

Vig870G  
Motherboard  
Manual

**Viglen**

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# 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).



## 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 effects 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. XMA take no responsibility (with regards to EMC characteristics) of equipment which has been tampered with or modified.



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Manual Version 1.0

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# Motherboard Overview

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## 3.4 Introduction

This manual describes the Viglen Vig870G 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 Vig870G motherboard is a Thin Mini ITX form factor offering, integrated Graphics via DisplayPort and HDMI, High Definition Audio via 2 flexible audio jacks and integrated 10/100/1000 network connection, as well as 4 USB 3.0 to enrich your multimedia creation experience.

The Vig870G Motherboard supports 7<sup>th</sup> and 6<sup>th</sup> generation Intel Core i3, i5, and i7 processors, as well as being Microsoft Windows 7, 8.1 and Windows 10 WHQL certified.

This manual contains technical information about the Viglen Vig870G 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.

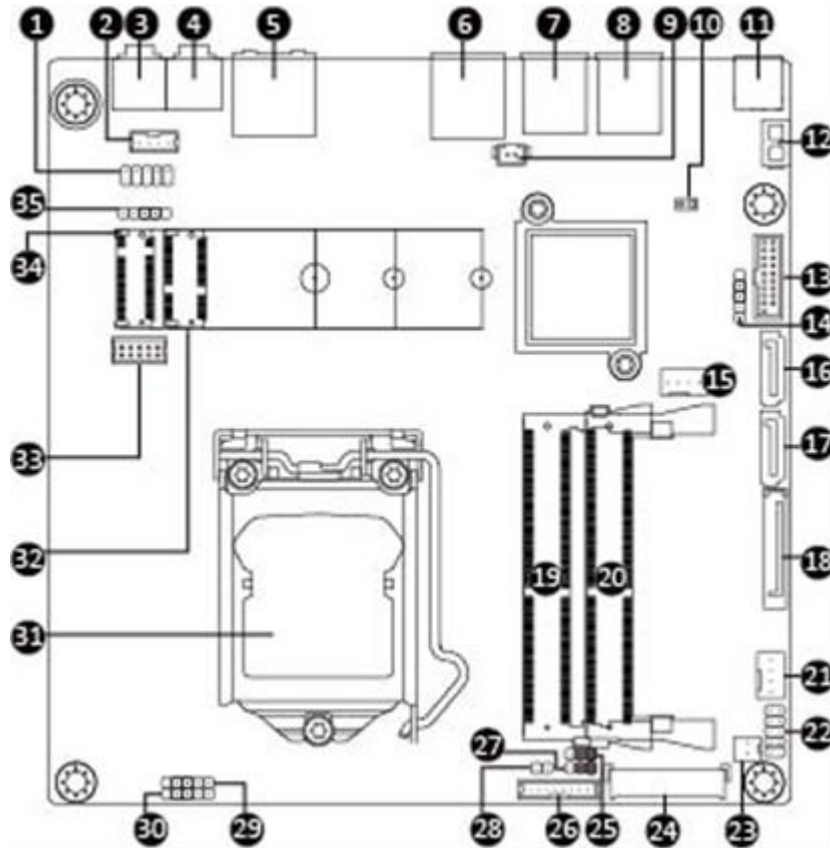
Above all we hope that you enjoy using your Viglen computer.

### 3.5 Feature Summary

|   |   |                                  |              |     |
|---|---|----------------------------------|--------------|-----|
| <b>Motherboard Form Factor</b>                  | Thin Mini-ITX Form Factor (6.7 inch x 6.7 inch (17 x 17 cm))  |                                  |              |     |
| <b>Motherboard chipset</b>                      | Intel® Q270 KBL PCH   |                                  |              |     |
| <b>CPU connector type</b>                       | LGA1151 Kabylake-S/Skylake-S Processor  |                                  |              |     |
| <b>Number of CPUs supported</b>                 | 1   |                                  |              |     |
| <b>Supported CPU types (C, P3 or P4 etc)</b>    | 7 <sup>th</sup> and 6 <sup>th</sup> Generation Core™ i7/Core™ i5/Core™ i3/Pentium®/Celeron® Processors Supports Intel® 14nm CPU<br>Supports Intel® Turbo Boost Technology 2.0<br>* The Intel® Turbo Boost Technology 2.0 support depends on the CPU |                                  |              |     |
| <b>Supported CPU speeds</b>                     | <b>CPU No.</b>  | <b>CPU speed</b>                 | <b>Cache</b> |     |
|   | <b>Intel® Core™ i7 Desktop Processor</b>  |                                  |              |     |
|   | i7-7700K  | 4.50 GHz                         | 8 MB         | 4/8 |
|   | <b>Intel® Core™ i5 Processor</b>  |                                  |              |     |
|   | i5-7600K  | 4.20 GHz                         | 6            | 4/4 |
|   | <b>Intel® Core™ i3 Processor</b>  |                                  |              |     |
|   | i3-6300   | 4.00 GHz                         | 4            | 2/4 |
| <b>Number of PCI-E slots</b>                    | 1 x PCIe 3.0/2.0 x4 (black)<br>1 x M.2 Slot (PCIe Gen3x1 supports NGFF-2230, E-KEY)<br>1 x M.2 Slot (PCIe Gen3x4 or SATA 6GB/x1, supports NGFF-2260/2280, M-KEY)  |                                  |              |     |
| <b>On board video fitted? Type</b>              | Integrated with CPU   |                                  |              |     |
| <b>On-board audio type?</b>                     | Realtek ALC887+ALC105   |                                  |              |     |
| <b>Front facing audio header</b>                | Yes   |                                  |              |     |
| <b>Audio Upgradeable?</b>                       | Via PCI   |                                  |              |     |
| <b>On-board network type?</b>                   | 1* Gb LAN Intel I219LM  |                                  |              |     |
| <b>Number of network connections?</b>           | 1   |                                  |              |     |
| <b>Number of SATA Channels</b>                  | 2 x SATA 6Gb/s ports  |                                  |              |     |
| <b>Internal connectors</b>                      | 1 x 2-pin power connector   | 1* SYS_FAN & 1* CPU_FAN          |              |     |
|   | 1 x CPU fan header  | 1* SATA Power                    |              |     |
|   | 1 x System fan header   | 1* COM (RS232)                   |              |     |
|   | 4 x SATA 6Gb/s connectors   | 1* MON_SW / 1* Clear CMOS header |              |     |
|   | 2 x M.2 slot  | 1* 12V/19V IN ( 1 x 2 Pin )      |              |     |
|   | 1 x SATA power connector  | 1* SYS_FAN & 1* CPU_FAN          |              |     |
|   | 5 x USB 2.0 headers   | 1* SATA Power                    |              |     |
|   | 1 x USB 3.0 connector   | 1* COM (RS232)                   |              |     |
|   | 1 x Front panel header  |                                  |              |     |
| <b>Rear I/O connectors</b>                      | 1* Display Port 1.2 +HDMI 1.4   | 1 * DC_IN Jack ( 12V/19V )       |              |     |
|   | 1* RJ45   |                                  |              |     |
|   | 1* Mic In / 1* Line Out   |                                  |              |     |
|   | 4* USB 3.0  |                                  |              |     |
| <b>Memory type</b>                              | Max 32GB, DDR4 SoDIMM 2400 MHz Non-ECC, Unbuffered Memory   |                                  |              |     |
| <b>Number of memory sockets</b>                 | 2   |                                  |              |     |
| <b>Maximum memory support</b>                   | 32GB  |                                  |              |     |
| <b>BIOS</b>                                     | N/A   |                                  |              |     |
| <b>Integrated Trusted Platform Module (TPM)</b> | Onboard TPM 2.0 Infineon SLB9665  |                                  |              |     |
| <b>MTBF</b>                                     |   |                                  |              |     |



## System Board Connectors



*Figure 1: System Board Components*

|    |                             |    |                                |
|----|-----------------------------|----|--------------------------------|
| 1  | Front panel audio connector | 21 | CPU fan connector              |
| 2  | Speaker cable connector     | 22 | System panel                   |
| 3  | Mic in                      | 23 | Monitor power switch connector |
| 4  | Line out                    | 24 | LVDS connector                 |
| 5  | Display port/ HDMI port     | 25 | LCD_VCC connector              |
| 6  | Gbe LAN port                | 26 | Flat panel display connector   |
| 7  | USB 3.0                     | 27 | LCD_VCC connector              |
| 8  | USB 3.0                     | 28 | Back light brightness switch   |
| 9  | Battery cable connector     | 29 | USB2 Header                    |
| 10 | Clear CMOS jumper           | 30 | USB2 Header                    |
| 11 | DC power in                 | 31 | CPU socket                     |
| 12 | 2Pin power connector        | 32 | M.2 slot X1                    |
| 13 | USB3 header                 | 33 | Serial port cable connector    |
| 14 | USB2 header                 | 34 | M.2 slot X4                    |
| 15 | System fan connector        | 35 | Digital mic connector          |
| 16 | SATA 6GB/s                  |    |                                |
| 17 | SATA 6GB/s                  |    |                                |
| 18 | Hard disk power connector   |    |                                |
| 19 | Sodimm slot 1               |    |                                |
| 20 | Sodimm slot 2               |    |                                |

*Table 1: System Board Components*

### **1.1.1 CPU and chassis fan connectors (2-pin CPU\_FAN, 4-pin CHA\_FAN).**

Connect the fan cables to the fan connectors on the motherboard, ensuring that the black wire of each cable matches the ground pin of the connector.

*NOTE: Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan connectors! The CPU\_FAN connector supports a CPU fan of maximum 1A (12 W) fan power.*

### **1.1.2 ATX power connectors (2-pin EATXPWR)**

Correctly orient the ATX power supply plugs into these connectors and push down firmly until the connectors completely fit.

### **1.1.3 Intel® LGA1151 CPU socket**

Install Intel® LGA1151 CPU into this surface mount LGA1151 socket, which is designed for 6th Generation Intel® Core™ i7 / i5 / i3, Pentium®, and Celeron® processors.

### **1.1.4 DDR4 DIMM slots**

Install 4 GB, 8 GB, and 16 GB unbuffered non-ECC DDR4 DIMMs into these SODIMM sockets.

### **1.1.5 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.

### **1.1.6 System panel connector (10-1 pin PANEL)**

This connector supports several chassis-mounted functions.

### **1.1.7 USB 3.0 connector (20-1 pin 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 5 Gbps, faster charging time for USB-chargeable devices, optimized power efficiency, and backward compatibility with USB 2.0.

### **1.1.8 Intel® Q270 Serial ATA 6.0Gb/s connectors (7-pin SATA6G\_1~4)**

These connectors connect to Serial ATA 6.0 Gb/s hard disk drives via Serial ATA Gb/s signal cables

*NOTE: When using PCI cards on shared slots, ensure that the drivers support “Share IRQ” or that the cards do not need IRQ assignments. Otherwise, conflicts will arise between the two PCI groups, making the system unstable and the card inoperable.*

### **1.1.9 Chassis intrusion connector (4-1 pin CHASSIS)**

This connector is for a chassis-mounted intrusion detection sensor or switch. Connect one end of the chassis intrusion sensor or switch cable to this connector. The chassis intrusion sensor or switch sends a high-level signal to this connector when a chassis component is removed or replaced. The signal is then generated as a chassis intrusion event.

By default, the pins labelled “Intruder” are shorted with a jumper cap. Remove the jumper caps only when you intend to use the chassis intrusion detection feature.

### **1.1.10 Clear RTC RAM (2-pin CLRTC)**

This header allows you to clear the CMOS RTC RAM data of the system setup information such as date, time, and system passwords

To erase the RTC RAM:

- 1 Turn OFF the computer and unplug the power cord.
- 2 Use a metal object such as a screwdriver to short the two pins.
- 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 re-enter data

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

This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC`97 audio standard. Connect one end of the front panel audio I/O module cable to this connector.

*NOTE: We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard’s high-definition audio capability. If you want to connect a high-definition front panel audio module to this connector, set the Front Panel Type item in the BIOS setup to [HD Audio]. If you want to connect an AC`97 front panel audio module to this connector, set the item to [AC97]. By default, this connector is set to [HD Audio]*

#### **1.1.12 Serial port connector (10-1 pin COM1)**

Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.

#### **1.1.13 NFC connector**

Connect a NFC module to this connector to allow Near field communication devices to connect to each other.

#### **1.1.14 USB 2.0 connector (10-1 pin USB910)**

This connector is for USB 2.0 ports. Connect the USB module cable to this connector, then install the module to a slot opening at the back of the system chassis. This USB connector complies with USB 2.0 specifications and supports up to 480Mbps connection speed

### 3.6 Rear panel connectors



*Figure 2: Rear panel connectors*

|   |                        |
|---|------------------------|
| 1 | DC in power connector  |
| 2 | USB3 ports             |
| 3 | GBE Ethernet LAN port  |
| 4 | Display port connector |
| 5 | HDMI ports             |
| 6 | Line out port          |
| 7 | Mic in port            |

*Table 2: Rear panel connectors*

#### 1.1.15 DC power connector port.

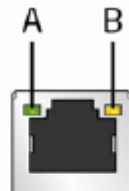
This 15-pin port is for a VGA monitor or other VGA-compatible devices.

#### 1.1.16 LAN (RJ-45) port.

This port allows Gigabit connection to a Local Area Network (LAN) through a network hub.

#### 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.



*Figure 3: RJ-45 LAN Connector*

#### 1.1.17 Line Out port (lime)

This port connects to a headphone or a speaker. In the 4.1, 5.1 and 7.1-channel configurations, the function of this port becomes Front Speaker Out.

### **1.1.18 Microphone port (pink)**

This port connects to a microphone.

### **1.1.19 USB 3.0 ports.**

These 9-pin Universal Serial Bus (USB) ports are for USB 3.0 devices.

*NOTE: Due to the limitation of USB 3.0 controller, USB 3.0 devices can only be used under Windows OS environment and after the USB 3.0 driver installation.*

We strongly recommend that you connect USB 3.0 devices to USB 3.0 ports for faster and better performance from your USB 3.0 devices.

### **1.1.20 Display Port.**

This port is for any Display Port compatible device.

### **1.1.21 HDMI port.**

This port is for a High-Definition Multimedia Interface (HDMI) connector, and is HDCP compliant allowing playback of HD DVD, Blu-ray, and other protected content.

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# System Board Options

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## 3.7 Upgrades

The Vig870G motherboard supports Intel® Core i3, i5, i7 and Pentium processors in the LGA1151 socket. RAM can be upgraded to a maximum of 32GB using DDR4 2400MHz Non ECC Unbuffered SODIMMs.

### **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.***

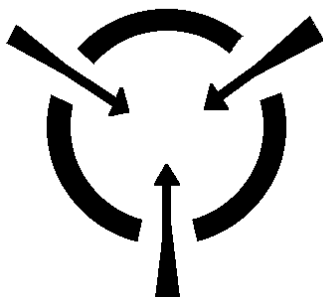
***Do not operate the system with the cover removed. Always replace the cover before turning on the system.***

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 Vig870G motherboard and associated components are sensitive electronic devices. A small static shock from your body can cause expensive damage to your equipment.***

### 3.8 Upgrade Procedures

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.*

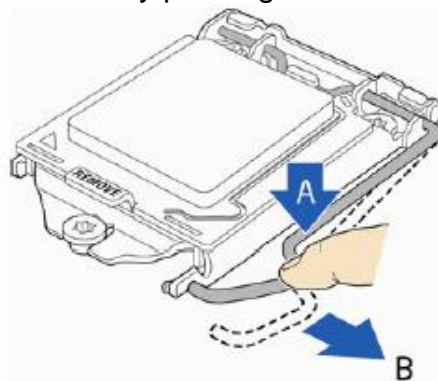
#### 1.1.22 Upgrading the CPU

##### **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:

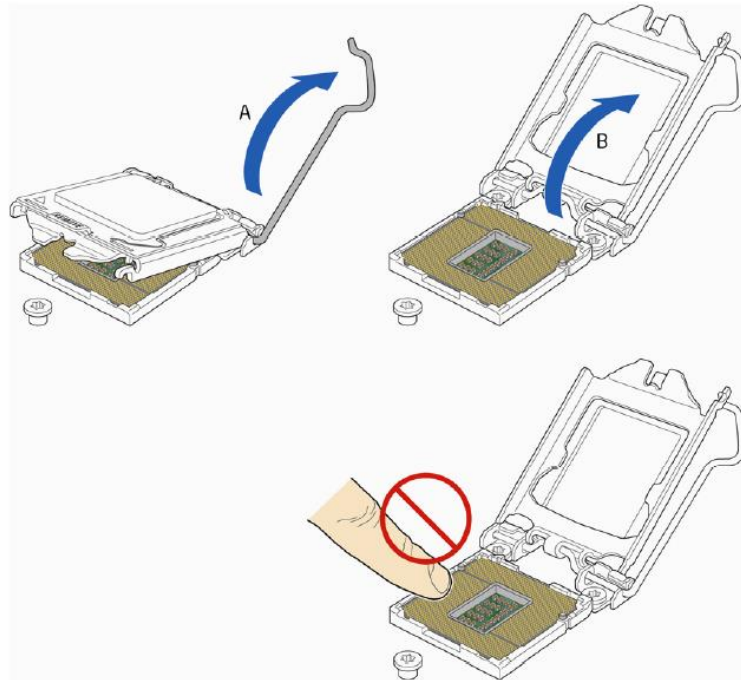
1. Unlatch the processor socket lever by pushing it down and away from the socket.



*Figure 4: Unlatch the socket lever*

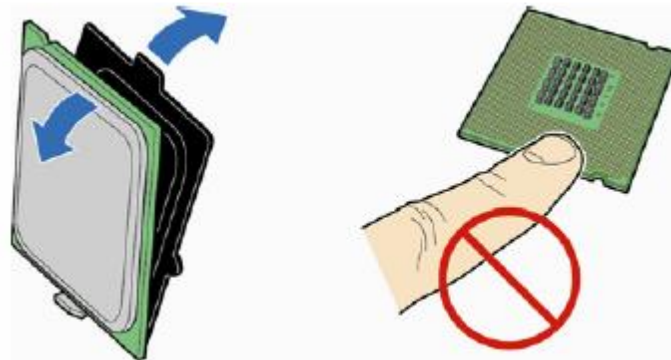


2. Rotate the socket lever to lift the load plate away from the socket (Figure 5, A). Make sure that the load plate is in the fully open position (Figure 5, B) while being careful not to damage adjacent components. Do not touch the socket contacts.



*Figure 5: 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 6).

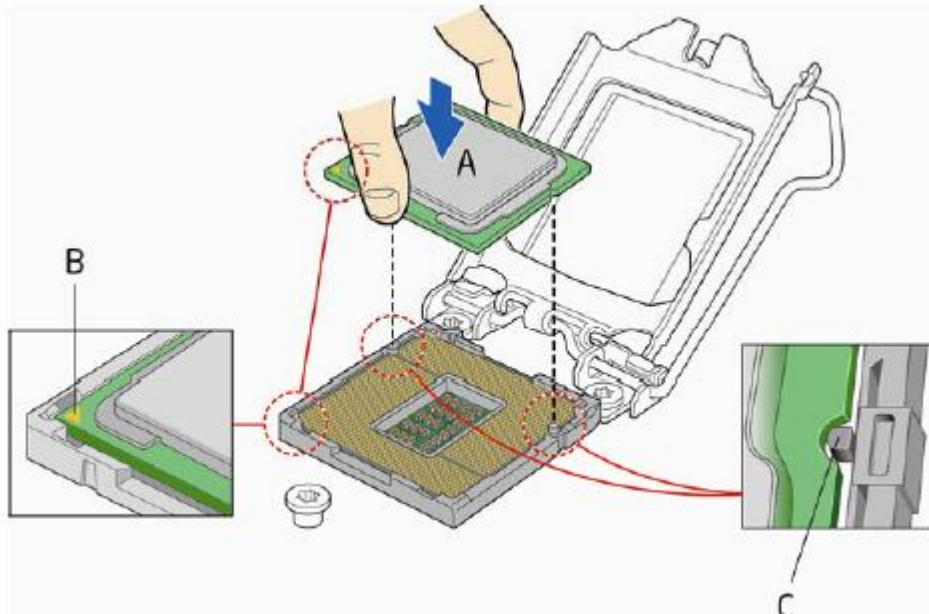


*Figure 6: Remove the processor from the protective cover*

*Remove the processor from the protective cover*

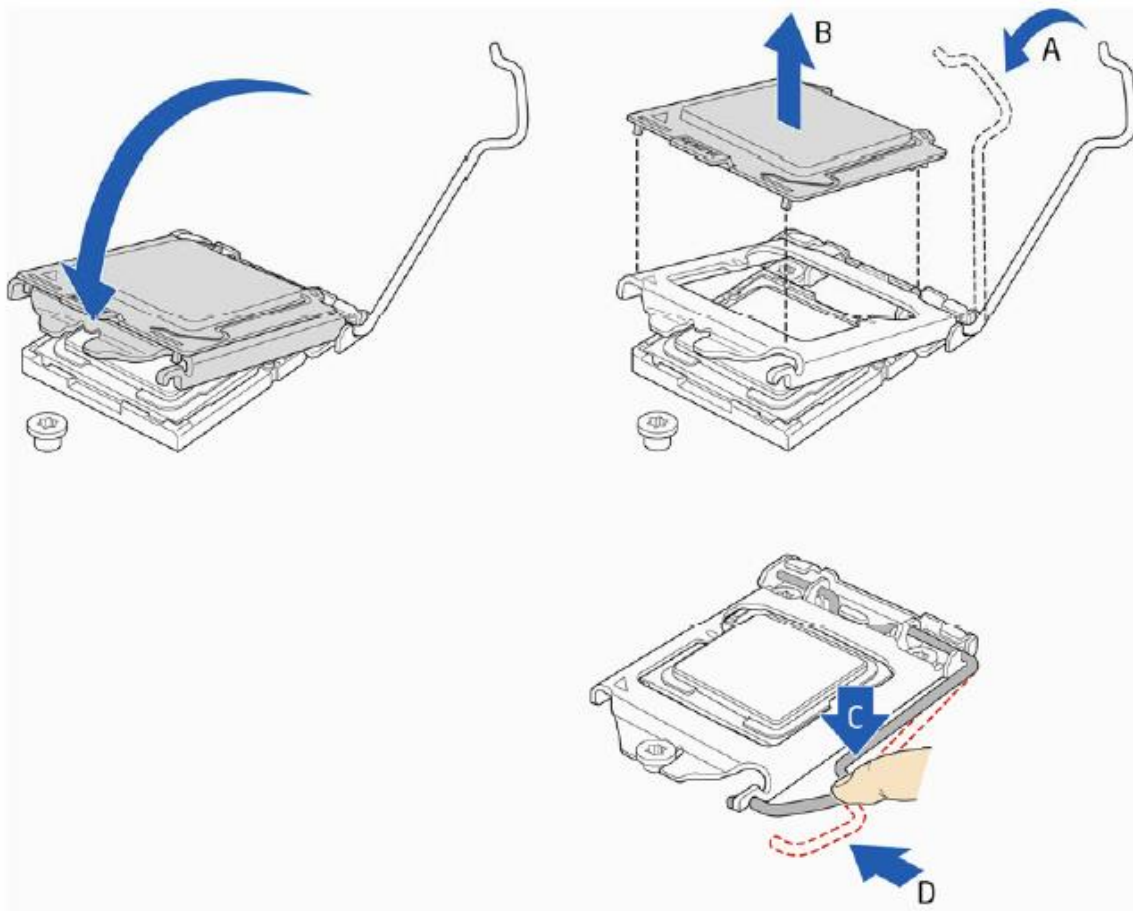
**Note:** Do not discard the processor cover. Always replace the processor cover if you remove the processor from the socket.

4. Hold the processor with your thumb and index finger oriented as shown in Figure 7 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 7, B) and that the notches on the processor align with the posts on the socket (Figure 7, C). Lower the processor straight down without tilting or sliding it in the socket (Figure 7, A).



*Figure 7: Install the processor*

- Carefully lower the socket lever (Figure 8) 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 8, C, and D). The socket cover (Figure 8, B) will pop off as shown.



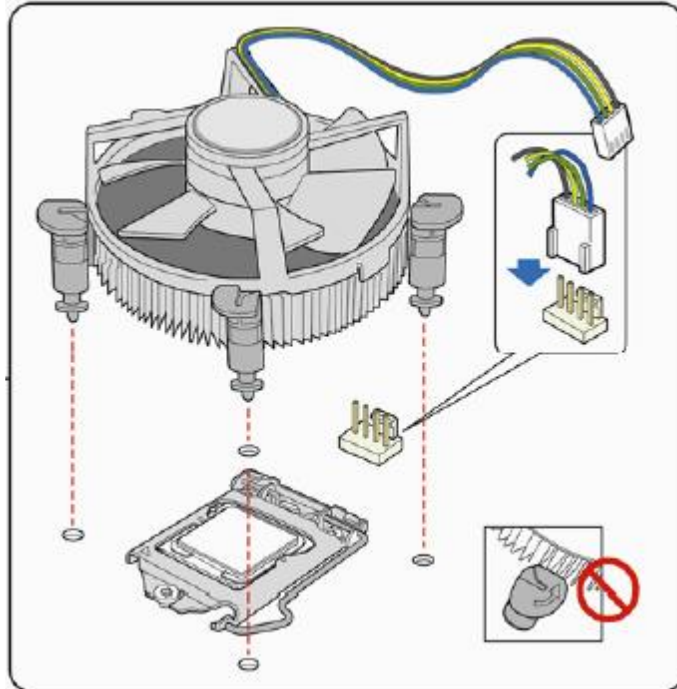
*Figure 8: Secure the load plate in place*

- 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 9). A fan with a 4-pin connector as shown in Figure 9 is recommended.

1. Make sure the four hooks are in the proper position before you install the cooler.



*Figure 9: Connecting the processor fan*

## 1.1.23 Installing & Removing Memory Modules

### Installing Memory

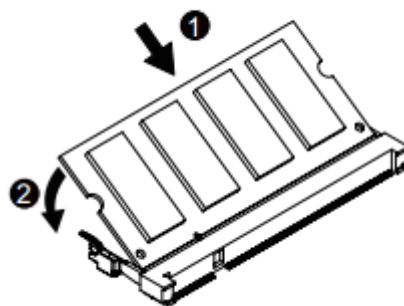
You may install 4GB, 8GB and 16GB unbuffered non-ECC DDR4 DIMMs into the DIMM sockets.

The motherboard has two SODIMM sockets. The motherboard supports the following memory features:

- 2 x DDR4 SODIMMs with gold-plated contacts.
- Non-ECC (64-bit) memory.
- 4GB, 8GB and 16GB modules.
- Memory Speeds 2400MHz
- Max. 32GB, DDR4

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.

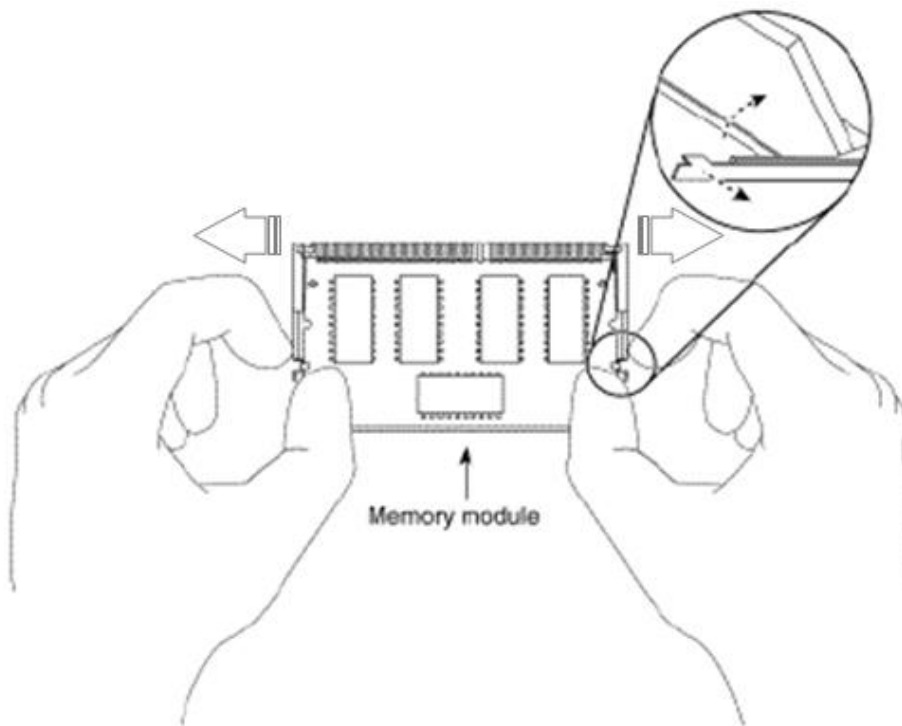


*Figure 10: Memory Installation*

## 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 11: Removing Memory Modules*

---

# Chapter 2 Solving Problems

---

## 3.9 Technical Support

### 2.1.1 Technical Support contact details

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 XMA Technical Support for further assistance.

XMA Technical Support can be reached in the following ways:

Telephone: 01727 201 850  
Fax: 01727 201 858  
Email: technical-support@xma.co.uk

You can also look for support information on our web site:

<http://www.xma.co.uk/>

Device drivers and various useful utilities can be downloaded from our ftp site:  
<http://download.viglen.co.uk/files/Motherboards/Vig870G>

### 2.1.2 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.

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

### **3.10 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/F2> for Set-up, <F12> 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.*



### 3.11 Problems & Suggestions

| What happens                                    | What to do  |
|---|---|
| Application software problems                   | <p>Try resetting the system.</p> <p>Make sure all cables are installed correctly.</p> <p>Verify that the system board jumpers are set properly.</p> <p>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.</p> <p>Make sure the software is properly configured for the system. Refer to the software documentation for information.</p> <p>Try a different copy of the software to see if the problem is with the copy you are using.</p> <p>If other software runs correctly on the system, contact the vendor of the software that fails.</p> <p>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.</p> |
| Characters on-screen are distorted or incorrect | <p>Make sure the brightness and contrast controls are properly adjusted on the monitor.</p> <p>Make sure the video signal cable and power cables are properly installed.</p> <p>Make sure your monitor is compatible with the video mode you have selected.</p>   |
| Characters do not appear on screen              | <p>Make sure the video display is plugged in and turned on.</p> <p>Check that the brightness and contrast controls are properly adjusted.</p> <p>Check that the video signal cable is properly installed.</p> <p>Make sure a video board is installed, enabled, and the jumpers are positioned correctly.</p> <p>Reboot the system.</p>   |

*Table 3: Problems and Suggestions*

**Table 8: Problems and Suggestions (Continued)**

| <b>What happens</b>   | <b>What to do</b>  |
|---|--|
| 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.<br><br>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.<br><br>Make sure the front panel connector is securely attached to the system board headers.<br><br>Check that the drive is properly configured and enabled in Setup.<br><br>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.<br><br>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.   |

**Table 8: Problems and Suggestions Continued**

---

# Chapter 3 System BIOS

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## **3.12 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.

## **3.13 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.

## 3.14 Managing and updating BIOS

### 3.1.1 Introduction

There are two 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.

- **Built-in EFI Shell**
- **Bios Update Under DOS**

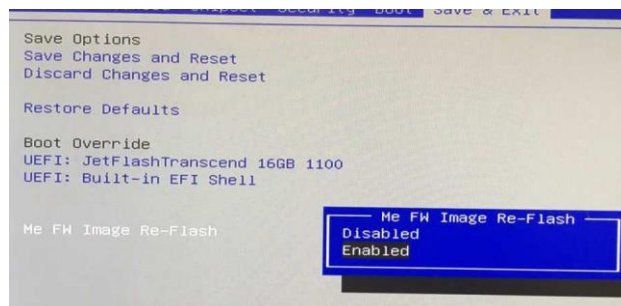
Latest BIOS files and Utility are available from Viglen FTP site:  
<http://download.viglen.co.uk/files/Motherboards/Vig870G/Bios>

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

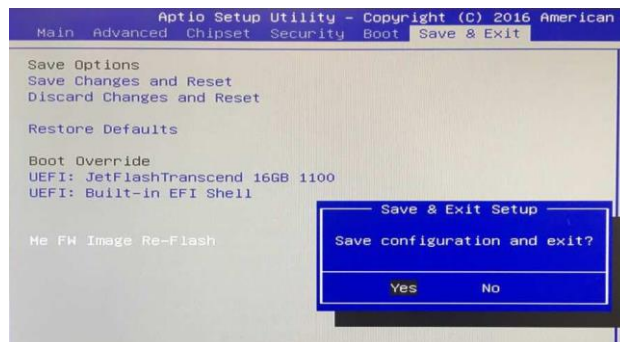
### 3.1.2 BIOS Update Instructions Using the Built-in EFI Shell

Before flashing BIOS, please **prepare an USB flash drive** and **do NOT connect any hard disk or M.2** to this BRIX.

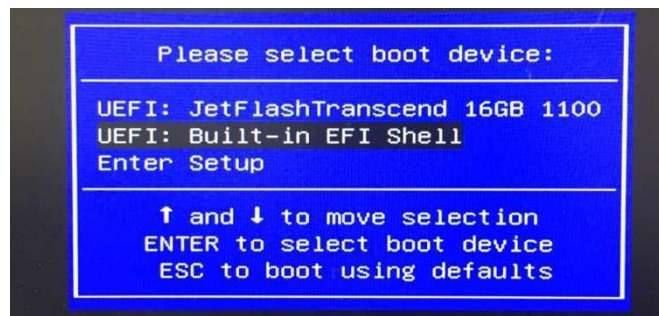
1. Download BIOS file from product page and unzip it. Save those files (image.bin, flash.nsh, afuefix64.efi) to USB flash drive
2. Turn on pc, press DEL enter BIOS setting then go to Save & Exit tab. Set **“ME FW Image Re-Flash”** to enable.



3. Press **F4** to save configuration and exit. Select Yes.



4. Press F12 during POST to select boot device: "UEFI: Built-in EFI Shell"



5. Screen will display all devices. Type **fs0:** to select USB drive.

Note: if more than 1 drives are connected, you need to select the drive which contains BIOS file.

```
EFI Shell version 2.50 [5.12]
Current running mode 1.1.2
Device mapping table
fs0  :Removable BlockDevice - Alias f10b0 blk0
      PciRoot(0x0)/Pci(0x1C,0x0)/Pci(0x0,0x0)/USB(0x1,0x0)
blk0  :Removable BlockDevice - Alias f10b0 fs0
      PciRoot(0x0)/Pci(0x1C,0x0)/Pci(0x0,0x0)/USB(0x1,0x0)

Press ESC in 1 seconds to skip startup.nsh, any other key to continue.
Shell> fs0:

fs0:\> dir
Directory of: fs0:\

12/29/16  02:53p <DIR>           8,192  F2
12/29/16  03:06p <DIR>           8,192  F1
0 File(s)                                0 bytes
2 Dir(s)
```

6. Enter the folder (our files were saved in F2 folder, so we type CD F2 then enter). Thereafter, please type flash.nsh to flash BIOS.

```
EFI Shell version 2.50 [5.12]
Current running mode 1.1.2
Device mapping table
fs0  :Removable BlockDevice - Alias f10b0 blk0
      PciRoot(0x0)/Pci(0x1C,0x0)/Pci(0x0,0x0)/USB(0x1,0x0)
blk0  :Removable BlockDevice - Alias f10b0 fs0
      PciRoot(0x0)/Pci(0x1C,0x0)/Pci(0x0,0x0)/USB(0x1,0x0)

Press ESC in 1 seconds to skip startup.nsh, any other key to continue.
Shell> fs0:

fs0:\> dir
Directory of: fs0:\

12/29/16  02:53p <DIR>           8,192  F2
12/29/16  03:06p <DIR>           8,192  F1
0 File(s)                                0 bytes
2 Dir(s)

fs0:\> cd f2

fs0:\F2> flash.nsh_
```

7. If you find below error message, please wait until BIOS is flashed. The computer will restart. Kindly enter BIOS, select Restore Defaults, Save Changes, and Reset. Re-do the procedure from Step 2 to Step 5.

```
FLASH.NSH> AfuEfix64.efi image.bin /ME
+-----+
|               AMI Firmware Update Utility  v5.08.00
|               Copyright (C)2015 American Megatrends Inc. All Rights Reserved
+-----+
Reading flash ..... done
- ME Data Size checking . ok
- FFS checksums ..... ok
- Error : No Memory Allocated!!
a1 - Error: BIOS does not support ME Entire Firmware update.
```

8. It may take a few minutes and you will see the following screen during BIOS update

```
flash.nsh> AfuEfix64.efi image.bin /ME
+-----+
|               AMI Firmware Update Utility  v5.08.00
|               Copyright (C)2015 American Megatrends Inc. All Rights Reserved
+-----+
Reading flash ..... done
- ME Data Size checking . ok
- FFS checksums ..... ok
- Update success for DSC
- Update success for GBE. |
- Update MER ..... \
```

9. Reboot and you can find BIOS updated to the one flashed.

```
Aptio Setup Utility - Copyright (C) 2016 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit

BIOS Information
-----
Project Name                GB-BK13(H)A-7100
BIOS Version                F2
Build Date and Time        12/21/2016 16:49:52
LAN MAC Address            1C-1B-0D-2C-12-99
Total Memory                4096 MB
ME FW Version               11.5.0.1058
System Date                 [Thu 12/29/2016]
System Time                 [15:58:36]
```

### 3.1.3 BIOS Update Instructions under DOS

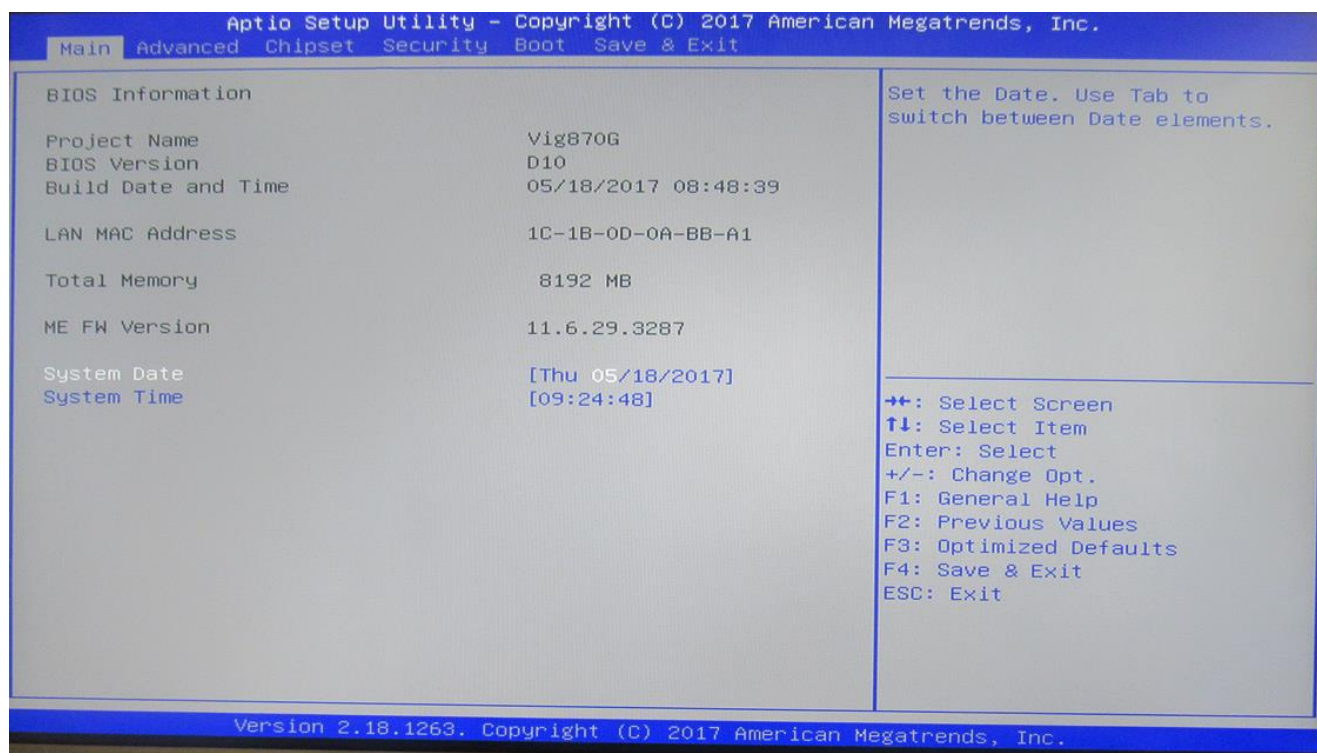
The BIOS Updater allows you to update BIOS in a DOS environment. This utility also allows you to copy the current BIOS file that you can use as a backup when the BIOS fails or gets corrupted during the updating process.

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. Turn on pc, press DEL enter BIOS setting then go to Save & Exit tab. Set “ME FW Image Re Flash” to enable, and save and reset system.
5. Boot the target PC with the device connected or inserted.
6. Select <F12> during POST to display the Boot Menu and select your bootable device.
7. Navigate to the target device using cd (example “cd bios folder”) to enter the target folder with the bios contents saved and dir (example “dir”) to list of the contents of the current directory.
8. At the DOS prompt Type 'Flash.bat' to launch the BIOS updates process.
9. Reboot the system once complete.
10. 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.

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

## **BIOS Screen**

### **Main**



*Figure – BIOS Screen – Main*

### **BIOS menu screen**

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

### **BIOS Main Menu selection**

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

| Main Menu Selection    |   |
|------------------------|---|
| <b>Main</b>            | For changing the basic system configuration                 |
| <b>Advanced</b>        | For changing the advanced system settings                   |
| <b>Chipset</b>         | For checking the chipset settings                           |
| <b>Security</b>        | For changing secure boot settings                           |
| <b>Boot</b>            | For changing the system boot configuration                  |
| <b>Save &amp; Exit</b> | For selecting the exit options and loading default settings |



## 3.15 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.

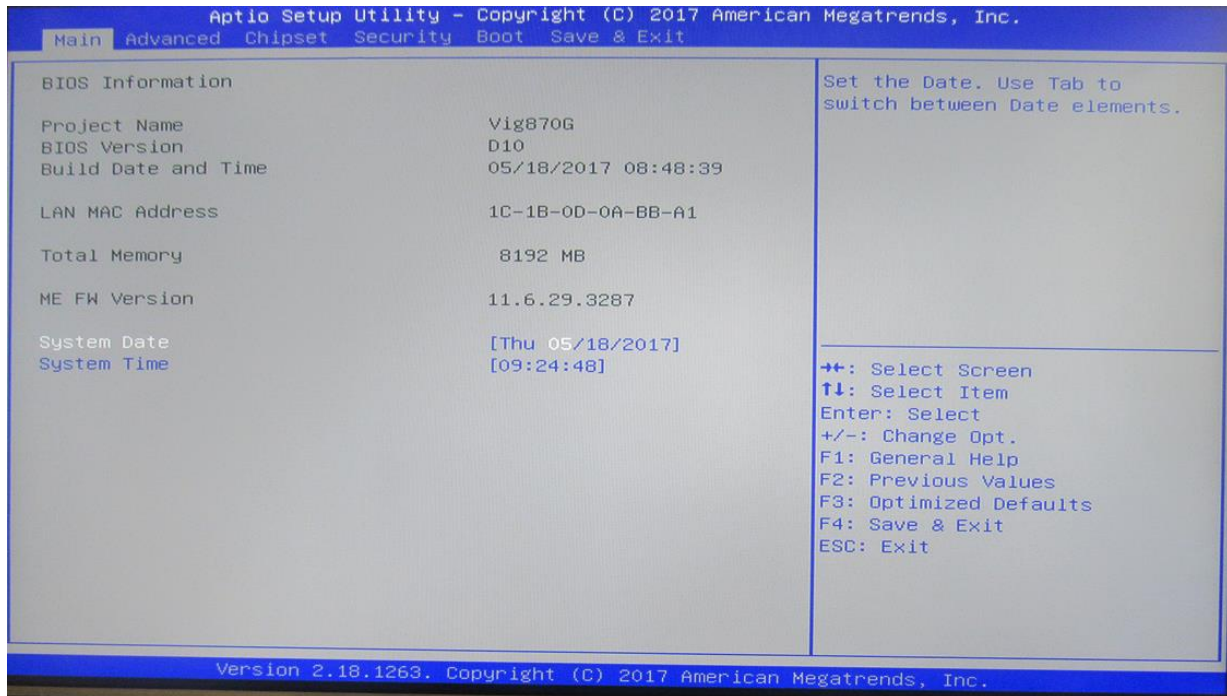


Figure 12: Main Menu

### **System Language [English]**

Allows you to choose the BIOS language version from the options. System Date [Day xx/xx/xxxx]

Allows you to set the system date.

### **System Time [xx:xx:xx]**

Allows you to set the system time.

### **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:

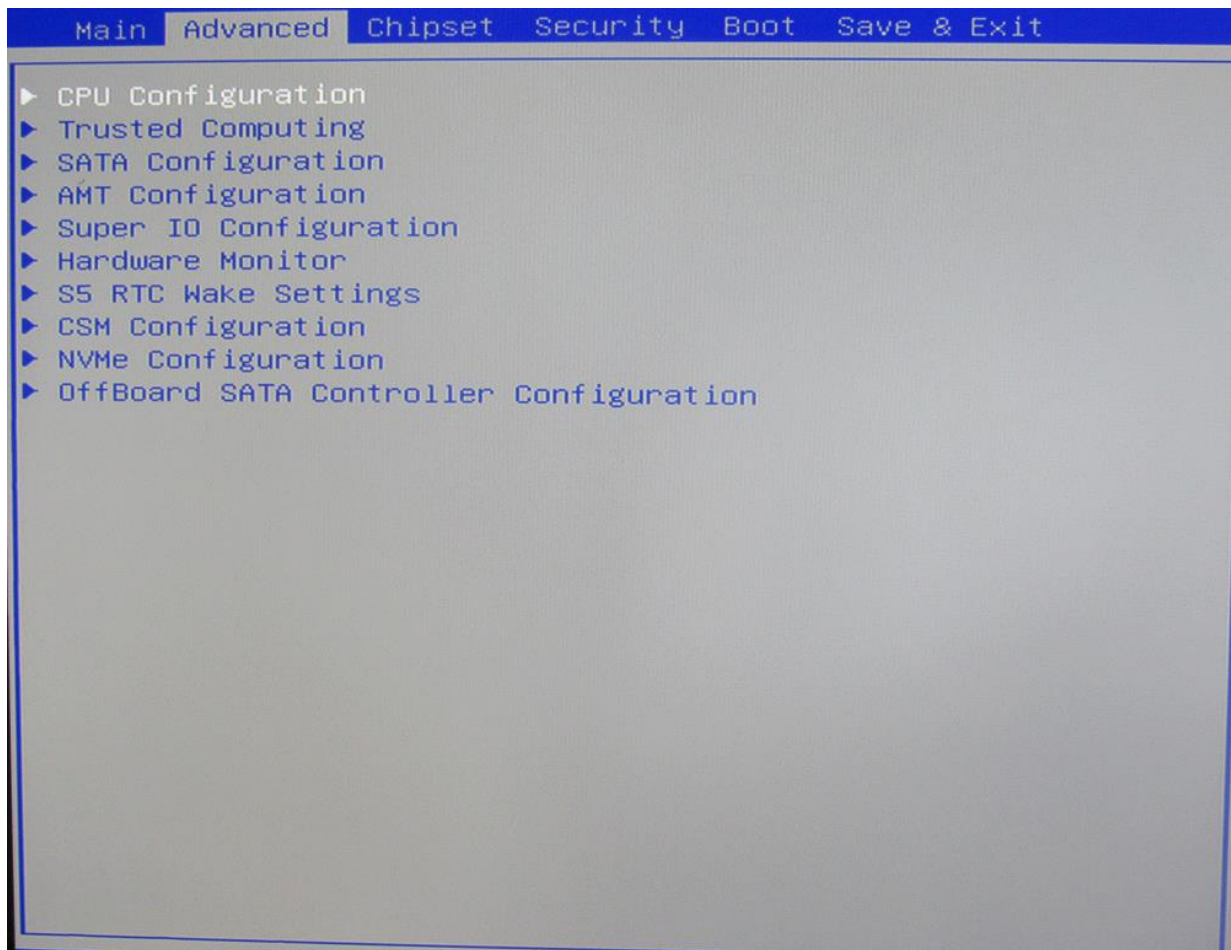
1. Select the **User Password** item and press <Enter>.
2. From the **Enter Current Password** box, key in the current password, then press <Enter>.
3. From the **Create New Password** box, key in a new password, then press <Enter>.
4. Confirm the password when prompted.

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**.

### 3.4.1 Advanced Menu Screen

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

*NOTE: Be cautious when changing the settings of the advanced menu items. Incorrect field values can cause the system to malfunction.*



*Figure 13: Advanced Sub Menu Screen*

### 3.4.2 CPU configuration

Here you can select the settings for the CPU, such as hyperthreading and speedstep.

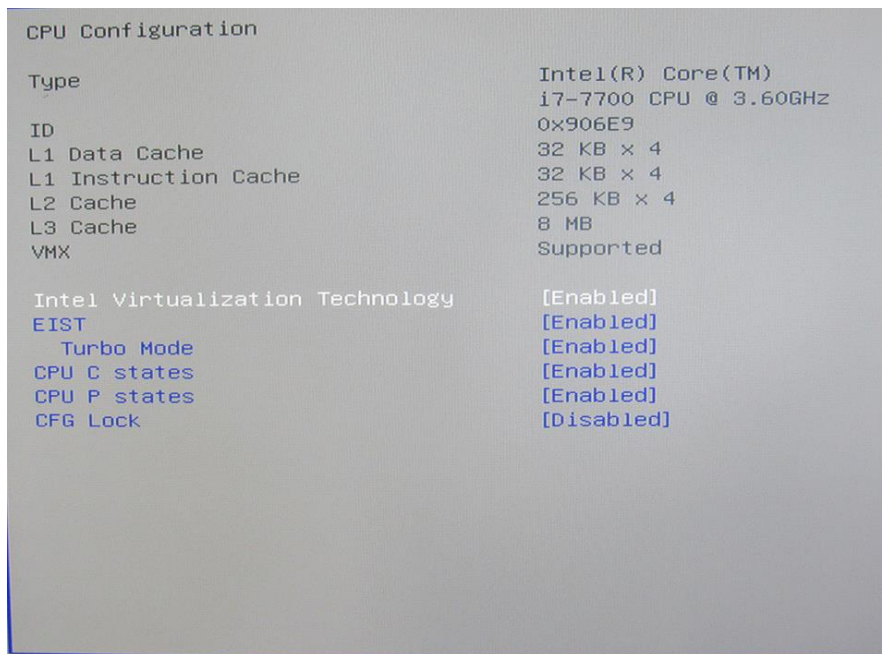


Figure 20: CPU Configuration

### 3.4.4 Trusted computing

The items in this menu show the TPM settings for the motherboard.

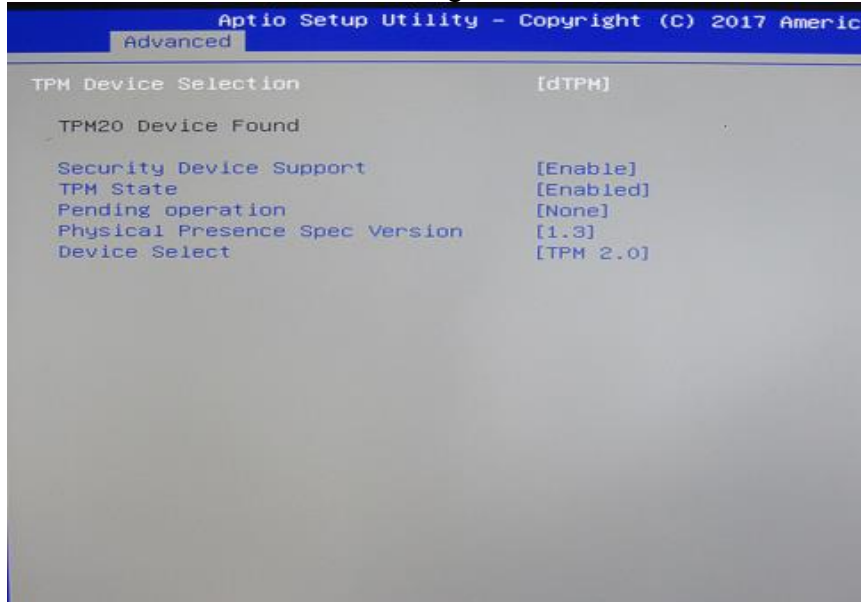
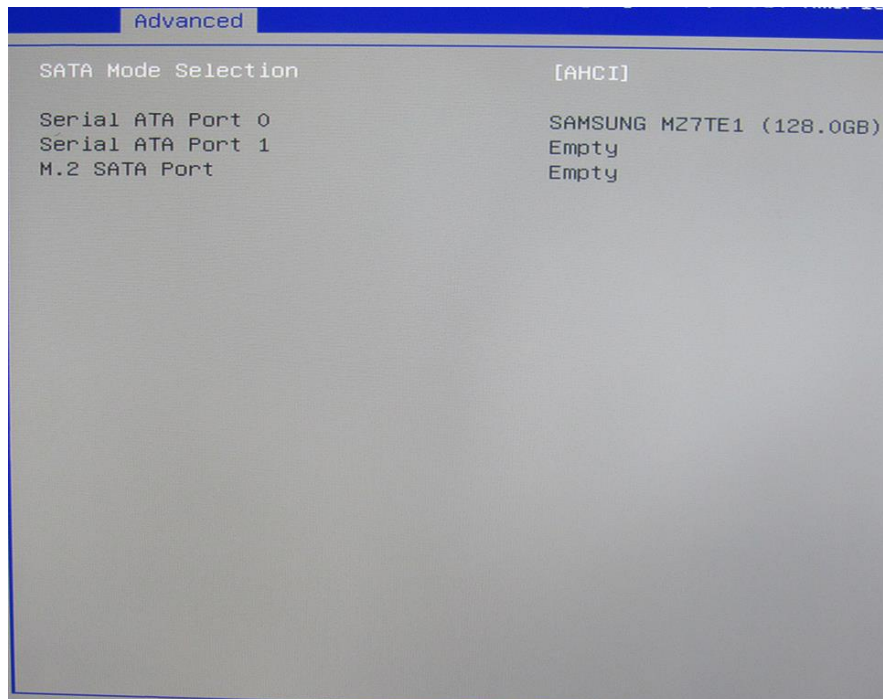


Figure 21: CPU Configuration

### 3.4.3 SATA Configuration

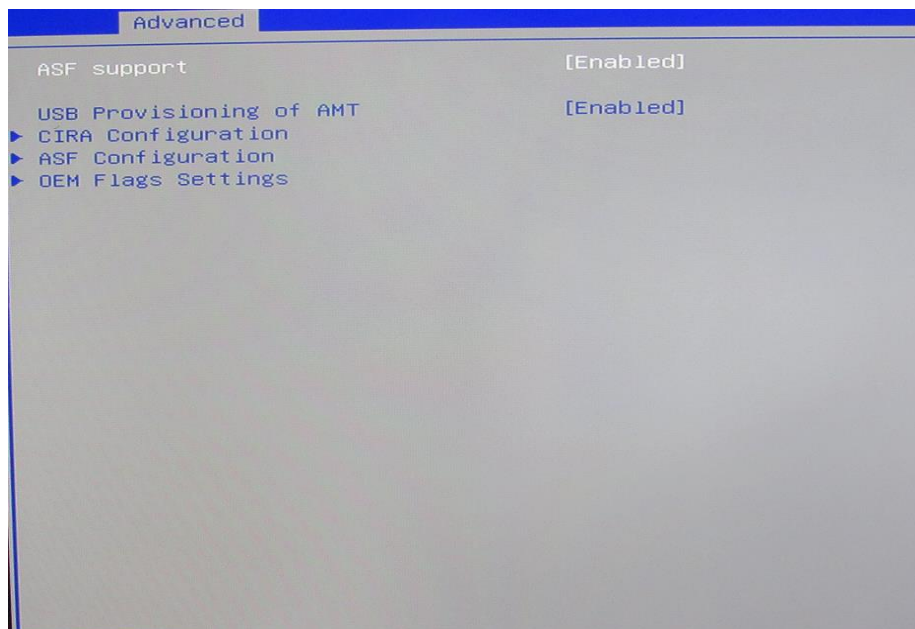
Here in SATA configuration, you can select the SATA mode, Hot plug settings and the M.2 SATA settings



*Figure 22: SATA Configuration*

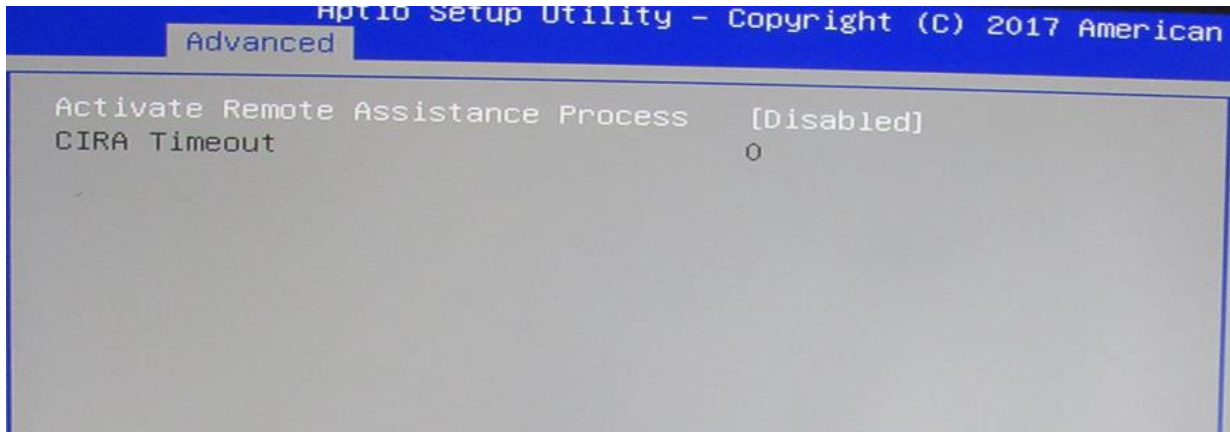
### 3.4.5 AMT Configuration

The items in this menu allow you to configure the Intel AMT settings.

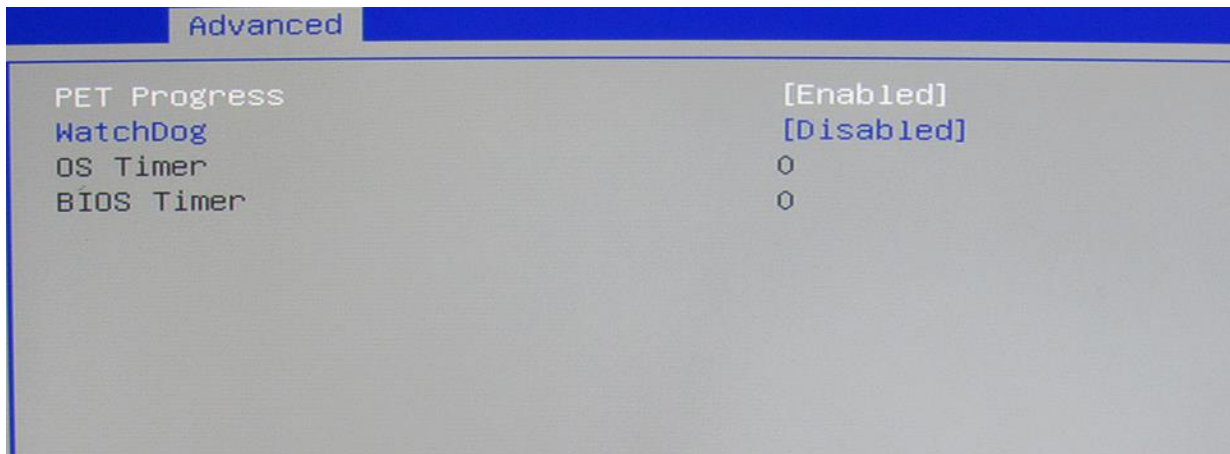


*Figure 23: AMT Configuration*

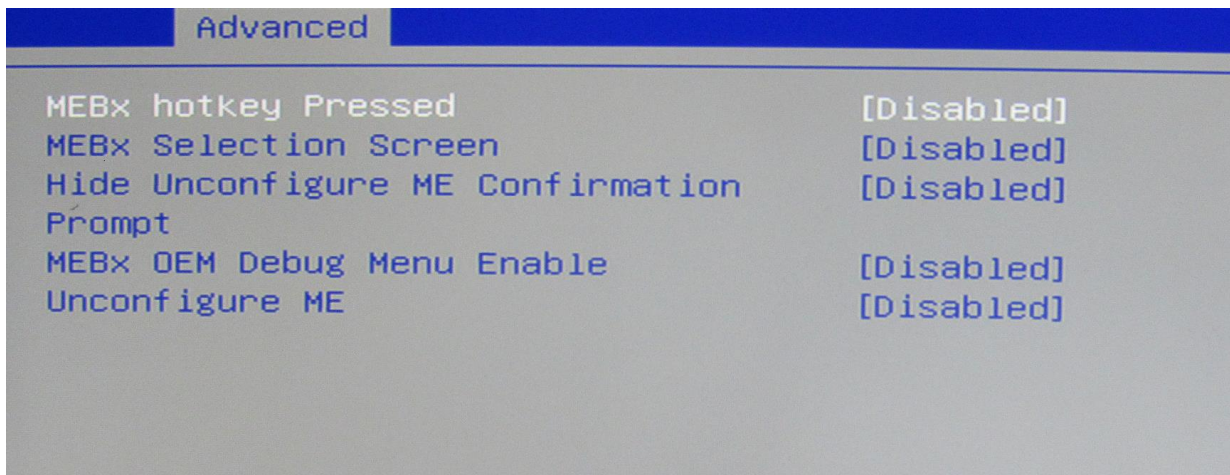
### 3.4.6 AMT Configuration (CIRA Configuration)



### 3.4.7 AMT Configuration (ASF Configuration)

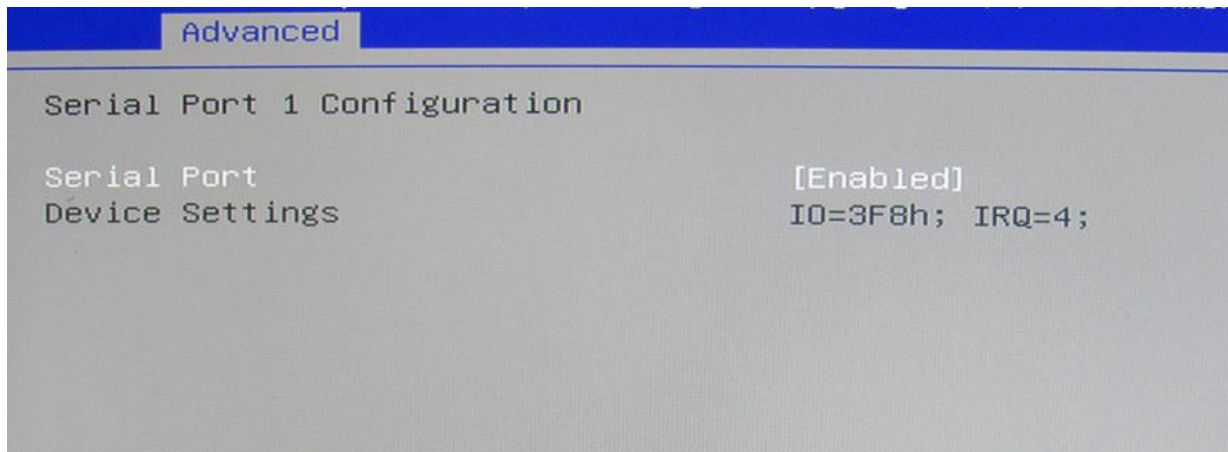


### 3.4.8 AMT Configuration (OEM Flag Settings)



### 3.4.9 Super IO Configuration

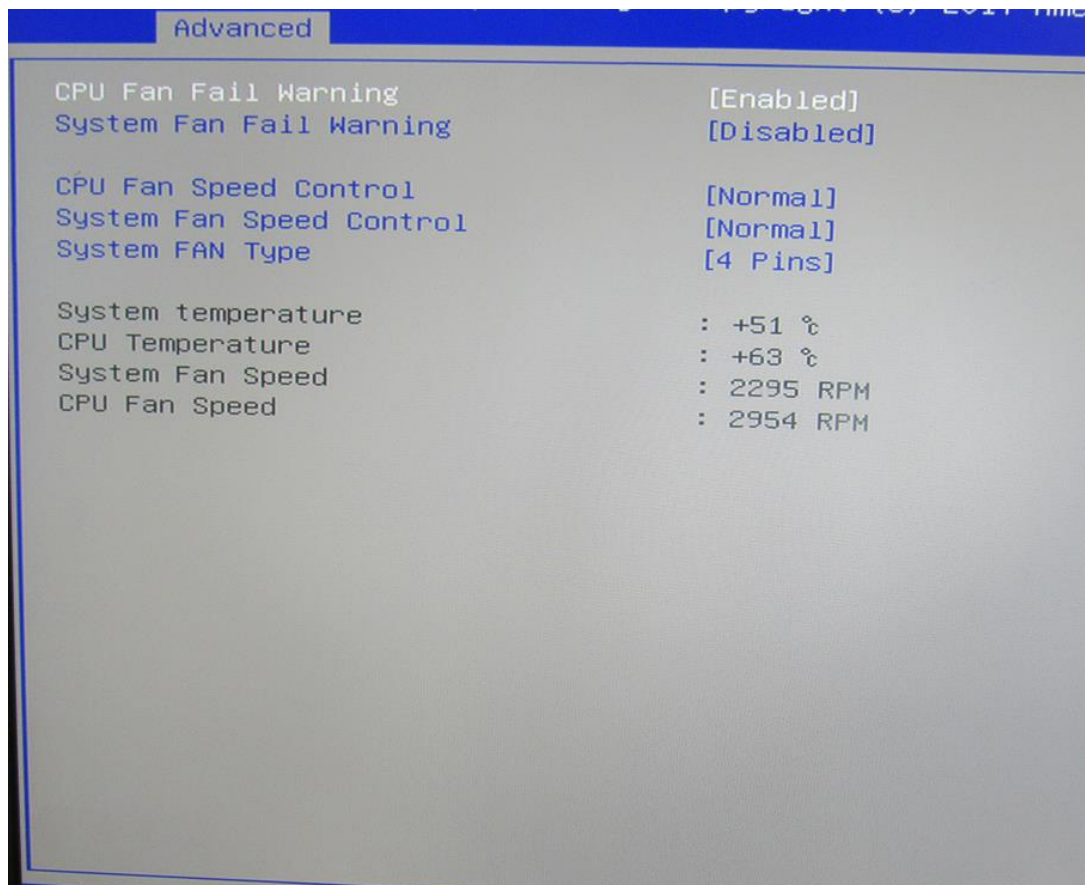
Allows you to set the Super IO configuration.



*Figure 24: Super IO Configuration*

### 3.4.10 Hardware monitor

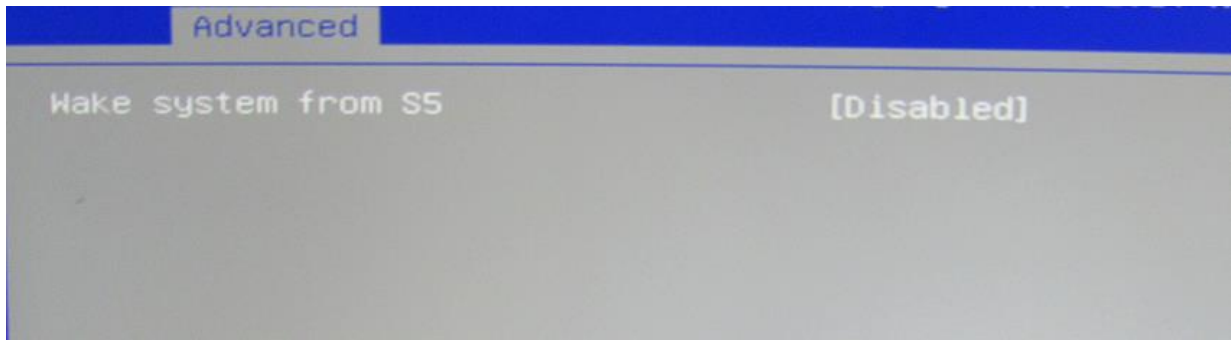
This menu allows you to check the settings for CPU or system fans. You can also check the temperature of the system.



*Figure 25: Hardware monitor*

### 3.15.11 S5 RTC wake settings

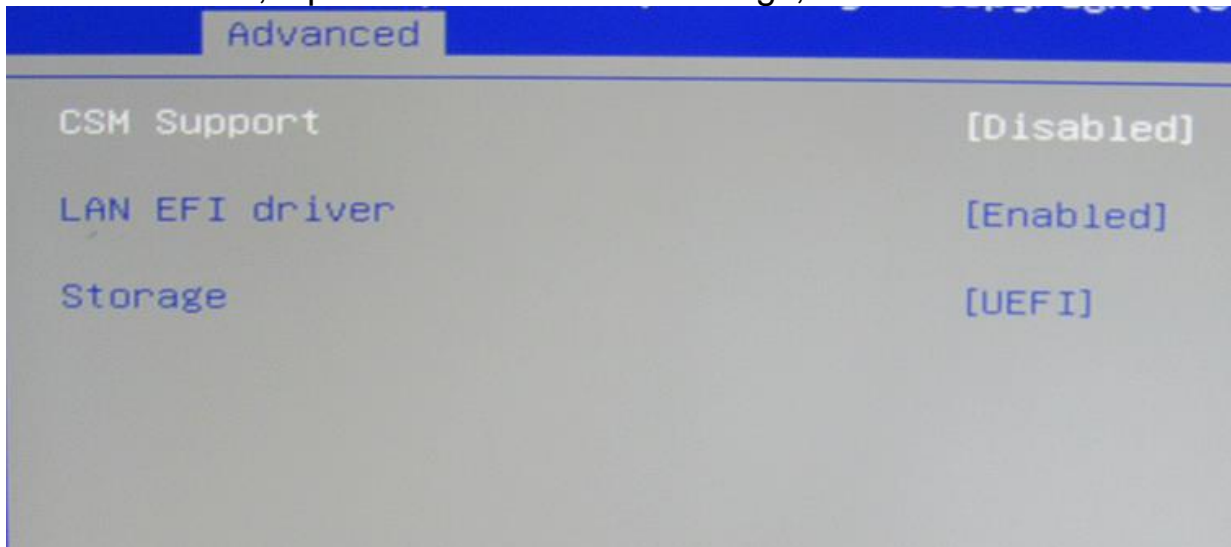
The items in this menu allow you to change the RTC features.



*Figure 26: S5 RTC wake settings*

### 3.15.12 CSM Configuration

Enable/Disable, Option ROM execution settings, etc.



*Figure 26: S5 RTC wake settings*



### 3.15.13 Chipset

The chipset menu lets you change the LVDS settings, the VD-t settings, NFC settings and the SATA settings

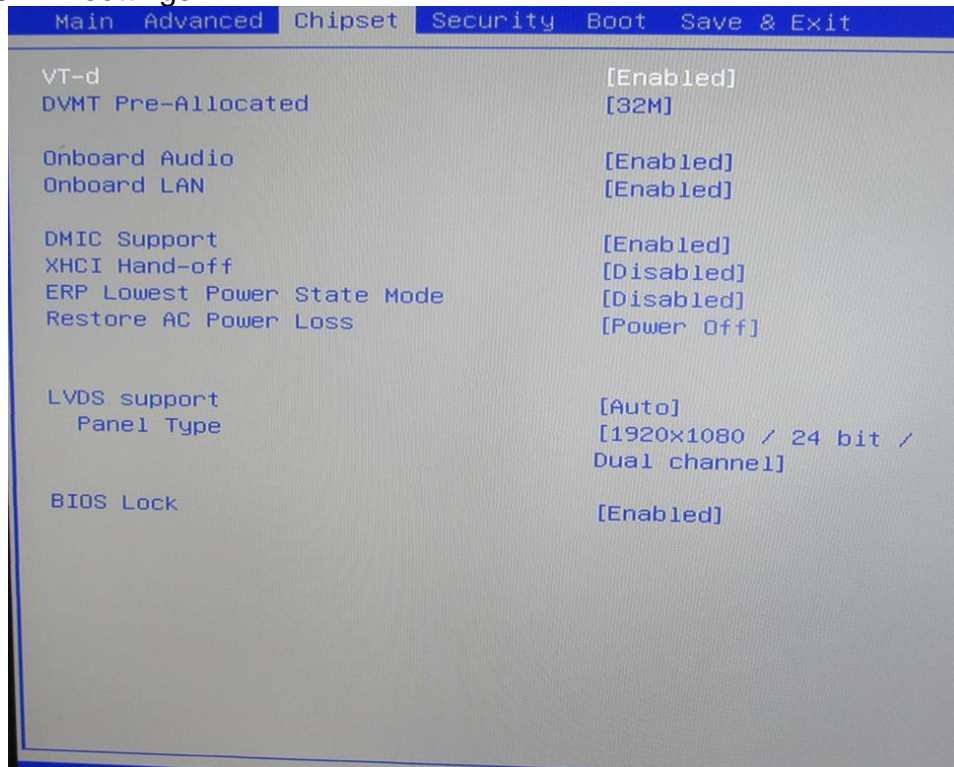


Figure 14: Chipset Menu

### 3.15.14 Security menu

In the security Menu, you can select the select wether to boot from other OS or Windows UEFI mode

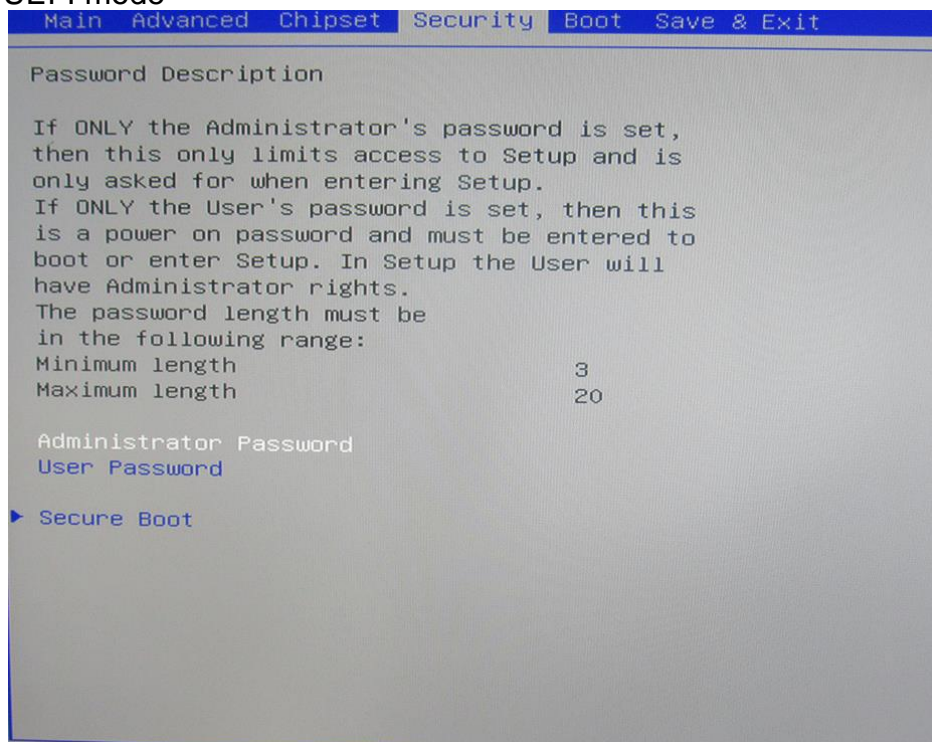
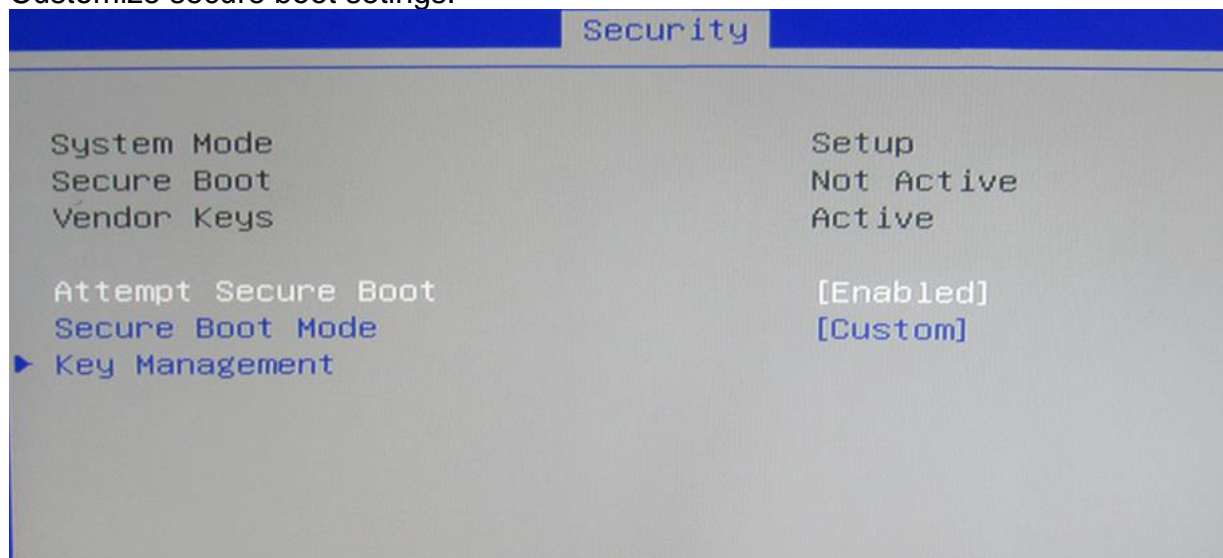


Figure 28: Security menu

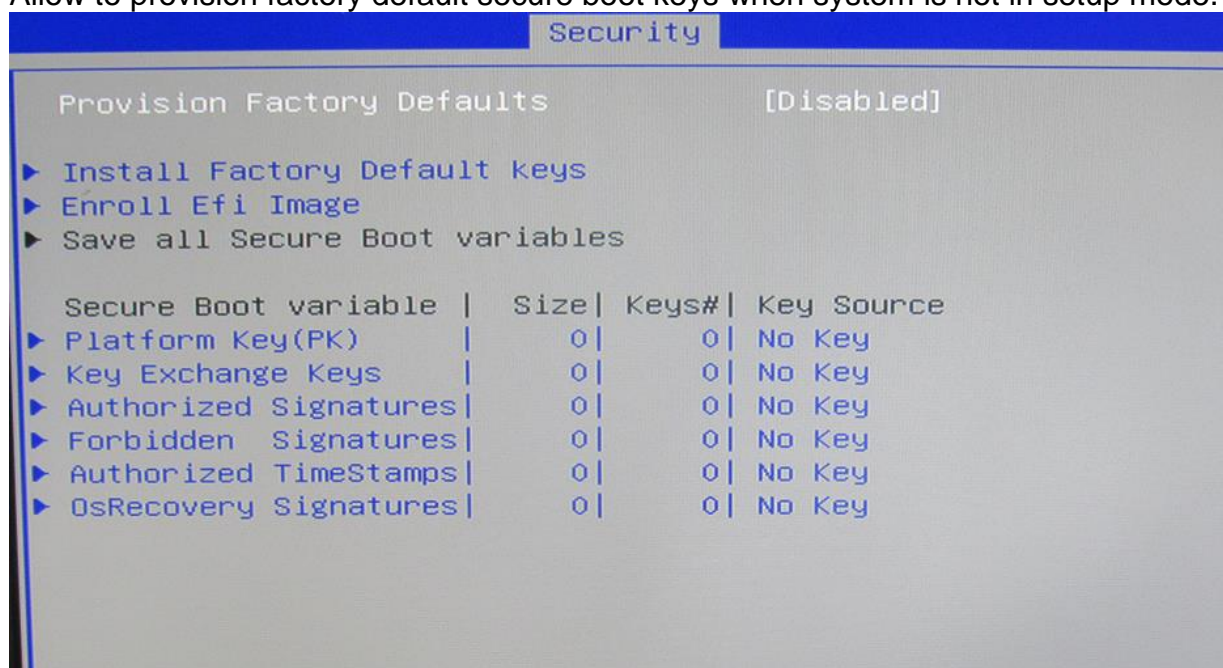
### 3.15.15 Security menu (Secure Boot)

Customize secure boot settings.



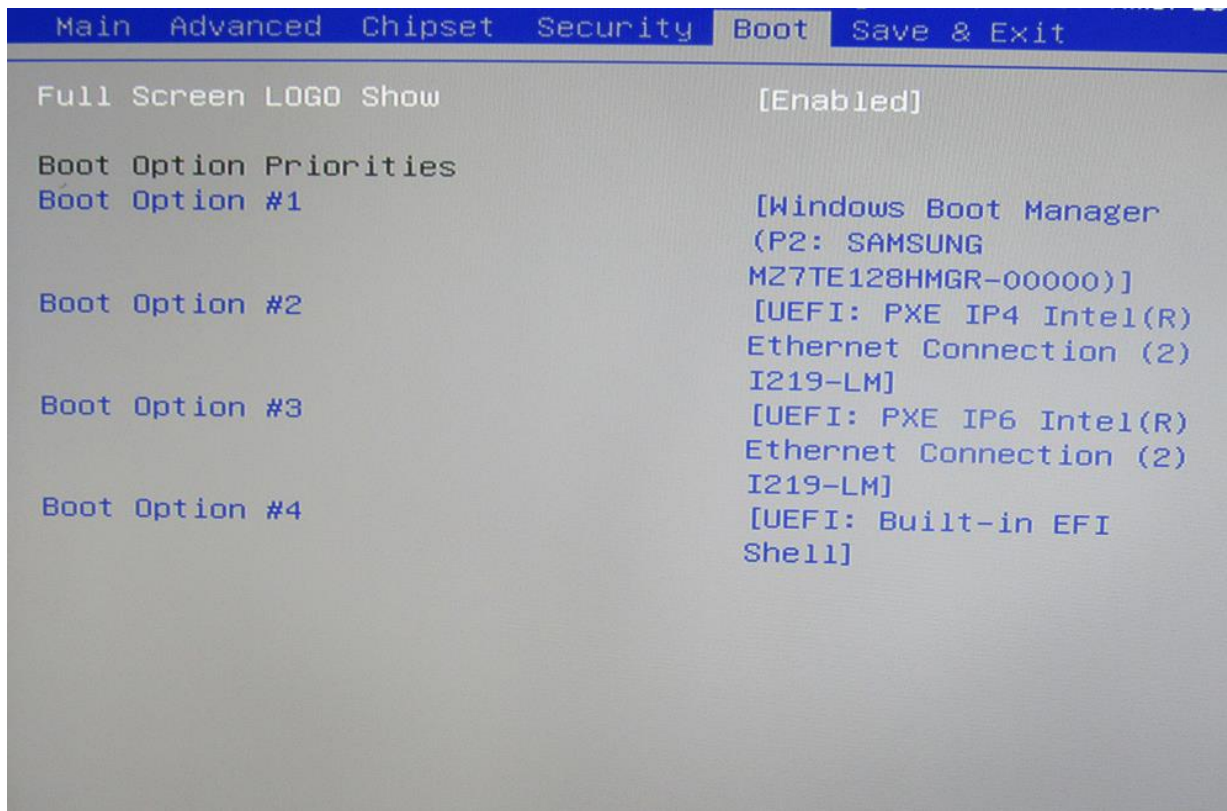
### 3.15.16 Secure Boot (Key Management)

Allow to provision factory default secure boot keys when system is not in setup mode.



### 3.15.17 Boot menu

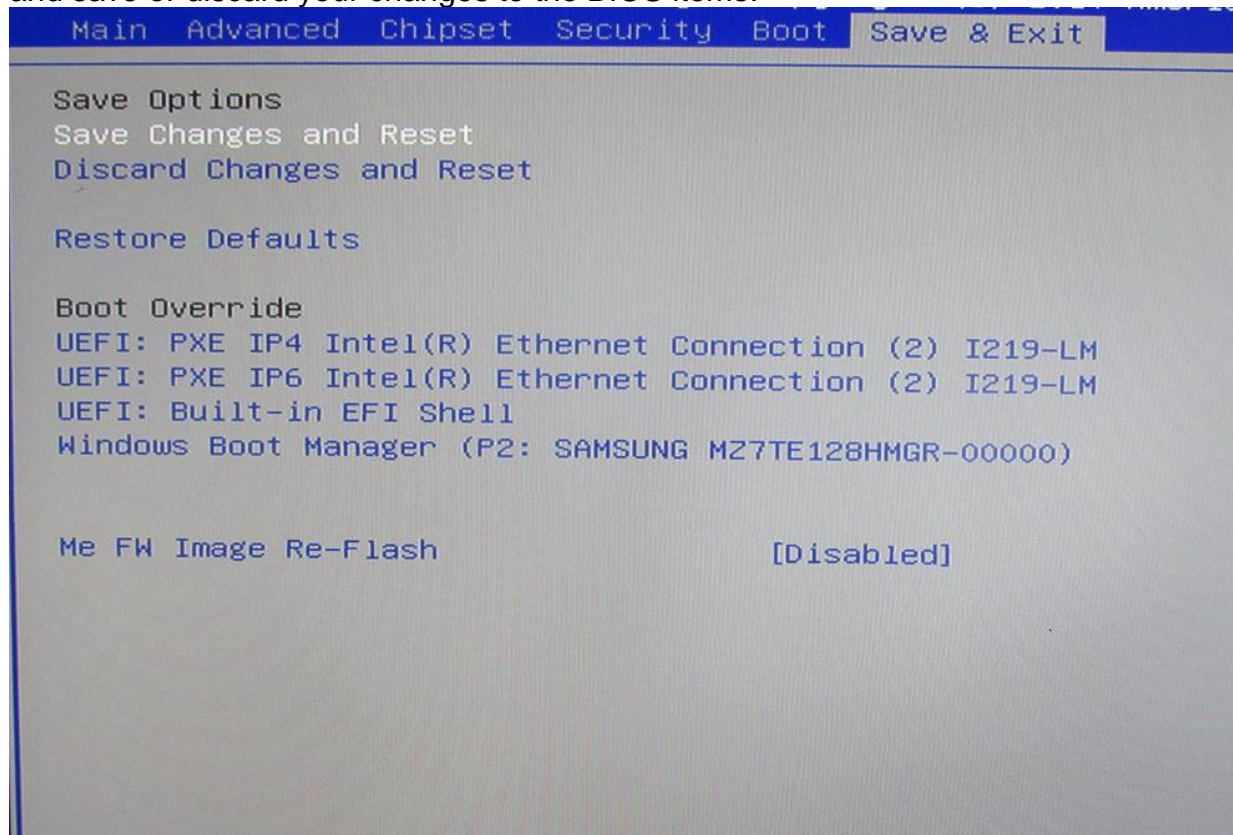
The Boot menu items allow you to change the system boot options.



*Figure 29: Boot Menu*

### 3.15.18 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.



*Figure 15: Exit menu*

#### 3.15.18.1 Restore defaults

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

#### 3.15.18.2 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, a confirmation window appears. Select Yes to save changes and exit.

#### 3.15.18.3 Discard Changes & reset

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

## BIOS settings for Windows 7 and Windows 10 O/S

### 3.5 Windows UEFI mode for Windows 10

Vig870G system configured with Windows 10 will have following default BIOS settings. If you wish to downgrade to Windows 7 then BIOS must be configured to vig870 Non-UEFI mode.

#### Advanced\CSM Configuration

|                |            |
|----------------|------------|
| CSM Support    | [Disabled] |
| LAN EFI driver | [Enabled]  |
| Storage        | [UEFI]     |

#### Security\Secure Boot Menu

|                     |           |
|---------------------|-----------|
| Attempt Secure Boot | [Enabled] |
| Secure Boot Mode    | [Custom]  |

#### Note

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

### 3.6 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

#### Advanced\CSM Configuration

|                |           |
|----------------|-----------|
| CSM Support    | [Enabled] |
| LAN PXE OproM  | [Enabled] |
| LAN EFI driver | [Enabled] |
| Storage        | [Legacy]  |

#### Security\Secure Boot Menu

|                     |            |
|---------------------|------------|
| Attempt Secure Boot | [Disabled] |
|---------------------|------------|

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## 4.0 : Suggestions

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### 4.1 Questionnaire

XMA is interested in continuing to improve the quality and information provided in their manuals. XMA 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?

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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?

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

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7. Other points you would like to mention?

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Please return this slip to:      Product Development Dept.  
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