

# Preface

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Version 1.0

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## Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

## Preface

## Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

## Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

## About the Manual

The manual consists of the following:

### Chapter 1

#### Introducing the Motherboard

Describes features of the motherboard.

Go to  page 1

### Chapter 2

#### Installing the Motherboard

Describes installation of motherboard components.

Go to  page 9

### Chapter 3

#### Using BIOS

Provides information on using the BIOS Setup Utility.

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### Chapter 4

#### Trouble Shooting

Provides basic trouble shooting tips

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# Chapter 1

## *Introducing the Motherboard*

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### Introduction

Thank you for choosing the **SYM86370** motherboard. This motherboard is a high performance, enhanced function motherboard designed to support Intel Haswell processors for high-end business or personal desktop markets.

This motherboard is based on integrated Intel Chipset for best desktop platform solution. Haswell is a quad-core/Dual-core processor. The chipset for Haswell is highly integrated and high performance. Moreover, Haswell will feature DirectX11.1-compliant graphics and support Win8 and UEFI Secure Boot. This motherboard supports up to 16 GB 240 pin DIMM memory with dual-channel DDR3/DDR3L 1333/ 1600 (1GB/ 2GB/ 4GB/ 8GB) SDRAM. Three PCI Express x16 Gen3 slots & one MINIPCI slot and one MSATA slot are supported. Four PCI slots are also supported.

It implements an EHCI (Enhanced Host Controller Interface) compliant interface that provides seven USB 2.0 ports (two USB 2.0 ports at the back panel, one USB2.0 port onboard and two USB 2.0 headers support additional four USB 2.0 ports) and four USB 3.0 ports at the back panel.

The motherboard is equipped with advanced full set of I/O ports in the rear panel, including one PS/2 mouse & keyboard combo connector, one Serial ports (COM1), two VGA ports, two Lan ports, two USB 2.0 ports, four USB 3.0 ports, one DVI port and audio jacks for line-in, line-out and Microphone.

In addition, this motherboard supports one SATA 6.0Gb/s connector and two SATA 3.0Gb/s connectors.

## Feature

### Processor

The motherboard uses Haswell CPU that carries the following features:

- DirectX11.1-compliant graphics architecture
- Supports “Hyper-Threading” technology
- Supports Win8 and UEFI Secure Boot.

“Hyper-Threading” technology enables the operating system into thinking it’s hooked up to two processors, allowing two threads to be run in parallel, both on separate “logical” processors within the same physical processor.

### Chipset

The integrated Haswell chip is a single-chip/dual-core with proven reliability and high performance.

- Support one MINIPCIe slot
- Support one MSATA slot
- Integrated one SATA 6.0 Gb/s Host Controllers and two SATA 3.0 Gb/s Host Controllers
- Seven USB 2.0 ports supported
- Four USB 3.0 port supported
- Support three PCI Express x16 Gen3 slot
- Support four PCI slots
- Intel® High Definition Audio Controller

### Memory

- Supports DDR3/DDR3L 1333/ 1600 (1GB/ 2GB/ 4GB/ 8GB) DDR3L SDRAM with dual-channel architecture
- Up to 16GB 240 pin DIMM memory module support

### Audio

- 2+2 Channel High Definition Audio Codec
- Meets Microsoft Windows Logo Program and Lync audio requirements
- All DACs supports 44.1k/48k/96k/192kHz sample rate
- Software selectable 2.5V/3.2V/4.0V VREFOUT
- Direct Sound 3D™ compatible
- Power Support: Digital: 3.3V; Analog: 5.0V

## Ethernet LAN

The onboard LAN provides the following features:

- Supports PCI Express™ 1.1
- IEEE 802.3/az
- Wake-on-LAN (including from S3, S4, S5, power button off) and remote wake-up support
- PXE and RPL support

## Expansion Options

The motherboard comes with the following expansion options:

- One MINIPCI slot
- One MSATA slot
- One SATA 6.0Gb/s connector and two SATA 3.0Gb/s connectors
- Support three PCI Express x16 Gen3 slot
- Support four PCI slots

## Integrated I/O

The motherboard has a full set of I/O ports and connectors:

- Two LAN ports
- One Serial port (COM1)
- two USB 2.0 ports
- Two VGA port
- One DVI port
- Four USB 3.0 ports
- One PS/2 keyboard & mouse combo connector
- Audio jacks for line-out, line-in and Microphone

## BIOS Firmware

This motherboard uses AMI BIOS that enables users to configure many system features including the following:

- Power management
- Wake-up alarms
- CPU parameters
- CPU and memory timing
- Graphic parameters

The firmware can also be used to set parameters for different processor clock speeds.



1. Some hardware specifications and software items are subject to change without prior notice.

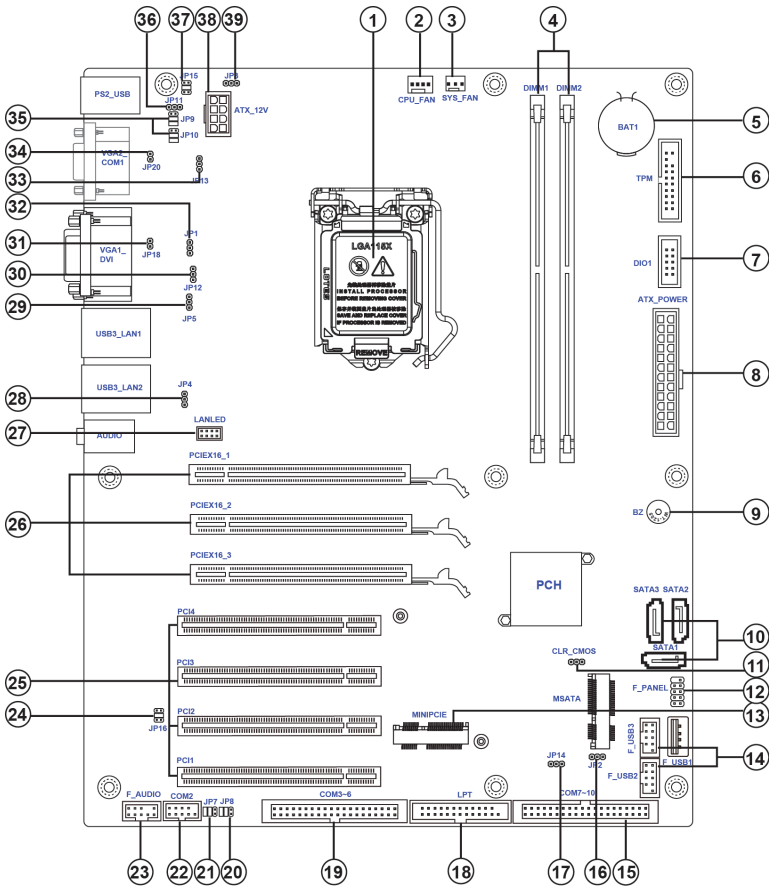
2. Due to chipset limitation, we recommend that motherboard be operated in the ambience between 0 and 60 ° C. (NOTICE: Test method: bare PCB with 100% loading running Pass Mark 7.0 at chamber 60 ° C)

## Specifications

CPU	<ul style="list-style-type: none"> <li>Intel Haswell series processors, up to 4 cores</li> <li>Supports "Hyper-Threading" technology</li> </ul>
Chipset	<ul style="list-style-type: none"> <li>Integrated Intel H81 chip</li> </ul>
Memory	<ul style="list-style-type: none"> <li>Dual-channel DDR3/DDR3L memory architecture</li> <li>1 DDR3L 240pin SO-DIMM sockets support up to 16 GB</li> <li>Supports 1333/ 1600 DDR3L SDRAM</li> </ul>
Expansion Slots	<ul style="list-style-type: none"> <li>1 x MINIPCI slot</li> <li>1 x MSATA slot</li> <li>One SATA 6.0Gb/s connector and Two SATA 3.0Gb/s connectors</li> <li>3 x PCI Express x16 Gen3 slot</li> <li>4 x PCI slots</li> </ul>
Storage	<ul style="list-style-type: none"> <li>Supported by integrated Intel Haswell H81 SoC chip</li> <li>2 x Serial ATA 5.0 Gb/s Host Controllers</li> <li>1 x Serial ATA 6.0 Gb/s Host Controllers</li> </ul>
Audio	<ul style="list-style-type: none"> <li>Realtek ALC662 6-Ch HD audio CODEC</li> </ul>
Ethernet LAN	<ul style="list-style-type: none"> <li>Intel I217-LM PHY Gbe LAN, Intel I210-AT Gbe LAN</li> </ul>
Rear Panel I/O	<ul style="list-style-type: none"> <li>2 x USB 2.0 ports</li> <li>1 x Serial port (COM1)</li> <li>2 x VGA port</li> <li>2 x RJ45 LAN connectors</li> <li>1 x PS/2 keyboard &amp; PS/2 mouse combo connector</li> <li>1 x Audio port (Line-out, Line-out, Microphone)</li> <li>1 x DVI port</li> <li>4 x USB 3.0 ports</li> </ul>
Internal I/O Connectors & Headers	<ul style="list-style-type: none"> <li>1 x 8-pin 12V Power Supply connector</li> <li>1 x 4-pin CPU_FAN connector</li> <li>1 x 3-pin SYS_FAN connector</li> <li>1 x SATA III 6.0Gb/s connector</li> <li>2 x SATA II 3.0Gb/s connectors</li> <li>1 x Front panel switch/LED header</li> <li>1 x Front panel audio header</li> <li>2 x USB 2.0 headers support additional four USB 2.0 ports</li> <li>1 x USB 2.0 port onboard</li> <li>4 x Serial headers (COM3~6)</li> <li>1 x SPK header</li> <li>1 x Clear CMOS header with jumper</li> <li>1 x 10-pin DIO1 header</li> <li>1 x TPM header</li> <li>1 x SPDIFO header</li> <li>1 x Opened Chassis detective header</li> <li>1 x LANLED header</li> </ul>

	<ul style="list-style-type: none"> <li>• 1 x JP1 (Option)</li> <li>• 1 x JP2 (Option)</li> <li>• 1 x JP3 (Option)</li> <li>• 1 x JP4 (Option)</li> <li>• 1 x JP5 (Option)</li> <li>• 1 x JP7 (Option)</li> <li>• 1 x JP8 (Option)</li> <li>• 1 x JP9 (Option)</li> <li>• 1 x JP10 (Option)</li> <li>• 1 x JP11 (Option)</li> <li>• 1 x JP12 (Option)</li> <li>• 1 x JP13 (Option)</li> <li>• 1 x JP14 (Option)</li> <li>• 1 x JP15 (Option)</li> <li>• 1 x JP16 (Option)</li> <li>• 1 x JP18 (Option)</li> <li>• 1 x JP20 (Option)</li> <li>• 9 x Serial headers (COM2~10)</li> <li>• 1 x Clear CMOS header with jumper</li> <li>• 1 x 10-pin DIO1 header</li> <li>• 1 x TPM header</li> <li>• 1 x LANLED header</li> </ul>
System BIOS	<ul style="list-style-type: none"> <li>• AMI BIOS with 64Mb SPI Flash ROM</li> <li>• Supports Plug and Play, S1 / STR (S3) / STD (S4) , Hardware monitor</li> <li>• Supports ACPI &amp; DMI</li> <li>• Audio, LAN, can be disabled in BIOS</li> <li>• Supports Dual Display</li> <li>• F7 hot key for boot up devices option</li> <li>• Supports Multi-Language</li> </ul>
Form Factor	<ul style="list-style-type: none"> <li>• ATX Size, 244mm x 305mm</li> </ul>

# Motherboard Components



Introducing the Motherboard

*Table of Motherboard Components*

LABEL	COMPONENTS
1. CPU	LGA1150 Haswell series processors
2. CPU_FAN	4-pin CPU cooling fan connector
3. SYS_FAN	3-pin System cooling fan connector
4. DIMM1~2	DDR3L 1333/1600 SDRAM slots
5. BAT1	Battery
6. TPM	Trusted platform module header
7. DIO1	4 bit GPIO (GPI*4, GPO*4)
8. ATX_POWER	Standard 24-pin ATX power connector
9. BZ	Buzzer
10. SATA1~3	Serial ATA connectors
11. CLR_CMOS	Clear CMOS header with jumper
12. F_PANEL	Front panel switch / LED header
13. MINIPCIIE	MINIPCIIE slots for MSATA / PCIE
14. F_USB1~3	Front panel USB 2.0 headers
15. COM7~10	Onboard serial port headers
16. JP2	F_USB1/2 output select Jumper
17. JP14	PWRON MODE select Jumper
18. LPT	Printer header
19. COM3~6	Onboard serial port headers
20&21. JP7~8	COM2 output select Jumper
22. COM2	Onboard serial port header
23. F_AUDIO	Front Audio header
24. JP16	COM2 output select Jumper
25. PCI1~4	32-bit add-on card slots
26. PCIEX16_1~3	PCI Express Gen3 slots for graphics interface
27. LANLED	LAN LED power connector
28. JP4	USB3LAN2 output select Jumper
29. JP5	USB3LAN1 output select Jumper
30. JP12	VGA1 output select Jumper
31. JP18	VGA1 EDID select Jumper
32. JP1	COM1 RI output select Jumper
33. JP13	VGA2 output select Jumper
34. JP20	VGA2 EDID select Jumper
35. JP9~10	COM1 output select Jumper
36. JP11	PS2 output select Jumper
37. JP15	COM1 output select Jumper
38. ATX_12V	8-pin +12V power in connector
39. JP3	PS2_USB output select Jumper

This concludes Chapter 1. The next chapter explains how to install the motherboard.

## **Introducing the Motherboard**

***Memo***



## **Chapter 2**

### ***Installing the Motherboard***

---

#### **Safety Precautions**

- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in the static-proof bags they came in
- Hold all circuit boards by the edges. Do not bend circuit boards

#### **Choosing a Computer Case**

There are many types of computer cases on the market. The motherboard complies with the specifications for the DTX system case. Some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required.

Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the motherboard.

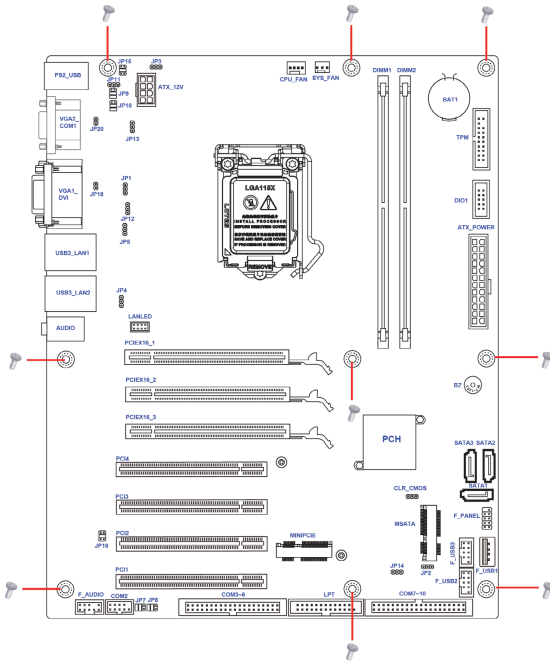
This motherboard carries a DTX form factor of 244 x 305 mm. Choose a case that accommodates this form factor.

#### **Installing the Motherboard in a Case**

Refer to the following illustration and instructions for installing the motherboard in a case.

Most system cases have mounting brackets installed in the case, which correspond the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your motherboard.



*Do not over-tighten the screws as this can stress the motherboard.*

## Checking Jumper Settings

This section explains how to set jumpers for correct configuration of the motherboard.

### Setting Jumpers

Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

The illustrations show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.

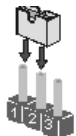


**SHORT**



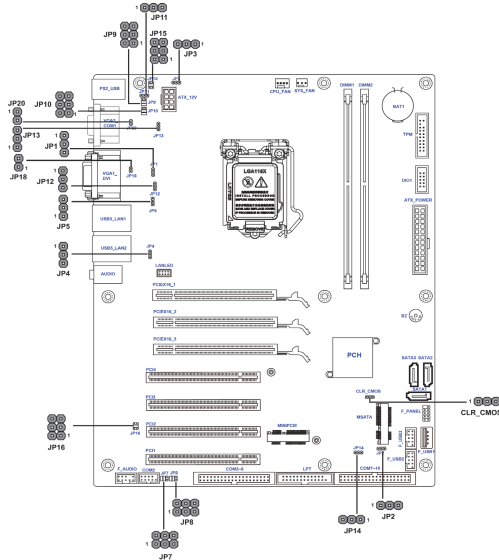
**OPEN**

This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT.







## Checking Jumper Settings

The following illustration shows the location of the motherboard jumpers. Pin 1 is labeled.



## Jumper Settings














Jumper	Type	Description	Setting (default)	
CLR_CMOS	3-pin	Clear CMOS	1-2: NORMAL 2-3: CLEAR Before clearing the CMOS, make sure to turn off the system.	1  CLR_CMOS
JP1(Optional)	3-pin	COM1 RI OUTPUT	1-2: +12V	 1
			2-3: +VCC	 1
			2: RI (Default)	 1










To avoid the system instability after clearing CMOS, we recommend users to enter the main BIOS setting page to “Load Default Settings” and then “Save and Exit Setup”.

## Installing the Motherboard

Jumper	Type	Description	Setting (default)	
<b>JP2(Optional)</b>	3-pin	F_USB1/2 OUTPUT	1-2: +VCC (Default)	1
			2-3: +5VSB	1
<b>JP3(Optional)</b>	3-pin	PS2_USB OUTPUT	1-2: +VCC (Default)	1
			2-3: +5VSB	1
<b>JP4(Optional)</b>	3-pin	USB3LAN2 OUTPUT	1-2: +VCC (Default)	1
			2-3: +5VSB	1
<b>JP5(Optional)</b>	3-pin	USB3LAN1 OUTPUT	1-2: +VCC (Default)	1
			2-3: +5VSB	1
<b>JP7~8(Optional)</b>	6-pin	COM2 OUTPUT	JP7: (1-3)(2-4) JP8: (1-3)(2-4) RS232	1
			JP7: (3-5)(4-6) JP8: (1-3)(2-4) RS485	1
			JP7: (3-5)(4-6) JP8: (3-5)(4-6) RS422	1
<b>JP11(Optional)</b>	3-pin	PS2 OUTPUT	1-2: +VCC (Default)	1
			2-3: +5VSB	1
<b>JP12(Optional)</b>	3-pin	VGA1 OUTPUT	1-2: Loading (Default)	1
			2-3: No Loading	1

Jumper	Type	Description	Setting (default)	
<b>JP13(Optional)</b>	3-pin	VGA2 OUTPUT	1-2: Loading <b>(Default)</b>	 1
			2-3: No Loading	 1
<b>JP9~10(Optional)</b>	6-pin	COM1 OUTPUT	JP9: (1-3)(2-4) JP10: (1-3)(2-4) RS232	 1  1
			JP9: (3-5)(4-6) JP10: (1-3)(2-4) RS485	 1  1
			JP9: (3-5)(4-6) JP10: (3-5)(4-6) RS422	 1  1
<b>JP14(Optional)</b>	3-pin	PWRON MODE	1-2: ATX <b>(Default)</b>	 1
			2-3: AT	 1
<b>JP15(Optional)</b>	6-pin	COM1 OUTPUT	1-2: RS232	 1
			3-4: RS485	 1
			5-6: RS422	 1

Jumper	Type	Description	Setting (default)	
<b>JP16(Optional)</b>	6-pin	COM2 OUTPUT	1-2: RS232	 1
			3-4: RS485	 1
			5-6: RS422	 1
<b>JP18(Optional)</b>	2-pin	VGA1 EDID	1-2: Enable (Default)	 1
			Float: Disable	 1
<b>JP20(Optional)</b>	2-pin	VGA2 EDID	1-2: Enable (Default)	 1
			Float: Disable	 1

## Installing Hardware

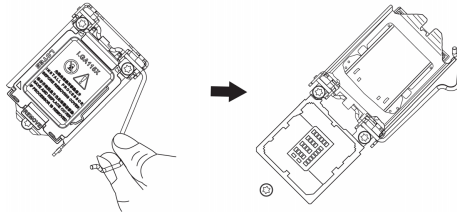
### CPU Installation Procedure

The following illustration shows CPU installation components.

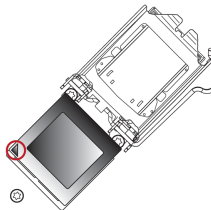
- A. Press the hook of lever down with your thumb and pull it to the right side to release it from retention tab.



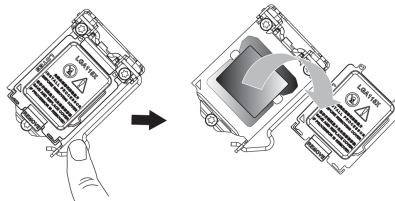
- B. Lift the tail of the load lever and rotate the load plate to fully open position.



- C. Grasp the edge of the package substrate. Make sure pin 1 indicator is on your bottom-left side. Aim at the socket and place the package carefully into the socket by purely vertical motion.



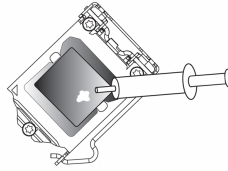
- D. Rotate the load plate onto the package IHS (Intergraded Heat Spreader). Engage the load lever while pressing down lightly onto the load plate. Secure the load lever with the hook under retention tab. Then the cover will flick automatically.



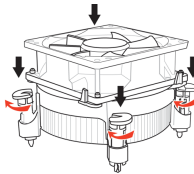
*Please save and replace the cover onto the CPU socket if processor is removed.*

## Installing the Motherboard

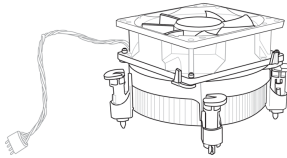
E. Apply some thermal grease onto the contacted area between the heatsink and the CPU, and make it to be a thin layer.



F. Fasten the cooling fan supporting base onto the CPU socket on the motherboard. And make sure the CPU fan is plugged to the CPU fan connector.



G. Connect the CPU cooler power connector to the CPU\_FAN connector.



1. To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 3800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/ heatsink supplied. The form and size of fan/heatsink may also vary.

2. DO NOT remove the CPU cap from the socket before installing a CPU.

3. Return Material Authorization (RMA) requests will be accepted only if the motherboard comes with the cap on the LGA1151 socket.



## Installing Hardware

### *Installing Memory Modules*

This motherboard accommodates one memory module. It can support DDR3L 1333/1600 (1GB/ 2GB/ 4GB/ 8GB). The total memory capacity is 16 GB.

#### **DDR3L SDRAM memory module table**

Memory module	Memory Bus
<i>DDR3L 1600</i>	<i>768 MHz</i>
<i>DDR3L 1333</i>	<i>667 MHz</i>

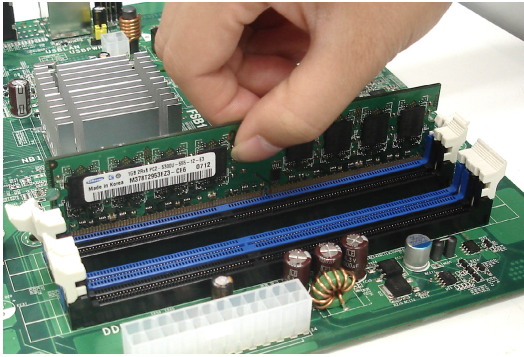


*Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.*

## Installation Procedure

Refer to the following to install the memory modules.

- 1 This motherboard supports unbuffered DDR3L SDRAM .
- 2 Push the latches on each side of the DIMM slot down.
- 3 Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
- 4 Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
- 5 Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
- 6 Install any remaining DIMM modules.

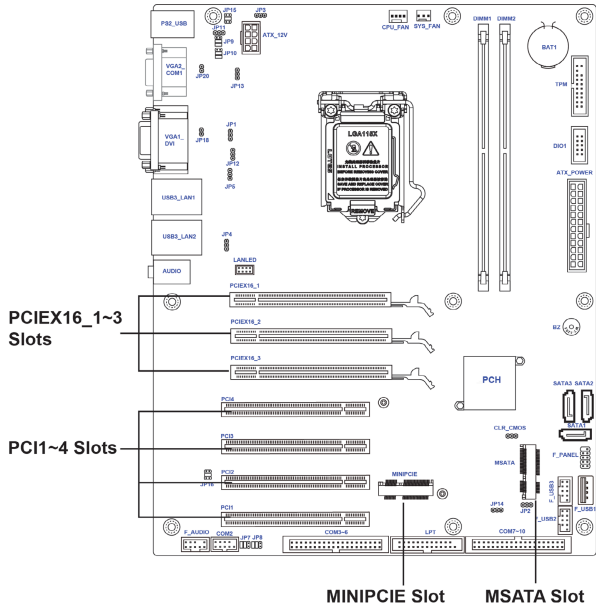


*\* For reference only*

## Expansion Slots

### Installing Add-on Cards

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.



#### PCIEX16\_1~3 Slot

The PCI Express x16 slot is used to install an external PCI Express graphics card that is fully compliant to the PCI Express Base Specification revision 3.0.

#### PCI1~4 Slots

This motherboard is equipped with four standard PCI slots. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slot on this board is PCI v2.3 compliant.

#### MSATA Slot

The MSATA slot is for Mini SATA card. It will provide high transfer performance than original SATA interface.

#### MINIPCIE Slot

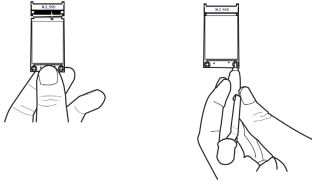
The MINIPCIE slot is for Wifi card.



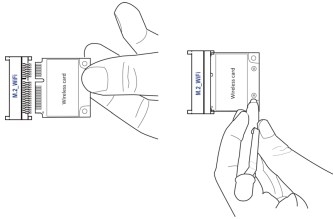
*Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.*

## Installing the Motherboard

Install the MSATA card:

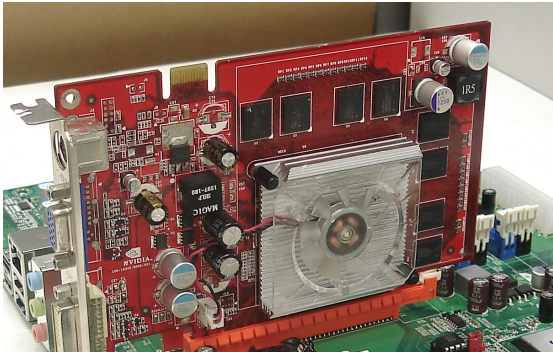


Install the Wifi card:



Follow these instructions to install an add-on card:

- 1 Remove a blanking plate from the system case corresponding to the slot you are going to use.
- 2 Install the edge connector of the add-on card into the expansion slot.
- 3 Ensure that the edge connector is correctly seated in the slot.
- 3 Secure the metal bracket of the card to the system case with a screw.



*\* For reference only*

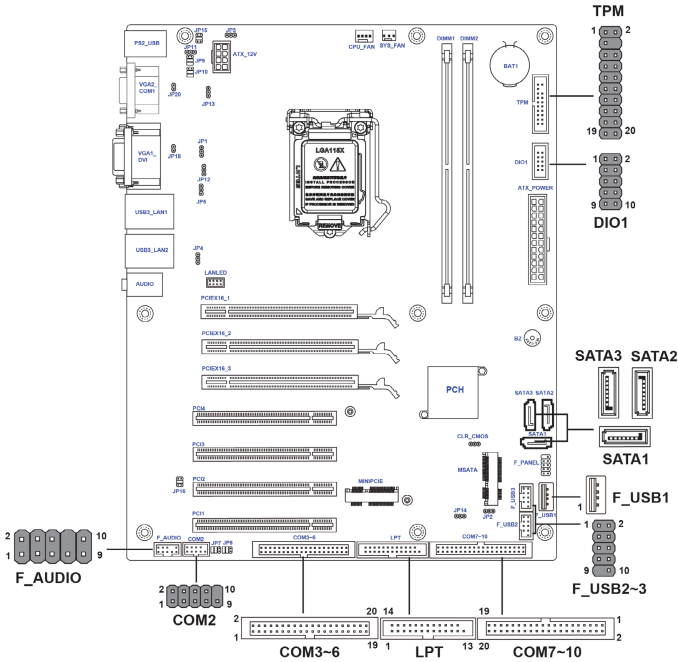


*For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.*

## Installing the Motherboard

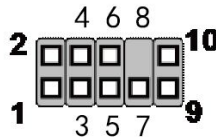
## Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:



### F\_AUDIO: Front Panel Audio Header

The front panel audio header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access. This header supports HD audio by default. If you want connect an AC' 97 front panel audio to HD onboard headers, please set as below picture.



### For HD Front Audio

Pin	Description	Pin	Description
1	Left channel microphone input signal	2	Analog ground
3	Right channel microphone input signal	4	HD Panel sensor detect
5	Right channel to front panel	6	Microphone sensor detect
7	Analog ground	8	No pin
9	Left channel to front panel	10	Line-in sensor detect

## COM2 : Onboard serial port header

Connect a serial port extension bracket to this header to add a second serial port to your system.

Pin	Signal Name	Pin	Signal Name
1	Data Carrier Detect	6	Data Set Ready
2	Serial Input	7	Request to Send
3	Serial Output	8	Clear to Send
4	Data Terminal Ready	9	Ring Indicator
5	Ground	10	No pin

## SATA1~3: One Serial ATA 6.0Gb/s connector and two Serial ATA 3.0Gb/s connectors

This connector is used to support the Serial ATA devices for the highest data transfer rates (6.0 Gb/s), simpler disk drive cabling and easier PC assembly.

Pin	Signal Name	Pin	Signal Name
1	Ground	2	TX+
3	TX-	4	Ground
5	RX-	6	RX+
7	Ground	8	No pin

## LPT: Onboard parallel port header

This is a header that can be used to connect to the printer, scanner or other devices.

Pin	Signal Name	Pin	Signal Name
1	STROBE	14	AUTOFF
2	PD0	15	ERROR
3	PD1	16	INIT
4	PD2	17	SLCTIN
5	PD3	18	Ground
6	PD4	19	Ground
7	PD5	20	Ground
8	PD6	21	Ground
9	PD7	22	Ground
10	ACK	23	Ground
11	BUSY	24	Ground
12	PE	25	Ground
13	SLCT	26	No pin

### TPM: Trusted Platform Module header

Trusted platform module (TPM) is a published specification detailing a microcontroller that can store secured information, and implementations of that specification.

Pin	Signal Name	Pin	Signal Name
1	TPM_CLK	11	LAD0
2	GND	12	GND
3	LFRAME#	13	RESERVE0
4	No pin	14	RESERVE1
5	LREST#	15	VCC3_DUAL
6	SMBDATA	16	SERIRQ
7	LAD3	17	GND
8	LAD2	18	GND
9	VCC3	19	LPCPD#
10	LAD1	20	SMBCLK

### F\_USB1: USB 2.0 Type A port onboard

#### F\_USB2~3: Front Panel USB 2.0 headers

The onboard F\_USB2~3 header delegate for card reader, it supports additional four USB 2.0 ports.

Pin	Signal Name	Pin	Signal Name
1	Power +5V	6	USB Port B (+)
2	Power +5V	7	Ground
3	USB Port A (-)	8	Ground
4	USB Port B (-)	9	No pin
5	USB Port A (+)	10	Not Connected



Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.

### DIO1: 4 bit GPIO header

Pin	Signal Name	Pin	Signal Name
1	GPIO73	6	GPIO25
2	GPIO29	7	GPIO57
3	GPIO15	8	GPIO26
4	GPIO11	9	5VSB
5	GPIO45	10	Ground

### COM3~6 & COM7~10 : Onboard serial port headers

Connect a serial port extension bracket to this header to add a second serial port to your system.

Pin	Signal Name	Pin	Signal Name
1	C3_DCD	21	C5_DCD
2	C3_DSR	22	C5_DSR
3	C3_RXD	23	C5_RXD
4	C3_RTS	24	C5_RTS
5	C3_TXD	25	C5_TXD
6	C3_CTS	26	C5_CTS
7	C3_DTR	27	C5_DTR
8	C3_RI	28	C5_RI
9	Ground	29	Ground
10	Ground	30	Ground
11	C4_DCD	31	C6_DCD
12	C4_DSR	32	C6_DSR
13	C4_RXD	33	C6_RXD
14	C4_RTS	34	C6_RTS
15	C4_TXD	35	C6_TXD
16	C4_CTS	36	C6_CTS
17	C4_DTR	37	C6_DTR
18	C4_RI	38	C6_RI
19	Ground	39	Ground
20	Ground	40	Ground



## *Installing a SATA Hard Drive*

This section describes how to install a SATA Hard Drive.

### **About SATA Connectors**

Your motherboard features three SATA connectors supporting a total of three drives. SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard and follow the illustration below to install the SATA hard drives.

### **Installing Serial ATA Hard Drives**

To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. This SATA cable comes with a SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.



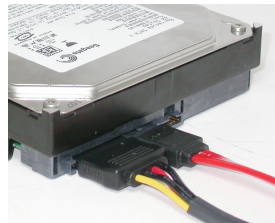
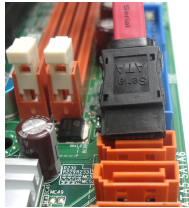
**SATA cable** (optional)



**SATA power cable** (optional)

Refer to the illustration below for proper installation:

- 1 Attach either cable end to the connector on the motherboard.
- 2 Attach the other cable end to the SATA hard drive.
- 3 Attach the SATA power cable to the SATA hard drive and connect the other end to the power supply.



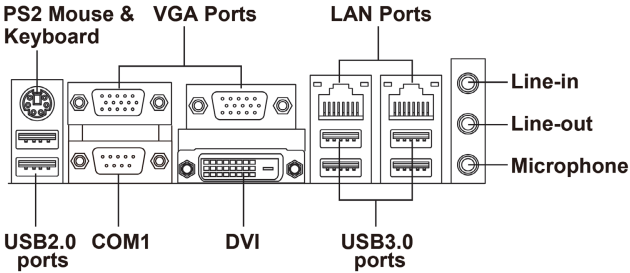
*\* For reference only*



*This motherboard supports the “Hot-Plug” function.*

## Connecting I/O Devices

The backplane of the motherboard has the following I/O ports:



### PS2 Mouse & Keyboard combo port

Use the upper PS/2 port to connect a PS/2 pointing device.

### VGA Ports

You can connect the display devices to the VGA port.

### DVI Port

You can connect the cash drawer to the DVI port.

### Serial port (COM1)

Use the COM port to connect the serial devices such as mice or fax/modems.

### LAN Ports

Connect an RJ-45 jack to the LAN port to connect your computer to the Network.

### USB 2.0 Ports

Use the USB 2.0 ports to connect USB 2.0 devices.

### USB 3.0 Ports

Use the USB 3.0 ports to connect USB 3.0 devices.

### USBLAN1



USB2.0 port7

USB2.0 port8

### USBLAN2



USB3.0 port3

USB3.0 port4

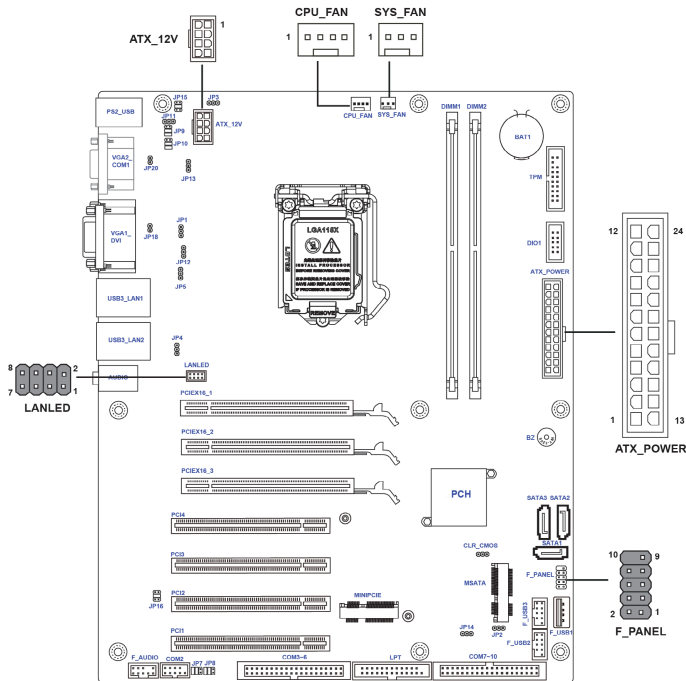
### Audio Ports

Use the three audio ports to connect audio devices. The first jack is for stereo line-in signal. The second jack is for stereo line-out signal. The third jack is for microphone signal.

## Connecting Case Components

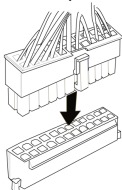
After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

- 1 Connect the CPU cooling fan connector to **CPU\_FAN**.
- 2 Connect the system cooling fan connector to **SYS\_FAN**.
- 3 Connect the standard power supply connector to **ATX\_POWER**.
- 4 Connect the case switches and indicator LEDs to the **F\_PANEL**.
- 5 Connect the case speaker cable to **SPKR**.
- 6 Connect the auxiliary case power supply connector to **ATX\_12V**.
- 7 Connect the LAN power supply indicator LED to the **LANLED**.



### Connecting 24-pin power cable

The ATX 24-pin connector allows you to connect to ATX v2.x power supply.



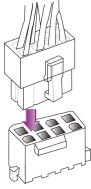
24-pin power cable

With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latches of power cable and the ATX match perfectly.



### Connecting 8-pin power cable

The ATX12V8P power connector is used to provide power to the CPU.



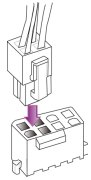
*8-pin power cable*

When installing 8-pin power cable, the latches of power cable and the ATX12V8P match perfectly.



### Connecting 4-pin power cable

The ATX12V8P power connector is used to provide power to the CPU.



*4-pin power cable*

When installing 4-pin power cable, the latches of power cable and the ATX12V8P match perfectly.

## ATX\_POWER

Pin	Signal Name	Pin	Signal Name
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	Ground	15	Ground
4	+5V	16	PS_ON
5	Ground	17	Ground
6	+5V	18	Ground
7	Ground	19	Ground
8	PWRGD	20	-5V
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	Ground

## ATX\_12V

Pin	Signal Name	Pin	Signal Name
1	Ground	5	+12V
2	Ground	6	+12V
3	Ground	7	+12V
4	Ground	8	+12V

**CYS\_FAN: System Cooling FAN Power Connectors**

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor
4	CONTROL	CONTROL

**SYS\_FAN: CPU Cooling FAN Power Connectors**

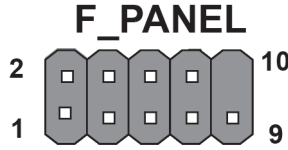
Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor

**LANLED: LAN power supply indicator LED header**

Pin	Signal Name	Pin	Signal Name
1	3VSB	2	Ground
3	100M_OR2	4	100M_OR1
5	1G_GR2	6	1G_GR1
7	ACTIVE2	8	ACTIVE1

## Front Panel Header

The front panel header (F\_PANEL) provides a standard set of switch and LED headers commonly found on ATX or Micro ATX cases. Refer to the table below for information:



Pin	Signal	Pin	Signal
1	Hard disk LED (+)	6	Power Switch (+)
2	MSG LED (+)	7	Reset Switch (+)
3	Hard disk LED (-)	8	Power Switch (-)
4	MSG LED (-)	9	Reserved
5	Reset Switch (-)	10	No pin

\* MSG LED (dual color or single color)

### Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

### Power/Sleep/Message waiting LED

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

### Reset Switch

Supporting the reset function requires connecting pin 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

### Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal de-bounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

## Chapter 3

### *Using BIOS*

---

#### About the Setup Utility

The computer uses the latest “American Megatrends Inc. ” BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system’s configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

#### *The Standard Configuration*

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

#### *Entering the Setup Utility*

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

**Press DEL to enter SETUP**

Press the delete key to access BIOS Setup Utility.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Main    Advanced    Chipset    Boot    Security    Save & Exit		
BIOS Information  BIOS Vendor                      American Megatrends Core Version                        4.6.5.4 Project Version                    SYM86370VGGGA Ver: 1.0 Build Date                            07/13/2017		Set the Date. Use Tab to switch between Date elements.
Memory Information Total Memory                        4096 MB (DDR3)		← →: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
System Date                        [Thu 07/13/2017] System Time                        [00: 00: 53]		
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

## Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ►) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ►.



*The default BIOS setting for this motherboard apply for most conditions with optimum performance. We do not suggest users change the default values in the BIOS setup and take no responsibility to any damage caused by changing the BIOS settings.*



## BIOS Navigation Keys

The BIOS navigation keys are listed below:

KEY	FUNCTION
ESC	Exit the current menu
↑↓←→	Scrolls through the items on a menu
+/-	Change Opt.
Enter	Select
F1	General Help
F2	Previous Value
F9	Optimized Defaults
F10	Save & Exit



*For the purpose of better product maintenance, the manufacture reserves the right to change the BIOS items presented in this manual. The BIOS setup screens shown in this chapter are for reference only and may differ from the actual BIOS. Please visit the manufacture's website for updated manual.*

## Main Menu

When you enter the BIOS Setup program, the main menu appears, giving you an overview of the basic system information. Select an item and press <Enter> to display the submenu.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
BIOS Information		Set the Date. Use Tab to switch between Date elements.			
BIOS Vendor	American Megatrends				
Core Version	4.6.5.4				
Project Version	SYM86370VGGA Ver: 1.0				
Build Date	07/13/2017				
Memory Information					
Total Memory	4096 MB (DDR3)			→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit	
System Date	[Thu 07/13/2017]				
System Time	[00: 00: 53]				
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.					

### BIOS Vendor (American Megatrends)

This item shows the information of BIOS vendor.

### Core Version (4.6.5.4)

This item shows the information of core version.

**Project Version (SYM86370VGGA Ver:1.0)**

This item shows the information of project version.

**Build Date (07/13/2017)**

This item shows the information of Build date.

**Total Memory (4096 MB (DDR3))**

This item shows the information of total memory.

**System Date & Time**

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

**Advanced Menu**

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Main	Advanced
Legacy OpROM Support	
Launch PXE OpROM	[Disabled]
Launch Storage OpROM	[Enabled]
▶ ACPI Settings	
▶ RTC Wake Settings	
▶ CPU Configuration	
▶ SATA Configuration	
▶ USB Configuration	
▶ F81866 Super IO Configuration	
▶ F81216 Second Super IO Configuration	
▶ H/W Monitor	
▶ Trusted Computing	
▶ ME Configuration	
▶ DIO Configuration	
EUP Function	[Disabled]
	Enable or Disable Boot Option for Legacy Network Devices
	→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

**Launch PXE OpROM (Disabled)**

Use this item to enable or disable the PXE OpROM.

**Launch Storage OpROM (Enabled)**

Use this item to enable or disable the Storage OpROM.

## ► ACPI Setting

The item in the menu shows the highest ACPI sleep state when the system enters suspend.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
ACPI Settings	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
ACPI Sleep State [S3 (Suspend to RAM)]	→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

### ACPI Sleep State (S3(Suspend to RAM))

This item allows user to enter the ACPI S3 (Suspend to RAM) Sleep State(default).

Press <Esc> to return to the Advanced Menu page.

## ► RTC Wake Settings

The item in the menu shows the information of RTC wake settings.

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.	
Advanced	
RTC Wake Setting [Disabled]	About Resume by RTC Alarm
	→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.	

### RTC Wake Setting (Disabled)

This item allows user to enable or disable RTC Wake Setting.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
RTC Wake Setting	[Enabled]	About Resume by RTC Alarm
Wake up Day 1-31	1	→ ← : Select Screen ↑ ↓ : Select Item Enter : Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Wake up Hours 0-23	0	
Wake up Minutes 0-59	0	
Wake up Seconds 0-59	0	
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

### Wake up Day/Hour/Minute/Second\* (1/0)

These items show the information of the wake up hour/minute/second.



\*These items will be hidden when **RTC Wake Setting** is set to be disabled.

Press <Esc> to return to the Advanced Menu page.

## ► CPU Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
CPU Configuration	Package C State limit
CPU Type	
Intel(R) Celeron(TM) i3-4330 CPU @ 3.50GHz	
EMT64	Supported
Processor Speed	3500 MHz
Processor Stepping	C0
Microcode Revision	1d
Processor Cores	2
Intel HT Technology	Supported
Hyper-threading	[Enabled]
Active Processor Cores	[All]
Limit CPUID Maximum	[Disabled]
Execute Disable Bit	[Enabled]
Intel Virtualization Technology	[Enabled]
LakeTiny Feature	[Enabled]
CPU C3 Report	[Enabled]
CPU C6 Report	[Enabled]
CPU C7 Report	[Disabled]
Package C State limit	[AUTO]
Enhanced Halt (C1E)	[Enabled]
	→ ←:Select Screen ↑ ↓ :Select Item Enter : Select +/- : Change Opt. F1:General Help F2:Previous Values F9:Optimized Defaults F10:Save & Exit ESC:Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

### Intel(R) Celeron(TM) i3-4330 CPU @ 3.50GHz

This is display-only field and displays the information of the CPU installed in your computer.

### EMT64 (Supported)

This item shows the computer supports EMT64.

### Processor Speed (3500 MHz)

This item shows the current processor speed.

### Processor Stepping (C0)

This item shows the processor stepping version.

### Microcode Revision (1d)

This item shows the Microcode version.

### Processor Cores (2)

This item shows the core number of the processor.

### Intel HT Technology (Supported)

This item shows that your computer supports Intel HT technology or not.

### Hyper-threading (Enabled)

This item is only available when the chipset supports Hyper-threading and you are using a Hyper-threading CPU.

### Active Processor Cores (All)

Use this item to control the number of active processor cores.

**Limit CPUID Maximum (Disabled)**

Use this item to enable or disable the maximum CPUID value limit, you can enable this item to prevent the system from “rebooting” when trying to install Windows NT4.0.

**Execute Disabled Bit (Enabled)**

This item allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation. Replacing older computers with Execute Disable Bit enabled systems can halt worm attacks, reducing the need for virus related repair.

**Intel Virtualization Technology (Enabled)**

When disabled, a VMM cannot utilize the additional hardware capabilities provided by Vander Pool Technology.

**LakeTiny Feature (Enabled)**

Use this item to enable or disable the LakeTiny for C state configuration.

**CPU C3 Report (Enabled)**

Use this item to enable or disable CPU C3 (ACPI C2) report to OC

**CPU C6 Report (Enabled)**

Use this item to enable or disable CPU C6 (ACPI C3) report to OC

**CPU C7 Report (Disabled)**

Use this item to enable or disable CPU C7 report to OC

**Package C State limit (AUTO)**

Use this item to set package C state limit.

**Enhanced Halt (C1E)(Enabled)**

Use this item to enable or disable the Enhanced C1 state.

Press <Esc> to return to the Advanced Menu page.

## ► SATA Configuration

Use this item to show the mode of serial SATA configuration options.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
SATA Configuration	Select IDE / AHCI
SATA Port1 Not Present	
mSATA Not Present	→ ←:Select Screen ↑ ↓ :Select Item Enter : Select +/- : Change Opt. F1:General Help F2:Previous Values F9:Optimized Defaults F10:Save & Exit ESC:Exit
SATA Port2 Not Present	
SATA Port3 Not Present	
SATA Mode	[AHCI Mode]
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

### SATA Port 1~3/mSATA (Not Present)

This motherboard supports two SATA channel and each channel allows one SATA device to be installed. Use these items to configure each device on the SATA channel.

### SATA Mode (AHCI Mode)

Use this item to select SATA mode.

Press <Esc> to return to the Advanced Menu page.

## ► USB Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
USB Configuration		Precondition work on USB host controller and root ports for faster enumeration.
All USB Devices	[Enabled]	
Legacy USB Support	[Enabled]	→ ← : Select Screen ↑ ↓ : Select Item Enter : Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Ex USB3 Controller	[Enabled]	
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

### All USB Devices (Enabled)

Use this item to enable or disable all USB devices.

### Legacy USB Support (Enabled)

Use this item to enable or disable Support for legacy USB devices.

### Ex USB3 Controller (Enabled)

Use this item to enable or disable Support for Ex USB3 Controller.

Press <Esc> to return to the Advanced Menu page.



## ► F81866 Super IO Configuration

Use this item to show the information of the Super IO Configuration.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
F81866 Super IO Configuration	Set Parameters of Serial Port 1 (COMA)
Super IO Chip                      F81866 ► Serial Port 1 Configuration ► Serial Port 2 Configuration ► Serial Port 3 Configuration ► Serial Port 4 Configuration ► Serial Port 5 Configuration ► Serial Port 6 Configuration ► Parallel Port Configuration Watch Dog Timer                      [[Minute] Watch Dog Timer Time Out Value      0	→ ←:Select Screen ↑↓ :Select Item Enter : Select +/- : Change Opt. F1:General Help F2:Previous Values F9:Optimized Defaults F10:Save & Exit ESC:Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

## ► Serial Port 1 Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Serial Port 1 Configuration	Enable or Disable Serial Port (COM)
Serial Port                              [Enabled] Device Settings                        IO=3F8h; IRQ=4; Change Settings                        [Auto]	→ ←:Select Screen ↑↓ :Select Item Enter : Select +/- : Change Opt. F1:General Help F2:Previous Values F9:Optimized Defaults F10:Save & Exit ESC:Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

### **Serial Port (Enabled)**

This item allows you to enable or disable serial port.

### **Device Settings (IO=3F8h; IRQ=4)**

This item shows the information of the device settings.

### **Change Settings (Auto)**

Use this item to change device settings.

Press <Esc> to return to the Super IO Configuration page.

## ► Serial Port 2 Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
Serial Port 2 Configuration		Enable or Disable Serial Port (COM)
Serial Port	[Enabled]	
Device Settings	IO=2F8h; IRQ=3;	
Change Settings	[Auto]	→ ← : Select Screen ↑ ↓ : Select Item Enter : Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

### **Serial Port (Enabled)**

This item allows you to enable or disable serial port.

### **Device Settings (IO=2F8h; IRQ=3)**

This item shows the information of the device settings.

### **Change Settings (Auto)**

Use this item to change device settings.

Press <Esc> to return to the Super IO Configuration page.

### ► Serial Port 3 Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
Serial Port 3 Configuration		Enable or Disable Serial Port (COM)
Serial Port	[Enabled]	
Device Settings	IO=3E8h; IRQ=6;	
Change Settings	[Auto]	→ ←:Select Screen ↑↓ :Select Item Enter : Select +/- : Change Opt. F1:General Help F2:Previous Values F9:Optimized Defaults F10:Save & Exit ESC:Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

#### **Serial Port (Enabled)**

This item allows you to enable or disable serial port.

#### **Device Settings (IO=3E8h; IRQ=6)**

This item shows the information of the device settings.

#### **Change Settings (Auto)**

Use this item to change device settings.

Press <Esc> to return to the Super IO Configuration page.

### ► Serial Port 4 Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Serial Port 4 Configuration	Enable or Disable Serial Port (COM)
Serial Port [Enabled]	
Device Settings IO=2E8h; IRQ=6;	
	→ ← : Select Screen ↑ ↓ : Select Item Enter : Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

#### **Serial Port (Enabled)**

This item allows you to enable or disable serial port.

#### **Device Settings (IO=2E8h; IRQ=6)**

This item shows the information of the device settings.

Press <Esc> to return to the Super IO Configuration page.

### ► Serial Port 5 Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Serial Port 5 Configuration	Enable or Disable Serial Port (COM)
Serial Port [Enabled]	
Device Settings IO=2F0h; IRQ=6;	
	→ ←: Select Screen ↑ ↓ : Select Item Enter : Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

#### **Serial Port (Enabled)**

This item allows you to enable or disable serial port.

#### **Device Settings (IO=2F0h; IRQ=6)**

This item shows the information of the device settings.

Press <Esc> to return to the Super IO Configuration page.

### ► Serial Port 6 Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Serial Port 6 Configuration	Enable or Disable Serial Port (COM)
Serial Port [Enabled]	
Device Settings IO=2E0h; IRQ=6;	
	→ ← : Select Screen ↑ ↓ : Select Item Enter : Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

#### **Serial Port (Enabled)**

This item allows you to enable or disable serial port.

#### **Device Settings (IO=2E0h; IRQ=6)**

This item shows the information of the device settings.

Press <Esc> to return to the Super IO Configuration page.

## ► Parallel Port Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
Parallel Port Configuration		Enable or Disable Parallel Port (LPT/LPTE)
Parallel Port	[Enabled]	
Device Settings	IO=378h; IRQ=5;	
Change Settings	[Auto]	→ ←: Select Screen
Device Mode	[STD Printer Mode]	↑ ↓ : Select Item
		Enter : Select
		+/- : Change Opt.
		F1: General Help
		F2: Previous Values
		F9: Optimized Defaults
		F10: Save & Exit
		ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

### **Parallel Port (Enabled)**

This item allows you to enable or disable parallel port.

### **Device Settings (IO=378h; IRQ=5;)**

This item shows the information of the device settings.

### **Change Settings (Auto)**

Use this item to change device settings.

### **Device Mode (STD Printer Mode)**

Use this item to select device mode.

Press <Esc> to return to the Super IO Configuration page.

### **Watch Dog Timer (Minute)**

Use this item to select Watch Dog Timer function to Minute or Second.

### **Watch Dog Timer Time Out Value (0)**

Use this item to select the value of Watch Dog Timer function.

Press <Esc> to return to the Advanced Menu page.

## ► F81216 Super IO Configuration

Use this item to show the information of the Super IO Configuration.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
F81216 Second Super IO Configuration	Set Parameters of Serial Port 1 (COMA)
F81216 Second Super IO Chip      F81216 Second Io ▶ Serial Port 7 Configuration ▶ Serial Port 8 Configuration ▶ Serial Port 9 Configuration ▶ Serial Port 10 Configuration	→ ← : Select Screen ↑ ↓ : Select Item Enter : Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

## ► Serial Port 7 Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Serial Port 7 Configuration	Enable or Disable Serial Port (COM)
Serial Port      [Enabled] Device Settings      IO=260h; IRQ=7;	→ ← : Select Screen ↑ ↓ : Select Item Enter : Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

### Serial Port (Enabled)

This item allows you to enable or disable serial port.

### Device Settings (IO=260h; IRQ=7)

This item shows the information of the device settings.

Press <Esc> to return to the Super IO Configuration page.



### ► Serial Port 8 Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Serial Port 8 Configuration	Enable or Disable Serial Port (COM)
Serial Port [Enabled]	
Device Settings IO=268h; IRQ=7;	
	→ ←:Select Screen ↑ ↓ :Select Item Enter : Select +/- : Change Opt. F1:General Help F2:Previous Values F9:Optimized Defaults F10:Save & Exit ESC:Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

#### **Serial Port (Enabled)**

This item allows you to enable or disable serial port.

#### **Device Settings (IO=268h; IRQ=7)**

This item shows the information of the device settings.

Press <Esc> to return to the Super IO Configuration page.

### ► Serial Port 9 Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Serial Port 9 Configuration	Enable or Disable Serial Port (COM)
Serial Port [Enabled]	
Device Settings IO=270h; IRQ=7;	
	→ ← : Select Screen ↑ ↓ : Select Item Enter : Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

#### **Serial Port (Enabled)**

This item allows you to enable or disable serial port.

#### **Device Settings (IO=270h; IRQ=7)**

This item shows the information of the device settings.

Press <Esc> to return to the Super IO Configuration page.

## ► Serial Port 10 Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Serial Port 10 Configuration	Enable or Disable Serial Port (COM)
Serial Port [Enabled]	
Device Settings IO=278h; IRQ=7;	
	→ ←:Select Screen ↑ ↓ :Select Item Enter : Select +/- : Change Opt. F1:General Help F2:Previous Values F9:Optimized Defaults F10:Save & Exit ESC:Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

### **Serial Port (Enabled)**

This item allows you to enable or disable serial port.

### **Device Settings (IO=278h; IRQ=7)**

This item shows the information of the device settings.

Press <Esc> to return to the Super IO Configuration page.

## ► H/W Monitor

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
H/W Monitor		Enable CPU SmartFan
Smart Fan Control	[Enabled]	
► Smart Fan Mode Configuration		
CPU Temperature (DTS)	56	→ ←:Select Screen ↑↓ :Select Item Enter : Select +/- : Change Opt. F1:General Help F2:Previous Values F9:Optimized Defaults F10:Save & Exit ESC:Exit
System Temperature	40°C	
CPU Fan Speed	0 RPM	
System Fan Speed	1905 RPM	
+3.3V	3.403V	
-12V	-12.348V	
+5V	5.129V	
+12V	11.880V	
TCC Activation Temperature (DTS)	100	
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

### Smart Fan Control (Enabled)

This item is used to enable or disable the CPU smart fan Control.

### ► Smart Fan Mode Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
SYS Smart Fan Mode	[Manual Mode]	Normal: auto adjusts depending on the CPU temperature. Quiet: auto minimizes fan speed for quiet environment operation. Silent: auto restricts fan speed to make system more quietly. Manual: the fan adjusts depending on user's parameter.  → ←:Select Screen ↑↓ :Select Item Enter : Select +/- : Change Opt. F1:General Help F2:Previous Values F9:Optimized Defaults F10:Save & Exit ESC:Exit
High Limit Offset	75	
Low Limit Offset	60	
High Limit PWM	200	
Low Limit PWM	90	
CPU Smart Fan Mode	[Manual Mode]	
High Limit Offset	75	
Low Limit Offset	60	
High Limit PWM	200	
Low Limit PWM	90	
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

### SYS/CPU Smart Fan Mode (Manual Mode)

This item allows you to select the system/CPU fan mode (Manual and Thermal) for a better operation environment.

### High Limit offset (75)

This item is used to set the System fan/CPU fan High output/DC voltage offset value.

**Low Limit offset (60)**

This item is used to set the System fan/CPU fan low output/DC voltage offset value.

**High Limit PWM (200)**

This item is used to set the System fan/CPU fan full speed offset value.

**Low Limit PWM (90)**

This item is used to set the System fan/CPU fan low speed offset value.

Press <Esc> to return to the H/W Monitor page.

**System Component Characteristics**

These items display the monitoring of the overall inboard hardware health events, such as System & CPU temperature, CPU & DIMM voltage, CPU & system fan speed,... etc.

- CPU Temperature
- System Temperature
- CPU Fan Speed
- System Fan Speed
- +3.3V
- -12V
- +5V
- +12V

**TCC Activation Temperature (100)**

This item is used to show the activation temperature of the TCC (Thermal Control Circuit). When CPU temperature is reaching this value, TCC function will startup.

Press <Esc> to return to the Advanced Menu page.

## ► Trusted Computing

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
Configuration		Enable or Disable BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
TPM Support	[Disabled]	
Current Status Information		→ ← :Select Screen ↑↓ :Select Item Enter : Select +/- : Change Opt. F1:General Help F2:Previous Values F9:Optimized Defaults F10:Save & Exit ESC:Exit
SUPPORT TURNED OFF		
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

### TPM Support (Disabled)

Use this item to enable or disable the TPM support. OS will not show TPM. Reset of platform is required.

### Current Status Information

This item shows the information of the current status.

Press <Esc> to return to the Advanced Menu page.

## ► ME Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Management Engine Technology Configuration	Enable or Disable ME Firmware
ME Control [Enabled]	
ME FW Version 9.1.0.1120	
	→ ← : Select Screen ↑ ↓ : Select Item Enter : Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

### ME Control (Enabled)

Use this item to enable or disable the ME Control.

### ME FW Version (9.1.0.1120)

This item shows the version of the ME FW.

Press <Esc> to return to the Advanced Menu page.

## ► DIO Configuration

Scroll to this item and press <Enter> to view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
DIO 60 DIO Input 60	[Input] HIGH	DIO 60
DIO 15 DIO Input 15	[Input] HIGH	
DIO 45 DIO Input 45	[Input] HIGH	
DIO 57 DIO Input 57	[Input] HIGH	
DIO 29 DIO Output 29	[Output] [HIGH]	
DIO 34 DIO Output 34	[Output] [HIGH]	
DIO 25 DIO Output 25	[Output] [HIGH]	
DIO 26 DIO Output 26	[Output] [HIGH]	
		→ ← : Select Screen ↑ ↓ : Select Item Enter : Select +/- : Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

### DIO Input (HIGH)

These items are used to show DIO input is high or low.

### DIO Output (HIGH)

Use these items to set the DIO output.

Press <Esc> to return to the Advanced Menu page.

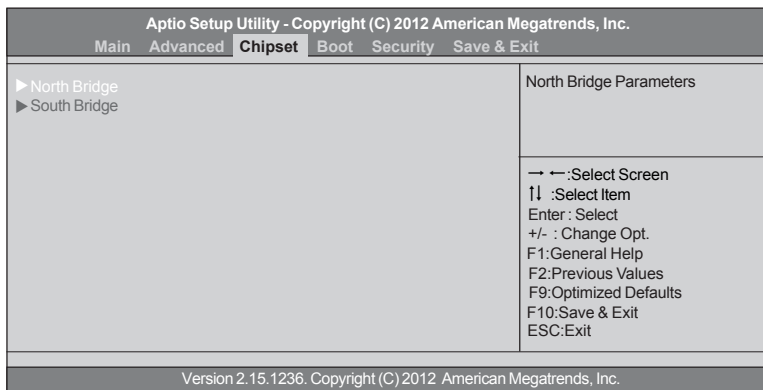
### EUP Function (Enabled)

This item allows user to enable or disable EUP function.



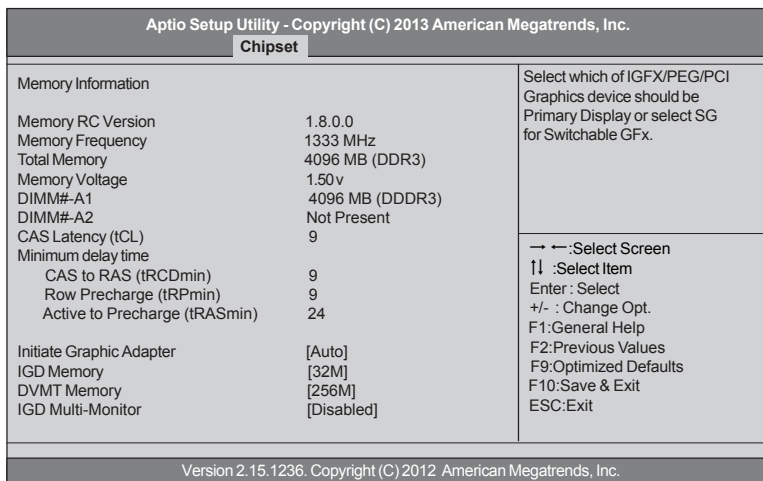
## Chipset Menu

The chipset menu items allow you to change the settings for the North chipset, South chipset and other system.



### ▶ North Bridge

Scroll to this item and press <Enter> and view the following screen:



#### Memory RC Version (1.8.0.0)

Use this item to show the the version of Memory RC.

#### Memory Frequency (1333 MHz)

Use this item to show the current memory frequency.

#### Total Memory (4096 MB (DDR3))

This item shows the total memory.

**Memory Voltage (1.50V)**

Use this item to show the memory voltage.

**DIMM#-A1~2 (4096 MB (DDR3)/Not Present)**

Use this item to show the current memory size.

**CAS Latency (tCL)**

This item controls amount of time in cycles between sending a reading command and time to act on it. From the beginning of the CAS to the end of the CAS is the latency. The lower the time of these in cycles, the higher the memory performance.

**CAS to RAS (tRCDmin (9))**

CAS to RAS delay (Row address stroke/ Select to column address stroke/Select) is the amount of time in cycles for issuing an active command and the read/write the commands.

**Row Precharge (tRPmin (9))**

Row Precharge Time. This is the minimum time between active commands and the read/write of the next bank on the memory module.

**Active to Precharge (tRASmin (24))**

This is the minimum number of cycles that a row has to be active to ensure enough time to access the information that is in it. This usually needs to be greater than or equal to the sum of the previous three latencies ( $tRAS = tCL + tRCD + tRP$ ).

**Initate Graphic Adapter (PCI)**

This item allows you to select graphics controller to use as the primary boot device.

**IGD Memory (256M)**

This item is used to configure internal graphic devices Memory size for graphics memory according to system memory size.

**DVMT Memory (256M)**

This item is used to configure DVMT Memory size for graphics memory according to system memory size.

**IGD Multi-Monitor (Disabled)**

This item enables or disables IGD(Internal Graphics device) multi-monitor.

Press <Esc> to return to the Chipset Menu page.

## ► South Bridge

Scroll to this item and press <Enter> and view the following screen:

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Chipset		
Onboard LAN Controller	[Enabled]	Enabled/Disabled Onboard LAN 1 Controller
LAN1 Controller	[Enabled]	
Wake on LAN1/ USB	[Disabled]	
GP27 Wake From DeepSx	[Disabled]	
Azalia HD Audio	[Enabled]	→ ←: Select Screen
Resume from PME	[Disabled]	↑ ↓: Select Item
Resume By PS2 KB	[Disabled]	Enter: Select
Resume By PS2 MS	[Disabled]	+/-: Change Opt.
Resume By ExUSB3	[Disabled]	F1: General Help
Restore AC Power Loss	[Power Off]	F2: Previous Values
		F9: Optimized Defaults
		F10: Save & Exit
		ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

### Onboard LAN Controller (Enabled)

Use this item to enable or disable onboard LAN controller.

### LAN1 Controller (Enabled)

Use this item to enable or disable the LAN1 controller.

### Wake on LAN1/USB (Disabled)

Use this item to enable or disable wake up system by LAN1/USB.

### GP27 Wake From DeepSx (Disabled)

Use this item to enable or disable GP27 wake up from DeepSx.

### Azalia HD Audio (Enabled)

Use this item to enable or disable Azalia HD Audio.

### Resume from PME (Disabled)

The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the PCI Modem or PCI/PCIE LAN card. You must use an ATX power supply in order to use this feature. Use this item to do wake-up action if inserting the PCI/PCIE card.

### Resume By PS2 KB (Disabled)

This item enables or disables you to allow keyboard activity to awaken the system from power saving mode.

### Resume By PS2 MS (Disabled)

This item enables or disables you to allow mouse activity to awaken the system from power saving mode.

### Resume By ExUSB3 (Disabled)

This item allows you to enable/disable ExUSB3 device wakeup function from S3 mode.

### Restore On AC Power Loss (Power Off)

This item defines how the system will act after AC power loss during system operation. When you set Off, it will keep the system in Off state until the power button is pressed.

Press <Esc> to return to the Chipset Menu page.

## Boot Menu

This page enables you to set the keyboard NumLock state and devices boot sequence.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Main Advanced Chipset <b>Boot</b> Security Save &		
<b>Boot Configuration</b>		Windows 7 or other OS: Boot policy for legacy OS
Operation System Select	[Windows 7 or other OS]	Windows 8.x: Boot policy for UEFI OS without Compatibility Support Module (CSM)
Fast Boot	[Disabled]	Manual: User customized CSM parameters & boot policy
Quiet Boot	[Disabled]	
Setup Prompt Timeout	1	
Bootup NumLock State	[On]	
Boot Mode Select	[LEGACY]	
<b>Set Boot Priority</b>		→ ←:Select Screen
Boot Option #1	[Hard Disk]	↑↓ :Select Item
Boot Option #2	[CD/DVD]	Enter : Select
Boot Option #3	[USB/Floppy]	+/- : Change Opt.
Boot Option #4	[USB CD/DVD]	F1:General Help
Boot Option #5	[USB Hard Disk]	F2:Previous Values
Boot Option #6	[USB Flash : UFD 2.0 S...]	F9:Optimized Defaults
Boot Option #7	[Network]	F10:Save & Exit
▶ USB Flash Drive Priorities		ESC:Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

### Operation System Select (Windows 7 or other OS)

This item is used to show the information of the operation system.

### Quiet Boot (Disabled)

This item enables or disables quiet boot.

### Fast Boot (Disabled)

This item enables or disables boot with initialization of a minimal set of device required to launch active boot option.

### Setup Prompt Timeout (1)

This item is used to set the number of seconds to wait for setup activation key.

### Bootup NumLock State (On)

This item determines if the NumLock key is active or inactive at system start-up time.

### Boot Mode Select (LEGACY)

Use this item to select boot mode.

### Set Boot Priority

This item enables you to set boot priority for all boot devices.

### Boot Option #1~7

These items show the boot priorities.

### USB Flash Drive Priorities

This item enables you to specify the sequence of loading the operation system from the installing USB Flash drives.

## Security Menu

This page enables you to set setup administrator and password.

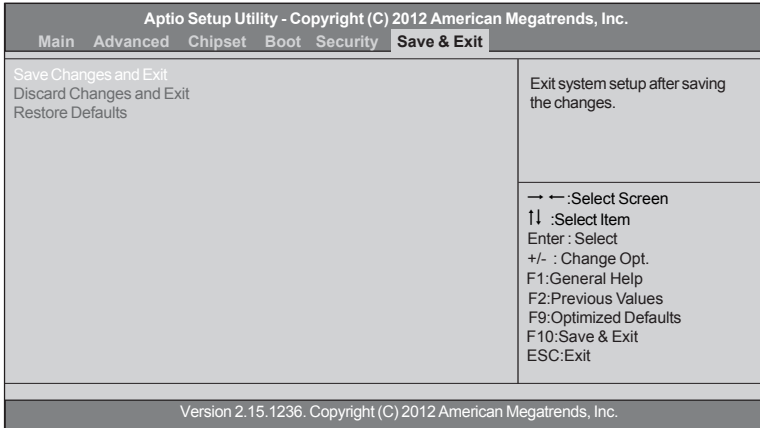
Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Main Advanced Chipset Boot <b>Security</b> Save & Exit	
Administrator Password	Set Administrator Password
	→ ←:Select Screen ↑↓ :Select Item Enter : Select +/- : Change Opt. F1:General Help F2:Previous Values F9:Optimized Defaults F10:Save & Exit ESC:Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.	

### Administrator Password

Press <Enter> to setup administrator password.

## Save & Exit Menu

This page enables you to exit system setup after saving or without saving the changes.



### Save Changes and Exit

This item enables you to save the changes that you have made and exit.

### Discard Changes and Exit

This item enables you to discard any changes that you have made and exit.

### Restore Defaults

This item enables you to restore the system defaults.

## *Updating the BIOS*

You can download and install updated BIOS for this motherboard from the manufacturer's Web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

- 1 If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.
- 2 If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)
- 3 Prepare a bootable device or create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
- 4 Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the bootable device.
- 5 Turn off your computer and insert the bootable device in your computer. (You might need to run the Setup Utility and change the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the bootable device first.)
- 6 At the C:\ or A:\ prompt, type the Flash Utility program name and the file name of the new BIOS and then press <Enter>. Example: AFUDOS.EXE 040706.ROM
- 7 When the installation is complete, remove the bootable device from the computer and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten. The computer will restart automatically.

*MEMO*



## Chapter 4

### ***Trouble Shooting***

---

#### **Start up problems during assembly**

After assembling the PC for the first time you may experience some start up problems. Before calling for technical support or returning for warranty, this chapter may help to address some of the common questions using some basic troubleshooting tips.

##### ***a) System does not power up and the fans are not running.***

1. Disassemble the PC to remove the VGA adaptor card, DDR memory, LAN, USB and other peripherals including keyboard and mouse. Leave only the motherboard, CPU with CPU cooler and power supply connected. Turn on again to see if the CPU and power supply fans are running.
2. Make sure to remove any unused screws or other metal objects such as screwdrivers from the inside PC case. This is to prevent damage from short circuit.
3. Check the CPU FAN connector is connected to the motherboard.
4. For Intel platforms check the pins on the CPU socket for damage or bent. A bent pin may cause failure to boot and sometimes permanent damage from short circuit.
5. Check the 12V power connector is connected to the motherboard.
6. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.

##### ***b) Power is on, fans are running but there is no display***

1. Make sure the monitor is turned on and the monitor cable is properly connected to the PC.
2. Check the VGA adapter card (if applicable) is inserted properly.
3. Listen for beep sounds. If you are using internal PC speaker make sure it is connected.
  - a. continuous beeping : memory not detected
  - b. 1 long beep and 2 short beeps looping : VGA not detected

##### ***c) The PC suddenly shuts down while booting up.***

1. The CPU may experience overheating so it will shutdown to protect itself. Ensure the CPU fan is working properly.

2. From the BIOS setting, try to disable the Smartfan function to let the fan run at default speed. Doing a Load Optimised Default will also disable the Smartfan.

## Start up problems after prolong use

After a prolong period of use your PC may experience start up problems again. This may be caused by breakdown of devices connected to the motherboard such as HDD, CPU fan, etc. The following tips may help to revive the PC or identify the cause of failure.

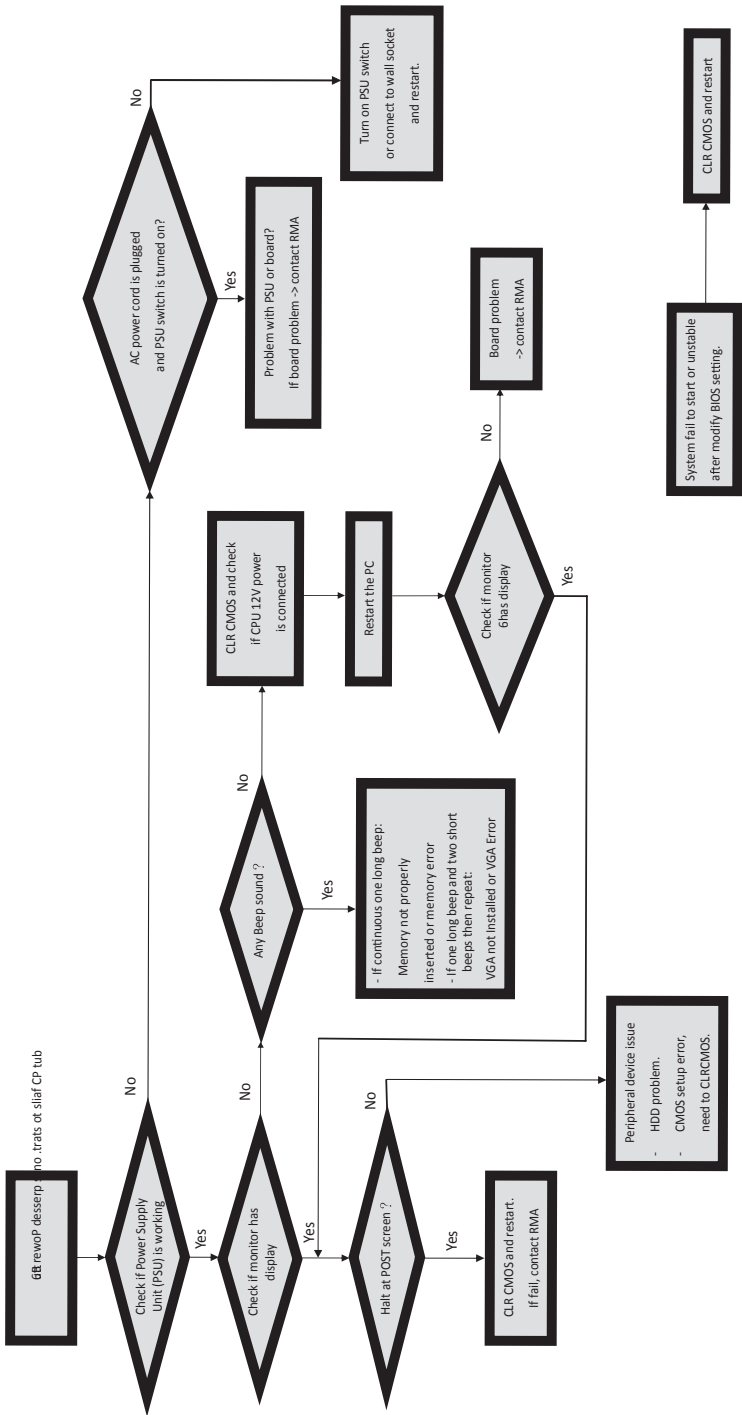
1. Clear the CMOS values using the CLR\_CMOS jumper. Refer to CLR\_CMOS jumper in Chapter 2 for Checking Jumper Settings in this user manual. When completed, follow up with a Load Optimised Default in the BIOS setup.
2. Check the CPU cooler fan for dust. Long term accumulation of dust will reduce its effectiveness to cool the processor. Clean the cooler or replace a new one if necessary.
3. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.
4. Remove the hard drive, optical drive or DDR memory to determine which of these components may be at fault.

## Maintenance and care tips

Your computer, like any electrical appliance, requires proper care and maintenance. Here are some basic PC care tips to help prolong the life of the motherboard and keep it running as best as it can.

1. Keep your computer in a well ventilated area. Leave some space between the PC and the wall for sufficient airflow.
2. Keep your computer in a cool dry place. Avoid dusty areas, direct sunlight and areas of high moisture content.
3. Routinely clean the CPU cooler fan to remove dust and hair.
4. In places of hot and humid weather you should turn on your computer once every other week to circulate the air and prevent damage from humidity.
5. Add more memory to your computer if possible. This not only speeds up the system but also reduces the loading of your hard drive to prolong its life span.
6. If possible, ensure the power cord has an earth ground pin directly from the wall outlet. This will reduce voltage fluctuation that may damage sensitive devices.

### Basic Troubleshooting Flowchart



***Memo***