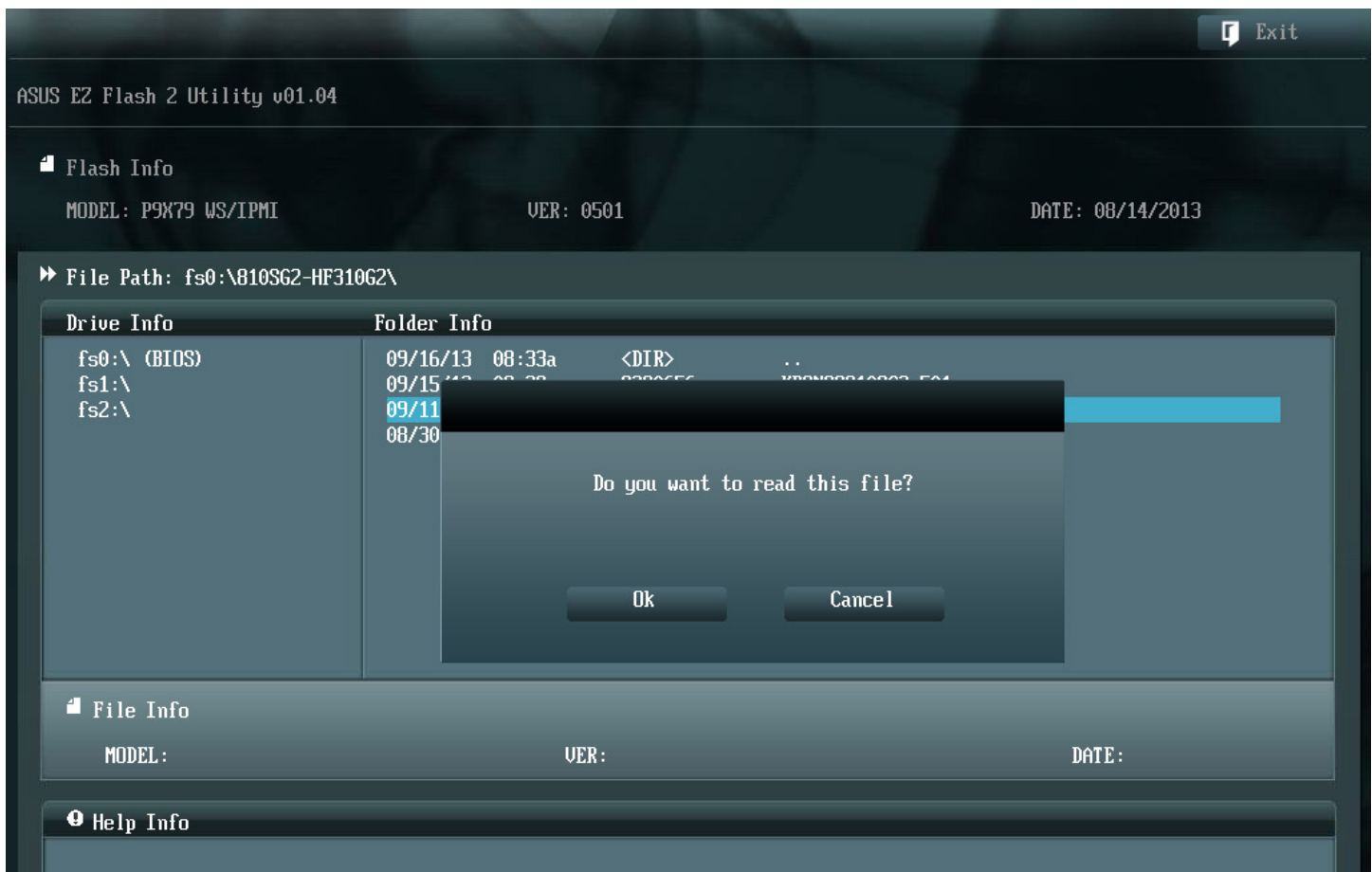
7.  After few seconds, the message will change to "Do you really want to update BIOS?". Select OK.



ASUS EZ Flash 2 Utility v01.04

**Flash Info**

MODEL: P9X79 WS/IPMI          VER: 0501          DATE: 08/14/2013

File Path: fs0:\810SG2-HF310G2\

Drive Info          Folder Info

fs0:\ (BIOS)        09/16/13  08:33a      <DIR>          ..
fs1:\              09/15
fs2:\              09/11
                   08/30

Do you really want to update BIOS?

Ok          Cancel

**File Info**

MODEL: P9X79 WS/IPMI          VER: 0501          DATE: 08/14/2013

8.  Once the BIOS updated, a confirmation message will pop up. Hit "Enter" to reboot the system.



ASUS EZ Flash 2 Utility v01.04

**Flash Info**

MODEL: P9X79 WS/IPMI          VER: 0501          DATE: 08/14/2013

File Path: fs0:\810SG2-HF310G2\

Drive Info          Folder Info

fs0:\ (BIOS)        09/16/13  08:33a      <DIR>          ..
fs1:\              09/15
fs2:\              09/11
                   08/30

Update successfully! System will be reset!

Ok

**File Info**

MODEL: P9X79 WS/IPMI          VER: 0501          DATE: 08/14/2013

**Help Info**

Processing...
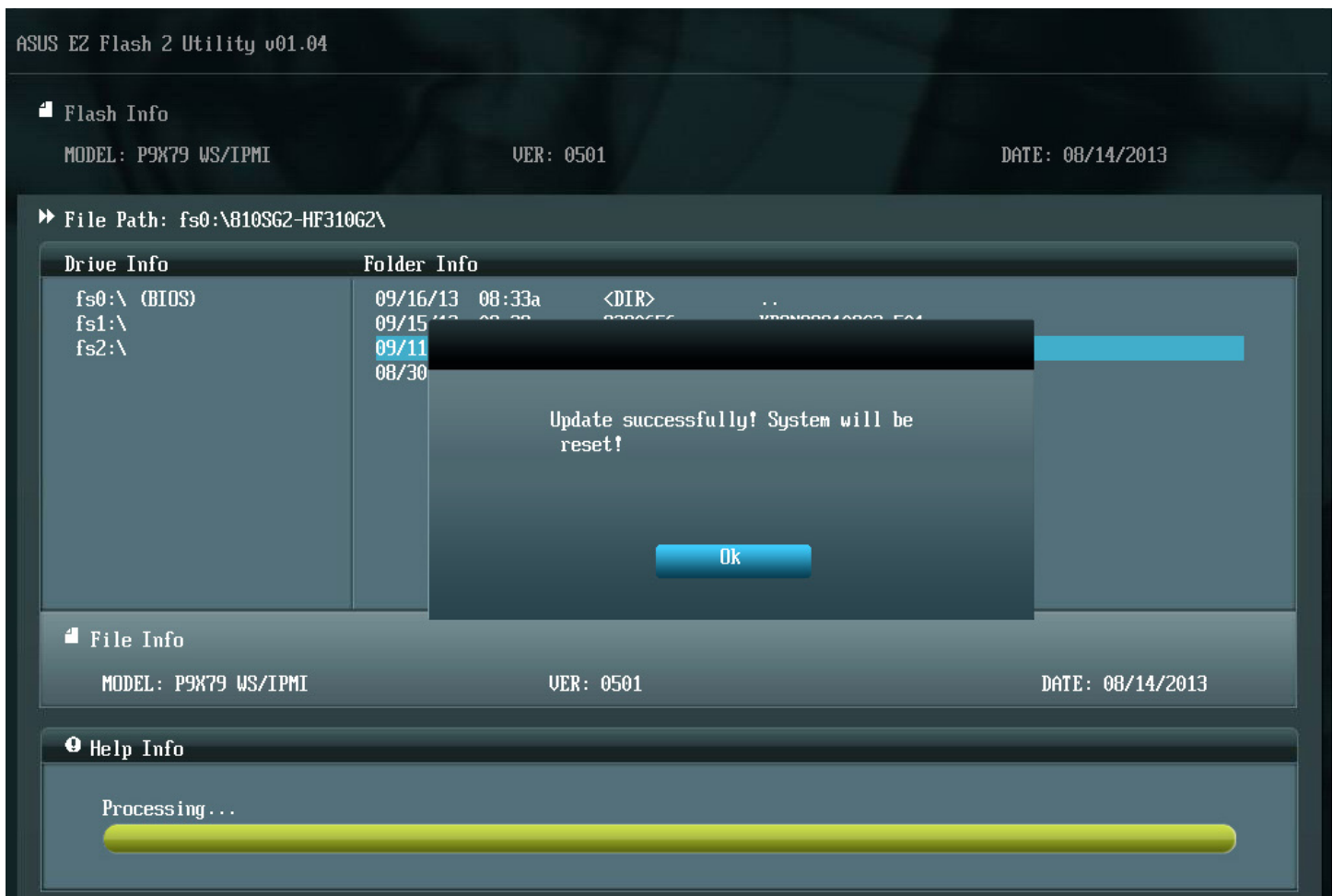
9.  At reboot, the system will stop during POST. Press F1 to go run BIOS.



```
AMIBIOS(C)2012 American Megatrends, Inc.

ASUS P9X79 WS/IPMI ACPI BIOS Revision 0501
CPU: Intel(R) Core(TM) i7-3960X CPU @ 3.30GHz
 Speed: 3300MHz

Total Memory: 65536MB (DDR3-1333)

USB Devices total: 3 Drives, 3 Keyboards, 2 Mice, 3 Hubs
USB Drive #0: KingstonDataTraveler G3
USB Drive #1: AMI Virtual CDROM0
USB Drive #2: AMI Virtual Floppy0

Detected ATA/ATAPI Devices...
SATA Port1: Samsung SSD 840 PRO Seri
SATA Port2: Samsung SSD 840 PRO Seri



Please enter setup to recover BIOS setting.
Press F1 to Run SETUP
```

10. The BIOS will load with the default settings. Press F7 to load the advanced Mode and load the profiles.

### Load profiles from a USB key.

Insert a FAT formatted USB key containing the Profiles in the unit you want to update.

1. While the system booting, hit "del". The following screen will appear. Hit "ESC" to access the BIOS.



2. Once in the BIOS, the Main tab will be displayed.

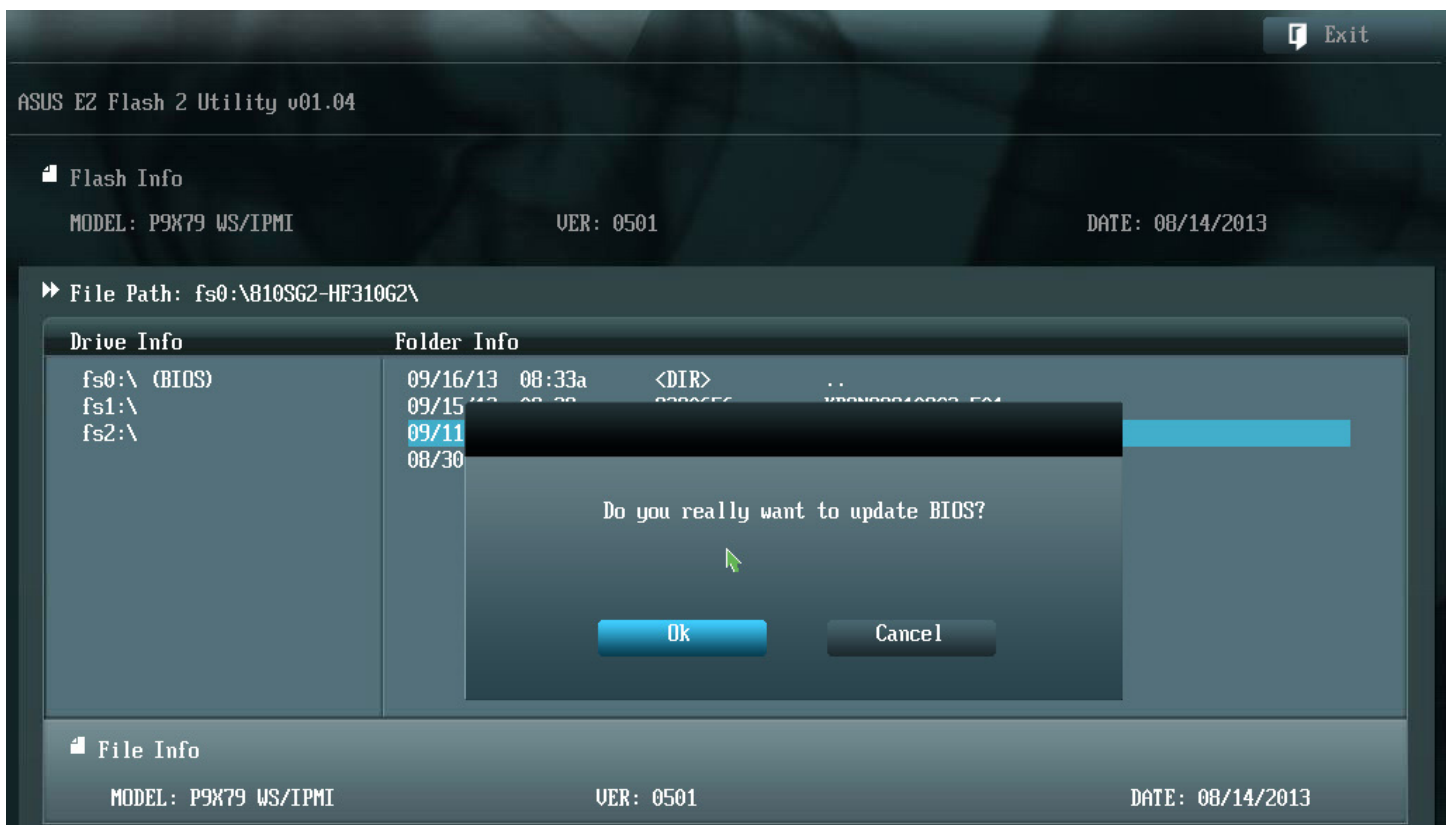3. Using the arrow key on your keyboard, navigate to the tab "Tool". Select ASUS O.C Profile and hit "Enter".

UEFI BIOS Utility - Advanced Mode

| Main | Ai Tweaker | Advanced | Monitor | Boot | Tool |

Be used to update BIOS

> ASUS EZ Flash 2 Utility

> ASUS DRAM SPD Information

> ASUS O.C. Profile

4. Select Load/Save CMOS Profile From/to USB drive and hit "Enter"
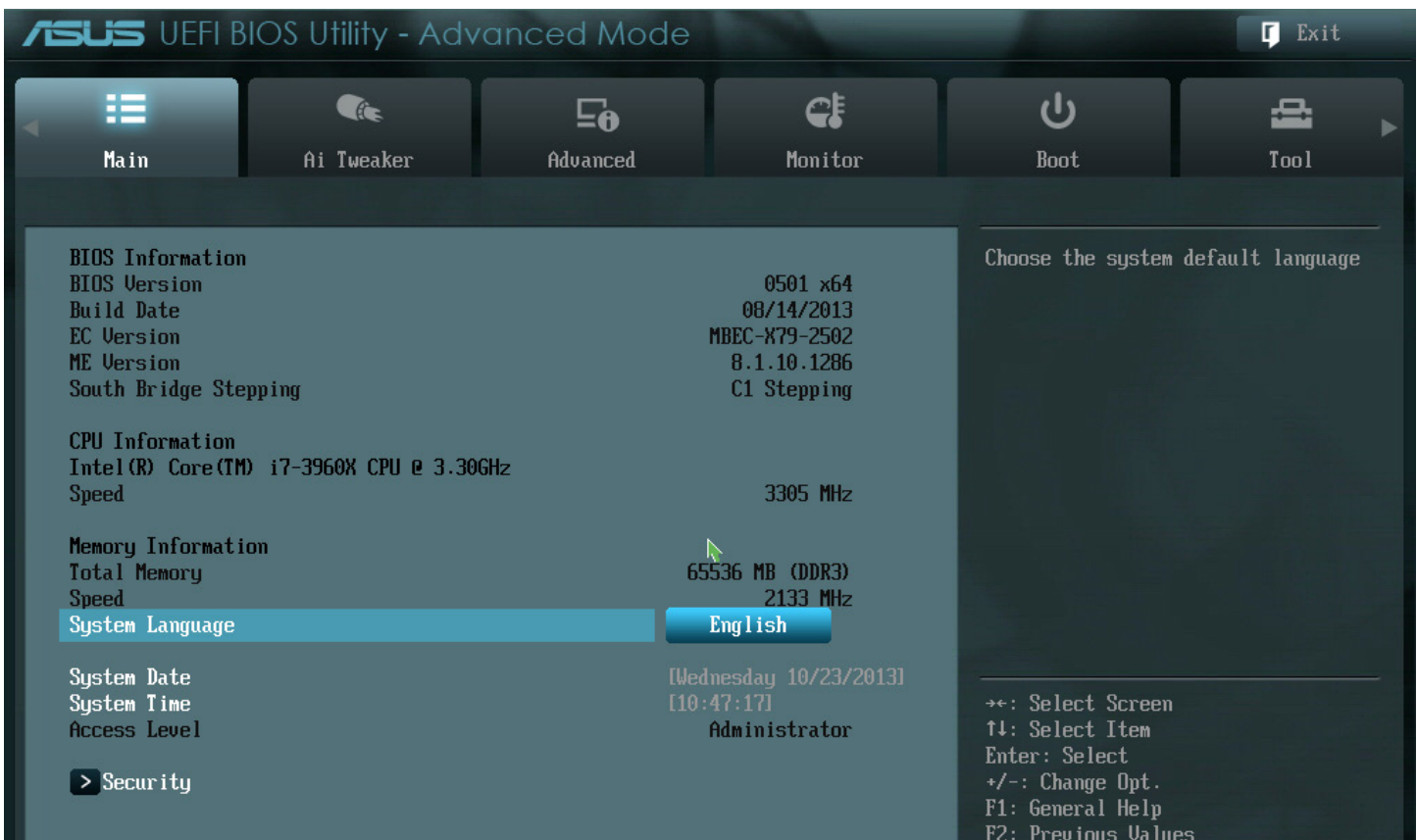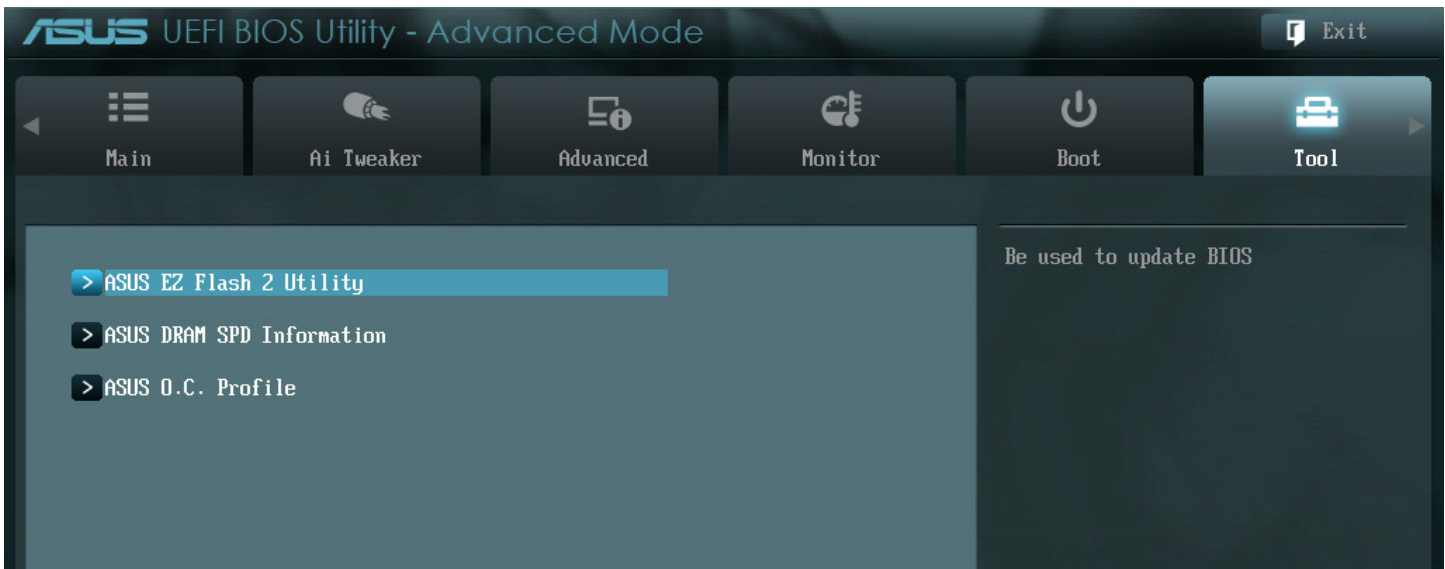
UEFI BIOS Utility - Advanced Mode

| Main | Ai Tweaker | Advanced | Monitor | Boot | Tool |

Back        Tool\ ASUS O.C. Profile >

O.C. Profile Configuration
Setup Profile 1 Status :                    Not Installed
Setup Profile 2 Status :                    Not Installed
Setup Profile 3 Status :                    Not Installed
Setup Profile 4 Status :                    Not Installed
Setup Profile 5 Status :                    Not Installed
Setup Profile 6 Status :                    Not Installed
Setup Profile 7 Status :                    Not Installed
Setup Profile 8 Status :                    Not Installed
Add Your CMOS Profile
   Label

   Save to Profile                          1

Load CMOS Profile
   Load from Profile                        1

> Load/Save CMOS Profile From/to USB drive.

Load/Save CMOS Profile From/to USB drive.

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help

5.  Select the first Profile that you want to load and hit enter.



6.  No message will be displayed. Hit "ESC" to leave the OC Profile Utility. Then select "Ok" to confirm.

7. In the Save to Profile field, enter the number that you want the Label to be saved to and hit enter.
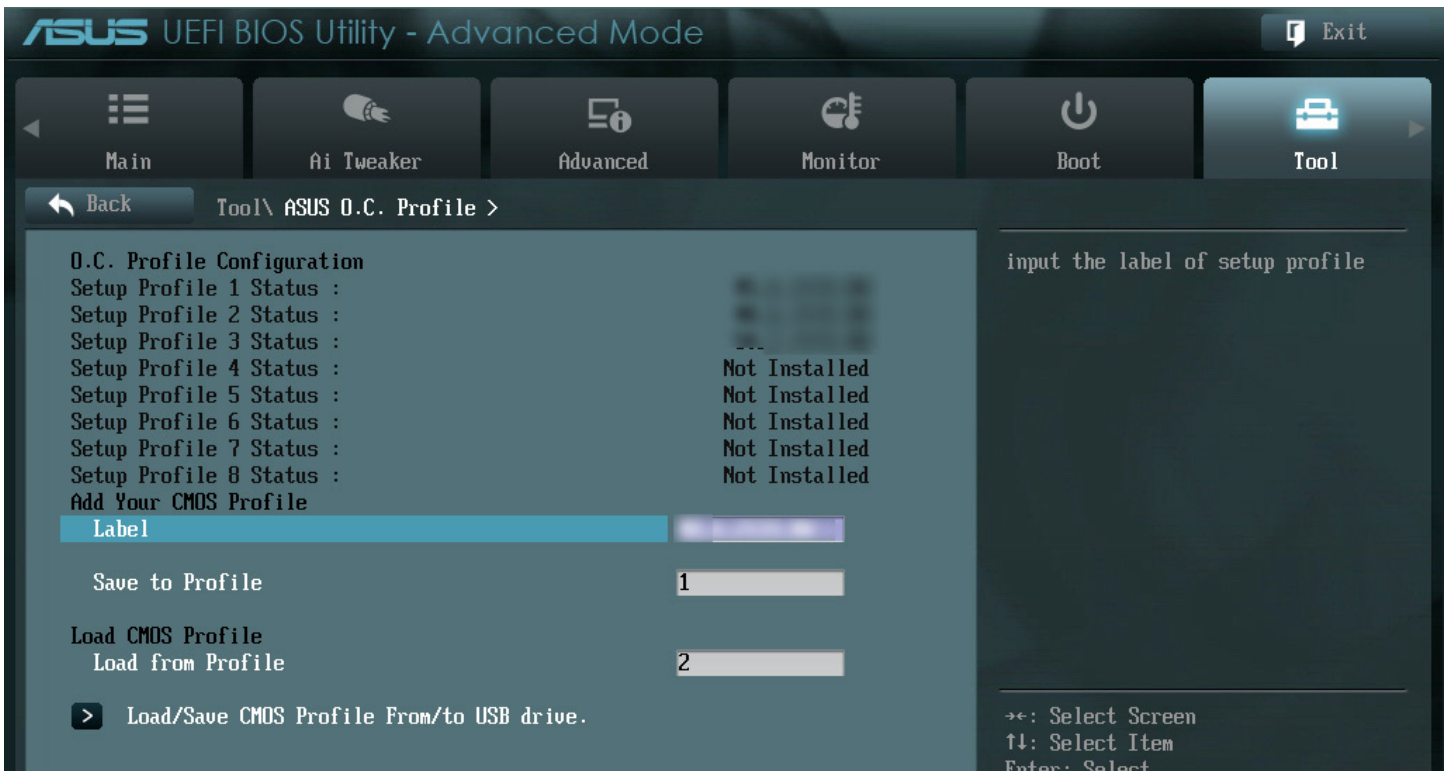


8. A confirmation pop up will appear. Select Yes.
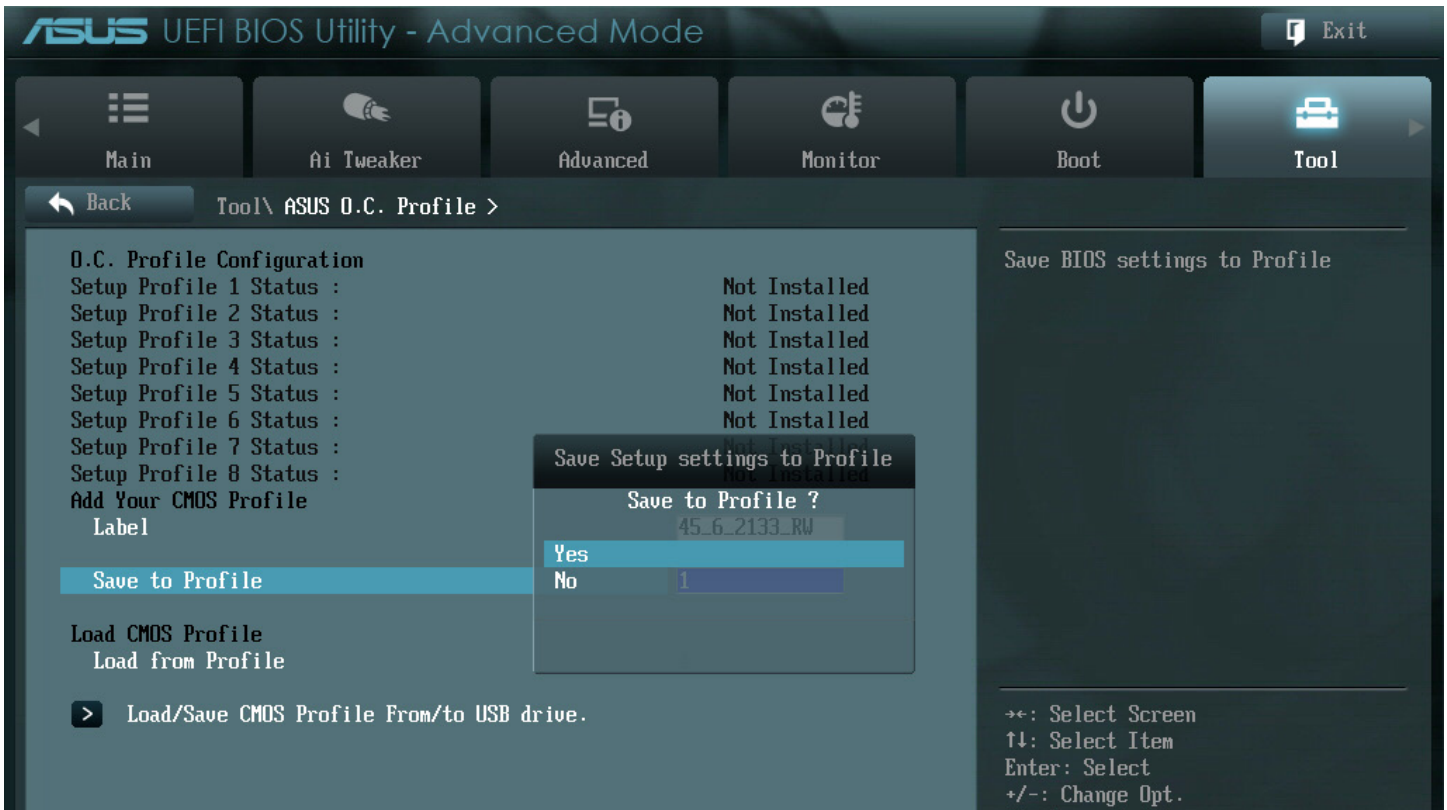


9. Repeat steps 4 to 8 to add more profiles.

**Load profiles.**

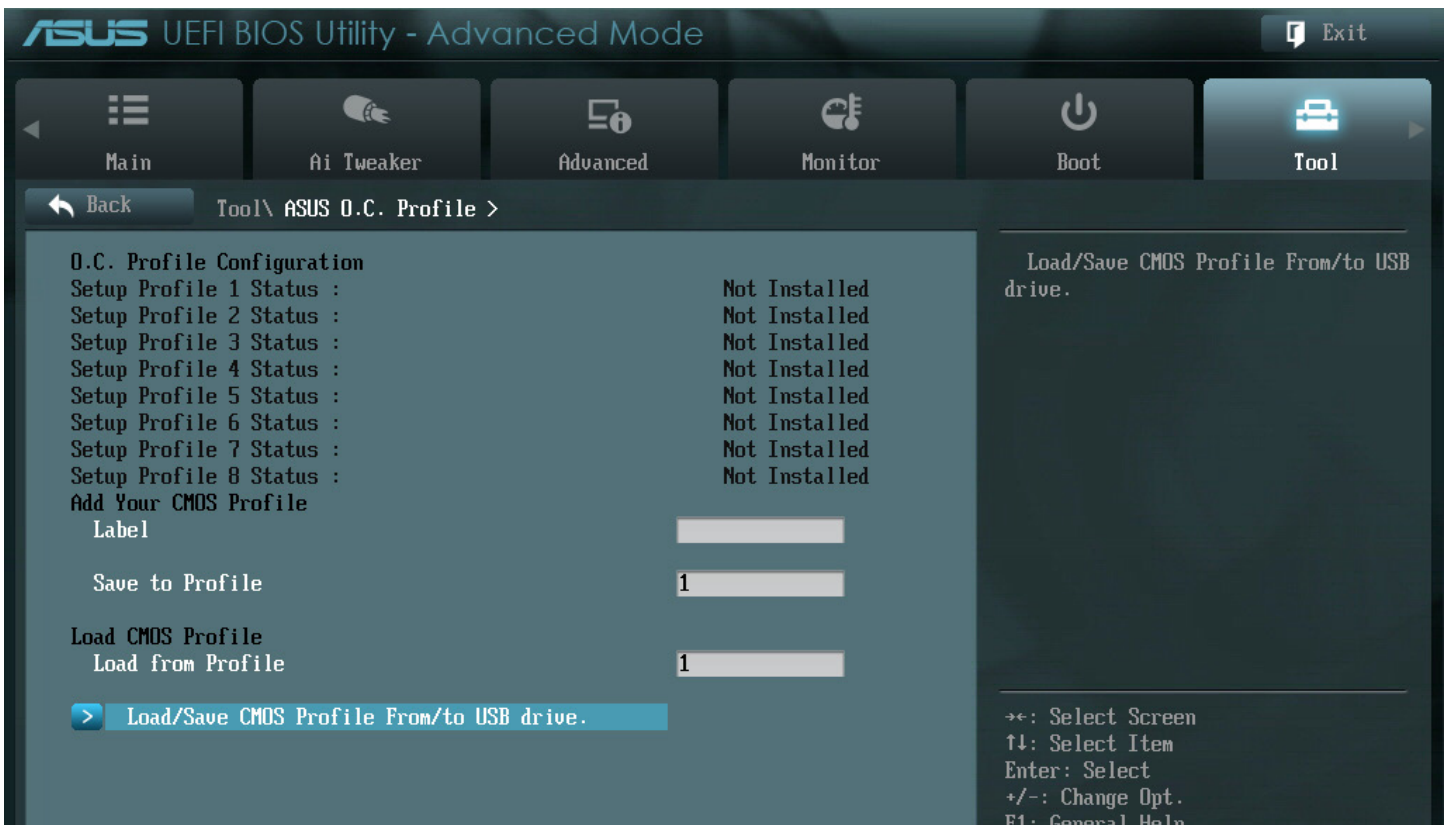1.  While the system booting, hit "del". The following screen will appear. Hit "ESC" to access the BIOS.



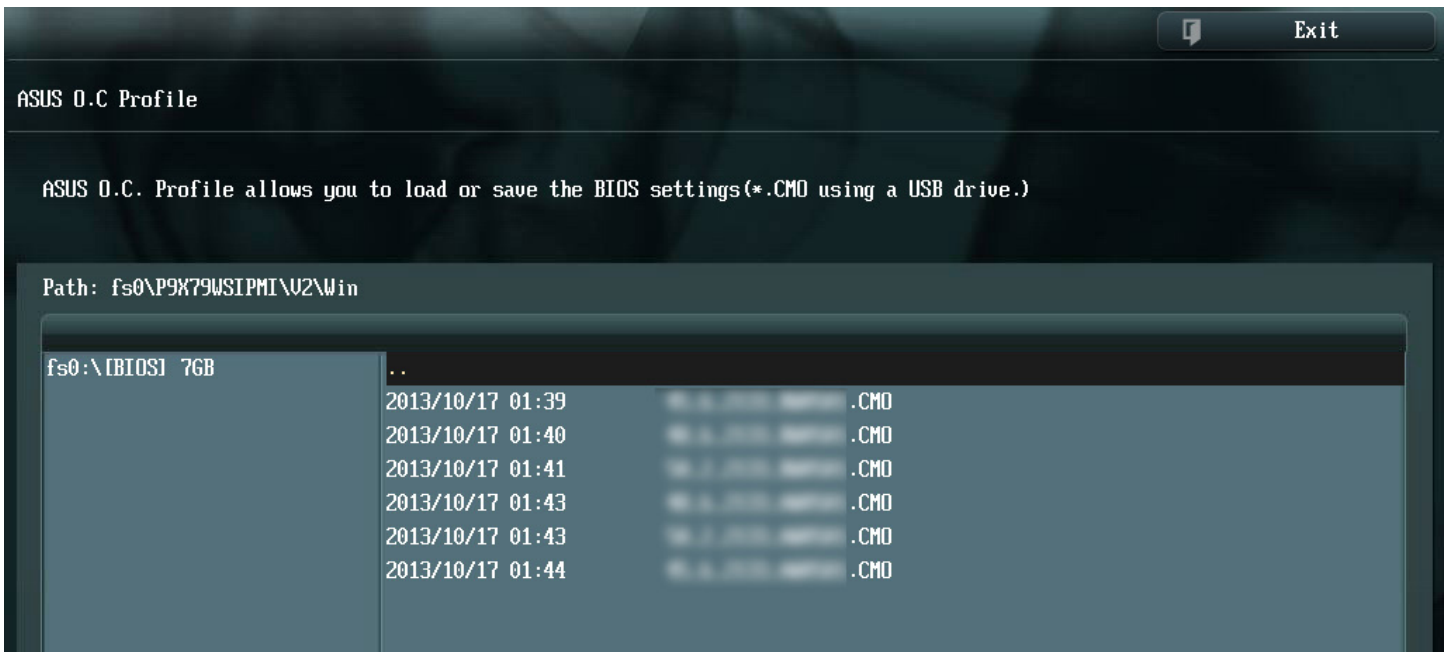2.  Once in the BIOS, the Main tab will be displayed.

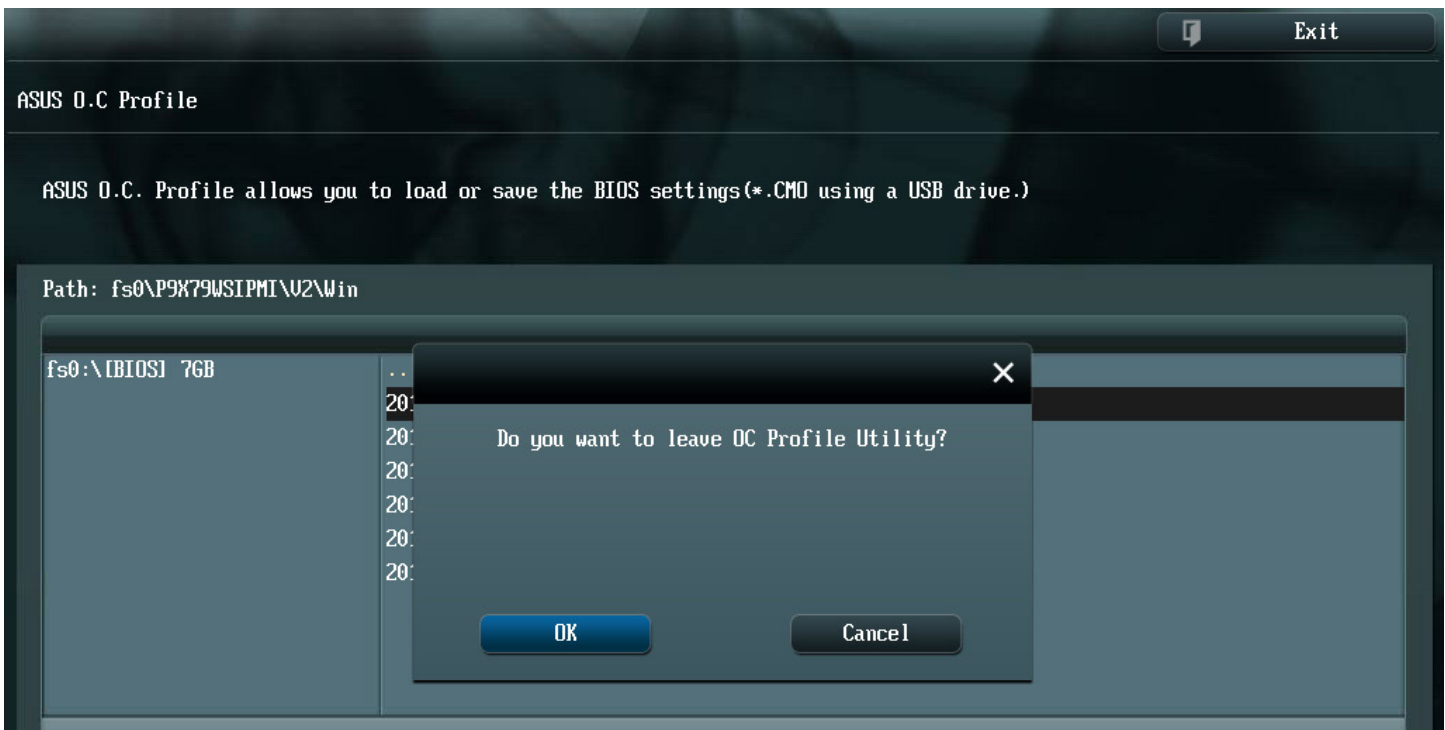3. Using the arrow key on your keyboard, navigate to the tab "Tool". Select ASUS O.C Profile and hit "Enter".
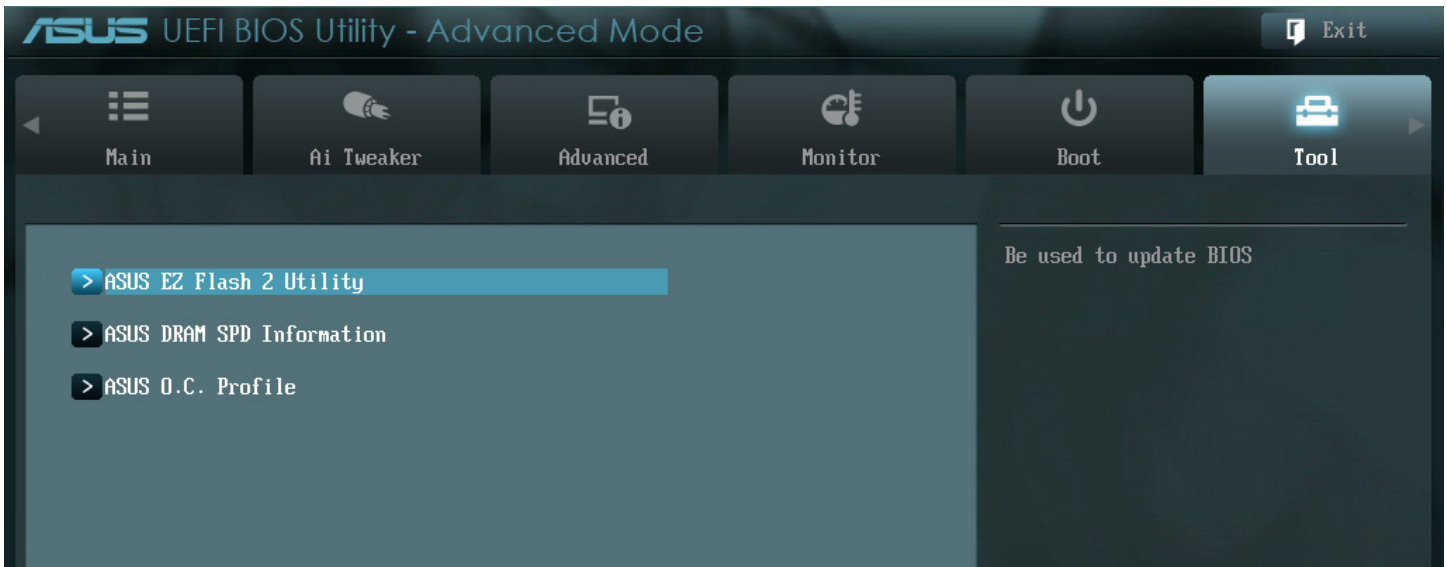


4. In the Load from Profile tab, select the number of the Profile to load and hit "Enter".

5. A confirmation message will open. Select yes.



6. Hit F10 (Save and Exit). Select yes. System will reboot.

## ASUS EZ Flash 2 utility

The ASUS EZ Flash 2 feature allows you to update the BIOS without having to use a bootable floppy disk or an OS-based utility.

˅   Before you start using this utility, download the latest BIOS from the ASUS website at www.asus.com.

**To update the BIOS using EZ Flash 2:**

1. Insert the USB flash disk that contains the latest BIOS file to the USB port.

2. Enter the Advanced Mode of the BIOS setup program. Go to the Tool menu to select ASUS EZ Flash

```
                                                                    🗗 Exit

ASUS EZ Flash 2 Utility v01.04

  ▪ Flash Info

    MODEL: P9X79 WS/IPMI              VER: 0204            DATE: 07/05/2013

  ▶▶ File Path:

    Drive Info            Folder Info

     fs0:\ (Sony_16GP)     05/08/13  11:17a   <DIR>        Helen
                           06/10/13  12:12p   <DIR>        RS740-E7-RS24-EG
                           06/10/13  12:22p   <DIR>        RS720-E7-RS24 Series Manual
                           06/10/13  04:24p   <DIR>        .Trashes
                           06/27/13  05:18p   <DIR>        Links
                           06/27/13  05:05p   <DIR>        Vess in Word
                           06/19/13  09:59p   <DIR>        Vess R2000 User Manual Folder
                           06/28/13  11:12a   <DIR>        DS300 G2
                           07/01/13  10:17a   <DIR>        DS300 G2_7_1
                           07/08/13  10:04a   8390656      P9X79-WS-IPMI-ASUS-0204.CAP

  ▪ File Info

    MODEL:                            VER:                 DATE:

  ❶ Help Info

        [Enter] Select or Load   [Tab] Switch   [Up/Down/PageUp/PageDown/Home/End] Move   [Esc] Exit
```
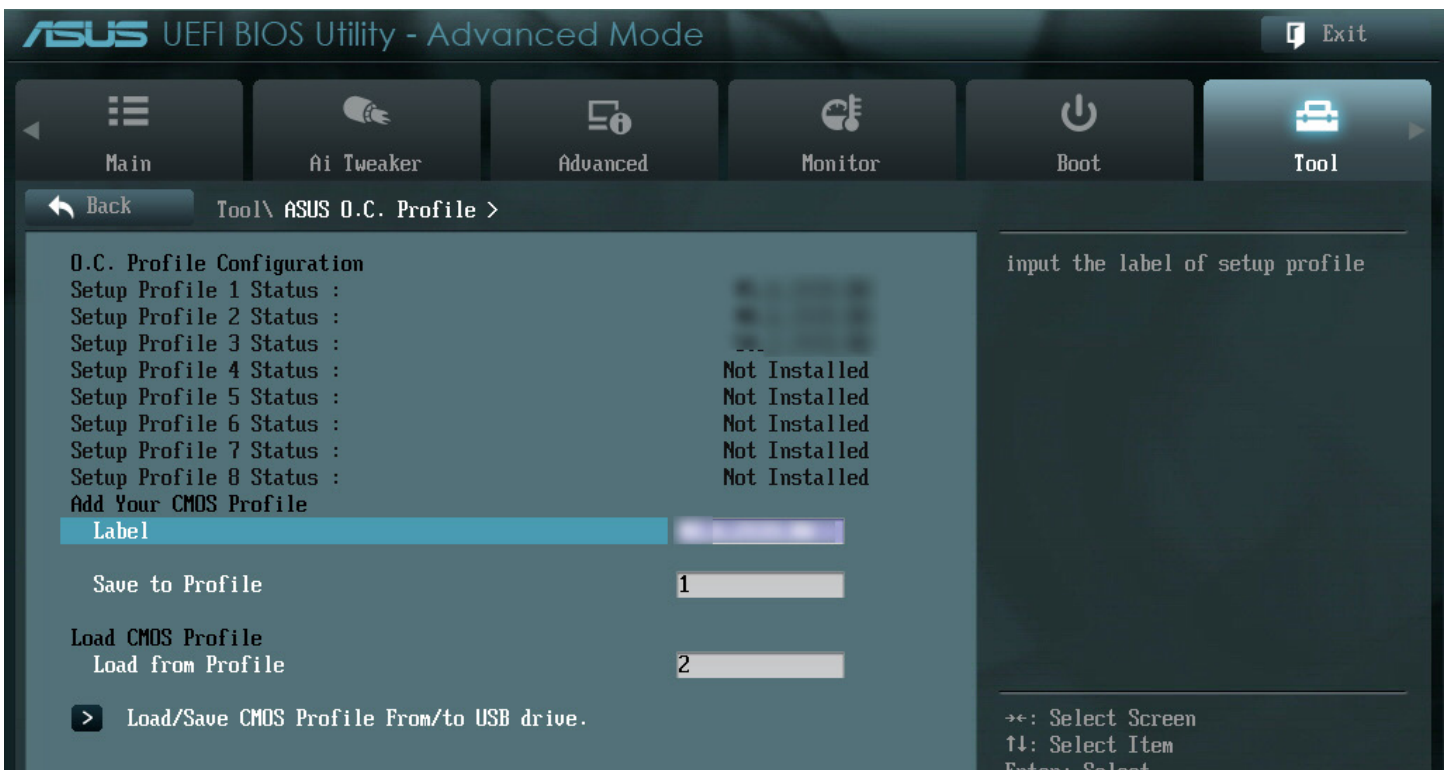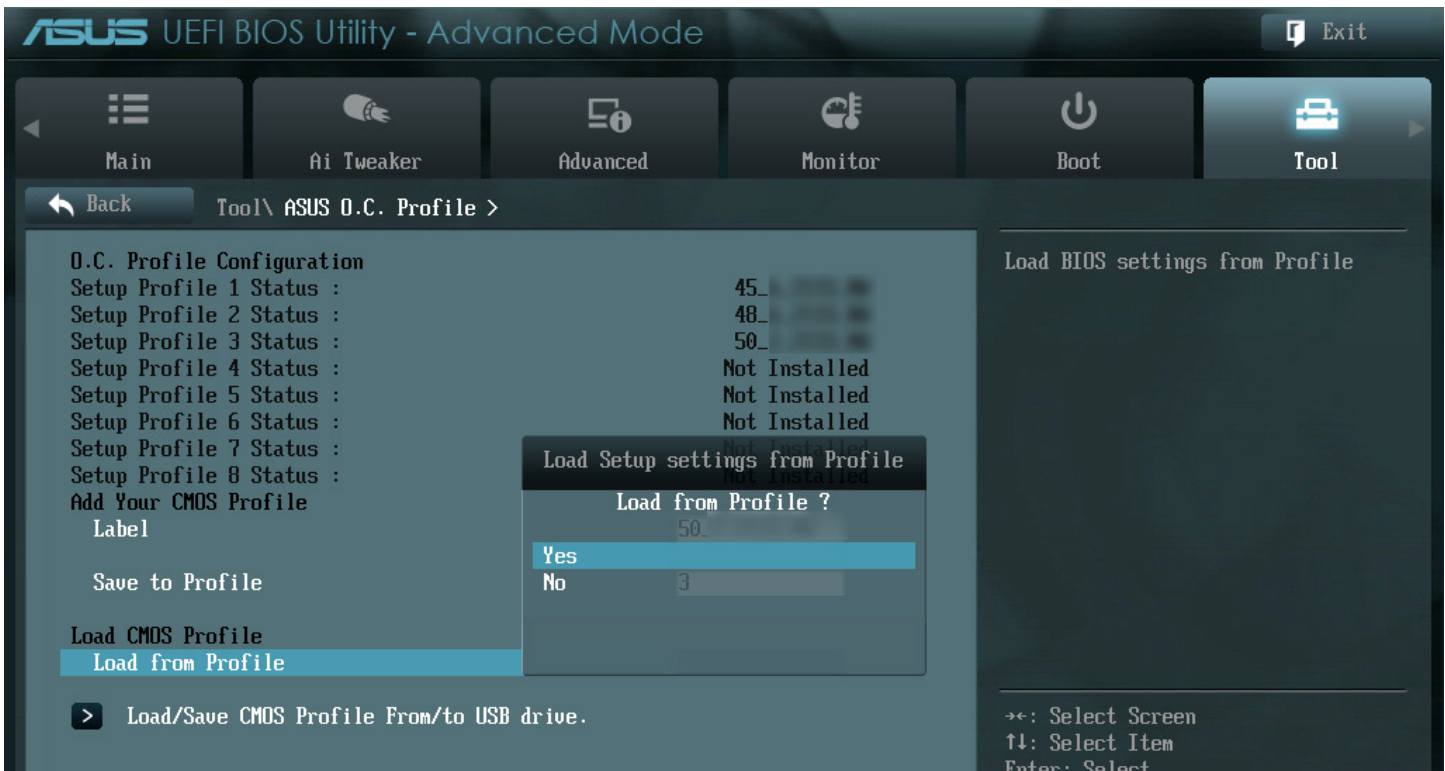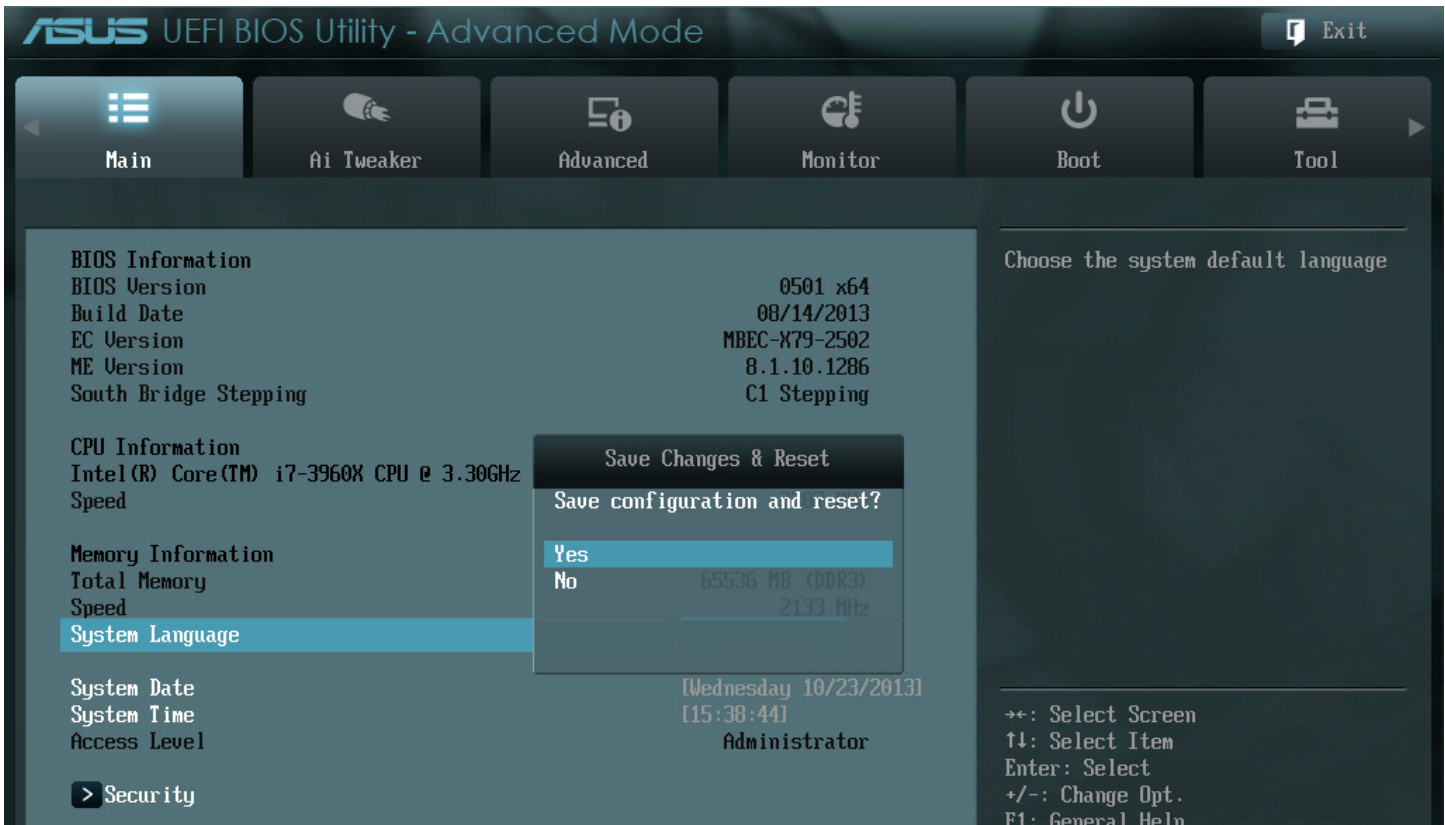
Utility and press <Enter> to enable it.

3. Press <Tab> to switch to the Drive field.

4. Press the Up/Down arrow keys to find the USB flash disk that contains the latest BIOS, and then press <Enter>.

5. Press <Tab> to switch to the Folder Info field.

6. Press the Up/Down arrow keys to find the BIOS file, and then press <Enter> to perform the BIOS update process. Reboot the system when the update process is done.

˘ This function can support devices such as a USB flash disk with FAT 32/16 format and single partition only.

˘ DO NOT shut down or reset the system while updating the BIOS to prevent system boot failure!

˘ Ensure to load the BIOS default settings to ensure system compatibility and stability. Select the Load Optimized Defaults item under the Exit menu. See section 3.8 Exit Menu for details.

## ASUS CrashFree BIOS 3 utility

The ASUS CrashFree BIOS 3 utility is an auto recovery tool that allows you to restore the BIOS file when it fails or gets corrupted during the updating process. You can restore a corrupted BIOS file using the motherboard support DVD or a USB flash drive that contains the BIOS file.

### Recovering the BIOS

To recover the BIOS:

1. Turn on the system.

2. Insert the motherboard support DVD to the optical drive, or the USB flash drive containing the BIOS file to the USB port.

3. The utility automatically checks the devices for the BIOS file. When found, the utility reads the BIOS file and enters ASUS EZ Flash 2 utility automatically.

4. The system requires you to enter BIOS Setup to recover BIOS setting. To ensure system compatibility and stability, we recommend that you press <F5> to load default BIOS values.

**DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!.**
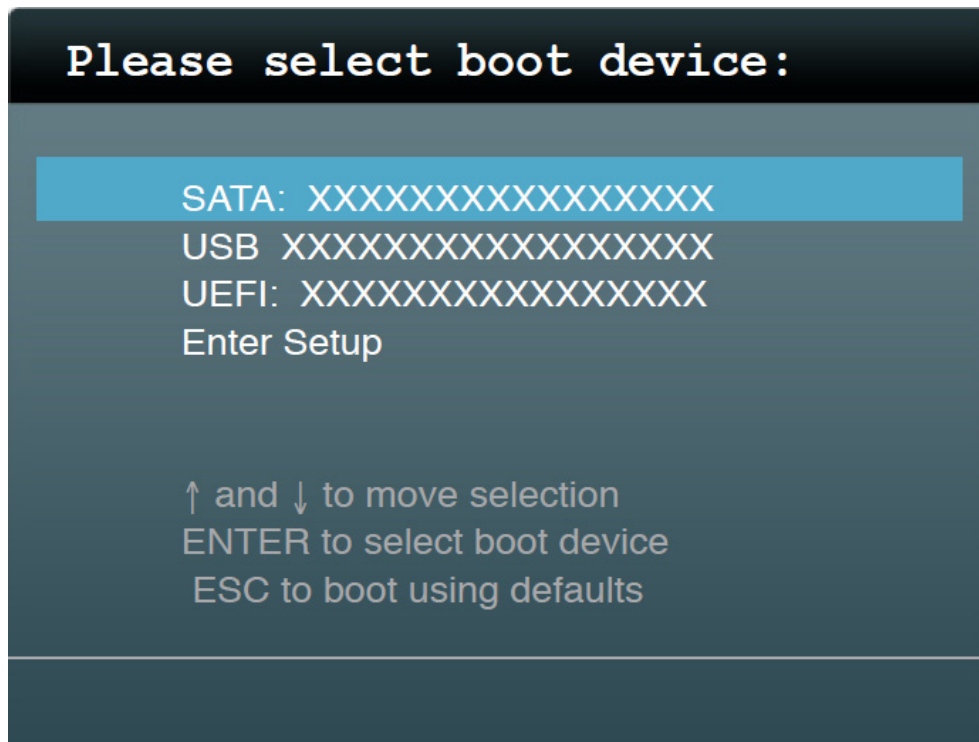
## ASUS BIOS Updater

The ASUS BIOS Updater allows you to update the BIOS in DOS environment. This utility also allows you to copy the current BIOS file that you can use as a backup when the BIOS fails or gets corrupted during the updating process.

˅　The succeeding utility screens are for reference only. The actual utility screen displays may not be same as shown.

### Before updating BIOS

1. Prepare the motherboard support DVD and a USB flash drive in FAT32/16 format and single partition.

2. Download the latest BIOS file and BIOS Updater from the ASUS website at http://support.asus.com and save them on the USB flash drive.

```
Please select boot device:

    SATA:  XXXXXXXXXXXXXXXX
    USB  XXXXXXXXXXXXXXXX
    UEFI:  XXXXXXXXXXXXXXX
    Enter Setup


    ↑ and ↓ to move selection
    ENTER to select boot device
     ESC to boot using defaults
```

˅　NTFS is not supported under DOS environment. Do not save the BIOS file and BIOS Updater to a hard disk drive or USB flash drive in NTFS format.

˅　Do not save the BIOS file to a floppy disk due to low disk capacity.

3. Turn off the computer and disconnect all SATA hard disk drives (optional).

### Booting the system in DOS environment

1. Insert the USB flash drive with the latest BIOS file and BIOS Updater to the USB port.

2. Boot your computer. When the ASUS Logo appears, press <F8> to show the BIOS Boot Device Select Menu. Insert the support DVD into the optical drive and select the optical drive as the boot device.

3. When the Make Disk menu appears, select the FreeDOS command prompt item by pressing the item number.

4. At the FreeDOS prompt, type d: and press <Enter> to switch the disk from Drive C (optical drive) to Drive D (USB flash drive).

```
Welcome to FreeDOS (http://www.freedos.org)!
C:\>d:
D:\>
```
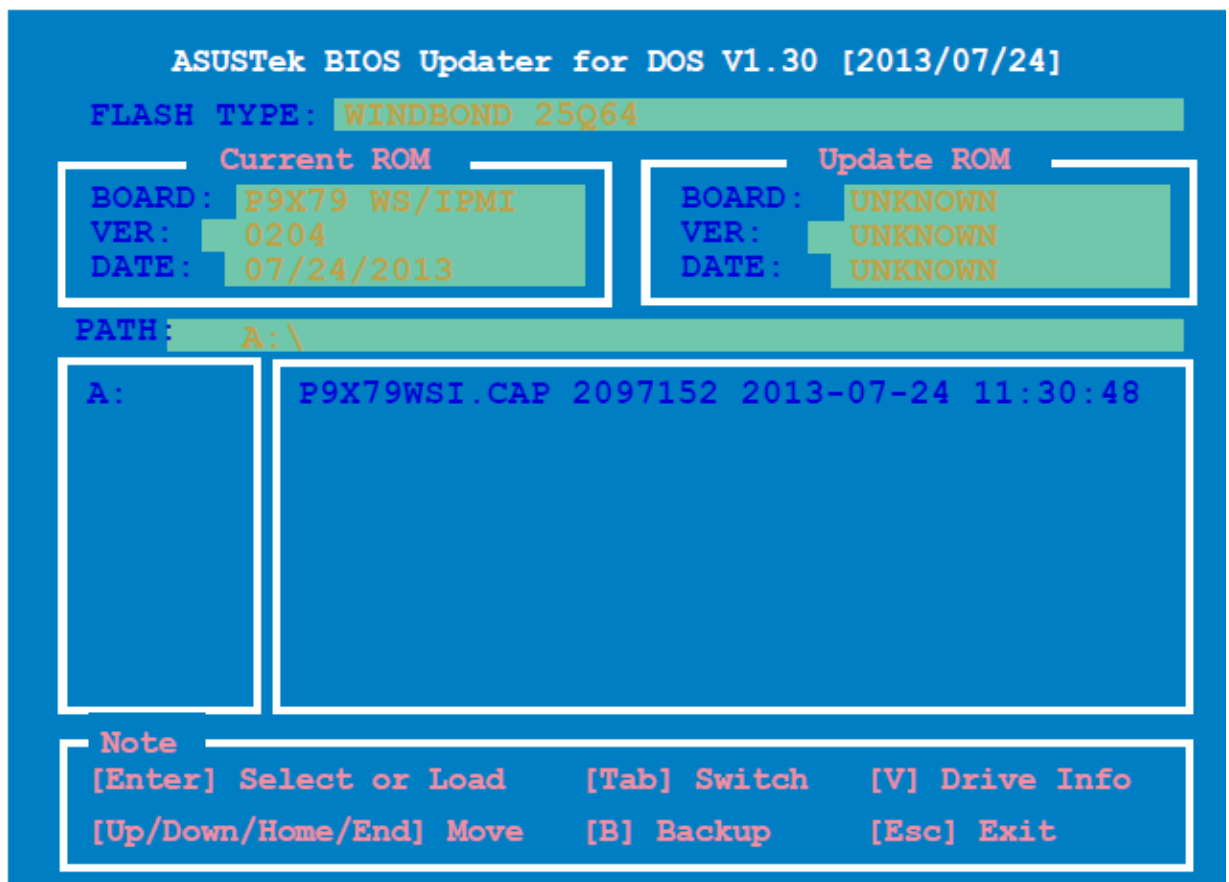
### Updating the BIOS file

To update the BIOS file using BIOS Updater:

1. At the FreeDOS prompt, type bupdater /pc /g and press <Enter>.

```
D:\>bupdater /pc /g
```

2. The BIOS Updater screen appears as below.

```
        ASUSTek BIOS Updater for DOS V1.30 [2013/07/24]
   FLASH TYPE: WINDBOND 25Q64
        ┌──── Current ROM ────┐        ┌──── Update ROM ────┐
   BOARD: P9X79 WS/IPMI              BOARD:   UNKNOWN
   VER:   0204                       VER:     UNKNOWN
   DATE:  07/24/2013                 DATE:    UNKNOWN

   PATH:    A:\
   ┌──────────┬──────────────────────────────────────────────┐
   │ A:       │   P9X79WSI.CAP 2097152 2013-07-24 11:30:48     │
   │          │                                                │
   │          │                                                │
   │          │                                                │
   │          │                                                │
   │          │                                                │
   └──────────┴────────────────────────────────────────────────
   ┌─ Note ──────────────────────────────────────────────────┐
   │ [Enter] Select or Load      [Tab] Switch    [V] Drive Info│
   │ [Up/Down/Home/End] Move     [B] Backup      [Esc] Exit    │
   └──────────────────────────────────────────────────────────┘
```

3.  Press <Tab> to switch between screen fields and use the <Up/Down/Home/End> keys to select the BIOS file and press <Enter>. BIOS Updater checks the selected BIOS file and prompts you to confirm BIOS update.
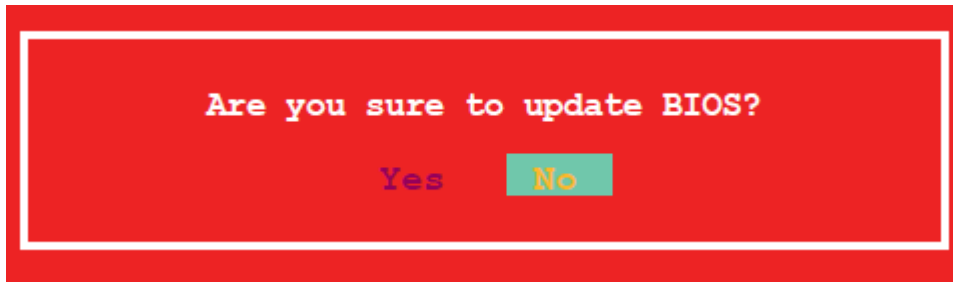


4.  Select Yes and press <Enter>. When BIOS update is done, press <ESC> to exit BIOS Updater. Restart your computer.

˘   For BIOS Updater version 1.3 or later, the utility automatically exits to the DOS prompt after updating BIOS.

˘   Ensure to load the BIOS default settings to ensure system compatibility and stability. Select the Load Optimized Defaults item under the Exit BIOS menu. See Chaper 3 of your motherboard user manual for details.

˘   Ensure to connect all SATA hard disk drives after updating the BIOS file if you have disconnected them.

**DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!.**

# Chapter 4
# Remote Management

The ORION HF210 comes installed on an Asus P9X79-WS-BMC Motherboard especially designed for CIARA Technologies in order to set the best over-clocking environment and provide extreme performances.
For the first time in a single socket server, a true remote management is now available.

## 4.1 ASMB7-iKVM

Server Management Board

ASMB7-iKVM specifications

Features

**IPMI 2.0**
- System interface (KCS)
- LAN interface (support RMPC+)
- System Event Log (SEL)
- Sensor Data Record (SDR)
- Field Replaceable Unit (FRU)
- Remote Power on/off, reboot
- Serial Over LAN (SOL)
- Authentication Type: RAKP-HMAC-SHA1
- Encryption (AES)
- Platform Event Filtering (PEF)
- Platform Event Trap (PET)
- Watchdog Timer

**Private I2C Bus**
- Auto Monitoring sensors (temperature, voltage, fan speed and logging events)

**PMBus**
- Support Power supply for PMBus device

**PSMI**
- Support Power supply for PSMI bus device

**Web-base GUI**
- Monitor sensor, show SDR, SEL, FRU, configure BMC, LAN
- Support SSL (HTTPS)
- Multiple user permission level
- Upgrade BMC firmware

**Update Firmware**
- DOS Tool
- Web GUI (Windows® XP/VISTA/2003/2008, RHEL 5.2, SLES10SP2)

**Notification**
- PET
- SNMP Trap
- e-Mail

| Chipset | Aspeed 2300 |
|---|---|
| Internal RAM | 224 MB for system |
| | 32 MB for video |
| Internal ROM | 32 MB |
| Timers | 32-bit Watchdog Timer |
| Main Features | IPMI 2.0 compliant and supports |
| | KVM over LAN |
| | Web-based user interface (remote management) |
| | Virtual media |
| | Network Bonding support |
| Form Factor | 22 mm x 17 mm |

## 4.2 ASWM 2.0

ASWM 2.0 – A New Real-Time and Mobile World for Servers
Powerful, User Friendly and Mobile Tool for Server Management

**ASWM** (**A**SUS **S**ystem **W**eb-based **M**anagement) is ASUS' self-developed software, which allows MIS engineers to conveniently and remotely monitor, manage and upgrade server systems. ASWM2.0, the next-generation of the popular software.

### Remote Web-Based Control

ASWM enables users to monitor system status from remote locations through the web. No need to install from client side. ASWM provides a user-friendly interface by utilizing pictures and icons to allow system manager to easily identify system status.

### Fast System Diagnosis

The System View feature of ASWM consists of a computer generated image of the server, clearly illustrating system operation on every major component from the front, rear and top of the system. When an abnormal system event takes place, a signal appears on the server image right next to the component that's responsible for the event. Warning signal is orange, while red indicates critical status.

### Clear Status Information

The Health Information feature displays key system status such as temperature, component voltages, fan speeds and capacity. The Inventory FRU System Information feature shows the name and number of each component.

### Automatic Update Real Time Chart

ASWM automatically updates system status data every 5 seconds by setting a real time charts for CPU operations, memory capacity. Motherboard temperature etc. This feature provides the most up-to-date information and allows system managers to quickly identify any abnormal system events.

### Warning Functions

When abnormal events occur, ASWM send e-mails or mobile phone messages to preprogrammed recipients.

### OS Support

ASWM supports Window®XP, Windows® 2003, Windows®2000, Linux RedHat8.0/9.0 and SuSE8.2.
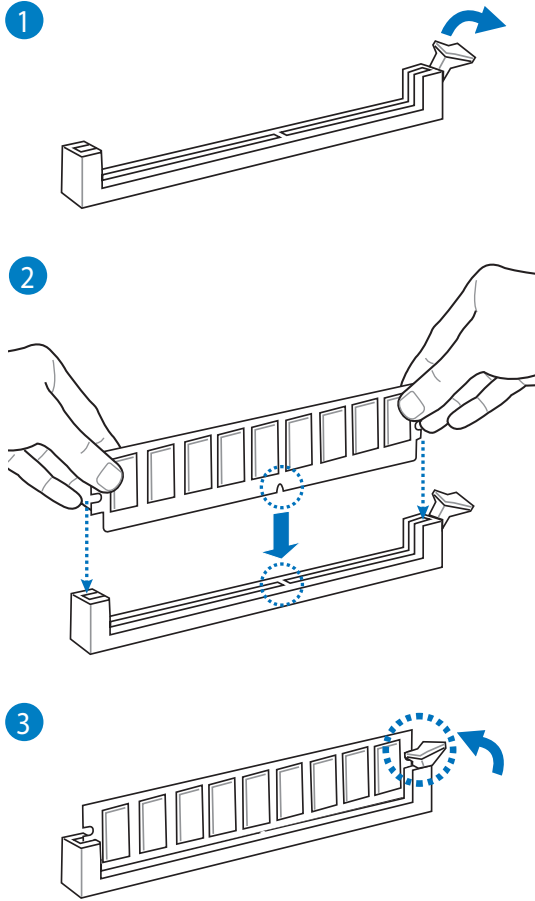
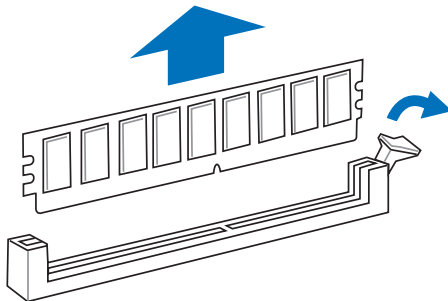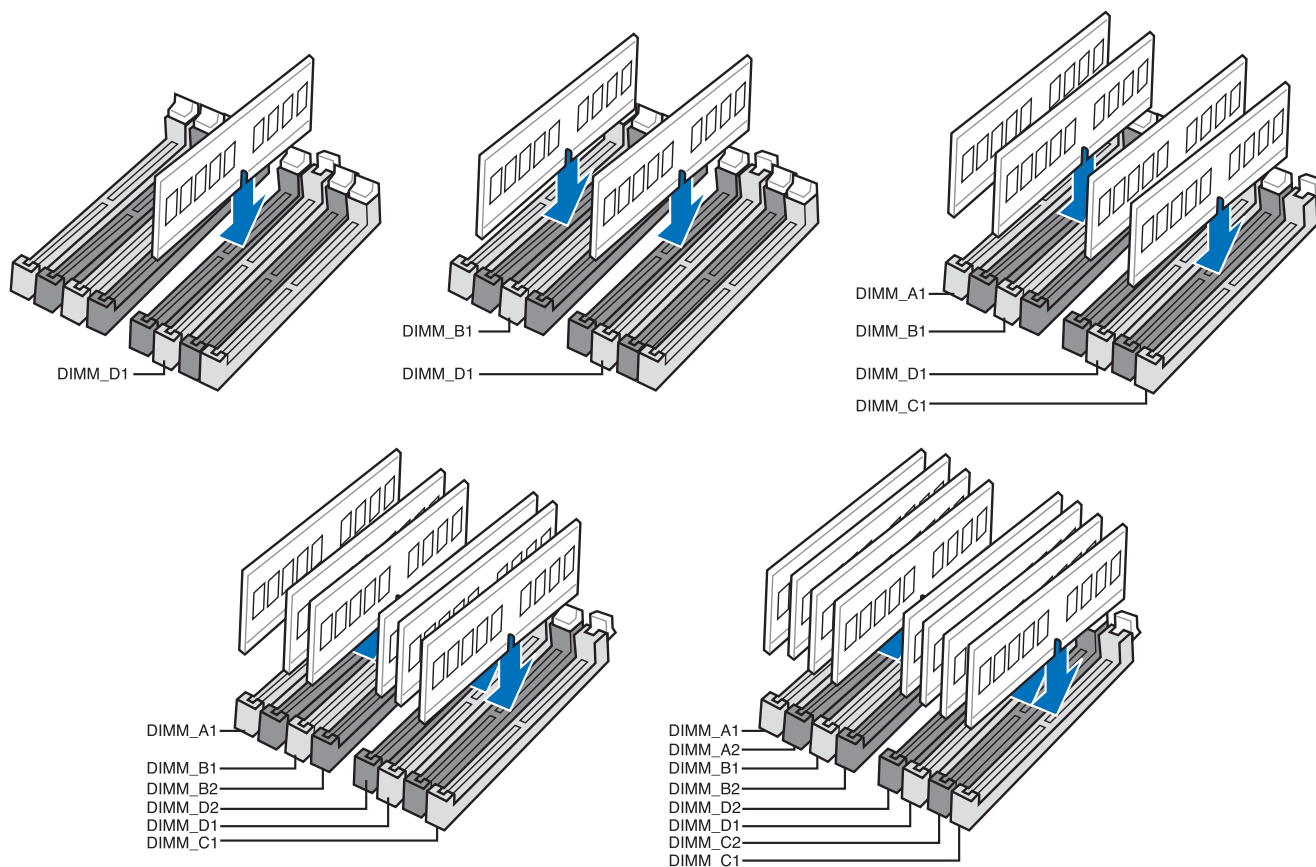**For further instructions on ASMB7 and ASWM, please refer to the dedicated user manuals. (Accessible at : http://www.ciaratech.com/)**

# Chapter 5
# Maintenance

# 5.1 Upgrade

Memory Upgrade



to remove a DIMM

**Recommended memory configuration**



DIMM_D1

DIMM_B1
DIMM_D1

DIMM_A1
DIMM_B1
DIMM_D1
DIMM_C1

DIMM_A1
DIMM_B1
DIMM_B2
DIMM_D2
DIMM_D1
DIMM_C1

DIMM_A1
DIMM_A2
DIMM_B1
DIMM_B2
DIMM_D2
DIMM_D1
DIMM_C2
DIMM_C1

## Memory Test with MemOK!

Installing DIMMs that are incompatible with the motherboard may cause system boot failure, and the DIAG_DRAM near the MemOK! switch lights continuously. Press and hold the MemOK! switch until the **DIAG_DRAM starts blinking to begin automatic** memory compatibility tuning for successful boot.



P9X79 WS/IPMI

MemOK!
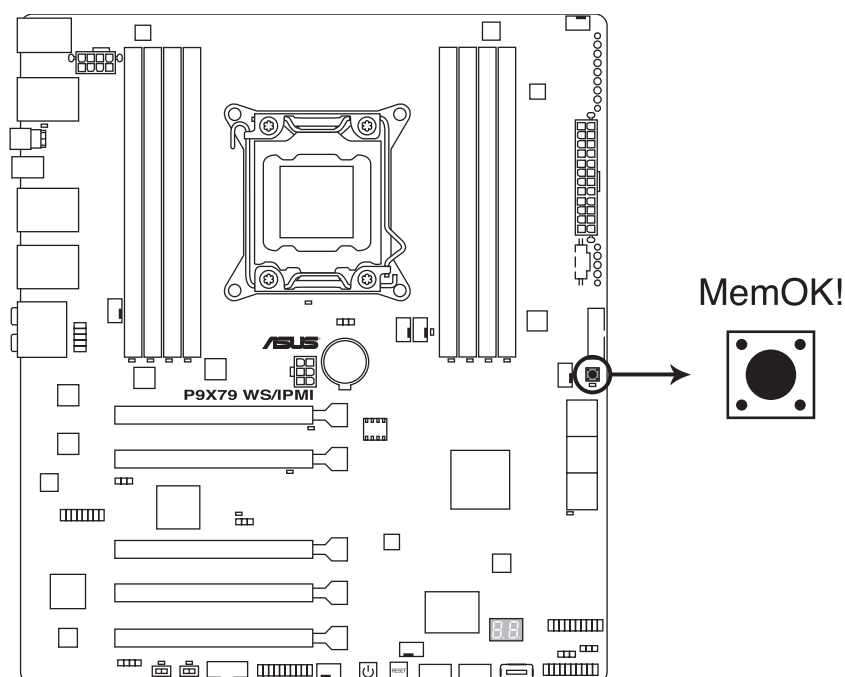
## 5.2 Disk replacement

The ORION HF210 comes with 4 hot swappable bay drives. This system allows you to mount/unmount disks faster without even shutting down the device.

**To unmount the disk:**

1. Push on the right side button
2. Pull the tab in order to slide out the disk tray.
3. Unscrew the disk from the tray.

## 5.3 Fan replacement

1. Shut down the machine.

2. Open the top of the machine.

3. Unplug the power cable.

4. Pull out the fan block.

# Chapter 6
# Troubleshooting

# 6.1 Onboard LEDs

### Diagnosis LED

These diagnosis LEDs of CPU, DRAM, VGA card, and HDD indicate key component status during POST (Power-on Self Test), providing an elegant embellishment to the motherboard design. The LED lights will flash sequentially during system bootup. If an error is found, the LED next to the error device will continue lighting until the problem is solved. This user-friendly design provides an institutional way to locate the root problem in seconds.
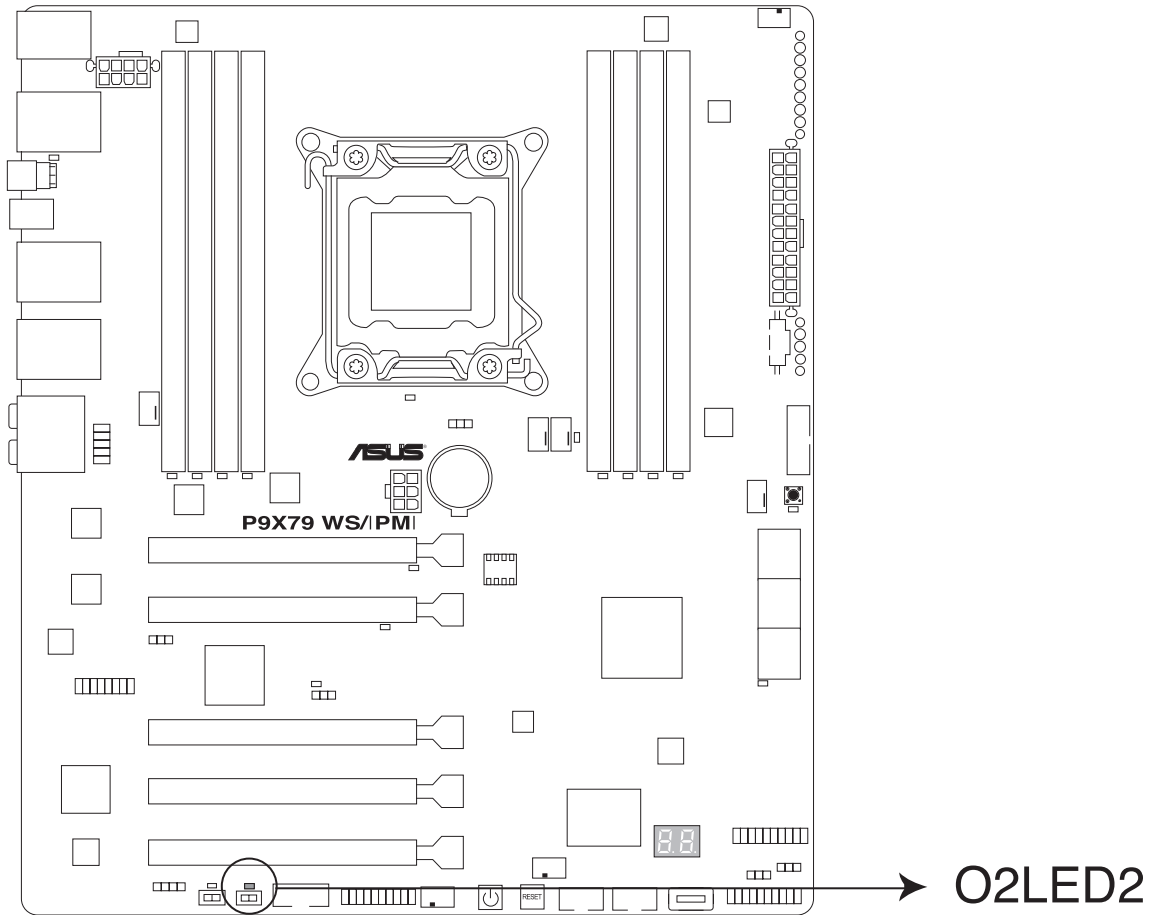


DIAG_CPU

DIAG_DRAM

DIAG_VGA

DIAG_HDD

O2LED3
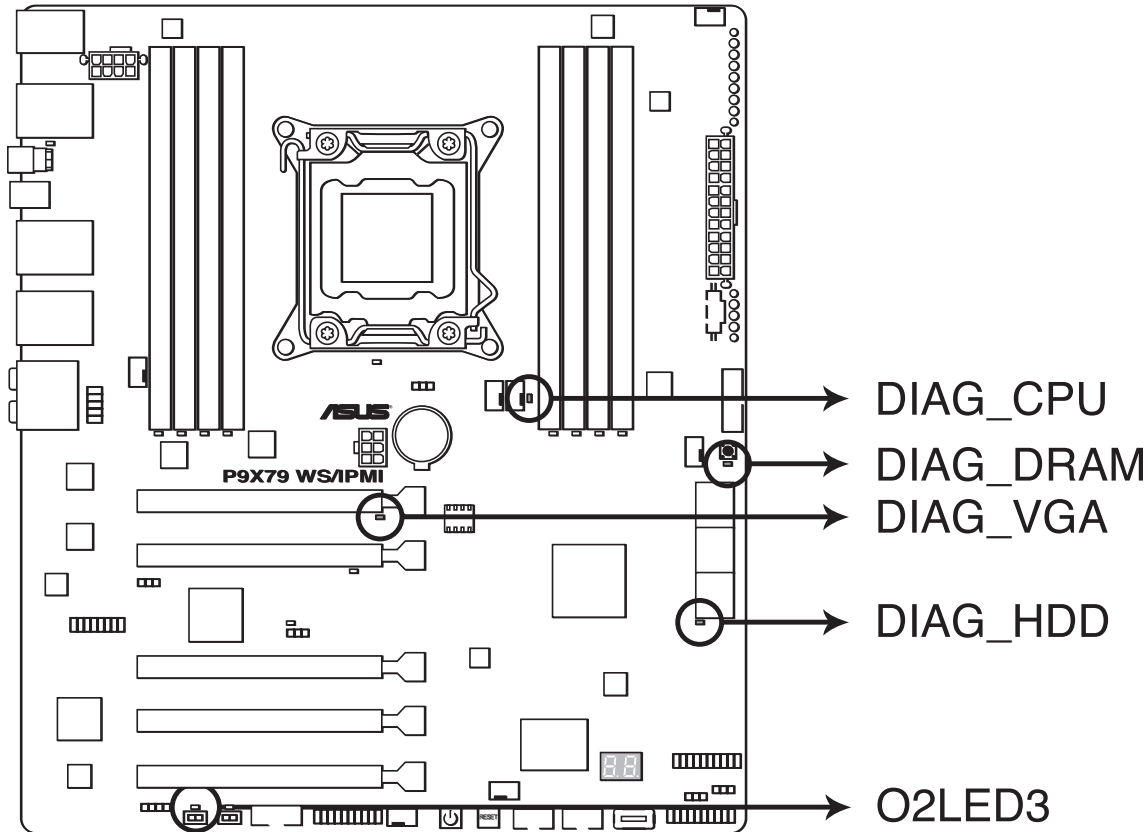
## EPU LED

The EPU LED lights when the EPU switch is turned to Enable.
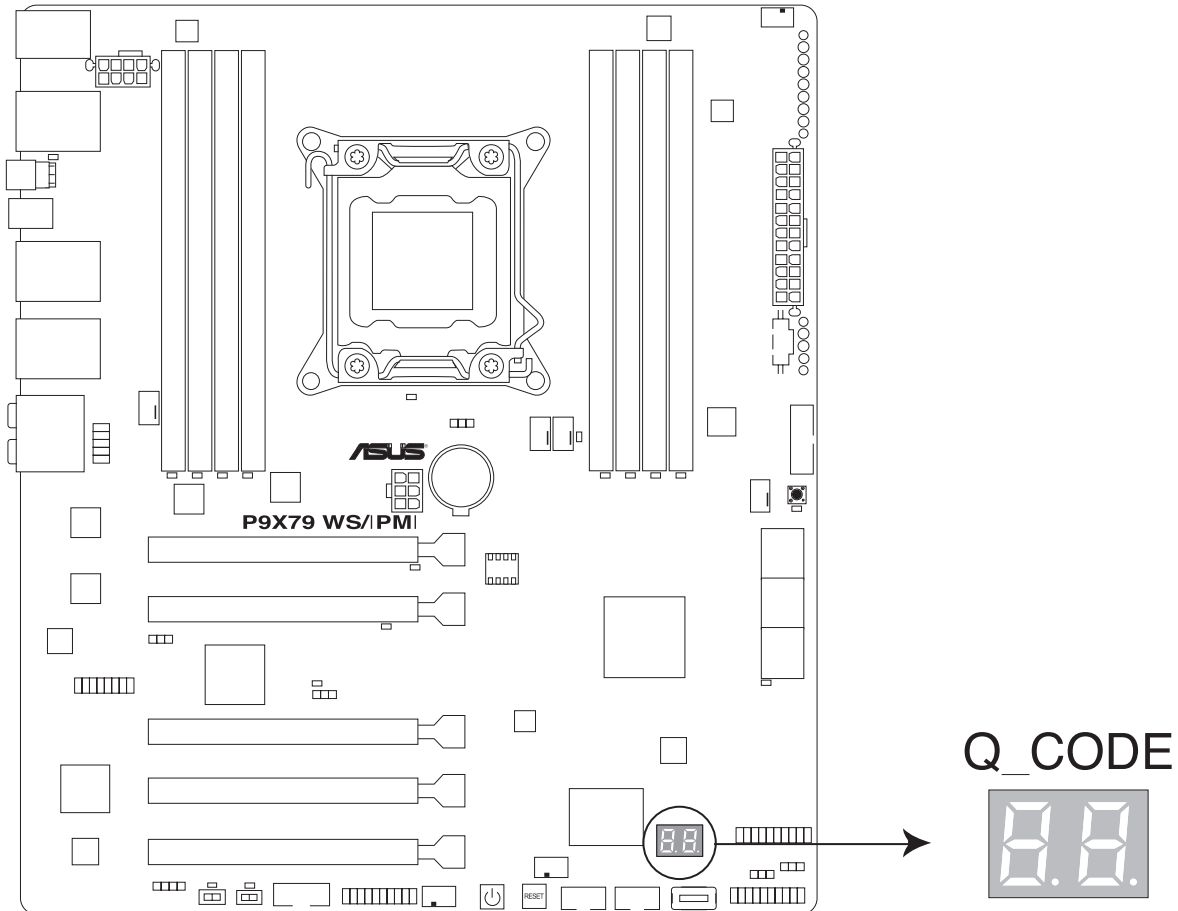


O2LED3
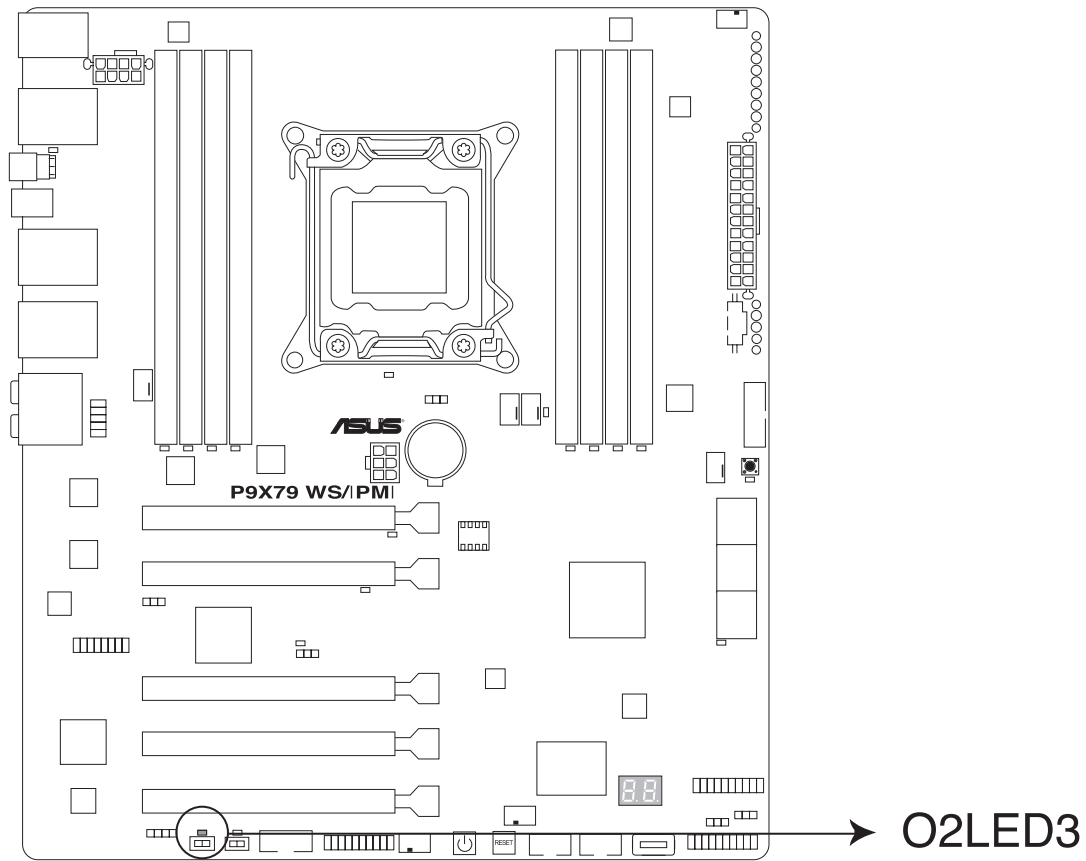
TPU LED

The TPU LED lights up when the TPU switch is turned to Enable.



O2LED2

### Q-Code LED

The Q-Code LED design provides you the 2-digit display, allowing you to know the system status. Refer to the Q-Code table on the next page for details.

## Q-Code Table

| Code | Description |
|------|-------------|
| 00 | Not used |
| 01 | Power on. Reset type detection (soft/hard). |
| 02 | AP initialization before microcode loading |
| 03 | System Agent initialization before microcode loading |
| 04 | PCH initialization before microcode loading |
| 05 | Initialization before microcode loading |
| 06 | Microcode loading |
| 07 | AP initialization after microcode loading |
| 08 | System Agent initialization after microcode loading |
| 09 | PCH initialization after microcode loading |
| 0A | Initialization after microcode loading |
| 0B | Cache initialization |
| 0C-0D | Reserved for future AMI SEC error codes |
| 0E | Microcode not found |
| 0F | Microcode not loaded |
| 10 | PEI Core is started |
| 11-14 | Pre-memory CPU initialization is started |
| 15-18 | Pre-memory System Agent initialization is started |
| 19-1C | Pre-memory PCH initialization is started |
| 1D-2A | Pre-memory initialization codes |
| 2B-2F | Memory initialization |
| 30 | Reserved for ASL (see ASL Status Codes section below) |
| 31 | Memory Installed |
| 32-36 | CPU post-memory initialization |
| 37-3A | Post-Memory System Agent initialization is started |
| 3B-3E | Post-Memory PCH initialization is started |
| 3F-4E | Post memory initialization codes |
| 4f | DXE IPL is started |
| 50-53 | Memory initialization error.  Invalid memory type or incompatible memory speed |
| 54 | Unspecified memory initialization error |
| 55 | Memory not installed |
| 56 | Invalid CPU type or Speed |
| 57 | CPU mismatch |
| 58 | CPU self test failed or possible CPU cache error |
| 59 | CPU micro-code is not found or micro-code update is failed |
| 5A | Internal CPU error |
| 5B | Reset PPI is  not available |
| 5C-5F | Reserved for future AMI error codes |

| Code | Description |
|------|-------------|
| E0 | S3 Resume is stared (S3 Resume PPI is called by the DXE IPL) |
| E1 | S3 Boot Script execution |
| E2 | Video repost |
| E3 | OS S3 wake vector call |
| E4-E7 | Reserved for future AMI progress codes |
| E8 | S3 Resume Failed |
| E9 | S3 Resume PPI not Found |
| EA | S3 Resume Boot Script Error |
| EB | S3 OS Wake Error |
| EC-EF | Reserved for future AMI error codes |
| F0 | Recovery condition triggered by firmware (Auto recovery |
| F1 | Recovery condition triggered by user (Forced recovery) |
| F2 | Recovery process started |
| F3 | Recovery firmware image is found |
| F4 | Recovery firmware image is loaded |
| F5-F7 | Reserved for future AMI progress codes |
| F8 | Recovery PPI is not available |
| F9 | Recovery capsule is not found |
| FA | Invalid recovery capsule |
| FB-FF | Reserved for future AMI error codes |
| 60 | DXE Core is started |
| 61 | NVRAM initialization |
| 62 | Installation of the PCH Runtime Services |
| 63-67 | CPU DXE initialization is started |
| 68 | PCI host bridge initialization |
| 69 | System Agent DXE initialization is started |
| 6A | System Agent DXE SMM initialization is started |
| 6B-6F | System Agent  DXE initialization (System Agent module specific |
| 70 | PCH DXE initialization is started |
| 71 | PCH DXE SMM initialization is started |
| 72 | PCH devices initialization |
| 73-77 | PCH DXE Initialization (PCH module specific) |
| 78 | ACPI module initialization |
| 79 | CSM initialization |
| 7A-7F | Reserved for future AMI DXE codes |
| 80-8F | DXE initialization codes |
| 90 | Boot Device Selection (BDS) phase is started |
| 91 | Driver connecting is started |
| 92 | PCI Bus initialization is started |
| 93 | PCI Bus Hot Plug Controller Initialization |
| 94 | PCI Bus Enumeration |

| Code | Description |
|------|-------------|
| 95 | PCI Bus Request Resources |
| 96 | PCI Bus Assign Resources |
| 97 | Console Output devices connect |
| 98 | Console input devices connect |
| 99 | Super IO Initialization |
| 9A | USB initialization is started |
| 9B | USB Reset |
| 9C | USB Detect |
| 9D | USB Enable |
| 9E-9F | Reserved for future AMI codes |
| A0 | IDE initialization is started |
| A1 | IDE Reset |
| A2 | IDE Detect |
| A3 | IDE Enable |
| A4 | SCSI initialization is started |
| A5 | SCSI Reset |
| A6 | SCSI Detect |
| A7 | SCSI Enable |
| A8 | Setup Verifying Password |
| A9 | Start of Setup |
| AA | Reserved for ASL (see ASL Status Codes section below) |
| AB | Setup Input Wait |
| AC | Reserved for ASL (see ASL Status Codes section below) |
| AD | Ready To Boot event |
| AE | Legacy Boot event |
| AF | Exit  Boot Services event |
| B0 | Runtime Set Virtual Address MAP Begin |
| B1 | Runtime Set Virtual Address MAP End |
| B2 | Legacy Option ROM Initialization |
| B3 | System Reset |
| B4 | USB hot plug |
| B5 | PCI bus hot plug |
| B6 | Clean-up of NVRAM |
| B7 | Configuration Reset (reset of NVRAM settings) |
| B8-BF | Reserved for future AMI codes |
| C0-CF | BDS initialization codes |
| D0 | CPU initialization error |
| D1 | System Agent initialization error |
| D2 | PCH initialization error |
| D3 | Some of the Architectural Protocols are not available |
| D4 | PCI resource allocation error.  Out of Resources |

| Code | Description |
| --- | --- |
| D5 | No Space for Legacy Option ROM |
| D6 | No Console Output Devices are found |
| D7 | No Console Input Devices are found |
| D8 | Invalid password |
| D9 | Error loading Boot Option (Load Image returned error) |
| DA | Boot Option is failed (Start Image returned error) |
| DB | Flash update is failed |
| DC | Reset protocol is not available |

**ACPI/ASL Checkpoints**

| Code | Description |
| --- | --- |
| 0x01 | System is entering S1 sleep state |
| 0x02 | System is entering S2 sleep state |
| 0x03 | System is entering S3 sleep state |
| 0x04 | System is entering S4 sleep state |
| 0x05 | System is entering S5 sleep state |
| 0x10 | System is waking up from the S1 sleep state |
| 0x20 | System is waking up from the S2 sleep state |
| 0x30 | System is waking up from the S3 sleep state |
| 0x40 | System is waking up from the S4 sleep state |
| 0xAC | System has transitioned into ACPI mode. Interrupt controller is in PIC mode. |
| 0xAA | System has transitioned into ACPI mode. Interrupt controller is in APIC mode. |

CPU Warning LED (ERR_CPU1)

The CPU warning LEDs light up to indicate impending failure of the CPU.
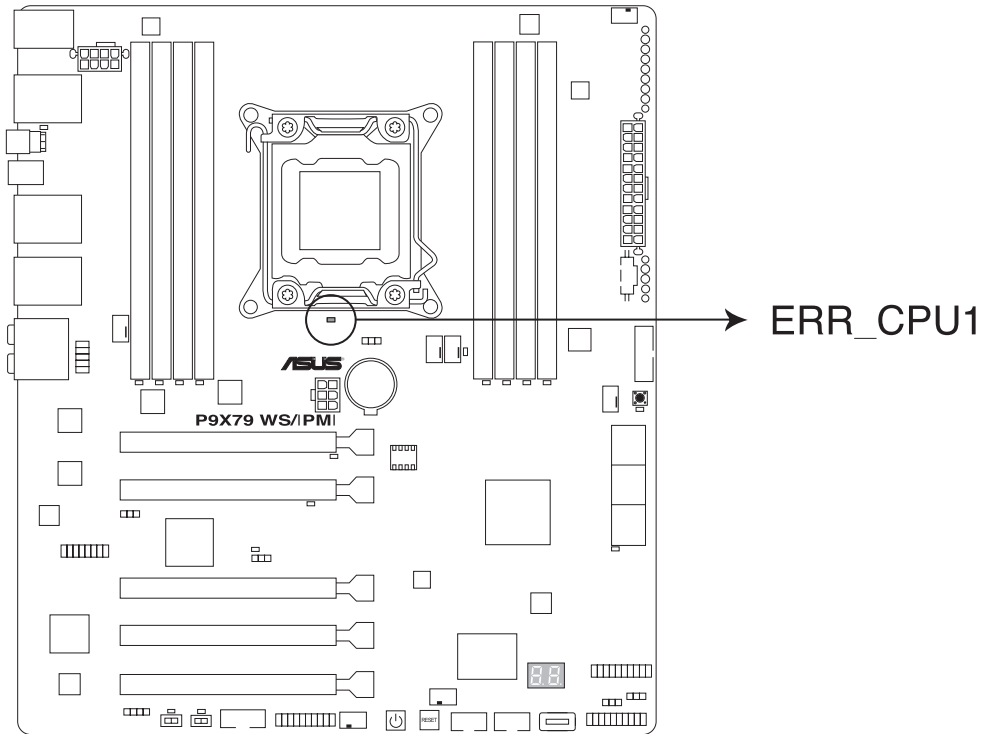
DIMM warning LED (ERR_DIMMA1/2;ERR_DIMMB1/2;ERR_DIMMC1/2;ERR_DIMMD1/2)

The DIMM warning LEDs light up to indicate an impending failure of the corresponding DIMMs.
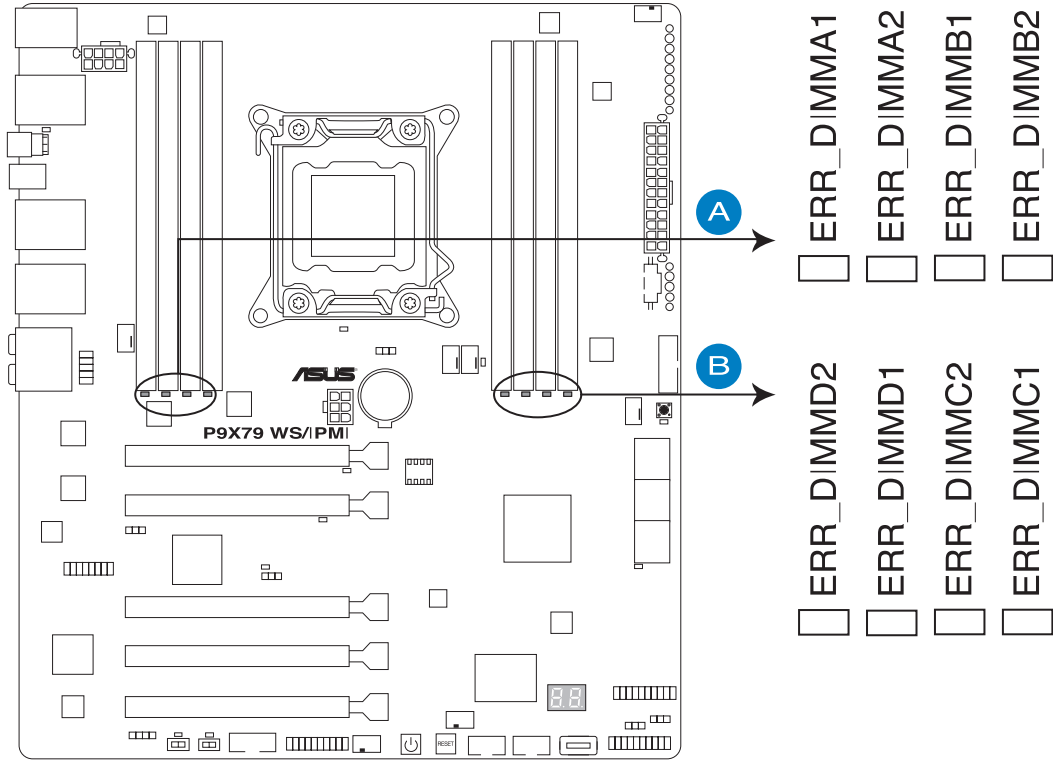
### Baseboard Management Controller LED (BMC_LED1)

The green heartbeat LED blinks per second to indicate that the ASMB7 is working normally.



BMC_LED
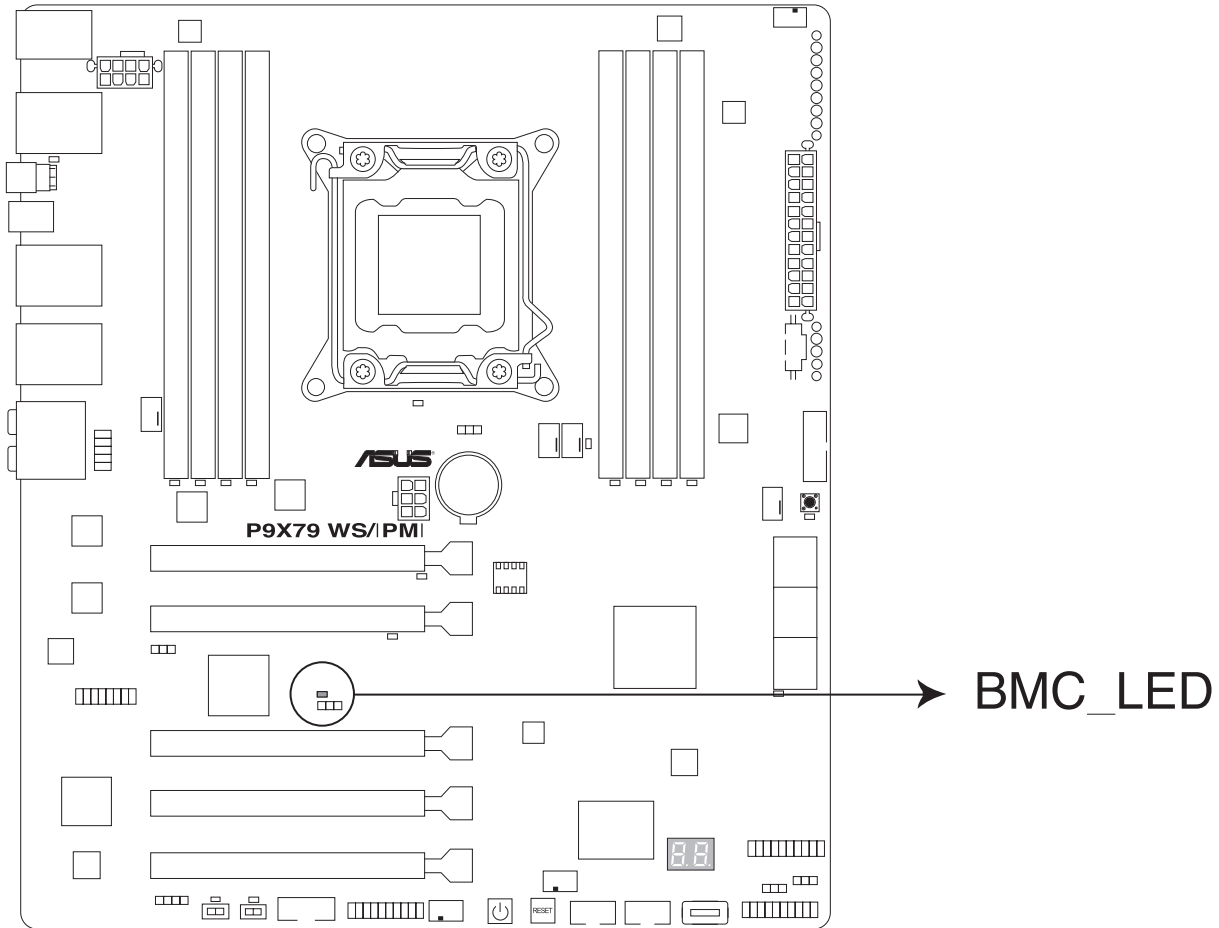
DIMM warning LED (ERR_DIMMA1/2

The CATTERR LED indicates that the system has experienced a fatal or catastrophic error and cannot continue to operate.



CATTERR_LED
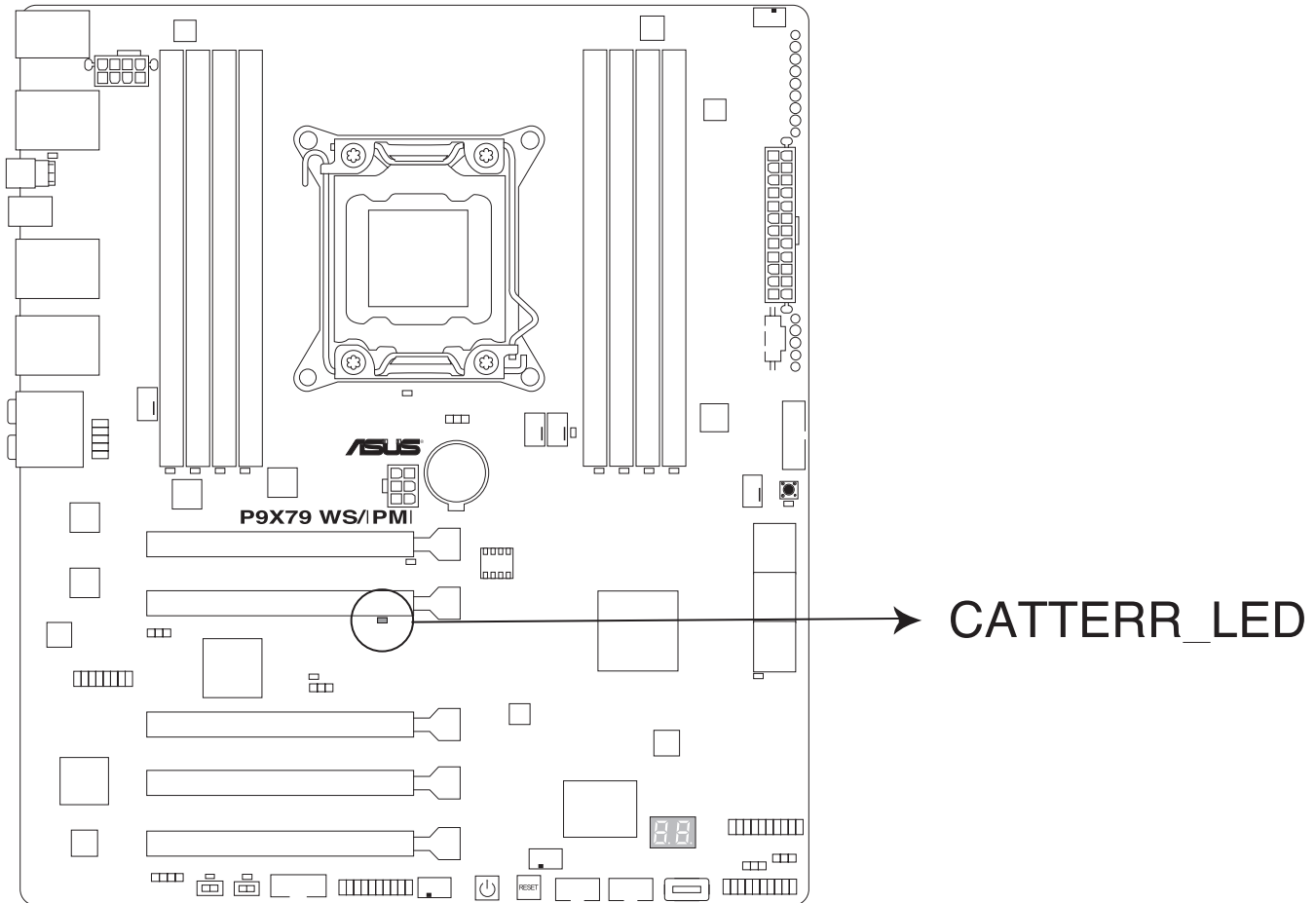
## 6.2 Battery Removal and Installation

### Battery Removal

To remove the onboard battery, follow the steps below:

1. Power off your system and unplug your power cable.

2. Locate the onboard battery as shown below.

3. Using a tool such as a pen or a small screwdriver, push the battery lock outwards to unlock it. Once unlocked, the battery will pop out from the holder.

4. Remove the battery.

### Battery Installation

1. To install an onboard battery, follow the steps 1 & 2 above and continue below:

2. Identify the battery's polarity. The positive (+) side should be facing up.

3. Insert the battery into the battery holder and push it down until you hear a click to ensure that the battery is securely locked.



LITHIUM BATTERY

BATTERY HOLDER
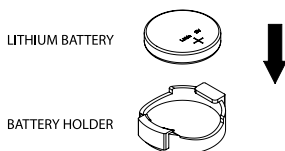
Warning: When replacing a battery, be sure to only replace it with the same type. Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

# Contact Information

## Find documentation for your product

Find more documentation about the ORION HF serie at **http://www.ciaratech.com/orionhf**

Find all downloads and manuals related to your product, at **http://www.ciaratech.com/support-home-en.html**

## Contact your support

### How to contact support

write at **orionhfsupport@ciaratech.com**

- Indicate the serial number of the machine(s)
- Write a brief description of the issue
- Indicate your address and the contact person name.

or please call **1-855-597-4913**

### How to contact CIARA Technologies

**CIARA Technologies**

9300, Transcanada Highway

Saint-Laurent, Québec

H4S 1K5 CANADA

| | |
|---|---|
| Tel: | **(514) 798-8880** |
| TF: | **1 (866) 789-7225** |
| Fax: | **(514) 798-8889** |
| E: | **sales@ciaratech.com** |