Vig700S Motherboard Manual

Viglen

Great

Minds

Think

Viglen

Viglen, EMC and the 'CE' mark

CE Marking

European standards are being harmonised across borders. If products comply with the same standards in all European countries, product exporting and importing is made simple - paving our way to a common market. If you buy a product with a 'CE' mark on it (shown below), on the box, in the manual, or on the guarantee - it complies with the currently enforced directive(s).

$$C\,E$$

Introduction to EMC

EMC (Electromagnetic Compatibility) is the term used to describe certain issues with RF (Radio Frequency) energy. Electrical items should be designed so they do not interfere with each other through RF emissions. E.g. If you turn on your microwave, your television shouldn't display interference if both items are CE marked to the EMC directive.

If emitted RF energy is not kept low, it can interfere with other electrical circuitry - E.g. Cars Automatic Braking Systems have been known to activate by themselves while in a strong RF field. As this has obvious repercussions ALL electrical products likely to cause RF related problems have to be 'CE' marked from 1st January 1996 onwards.

If a product conforms to the EMC directive, not only should its RF emissions be very low, but its immunity to RF energy (and other types) should be high. The apparatus has to resist many 'real world' phenomena such as static shocks and mains voltage transients.

Viglen's Environment laboratory

To gain a 'CE' mark, the Viglen computer range has had to undergo many difficult tests to ensure it is Electromagnetically Compatible. These are carried out in the in-house 'Environment lab' at Viglen Headquarters. We have made every effort to guarantee that each computer leaving our factory complies fully with the correct standards. To ensure the computer system maintains compliance throughout its functional life, it is essential you follow these guidelines.

➢ Install the system according to Viglen's instructions
➢ If you open up your Viglen:

    ➢ Keep internal cabling in place as supplied.
    ➢ Ensure the lid is tightly secured afterwards
    ➢ Do not remove drive bay shields unless installing a 'CE' marked peripheral in its place
    ➢ The clips or 'bumps' around the lips of the case increase conductivity - do not remove or damage.
    ➢ Do not remove the ferrite ring from the L.E.D cables.
    ➢ Only use your Viglen computer with 'CE' marked peripherals

This system has been tested in accordance with European standards for use in residential and light industrial areas - this specifies a 10 meter testing radius for emissions and immunity. If you do experience any adverse affects which you think might be related to your computer, try moving it at least 10 meters away from the affected item. If you still experience problems, contact Viglen's Technical Support department who will put you straight through to an EMC engineer - s/he will do everything possible to help. If modifications are made to your Viglen computer system, it might breach EMC regulations. Viglen take no responsibility (with regards to EMC characteristics) of equipment which has been tampered with or modified.

This symbol on the product or on its packaging indicates that the product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or Viglen Ltd.

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Contents

Chapter 1: Motherboard Overview

Introduction

This manual describes the Viglen Vig690M motherboard inside your computer. The motherboard is the most important part of your computer. It contains the CPU, memory and graphics circuitry that make the computer work in the correct manner.

The Vig700S motherboard is a mini-ITX form factor offering legacy to premium features. PS/2 mouse/keyboard combo port, integrated Graphics via VGA, DVI and HDMI, High Definition Audio via 3 flexible audio jacks and integrated 10/100/1000 network connection, as well as 4 USB 2.0 and 2 USB 3.0 ports to enrich your multimedia creation experience.

The Vig700S supports 4th generation Intel Core i3, i5, i7, Pentium and Celeron processors, as well as being Microsoft Windows 7 and 8.1 Premium WHQL certified.

This manual contains technical information about the Viglen Vig700S motherboard and other hardware components inside your computer. If you are new to computers we recommend that you read the user guide first. If you are an experienced computer user this manual should provide all the information you will need to perform simple upgrades and maintenance.

We hope that this manual is both readable and informative. If you have any comments for suggestions about how we could improve the format then please fill out the form at the back of the manual and send it to us.

Above all we hope that you enjoy using your Viglen computer.

Feature Summary

Form factor:

- Micro-ATX Form Factor: 17.0 cm X 17.0 cm

Processor:

- Supports 4th generation Intel® Core™ i7, Intel® Core™ i5, Intel® Core™ i3, Intel® Pentium® and Celeron® processors in an LGA1150 socket.
- Integrated graphics processing (processors with Intel® Graphics Technology)
- External graphics interface controller
- Integrated memory controller

Chipset

- Intel® H81 Express Chipset

Memory

- Support 2 x U-DIMM, max. 16GB DDR3 1600/1333/1066MHz, non-ECC, unbuffered memory modules.
- Up to 16GB total
- Supports Dual-Channel mode

Graphics

- Integrated graphics support for processors with Intel Graphics Technology:
  - VGA
  - DVI-D
  - HDMI

- Multi-VGA output support: HDMI/DVI/D-Sub port
  - Supports HDMI with max. resolution 4096 x 2304@24Hz /2560x1600@60Hz
  - Supports DVI-D with max. resolution 1920 x1200@60Hz
  - Supports D-Sub with max. resolution 1920x1200@60HzMax. UMA Memory: 1024MB

Audio

- Realtek® ALC887 8-Channel High Definition Audio CODEC
- Flexible 8-channel audio with jack sensing

LAN

- Gigabit (10/100/1000 Mbits/s) LAN subsystem using the Realtek® RTL8111G Gigabit Ethernet Controller

SATA
- 2 x SATA 6Gb/s ports (SATA6G_1 & SATA6G_2)
- 2 x SATA 3Gb/s ports (SATA3G_1 & SATA3G_2)

Internal Connectors

- ATX 24-pin power connector
- 4-pin ATX 12V power connector
- 1x CPU fan connector
- 1x system fan connectors
- Front panel audio connector
- Front panel connector
- 1x chassis intrusion connector
- 2x USB 2.0 connectors (providing connectivity for 4 devices)
- 1x USB 3.0 connectors (providing connectivity for 2 devices)
- 1x CLRTC jumper
- 1x Speaker header
- 1x TPM module connector
- 1x S/PDIF header

Expansion Capabilities

- 1 x PCI Express 2.0 x16 slot

Rear I/O Ports

- 1x PS/2 mouse/keyboard combo port
- 4x USB 2.0 ports
- 2x USB 3.0 ports
- 1x DVI-D port*, supporting a maximum resolution of 1920x1200
- 1x VGA port*, supporting a maximum resolution of 1920x1200
- 1x HDMI* port, a maximum resolution of 4096x2304 at 24Hz/ 2560x1600 at 60Hz
- 1x RJ-45 LAN port
- 3x flexible audio jacks (Line In ,Line Out, Microphone)**

*(The DVI, VGA & HDMI ports only work with Integrated Graphics Processor.)
**(To reach the 8-channel sound effect, the 7th and 8th channels must be outputted from front panel.

Processor

The motherboard is designed to support the Intel Core i7, Intel Core i5, Intel Core i3, and Intel Pentium processors in an LGA1150 socket.
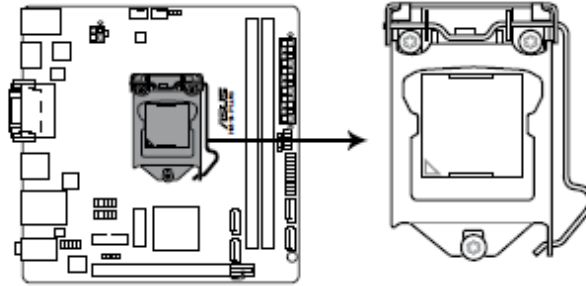

Figure 1: CPU Socket

Other processors may be supported in the future. This board is designed to support processors with a maximum TDP of 84 W.

Chipset

The Intel H81 Express Chipset consisting of the Intel H81 Platform Controller Hub (PCH) provides interfaces to the processor, USB, SATA, LPC, audio, network, display, and PCI Express. The PCH is a centralized controller for the board's I/O paths.

Memory

This motherboard comes with two Double Data Rate 3 (DDR3) Dual Inline Memory Module (DIMM) sockets. A DDR3 module has the same physical dimensions as a DDR2 DIMM but is notched differently to prevent installation of a DDR2 DIMM. DDR3 modules are developed for better performance with less power consumption. The figure illustrates the location of the DDR3 DIMM sockets:
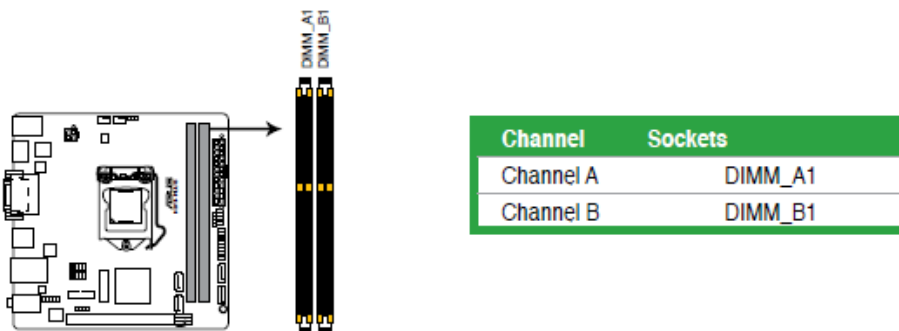

Channel	Sockets
Channel A	DIMM_A1
Channel B	DIMM_B1

Figure 2: Vig700S 240-Pin DDR3 DIMM Sockets

You may install 1GB, 2GB, 4GB, and 8GB 1600/1333/1066MHz unbuffered non‑ECC DDR3 DIMMs into the DIMM sockets.

NOTE: To be fully compliant with all applicable DDR SDRAM memory specifications, the board should be populated with DIMMs that support the Serial Presence Detect (SPD) data structure. This allows the BIOS to read the SPD data and program the chipset to accurately configure memory settings for optimum performance. If non-SPD memory is installed, the BIOS will attempt to correctly configure the memory settings, but performance and reliability may be impacted or the DIMMs may not function under the determined frequency.

Memory Configurations

The Intel Core i7, Intel Core i5, Intel Core i3, and Intel Pentium processors support the following types of memory organization:

- **Dual channel (Interleaved) mode**. This mode offers the highest throughput for real world applications. Dual channel mode is enabled when the installed memory capacities of both DIMM channels are equal. Technology and device width can vary from one channel to the other but the installed memory capacity for each channel must be equal. If different DIMM speeds are used between channels, the slowest memory timing will be used.

- **Single channel (Asymmetric) mode**. This mode is equivalent to single channel bandwidth operation for real world applications. This mode is used when only a single DIMM is installed or the memory capacities are unequal. Technology and device width can vary from one channel to the other. If different DIMM speeds are used between channels, the slowest memory timing will be used.

Graphics Subsystem

The board supports system graphics through either Intel Graphics Technology or a PCI Express x16 add-in graphics card.

Integrated Graphics

The board supports integrated graphics through the Intel® Flexible Display Interface (Intel® FDI) for processors with Intel Graphics Technology.

Analog Display (VGA)

The VGA port supports analog displays. The maximum supported resolution is 1920 x 1200 at 60Hz refresh rate. The VGA port is enabled for POST whenever a monitor is attached, regardless of the DVI-D connector status.

DVI-D

The maximum supported resolution is 1920 x 1200 at 60Hz refresh rate.

HDMI

The maximum supported resolution is 4096x2304 at 24Hz/ 2560x1600 at 60Hz

PCI Express x16 Graphics

The Intel Core i7/i5/i3, Pentium and Celeron processors in the LGA1150 socket support discrete add in graphics cards through the PCI Express 2.0 x16 connector:

- Supports PCI Express GEN3 frequency of 2.5 GHz resulting in 8.0 Gb/s each direction (1000 MB/s) per lane. Maximum theoretical bandwidth on interface is 16GB/s in each direction, simultaneously, when operating in x16 mode.
- Supports PCI Express GEN2 frequency of 2.5 GHz resulting in 5.0 Gb/s each direction (500 MB/s) per lane. Maximum theoretical bandwidth on interface is 8GB/s in each direction, simultaneously, when operating in x16 mode.
- Supports PCI Express GEN1 frequency of 1.25 GHz resulting in 2.5 Gb/s each direction (250 MB/s) per lane. Maximum theoretical bandwidth on interface is 4GB/s in each direction, simultaneously, when operating in x16 mode.

Audio Subsystem

The motherboard supports Intel High Definition Audio through a Realtek ACL887 audio codec. The following software features are supported

- Meets Microsoft WLP 3.x and future WLP audio requirements
- WaveRT-based audio function driver for Windows Vista and Windows 7
- EAX^{TM} 1.0 and 2.0 compatible
- Direct Sound 3D^{TM} compatible
- I3DL2 compatible
- Emulation of 26 sound environments to enhance gaming experience
- Multi bands of software equalizer and tool are provided
- Voice Cancellation and Key Shifting effect
- Dynamic range control (expander, compressor and limiter) with adjustable parameters
- Smart multiple streaming operation

These audio connectors are used for audio devices. It is easy to differentiate between audio effects according to the colour of audio jacks.

Figure 3: Audio Connectors

- Line-In (Blue) - Line In, is used for external CD player, tape-player or other audio devices.
- Line-Out (Green) - Line Out, is a connector for speakers or headphones.
- Mic (Pink) - Mic, is a connector for microphones.

Notes: If you want to configure a 7.1-channel audio output: Use a chassis with HD audio module in the front panel to support an 7.1-channel audio output.

Audio 2.1, 4.1, 5.1 or 7.1-channel configuration

Port	Headset 2.1-channel	4.1-channel	5.1-channel	7.1-channel
Light Blue (Rear panel)	Line In	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
Lime (Rear panel)	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink (Rear panel)	Mic In	Mic In	Bass/Center	Bass/Center
Lime (Front panel)	-	-	-	Side Speaker Out

Table 1: Audio channel configuration

LAN Subsystem

The LAN subsystem consists of the following:

- Realtek RTL8111G Gigabit Ethernet Controller (10/100/1000Mbits/s)
- RJ-45 LAN connector with integrated status LEDs

Additional features of the LAN subsystem include:

- Integrated 10/100/1000 transceiver
- Crossover Detection & Auto-Correction
- Wake-on-LAN and remote wake-up support
- Supports Full Duplex flow control (IEEE 802.3x)
- Supports jumbo frame to 9K bytes
- Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
- Supports power down/link down power saving

RJ-45 LAN Connector LEDs

The two LEDs are built into the RJ-45 LAN connector located on the back panel. These LEDs indicate the status of the LAN as shown in Table 1.
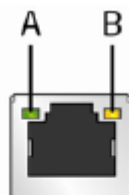
Item	Description
A	Link/Activity LED (green)
B	Link Speed LED (green/yellow)

Figure 4: LAN Connector LED Locations

Table 2: LAN LED Status

Activity/Link LED		Speed LED	
Status	Description	Status	Description
Off	No link	OFF	10Mbps connection
Orange	Linked	ORANGE	100Mbps connection
Orange (Blinking)	Data activity	GREEN	1Gbps connection
Orange (Blinking then steady)	Ready to wake up from S5 mode		

Universal Serial Bus (USB)

The motherboard supports up to 8 USB 2.0 ports and 4 USB 3.0. The port arrangement is a follows:

- Four USB 2.0 ports are implemented with stacked back panel connectors (black)
- Two USB 3.0 ports are implemented with stacked back panel connectors (blue)
- Four USB 2.0 front panel ports are implemented through two dual-port internal headers
- Two USB 3.0 front panel ports are implemented through two dual-port internal header

All USB ports are high-speed, full-speed, and low-speed capable.

NOTE: Computer systems that have an unshielded cable attached to a USB port may not meet FCC Class B requirements, even if no device or a low-speed (sub-channel) USB device is attached to the cable. Use shielded cable that meets the requirements for high-speed (fully rated) devices.

SATA Support

The board provides two 6 Gb/s and two 3 Gb/s SATA connectors, which support one device per connector.

NOTE: By default the SATA mode is set to AHCI in the BIOS to improve system performance. During Microsoft Windows XP installation, you must press F6 to install the AHCI drivers. Microsoft Windows Vista, Windows 7 and Windows 8 include the necessary RAID drivers for both AHCI and RAID without the need to install separate RAID drivers using the F6 switch in the operating system installation process. It is advised to install the latest AHCI drivers to improve system performance.

Expansion Slots

The motherboard provides the following expansion capability:

- One PCI Express 2.0 x16 slot

Table 3: IRQ assignment

IRQ assignments for this motherboard

	A	B	C	D	E	F	G	H
PCIe x16	shared	-	-	-	-	-	-	-
Intel SATA Controller	-	-	-	shared	-	-	-	-
Realtek LAN	-	-	shared	-	-	-	-	-
Intel xHCI	-	-	-	-	-	shared	-	-
Intel EHCI 1	-	-	-	-	-	-	-	shared
Intel EHCI 2	-	-	-	-	shared	-	-	-
HD Audio	-	-	-	-	-	-	shared	-

Legacy I/O Controller

The Legacy I/O Controller provides the following features:

- PS/2-style keyboard/mouse interface on the back panel
- Intelligent power management, including a programmable wake-up event interface

The BIOS Setup program provides configuration options for the Legacy I/O controller.

Real- Time Clock, CMOS RAM, and Battery

A coin-cell battery (CR2032) powers the real-time clock and CMOS memory. When the computer is not plugged into a wall socket, the battery has an estimated life of three years. When the computer is plugged in, the standby current from the power supply extends the life of the battery.

The clock is accurate to ± 13 minutes/year at 25 ºC with power applied through the power supply 5V STBY rail.

NOTE: If the battery and AC power fail, date and time values will be reset and the user will be notified during POST. When the voltage drops below a certain level, the BIOS Setup program settings stored in CMOS RAM (for example, the date and time) might not be accurate. Replace the battery with an equivalent one.

BIOS

The BIOS provides the Power-On Self-Test (POST), the BIOS Setup program, and the PCI/PCI Express and SATA auto-configuration utilities. The BIOS is stored in the Serial Peripheral Interface (SPI) Flash memory device.

SATA Auto Configuration

If you install a SATA device (such as a hard disk drive) in your computer, the auto-configuration utility in the BIOS automatically detects and configures the device for your computer. You do not need to run the BIOS Setup program after installing a SATA device. You can override the auto-configuration options by specifying manual configuration in the BIOS Setup program.

PCI/PCI Express Auto Configuration

If you install a PCI Express add-in card in your computer, the PCI/PCI Express auto-configuration utility in the BIOS automatically detects and configures the resources (IRQs, DMA channels, and I/O space) for that add-in card. You do not need to run the BIOS Setup program after you install a Conventional PCI or PCI Express add-in card.

BIOS Security Passwords

The BIOS includes security features that restrict whether the BIOS Setup program can be accessed and who can boot the computer. An administrator password and a user password can be set for the BIOS Setup and for booting the computer, with the following restrictions:

- The administrator password gives unrestricted access to view and change all Setup options. If only the administrator password is set, pressing <Enter> at the password prompt of Setup gives the user restricted access to Setup.

- If both the administrator and user passwords are set, you must enter either the administrator password or the user password to access Setup. Setup options are then available for viewing and changing depending on whether the administrator or user password was entered.

- Setting a user password restricts who can boot the computer. The password prompt is displayed before the computer is booted. If only the administrator password is set, the computer boots without asking for a password. If both passwords are set, you can enter either password to boot the computer.
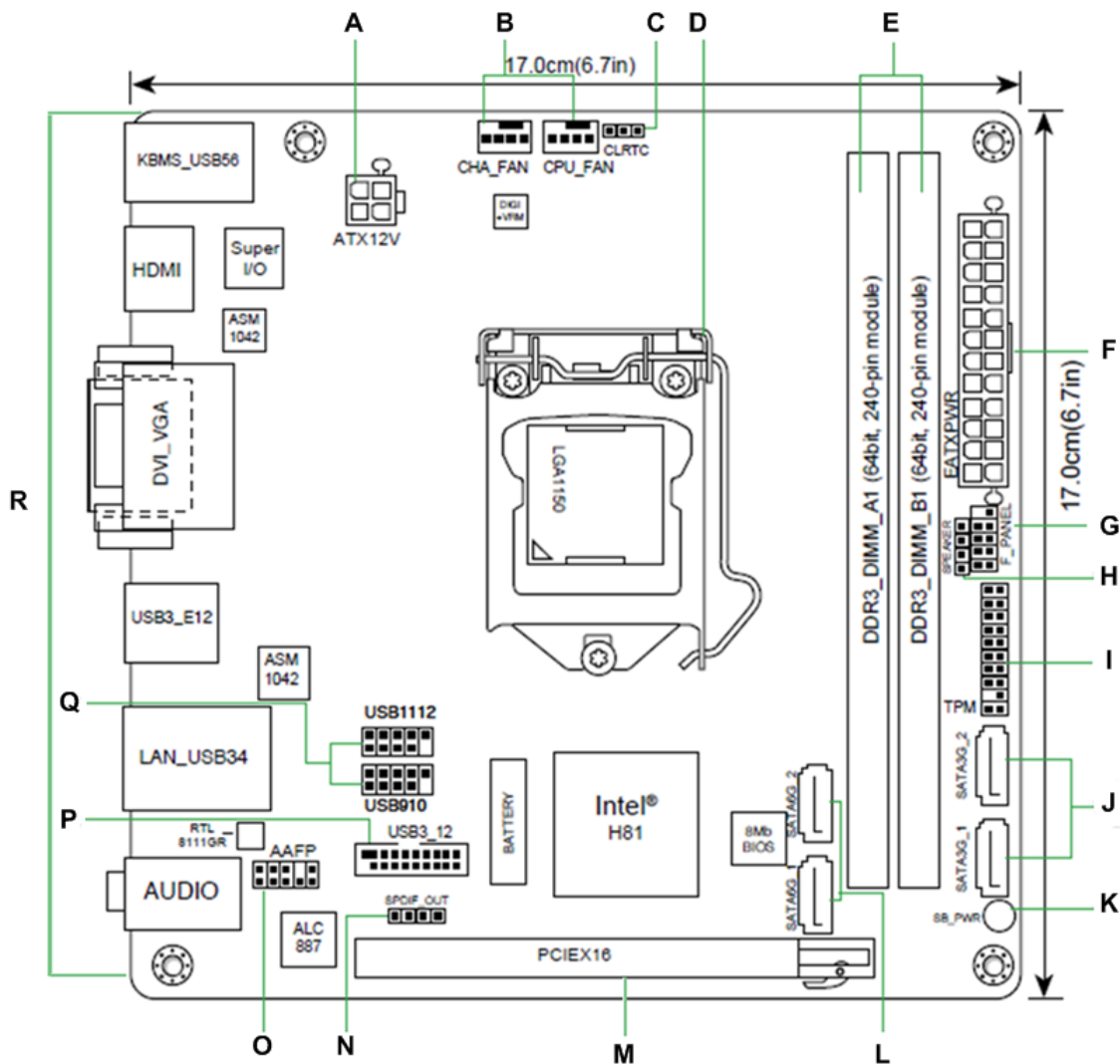
System Board Components

**Figure 5:** Motherboard Layout & Components

A	4-pin Power Socket Connector	**J**	SATA3G_1 & SATA3G_2 Ports (3Gb/s)
B	System Fan Header & CPU Fan Header	**K**	LED
C	Clear RTC Header (Clear CMOS)	**L**	SATA6G_1 & SATA6G_2 Ports (6Gb/s)
D	CPU Socket	**M**	PCI Express x16 Slot
E	DIMM Sockets	**N**	S/PDIF Header
F	24-pin Power Socket Connector	**O**	Front Panel Audio Header
G	Front Panel Header	**P**	USB 3.0 Header
H	Front Panel Header 2 for Speaker	**Q**	USB 2.0 Header 1 & 2
I	TPM Header	**R**	Back Panel

Back Panel Connectors

The motherboard external IO connectors are attached to a metallic I/O shield. This shield serves several purposes:

- It protects the sensitive motherboard from any external EMC interference.
- It stops the computer from interfering with other electrical devices.
- It allows the motherboard to be easily upgraded in the future without having to resort to buying a whole new case. Simply change the I/O shield to match the motherboard.

The I/O shield provides external access to PS/2 mouse/keyboard connectors as well as the USB ports, LAN Port, audio connectors, VGA, DVI-D and HDMI ports.
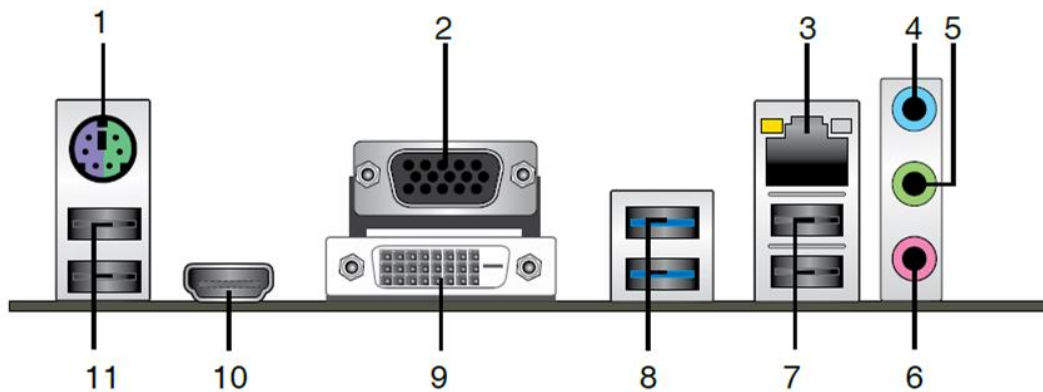
Figure 6: Back Panel Connectors

1	**Mouse/Keyboard** - The standard PS/2® mouse/keyboard DIN connector is for a PS/2® mouse/keyboard.
2	**VGA Port** - The DB15-pin female connector is provided for monitor.
3	**LAN Port** - The standard RJ-45 LAN jack is for connection to the Local Area Network (LAN). You can connect a network cable to it.
4	**Line In port (light blue).** This port connects the tape, CD, DVD player, or other audio sources.
5	**Line Out port (lime).** This port connects a headphone or a speaker. In 4.1-channel, 5.1-channel, and 7.1-channel configurations, the function of this port becomes Front Speaker Out.
6	**Microphone port (pink).** This port connects a microphone.
7	**USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are for USB 2.0/1.1 devices.
8	**USB 3.0 ports 1 and 2.** These two 9-pin Universal Serial Bus (USB) ports connect to USB 3.0/2.0 devices.
9	**DVI-D Port** - Port used for connecting to monitors.
10	**HDMI Port** - Port used for connecting to monitors, provides video and audio.
11	**USB 2.0 ports 5 and 6**. These two 4-pin Universal Serial Bus (USB) ports are for USB 2.0/1.1 devices.

Chapter 2: System Board Options

The Vig700S motherboard is supports Intel® Core i3, i5, i7 and Pentium processors in the LGA1150 socket. RAM can be upgraded to a maximum of 16GB using DDR3 1066, 1333 or 1600MHz Non ECC Unbuffered DIMMs.

WARNING!

Unplug the system before carrying out the procedures described in this chapter. Failure to disconnect power before you open the system can result in personal injury or equipment damage. Hazardous voltage, current, and energy levels are present in this product. Power switch terminals can have hazardous Voltages present even when the power switch is off.

The procedures assume familiarity with the general terminology associated with personal computers and with the safety practices and regulatory compliance required for using and modifying electronic equipment.

Do not operate the system with the cover removed. Always replace the cover before turning on the system.

As the colours of the wires in the mains lead of this computer may not correspond with the coloured markings identifying the terminals in your plug precede as follows:

The wire which is coloured **green-and-yellow** must be **connected** to the **terminal** in the plug which is marked by the letter **E** or by the safety Earth symbol **Q** or coloured green or **green-and-yellow**.

The wire which is coloured blue must be connected to the terminal which is marked with the letter **N** or coloured **black**.

The wire which is coloured brown must be connected to the terminal which is marked with the letter **L** or coloured **red**.
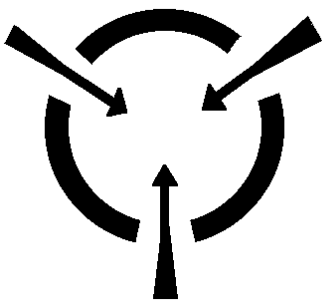
CAUTION!
The Viglen Vig700S motherboard and associated components are sensitive electronic devices. A small static shock from your body can cause expensive damage to your equipment.

BEFORE YOU BEGIN

Make sure you are earthed and free of static charge before you open the computer case. If you are unsure about upgrading your computer, return it to Viglen so a qualified engineer can perform the upgrade.

STEPS TO TAKE TO PREVENT STATIC DISCHARGE:

1. The best way to prevent static discharge is to buy an anti-static strap from your local electrical shop. While you are wearing the strap and it is earthed, static charge will be harmlessly bled to ground.

2. Do not remove the component from its anti-static protective packaging until you are about to install it.

3. Hold boards by the edges - try not to touch components / interface strips etc.

NOTE: We recommend that you return your computer to the service department for upgrading. Any work carried out is fully guaranteed. Upgrades should only be carried out by persons who are familiar with handling IC's, as incorrect installation will invalidate the guarantee.

Overview of Jumper Settings

The Vig700S motherboard contains the latest technology to offer an almost jumperless configuration. All Intel® Core CPUs are automatically detected and the speed is automatically set from the information provided by the CPU.

The only jumpers present on the motherboard are for clearing all the CMOS settings. In the unlikely event of the CMOS becoming corrupted then jumper CLRTC can be set to clear the contents of the CMOS, and for write protecting the BIOS.

CAUTION!

Never remove jumpers using large pliers as this can damage the pins. The best way to remove a jumper is to use a small pair of tweezers or fine needle-nosed pliers.

Never remove a jumper when the computer is switch on. Always switch the computer off first.

System Board Jumper Settings

⚠️ **CAUTION**

Do not move the jumper with the power on. Always turn off the power and unplug the power cord from the computer before changing a jumper setting. Otherwise, the board could be damaged.

- **Clear RTC RAM: (3-pin CLRTC)**

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.
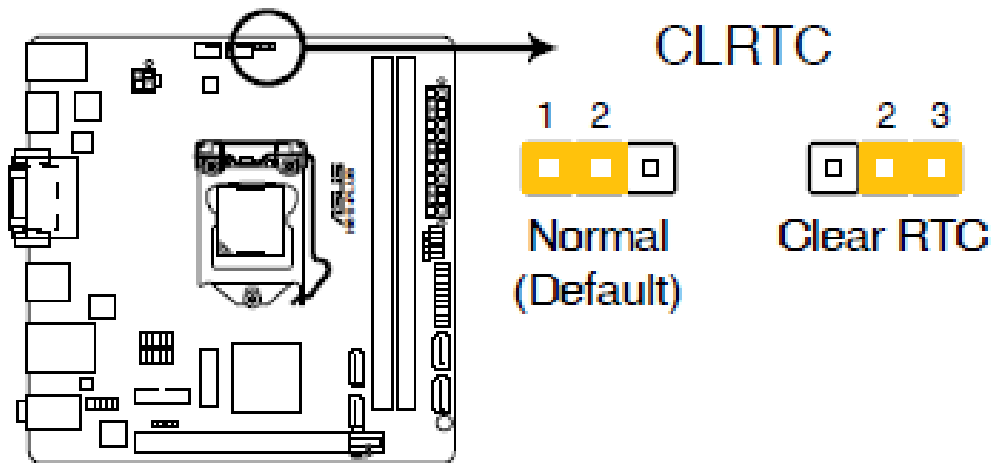

Figure 7: Clear CMOS jumper

To erase the RTC RAM:
1. Turn OFF the computer and unplug the power cord.

2. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5-10 seconds, then move the cap back to pins 1-2.

3. Plug the power cord and turn ON the computer.

4. Hold down the **<Del>** key during the boot process and enter BIOS setup to reenter data.

Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!

If the steps above do not help, remove the onboard battery and move the jumper again to clear the CMOS RTC RAM data. After clearing the CMOS, reinstall the battery.

You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the CPU Parameter Recall (C.P.R.) feature. Shut down and reboot the system, then the BIOS automatically resets parameter settings to default values.

Motherboard Connectors

There are connectors on the motherboard for the Power supply, HD audio, fans, front panel audio, front panel USB and front panel connectors. The location and/or details of these connections are shown below.

ATX power connectors (24-pin EATXPWR, 4-pin ATX12V)

These connectors are for ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.

This connector allows you to connect an ATX 12V 24-pin power supply. To connect the ATX 24-pin power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.
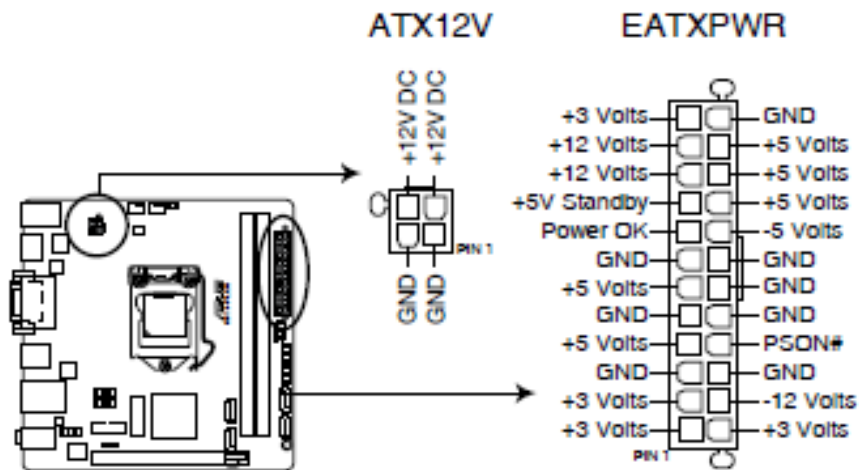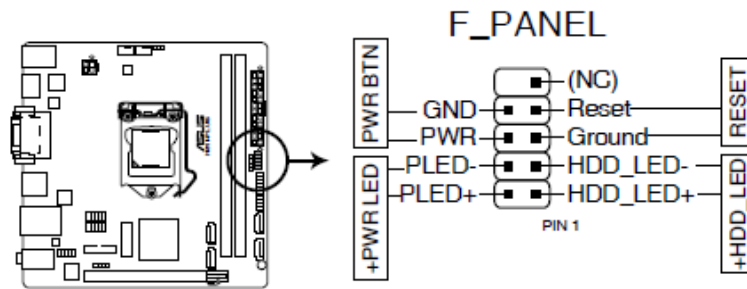

Figure 8: ATX Power Connectors

NOTE:

- *Make sure that all the connectors are connected to proper ATX power supplies to ensure stable operation of the Motherboard*
- *ATX 12V power connection should be greater than 18A.*
If a high power (75W or greater) add-in card is installed in the PCI Express connector, that card must be connected directly to the power supply. Failure to do so may cause damage to the motherboard and the add-in card.

- **System panel connector (10-1 pin F_PANEL):**

These connectors are for electrical connection to the front panel switches and LEDs. The JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.
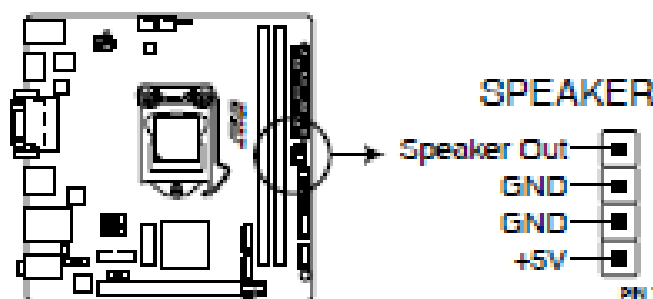

Figure 9: Front Panel Connectors

Table 4: Front Panel Connectors (F_PANEL)

Pin	Connector	Comments
1-3	**Hard Drive Activity LED Header**	Pins 1 and 3 can be connected to an LED to provide a visual indicator that data is being read from or written to a hard drive. Proper LED function requires a Serial ATA hard drive connected to an onboard Serial ATA connector.
5-7	**Reset Switch Header**	Pins 5 and 7 can be connected to a momentary single pole, single throw (SPST) type switch that is normally open. When the switch is closed, the board resets and runs the POST.
2-4	**Power/Sleep LED Header**	Pins 2 and 4 can be connected to a one- or two-colour LED. This display if the computer is active or not.
6-8	**Power Switch Header**	Pins 6 and 8 can be connected to a front panel momentary-contact power switch. The switch must pull the SW_ON# pin to ground for at least 50 ms to signal the power supply to switch on or off. (The time requirement is due to internal debounce circuitry on the board.) At least two seconds must pass before the power supply will recognize another on/off signal.

- **Speaker connector (4-pin SPEAKER)**
The 4-pin connector is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings. Viglen chassis does not support speaker.

Figure 10: Speaker

- **Front panel audio connector (10-1 pin AAFP)**

This connector allows you to connect the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.
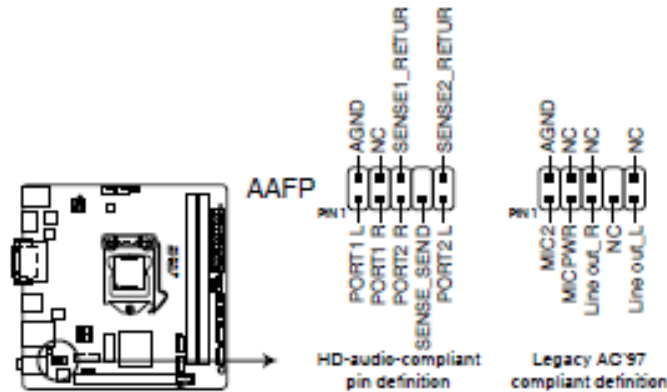

Figure 11: Front panel audio connector

- **Digital audio connector (4-1 pin SPDIF_OUT)**

This connector is for an additional Sony/Philips Digital Interface (S/PDIF) port. Connect the S/PDIF Out module cable to this connector, then install the module to a slot opening at the back of the system chassis.

The SPDIF module is an Optional part (sold separately)

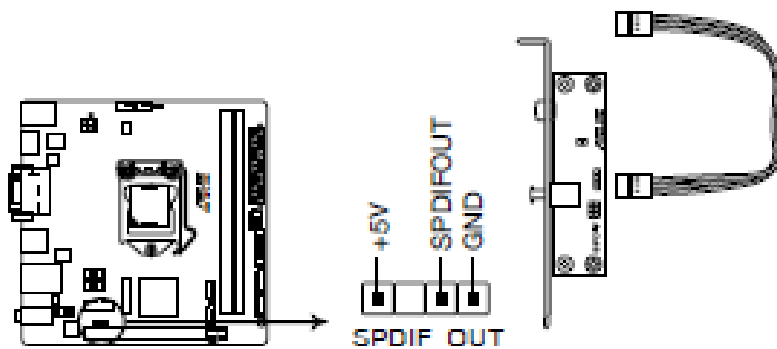**Figure 12:** Digital Audio connector

- **Front USB2.0 Connectors: USB910, USB1112**

These connectors are for USB 2.0 ports. Connect the USB module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specifications and supports up to 480Mbps connection speed.
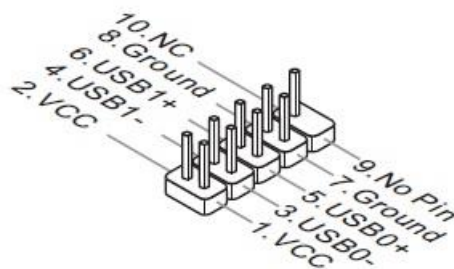

Figure 13: Front USB2.0 connectors

• **Front USB3.0 Connector: USB3_12**

This connector allows you to connect a USB 3.0 module for additional USB 3.0 front or rear panel ports. With an installed USB 3.0 module, you can enjoy all the benefits of USB 3.0 including faster data transfer speeds of up to 5Gbps, faster charging time for USB-chargeable devices, optimized power efficiency, and backward compatibility with USB 2.0.
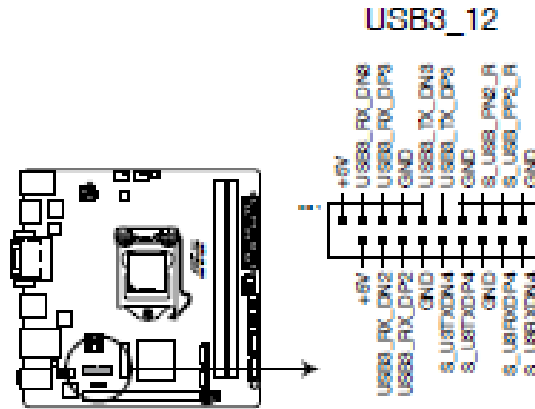
Figure 14: Front USB3.0 connector

• **TPM Module connector: TPM**

This connector connects to a TPM (Trusted Platform Module) module (optional).

Figure 15: TPM Module connector

• **Onboard LEDs**

The motherboard comes with a standby power LED that lights up to indicate that the system is ON, in sleep mode, or in soft-off mode. This is a reminder 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 LED.
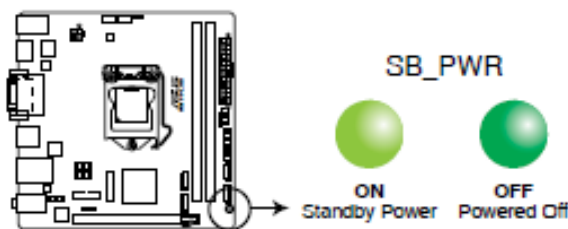
Figure 16: Onboard LED

Fan Power Connectors: CPU_FAN, CHA_FAN

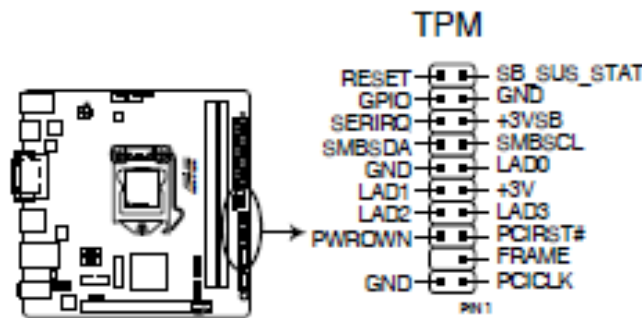The fan power connectors support system cooling fans with +12V. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with a speed sensor to take advantage of the CPU fan control. Remember to connect all system fans. Some system fans may not connect to the mainboard and will instead connect to the power supply directly. A system fan can be plugged into any available system fan connector.

Figure 17: Fan Power connectors

- **Intel® H81 Serial ATA 3.0 Gb/s connectors (7-pin SATA3G 1~2 [brown])**

These connectors are for the Serial ATA 3.0 Gb/s signal cables for Serial ATA hard disk drives and optical disc drives.

Figure 18: Serial ATA Connector

PCI Express Slot

The PCI Express slot supports the PCI Express interface expansion card. The PCI Express x16 slot supports up 4.0 GB/s transfer rate and the PCI Express x1 slot supports up to 250 MB/s
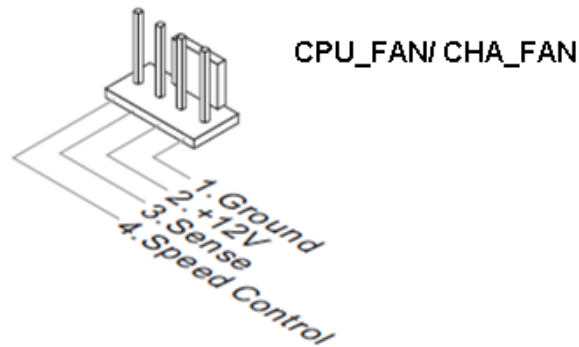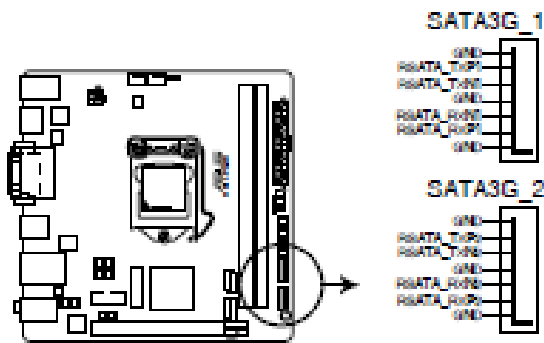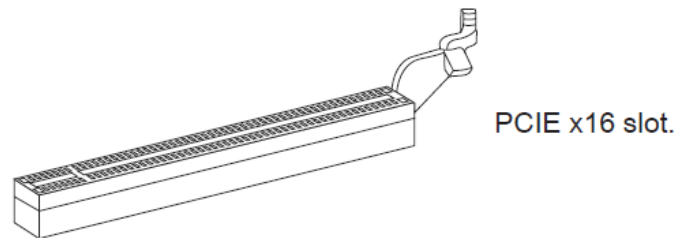

Figure 19: PCI Express Slot

Note: When adding or removing expansion cards, make sure that you power off the system first.

PCI Express x16 slot

IR Q, or interrupt request lines, are hardware lines over which devices can send interrupt requests to the processor. The PCI IR Q pins are typically connected to the PCI bus pins as followed:

IRQ assignments for this motherboard

	A	B	C	D	E	F	G	H
PCIe x16	shared	-	-	-	-	-	-	-
Intel SATA Controller	-	-	-	shared	-	-	-	-
Realtek LAN	-	-	shared	-	-	-	-	-
Intel xHCI	-	-	-	-	-	shared	-	-
Intel EHCI 1	-	-	-	-	-	-	-	shared
Intel EHCI 2	-	-	-	-	shared	-	-	-
HD Audio	-	-	-	-	-	-	shared	-

Important

When adding or removing expansion cards, always turn off the power supply and unplug the power supply power cable from the power outlet. Read the expansion card's documentation to check for any necessary additional hardware or software changes.

Upgrading the CPU

CAUTION!

Before installing or removing a processor, make sure the AC power has been removed by unplugging the power cord from the computer; the standby power LED should not be lit. Failure to do so could damage the processor and the board.

To install a processor, follow these instructions:

1. Unlatch the processor socket lever by pushing it down and away from the socket. (Figure 20, A, B)
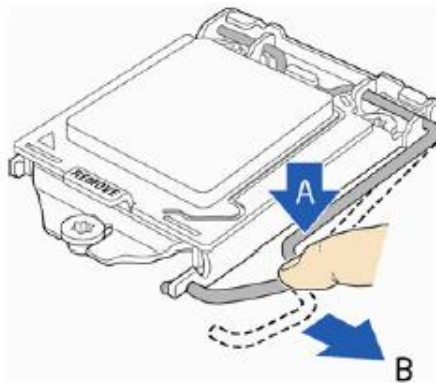
Figure 20: Unlatch the socket lever

2. Rotate the socket lever to lift the load plate away from the socket (Figure 21, A). Make sure that the load plate is in the fully open position (Figure 21, B) while being careful not to damage adjacent components. Do not touch the socket contacts.
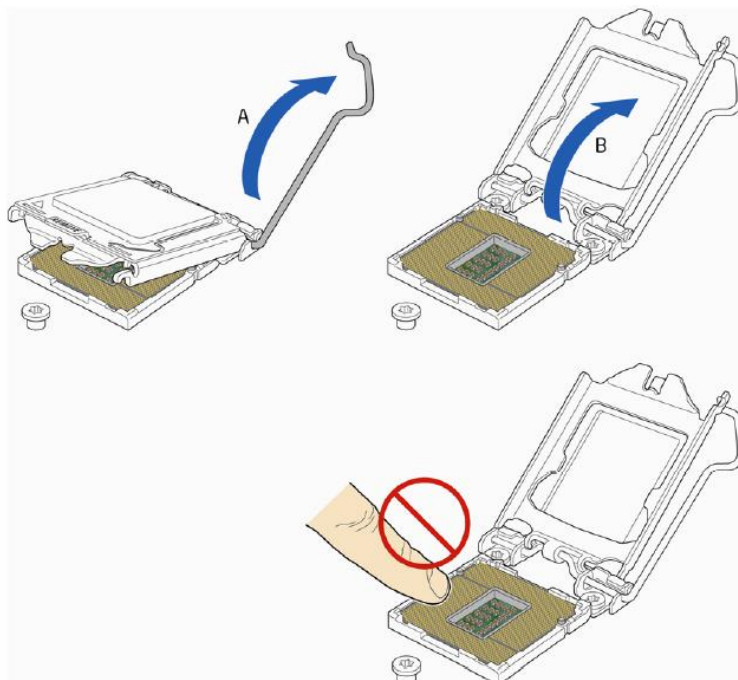
Figure 21: Lift the load plate

3. Remove the processor from its protective cover. Hold the processor only at the edges, being careful not to touch the bottom of the processor (see Figure 22).
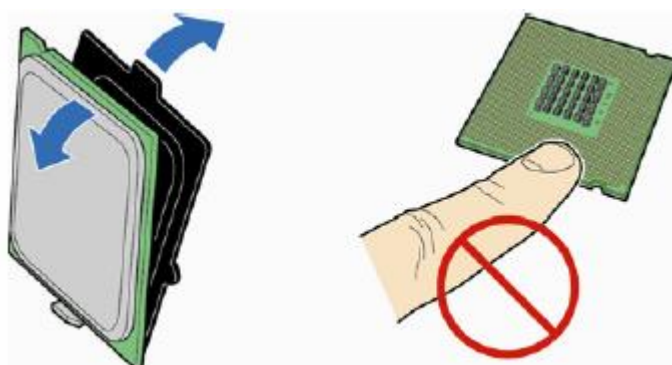
Figure 22: Remove the processor from the protective cover

Note: Do not discard the processor cover. Always replace the processor cover if you remove the processor from the socket.

4. Hold the processor with your thumb and index finger oriented as shown in Figure 23 to align your fingers with the socket finger cut-outs. Make sure that the processor Pin 1 indicator (gold triangle) is aligned with the Pin 1 chamfer on the socket (Figure 23, B) and that the notches on the processor align with the posts on the socket (Figure 23, C). Lower the processor straight down without tilting or sliding it in the socket (Figure 23, A).
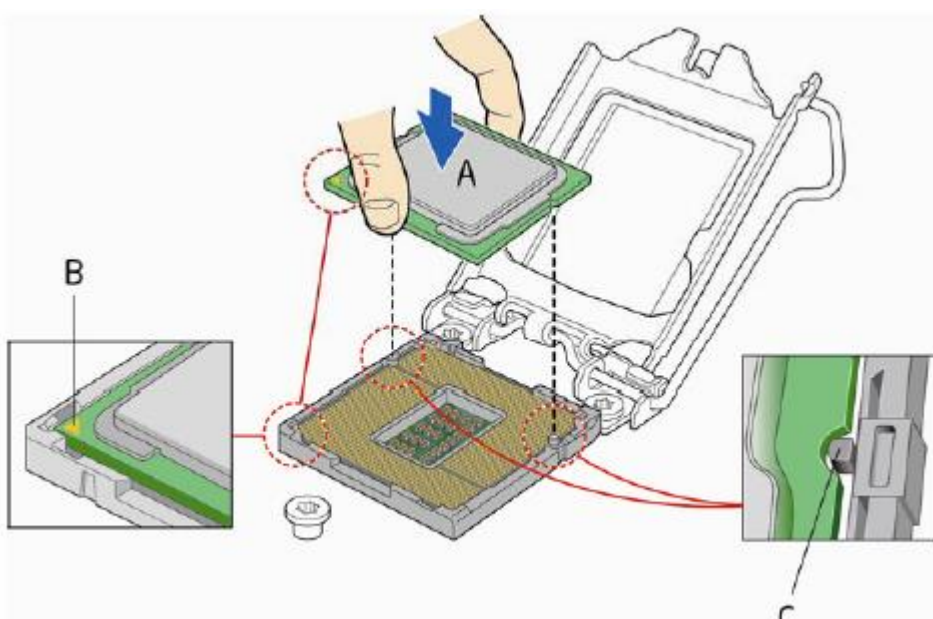
Figure 23: Install the processor

5. Carefully lower the socket lever (Figure 20) while making sure that the front edge of the load plate slides under the shoulder screw cap as the lever is lowered. Latch the socket lever under the load plate tab (Figure 20, C, and D). The socket cover (Figure 20, B) will pop off as shown.
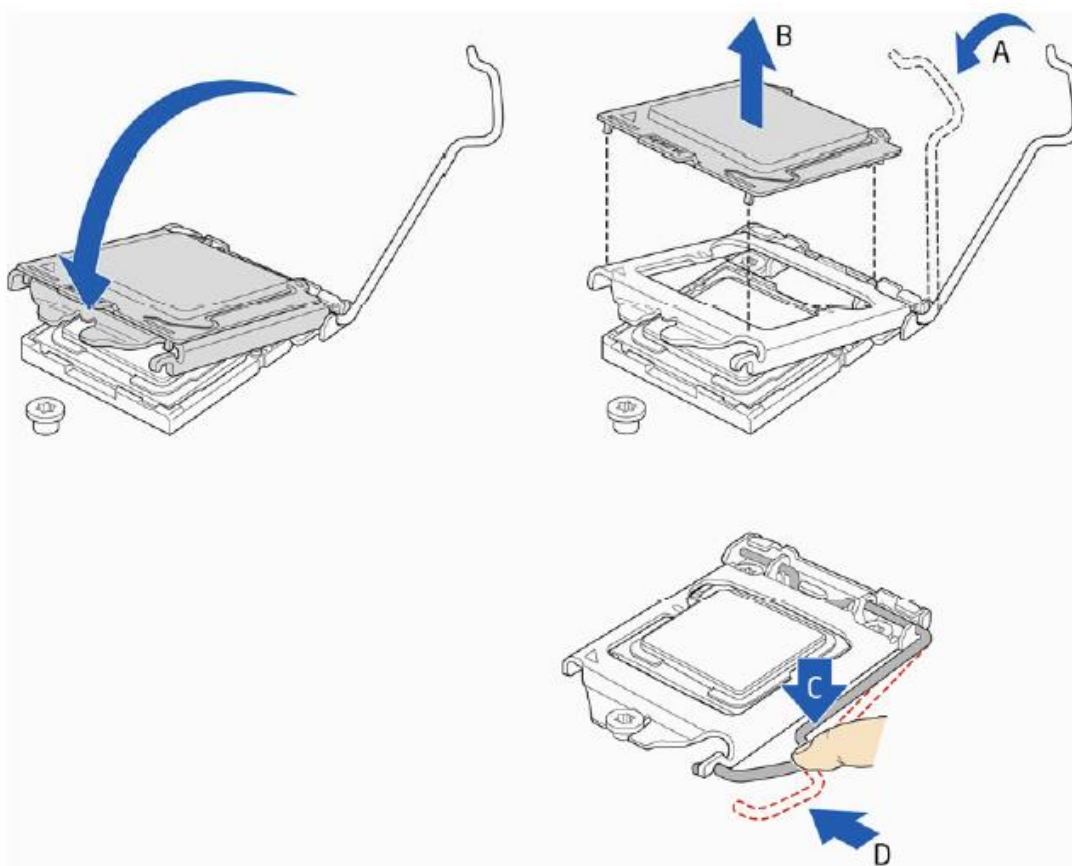
Figure 24: Secure the load plate in place

6. Pick up the socket cover and remove it from the desktop board.

- **Connecting the Processor Fan Heat Sink Cable**

Connect the processor fan heat sink power cable to the 4-pin processor fan header (see Figure 25). A fan with a 4-pin connector as shown in Figure 25 is recommended.

1. Make sure the four hooks are in the proper position before you install the cooler.
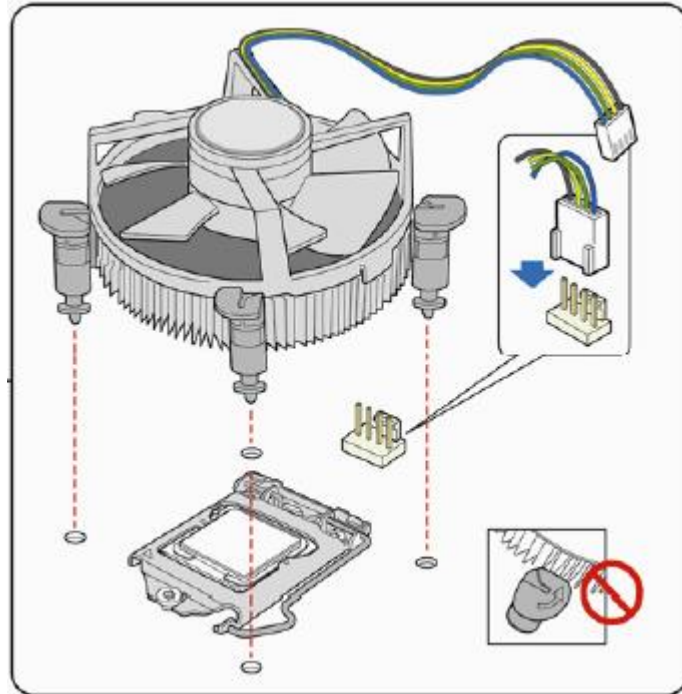
Figure 25: Connecting the processor fan heat sink power cable to the processor fan header

- **Removing the Processor**

For instructions on how to remove the processor fan heat sink and processor, refer to the processor installation manual.

Installing & Removing Memory Modules

- **Installing Memory**

You may install 1GB, 2GB, 4GB, and 8GB unbuffered non‑ ECC DDR3 DIMMs into the DIMM sockets.
The motherboard has two DIMM sockets. The motherboard supports the following memory features:

- o Two DDR3 DIMMs with gold-plated contacts.
- o Non-ECC (64-bit) memory.
- o 1GB, 2GB, 4GB and 8GB modules.
- o Memory Speeds 1066MHz, 1333MHz and 1600MHz

You may install varying memory sizes in Channel A and Channel B. The system maps the total size of the lower-sized channel for the dual-channel configuration. Any excess memory from the higher-sized channel is then mapped for single-channel operation.

- Due to Intel® chipset limitation, DDR3 1600MHz and higher memory modules on XMP mode will run at the maximum transfer rate of DDR3 1600MHz.

- Always install DIMMs with the same CAS latency. For optimal compatibility, we recommend that you install memory modules of the same version or date code (D/C) from the same vendor. Check with the retailer to get the correct memory modules.

- Due to the memory address limitation on 32-bit Windows® OS, when you install 4GB or more memory on the motherboard, the actual usable memory for the OS can be about 3GB or less. For effective use of memory, we recommend that you do any of the following:

    - Use a maximum of 3GB system memory if you are using a 32-bit Windows® OS.

    - Install a 64-bit Windows® OS if you want to install 4GB or more on the motherboard.

- This motherboard does not support DIMMs made up of 512 megabits (Mb) chips or less.

- Memory modules with memory frequency higher than 2133 MHz and its corresponding timing or the loaded X.M.P. Profile is not the JEDEC memory standard. The stability and compatibility of these memory modules depend on the CPU's capabilities and other installed devices.

The maximum 16GB memory capacity can be supported with 8GB or above DIMMs

To install DIMMs, follow these steps:

1. Observe the precautions in "Before You Begin". Turn off the computer and all Peripheral devices.
2. Remove the computer cover and locate the DIMM sockets.
3. Holding the DIMM by the edges, remove it from its antistatic package.
4. Make sure the clips at either end of the socket are pushed away from the socket.
5. Position the DIMM above the socket. Align the two small notches in the bottom edge of the DIMM with the keys in the socket. Insert the bottom edge of the DIMM into the socket.
6. When the DIMM is seated, push down on the top edge of the DIMM until the retaining clips at the ends of the socket snap into place. Make sure the clips are firmly in place.
7. Replace the computer cover.
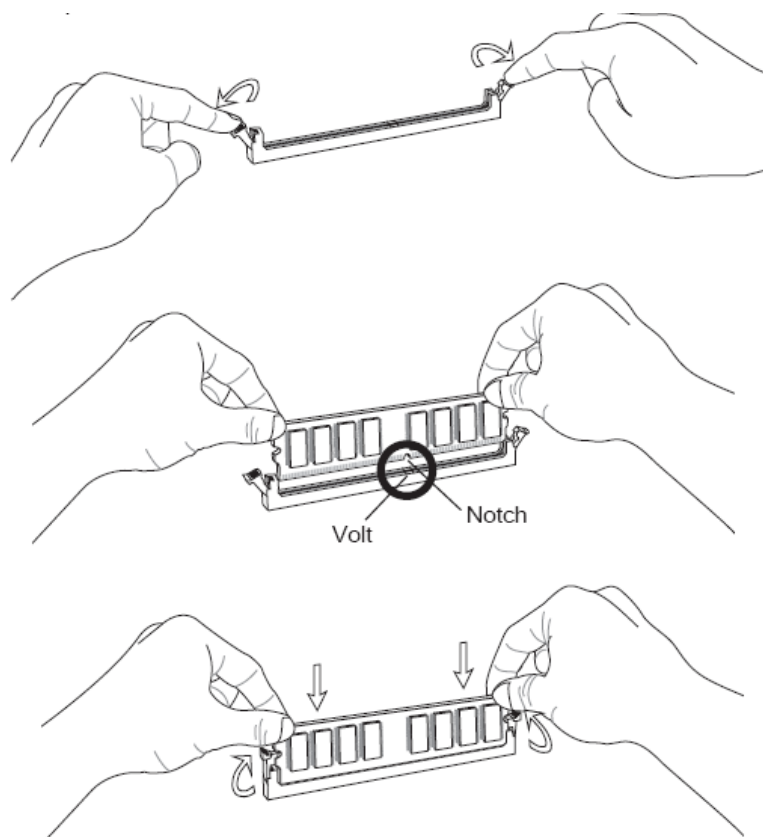
Figure 26: Memory Installation

Removing Memory

To remove a DIMM, follow these steps:

1. Observe the precautions in "Before You Begin".
2. Turn off all peripheral devices connected to the computer. Turn off the computer.
3. Remove the computer cover.
4. Gently spread the retaining clips at each end of the socket. The DIMM pops out of the socket. Hold the DIMM by the edges, lift it away from the socket, and store it in an antistatic package.
5. Reinstall and reconnect any parts you removed or disconnected to reach the DIMM sockets.
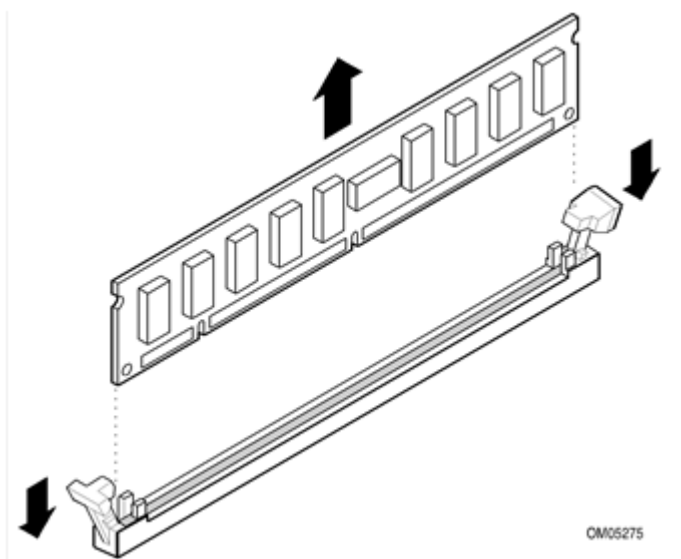
Figure 27: Removing Memory Modules

Replacing the Clock/CMOS RAM Battery

A lithium battery is installed in a socket on the system board.

The battery has an estimated life expectancy of seven years. When the battery starts to weaken, it loses voltage; when the voltage drops below a certain level, the system settings stored in CMOS RAM (for example, the date and time) may be wrong.

If the battery fails, you will need to replace it with a **CR2032** battery or an equivalent. As long as local ordinance permits, you may dispose of individual batteries as normal rubbish. Do not expose batteries to excessive heat or any naked flame. Keep all batteries away from children.

CAUTION!

Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by Viglen. Discard used batteries according to manufacturer's instructions.

To replace the battery, carry out the following:

1. Observe the precautions in "Before You Begin."
2. Turn off all peripheral devices connected to the system.
3. Turn off the system.
4. Remove any components that are blocking access to the battery.
5. Figure 24 shows the battery location. Gently pry the battery free from its socket, taking care to note the "+" and "-" orientation of the battery (Figure 28, 2).
6. Install the new battery in the socket.
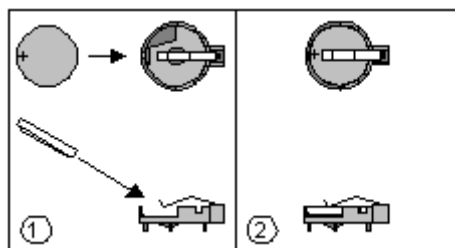
Figure 28: Removing the Battery

Chapter 3: Solving Problems

The first part of this chapter helps you identify and solve problems that might occur when the system is in use. The second part lists error code messages that might be displayed.

Please remember that if you cannot solve the problem by yourself then you should contact Viglen Technical Support for further assistance.

Viglen Technical Support can be reached in the following ways:

Telephone: 01727 201 850
Fax: 01727 201 858
Email: techsupport@viglen.co.uk

You can also look for support information on our web site:
http://www.viglen.co.uk

Device drivers and various useful utilities can be downloaded from our ftp site:
http://download.viglen.co.uk/files/Motherboards/Vig700S

Resetting the System

Before checking your system for hardware problems, it is always a good idea to try resetting your computer and see if a re-boot can solve the problem. Most software related problems can be solved simply by re-booting your PC.

Table 5: Resetting the System

To do the following	Press
Soft boot: Clear the system memory and reload the operating system (also called warm reset).	<Ctrl + Alt + Del>
Cold boot: Clear the system memory, halt power to all peripherals, restart POST, and reload the operating system.	Power off/on or reset button (at front of the system)

Troubleshooting Procedures

This section provides a step-by-step troubleshooting procedure to identify a problem and locate its source.

CAUTION!

1. Turn off the system and any peripheral devices before you disconnect any peripheral cables from the system. Otherwise, you can permanently damage the system or the peripheral devices.

2. Make sure the system is plugged into a properly grounded power outlet.

3. Make sure your keyboard and video display are correctly connected to the system. Turn on the video display, and turn up its brightness and contrast controls to at least two-thirds of the maximum (refer to the documentation supplied with the video display).

4. If the operating system normally loads from the hard disk drive, make sure there is no diskette in the diskette drive. If the operating system normally loads from a diskette, insert the operating system diskette into the drive.

5. Turn on the system. If the power indicator does not light, but the system seems to be operating normally, the indicator is probably defective. Monitor the power-on self test (POST) execution. Each time you turn on the system, the POST checks the system board, memory, keyboard, and certain peripheral devices.

NOTE: If the POST does not detect any errors, the system beeps once and boots up.

Errors that do not prevent the boot process (non-fatal errors) display a message that looks similar to the following:

> *Error Message Line 1*
> *Error Message Line 2*
> *Press <DEL> for Set-up, <F1> to Boot*
> *You can note the error and press <F1> to resume the boot-up process, or <DEL> to enter Set-up.*

Errors that prevent the boot process from continuing (fatal errors), are communicated by a series of audible beeps. If this type of error occurs, refer to the error codes and messages listed at the end of this chapter.

6. Confirm that the operating system has loaded.

Problems & Suggestions

Table 6: Problems and Suggestions

What happens	What to do
Application software problems	Try resetting the system.
	Make sure all cables are installed correctly.
	Verify that the system board jumpers are set properly.
	Verify that your system hardware configuration is set correctly. In Setup, check the values against the system settings you recorded previously. If an error is evident (wrong type of drive specified, for example), make the change in Setup and reboot the system. Record your change.
	Make sure the software is properly configured for the system. Refer to the software documentation for information.
	Try a different copy of the software to see if the problem is with the copy you are using.
	If other software runs correctly on the system, contact the vendor of the software that fails.
	If you check all of the above with no success, try clearing CMOS RAM and reconfiguring the system. Make sure you have your list of system settings available to re-enter, because clearing CMOS RAM sets the options to their default values.
Characters on-screen are distorted or incorrect	Make sure the brightness and contrast controls are properly adjusted on the monitor.
	Make sure the video signal cable and power cables are properly installed.
	Make sure your monitor is compatible with the video mode you have selected.
Characters do not appear on screen	Make sure the video display is plugged in and turned on.
	Check that the brightness and contrast controls are properly adjusted.
	Check that the video signal cable is properly installed.
	Make sure a video board is installed, enabled, and the jumpers are positioned correctly.
	Reboot the system.

Table 7: Problems and Suggestions **(Continued)**

What happens	What to do
CMOS RAM settings are wrong	If system settings stored in CMOS RAM change for no apparent reason (for example, the time of day develops an error), the backup battery may no longer have enough power to maintain the settings. Replace the battery (Chapter 2).
Diskette drive light does not go on when drive is in use or is tested by POST	Make sure the power and signal cables for the drive are properly installed. Check that the drive is properly configured and enabled in Setup.
Hard drive light does not go on when drive is in use or is tested by POST	Make sure the power and signal cables for the drive are properly installed. Make sure the front panel connector is securely attached to the system board headers. Check that the drive is properly configured and enabled in Setup. Check the drive manufacturer's manual for proper configuration for remote hard disk drive activity.
Power-on light does not go on	If the system is operating normally, check the connector between the system board and the front panel. If OK, the light may be defective.
Prompt doesn't appear after system boots	It's probably switched off. A serious fault may have occurred consult your dealer service department / Technical Support.
Setup, can't enter	If you can't enter Setup to make changes, check the switch that disables entry into Setup (Chapter 2). If the switch is set to allow entry into Setup, you might need to clear CMOS RAM to the default values and reconfigure the system in Setup.
System halts before completing POST	This indicates a fatal system error that requires immediate service attention. Note the screen display and write down any beep code emitted. Provide this information to your dealer service department / Technical Support.

Chapter 4: System BIOS

4.1 What is the BIOS?

The BIOS (Basic Input Output System) is an important piece of software which is stored in a ROM (Read Only Memory) chip inside the computer. It consists of the basic instructions for controlling the disk drives, hard disk, keyboard and serial/parallel ports. The BIOS also keeps a list of the specifications of the computer in battery-backed RAM (also known as the CMOS RAM) and provides a special Setup program to change this information.

The BIOS in your Viglen computer is guaranteed to be fully compatible with the IBM BIOS. It has been written by American Megatrends Inc, an industrial leader in the field of BIOS software.

4.2 The Power-On sequence

When the computer is first switched on, certain instructions in the BIOS are executed to test various parts of the machine. This is known as the POST (Power-On Self Test) routine. When you switch the computer on (or when you press the Reset button or press <Ctrl> + <Alt>+ <Delete> keys, which has the same effect), you can see on the monitor that it counts through the memory, testing it. The floppy disk drives are then accessed and tested, and the various interfaces are checked. If there are any errors, a message is displayed on the screen.

4.3 Managing and updating BIOS

There are up three methods of updating BIOS to the latest Viglen approved version. The number of options made available for any particular board may vary depending on BIOS Support, drive support and BIOS update file size. You only need to use one.

- **BIOS Updater**
- **EZ-Flash 2 Update**
- **BIOS recovery**

Latest BIOS files and Utility are available from Viglen FTP site:
http://download.viglen.co.uk/files/Motherboards/Vig700S

NOTE: Please review the instructions distributed with the upgrade utility before attempting a BIOS upgrade.

4.3.1 BIOS Update Instructions under DOS

The BIOS Updater allows you to update BIOS in a 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.

1. Save BIOS update zipped file to a temporary directory.

2. Extract the necessary files.

3. Copy the contents of the file to a bootable USB key or CD-ROM media.

4. Boot the target PC with the device connected or inserted.

5. Select **<F8>** during POST to display the Boot Menu and select your bootable device.

6. At the DOS prompt Type 'Flash.bat' to launch the BIOS updates process.

7. Reboot the system once complete.

8. Enter the BIOS Setup and Ensure to load the BIOS default settings to ensure system compatibility and stability. Select the Load Optimized Defaults item under the Exit menu.

DO NOT shutdown or reset the system while updating the BIOS! Doing so may cause system boot failure!

4.3.2 BIOS Update Instructions using EZ-Flash Method

For this method you will require a Flash USB device and required BIOS file.

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 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.

Note:

• *This function supports USB flash disks formatted using FAT32/16 on a single partition only.*

• *Ensure to load the BIOS default settings to ensure system compatibility and stability. Select the Load Optimized Defaults item under the Exit menu. .*

IMPORTANT!!!!!

During the update process DO NOT shut down the PC or interrupt the process, this could cause damage to the motherboard.
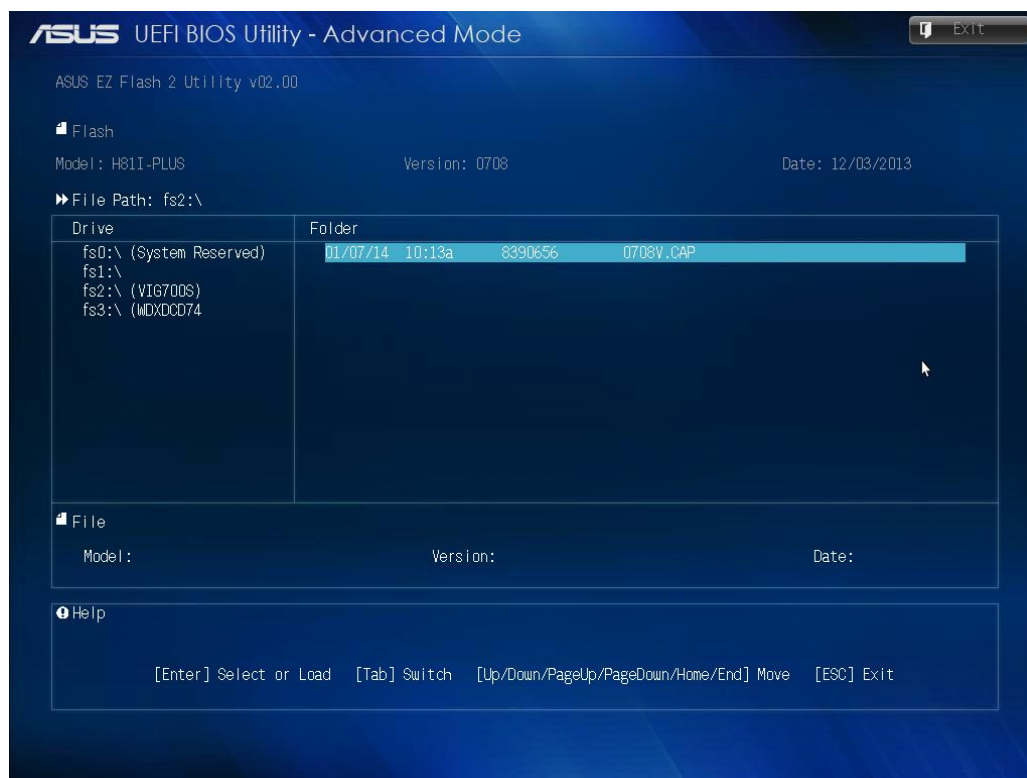
Figure 29: EZ Flash BIOS update screen

4.3.3 Recovering the BIOS - CrashFree BIOS 3

The CrashFree BIOS 3 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 updated BIOS file.

Before using this utility, rename the BIOS file in the removable device to:
H81IPLUS.CAP*.*

To recover the BIOS:

1. Turn on the system.

2. Insert the support DVD to the optical drive or the USB flash drive that contains 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 settings. 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!

4.4 BIOS Setup Program

This chapter provides basic information on the BIOS Setup program and allows you to configure the system for optimum use. You may need to run the Setup program when:

- An error message appears on the screen during the system booting up, and requests you to run BIOS SETUP.
- You want to change the default settings for customized features.

Note: The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.

➢ Entering BIOS Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <F2> or <DEL> key to enter Setup. You can also press <F8> when the message below is on screen to bring up the Boot Menu.
"Press <Del> or <F2> to enter BIOS setup Menu"

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

➢ Control Keys
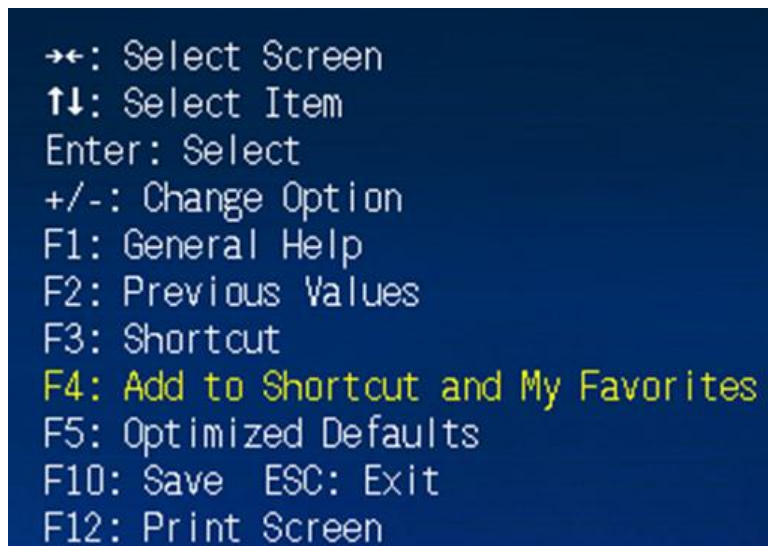
Figure 30: BIOS control keys

After entering the BIOS, the first screen you will see is the Main Menu – EZ Mode

BIOS menu screen

The BIOS setup program can be used under two modes: **EZ Mode** and **Advanced Mode**. You can change modes from the **Exit** menu or from the Exit/Advanced Mode button in the EZ Mode/Advanced Mode screen.

EZ Mode

By default, the EZ Mode screen appears when you enter the BIOS setup program. The EZ Mode provides you an overview of the basic system information, and allows you to select the display language, system performance mode and boot device priority. To access the Advanced Mode, click Exit/Advanced Mode, then select Advanced Mode or press F7 for the advanced BIOS settings
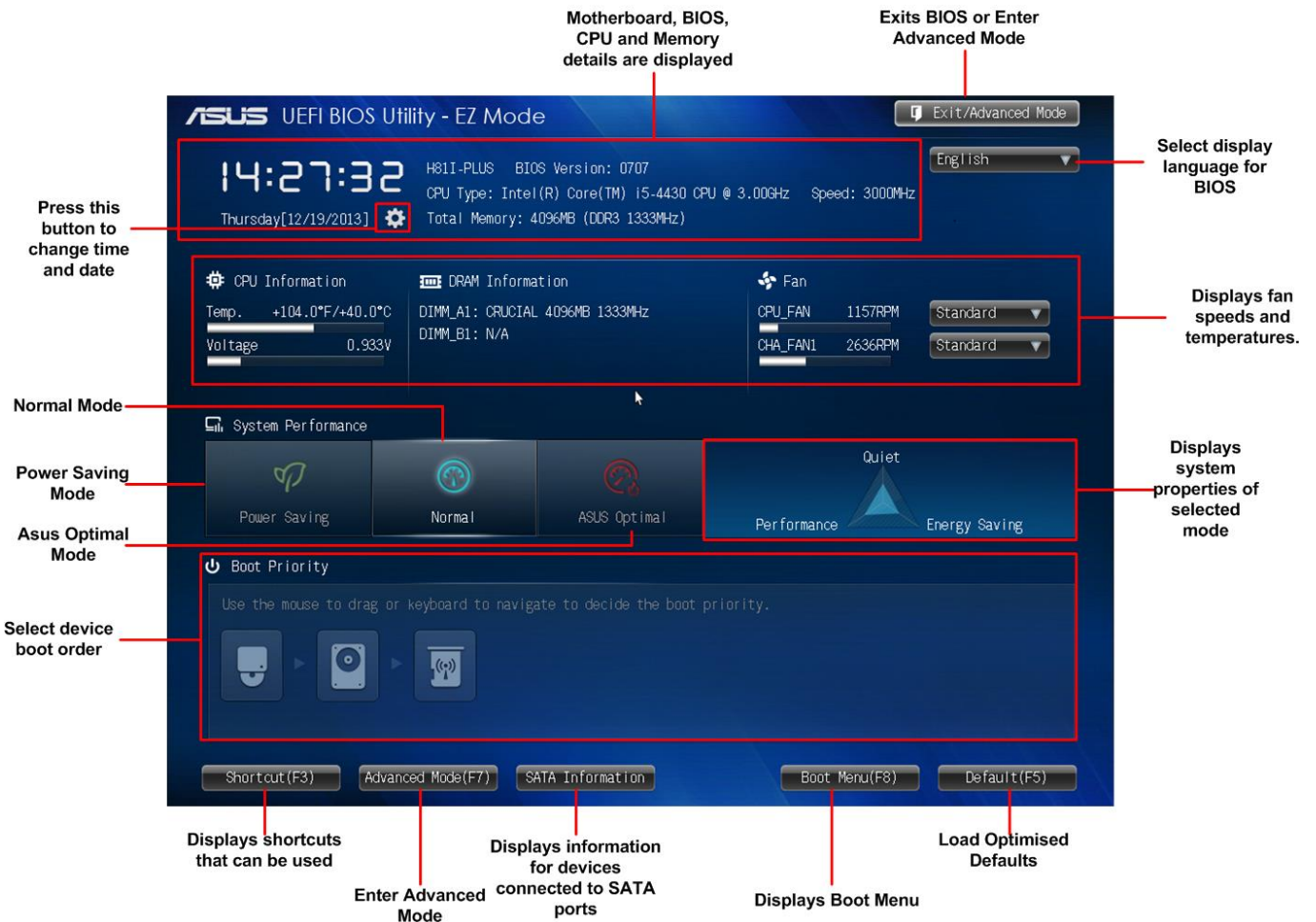
Figure 31: BIOS Main Menu – EZ Mode

- The boot device options vary depending on the devices you installed to the system.

- The **Boot Menu (F8)** button is available only when the boot device is installed to the system.

Advanced Mode

The Advanced Mode provides advanced options for experienced end-users to configure the BIOS settings. The figure below shows an example of the Advanced Mode. Refer to the following sections for the detailed configurations.
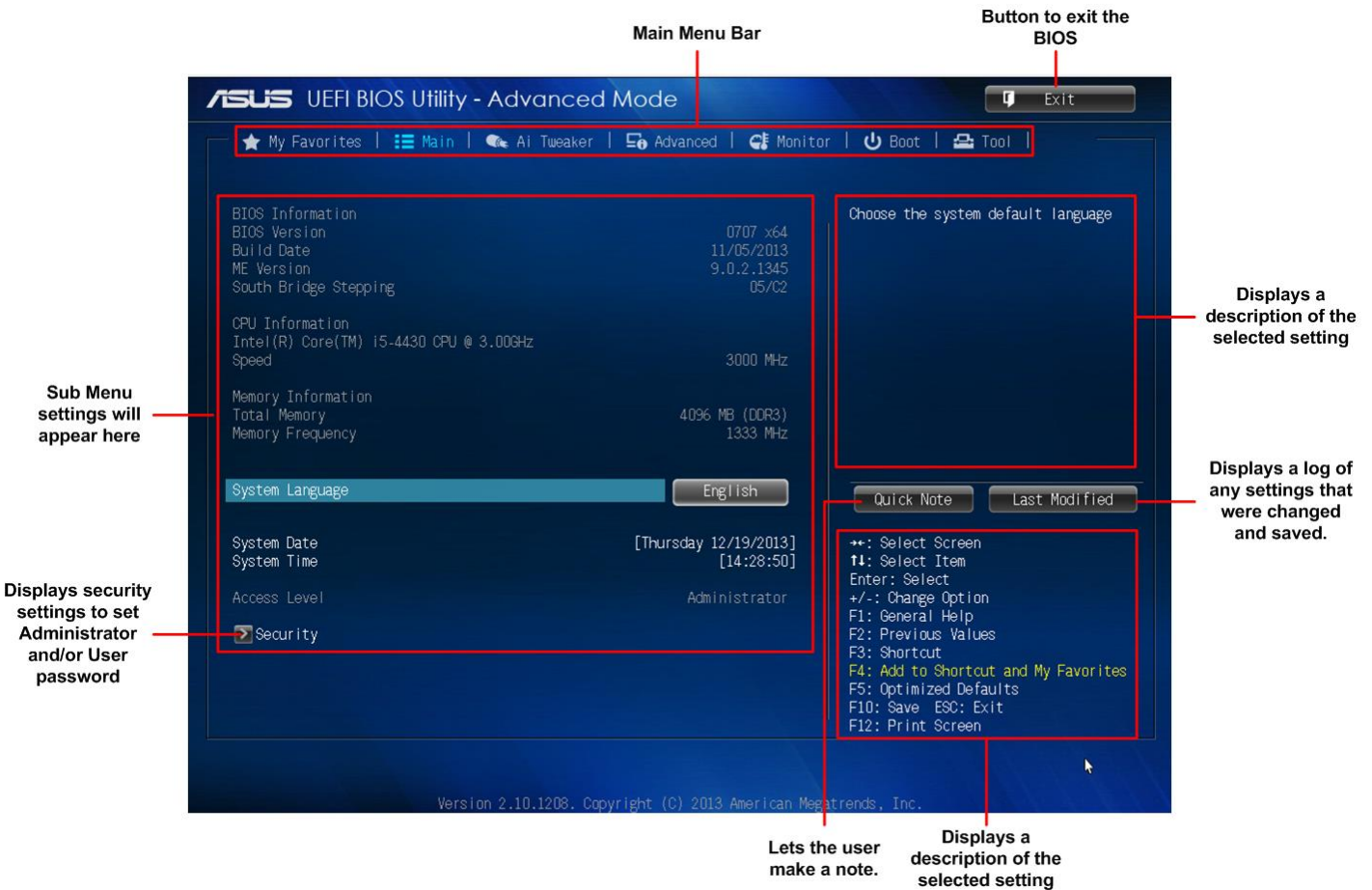
Figure 32: BIOS Main Menu – Advanced Mode

BIOS Main Menu selection

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

My Favorites	For saving the frequently-used system settings and configuration
Main	For changing the basic system configuration
Ai Tweaker	For changing the overclocking settings
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 functions
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. For 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

4.5 My Favorites

MyFavorites is your personal space where you can easily save and access your favourite BIOS items.
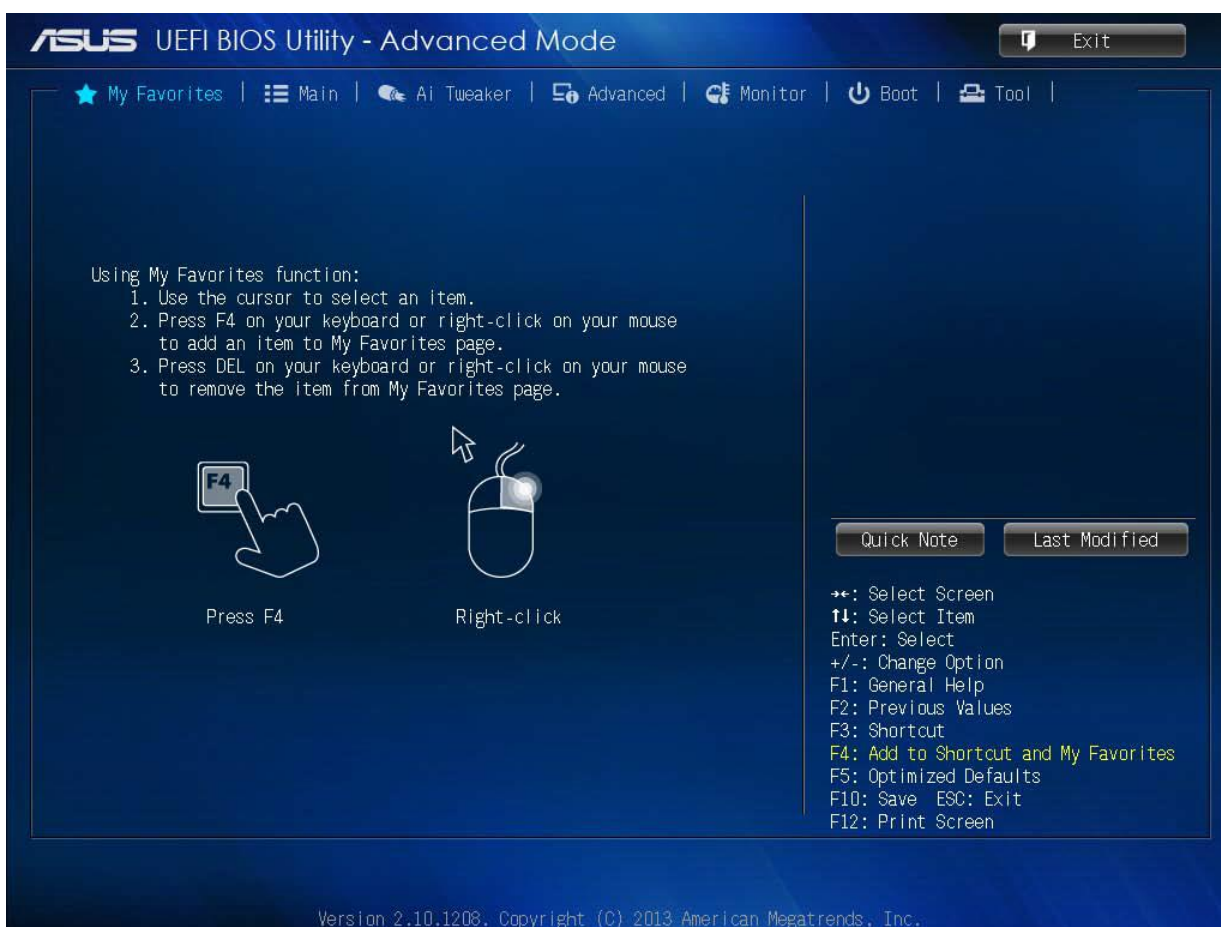
Figure 33: My Favourites Menu

4. 6 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.
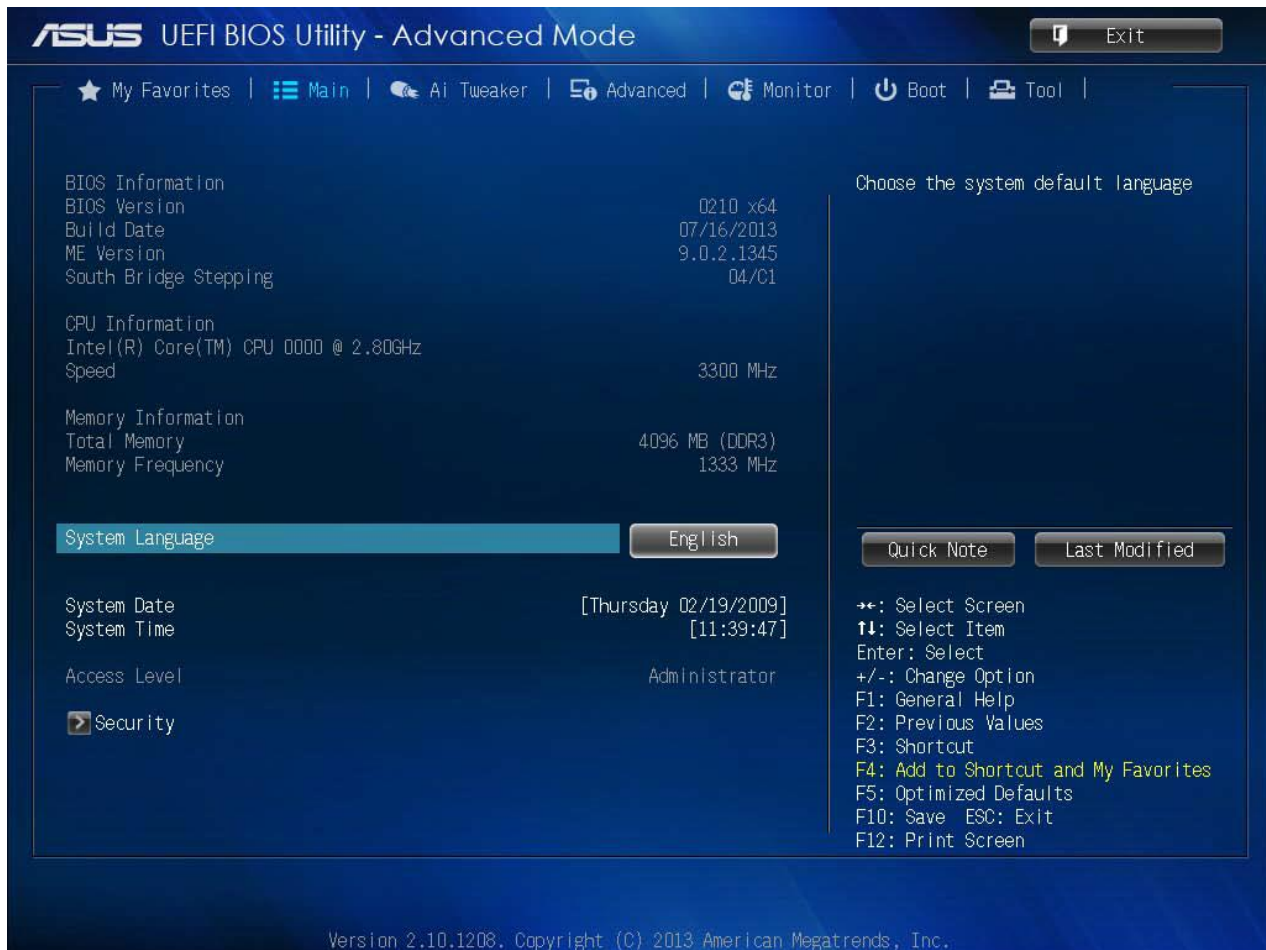
Figure 34: Main Menu

4.6.1 System Language [English]
Allows you to choose the BIOS language version from the options.

4.6.2 System Date [Day xx/xx/xxxx]
Allows you to set the system date.

4.6.3 System Time [xx:xx:xx]
Allows you to set the system time.

4.6.4 Security
The Security menu items allow you to change the system security settings.

- *If you have forgotten your BIOS password, erase the CMOS Real Time Clock (RTC) RAM to clear the BIOS password.*

- *The **Administrator** or **User Password** items on top of the screen show the default **Not Installed**. After you set a password, these items show **Installed**.*

Administrator Password

If you have set an administrator password, we recommend that you enter the administrator password for accessing the system. Otherwise, you might be able to see or change only selected fields in the BIOS setup program.

To set an administrator password:

1. Select the **Administrator Password** item and press <Enter>.
2. From the **Create New Password** box, key in a password, then press <Enter>.
3. Confirm the password when prompted.

To change an administrator password:

1. Select the **Administrator Password** item and press <Enter>.
2. From the **Enter Current Password** box, key in the current password, then press <Enter>.
3. From the **Create New Password** box, key in a new password, then press <Enter> Confirm the password when prompted.

To clear the administrator password, follow the same steps as in changing an administrator password, but press <Enter> when prompted to create/confirm the password. After you clear the password, the **Administrator Password** item on top of the screen shows **Not Installed**.

User Password
If you have set a user password, you must enter the user password for accessing the system. The **User Password** item on top of the screen shows the default **Not Installed**. After you set a password, this item shows **Installed**.

To set a user password:
1. Select the **User Password** item and press <Enter>.
2. From the **Create New Password** box, key in a password, then press <Enter>.
3. Confirm the password when prompted.

To change a user password:
1. Select the **User Password** item and press <Enter>.
2. From the **Enter Current Password** box, key in the current password, then press <Enter>.
3. From the **Create New Password** box, key in a new password, then press <Enter>.
4. Confirm the password when prompted.

To clear the user password, follow the same steps as in changing a user password, but press<Enter> when prompted to create/confirm the password. After you clear the password, the **User Password** item on top of the screen shows **Not Installed**.

4. 7 Ai Tweaker menu

The Ai Tweaker menu items allow you to configure overclocking-related items.

Be cautious when changing the settings of the Ai Tweaker menu items. Incorrect field values can cause the system to malfunction.

The configuration options for this section vary depending on the CPU and DIMM model installed on the motherboard.
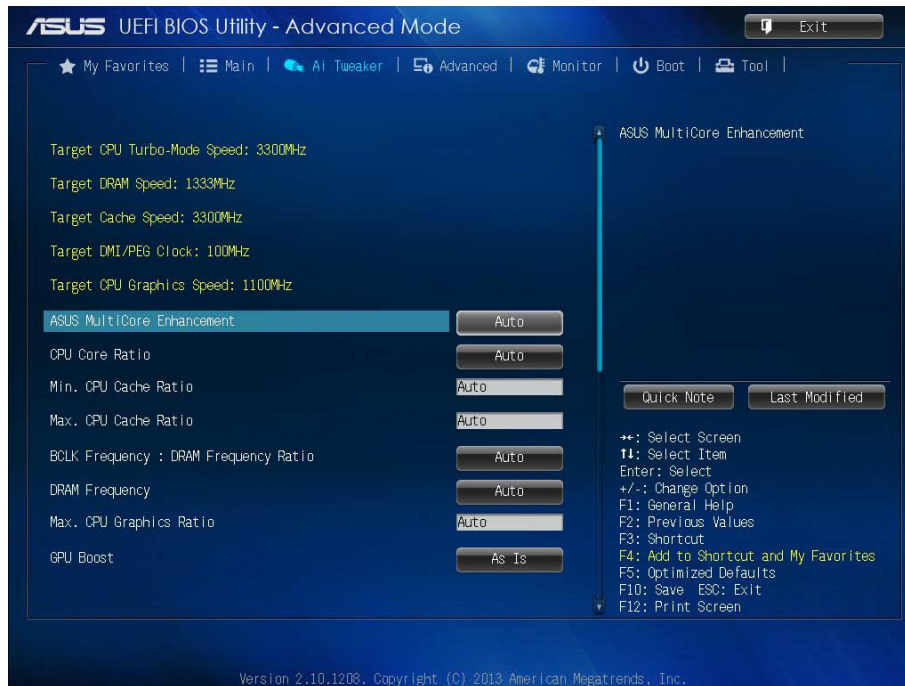

Figure 35: Ai Tweaker Menu

Scroll down to display the following items:
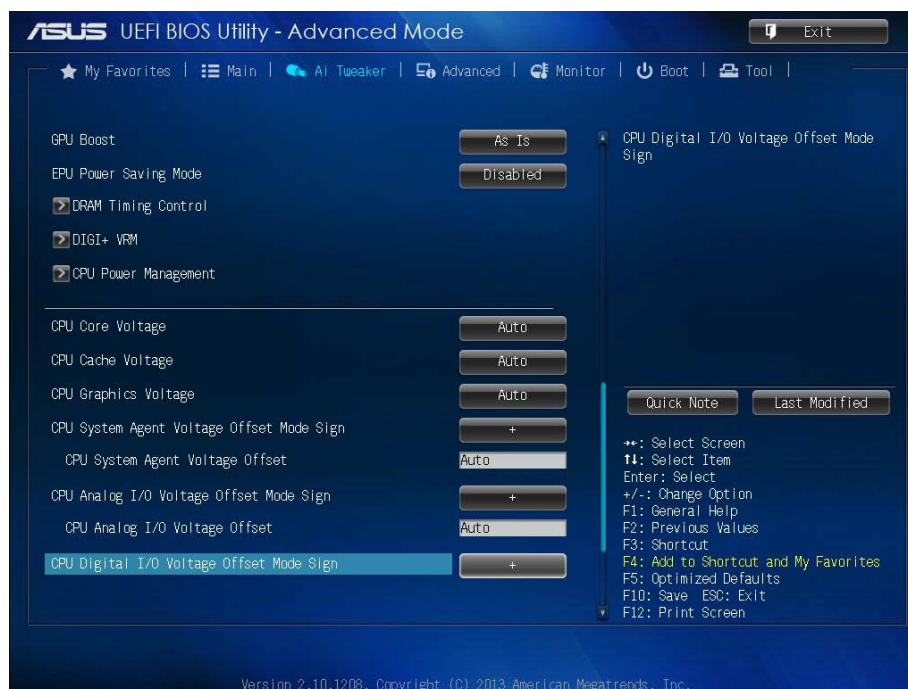
Figure 36: Tweaker Menu

Scroll down to display the following items:

Figure 37: Tweaker Menu

Target CPU Turbo-Mode Speed : xxxxMHz
Displays the target CPU Turbo-Mode speed.

Target DRAM Speed : xxxxMHz
Displays the target DRAM speed.

Target Cache Speed : xxxxMHz
Displays the target Cache speed.

Target DMI/PEG Clock : xxxxMHz
Displays the target DMI/PEG clock.

Target iGPU Speed : xxxxMHz
Displays the target iGPU speed.

4.7.1 ASUS MultiCore Enhancement [Auto]
[Auto]   Default set to [Auto] for maximum performance under
                  XMP/Manual/Userdefinedmemory frequency mode.
[Disabled]   Allows you to set to default core ratio settings.

4.7.2 CPU Core Ratio [Auto]
Allows you to set the CPU core ratio automatically or manually.

[Auto]   Sets all CPU Core Ratio to Intel® CPU default settings automatically.
[Sync All Cores] Allows you to set CPU Core Ratio settings for all cores.
[Per Core]   Allows you to set CPU Core Ratio individually.

The following two items appear only when you set the CPU Core Ratio to [Sync All Cores] or [Per Core].

1-Core Ratio Limit [Auto]
Allows you to set the 1-Core Ratio Limit. Select [Auto] to apply the CPU default Turbo Ratio setting or manually assign a 1-Core Ratio Limit value that is higher than or equal to the 2-Core Ratio Limit.

2-Core Ratio Limit [Auto]
This item becomes configurable only when you set **CPU Core Ratio** to [Per Core] and allows you to set the 2-Core Ratio Limit. Select [Auto] to apply the CPU default Turbo Ratio setting or manually assign a 2-Core Ratio Limit value that is higher than or equal to the 3-Core Ratio Limit. 1-Core Limit must not be set to [Auto].

3-Core Ratio Limit [Auto]
This item becomes configurable only when you set **CPU Core Ratio** to [Per Core] and allows you to set the 3-Core Ratio Limit. Select [Auto] to apply the CPU default Turbo Ratio setting or manually assign a 3-Core Ratio Limit value that is higher than or equal to the 4-Core Ratio Limit. 1-Core/2-Core Ratio Limit must not be set to [Auto].

4-Core Ratio Limit [Auto]
This item becomes configurable only when you set **CPU Core Ratio** to [Per Core] and allows you to set the 4 Core Ratio Limit. Select [Auto] to apply the CPU default Turbo Ratio setting or manually assign a 4-Core Ratio Limit value that is higher than or equal to the 3-Core Ratio Limit. 1-Core/2-Core/3-Core Limit must not be set to [Auto].

4.7.3 Min CPU Cache Ratio [Auto]
Allows you to set the uncore ratio of the processor to its possible minimum value.
Configuration options: [Auto] [1] ~ [30].

4.7.4 Max CPU Cache Ratio [Auto]
Allows you to set the uncore ratio of the processor to its possible maximum value.
Configuration options: [Auto] [1] ~ [30].

4.7.5 BCLK Frequency : DRAM Frequency Ratio [Auto]
Allows you to set the BCLK frequency to DRAM frequency ratio.
[Auto]   DRAM frequency is set to the optimized settings.
[100:133]   The BCLK frequency to DRAM frequency ratio is set to 100:133.
[100:100]   The BCLK frequency to DRAM frequency ratio is set to 100:100.

4.7.6 DRAM Frequency [Auto]
Allows you to set the memory operating frequency. The configuration options vary with the **BCLK Frenquency : DRAM Frequency Ratio** item settings.

Selecting a very high memory frequency may cause the system to become unstable! If this happens, revert to the default setting.

4.7.7 Max. CPU Graphics Ratio [Auto]
[Auto]   The iGPU frequency is set to its optimized setting depending on the system loading.
[Manaul]   Use the <+> or <-> keys to adjust the optimal iGPU frequency value. The frequency may vary depending on the system loading.

4.7.8 GPU Boost [As is]
Allows you to enable the GPU Boost to accelerate the integrated GPU for extreme graphics performance.
Configuration options: [As is] [Enabled].

4.7.9 EPU Power Saving Mode [Disabled]
Allows you to enable or disable the EPU power saving function. Configuration options:
[Disabled] [Enabled]

4.7.10 DRAM Timing Control
The subitems in this menu allow you to set the DRAM timing control features. Use the <+> and <-> keys to adjust the value. To restore the default setting, type [auto] using the keyboard and press the <Enter> key.

Primary Timings
DRAM CAS# Latency [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [31 DRAM Clock]

DRAM RAS# to CAS# Delay [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [31 DRAM Clock]

DRAM RAS# PRE Time [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [31 DRAM Clock]

DRAM RAS# ACT Time [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [63 DRAM Clock]

DRAM COMMAND Rate [Auto]
Configuration options: [Auto] [1 DRAM Clock] [2 DRAM Clock] [3 DRAM Clock]

Secondary Timings
DRAM RAS# to RAS# Delay [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [15 DRAM Clock]

DRAM REF Cycle Time [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [511 DRAM Clock]

DRAM Refresh Interval [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [65535 DRAM Clock]

DRAM WRITE Recovery Time [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [16 DRAM Clock]

DRAM READ to PRE Time [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [15 DRAM Clock]

DRAM FOUR ACT WIN Time [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [255 DRAM Clock]

DRAM WRITE to READ Delay [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [15 DRAM Clock]

DRAM CKE Minimum pulse width [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [15 DRAM Clock]

DRAM CAS# Write Latency [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [31 DRAM Clock]

RTL IOL control
DRAM RTL initial Value [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [63 DRAM Clock]

DRAM RTL (CHA) [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [63 DRAM Clock]

DRAM RTL (CHB) [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [63 DRAM Clock]

DRAM I0-L (CHA) [Auto]
Configuration options: [Auto] [Delay 1 Clock] - [Delay 15 Clock]

DRAM IO-L (CHB) [Auto]
Configuration options: [Auto] [Delay 1 Clock] - [Delay 15 Clock]

Third Timings
tRDRD [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [7 DRAM Clock]

tRDRD_dr [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [15 DRAM Clock]

tRDRD_dd [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [15 DRAM Clock]

tWRRD [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [63 DRAM Clock]

tWRRD_dr [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [15 DRAM Clock]

tWRRD_dd [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [15 DRAM Clock]

tWRWR [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [7 DRAM Clock]

tWRWR_dr [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [15 DRAM Clock]

tWRWR_dd [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [15 DRAM Clock]

Dec_WRD [Auto]
Configuration options: [Auto] [0] [1]

tRDWR [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [31 DRAM Clock]

tRDWR_dr [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [31 DRAM Clock]

tRDWR_dd [Auto]
Configuration options: [Auto] [1 DRAM Clock] – [31 DRAM Clock]

MISC
MRC Fast Boot [Enabled]
Allows you to enable or disable the MRC fast boot.
[Enabled] Enables the MRC fast boot.
[Disable] Disables the MRC fast boot.

DRAM CLK Period [Auto]
Configuration options: [Auto] [1] – [14]

Channel A DIMM Control [Enable Bot...]
Configuration options: [Enable Both DIMMS] [Disable DIMM0] [Disable DIMM1]
[Disable Both DIMMS]

Channel B DIMM Control [Enable Bot...]
Configuration options: [Enable Both DIMMS] [Disable DIMM0] [Disable DIMM1]
[Disable Both DIMMS]

Scrambler Setting [Optimized ...]
Configuration options: [Optimized (ASUS)] [Default (MRC)]

4.7.11 DIGI+ VRM

CPU Load-Line Calibration [Auto]
Load-line is defined by Intel VRM specification and affects CPU voltage. The CPU working voltage will decrease proportionally to CPU loading. Higher value gets a higher voltage and better overclocking performance, but increases the CPU and VRM thermal conditions. This item allows you to adjust the voltage range from the following percentages to boost the system performance: 0% (Regular), 25% (Medium), 50% (High), 75% (Ultra High), and 100% (Extreme). Configuration options: [Auto] [Regular] [Medium] [High] [Ultra High] [Extreme]

CPU Fixed Frequency [XXX]
This item allows you to set a fixed CPU frequency. Use the <+> or <-> keys to adjust the value. The values range from 200kHz to 350kHz with a 50kHz interval.

CPU Power Phase Control [Standard]
Allows you to set the power phase based on the CPU. Configuration options: [Auto] [Standard] [Optimized] [Extreme] [Manual Adjustment]

Manual Adjustment [Fast]
Allows you to set a response for the CPU power phase control. Configuration options:
[Ultra Fast] [Fast] [Medium] [Regular]

CPU Power Duty Control [T.Probe]
DIGI + VRM Duty Control adjust the current of every VRM phase and the thermal conditions of every component.

[T. Probe]   Select to maintain the VRM thermal balance.
[Extreme]   Select to maintain the current VRM balance.

CPU Current Capability [Auto]
Allows you to configure the total power range, and extends the overclocking frequency range simultaneously. Configuration options: [Auto] [100%] [110%] [120%] [130%] [140%]

4.7.12 CPU Power Management
The subitems in this menu allow you to set the CPU ratio and features.

Enhanced Intel® SpeedStep Technology [Enabled]
Allows you to enable or disable the Enhanced Intel® Speed Step Technology (EIST).

[Disabled]   Disables this function.
[Enabled]   The operating system dynamically adjusts the processor voltage and core frequency which may result in decreased average consumption and decreased average heat production.

Turbo Mode [Enabled]
Allows you to enable your core processor's speed to run faster than the marked frequency in a specific condition. Configuration options: [Disabled] [Enabled]

> • Turbo Mode is only available on selected CPU models only.
> • The following first three items appear only when you set the Turbo Mode to **[Enabled]**.

Turbo Mode Parameters
> **Long Duration Package Power Limit [Auto]**
> Allows you to limit the turbo ratio's long duration package power.
> Use the <+> and <-> keys to adjust the value.

> **Package Power Time Window [Auto]**
> Allows you to set the package power time window.
> Use the <+> and <-> keys to adjust the value.

> **Short Duration Package Power Limit [Auto]**
> Allows you to limit the turbo ratio's long duration power.
> Use the <+> and <-> keys to adjust the value.

CPU Integrated VR Current Limit [Auto]
Allows you to limit the CPU Integrated VR current
> Use <+> and <-> key to adjust the value.

CPU Internal Power Switching Frequency
> **Frequency Tuning Mode [Auto]**
> Allows you to set the frequency tuning mode. Configuration options: [Auto][+] [-]

CPU Internal Power Fault Control
> **Thermal Feedback [Auto]**
> When enabled, it allows CPU to take precautionary actions when the thermal of the external regulator exceeds the limit. Configuration options:[Auto] [Disabled] [Enabled]

> **CPU Integrated VR Fault Management [Auto]**
> Allows you to manage the CPU Integrated VR fault. Configuration options:[Auto] [Disabled] [Enabled]

CPU Internal Power Configuration

CPU Integrated VR Efficiency Management [Auto]
Allows you to manage the CPU integrated VR efficiency. Configuration options: [Auto] [High Performance] [Balanced]

Power Decay Mode [Auto]
Enable to improve power saving on the Fully Integrated Voltage Regulator as the processor enters low current mode. Configuration options: [Auto] [Disabled] [Enabled]

Idle Power-in Response [Auto]
Allows you to set the idle power-in response. Configuration options: [Auto] [Regular] [Fast]

Idle Power-out Response [Auto]
Allows you to set the idle power-out response. Configuration options: [Auto] [Regular] [Fast]

Power Current Slope [Auto]
Allows you to set the power current slope. Configuration options: [Auto] [Level -4] ~[Level 4].

Power Current Offset [Auto]
Allows you to set the power current offset. Configuration options: [Auto] [100%] [87.5%] [75%] [62.5%] [50%] [37.5%] [25%] [12.5%] [0%] [-12.5%] [-25%] [-37.5%] [-50.0%][-62.5%] [-75%] [-87.5%] [-100%]

Power Fast Ramp Response [Auto]
Allows you to increase to enhance the response of the voltage regulator during the load transient. Configurations: [Auto] [0.00] - [1.50].

CPU Internal Power Saving Control
Power Saving Level 1 Threshhold [Auto]
Allows you to set the power saving level 1 threshhold.
Use the <+> and <-> keys to adjust the value.

Power Saving Level 2 Threshhold [Auto]
Allows you to set the power saving level 2 threshhold.
Use the <+> and <-> keys to adjust the value.

Power Saving Level 3 Threshhold [Auto]
Allows you to set the power saving level 3 threshhold.
Use the <+> and <-> keys to adjust the value.

4.7.13 CPU Core Voltage [Auto]
Allows you to configure the amount of voltage fed to the cores of the processor. Increase the amount of voltage when increasing core frequency. Configuration options: [Auto] [Manual Mode] [Offset Mode]

CPU Core Voltage Override [Auto]
This item appears only when you set the CPU Core Voltage to [Manual Mode] and allows you to set the CPU core voltage override. The values range from 0.001V to 1.920V with a 0.001V interval.

Offset Mode Sign [+]
This item appears only when you set the CPU Core Voltage to [Offset Mode] and allows you to set the offset mode sign. Configuration options: [+] [-]

CPU Core Voltage Offset [Auto]
This item appears only when you set the CPU Core Voltage to [Offset Mode] and allows you to set the CPU core voltage offset. The values range from 0.001V to 0.999V with a 0.001V interval.

4.7.14 CPU Cache Voltage [Auto]

This item allows you to set the CPU cache voltage. Increase the cache voltage when increasing the ring frequency. Configuration options: [Auto] [Manual Mode] [Offset Mode].

CPU Cache Voltage Override [Auto]

This item appears only when you set the CPU Cache Voltage to [Manual Mode] and allows you to set the CPU cache voltage override. The values range from 0.001V to 1.920V with a 0.001V interval.

Offset Mode Sign [+]

This item appears only when you set the CPU Cache Voltage to [Offset Mode] and allows you to set the offset mode sign. Configuration options: [+] [-]

> CPU Cache Voltage Offset [Auto]
> This item appears only when you set the CPU Cache Voltage to [Offset Mode] and allows you to set the CPU cache voltage offset. The values range from 0.001V to 0.999V with a 0.001V interval.

4.7.15 CPU Graphics Voltage [Auto]

This item allows you to set the CPU graphics voltage. Increase the graphics voltage when increasing the iGPU frequency. Configuration options: [Auto] [Manual Mode] [Offset Mode] [Adaptive Mode].

CPU Graphics Voltage Override [Auto]

This item appears only when you set the CPU Graphics Voltage to [Manual Mode] and allows you to set the CPU graphics voltage override. The values range from 0.001V to 1.920V with a 0.001V interval.

Offset Mode Sign [+]

This item appears only when you set the CPU Graphics Voltage to [Offset Mode] or [Adaptive Mode] and allows you to set the offset mode sign. Configuration options: [+] [-]

> CPU Graphics Voltage Offset [Auto]
> This item appears only when you set the CPU Graphics Voltage to [Offset Mode] or [Adaptive Mode] and allows you to set the CPU graphics voltage offset. The values range from 0.001V to 0.999V with a 0.001V interval.

Additional Turbo Mode CPU Graphics Voltage [Auto]

This item appears only when you set the CPU Graphics Voltage to [Adaptive Mode] and allows you to set the additional turbo mode CPU graphics voltage. The values range from 0.001V to 1.920V with a 0.001V interval.

Total Adaptive Mode CPU Graphics Voltage [Auto]

This item appears only when you set the CPU Graphics Voltage to [Adaptive Mode] and allows you to set the total adaptive mode CPU graphics voltage. The values range from 0.001V to 1.920V with a 0.001V interval.

4.7.16 CPU System Agent Voltage Offset Mode Sign [+]

This item allows you to set the CPU system agent voltage offset mode sign. Configuration options: [+] [-].

CPU System Agent Voltage Offset [Auto]

This item allows you to set the CPU system agent voltage offset. Increase the value when increasing DRAM frequency. The values range from 0.001V to 0.999V with a 0.001V interval.

4.7.17 CPU Analog I/O Voltage Offset Mode Sign [+]

This item allows you to set the CPU analog I/O voltage offset mode sign. Configuration options: [+] [-].

CPU Analog I/O Voltage Offset [Auto]

This item allows you to set the CPU analog I/O voltage offset. Increase the value when increasing DRAM frequency. The values range from 0.001V to 0.999V with a 0.001V interval.

4.7.18 CPU Digital I/O Voltage Offset Mode Sign [+]
This item allows you to set the CPU digital I/O voltage offset mode sign. Configuration options: [+] [-].

CPU Digital I/O Voltage Offset [Auto]
This item allows you to set the CPU digital I/O voltage offset. Increase the value when increasing DRAM frequency. The values range from 0.001V to 0.999V with a 0.001V interval.

4.7.19 SVID Control [Auto]
Disabling SVID Control stops the processor from communicating with the external voltage regulator. Configuration options: [Auto] [Disabled] [Enabled].

4.7.20 CPU Input Voltage (VCCIN) [Auto]
This item allows you to set the CPU input voltage. The values range from 0.800V to 2.700V with a 0.010V interval.

4.7.21 DRAM Voltage [Auto]
Allows you to set the DRAM Voltage. The values range from 1.500V to 1.650V with a 0.050V interval. According to Intel CPU specifications, DIMMs with voltage requirement over 1.65V may damage the CPU permanently. We recommend that you install the DIMMs with the voltage requirement below 1.65V.

4.7.22 PCH Core Voltage [Auto]
Allows you to set the core voltage for the PCH. Configuration options: [Auto] [+1.10V].

4. 8 Menu Screen

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

Be cautious when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.
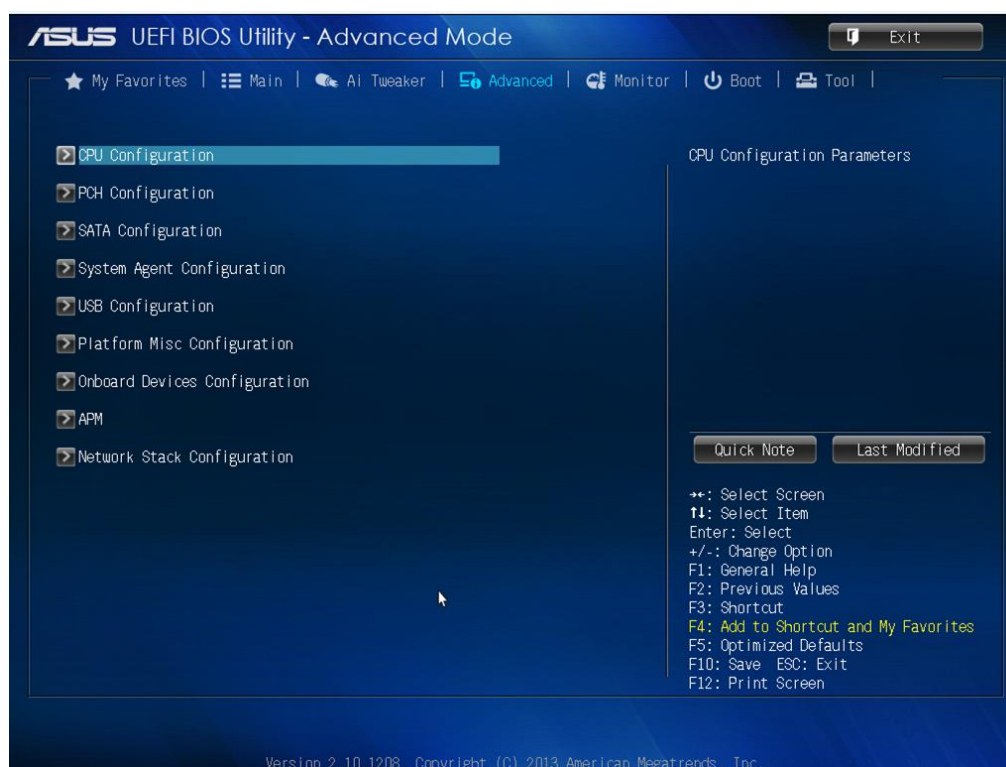
Figure 38: Advanced Sub Menu Screen

4. 8.1 CPU Configuration

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

The items shown in submenu may be different due to the CPU you installed

Intel® Adaptive Thermal Monitor [Enabled]

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

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]

Limit CPUID Maximum [Disabled]

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

Execute Disable Bit [Enabled]

[Enabled]	Enables the No-Execution Page Protection Technology.
[Disabled]	Forces the XD feature flag to always return to zero (0).

Intel Virtualization Technology [Disabled]

[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.

Hardware Prefetcher [Enabled]

[Enabled]   Allows a hardware platform to automatically analyze the requirements and prefetch data and codes for the CPU.
[Disabled]   Disables this function.

Adjacent Cache Line Prefetch [Enabled]

[Enabled]   Allows a hardware platform to perform adjacent cache line prefetching.
[Disabled]   Disables this function.

Boot performance mode [Max Non-Tu...]
This item allows you to select the boot performance mode. Configuration options: [Max Non-Turbo Performance] [Max battery] [Turbo Performance]

CPU Power Management Configuration
This item allows you to manage and configure the CPU's power.

EIST [Enabled]
Allows you to enable or disable the Enhanced Intel® SpeedStep Technology (EIST).

[Disabled]   The CPU runs at its default speed.
[Enabled]   The operating system controls the CPU speed.

Turbo Mode [Enabled]
Allows you to set the processor cores to run faster than the marked frequency in a specific condition. Configuration options: [Enabled] [Disabled]

CPU C states [Auto]
[Auto]   Automatic configuration.

[Enabled]   Enables the CPU C states.

[Disabled]   Disables the CPU C states.

Enhanced C1 state [Enabled]
[Enabled]   Enables enhanced C1 state.

[Disabled]   Disables enhanced C1 state.

CPU C3 Report [Enabled]
Allows you to disable or enable the CPU C3 report to OS. Configuration options:
[Enabled] [Disabled]

CPU C6 report [Enabled]
Allows you to disable or enable the CPU C6 report to OS. Configuration options:
[Enabled] [Disabled]

C6 Latency [Short]
Allows you to choose short or long latency for C6. Configuration options: [Short] [Long]

CPU C7 report [CPU C7s]
Allows you to disable or enable the CPU C7 report to OS. Configuration options:
[Disabled] [CPU C7] [CPU C7s]

C7 Latency [Long]
Allows you to choose short or long latency for C6. Configuration options: [Short] [Long]

Package C State Support [Auto]
Allows you to disable or enable the whole C-State package support. Configuration options: [Auto] [Enabled] [C0/C1] [C2] [C3] [C6] [CPU C7] [CPU C7s]

4. 8.2 PCH Configuration

PCI Express Configuration

DMI Link ASPM Control [Auto]
Allows you to control the Active State Power Managemennt on both NB and SB side of
the DMI Link. Configuration options: [Auto] [Enabled] [Disabled]

ASPM Support [Disabled]
Allows you to set the ASPM support. Configuration options: [Disabled] [Auto] [L0s] [L1] L0sL1].

PCIe Speed [Auto]
Allows you to select the PCI Express port speed. Configuration options: [Auto] [Gen1][Gen2]

Intel® Rapid Start Technology

Intel® Rapid Start Technology [Disabled]
Allows you to enable or disable Intel® Rapid Start Technology. Configuration options:
[Enabled] [Disabled]

*The following items appear only when you set the Intel® Rapid Start Technology to **[Enabled]**.*

Entry on S3 RTC Wake [Enabled]
The system automatically wakes up and set to Rapid Start Technology S4 mode.
Configuration options: [Enabled] [Disabled]

Entry After [x]
Allows you to set the wake-up time. The values range from 0 (immediately) to 120.

Active Page Threshold Support [Enabled]
The system automatically set itself to sleep when the partition size is not enough for
Rapid Start Technology to work. Configuration options: [Enabled] [Disabled]

Active Memory Threshold [0]
Key in the value for the additional partition size for Rapid Start Technology to work.

Hybrid Hard Disk Support [Disabled]
Allows you to enable or disable hybrid hard disk support.
Configuration options: [Enabled] [Disabled]

4. 8.3 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 Selection [AHCI]
Allows you to set the SATA configuration.

[Disabled]   Disables the SATA function.
[IDE]   Set to [IDE] when you want to use the Serial ATA hard disk drives as
                        Parallel ATA physical storage devices.

[AHCI]   Set to [AHCI] 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.

Aggressive LPM Support [Auto]
This item appears only when you set the previous item to [AHCI] and allows you to enable or disable PCH entering link power state aggressively. Configuration options: [Auto] [Disabled] [Enabled]

IDE Legacy / Native Mode Selection [Native]
This item appears only when you set the SATA Mode Selection item to [IDE]. Configuration options: [Native] [Legacy]

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: [Enabled] [Disabled]

Hot Plug [Disabled]
These items appear only when you set the SATA Mode Selection item to [AHCI] and allow you to enable/disable SATA Hot Plug Support. Configuration options: [Disabled] [Enabled]

4. 8.4 System Agent Configuration
VT-d [Disabled]
Allows you to enable virtualization technology function on memory control hub.

[Enabled]   Enables the function.
[Disabled]   Disables this function.

CPU Audio Devices [Enabled]
Allows you to enable or disable CPU SA Audio devices. Configuration options: [Enabled] [Disabled]

DVI Port Audio [Disabled]
Allows you to enable or disable the DVI port. Configuration options: [Enabled] [Disabled]

Graphics Configuration
Allows you to select a primary display from iGPU, and PCIe graphical devices.

> **Primary Display [Auto]**
> Allows you to select which of the iGPU/PCIE Graphics device should be the Primary Display. Configuration options: [Auto] [iGPU] [PCIE] [PCI]

> **iGPU Memory [Auto]**
> Allows you to select the amount of system memory allocated to DVMT 5.0 used by the iGPU. Configuration options: [Auto] [32M] [64M] [96M] [128M] [160M] [192M] [224M] [256M] [288M][320M] [352M] [384M] [416M] [448M] [480M] [512M] [1024M]

> **Render Standby [Auto]**
> Allows you to enable or disable Intel® Graphics Render Standby support to reduce iGPU power use when the system is idle. Configuration options: [Auto] [Disabled] [Enabled]

> **iGPU Multi-Monitor [Disabled]**
> Set this item to [Enabled] to empower both integrated and discrete graphics for multiple-monitor output. The iGPU shared system memory size will be fixed at 64MB.
> Configuration options: [Disabled] [Enabled]

DMI Configuration
Allows you to control various DMI functions.

> **DMI Gen 2 [Auto]**
> Allows you to enable or disable DMI Gen 2. Configuration options: [Auto] [Enabled] [Disabled]

NB PCIe Configuration
Allows you to configure the NB PCI Express settings.

PCIEX16_1 Link Speed [Auto]
Allows you to configure the PCIEX16_1 speed. Configuration options: [Auto] [Gen1][Gen2]

DMI Link ASPM Control [Auto]
Allows you to enable or disable the control of Active State Power Management on SA side of the DMI Link. Configuration options: [Auto] [Disabled] [L0s] [L1] [L0sL1]

PEG - ASPM [Disabled]
Allows you to control ASPM support for the PEG Device. The setting takes no effect if PEG is not the active device at present. Configuration options: [Disabled] [Auto] [ASPM L0s] [ASPM L1] [ASPM L0sL1]

Memory Configuration
Memory Scrambler [Enabled]
Allows you to enable or disable Memory Scrambler support.

Memory Remap [Enabled]
Allows you to enable or disable remapping the memory above 4GB.
[Enabled]   Enables the function.
[Disabled]   Disables this function.

4. 8. 5 USB Configuration
The items in this menu allow you to change the USB-related features.

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.

Intel xHCI Mode [Smart Auto]
[Smart Auto]   Enables the operation of xHCI controller.
[Auto]   Keeps the last operation of xHCI controller in OS during bootup.
[Enabled]   Enables the function.
[Disabled]   Disables the function.

EHCI Hand-off [Disabled]
[Enabled]   Enables the support for operating systems without an EHCI hand‑ off feature.
[Disabled]   Disables the function.

USB Single Port Control
USB3_1~2 [Enabled]
Allows you to enable or disable an individual USB port. Refer to the section **1.2.3 Motherboard layout** in this user manual for the locations of the USB ports. Configuration options: [Enabled] [Disabled].

USB_3~6, 9~12 [Enabled]
Allows you to enable or disable an individual USB port. Refer to the section **1.2.3 Motherboard layout** in this user manual for the locations of the USB ports. Configuration options: [Enabled] [Disabled].

4. 8. 6 Platform Misc Configuration

The items in this menu allow you to configure the Platform Misc.

PCI Express Native Power Management [Disabled]
Allows you to enhance the power saving feature of PCI Express and perform ASPM operations in the operating system. Configuration options: [Disabled] [Enabled]

Native ASPM [Disabled]
The item appears only when you set the previous item to [Enabled] and allows you to enable or disable ASPM. Configuration options: [Enabled] [Disabled]

4. 8. 7 Onboard Devices Configuration

HD Audio Controller [Enabled]
[Enabled]   Enables the HD Audio Device.
[Disabled]   Disables the HD Audio Device

Front Panel Type [HD]
Allows you to set the front panel audio connector (AAFP) mode to legacy AC'97 or highdefinition 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 AC'97

SPDIF Out Type [SPDIF]
[SPDIF]   Sets to an SPDIF audio output.
[HDMI]   Sets to an HDMI audio output.

Realtek LAN Controller [Enabled]
[Enabled]   Enables the Realtek LAN controller.
[Disabled]   Disables the controller.

Realtek PXE OPROM [Disabled]
Allows you to enable or disable the PXE OptionRom of the Realtek LAN controller.
Configuration options: [Enabled] [Disabled]

As media USB 3.0 Controller (USB3_E12) [Enabled]
[Enabled]   Enables the USB 3.0 controller.
[Disabled]   Disables the USB 3.0 controller.

Asmedia USB 3.0 Battery Charging Support [Disabled]
[Enabled]   Enables Asmedia USB 3.0 fast battery charging support for USB 3.0 devices complying with the BC 1.1 regulation.
[Disabled]   Disables battery charging support.

4. 8. 8 APM

Deep S4 [Disabled]
When enabled, the system in S4 state will further reduce power usage and will power off the USB and PS/2 devices. The system in deep S4 state can be woken up via the power button, devices in LAN, or other ways except via the USB and PS/2 devices. Configuration options: [Disabled] [Enabled]

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 [Disabled]

[Disabled]   Disables the PCIE devices to generate a wake-on-LAN feature of the Intel®/Realtek LAN device.

[Enabled]   Enables the PCIE devices to generate a wake-on-LAN feature of the Intel®/Realtek LAN device.

Power On By RTC [Disabled]

[Disabled]   Disables RTC to generate 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.

4. 8. 9 Network Stack Configuration

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

> ➢ The following two items appear only when you set the previous item to [Enabled].

Ipv4 PXE Support [Enabled]
This item allows user to disable or enable the Ipv4 PXE Boot support. Configuration options: [Disable Link] [Enabled]

Ipv6 PXE Support [Enabled]
This item allows user to disable or enable the Ipv6 PXE Boot support. Configuration options: [Disable Link] [Enabled]

4. 9 Monitor menu

The Monitor menu displays the system temperature/power status, and allows you to change the fan settings.
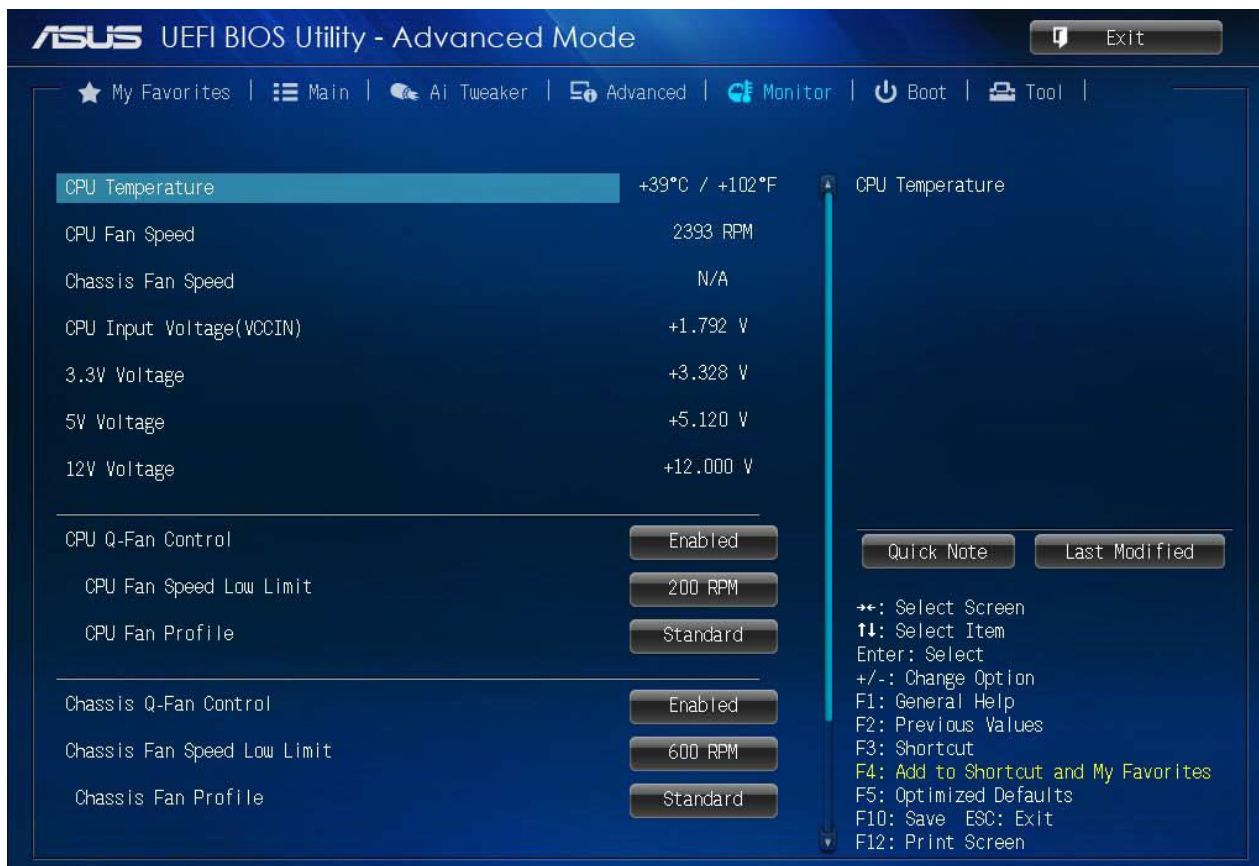
Scroll down to display the following items:

4. 9.1 CPU Temperature [xxx⁰C/xxx⁰F]
The onboard hardware monitor automatically detects and displays the CPU temperature.
Select **Ignore** if you do not wish to display the detected temperature.

4. 9.2 CPU / Chassis Fan Speed [xxxx RPM] or [Ignore] / [N/A]
The onboard hardware monitor automatically detects and displays the CPU / chassis fan
speeds 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.

4. 9.3 CPU Input Voltage (VCCIN), 3.3V Voltage, 5V Voltage,12V 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.

4. 9.4 CPU Q-Fan Control [Enabled]
[Disabled]   Disables the CPU Q-Fan control feature.
[Enabled]   Enables the CPU Q-Fan control feature.

CPU Fan Speed Low Limit [200 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. Configuration options: [Ignore] [100RPM] [200RPM] [300 RPM] [400 RPM] [500 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]   Sets to [Standard] to make the CPU fan automatically adjust depending on the CPU temperature.

[Silent]   Sets to [Silent] to minimize the fan speed for quiet CPU fan operation.

[Turbo]   Sets to [Turbo] to achieve maximum CPU fan speed.

[Manual]   Sets to [Manual] to assign detailed fan speed control parameters.

The following four items appear only when you set CPU Fan Profile to [Manual].

> **CPU Upper Temperature [70]**
> Use the <+> and <-> keys to adjust the upper limit of the CPU temperature. The values range from 20ºC to 75ºC.
>
> **CPU Fan Max. Duty Cycle(%) [100]**
> Use the <+> and <-> keys to adjust the maximum CPU fan duty cycle. The values range from 20% to 100%. When the CPU temperature reaches the upper limit, the CPU fan will operate at the maximum duty cycle.
>
> **CPU Lower Temperature [20]**
> Displays the lower limit of the CPU temperature.
>
> **CPU Fan Min. Duty Cycle(%) [20]**
> Use the <+> and <-> keys to adjust the minimum CPU fan duty cycle. The values range from 20% to 100%. When the CPU temperature is under the lower limit, the CPU fan will operate at the minimum duty cycle.

4. 9.5 Chassis Q-Fan Control [Enabled]

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

Chassis Fan Speed Low Limit [600 RPM]
This item appears only when you enable the Chassis Q-Fan Control feature and allows you to disable or set the chassis fan warning speed. Configuration options: [Ignore] [200RPM] [300 RPM] [400 RPM] [500 RPM] [600 RPM]

Chassis Fan Profile [Standard]
This item appears only when you enable the Chassis Q-Fan Control feature and allows you to set the appropriate performance level of the chassis fan.

[Standard]   Sets to [Standard] to make the chassis fan automatically adjust depending on the chassis temperature.
[Silent]   Sets to [Silent] to minimize the fan speed for quiet chassis fan operation.
[Turbo]   Sets to [Turbo] to achieve maximum chassis fan speed.
[Manual]   Sets to [Manual] to assign detailed fan speed control parameters.

4. 9.6 Anti-Surge Support
This item allows you to enable or disable the Anti-Surge function.
Configuration options: [Disabled] [Enabled]

4.10 Boot menu

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

Figure 39: Boot Menu

Scroll down to display the following items:

Figure 40: Boot Menu

4.10 .1 Fast Boot [Enabled]

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

*The following five items appear when you set **Fast Boot** to [Enabled].*

SATA Support [All Devices]
[All Devices]   All devices connected to SATA ports will be available during POST. This
                         process will extend the POST time.

[Hard Drive Only]   Only hard drives connected to SATA ports will be detected during POST.
                         Any hardware change will disable fast boot.
[Boot Drive Only]   Only boot drive connected to SATA ports will be detected during POST.
                         Any hardware change will disable fast boot.

USB Support [Partial In...]
[Disabled]   All USB devices will not be available until OS boot up for a 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.

4.10.2 Boot Logo Display [Auto]

[Auto]   Adjust automatically for Windows® requirement.
[Full Screen]   Maximize the boot logo size.
[Disabled]   Hide the logo during POST.

POST Delay Time [3 sec]
This item appears only when you set **Boot Logo Display** to [Auto] or [Full Screen]. 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 0 to 10 seconds.

Post Report [5 sec]
This item appears only when you set **Boot Logo Display** to [Disabled]. This item allows you to select a desired post report waiting time. Configuration options: [1 sec] ~ [10 sec] [Until Press ESC].

4.10.3 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].

4.10.4 Wait for 'F1' If Error [Enabled]
When this item is set to [Enabled], the system waits for the F1 key to be pressed when error occurs. Configuration options: [Disabled] [Enabled]

4.10.5 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.

4.10.6 Interrupt 19 Capture [Disabled]
[Enabled]   Allows the option ROMs to trap Interrupt 19.
[Disabled]   Disables this function.

4.10.7 Setup Mode [EZ 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.

4.10.8 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 [Enabled]
[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 Windows® Security Update and Security Boot.

The following four items appear when you set Launch CSM to [Enabled].

Boot Device Control [UEFI and L...]
Allows you to select the type of devices that you want to boot up. Configuration options:

[UEFI and Legacy OpROM]
[Legacy OpROM only] [UEFI only]

Boot from Network Devices [Legacy OpR...]
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 OpR...]
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 PCI-E/PCI Expansion Devices [Legacy OpR...]
Allows you to select the type of PCIe/PCI expansion devices that you want to launch. Configuration options:

[Legacy OpROM first]
[UEFI driver first]

4.10.9 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 UE...]

Allows you to select your installed operating system.

[Windows UEFI mode]   Executes 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/XP, or other Microsoft® Secure Boot non-compliant OS. Only on Windows® UEFI mode that Microsoft®Secure Boot can function properly.

 ➢ The following item appears when **OS Type** is set to [**Windows UEFI mode**].

Key Management

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

PK Management
The Platform Key (PK) locks and secures the firmware from any non-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.

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). Key-exchange Key (KEK) refers to Microsoft® Secure Boot Key-Enrollment Key (KEK).

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.

Append KEK from file

Allows you to load the additional KEK from a storage device for an additional db and dbx loaded management. 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.

Append db from file

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

Append DBX from file

Allows you to load the additional DBX from a storage device so that more db's images cannot be loaded. The DBX file must be formatted as a UEFI variable structure with time-based authenticated variable.

4.10.10 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 select the boot device during system startup, press <F8> when ASUS Logo appears.
• To access Windows OS in Safe Mode, do any of the following:
• Press <F5> when ASUS Logo appears.
• Press <F8> after POST.

4.10.11 Boot Override

These items display 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

4.11 Tools menu

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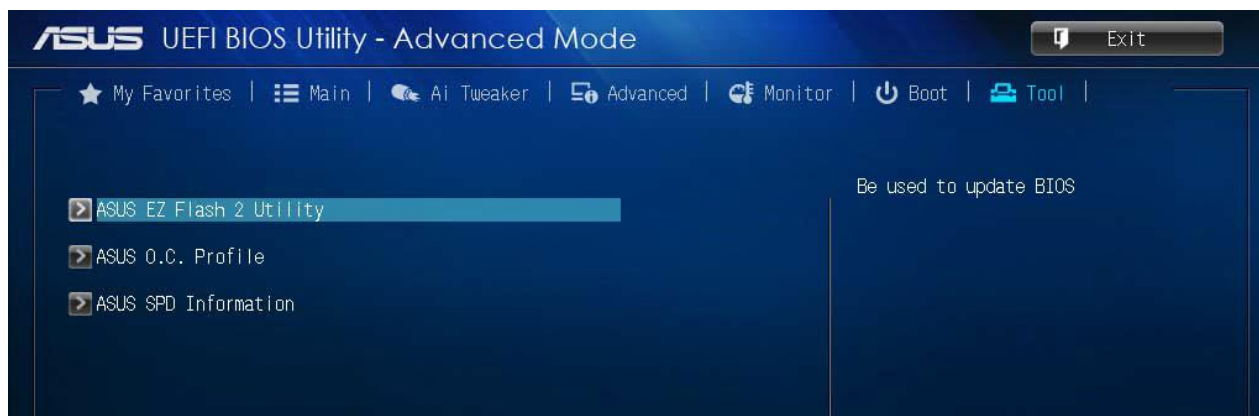

Figure 41: Tool menu

4.11.1 ASUS EZ Flash 2 Utility
Allows you to run ASUS EZ Flash 2. Press [Enter] to launch the ASUS EZ Flash 2 screen.

4.11.2 ASUS O.C. Profile
This item allows you to store or load multiple BIOS settings.

> The **Setup Profile Status** items show **Not Installed** if no profile is created.

Label
Allows you to input the label of the 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, 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 CMOS settings, press <Enter>, and then select **Yes**.

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

Load/Save Profile from/to USB Drive
Allows you to load/save CMOS profile from/to USB drive.

4.11.3 ASUS SPD Information

DIMM Slot Number [DIMM_A1]
Displays the Serial Presence Detect (SPD) information of the DIMM module installed on the selected slot.
Configuration options: [DIMM_A1] [DIMM_A2] [DIMM_B1] [DIMM_B2]

4.12 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.
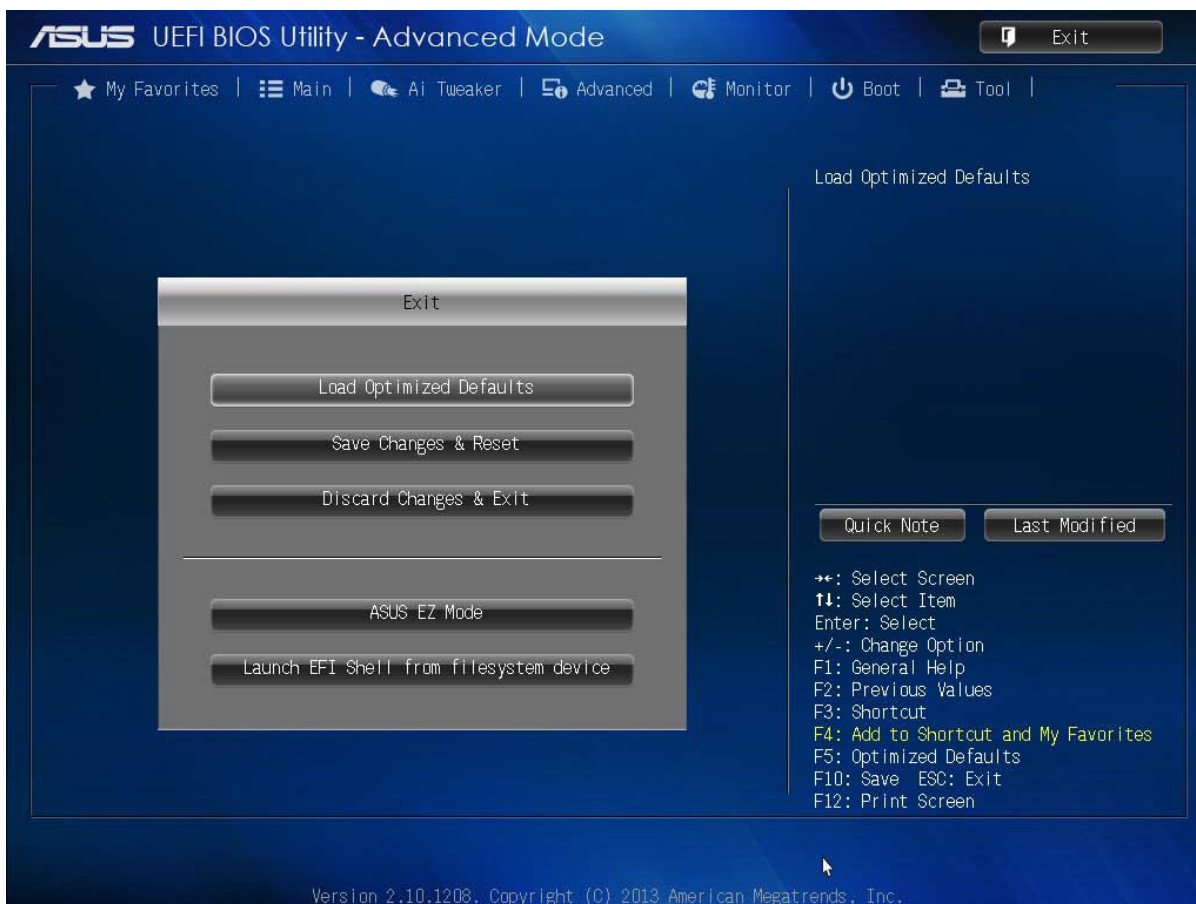
Figure 42: Exit menu

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 devices that have a file system.

4.13 BIOS settings for Windows 7 and Windows 8/8.1 O/S

4.13.1 Windows UEFI mode for Windows 8/8.1

Vig700S system configured with Windows 8/8.1 will have following default BIOS settings. If you wish to downgrade to Windows 7 then BIOS must be configured to Non-UEFI mode.

Boot\CSM (Compatibility Support module)

Launch CSM	**[Enabled]**
Boot Device Control	**[UEFI Only]**
Boot from Network Devices	**[UEFI drivers first]**
Boot from Storage Devices	**[UEFI drivers first]**
Boot from PCI-E/PCI Expansion Devices	**[UEFI drivers first]**

Boot\Secure Boot Menu

OS Type [**Windows UEFI mode**]

Note
Please ensure the changes of the following settings are performed by personnel with some previous experience/knowledge of altering BIOS settings.

4.13.2 Enabling Windows UEFI mode for Windows 8/8.1 Operating System

1. From the BIOS main menu bar select '**Advanced'**

2. Navigate to the **Boot** sub menu

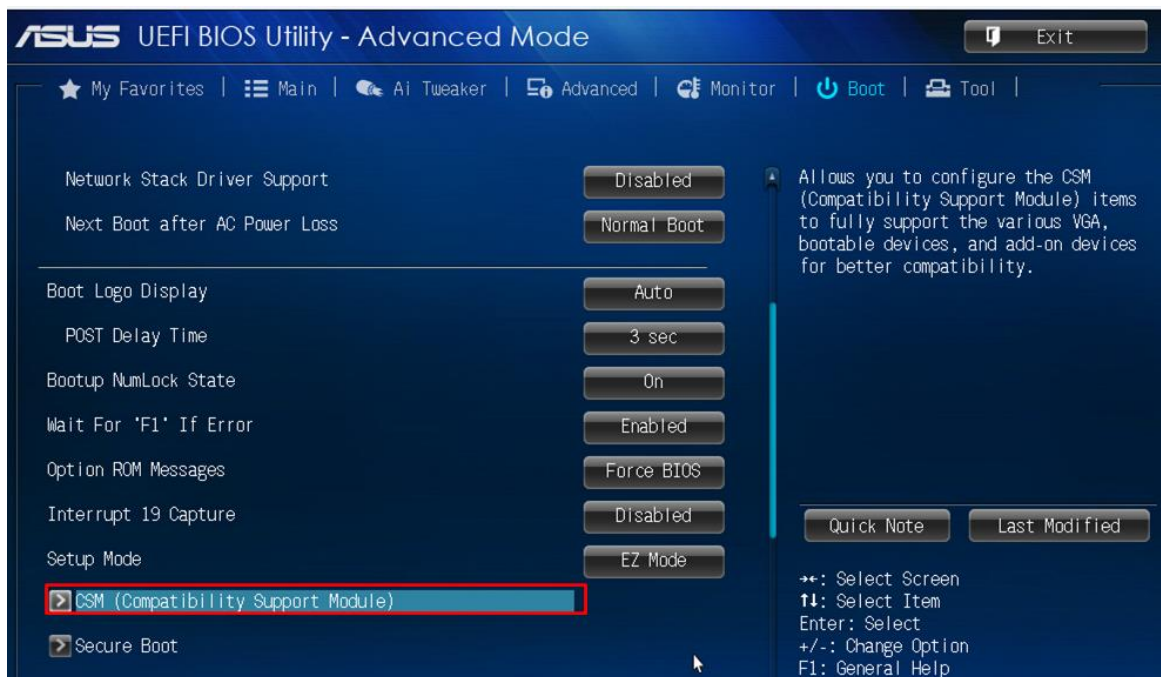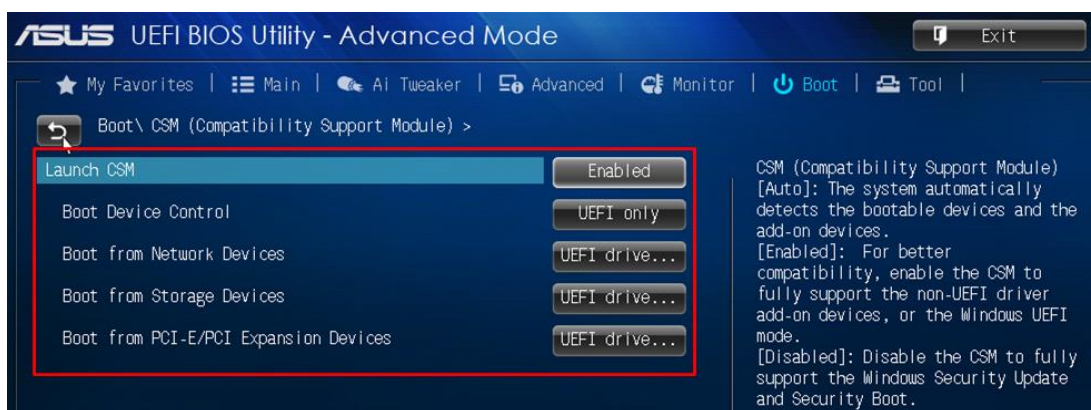3. Select **CSM (Compatibility Support Module)**

Figure 43: Boot Menu

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4. In the **CSM (Compatibility Support Module)** change following settings for Windows 8/8.1.

Launch CSM	**[Enabled]**
Boot Device Control	**[UEFI Only]**
Boot from Network Devices	**[UEFI drivers first]**
Boot from Storage Devices	**[UEFI drivers first]**
Boot from PCI-E/PCI Expansion Devices	**[UEFI drivers first]**

**Figure 44:** Compatibility Support Module

*When these settings have been changed, press <Esc> or the Back Button to go back to the Boot Sub Menu to enable **Windows UEFI** for secure boot.*

5. Navigate to **Secure Boot** from within the Boot sub menu.

6. Change **OS Type** to **Windows UEFI**.
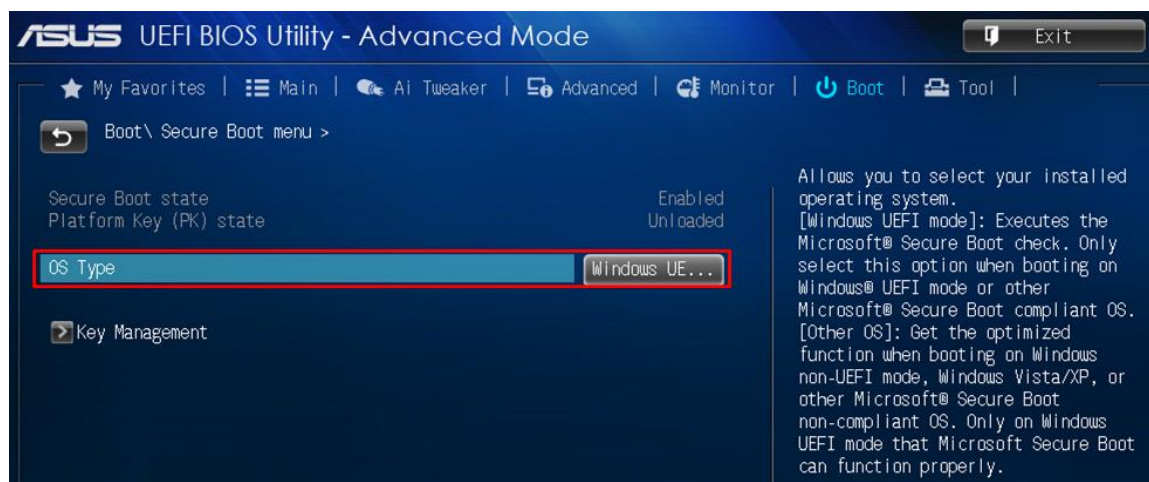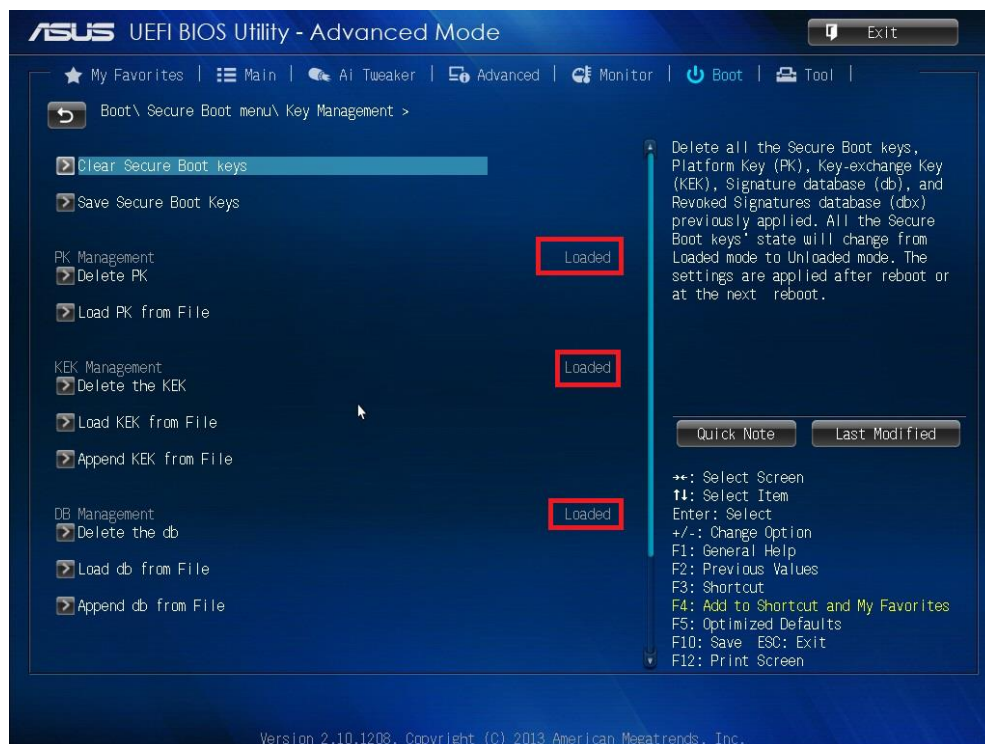

Figure 45: Secure Boot Menu

7. Select **Key Management**.

8. Select **Install default Secure Boot keys** and select **Yes** to proceed.
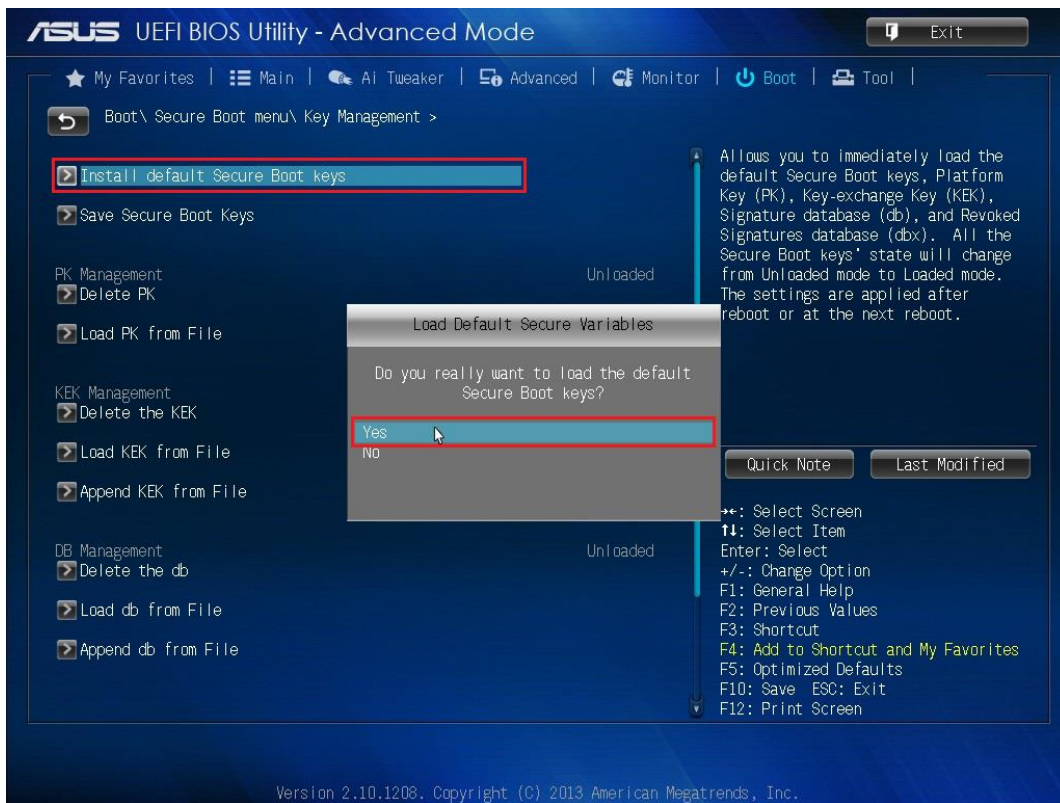
Figure 46: Key Management

9.   Press **F10** to Save and exit.

*If you need to check changes have been saved go back into BIOS after reboot and navigate into Secure Boot settings. Check that **Secure Boot state** is **enabled** and **Platform Key (PK) state** is **Loaded.***

Figure 47: key management – Key loaded

4.13.3 BIOS Settings for Windows 7 Operating System (Non UEFI Mode)

To downgrade to Windows 7 operating system, BIOS settings must be changed to boot into Legacy BIOS mode (non UEFI Mode).

For Windows 7 operating system BIOS should be configured as per below settings

Boot\CSM (Compatibility Support module)

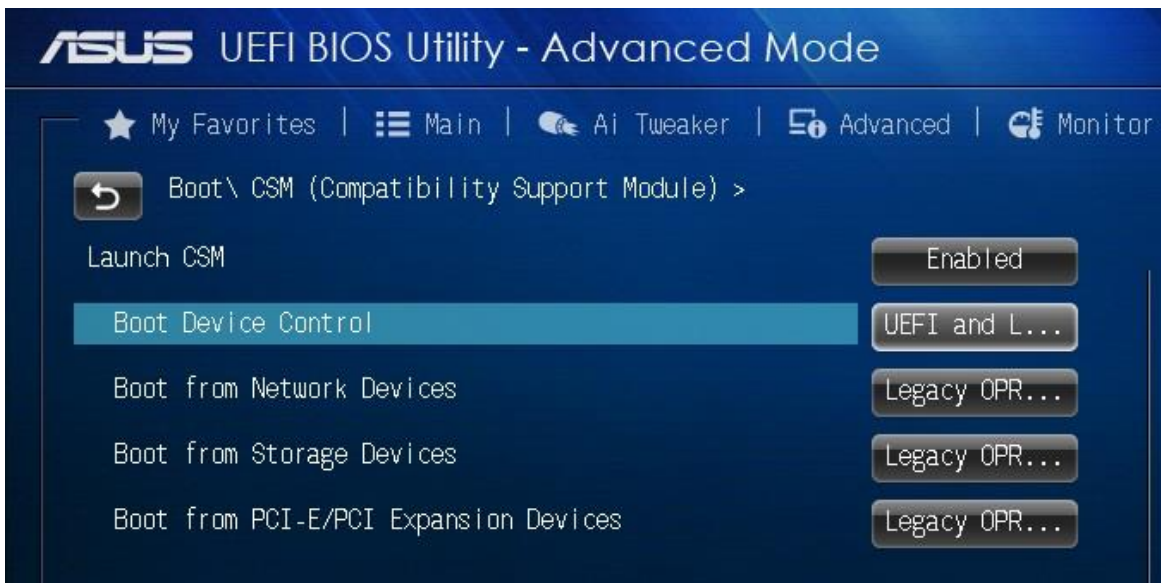|	
Launch CSM	**[Enabled]**
Boot Device Control	**[UEFI and Legacy OPROM first]**
Boot from Network Devices	**[Legacy OPROM]**
Boot from Storage Devices	**[Legacy OPROM]**
Boot from PCI-E/PCI Expansion Devices	**[Legacy OPROM]**

Figure 48: Windows 7 BIOS settings

Boot\Secure Boot Menu
OS Type [**Other OS**]

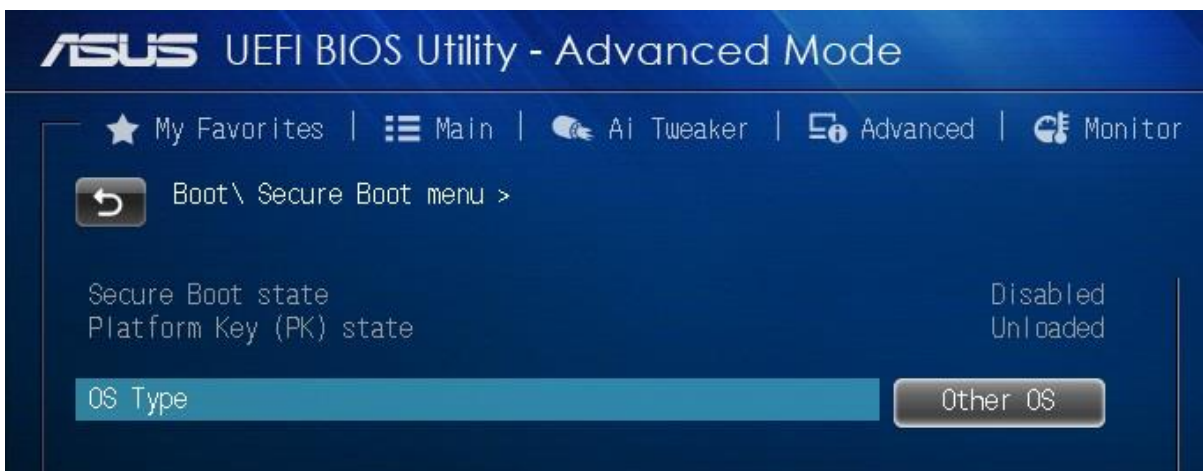**Figure 49:** Windows 7 BIOS settings

Chapter 5: Suggestions

Viglen is interested in continuing to improve the quality and information provided in their manuals. Viglen has listed some questions that you may like to answer and return to Viglen. This will help Viglen help to keep and improve the standard of their manuals.

1. Is the information provided in this and other manuals clear enough?

_____
_____
_____
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_____

2. What could be added to the manual to improve it?

_____
_____
_____
_____
_____
_____

3. Does the manual go into enough detail?

_____
_____
_____
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_____

4. Would you like an on-line version of this manual?

_____
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_____

5. How do you rate the Viglen Technical support and Service Departments?

_____
_____
_____
_____
_____

6. Are there any technological improvements that could be made to the system?

_____

_____

_____

_____

_____

7. Other points you would like to mention?

_____

_____

_____

_____

_____

Please return this slip to: Product Development Dept.
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Notes