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Version 1.0

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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

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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 Réglement sur le matériel brouilieur 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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Trouble Shooting

Provides basic trouble shoot ing tips

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Chapter 1
Introducing the Motherboard

Introduction

Thank you for choosing the SYM86373VGGA 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 DDR3L 1333/ 1600 (1GB/ 2GB/ 4GB/ 8GB) SDRAM. One PCI Express x16 Gen3 slots & one PCI Express x4 slot and one PCI Express x1 slot are supported, fully compliant to the PCI Express Base Specification revision 2.0. 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 two 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 PS/2 mouse and PS/2 keyboard connectors, two Serial ports (COM), one VGA port, two Lan ports, two USB 2.0 ports, two USB 3.0 ports, one HDMI port and audio jacks for line-out and Mic-in.

In addition, this motherboard supports four SATA 6.0Gb/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 PCI Express x1 slot
- Integrated four SATA 6.0 Gb/s Host Controllers
- Seven USB 2.0 ports supported
- Two USB 3.0 port supported
- Support one PCI Express x16 Gen3 slot
- Support four PCI slots
- Support one PCI Express x4 slot
- Intel® High Definition Audio Controller

Memory

- Supports 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 PCI Express x1 slot
- One PCI Express x4 slot
- Four SATA 6.0Gb/s connectors
- Support one 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
- Two Serial port (COM)
- two USB 2.0 ports
- One VGA port
- One HDMI port
- two USB 3.0 ports
- One PS/2 keyboard and PS/2 mouse connectors
- Audio jacks for line-out and Mic-in

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 ambiance between 0 and 60 ° C. (NOTICE: Test method: bare PCB with 100% loading running Pass Mark 7.0 at chamber 60 ° C)

Specifications

CPU	• Intel Haswell series processors, up to 4 cores • Supports “Hyper-Threading” technology
Chipset	• Integrated Intel H81 chip
Memory	• Dual-channel DDR3L memory architecture • 1 DDR3L 240pin SO-DIMM sockets support up to 16 GB • Supports 1333/ 1600 DDR3L SDRAM
Expansion Slots	• 1 x PCI Express x1 slot • 1 x PCI Express x4 slot • Four SATA 6.0Gb/s connectors • 1 x PCI Express x16 Gen3 slot • 4 x PCI slots
Storage	• Supported by integrated Intel Haswell H81 SoC chip 4 x Serial ATA 6.0 Gb/s Host Controllers
Audio	• Realtek ALC269VC 2.1-Ch HD audio CODEC
Ethernet LAN	• Realtek RTL8111G
Rear Panel I/O	• 2 x USB 2.0 ports • 2 x Serial ports (COM) • 1 x VGA port • 2 x RJ45 LAN connectors • 1 x PS/2 keyboard & PS/2 mouse connectorss • 1 x Audio port (Line out, Mic in) • 1 x HDMI port • 2 x USB 3.0 ports
Internal I/O Connectors & Headers	• 1 x 4-pin 12V Power Supply connector • 1 x 4-pin CPU_FAN connector • 1 x 4-pin SYS_FAN connector • 4 x SATA III 6.0Gb/s connectors • 1 x Front panel switch/LED header • 1 x Front panel audio header • 2 x USB 2.0 headers support additional four USB 2.0 ports • 1 x USB 2.0 port onboard • 1 x JP1 (Option) • 1 x JP2 (Option) • 1 x JP3 (Option) • 4 x Serial headers (COM3~6) • 1 x SPK header • 1 x Clear CMOS header with jumper • 1 x 10-pin DIO1 header • 1 x TPM header • 1 x SPDIFO header • 1 x Opened Chassis detective header • 1 x LANLED header

System BIOS	•	AMI BIOS with 64Mb SPI Flash ROM
	•	Supports Plug and Play, S1 / STR (S3) / STD (S4) , Hardware monitor
	•	Supports ACPI & DMI
	•	Audio, LAN, can be disabled in BIOS
	•	Supports Dual Display
	•	F7 hot key for boot up devices option
	•	Supports Multi-Language
Form Factor	•	ATX Size, 244mm x 304mm

Motherboard Components

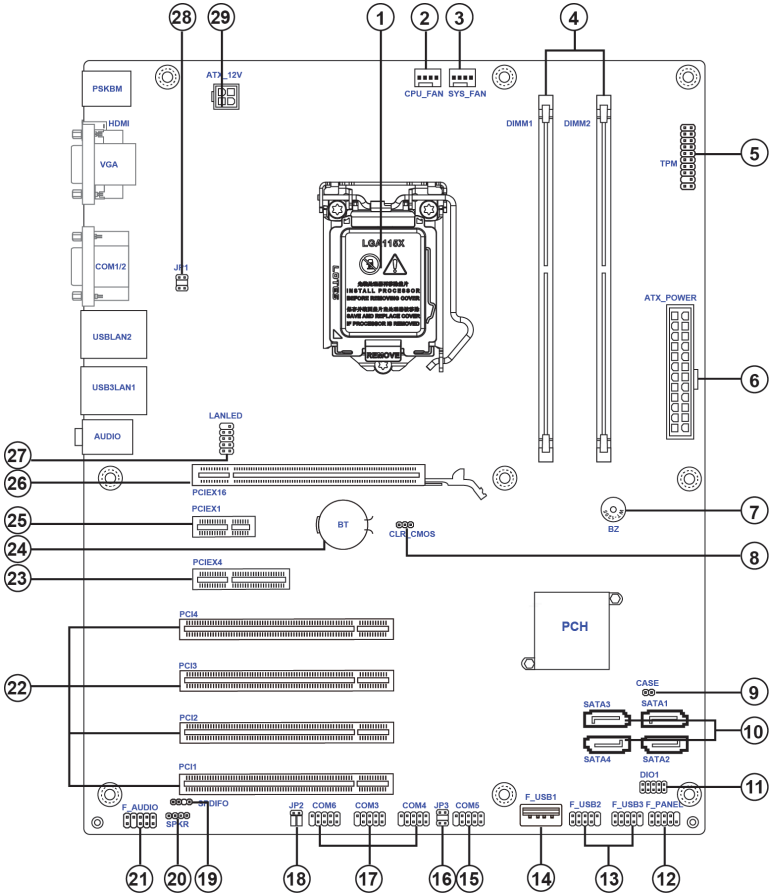


Table of Motherboard Components

LABEL	COMPONENTS
1. CPU	LGA1150 Haswell series processors
2. CPU_FAN	4-pin CPU cooling fan connector
3. SYS_FAN	4-pin System cooling fan connector
4. DIMM1~2	DDR3L 1333/1600 SDRAM slots
5. TPM	Trusted platform module header
6. ATX_POWER	Standard 24-pin ATX power connector
7. BZ	Buzzer
8. CLR_CMOS	Clear CMOS header with jumper
9. CASE	Opened Chassis detective header
10. SATA1~4	Serial ATA 6.0Gb/s connectors
11. DIO1	4 bit GPIO (GPI*4, GPO*4)
12. F_PANEL	Front panel switch / LED header
13. F_USB2~3	Front panel USB 2.0 header
14. F_USB1	USB 2.0 Type A port onboard
15. COM5	Onboard serial port header
16. JP3	COM5 Pin9 output Jumper
17. COM3~6	Onboard serial port headerS
18. JP2	COM6 output Jumper
19. SPDIFO	SPDIF output header
20. SPKR	Speaker
21. F_AUDIO	Front Audio header
22. PCI1~4	32-bit add-on card slots
23. PCIEX4	PCI Express x4 card slot
24. BT	Battery
25. PCIEX1	PCI Express x1 card slot
26. PCIEX16	PCI Express Gen3 slot for graphics interface
27. LANLED	LAN LED power connector
28. JP1	COM2 Pin9 output Jumper
29. ATX_12V	4-pin +12V power in connector

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

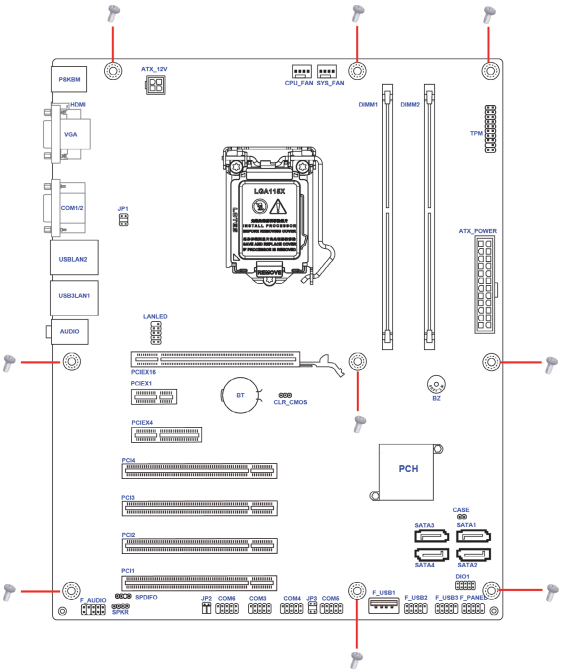
This motherboard carries a DTX form factor of 244 x 304 mm. Choose a case that accommodates this form factor.

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

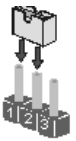
Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

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

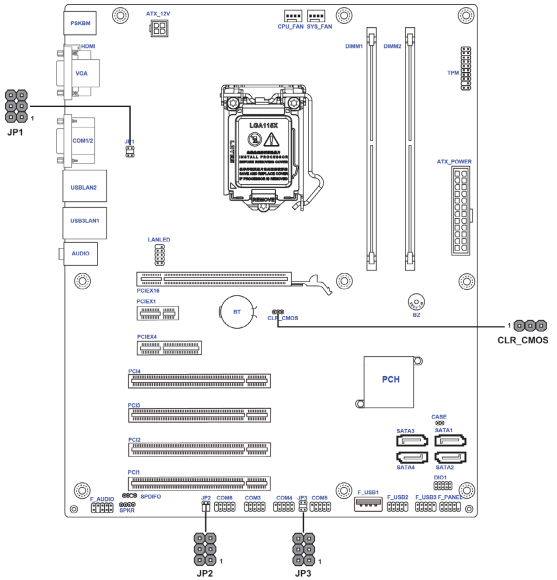
OPEN

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(Option)	6-pin	COM2 PIN9 OUTPUT	1-2: 12V	1
			3-4: RI **(Default)**	1
			5-6: 5V	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".

Jumper	Type	Description	Setting (default)	
JP2(Option)	6-pin	COM6 OUTPUT	(1-3)(2-4): RS232	 1
			(3-5)(4-6): RS485	 1
JP3(Option)	6-pin	COM5 PIN9 OUTPUT	1-2: 12V	 1
			3-4: RI **(Default)**	 1
			5-6: 5V	 1

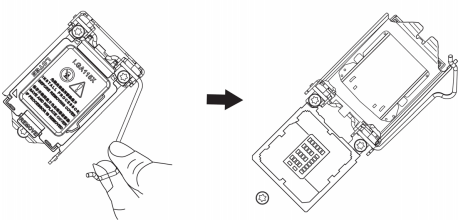
Installing Hardware

CPU Installation Procedure

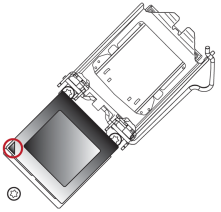
The following illustration shows CPU installation components.

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

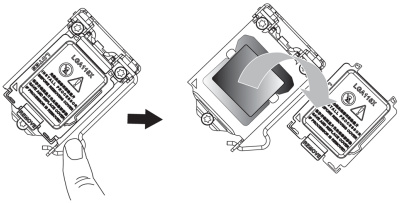
B. Lift the tail of the load lever and rotate the load plate to fully open position.



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.

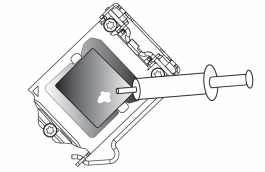


D. Rotate the load plate onto the package IHS (Intergraded Heat Spreader). Engage the load lever while pressing down lightly onto the load plate. Secure the load lever with the hook under retention tab. Then the cover will flick automatically.

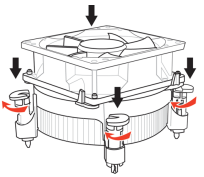


Please save and replace the cover onto the CPU socket if processor is removed.

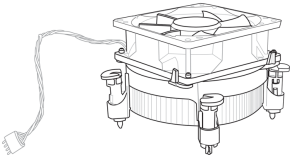
E. Aplly some thermal grease onto the contacted area between the heatsink and the CPU, and make it to be a thin layer.



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

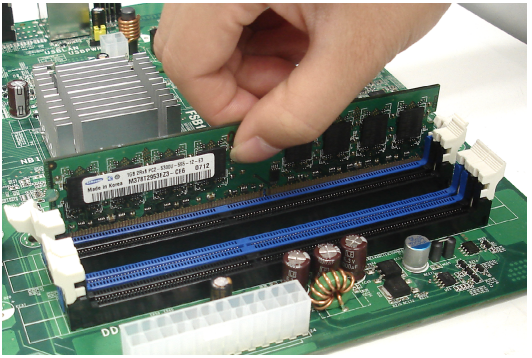
Memory module	Memory Bus
DDR3L 1600	*768 MHz*
DDR3L 1333	*667 MHz*

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.

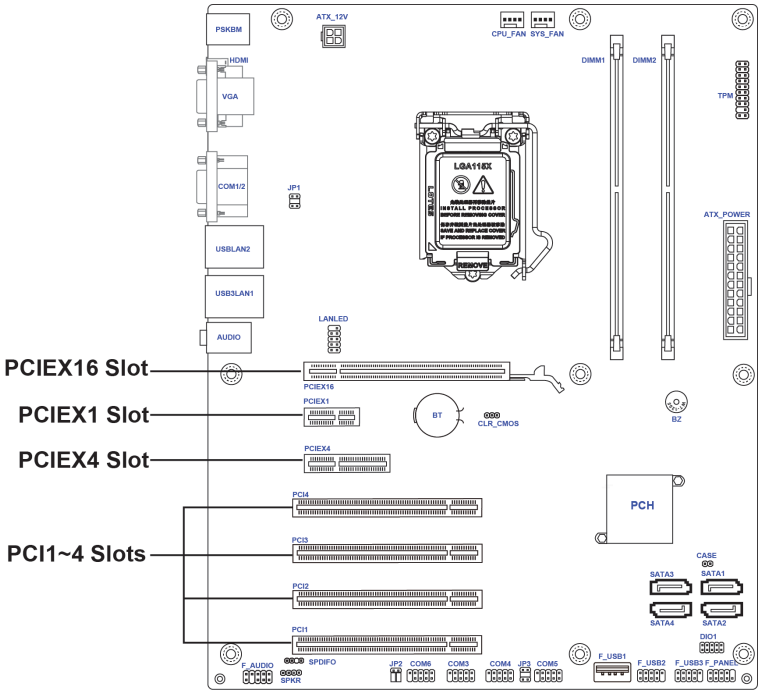


** For reference only*

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 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.

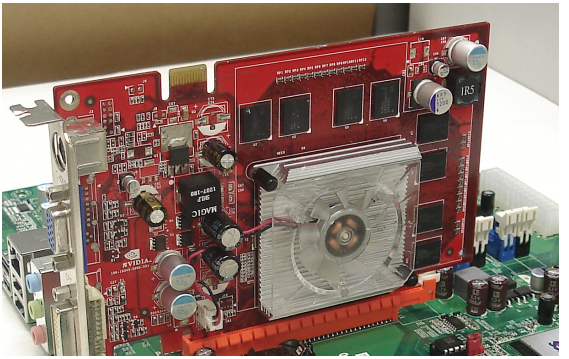
PCIEX1 Slot
PCIEX4 Slot The PCI Express x1 slot and The PCI Express x4 slot are fully compliant to the PCI Express Base Specification revision 2.0.

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.

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.

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. 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.

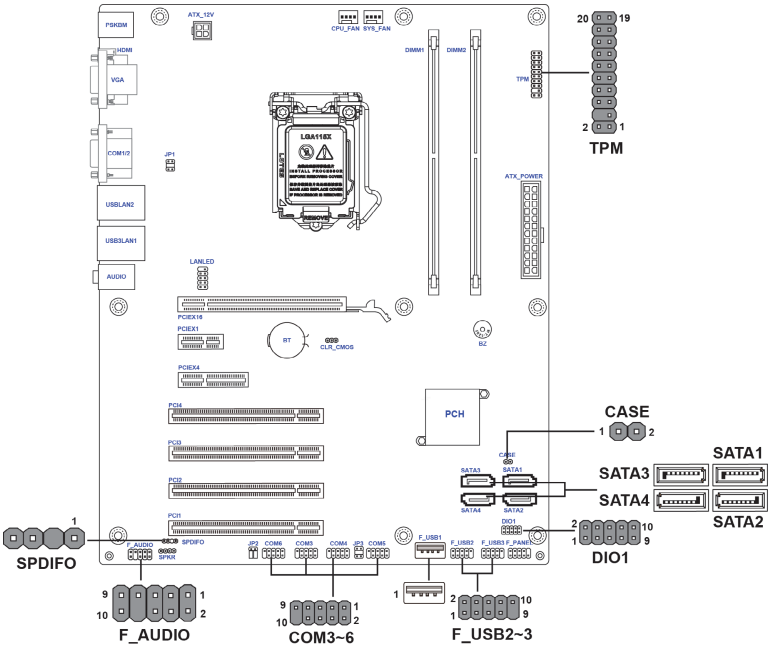


** For reference only*

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.

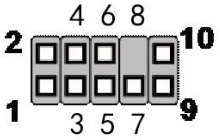
Connecting Optional Devices

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 groud
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

COM3~6 : 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	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

SATA1~4: Serial ATA 6.0Gb/s connector

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

CASE: Opened Chassis detective header

This detects if the chassis cover has been removed. This function needs a chassis equipped with intrusion detection switch and needs to be enabled in BIOS.

Pin	Signal Name
1	GND
2	Case open

SPDIFO: SPDIF output header

This is an optional header that provides an SPDIFO (Sony/Philips Digital Interface) output to digital multimedia device through optical fiber or coaxial connector.

Pin	Function
1	VCC
2	No pin
3	SPDIF OUT
4	Ground

TPM: Trusted Platform Module header

Trusted platform module (TPM) is a published specification detailing a microcontrollerthat 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 additonal 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

Installing a SATA Hard Drive

This section describes how to install a SATA Hard Drive.

About SATA Connectors

Your motherboard features four SATA connectors supporting a total of four 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

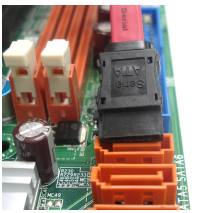
To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. This SATA cable comes with a SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.

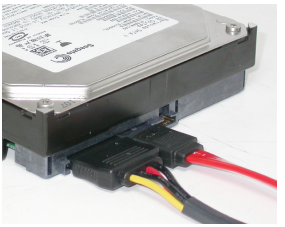
SATA cable (optional)

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.



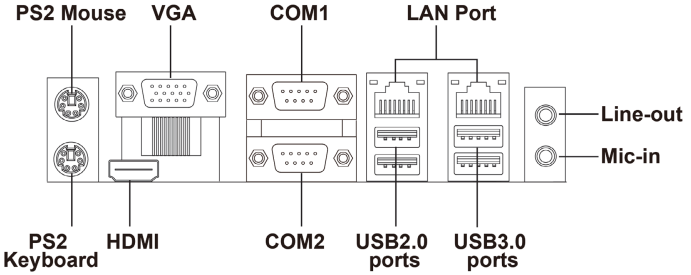


** For reference only*

This motherboard supports the "Hot-Plug" function.

Connecting I/O Devices

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



PS2 Mouse Use the upper PS/2 port to connect a PS/2 pointing device.

PS2 Keyboard Use the lower PS/2 port to connect a PS/2 keyboard.

VGA Port You can connect the display devices to the VGA port.

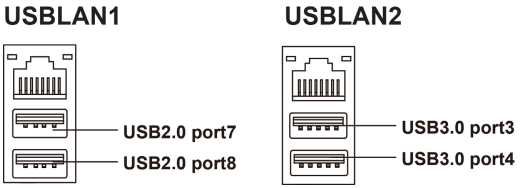
HDMI Port You can connect the cash drawer to the HDMI port.

Serial port (COM1~2) 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.

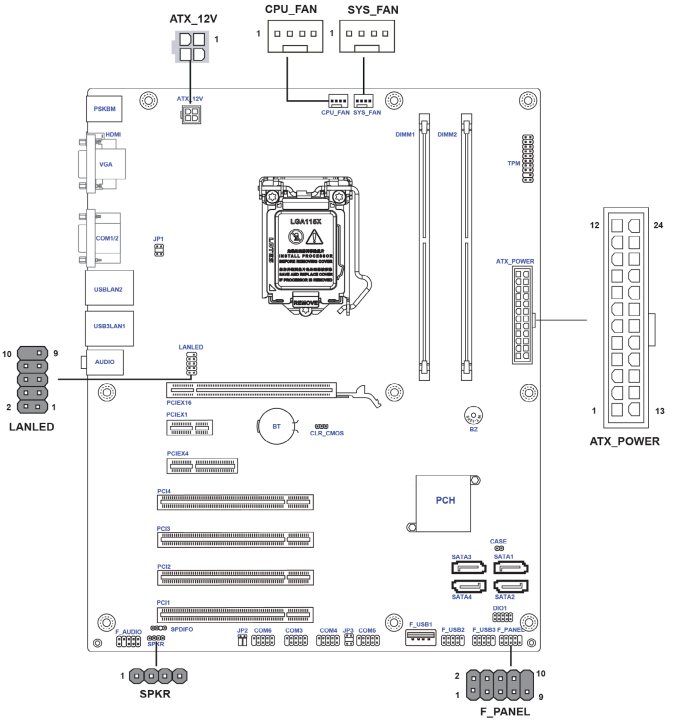


Audio Ports Use the two audio ports to connect audio devices. The first jack is for stereo line-out singal. The second jack is for stereo Mic-in singal.

Connecting Case Components

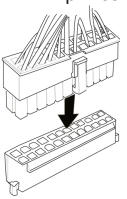
After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

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.

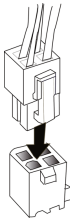


24-pin power cable

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 4-pin power cable

The ATX12V4P 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 ATX12V4P 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
1	Ground
2	Ground
3	+12V
4	+12V

SYS_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
4	CONTROL	CONTROL

SPKR: Internal speaker

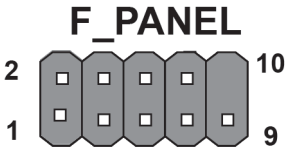
Pin	Signal Name
1	Left Channel-
2	Left Channel+
3	Right Channel-
4	Right Channel+

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
9	NC	10	NC

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.

MEMO

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:

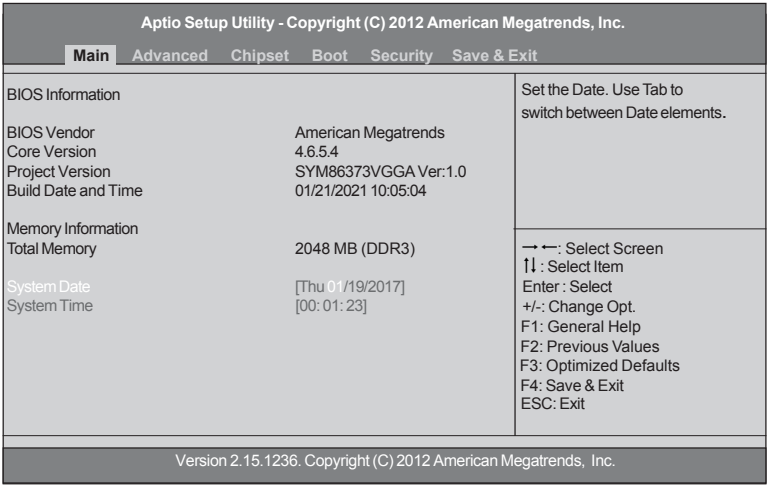
- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security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



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

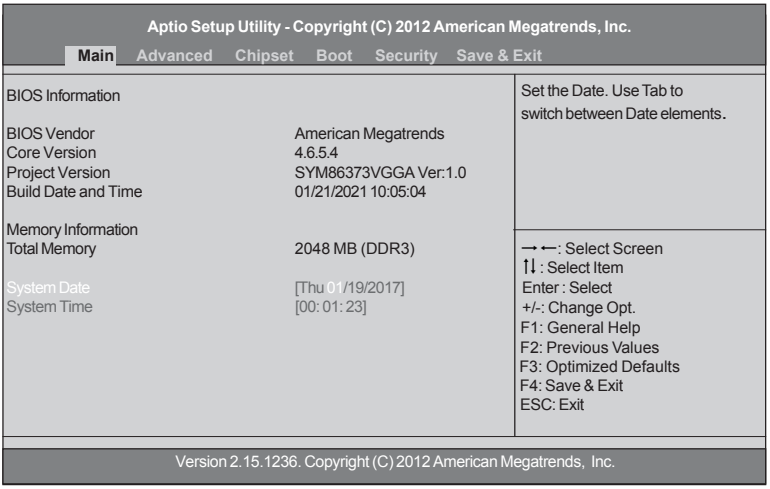
The BIOS navigation keys are listed below:

KEY	FUNCTION
ESC	Exit the current menu
↑↓→←	Scrolls through the items on a menu
+/-	Change Opt.
Enter	Select
F1	General Help
F2	Previous Value
F3	Optimized Defaults
F4	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.



BIOS Vendor (American Megatrends)

This item shows the informtion of BIOS vendor.

Core Version (4.6.5.4)

This item shows the informtion of core version.

Project Version (SYM86373VGGA Ver:1.0)

This item shows the informtion of project version.

Build Date and Time (01/19/2017 10:05:04)

This item shows the informtion of Build date.

Total Memory (2048 MB (DDR3))

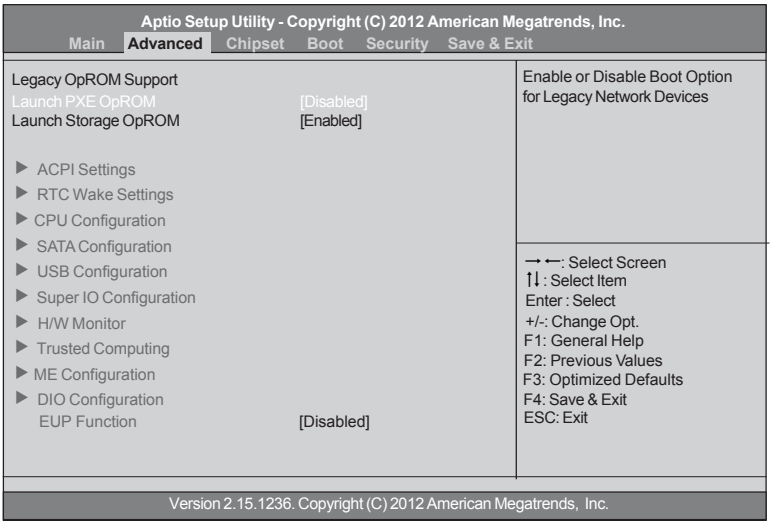
This item shows the informtion of total memory.

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.



Launch PXE OpROM (Disabled)

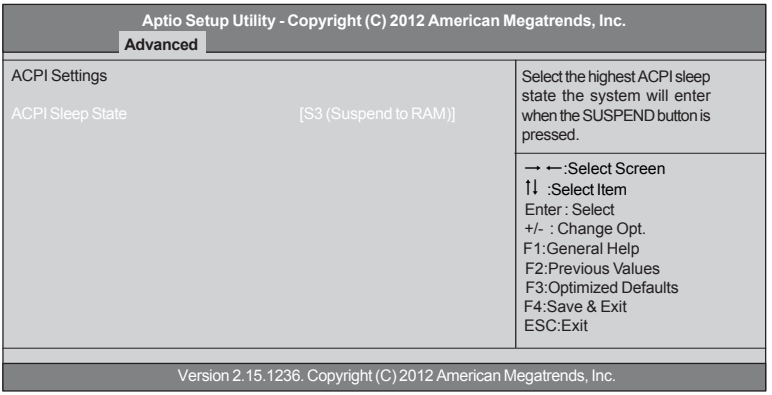
Use this item to enable or disable the PXE OpROM.

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.



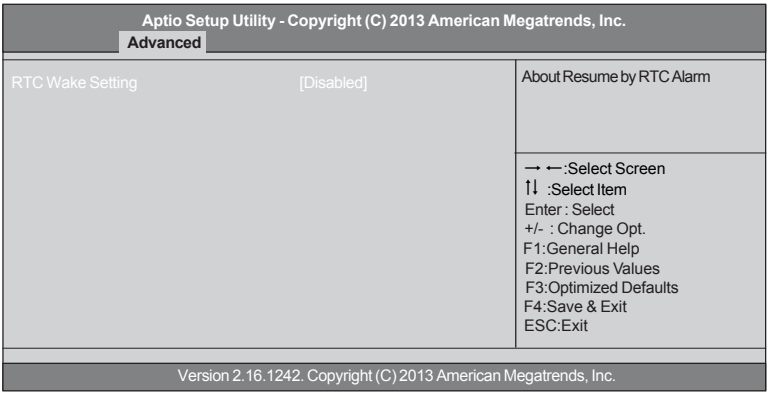
ACPI Sleep State (S3(Suspend to RAM))

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

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

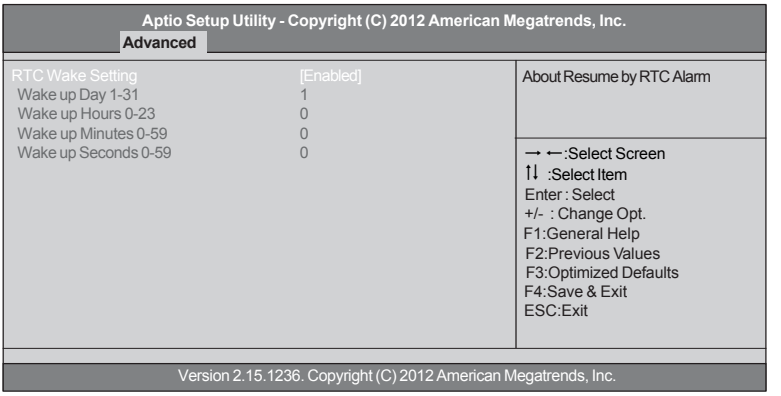
▶ RTC Wake Settings

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



RTC Wake Setting (Disabled)

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



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

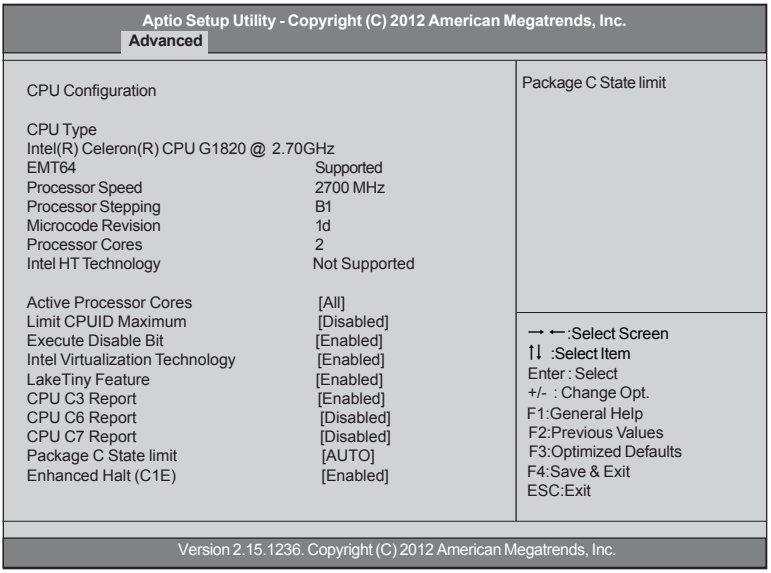
These items shows the information of the wake up hour/minute/second.

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:



Intel(R) Celeron(R) CPU G1820 @ 2.70GHz

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

EMT64 (Supported)

This item shows the computer supports EMT64.

Processor Speed (2700 MHz)

This item shows the current processor speed.

Processor Stepping (B1)

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 (Not Supported)

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

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 excute and where in cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code excution, preventing damage or worm propagation. Replacing older computers with Excute Disable Bit enabled systems can halt worm attacks, reducing the need for virus related repair.

Intel Vitualization Technology (Enabled)

When disabled, a VMM cannot utilize the additional hardware capabilities provided by Vandor 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 (Disabled)

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.

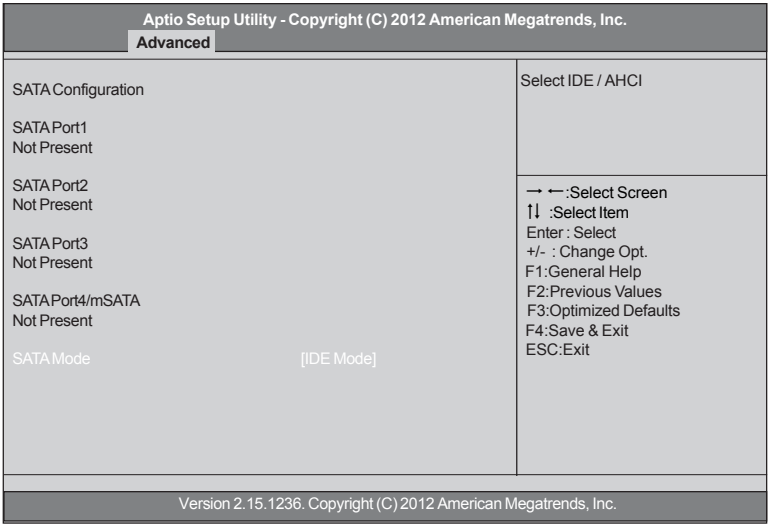
Enhanced Halt (C1E)

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.



SATA Port 1~4/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.

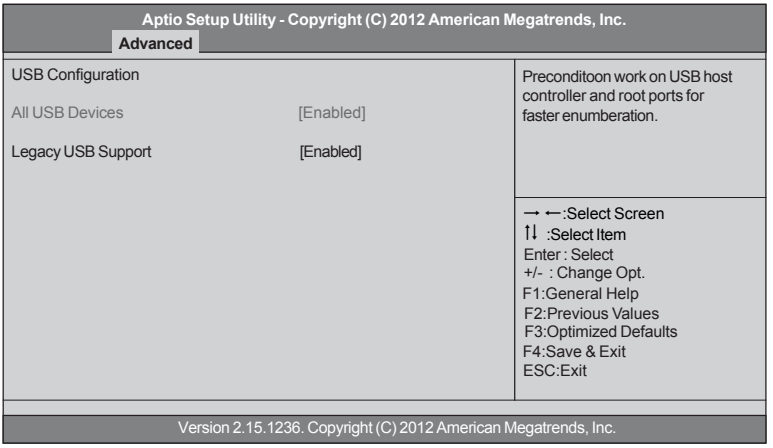
SATA Mode (IDE Mode)

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:



All USB Devices (Enabled)

Use this item to enable or disable all USB devices.

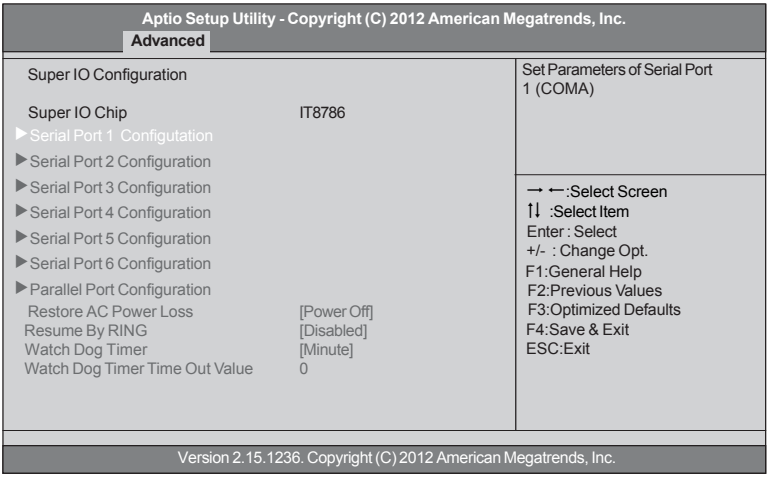
Legacy USB Support (Enabled)

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

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

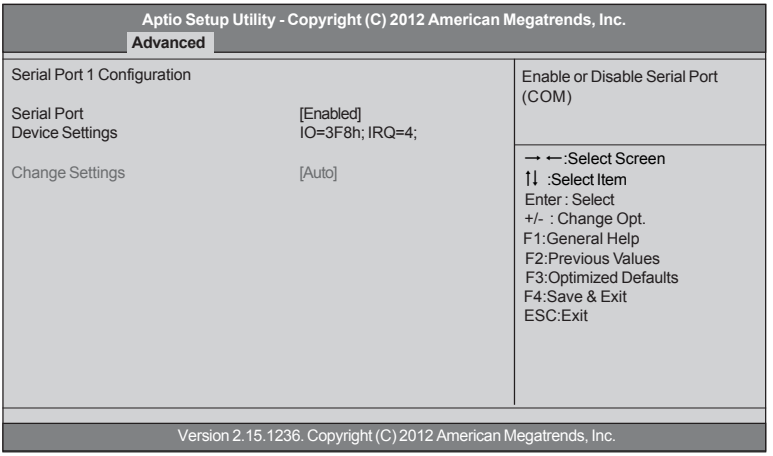
▶Super IO Configuration

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



▶Serial Port 1 Configuration

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



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.

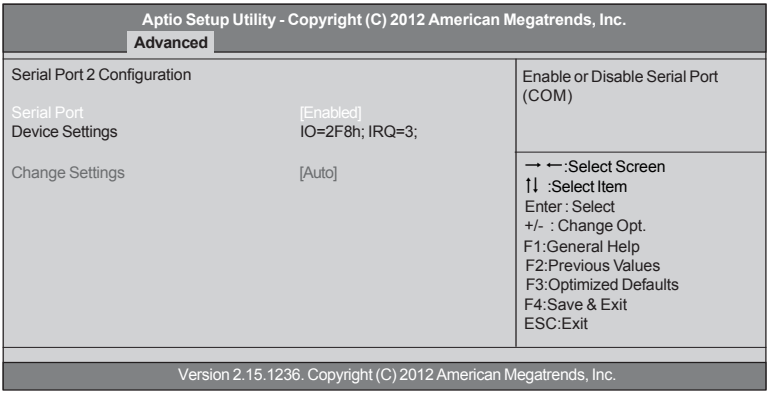
Change Settings (Auto)

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:



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.

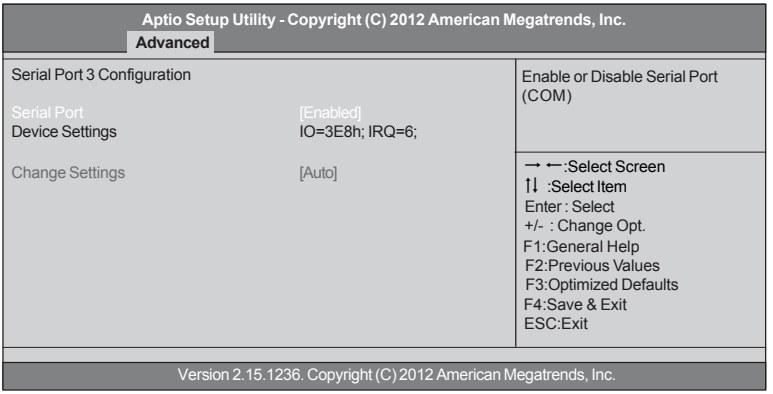
Change Settings (Auto)

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:



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.

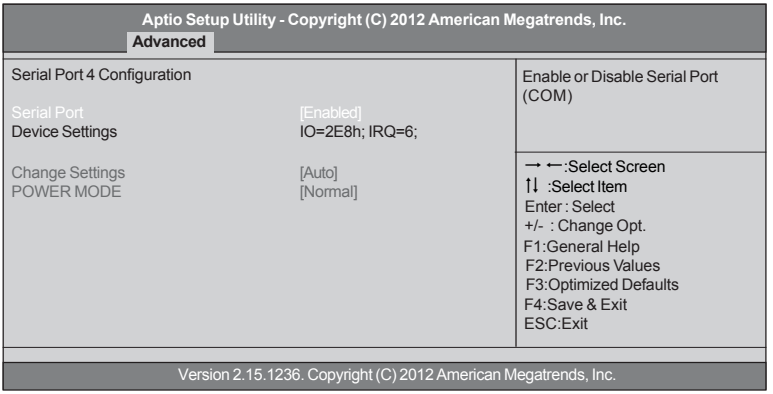
Change Settings (Auto)

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:



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.

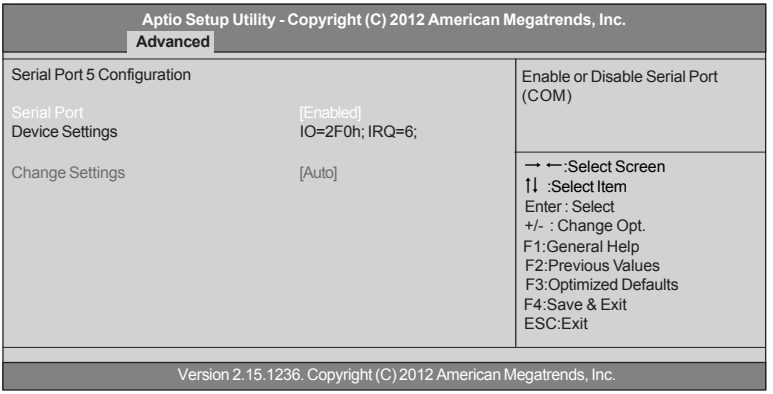
Change Settings (Auto)

Use this item to change 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:



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.

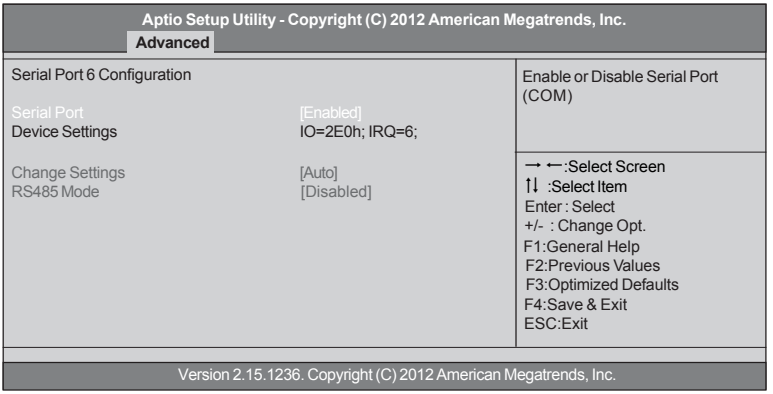
Change Settings (Auto)

Use this item to change 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:



Serial Port (Enabled)

This item allows you to enable or disable serial port.

Device Settings (IO=2F0h; IRQ=7)

This item shows the information of the device settings.

Change Settings (Auto)

Use this item to change device settings.

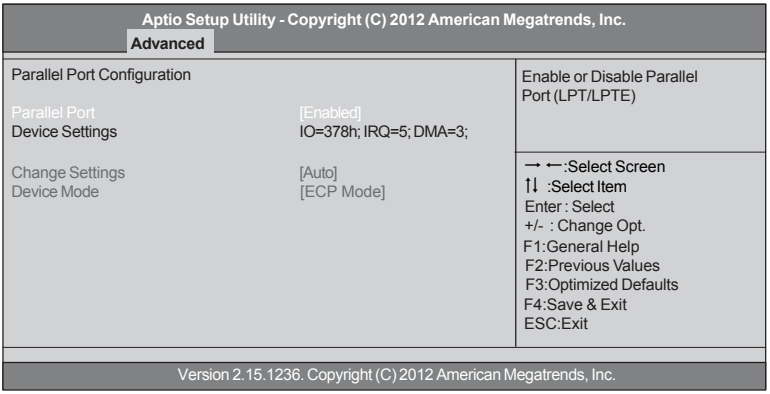
RS485 Mode (Disabled)

Use this item to enable or disable the RS485 Mode.

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:



Parallel Port (Enabled)

This item allows you to enable or disable parallel port.

Device Settings (IO=378h; IRQ=5; DMA=3)

This item shows the information of the device settings.

Change Settings (Auto)

Use this item to change device settings.

Device Mode (ECP Mode)

Use this item to select device mode.

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

Restore AC Power Loss (Power Off)

This item enables your computer to automatically restart or return to its operating status.

Resume on RING (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 Modem. You must use an ATX power supply in order to use this feature.

Watch Dog Timer (Minute)

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

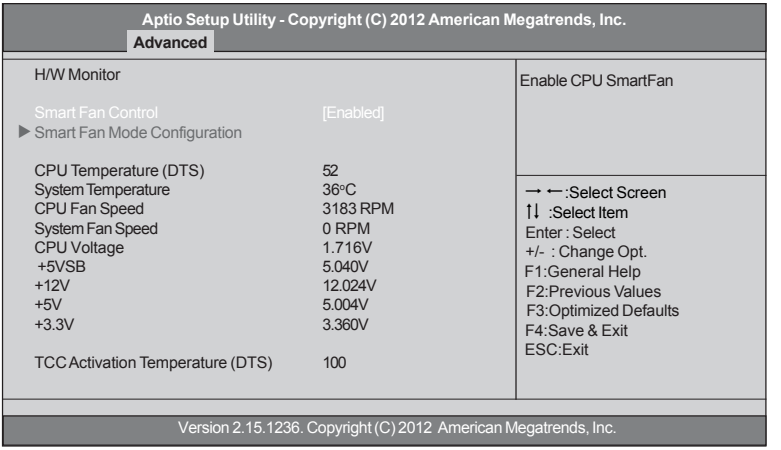
Watch Dog Timer Time Out Value (0)

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

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

► H/W Monitor

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

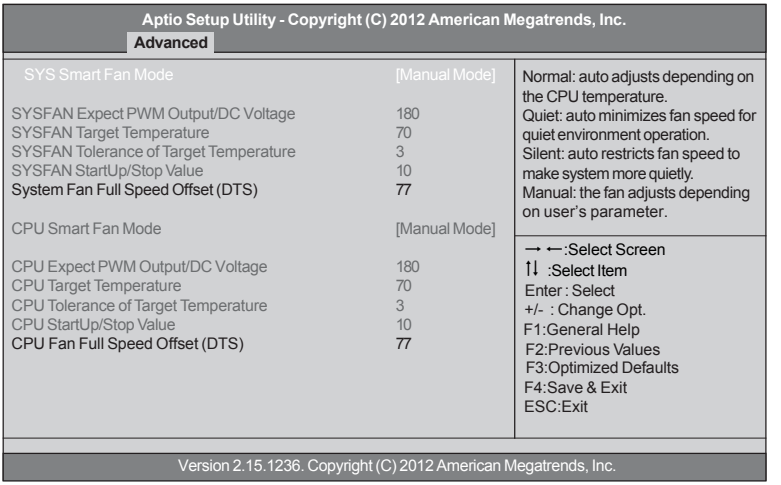


Smart Fan Control (Enabled)

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

►Smart Fan Mode Configuration

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



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.

SYSFAN/CPU Expect PWM Output/DC Voltage (180)

This item is used to set the expect PWM output/DC voltage of the System fan/CPU.

SYSFAN/CPU Target Temperature (70)

This item is used to set the target temperature of the System fan/CPU.

SYSFAN/CPU Tolerance of Target Temperature (3)

This item is used to set the target temperature of the System fan/CPU tolerance.

SYSFAN/CPU StartUp/Stop Value (10)

When the SYSFAN/CPU temperature is increased by 1°C, SYSFAN/CPU fan speed will increase as much.

SYSFAN/CPU Fan Full Speed Offset(DTS) (77)

This item is used to set the System fan/CPU fan full 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
- CPU Voltage
- +5VSB
- +12V
- +5V
- +3.3V

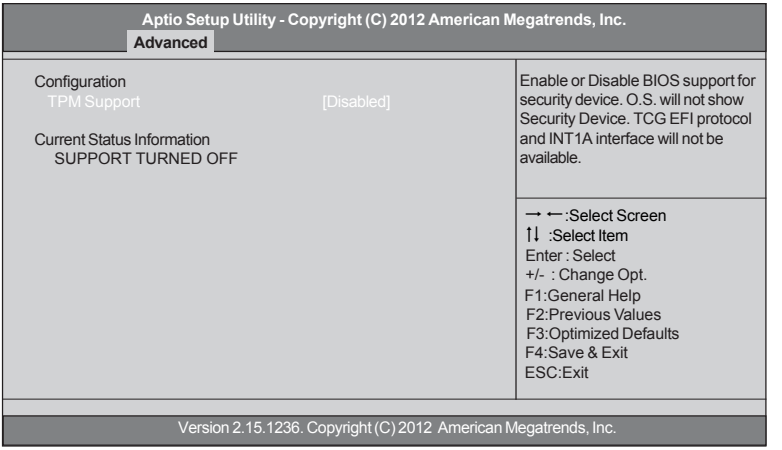
TCC Activation Temperature (100)

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:



TPM Support (Disabled)

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

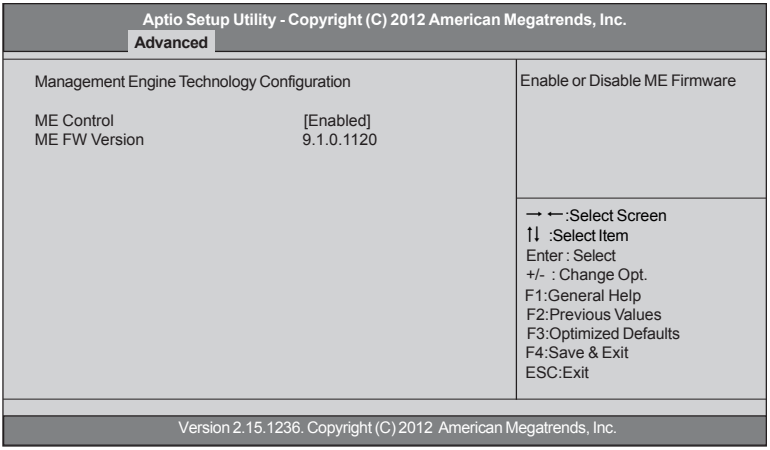
Current Status Information

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:



ME Control (Enabled)

Use this item to enable or disable the ME Control.

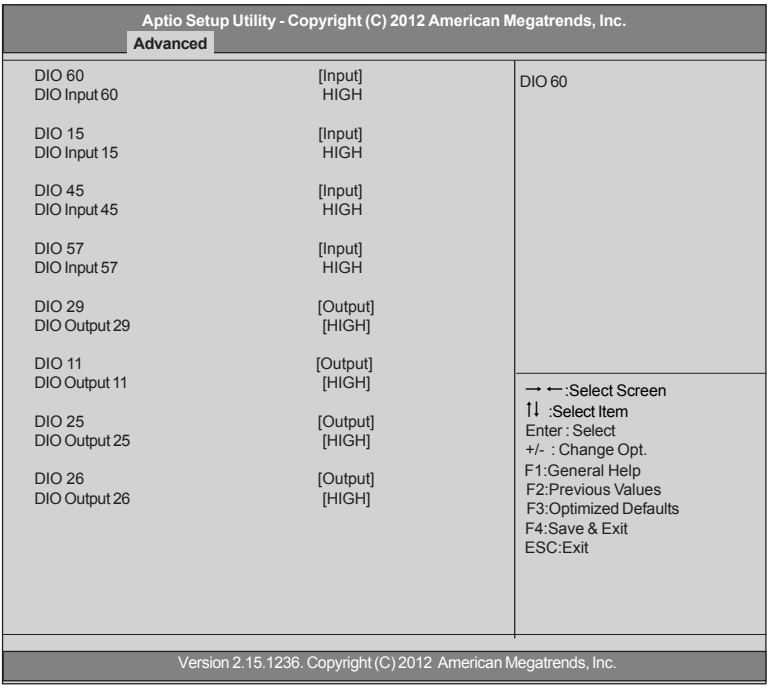
ME FW Version (9.1.0.1120)

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:



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.

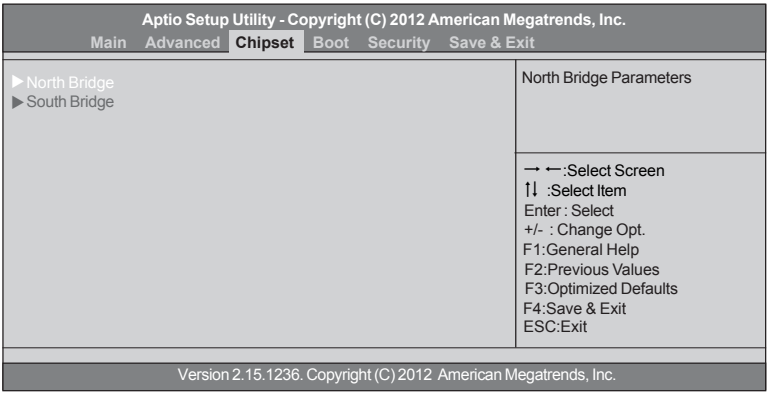
Press <Esc> to return to the Advanced Menu page.

EUP Function (Enabled)

This item allows user to enable or disable EUP function.

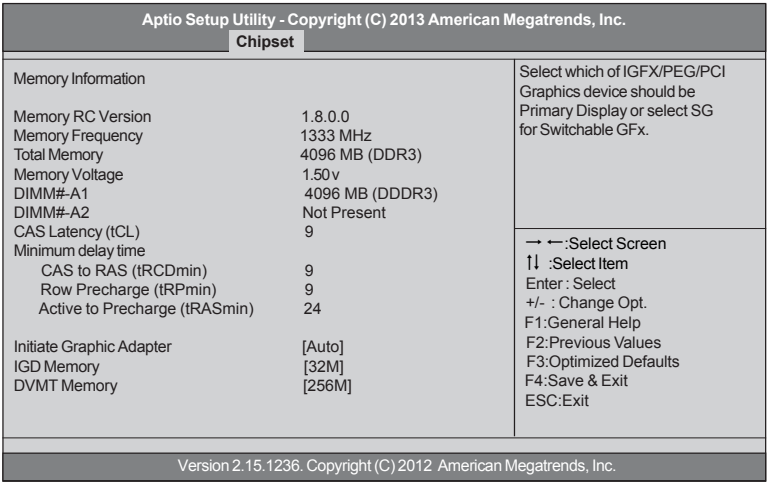
Chipset Menu

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 nect 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.

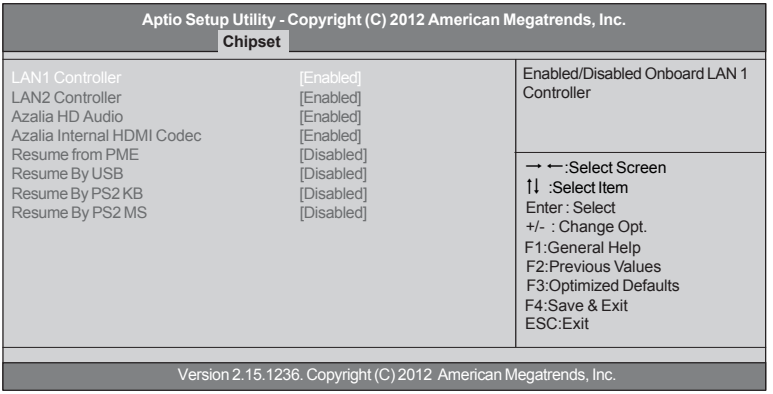
DVMT Memory (256M)

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

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

▶South Bridge

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



LAN1/2 Controller (Enabled)

Use these items to enable or disable the LAN1/2 controller.

Azalia HD Audio (Enabled)

Use this item to enable or disable Azalia HD Audio.

Azalia Internal HDMI Codec (Enabled)

Use this item to enable or disable Azalia internal HDMI Codec.

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 USB (Disabled)

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

Resume By PS2 KB (Disabled)

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

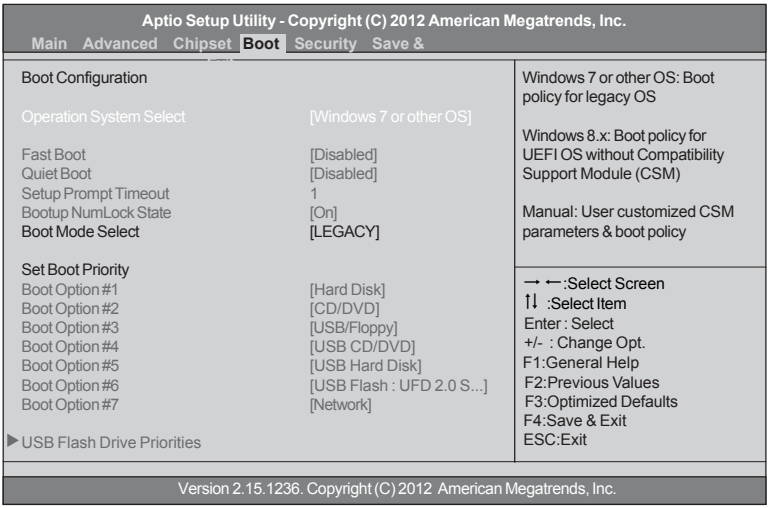
Resume By PS2 MS (Disabled)

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

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.



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

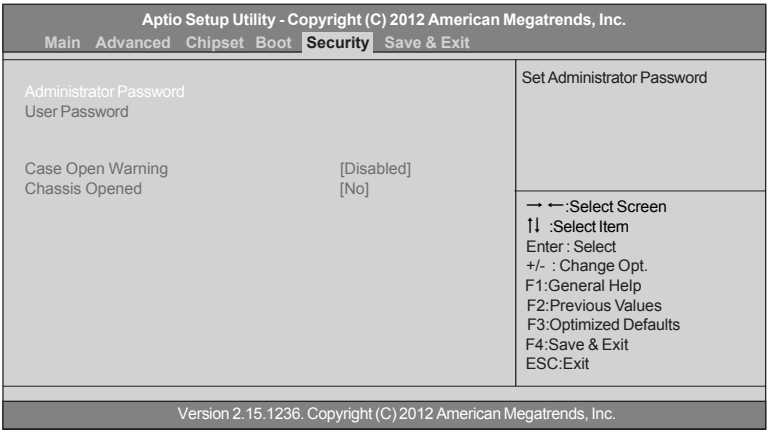
These items show the boot priorities.

USB Flash Drive Priorities

This item enables you to spacify 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.



Administrator Password

Press <Enter> to setup administrator password.

User Password

Press <Enter> to setup user password. (This item only show when administrator password had been set.)

Case Open Warning (Disabled)

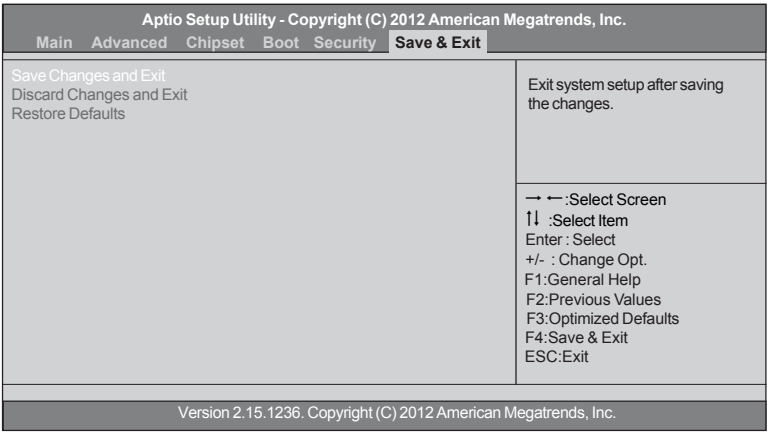
This item enables or disables the warning if the case is opened up, and the item below indicates the current status of the case.

Chassis Opened (No)

This item indicates whether the case has been opened.

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.

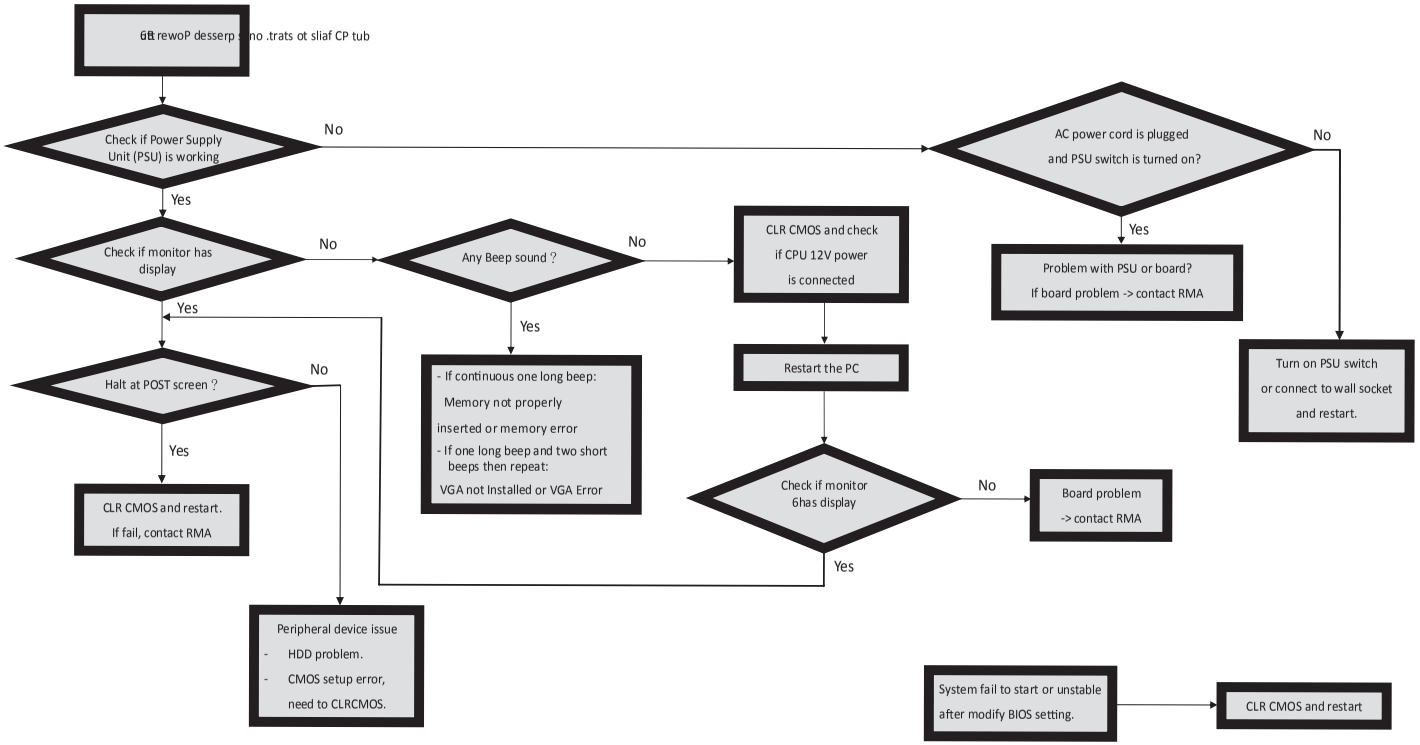
3. Routinely clean the CPU cooler fan to remove dust and hair.

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