

GA-970A-DS3

User's Manual

Rev. 1001

12ME-970ADS3-1001R

Declaration of Conformity

We, Manufacturer/Importer
G.B.T. Technology Trading GmbH
Bültenkoppl 16, 22047 Hamburg, Germany

(description of the apparatus, system, installation to which it refers)

01071003-2
GA-970A-DS3

(reference to the specification under which conformity is claimed)
in accordance with the EMC Directive 2004/108/E

EN 55011 Limits and methods of measurement of radio disturbance characteristics of household appliances, systems and high frequency equipment

EN 1000-3-2 Disturbances in supply systems caused by household appliances and similar electrical equipment "Voltage fluctuations"

EN 55013 Limits and methods of measurement of radio disturbance characteristics of broadcast receivers and associated equipment

EN 55024 Information Technology equipment/Immunity characteristics/Limits and methods of measurement

EN 55014-1 Limits and methods of measurement of radio disturbance characteristics of portable tools and similar electrical apparatus

EN 50082-1 Generic immunity standard Part 1: Residential, commercial and light industry

EN 50082-2 Generic immunity standard Part 2: Industrial environment

EN 55015 Limits and methods of measurement of radio disturbance characteristics of fluorescent lamps and luminaires

EN 55014-2 Immunity requirements for household appliances tools and similar apparatus

EN 55020 Immunity from radio interference of broadcast receivers and associated equipment

EN 50091- 2 EMC requirements for uninterruptible power systems (UPS)

EN 55022 Limits and methods of measurement of radio disturbance characteristics of information technology equipment

DIN VDE 0855 Cabled distribution systems; Equipment for receiving and/or distribution from Part 10
 part 10
 part 15 Cabled distribution systems; Equipment for receiving and television signals



(CE conformity marking)

EN 60085 Safety requirements for mains operated electronic and related apparatus for household and similar general use
 EN 60335 Safety of household and similar electrical appliances

EN 50091-1 General and Safety requirements for uninterruptible power systems (UPS)

Manufacturer/Importer

Signature : **Timmy Huang**

(Stamp)

Date: **Jan. 20, 2012**

Name : **Timmy Huang**

DECLARATION OF CONFORMITY

Per FCC Part 2 Section 2.1077(a)



Responsible Party Name: **G.B.T. INC. (U.S.A)**

Address: **17388 Railroad Street**

City of Industry, CA 91748

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hereby declares that the product

Product Name: Motherboard

Model Number: GA-970A-DS3

Conforms to the following specifications:

FCC Part 15, Subpart B, Section 15.107(a) and Section 15.109

(a), Class B Digital Device

Supplementary Information:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful and (2) this device must accept any interference received, including that may cause undesired operation.

Representative Person's Name: **ERIC LU**

Signature: **Eric Lu**

Date: **Jan. 20, 2012**

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Documentation Classifications

In order to assist in the use of this product, GIGABYTE provides the following types of documentations:

- For quick set-up of the product, read the Quick Installation Guide included with the product.
- For detailed product information, carefully read the User's Manual.

For product-related information, check on our website at:

<http://www.gigabyte.com>

Identifying Your Motherboard Revision

The revision number on your motherboard looks like this: "REV: X.X." For example, "REV: 1.0" means the revision of the motherboard is 1.0. Check your motherboard revision before updating motherboard BIOS, drivers, or when looking for technical information.

Example:

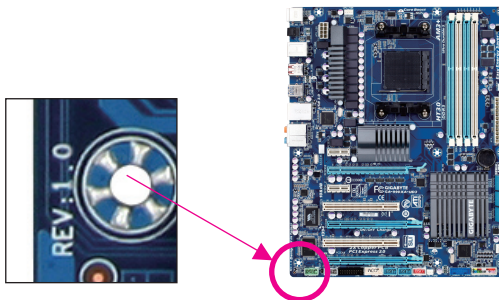
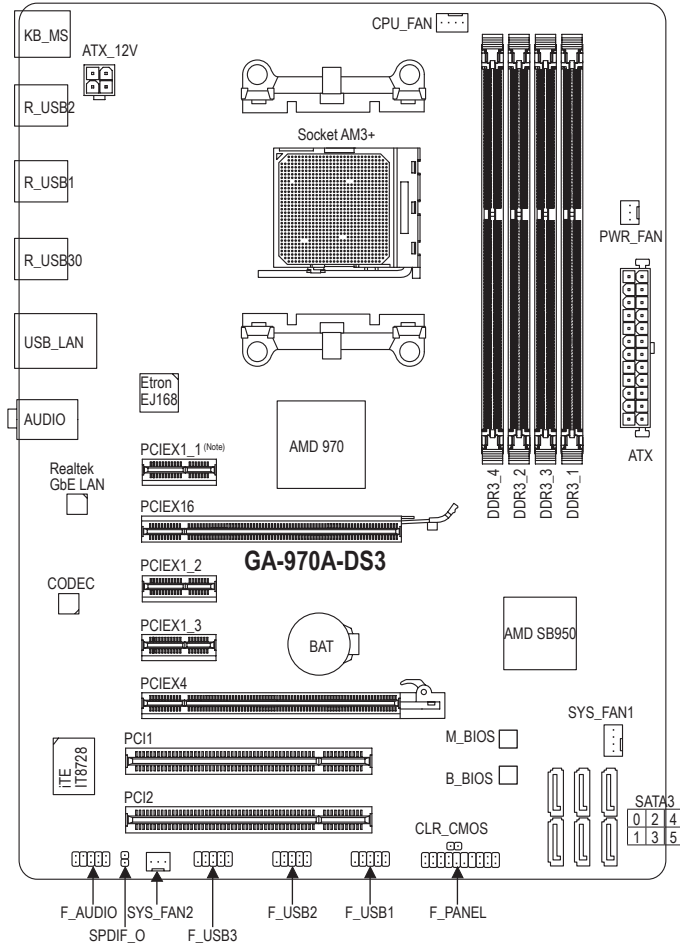


Table of Contents

GA-970A-DS3 Motherboard Layout	5
GA-970A-DS3 Motherboard Block Diagram.....	6
Chapter 1 Hardware Installation	7
1-1 Installation Precautions	7
1-2 Product Specifications.....	8
1-3 Installing the CPU	10
1-4 Installing the Memory	11
1-5 Installing an Expansion Card	11
1-6 Back Panel Connectors.....	12
1-7 Internal Connectors.....	13
Chapter 2 BIOS Setup	20
2-1 Startup Screen	20
2-2 The Main Menu	21
2-3 MB Intelligent Tweaker(M.I.T.).....	22
2-4 Standard CMOS Features.....	27
2-5 Advanced BIOS Features	28
2-6 Integrated Peripherals.....	30
2-7 Power Management Setup.....	32
2-8 PC Health Status.....	34
2-9 Load Fail-Safe Defaults.....	35
2-10 Load Optimized Defaults.....	35
2-11 Set Supervisor/User Password	36
2-12 Save & Exit Setup	36
2-13 Exit Without Saving.....	37
Chapter 3 Drivers Installation.....	37
Chapter 4 Appendix	38
4-1 Configuring SATA Hard Drive(s).....	38
4-2 Regulatory Statements.....	40

GA-970A-DS3 Motherboard Layout



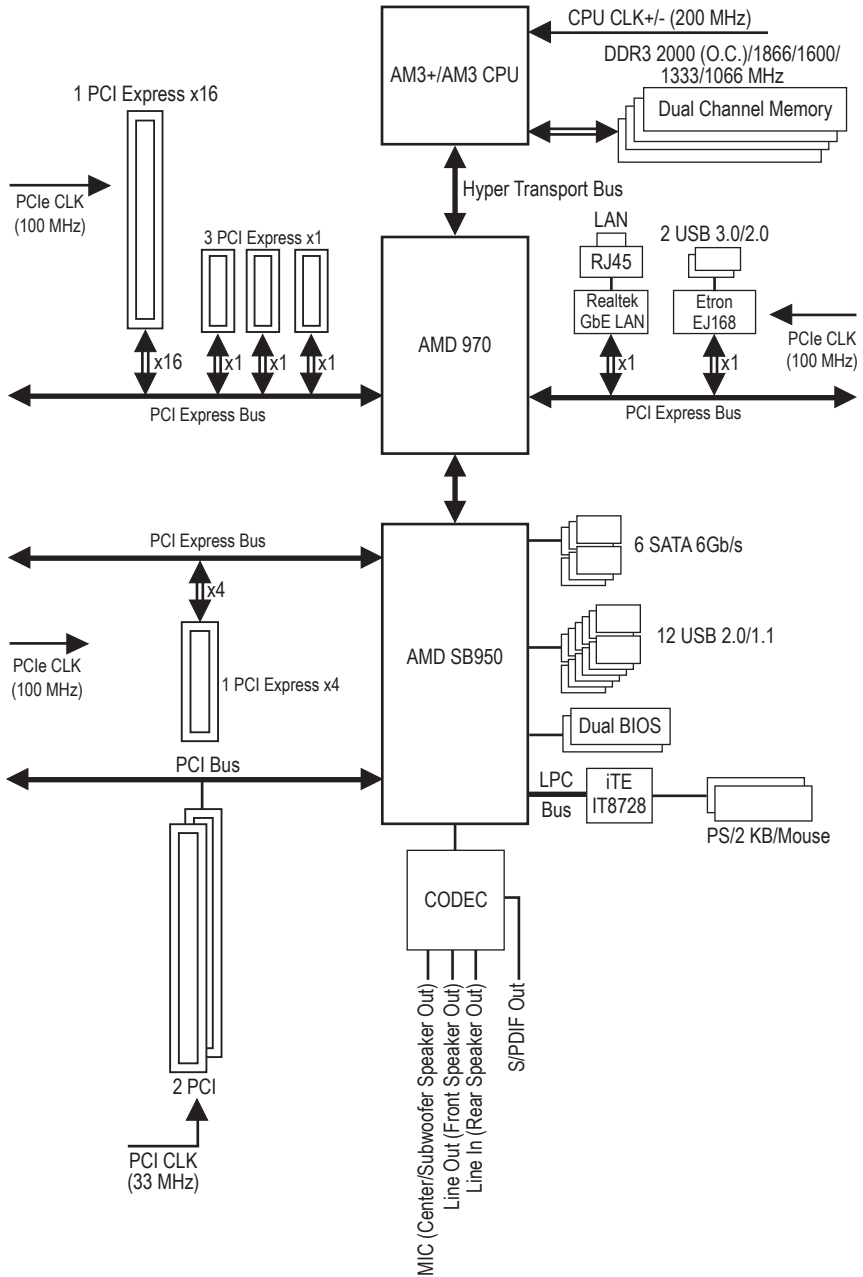
(Note) Due to a hardware limitation, the PCIEX1_1 slot can only accommodate a shorter PCI Express x1 expansion card. For a longer expansion card, use other expansion slots.

Box Contents

- GA-970A-DS3 motherboard
- Motherboard driver disk
- User's Manual
- Two SATA cables
- I/O Shield

* The box contents above are for reference only and the actual items shall depend on the product package you obtain.

GA-970A-DS3 Motherboard Block Diagram













Chapter 1 Hardware Installation










1-1 Installation Precautions

The motherboard contains numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Prior to installation, carefully read the user's manual and follow these procedures:

- Prior to installation, make sure the chassis is suitable for the motherboard.
- Prior to installation, do not remove or break motherboard S/N (Serial Number) sticker or warranty sticker provided by your dealer. These stickers are required for warranty validation.
- Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.
- When connecting hardware components to the internal connectors on the motherboard, make sure they are connected tightly and securely.
- When handling the motherboard, avoid touching any metal leads or connectors.
- It is best to wear an electrostatic discharge (ESD) wrist strap when handling electronic components such as a motherboard, CPU or memory. If you do not have an ESD wrist strap, keep your hands dry and first touch a metal object to eliminate static electricity.
- Prior to installing the motherboard, please have it on top of an antistatic pad or within an electrostatic shielding container.
- Before unplugging the power supply cable from the motherboard, make sure the power supply has been turned off.
- Before turning on the power, make sure the power supply voltage has been set according to the local voltage standard.
- Before using the product, please verify that all cables and power connectors of your hardware components are connected.
- To prevent damage to the motherboard, do not allow screws to come in contact with the motherboard circuit or its components.
- Make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
- Do not place the computer system on an uneven surface.
- Do not place the computer system in a high-temperature environment.
- Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
- If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.

1-2 Product Specifications

	CPU	<ul style="list-style-type: none"> ◆ AM3+ Socket: <ul style="list-style-type: none"> - AMD AM3+ FX processors - AMD AM3 Phenom™ II processor/ AMD Athlon™ II processor <p>(Go to GIGABYTE's website for the latest CPU support list.)</p>
	Hyper Transport Bus	<ul style="list-style-type: none"> ◆ 4800 MT/s
	Chipset	<ul style="list-style-type: none"> ◆ North Bridge: AMD 970 ◆ South Bridge: AMD SB950
	Memory	<ul style="list-style-type: none"> ◆ 4 x 1.5V DDR3 DIMM sockets supporting up to 32 GB of system memory <ul style="list-style-type: none"> * Due to Windows 32-bit operating system limitation, when more than 4 GB of physical memory is installed, the actual memory size displayed will be less than 4 GB. ◆ Dual channel memory architecture ◆ Support for DDR3 2000(O.C.)/1866/1600/1333/1066 MHz memory modules <ul style="list-style-type: none"> * To support a DDR3 1866 MHz (and above) memory, you must install an AM3+ CPU first. <p>(Go to GIGABYTE's website for the latest supported memory speeds and memory modules.)</p>
	Audio	<ul style="list-style-type: none"> ◆ Realtek HD audio codec ◆ High Definition Audio ◆ 2/4/5.1/7.1-channel ◆ Support for S/PDIF Out
	LAN	<ul style="list-style-type: none"> ◆ Realtek GbE LAN chip (10/100/1000 Mbit)
	Expansion Slots	<ul style="list-style-type: none"> ◆ 1 x PCI Express x16 slot, running at x16 (PCIEX16) <ul style="list-style-type: none"> * For optimum performance, if only one PCI Express graphics card is to be installed, be sure to install it in the PCIEX16 slot. ◆ 1 x PCI Express x16 slot, running at x4 (PCIEX4) ◆ 3 x PCI Express x1 slots <p>(All PCI Express slots conform to the PCI Express 2.0 standard.)</p> <ul style="list-style-type: none"> ◆ 2 x PCI slots
	Storage Interface	<ul style="list-style-type: none"> ◆ South Bridge: <ul style="list-style-type: none"> - 6 x SATA 6Gb/s connectors supporting up to 6 SATA 6Gb/s devices - Support for RAID 0, RAID 1, RAID 5, RAID 10, and JBOD
	USB	<ul style="list-style-type: none"> ◆ South Bridge: <ul style="list-style-type: none"> - Up to 12 USB 2.0/1.1 ports (6 ports on the back panel, 6 ports available through the internal USB headers) ◆ Etron EJ168 chip: <ul style="list-style-type: none"> - Up to 2 USB 3.0/2.0 ports on the back panel
	Internal Connectors	<ul style="list-style-type: none"> ◆ 1 x 24-pin ATX main power connector ◆ 1 x 4-pin ATX 12V power connector ◆ 6 x SATA 6Gb/s connectors ◆ 1 x CPU fan header ◆ 2 x system fan headers ◆ 1 x power fan header ◆ 1 x front panel header

 Internal Connectors	<ul style="list-style-type: none"> ◆ 1 x front panel audio header ◆ 1 x S/PDIF Out header ◆ 3 x USB 2.0/1.1 headers ◆ 1 x Clear CMOS jumper
 Back Panel Connectors	<ul style="list-style-type: none"> ◆ 1 x PS/2 keyboard/mouse port ◆ 6 x USB 2.0/1.1 ports ◆ 2 x USB 3.0/2.0 ports ◆ 1 x RJ-45 port ◆ 3 x audio jacks (Line In/Line Out/Microphone)
 I/O Controller	<ul style="list-style-type: none"> ◆ iTE IT8728 chip
 Hardware Monitor	<ul style="list-style-type: none"> ◆ System voltage detection ◆ CPU/System temperature detection ◆ CPU/System/Power fan speed detection ◆ CPU overheating warning ◆ CPU/System/Power fan fail warning ◆ CPU/System fan speed control <p style="margin-left: 20px;">* Whether the CPU/system fan speed control function is supported will depend on the CPU/system cooler you install.</p>
 BIOS	<ul style="list-style-type: none"> ◆ 2 x 32 Mbit flash ◆ Use of licensed AWARD BIOS ◆ Support for DualBIOS™ ◆ PnP 1.0a, DMI 2.0, SM BIOS 2.4, ACPI 1.0b
 Unique Features	<ul style="list-style-type: none"> ◆ Support for @BIOS ◆ Support for Q-Flash ◆ Support for Download Center ◆ Support for Xpress Install ◆ Support for Xpress Recovery2 ◆ Support for EasyTune <p style="margin-left: 20px;">* Available functions in EasyTune may differ by motherboard model.</p> <ul style="list-style-type: none"> ◆ Support for Turbo XHD ◆ Support for Smart Recovery ◆ Support for Auto Green ◆ Support for ON/OFF Charge ◆ Support for 3TB+ Unlock ◆ Support for Q-Share
 Bundled Software	<ul style="list-style-type: none"> ◆ Norton Internet Security (OEM version)
 Operating System	<ul style="list-style-type: none"> ◆ Support for Microsoft® Windows 7/Vista/XP
 Form Factor	<ul style="list-style-type: none"> ◆ ATX Form Factor; 30.5cm x 22.5cm

* GIGABYTE reserves the right to make any changes to the product specifications and product-related information without prior notice.

1-3 Installing the CPU

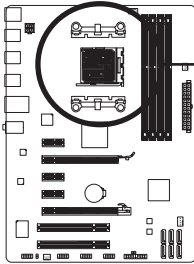


Read the following guidelines before you begin to install the CPU:

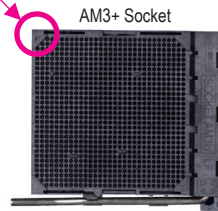
- Make sure that the motherboard supports the CPU.
(Go to GIGABYTE's website for the latest CPU support list.)
- Always turn off the computer and unplug the power cord from the power outlet before installing the CPU to prevent hardware damage.
- Locate the pin one of the CPU. The CPU cannot be inserted if oriented incorrectly.
- Apply an even and thin layer of thermal grease on the surface of the CPU.
- Do not turn on the computer if the CPU cooler is not installed, otherwise overheating and damage of the CPU may occur.
- Set the CPU host frequency in accordance with the CPU specifications. It is not recommended that the system bus frequency be set beyond hardware specifications since it does not meet the standard requirements for the peripherals. If you wish to set the frequency beyond the standard specifications, please do so according to your hardware specifications including the CPU, graphics card, memory, hard drive, etc.

Installing the CPU

- A. Locate the pin one (denoted by a small triangle) of the CPU socket and the CPU.



A Small Triangle Mark
Denotes Pin One of
the Socket



A Small Triangle Marking
Denotes CPU Pin One



1-4 Installing the Memory



Read the following guidelines before you begin to install the memory:

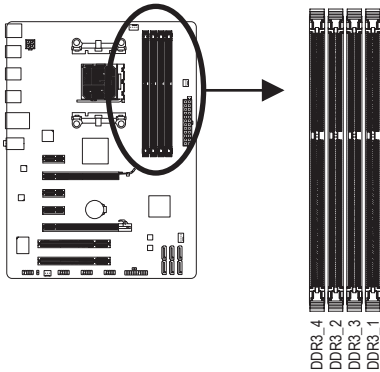
- Make sure that the motherboard supports the memory. It is recommended that memory of the same capacity, brand, speed, and chips be used.
(Go to GIGABYTE's website for the latest supported memory speeds and memory modules.)
- Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage.
- Memory modules have a foolproof design. A memory module can be installed in only one direction. If you are unable to insert the memory, switch the direction.

Dual Channel Memory Configuration

This motherboard provides four DDR3 memory sockets and supports Dual Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory. Enabling Dual Channel memory mode will double the original memory bandwidth.

The four DDR3 memory sockets are divided into two channels and each channel has two memory sockets as following:

- ▶▶ Channel 0: DDR3_2, DDR3_4
- ▶▶ Channel 1: DDR3_1, DDR3_3



▶▶ Dual Channel Memory Configurations Table

	DDR3_4	DDR3_2	DDR3_3	DDR3_1
Two Modules	--	DS/SS	--	DS/SS
	DS/SS	--	DS/SS	--
Four Modules	DS/SS	DS/SS	DS/SS	DS/SS

(SS=Single-Sided, DS=Double-Sided, "--"=No Memory)

Due to CPU limitations, read the following guidelines before installing the memory in Dual Channel mode.

1. Dual Channel mode cannot be enabled if only one DDR3 memory module is installed.
2. When enabling Dual Channel mode with two or four memory modules, it is recommended that memory of the same capacity, brand, speed, and chips be used and installed in the same colored DDR3 sockets for optimum performance. For optimum performance, when enabling Dual Channel mode with two memory modules, we recommend that you install them in the DDR3_1 and DDR3_2 sockets.

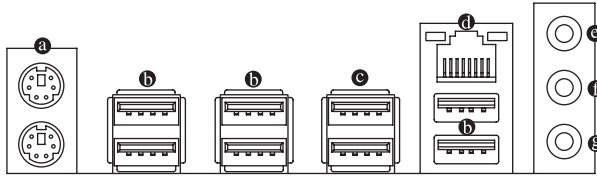
1-5 Installing an Expansion Card



Read the following guidelines before you begin to install an expansion card:

- Make sure the motherboard supports the expansion card. Carefully read the manual that came with your expansion card.
- Always turn off the computer and unplug the power cord from the power outlet before installing an expansion card to prevent hardware damage.

1-6 Back Panel Connectors



a PS/2 Keyboard/Mouse Port

Use this port to connect a PS/2 mouse or keyboard.

b USB 2.0/1.1 Port

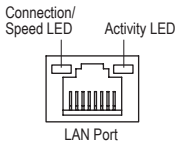
The USB port supports the USB 2.0/1.1 specification. Use this port for USB devices such as a USB keyboard/mouse, USB printer, USB flash drive and etc.

c USB 3.0/2.0 Port

The USB 3.0 port supports the USB 3.0 specification and is compatible to the USB 2.0/1.1 specification. Use this port for USB devices such as a USB keyboard/mouse, USB printer, USB flash drive and etc.

d RJ-45 LAN Port

The Gigabit Ethernet LAN port provides Internet connection at up to 1 Gbps data rate. The following describes the states of the LAN port LEDs.



Connection/Speed LED:

State	Description
Orange	1 Gbps data rate
Green	100 Mbps data rate
Off	10 Mbps data rate

Activity LED:

State	Description
Blinking	Data transmission or receiving is occurring
Off	No data transmission or receiving is occurring

e Line In Jack (Blue)

The default line in jack. Use this audio jack for line in devices such as an optical drive, walkman, etc.

f Line Out Jack (Green)

The default line out jack. Use this audio jack for a headphone or 2-channel speaker. This jack can be used to connect front speakers in a 4/5.1/7.1-channel audio configuration.

g Mic In Jack (Pink)

The default Mic in jack. Microphones must be connected to this jack.

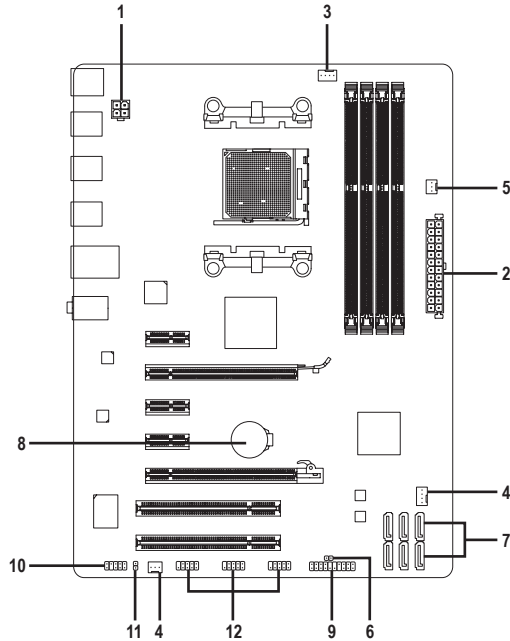


To configure 7.1-channel audio, you have to use an HD front panel audio module and enable the multi-channel audio feature through the audio driver.



- When removing the cable connected to a back panel connector, first remove the cable from your device and then remove it from the motherboard.
- When removing the cable, pull it straight out from the connector. Do not rock it side to side to prevent an electrical short inside the cable connector.

1-7 Internal Connectors



1)	ATX_12V	7)	SATA3 0/1/2/3/4/5
2)	ATX	8)	BAT
3)	CPU_FAN	9)	F_PANEL
4)	SYS_FAN1/SYS_FAN2	10)	F_AUDIO
5)	PWR_FAN	11)	SPDIF_O
6)	CLR_CMOS	12)	F_USB1/F_USB2/F_USB3



Read the following guidelines before connecting external devices:

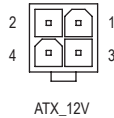
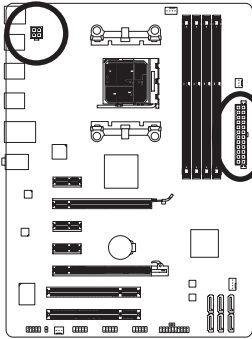
- First make sure your devices are compliant with the connectors you wish to connect.
- Before installing the devices, be sure to turn off the devices and your computer. Unplug the power cord from the power outlet to prevent damage to the devices.
- After installing the device and before turning on the computer, make sure the device cable has been securely attached to the connector on the motherboard.

1/2) ATX_12V/ATX (2x2 12V Power Connector and 2x12 Main Power Connector)

With the use of the power connector, the power supply can supply enough stable power to all the components on the motherboard. Before connecting the power connector, first make sure the power supply is turned off and all devices are properly installed. The power connector possesses a foolproof design. Connect the power supply cable to the power connector in the correct orientation. The 12V power connector mainly supplies power to the CPU. If the 12V power connector is not connected, the computer will not start.

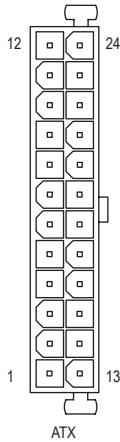


To meet expansion requirements, it is recommended that a power supply that can withstand high power consumption be used (500W or greater). If a power supply is used that does not provide the required power, the result can lead to an unstable or unbootable system.



ATX_12V:

Pin No.	Definition
1	GND
2	GND
3	+12V
4	+12V

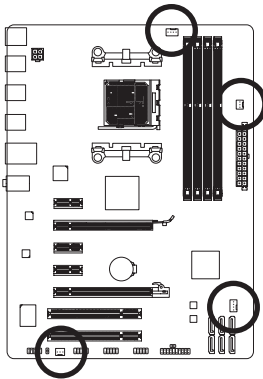


ATX:

Pin No.	Definition	Pin No.	Definition
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON (soft On/Off)
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	Power Good	20	-5V
9	5VSB (stand by +5V)	21	+5V
10	+12V	22	+5V
11	+12V (Only for 2x12-pin ATX)	23	+5V (Only for 2x12-pin ATX)
12	3.3V (Only for 2x12-pin ATX)	24	GND (Only for 2x12-pin ATX)

3/4/5) CPU_FAN/SYS_FAN1/SYS_FAN2/PWR_FAN (Fan Headers)

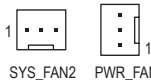
The motherboard has a 4-pin CPU fan header (CPU_FAN), a 3-pin (SYS_FAN2) and a 4-pin (SYS_FAN1) system fan headers, and a 3-pin power fan header (PWR_FAN). Most fan headers possess a foolproof insertion design. When connecting a fan cable, be sure to connect it in the correct orientation (the black connector wire is the ground wire). The speed control function requires the use of a fan with fan speed control design. For optimum heat dissipation, it is recommended that a system fan be installed inside the chassis.



CPU_FAN



SYS_FAN1



SYS_FAN2

PWR_FAN

CPU_FAN:

Pin No.	Definition
1	GND
2	+12V
3	Sense
4	Speed Control

SYS_FAN1:

Pin No.	Definition
1	GND
2	+12V
3	Sense
4	Reserve

SYS_FAN2/PWR_FAN:

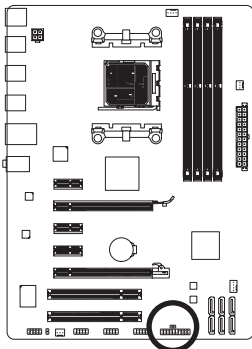
Pin No.	Definition
1	GND
2	+12V
3	Sense



- Be sure to connect fan cables to the fan headers to prevent your CPU and system from overheating. Overheating may result in damage to the CPU or the system may hang.
- These fan headers are not configuration jumper blocks. Do not place a jumper cap on the headers.

6) CLR_CMOS (Clear CMOS Jumper)

Use this jumper to clear the CMOS values (e.g. date information and BIOS configurations) and reset the CMOS values to factory defaults. To clear the CMOS values, use a metal object like a screwdriver to touch the two pins for a few seconds.



 Open: Normal

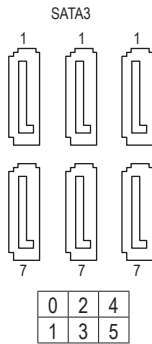
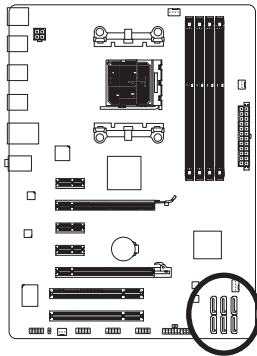
 Short: Clear CMOS Values



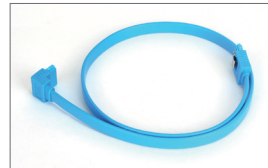
- Always turn off your computer and unplug the power cord from the power outlet before clearing the CMOS values.
- After system restart, go to BIOS Setup to load factory defaults (select Load Optimized Defaults) or manually configure the BIOS settings (refer to Chapter 2, "BIOS Setup," for BIOS configurations).

7) SATA3 0/1/2/3/4/5 (SATA 6Gb/s Connectors)

The SATA connectors conform to SATA 6Gb/s standard and are compatible with SATA 3Gb/s and SATA 1.5Gb/s standard. Each SATA connector supports a single SATA device. The AMD SB950 South Bridge supports RAID 0, RAID 1, RAID 5, RAID 10, and JBOD. Refer to Chapter 4, "Configuring SATA Hard Drive(s)," for instructions on configuring a RAID array.



Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND



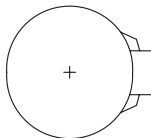
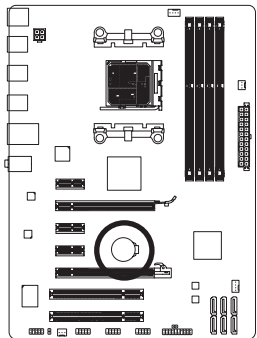
Please connect the L-shaped end of the SATA cable to your SATA hard drive.



- A RAID 0 or RAID 1 configuration requires at least two hard drives. If more than two hard drives are to be used, the total number of hard drives must be an even number.
- A RAID 5 configuration requires at least three hard drives. (The total number of hard drives does not have to be an even number.)
- A RAID 10 configuration requires four hard drives.

8) BAT (Battery)

The battery provides power to keep the values (such as BIOS configurations, date, and time information) in the CMOS when the computer is turned off. Replace the battery when the battery voltage drops to a low level, or the CMOS values may not be accurate or may be lost.



You may clear the CMOS values by removing the battery:

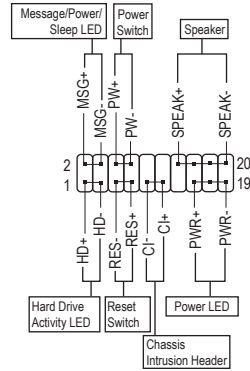
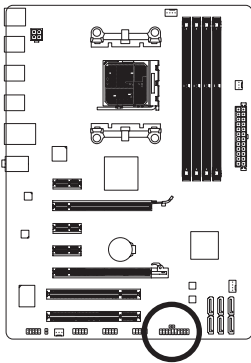
1. Turn off your computer and unplug the power cord.
2. Gently remove the battery from the battery holder and wait for one minute. (Or use a metal object like a screwdriver to touch the positive and negative terminals of the battery holder, making them short for 5 seconds.)
3. Replace the battery.
4. Plug in the power cord and restart your computer.



- Always turn off your computer and unplug the power cord before replacing the battery.
- Replace the battery with an equivalent one. Danger of explosion if the battery is replaced with an incorrect model.
- Contact the place of purchase or local dealer if you are not able to replace the battery by yourself or uncertain about the battery model.
- When installing the battery, note the orientation of the positive side (+) and the negative side (-) of the battery (the positive side should face up).
- Used batteries must be handled in accordance with local environmental regulations.

9) F_PANEL (Front Panel Header)

Connect the power switch, reset switch, speaker, chassis intrusion switch/sensor and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.



- **MSG/PWR** (Message/Power/Sleep LED, Yellow/Purple):

System Status	LED
S0	On
S1	Blinking
S3/S4/S5	Off

Connects to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1 sleep state. The LED is off when the system is in S3/S4 sleep state or powered off (S5).

- **PW** (Power Switch, Red):

Connects to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch (refer to Chapter 2, "BIOS Setup," "Power Management Setup," for more information).

- **SPEAK** (Speaker, Orange):

Connects to the speaker on the chassis front panel. The system reports system startup status by issuing a beep code. One single short beep will be heard if no problem is detected at system startup. If a problem is detected, the BIOS may issue beeps in different patterns to indicate the problem. Refer to Chapter 5, "Troubleshooting," for information about beep codes.

- **HD** (Hard Drive Activity LED, Blue)

Connects to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

- **RES** (Reset Switch, Green):

Connects to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

- **CI** (Chassis Intrusion Header, Gray):

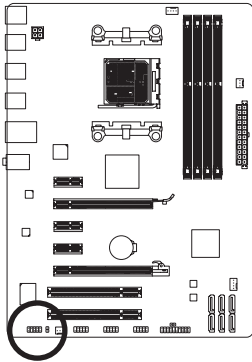
Connects to the chassis intrusion switch/sensor on the chassis that can detect if the chassis cover has been removed. This function requires a chassis with a chassis intrusion switch/sensor.



The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

10) F_AUDIO (Front Panel Audio Header)

The front panel audio header supports Intel High Definition audio (HD) and AC'97 audio. You may connect your chassis front panel audio module to this header. Make sure the wire assignments of the module connector match the pin assignments of the motherboard header. Incorrect connection between the module connector and the motherboard header will make the device unable to work or even damage it.



For HD Front Panel Audio:

Pin No.	Definition
1	MIC2_L
2	GND
3	MIC2_R
4	-ACZ_DET
5	LINE2_R
6	GND
7	FAUDIO_JD
8	No Pin
9	LINE2_L
10	GND

For AC'97 Front Panel Audio:

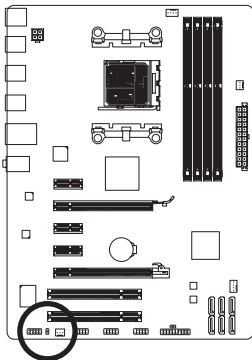
Pin No.	Definition
1	MIC
2	GND
3	MIC Power
4	NC
5	Line Out (R)
6	NC
7	NC
8	No Pin
9	Line Out (L)
10	NC



- The front panel audio header supports HD audio by default.
- Audio signals will be present on both of the front and back panel audio connections simultaneously.
- Some chassis provide a front panel audio module that has separated connectors on each wire instead of a single plug. For information about connecting the front panel audio module that has different wire assignments, please contact the chassis manufacturer.

11) SPDIF_O (S/PDIF Out Header)

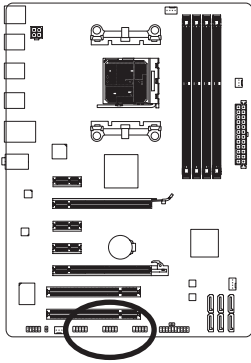
This header supports digital S/PDIF Out and connects a S/PDIF digital audio cable (provided by expansion cards) for digital audio output from your motherboard to certain expansion cards like graphics cards and sound cards. For example, some graphics cards may require you to use a S/PDIF digital audio cable for digital audio output from your motherboard to your graphics card if you wish to connect an HDMI display to the graphics card and have digital audio output from the HDMI display at the same time. For information about connecting the S/PDIF digital audio cable, carefully read the manual for your expansion card.



Pin No.	Definition
1	SPDIFO
2	GND

12) F_USB1/F_USB2/F_USB3 (USB Headers)

The headers conform to USB 2.0/1.1 specification. Each USB header can provide two USB ports via an optional USB bracket. For purchasing the optional USB bracket, please contact the local dealer.



Pin No.	Definition
1	Power (5V)
2	Power (5V)
3	USB DX-
4	USB DY-
5	USB DX+
6	USB DY+
7	GND
8	GND
9	No Pin
10	NC



- Do not plug the IEEE 1394 bracket (2x5-pin) cable into the USB header.
- Prior to installing the USB bracket, be sure to turn off your computer and unplug the power cord from the power outlet to prevent damage to the USB bracket.

Chapter 2 BIOS Setup

To access the BIOS Setup program, press the <Delete> key during the POST when the power is turned on. To see more advanced BIOS Setup menu options, you can press <Ctrl> + <F1> in the main menu of the BIOS Setup program.

To upgrade the BIOS, use either the GIGABYTE Q-Flash or @BIOS utility.

- Q-Flash allows the user to quickly and easily upgrade or back up BIOS without entering the operating system.
- @BIOS is a Windows-based utility that searches and downloads the latest version of BIOS from the Internet and updates the BIOS.



- Because BIOS flashing is potentially risky, if you do not encounter problems using the current version of BIOS, it is recommended that you not flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction.
- BIOS will emit a beep code during the POST. Refer to Chapter 5, "Troubleshooting," for the beep codes description.
- It is recommended that you not alter the default settings (unless you need to) to prevent system instability or other unexpected results. Inadequately altering the settings may result in system's failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values. (Refer to the "Load Optimized Defaults" section in this chapter or introductions of the battery/clearing CMOS jumper in Chapter 1 for how to clear the CMOS values.)

2-1 Startup Screen

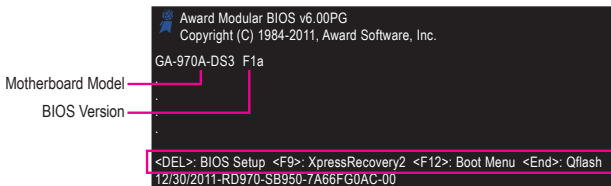
The following screens may appear when the computer boots.

A. The LOGO Screen (Default)



Function Keys

B. The POST Screen

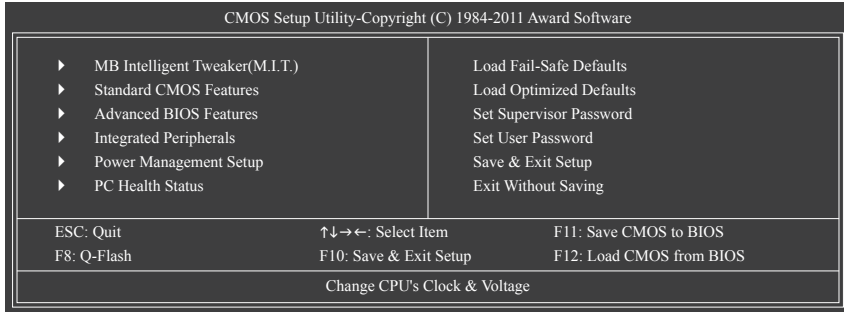


Function Keys

2-2 The Main Menu

Once you enter the BIOS Setup program, the Main Menu (as shown below) appears on the screen. Use arrow keys to move among the items and press <Enter> to accept or enter a sub-menu.

(Sample BIOS Version: F1a)



- If you do not find the settings you want in the Main Menu or a submenu, press <Ctrl>+<F1> to access more advanced options.
- When the system is not stable as usual, select the **Load Optimized Defaults** item to set your system to its defaults.
- The BIOS Setup menus described in this chapter are for reference only and may differ by BIOS version.

■ The Functions of the <F11> and <F12> keys (For the Main Menu Only)

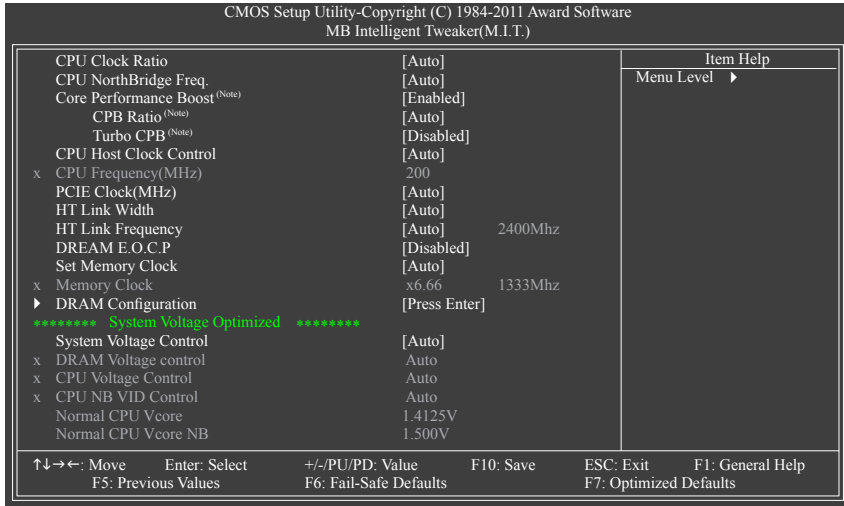
▶ F11: Save CMOS to BIOS

This function allows you to save the current BIOS settings to a profile. You can create up to 8 profiles (Profile 1-8) and name each profile. First enter the profile name (to erase the default profile name, use the SPACE key) and then press <Enter> to complete.

▶ F12: Load CMOS from BIOS

If your system becomes unstable and you have loaded the BIOS default settings, you can use this function to load the BIOS settings from a profile created before, without the hassles of reconfiguring the BIOS settings. First select the profile you wish to load, then press <Enter> to complete.

2-3 MB Intelligent Tweaker(M.I.T.)



- Whether the system will work stably with the overclock/overvoltage settings you made is dependent on your overall system configurations. Incorrectly doing overclock/overvoltage may result in damage to CPU, chipset, or memory and reduce the useful life of these components. This page is for advanced users only and we recommend you not to alter the default settings to prevent system instability or other unexpected results. (Inadequately altering the settings may result in system's failure to boot. If this occurs, clear the CMOS values and reset the board to default values.)
- When the System Voltage Optimized item blinks in red, it is recommended that you set the System Voltage Control item to Auto to optimize the system voltage settings.

☞ CPU Clock Ratio

Allows you to alter the clock ratio for the installed CPU. The adjustable range is dependent on the CPU being used.

☞ CPU NorthBridge Freq.

Allows you to alter the North Bridge controller frequency for the installed CPU. The adjustable range is dependent on the CPU being used.

☞ Core Performance Boost ^(Note)

Allows you to determine whether to enable the Core Performance Boost (CPB) technology, a CPU performance-boost technology. (Default: Enabled)

☞ CPB Ratio ^(Note)

Allows you alter the ratio for the CPB. The adjustable range is dependent on the CPU being installed. (Default: Auto)

☞ Turbo CPB ^(Note)

Allows you to determine whether to improve CPU performance. (Default: Disabled)

☞ CPU Host Clock Control

Enables or disables the control of CPU host clock. **Auto** (default) allows the BIOS to automatically adjust the CPU host frequency. **Manual** allows the **CPU Frequency (MHz)** item below to be configurable.

Note: If your system fails to boot after overclocking, please wait for 20 seconds to allow for automated system reboot, or clear the CMOS values to reset the board to default values.

(Note) This item is present only when you install a CPU that supports this feature.

☞ **CPU Frequency(MHz)**

Allows you to manually set the CPU host frequency. The adjustable range is from 200 MHz to 500 MHz. This option is configurable only when **CPU Host Clock Control** is set to **Manual**.

Important It is highly recommended that the CPU frequency be set in accordance with the CPU specifications.

☞ **PCIe Clock(MHz)**

Allows you to manually set the PCIe clock frequency. The adjustable range is from 100 MHz to 150 MHz.

Auto sets the PCIe clock frequency to standard 100 MHz. (Default: Auto)

☞ **HT Link Width**

Allows you to manually set the width for the HT Link between the CPU and chipset.

▶▶ Auto BIOS will automatically adjust the HT Link Width. (Default)

▶▶ 8 bit Sets HT Link Width to 8 bit.

▶▶ 16 bit Sets HT Link Width to 16 bit.

☞ **HT Link Frequency**

Allows you to manually set the frequency for the HT Link between the CPU and chipset.

▶▶ Auto BIOS will automatically adjust the HT Link Frequency. (Default)

▶▶ x1~x13 Sets HT Link Frequency to x1~x13 (200 MHz~2.6 GHz).

☞ **DRAM E.O.C.P**

Allows you to determine whether to use the preset memory overclocking profile to achieve optimum overclocking performance. (Default: Disabled)

☞ **Set Memory Clock**

Determines whether to manually set the memory clock. **Auto** lets BIOS automatically set the memory clock as required. **Manual** allows the memory clock control item below to be configurable. (Default: Auto)

☞ **Memory Clock**

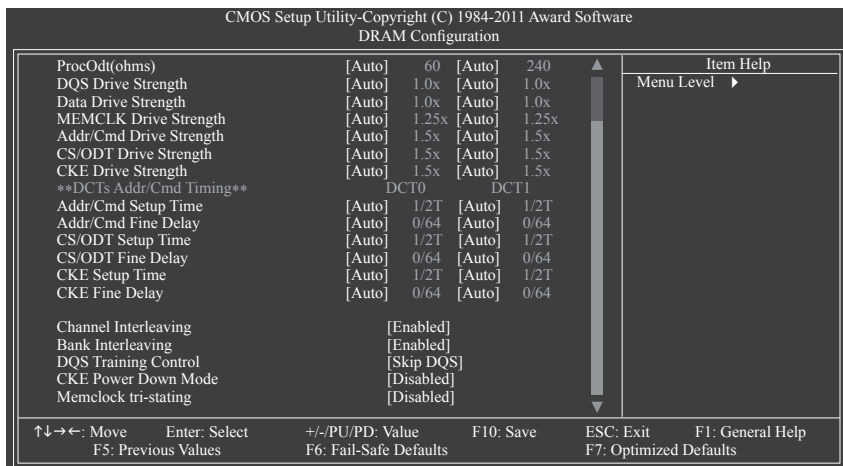
This option is configurable only when **Set Memory Clock** is set to **Manual**. The adjustable range is dependent on the CPU being installed.

☞ **DRAM Configuration**

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software
DRAM Configuration

		Item Help	
		Menu Level ▶	
	CPU Host Clock Control	[Auto]	
x	CPU Frequency(MHz)	200	
	Set Memory Clock	[Auto]	
x	Memory Clock	x6.66	1333Mhz
	DCTs Mode	[Unganged]	
	DDR3 Timing Items	[Auto]	SPD Auto
x	1T/2T Command Timing	Auto	-- --
x	CAS# latency	Auto	9T 9T
x	RAS to CAS R/W Delay	Auto	9T 9T
x	Row Precharge Time	Auto	9T 9T
x	Minimum RAS Active Time	Auto	24T 24T
x	TwTr Command Delay	Auto	5T 5T
x	Trfc0 for DIMM1, DIMM3	Auto	110ns 110ns
x	Trfc1 for DIMM2, DIMM4	Auto	-- --
x	Write Recovery Time	Auto	10T 10T
x	Precharge Time	Auto	5T 5T
x	Row Cycle Time	Auto	33T 33T
x	RAS to RAS Delay	Auto	4T 4T
	DCTs Drive Strength	DCT0	DCT1

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults



- ☞ **CPU Host Clock Control, CPU Frequency (MHz), Set Memory Clock, Memory Clock**
The settings under the four items above are synchronous to those under the same items on the MB Intelligent Tweaker(M.I.T.) main menu.
- ☞ **DCTs Mode**
Allows you to set memory control mode.
 - ▶ Ganged Sets memory control mode to single dual-channel.
 - ▶ Unganged Sets memory control mode to two single-channel. (Default)
- ☞ **DDR3 Timing Items**
Manual allows all DDR3 Timing items below to be configurable.
Options are: Auto (default), Manual.
- ☞ **1T/2T Command Timing**
Options are: Auto (default), 1T, 2T.
- ☞ **CAS# latency**
Options are: Auto (default), 5T~14T.
- ☞ **RAS to CAS R/W Delay**
Options are: Auto (default), 2T~19T.
- ☞ **Row Precharge Time**
Options are: Auto (default), 2T~19T.
- ☞ **Minimum RAS Active Time**
Options are: Auto (default), 8T~40T.
- ☞ **TwTr Command Delay**
Options are: Auto (default), 4T~9T.
- ☞ **Trfc0 for DIMM1, DIMM3**
Options are: Auto (default), 90ns, 110ns, 160ns, 300ns, 350ns.
- ☞ **Trfc1 for DIMM2, DIMM4**
Options are: Auto (default), 90ns, 110ns, 160ns, 300ns, 350ns.

- ☞ **Write Recovery Time**
Options are: Auto (default), 5T~8T, 10T, 12T, 14T, 16T.
- ☞ **Precharge Time**
Options are: Auto (default), 4T~10T.
- ☞ **Row Cycle Time**
Options are: Auto (default), 10T~56T.
- ☞ **RAS to RAS Delay**
Options are: Auto (default), 1T~9T.

****DCTs Drive Strength****

- ☞ **ProcOdt(ohms)**
Options are: Auto (default), 240 ohms, 120 ohms, 60 ohms.
- ☞ **DQS Drive Strength**
Options are: Auto (default), 0.75x, 1.0x, 1.25x, 1.5x.
- ☞ **Data Drive Strength**
Options are: Auto (default), 0.75x, 1.0x, 1.25x, 1.5x.
- ☞ **MEMCLK Drive Strength**
Options are: Auto (default), 0.75x, 1.0x, 1.25x, 1.5x.
- ☞ **Addr/Cmd Drive Strength**
Options are: Auto (default), 1.0x, 1.25x, 1.5x, 2.0x.
- ☞ **CS/ODT Drive Strength**
Options are: Auto (default), 1.0x, 1.25x, 1.5x, 2.0x.
- ☞ **CKE Drive Strength**
Options are: Auto (default), 1.0x, 1.25x, 1.5x, 2.0x.

****DCTs Addr/Cmd Timing****

- ☞ **Addr/Cmd Setup Time**
Options are: Auto (default), 1/2T, 1T.
- ☞ **Addr/Cmd Fine Delay**
Options are: Auto (default), 0/64~31/64.
- ☞ **CS/ODT Setup Time**
Options are: Auto (default), 1/2T, 1T.
- ☞ **CS/ODT Fine Delay**
Options are: Auto (default), 0/64~31/64.
- ☞ **CKE Setup Time**
Options are: Auto (default), 1/2T, 1T.
- ☞ **CKE Fine Delay**
Options are: Auto (default), 0/64~31/64.

- ☞ **Channel Interleaving**

Enables or disables memory channel interleaving. **Enabled** allows the system to simultaneously access different channels of the memory to increase memory performance and stability. (Default: Enabled)

☞ **Bank Interleaving**

Enables or disables memory bank interleaving. **Enabled** allows the system to simultaneously access different banks of the memory to increase memory performance and stability. (Default: Enabled)

☞ **DQS Training Control**

Enables or disables memory DQS training each time the system restarts. (Default: Skip DQS)

☞ **CKE Power Down Mode**

Determines whether to set the memory to power down mode when the CKE pin is closed. (Default: Disabled)

☞ **Memclock tri-stating**

Determines whether to enable memory clock tri-stating in CPU C3 or Alt VID mode. (Default: Disabled)

***** **System Voltage Optimized** *****

☞ **System Voltage Control**

Determines whether to manually set the system voltages. **Auto** lets the BIOS automatically set the system voltages as required. **Manual** allows all voltage control items below to be configurable. (Default: Auto)

☞ **DRAM Voltage control**

Allows you to set memory voltage.

- ▶▶ Normal Supplies the memory voltage as required. (Default)
- ▶▶ 1.035V ~ 2.145V The adjustable range is from 1.035V to 2.145V.

Note: Increasing memory voltage may result in damage to the memory or reduce the useful life of the memory.

☞ **CPU Voltage Control**

Allows you to set the CPU voltage. **Auto** sets the CPU voltage as required. The adjustable range is dependent on the CPU being installed. (Default: Normal)

Note: Increasing CPU voltage may result in damage to your CPU or reduce the useful life of the CPU.

☞ **CPU NB VID Control**

Allows you to set the CPU North Bridge VID voltage. **Auto** sets the CPU North Bridge VID voltage as required. The adjustable range is dependent on the CPU being installed. (Default: Normal)

Note: Increasing CPU voltage may result in damage to your CPU or reduce the useful life of the CPU.

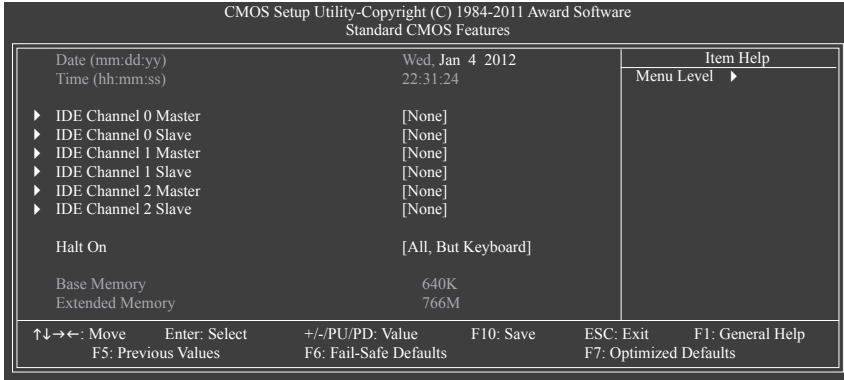
☞ **Normal CPU Vcore**

Displays the normal operating voltage of your CPU.

☞ **Normal CPU Vcore NB**

Displays the normal operating voltage of your CPU North Bridge.

2-4 Standard CMOS Features



☞ **Date (mm:dd:yy)**

Sets the system date.

☞ **Time (hh:mm:ss)**

Sets the system time.

☞ **IDE Channel 0, 1 Master/Slave**

▶▶ IDE HDD Auto-Detection

Press <Enter> to autodetect the parameters of the SATA device on this channel.

▶▶ IDE Channel 0, 1 Master/Slave

Configure your SATA devices by using one of the two methods below:

- Auto Lets the BIOS automatically detect SATA devices during the POST. (Default)
- None If no SATA devices are used, set this item to **None** so the system will skip the detection of the device during the POST for faster system startup.

▶▶ Access Mode Sets the hard drive access mode. Options are: Auto (default), CHS, LBA, Large.

☞ **IDE Channel 2 Master/Slave**

▶▶ IDE Auto-Detection

Press <Enter> to autodetect the parameters of the SATA device on this channel.

▶▶ Extended IDE Drive

Configure your SATA devices by using one of the two methods below:

- Auto Lets the BIOS automatically detect SATA devices during the POST. (Default)
- None If no SATA devices are used, set this item to **None** so the system will skip the detection of the device during the POST for faster system startup.

▶▶ Access Mode Sets the hard drive access mode. Options are: Auto (default), Large.

▶▶ Capacity Approximate capacity of the currently installed hard drive.

☞ **Halt On**

Allows you to determine whether the system will stop for an error during the POST.

Options are: "All Errors," "No Errors," "All, But Keyboard". (Default)

☞ **Memory**

These fields are read-only and are determined by the BIOS POST.

2-5 Advanced BIOS Features

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software Advanced BIOS Features		
		Item Help
Load Line Control	[Auto]	
AMD C1E Support	[Auto]	
Virtualization	[Disabled]	Menu Level ▶
AMD K8 Cool&Quiet control	[Auto]	
CPU Unlock ^(Note)	[Disabled]	
CPU core Control ^(Note)	[Auto]	
x CPU core 0 ^(Note)	Enabled	
x CPU core 1 ^(Note)	Enabled	
x CPU core 2/3/4/5 ^(Note)	Enabled	
▶ Hard Disk Boot Priority	[Press Enter]	
EFI CD/DVD Boot Option	[Auto]	
First Boot Device	[Hard Disk]	
Second Boot Device	[CDROM]	
Third Boot Device	[USB-FDD]	
Password Check	[Setup]	
HDD S.M.A.R.T. Capability	[Disabled]	
Away Mode	[Disabled]	
Full Screen LOGO Show	[Enabled]	
IOMMU support	[Disabled]	
Init Display First	[PCI Slot]	
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

ⓘ Load Line Control

Enables or disables Load Line control. This item allows you to adjust Vdroop at different levels. Enabling Load Line control may keep the CPU voltage more constant under light and heavy CPU load. **Auto** lets the BIOS automatically configure this setting. (Default: Auto)

ⓘ AMD C1E Support

Enables or disables the C1E CPU power-saving function in system halt state. When enabled, the power consumption will be reduced during system halt state.

- ▶▶ Auto If a CPU that supports hardware C1E is installed, the BIOS will automatically enable the hardware C1E function. If not, the C1E function will be disabled. (Default)
- ▶▶ Enabled If a CPU that supports hardware C1E is installed, the BIOS will automatically enable the hardware C1E function. If not, the BIOS will enable the software C1E function.
- ▶▶ Disabled Disables the C1E function.

ⓘ Virtualization

Virtualization allows a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual systems.

(Default: Disabled)

ⓘ AMD K8 Cool&Quiet control

- ▶▶ Auto Lets the AMD Cool'n'Quiet driver dynamically adjust the CPU clock and VID to reduce heat output from your computer and its power consumption. (Default)
- ▶▶ Disabled Disables this function.

ⓘ CPU Unlock ^(Note)

Allows you to determine whether unlock hidden CPU cores. (Default: Disabled)

ⓘ CPU core Control ^(Note)

Allows you to determine whether to manually enable/disable CPU Core 1/2/3/4/5.

- ▶▶ Auto Lets the BIOS to enable all CPU cores (number of cores available depends on the CPU being used). (Default)
- ▶▶ Manual Allows you to individually enable/disable CPU Core 1/2/3/4/5.

(Note) This item is present only when you install a CPU that supports this feature.

- ☞ **CPU core 0** (Note)
This setting is fixed. CPU Core 0 is always enabled.
- ☞ **CPU core 1, 2/3/4/5** (Note)
Enables or disables CPU Core 1/2/3/4/5. (Default: Enabled)
- ☞ **Hard Disk Boot Priority**
Specifies the sequence of loading the operating system from the installed hard drives. Use the up or down arrow key to select a hard drive, then press the plus key <+> (or <PageUp>) or the minus key <-> (or <PageDown>) to move it up or down on the list. Press <Esc> to exit this menu when finished.
- ☞ **EFI CD/DVD Boot Option**
Set this item to **EFI** if you want to install the operating system to a hard drive larger than 2.2 TB. Make sure the operating system to be installed supports booting from a GPT partition, such as Windows 7 64-bit and Windows Server 2003 64-bit. **Auto** lets the BIOS automatically configure this setting depending on the hard drive you install. (Default: Auto)
- ☞ **First/Second/Third Boot Device**
Specifies the boot order from the available devices. Use the up or down arrow key to select a device and press <Enter> to accept. Options are: LS120, Hard Disk, CDROM, ZIP, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, Legacy LAN, Disabled.
- ☞ **Password Check**
Specifies whether a password is required every time the system boots, or only when you enter BIOS Setup. After configuring this item, set the password(s) under the **Set Supervisor/User Password** item in the BIOS Main Menu.

 - ▶▶ Setup A password is only required for entering the BIOS Setup program. (Default)
 - ▶▶ System A password is required for booting the system and for entering the BIOS Setup program.
- ☞ **HDD S.M.A.R.T. Capability**
Enables or disables the S.M.A.R.T. (Self Monitoring and Reporting Technology) capability of your hard drive. This feature allows your system to report read/write errors of the hard drive and to issue warnings when a third party hardware monitor utility is installed. (Default: Disabled)
- ☞ **Away Mode**
Enables or disables Away Mode in Windows XP Media Center operating system. Away Mode allows the system to silently perform unattended tasks while in a low-power mode that appears off. (Default: Disabled)
- ☞ **Full Screen LOGO Show**
Allows you to determine whether to display the GIGABYTE Logo at system startup. **Disabled** displays normal POST message. (Default: Enabled)
- ☞ **IOMMU support**
Enables or disables AMD IOMMU support. (Default: Disabled)
- ☞ **Init Display First**
Specifies the first initiation of the monitor display from the installed PCI graphics card or the PCI Express graphics card.

 - ▶▶ PCI Slot Sets the PCI graphics card as the first display. (Default)
 - ▶▶ PEG Sets the PCI Express graphics card on the PCIEX16 slot as the first display.
 - ▶▶ PEG1 Sets the PCI Express graphics card on the PCIEX4 slot as the first display.

2-6 Integrated Peripherals

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software Integrated Peripherals		Item Help
		Menu Level ▶
OnChip SATA Controller	[Enabled]	
OnChip SATA Type	[Native IDE]	
x OnChip SATA Port4/5 Type	IDE	
x OnChip SATA RAID5 Support	Enabled	
OnChip SATA3.0 Support	[Enabled]	
x OnChip SATA Port as ESP	Press Enter	
Onboard LAN Function	[Enabled]	
Onboard LAN Boot ROM	[Disabled]	
▶ SMART LAN	[Press Enter]	
Onboard Audio Function	[Enabled]	
USB30 Controller	[Enabled]	
USB Controllers	[Enabled]	
USB Legacy Function	[Enabled]	
USB Storage Function	[Enabled]	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
 F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

- ☞ **OnChip SATA Controller (AMD SB950 South Bridge, SATA3 0~5 connectors)**
 Enables or disables the integrated SATA controller. (Default: Enabled)
- ☞ **OnChip SATA Type (AMD SB950 South Bridge, SATA3 0~3 connectors)**
 Configures the operating mode of the integrated SATA3 0~3 controller.
 - ▶▶ Native IDE Allows the SATA controller to operate in Native IDE mode. (Default)
 Enable Native IDE mode if you wish to install operating systems that support Native mode.
 - ▶▶ RAID Enables RAID for the SATA controller.
 - ▶▶ AHCI Configures the SATA controllers to AHCI mode. Advanced Host Controller Interface (AHCI) is an interface specification that allows the storage driver to enable advanced Serial ATA features such as Native Command Queuing and hot plug.
- ☞ **OnChip SATA Port4/5 Type (AMD SB950 South Bridge, SATA3 4/5 connectors)**
 This option is configurable only when **OnChip SATA Type** is set to **RAID** or **AHCI**. Configures the operating mode of the integrated SATA3 4/5 connectors.
 - ▶▶ IDE Disables RAID for the SATA controller and configures the SATA controller to PATA mode. (Default)
 - ▶▶ As SATA Type The mode depends on the **OnChip SATA Type** settings.
- ☞ **OnChip SATA RAID5 Support (AMD SB950 South Bridge, SATA3 0~5 connectors)**
 Enables or disables RAID 5 support for the SATA controller integrated in the AMD SB950 South Bridge. This option is configurable only when **OnChip SATA Type** is set to **RAID**. (Default: Enabled)
- ☞ **OnChip SATA3.0 Support**
 Enables or disables the SATA 6Gb/s function integrated in the South Bridge. When set to **Disabled**, the SATA controller will operate in SATA 3Gb/s mode. (Default: Enabled)
- ☞ **OnChip SATA Port as ESP**

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software OnChip SATA Port as ESP		Item Help
		Menu Level ▶▶
Port0 as ESP	[Disabled]	
Port1 as ESP	[Disabled]	
Port2 as ESP	[Disabled]	
Port3 as ESP	[Disabled]	
x Port4 as ESP	Disabled	
x Port5 as ESP	Disabled	

↑↓→←: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
 F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

☞ **Port0 as ESP/Port1 as ESP/Port2 as ESP/Port3 as ESP**

This option is configurable only when **OnChip SATA Type** is set to **AHCI**. **Enabled** will speed up the hot plug detection of the connected SATA device. (Default: Disabled)

☞ **Port4 as ESP/Port5 as ESP**

This option is configurable only when **OnChip SATA Type** is set to **AHCI** and **OnChip SATA Type Port4/5** is set to **As SATA Type**. **Enabled** will speed up the hot plug detection of the connected SATA device. (Default: Disabled)

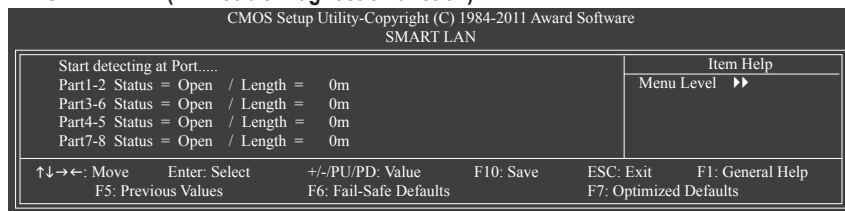
☞ **Onboard LAN Function**

Enables or disables the onboard LAN function. (Default: Enabled) If you wish to install a 3rd party add-in network card instead of using the onboard LAN, set this item to **Disabled**.

☞ **Onboard LAN Boot ROM**

Allows you to decide whether to activate the boot ROM integrated with the onboard LAN chip. (Default: Disabled)

☞ **SMART LAN (LAN Cable Diagnostic Function)**



This motherboard incorporates cable diagnostic feature designed to detect the status of the attached LAN cable. This feature will detect cabling issue and report the approximate distance to the fault or short.

☞ **Onboard Audio Function**

Enables or disables the onboard audio function. (Default: Enabled)

If you wish to install a 3rd party add-in audio card instead of using the onboard audio, set this item to **Disabled**.

☞ **USB30 Controller (Etron EJ168 USB Controller)**

Enables or disables the Etron EJ168 USB controller. (Default: Enabled)

☞ **USB Controllers**

Enables or disables the integrated USB controllers. (Default: Enabled)

Disabled will turn off all of the USB functionalities below.

☞ **USB Legacy Function**

Allows USB keyboard to be used in MS-DOS. (Default: Enabled)

☞ **USB Storage Function**

Determines whether to detect USB storage devices, including USB flash drives and USB hard drives during the POST. (Default: Enabled)

2-7 Power Management Setup

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software Power Management Setup		
		Item Help Menu Level ▶
ACPI Suspend Type	[S3(STR)]	
Soft-Off by Power button	[Instant-off]	
USB Wake Up from S3	[Enabled]	
Modem Ring Resume	[Disabled]	
PME Event Wake Up	[Enabled]	
HPET Support ^(Note)	[Enabled]	
Power On By Mouse	[Disabled]	
Power On By Keyboard	[Disabled]	
x KB Power ON Password	Enter	
AC Back Function	[Soft-Off]	
Power-On by Alarm	[Disabled]	
x Date (of Month)	Everyday	
x Resume Time (hh:mm:ss)	0 : 0 : 0	
ErP Support	[Disabled]	
↑↓ → ← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

☞ **ACPI Suspend Type**

Specifies the ACPI sleep state when the system enters suspend.

- ▶▶ S1(POS) Enables the system to enter the ACPI S1 (Power on Suspend) sleep state.
In S1 sleep state, the system appears suspended and stays in a low power mode.
The system can be resumed at any time.
- ▶▶ S3(STR) Enables the system to enter the ACPI S3 (Suspend to RAM) sleep state (default).
In S3 sleep state, the system appears to be off and consumes less power than in the S1 state. When signaled by a wake-up device or event, the system resumes to its working state exactly where it was left off.

☞ **Soft-Off by Power button**

Configures the way to turn off the computer in MS-DOS mode using the power button.

- ▶▶ Instant-Off Press the power button and then the system will be turned off instantly. (Default)
- ▶▶ Delay 4 Sec. Press and hold the power button for 4 seconds to turn off the system. If the power button is pressed for less than 4 seconds, the system will enter suspend mode.

☞ **USB Wake Up from S3**

Allows the system to be awakened from ACPI S3 sleep state by a wake-up signal from the installed USB device. (Default: Enabled)

☞ **Modem Ring Resume**

Allows the system to be awakened from an ACPI sleep state by a wake-up signal from a modem that supports wake-up function. (Default: Disabled)

☞ **PME Event Wake Up**

Allows the system to be awakened from an ACPI sleep state by a wake-up signal from a PCI or PCIe device. Note: To use this function, you need an ATX power supply providing at least 1A on the +5VSB lead. (Default: Enabled)

☞ **HPET Support ^(Note)**

Enables or disables High Precision Event Timer (HPET) for Windows 7/Vista operating system. (Default: Enabled)

(Note) Supported on Windows 7/Vista operating system only.

☞ **Power On By Mouse**

Allows the system to be turned on by a PS/2 mouse wake-up event.

Note: To use this function, you need an ATX power supply providing at least 1A on the +5VSB lead.

- ▶▶ Disabled Disables this function. (Default)
- ▶▶ Double Click Double click on left button on the PS/2 mouse to turn on the system.

☞ **Power On By Keyboard**

Allows the system to be turned on by a PS/2 keyboard wake-up event.

Note: you need an ATX power supply providing at least 1A on the +5VSB lead.

- ▶▶ Disabled Disables this function. (Default)
- ▶▶ Password Set a password with 1~5 characters to turn on the system.
- ▶▶ Any KEY Press any key on the keyboard to turn on the system.
- ▶▶ Keyboard 98 Press POWER button on the Windows 98 keyboard to turn on the system.

☞ **KB Power ON Password**

Set the password when **Power On by Keyboard** is set to **Password**. Press <Enter> on this item and set a password with up to 5 characters and then press <Enter> to accept. To turn on the system, enter the password and press <Enter>.

Note: To cancel the password, press <Enter> on this item. When prompted for the password, press <Enter> again without entering the password to clear the password settings.

☞ **AC Back Function**

Determines the state of the system after the return of power from an AC power loss.

- ▶▶ Soft-Off The system stays off upon the return of the AC power. (Default)
- ▶▶ Full-On The system is turned on upon the return of the AC power.
- ▶▶ Memory The system returns to its last known awake state upon the return of the AC power.

☞ **Power-On by Alarm**

Determines whether to power on the system at a desired time. (Default: Disabled)

If enabled, set the date and time as following:

- ▶▶ Date (of Month): Turn on the system at a specific time on each day or on a specific day in a month.
- ▶▶ Resume Time (hh: mm: ss): Set the time at which the system will be powered on automatically.

Note: When using this function, avoid inadequate shutdown from the operating system or removal of the AC power, or the settings may not be effective.

☞ **ErP Support**

Determines whether to let the system consume less than 1W power in S5 (shutdown) state. (Default: Disabled)

Note: When this item is set to **Enabled**, the following four functions will become unavailable:

PME event wake up, power on by mouse, power on by keyboard, and wake on LAN.

(Note) Supported on Windows 7/Vista operating system only.

2-8 PC Health Status

CMOS Setup Utility-Copyright (C) 1984-2011 Award Software
PC Health Status

		Item Help
Hardware Thermal Control	[Enabled]	Menu Level ▶
Reset Case Open Status	[Disabled]	
Case Opened	No	
Vcore	1.424V	
DDR15V	1.472V	
+12V	11.985V	
+3.3V	3.280V	
Current System Temperature	36°C	
Current CPU Temperature	39°C	
Current CPU FAN Speed	2360 RPM	
Current SYSTEM FAN1 Speed	0 RPM	
Current SYSTEM FAN2 Speed	0 RPM	
Current POWER FAN Speed	0 RPM	
CPU Warning Temperature	[Disabled]	
CPU FAN Fail Warning	[Disabled]	
SYSTEM FAN1 Fail Warning	[Disabled]	
SYSTEM FAN2 Fail Warning	[Disabled]	
POWER FAN Fail Warning	[Disabled]	
CPU Smart FAN Control	[Enabled]	
CPU Smart FAN Mode	[Auto]	
System Smart FAN Control	[Enabled]	

↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

☞ Hardware Thermal Control

Enables or disables the CPU overheating protection function. When enabled, the CPU core voltage and ratio will be reduced when the CPU is overheated. (Default: Enabled)

☞ Reset Case Open Status

Keeps or clears the record of previous chassis intrusion status. **Enabled** clears the record of previous chassis intrusion status and the **Case Opened** field will show "No" at next boot. (Default: Disabled)

☞ Case Opened

Displays the detection status of the chassis intrusion detection device attached to the motherboard CI header. If the system chassis cover is removed, this field will show "Yes", otherwise it will show "No". To clear the chassis intrusion status record, set **Reset Case Open Status** to **Enabled**, save the settings to the CMOS, and then restart your system.

☞ Current Voltage(V) Vcore/DDR15V/+12V/+3.3V

Displays the current system voltages.

☞ Current System/CPU Temperature

Displays current system/CPU temperature.

☞ Current CPU/SYSTEM/POWER FAN Speed (RPM)

Displays current CPU/system/power fan speed.

☞ CPU Warning Temperature

Sets the warning threshold for CPU temperature. When CPU temperature exceeds the threshold, BIOS will emit warning sound. Options are: Disabled (default), 60°C/140°F, 70°C/158°F, 80°C/176°F, 90°C/194°F.

☞ CPU/SYSTEM/POWER FAN Fail Warning

Allows the system to emit warning sound if the CPU/system/power fan is not connected or fails. Check the fan condition or fan connection when this occurs. (Default: Disabled)

☞ CPU Smart FAN Control

Enables or disables the CPU fan speed control function. **Enabled** allows the CPU fan to run at different speed according to the CPU temperature. You can adjust the fan speed with EasyTune based on system requirements. If disabled, the CPU fan runs at full speed. (Default: Enabled)

☞ CPU Smart FAN Mode

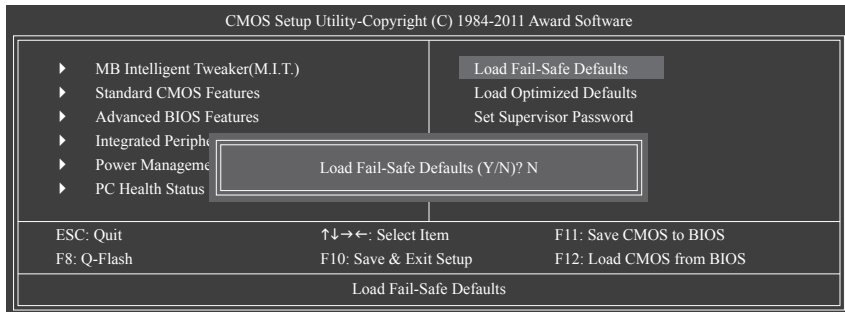
Specifies how to control CPU fan speed. This item is configurable only when **CPU Smart FAN Control** is enabled.

- ▶▶ Auto Lets the BIOS automatically detect the type of CPU fan installed and sets the optimal CPU fan control mode. (Default)
- ▶▶ Voltage Sets Voltage mode for a 3-pin CPU fan.
- ▶▶ PWM Sets PWM mode for a 4-pin CPU fan.

☞ System Smart FAN Control

Enables or disables the system fan speed control function. **Enabled** allows the system fan to run at different speed according to the system temperature. If disabled, system fan runs at full speed. (Default: Enabled)

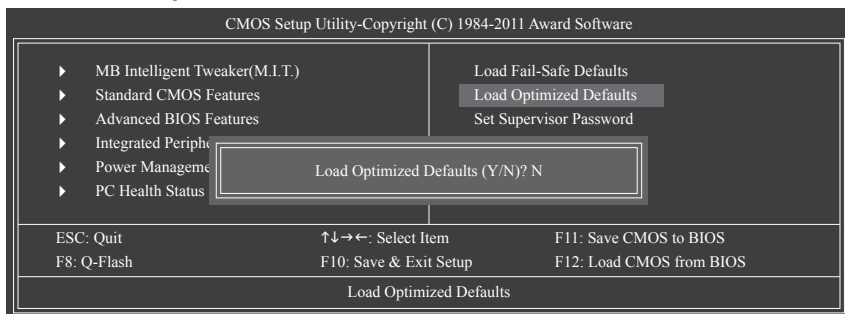
2-9 Load Fail-Safe Defaults



Press <Enter> on this item and then press the <Y> key to load the safest BIOS default settings.

In case system instability occurs, you may try to load Fail-Safe defaults, which are the safest and most stable BIOS settings for the motherboard.

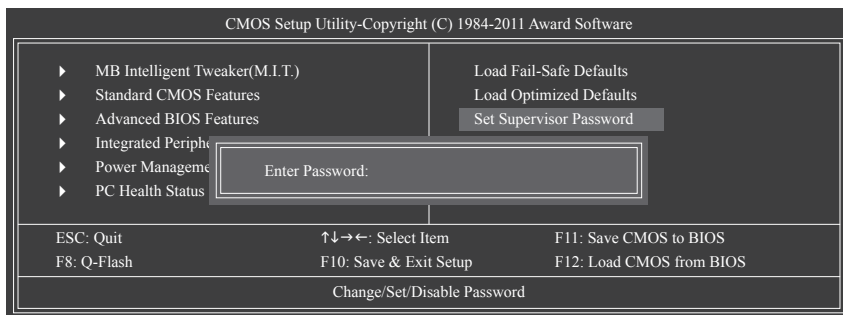
2-10 Load Optimized Defaults



Press <Enter> on this item and then press the <Y> key to load the optimal BIOS default settings.

The BIOS defaults settings help the system to operate in optimum state. Always load the Optimized defaults after updating the BIOS or after clearing the CMOS values.

2-11 Set Supervisor/User Password



Press <Enter> on this item and type the password with up to 8 characters and then press <Enter>. You will be requested to confirm the password. Type the password again and press <Enter>.

The BIOS Setup program allows you to specify two separate passwords:

➤ Supervisor Password

When a system password is set and the **Password Check** item in **Advanced BIOS Features** is set to **Setup**, you must enter the supervisor password for entering BIOS Setup and making BIOS changes.

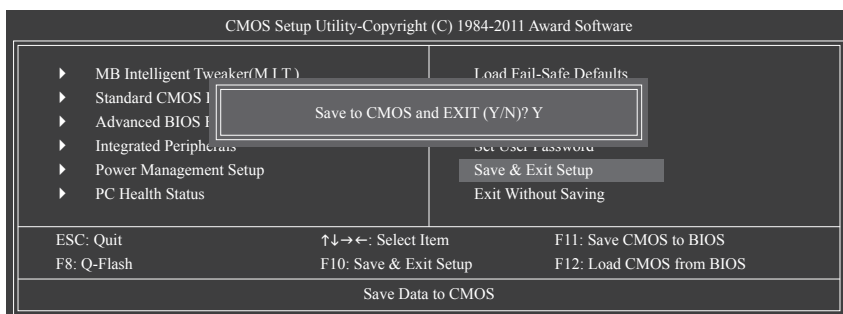
When the **Password Check** item is set to **System**, you must enter the supervisor password (or user password) at system startup and when entering BIOS Setup.

➤ User Password

When the **Password Check** item is set to **System**, you must enter the supervisor password (or user password) at system startup to continue system boot. In BIOS Setup, you must enter the supervisor password if you wish to make changes to BIOS settings. The user password only allows you to view the BIOS settings but not to make changes.

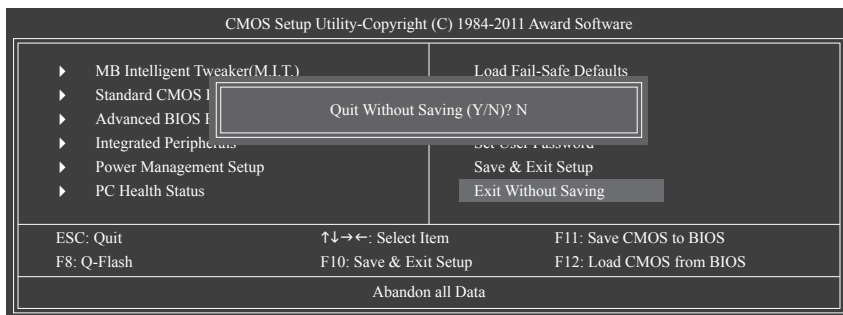
To clear the password, press <Enter> on the password item and when requested for the password, press <Enter> again. The message "PASSWORD DISABLED" will appear, indicating the password has been cancelled.

2-12 Save & Exit Setup



Press <Enter> on this item and press the <Y> key. This saves the changes to the CMOS and exits the BIOS Setup program. Press <N> or <Esc> to return to the BIOS Setup Main Menu.

2-13 Exit Without Saving



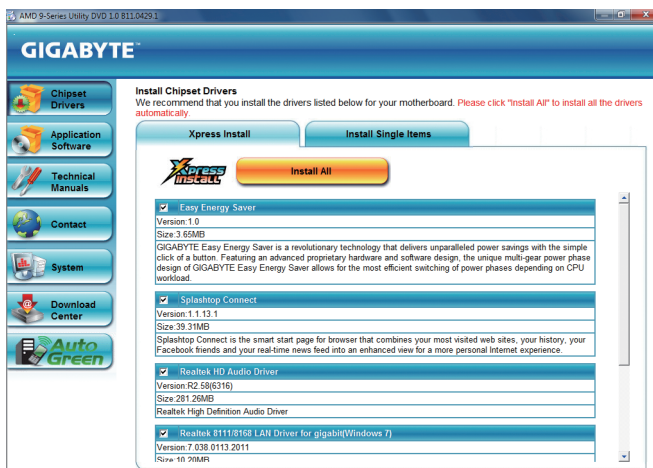
Press <Enter> on this item and press the <Y> key. This exits the BIOS Setup without saving the changes made in BIOS Setup to the CMOS. Press <N> or <Esc> to return to the BIOS Setup Main Menu.

Chapter 3 Drivers Installation



- Before installing the drivers, first install the operating system.
- After installing the operating system, insert the motherboard driver disk into your optical drive. The driver Autorun screen is automatically displayed which looks like that shown in the screen shot below. (If the driver Autorun screen does not appear automatically, go to My Computer, double-click the optical drive and execute the **Run.exe** program.)

After inserting the driver disk, "Xpress Install" will automatically scan your system and then list all the drivers that are recommended to install. You can click the **Install All** button and "Xpress Install" will install all the recommended drivers. Or click **Install Single Items** to manually select the drivers you wish to install.



Chapter 4 Appendix

4-1 Configuring SATA Hard Drive(s)

Before you begin

Please prepare:

- At least two SATA hard drives (to ensure optimal performance, it is recommended that you use two hard drives with identical model and capacity). If you do not want to create RAID, you may prepare only one hard drive.
- Windows 7/Vista/XP setup disk.
- Motherboard driver disk.
- A USB floppy disk drive (needed during Windows XP installation).
- An empty formatted floppy disk (needed during Windows XP installation).

Configuring the Onboard SATA Controller

A. Installing SATA hard drive(s) in your computer

Attach one end of the SATA signal cable to the rear of the SATA hard drive and the other end to available SATA port on the motherboard. Then connect the power connector from your power supply to the hard drive.

B. Configuring SATA controller mode in BIOS Setup

Make sure to configure the SATA controller mode correctly in system BIOS Setup. For the BIOS Setup menus, refer to Chapter 2, "BIOS Setup," "Integrated Peripherals."

Steps:

1. Turn on your computer and press <Delete> to enter BIOS Setup during the POST (Power-On Self-Test). Ensure **OnChip SATA Controller** is enabled under **Integrated Peripherals**. To enable RAID for the SATA3 0/1/2/3 connectors, set **OnChip SATA Type** to **RAID**. To enable RAID for the SATA2 4/SATA2 5 connectors, set **OnChip SATA Type** to **RAID** and set **OnChip SATA Port4/5 Type** to **As SATA Type**.
2. Save changes and exit BIOS Setup.



The BIOS Setup menus described in this section may differ from the exact settings for your motherboard. The actual BIOS Setup menu options you will see shall depend on the motherboard you have and the BIOS version.

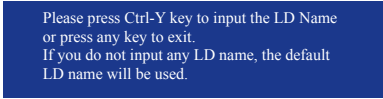
C. Configuring RAID set in RAID BIOS

Enter the RAID BIOS setup utility to configure a RAID array. After the POST memory test begins and before the operating system boot begins, look for a message which says "Press <Ctrl-F> to enter RAID Option ROM Utility". Press <Ctrl> + <F> to enter the RAID BIOS setup utility. To create a new array, press <2> to enter the **LD View/LD Define Menu** window. To create an array, press <Ctrl+C> to access the **LD Define Menu**. In the **LD Define Menu**, use the up or down arrow key to move to an item for further configuration. In the following procedure, we'll create RAID 0 as an example.

Steps:

1. Under the **RAID Mode** section, press the <SPACE> key to select **RAID 0**.
2. Set the **Stripe Block** size. **64 KB** is the default.
3. Under the **Drives Assignments** section, press the up or down arrow key to highlight a drive.
4. Press the <SPACE> key or <Y> to change the **Assignment** option to **Y**. This action adds the drive to the disk array. The **Drv** section will show the number of disks assigned.

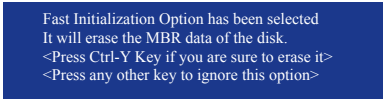
5. Press <Ctrl>+<Y> keys to save the information. The message in Figure 1 will appear. Press <Ctrl>+<Y> to input the array name. If you do not input the array name, the default array name will be used.



Please press Ctrl-Y key to input the LD Name
or press any key to exit.
If you do not input any LD name, the default
LD name will be used.

Figure 1

6. When the next message appears, press <Ctrl>+<Y> to clear the MBR or press other keys to ignore this option.



Fast Initialization Option has been selected
It will erase the MBR data of the disk.
<Press Ctrl-Y Key if you are sure to erase it>
<Press any other key to ignore this option>

Figure 2

7. Then, the message in Figure 3 will appear. Press <Ctrl>+<Y> to set the capacity of the RAID array or press other keys to set the array to its maximum capacity.



Press Ctrl-Y to Modify Array Capacity or press any
other key to use maximum capacity...

Figure 3

8. After the creation is complete, the screen will return to **LD View Menu** where you will see the newly-created array.
9. Press <Esc> to return to **Main Menu** and press <Esc> again if you want to exit the RAID BIOS utility.

Making a SATA RAID Driver Diskette

Before installing Windows XP, connect a USB floppy disk drive to your computer first because you need to install the SATA RAID/AHCI driver from a floppy disk that contains the driver during the OS installation. To copy the RAID driver for Windows XP, copy all files in the **\\BootDrv\\SBxxx\\x86** folder in the motherboard driver disk to your floppy disk. (To install Windows 64-bit, copy the files in the **x64** folder.)

Installing the SATA RAID Driver and Operating System

A. Installing Windows XP

Restart your system to boot from the Windows XP setup disk and press <F6> as soon as you see the message "Press F6 if you need to install a 3rd party SCSI or RAID driver." Insert the floppy disk containing the SATA RAID driver. Follow the on-screen instructions to install the driver that suits your operating system. When completed, proceed with the Windows XP installation.

B. Installing Windows 7/Vista

Restart your system to boot from the Windows 7/Vista setup disk and perform standard OS installation steps. Select **Load Driver**. Insert the motherboard driver disk and then browse to the location of the driver. Then follow the on-screen instructions to load the driver. The locations of the drivers for Windows 7 are as follows:

RAID driver for Windows 32-bit: \\BootDrv\\SBxxxW7\\RAID\\W7

RAID driver for Windows 64-bit: \\BootDrv\\SBxxxW7\\RAID\\W764A

After loading the driver, continue the OS installation.

4-2 Regulatory Statements

Regulatory Notices

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Our Commitment to Preserving the Environment

In addition to high-efficiency performance, all GIGABYTE motherboards fulfill European Union regulations for RoHS (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) and WEEE (Waste Electrical and Electronic Equipment) environmental directives, as well as most major worldwide safety requirements. To prevent releases of harmful substances into the environment and to maximize the use of our natural resources, GIGABYTE provides the following information on how you can responsibly recycle or reuse most of the materials in your "end of life" product.

Restriction of Hazardous Substances (RoHS) Directive Statement

GIGABYTE products have not intended to add and safe from hazardous substances (Cd, Pb, Hg, Cr+6, PBDE and PBB). The parts and components have been carefully selected to meet RoHS requirement. Moreover, we at GIGABYTE are continuing our efforts to develop products that do not use internationally banned toxic chemicals.

Waste Electrical & Electronic Equipment (WEEE) Directive Statement

GIGABYTE will fulfill the national laws as interpreted from the 2002/96/EC WEEE (Waste Electrical and Electronic Equipment) directive. The WEEE Directive specifies the treatment, collection, recycling and disposal of electric and electronic devices and their components. Under the Directive, used equipment must be marked, collected separately, and disposed of properly.

WEEE Symbol Statement



The symbol shown below is on the product or on its packaging, which indicates that this product must not be disposed of with other waste. Instead, the device should be taken to the waste collection centers for activation of the treatment, collection, recycling and disposal procedure. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

For more information about where you can drop off your waste equipment for recycling, please contact your local government office, your household waste disposal service or where you purchased the product for details of environmentally safe recycling.

- ◆ When your electrical or electronic equipment is no longer useful to you, "take it back" to your local or regional waste collection administration for recycling.
- ◆ If you need further assistance in recycling, reusing in your "end of life" product, you may contact us at the Customer Care number listed in your product's user's manual and we will be glad to help you with your effort.

Finally, we suggest that you practice other environmentally friendly actions by understanding and using the energy-saving features of this product (where applicable), recycling the inner and outer packaging (including shipping containers) this product was delivered in, and by disposing of or recycling used batteries properly. With your help, we can reduce the amount of natural resources needed to produce electrical and electronic equipment, minimize the use of landfills for the disposal of "end of life" products, and generally improve our quality of life by ensuring that potentially hazardous substances are not released into the environment and are disposed of properly.



Contact Us

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Tech. and Non-Tech. Support (Sales/Marketing) : <http://ggts.gigabyte.com.tw>

WEB address (English): <http://www.gigabyte.com>

WEB address (Chinese): <http://www.gigabyte.tw>

You may go to the GIGABYTE website, select your language in the language list on the top right corner of the website.

- **GIGABYTE Global Service System**

GIGABYTE  **GTS** Global Technical Service

Welcome to GIGABYTE Service system. If you are a GIGABYTE Passport member, please login with your membership E-Mail address and password. Otherwise, you can simply enter E-Mail address to login.

✉ Your Email:

Your Password: [Forgot password](#)

English 繁體中文 Deutsch 简体中文
Français Polski Español

To submit a technical or non-technical (Sales/Marketing) question, please link to:

<http://ggts.gigabyte.com.tw>

Then select your language to enter the system.