

Intel® Core 2 Duo/Pentium® Dual-Core/Celeron® 5XX series

Mini ITX Motherboard

MX965GME

Version 1.02

User's Manual

<http://www.bcmcom.com>

Note: Manual Subject to change without notice

FCC Statement



THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS
SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING
INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS
FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.
THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST
HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A
COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN
RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN
ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL
INTERFERENCE TO RADIO COMMUNICATIONS.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE
HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO
CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

Notice

This guide is designed for experienced users to setup the system within the shortest time.

For detailed information, please always refer to the electronic user's manual.

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This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by BCM, or which have been subject to misuse, abuse, accident or improper installation. BCM assumes no liability under the terms of this warranty as a consequence of such events. Because of BCM high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If any of BCM products is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details. If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU type and speed, BCM products model name, hardware & BIOS revision number, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your good return more quickly.
4. Carefully pack the defective product, a complete Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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Chapter 1

Getting Started

Thank you for choosing the MX965GME Mini ITX motherboard from BCM.

Based on the innovative Intel® GME965 & ICH8M controllers for optimal system efficiency, the MX965GME accommodates the latest Intel® Core™ 2 Duo / Pentium® Dual-Core / Celeron® 5XX series processors in Socket P and supports two 240-pin 533/667MHz DDRII DIMM to provide the maximum of 4GB memory capacity .

In the entry-level and mid-range market segment, the MX965GME can provide a high-performance solution for today's front-end and general purpose workstation, as well as in the future.

Mainboard Specifications

Processor

- Intel Core 2 Duo/Pentium Dual-Core/Celeron 5xx CPU in SocketP
- Supports 3-pin CPU fan pin-header with Fan Speed Control
- Supports Intel Dual Core Technology up to 800MHz

Supported FSB

- 533/667/800MHz

Chipset

- North Bridge: Intel GME965 chipset
- South Bridge: Intel ICH8M chipset

Memory

- DDR2 533/667 SDRAM (4GB Max)
- 2 DDR2 DIMM slots (240pin / 1.8V)

LAN

- Supports 2 Gb Ethernet by Intel 82573L & 82566DC

Audio

- HDA Codec by Realtek ALC888 7.1 channel
- Compliant with Azalia 1.0 specs
- 6 watt amplifier

IDE

- 1 IDE port by ICH8M
- Supports Ultra DMA 66/100 mode
- Supports PIO, Bus Master operation mode

SATA

- SATA II ports by ICH8M
- Supports two SATA II devices
- Supports storage and data transfers at up to 300MB/s

Connectors

● Back Panel

- 1 HDMI connector
- 2 RJ-45 LAN jacks and 4 USB 2.0 ports
- 1 D-Sub VGA and 1 DVI connector
- 1 serial port

- 1 PS2 keyboard/mouse port
- 3 audio jacks

- **Onboard Connectors**

- 2 USB 2.0 connectors (4 ports)
- 1 parallel port connector
- 1 amplifier connector (4-pin)
- 1 LVDS connector
- 1 TV-out connector
- 1 digital I/O connector (16GPIO)
- 1 serial port connector
- 1 front panel connector
- 1 front lan led connector

Slots

- 1 PCI Express x4 slot
(Must use a right angle PCI Express X4 riser card due to lack of clearance.)
- 1 Mini PCI-E slot
- 1 PCI 32-bit/33MHz slot
- 1 CF socket

Form Factor

- Mini ITX: 170mm x 170mm

Mounting

- 4 mounting holes

Environmental

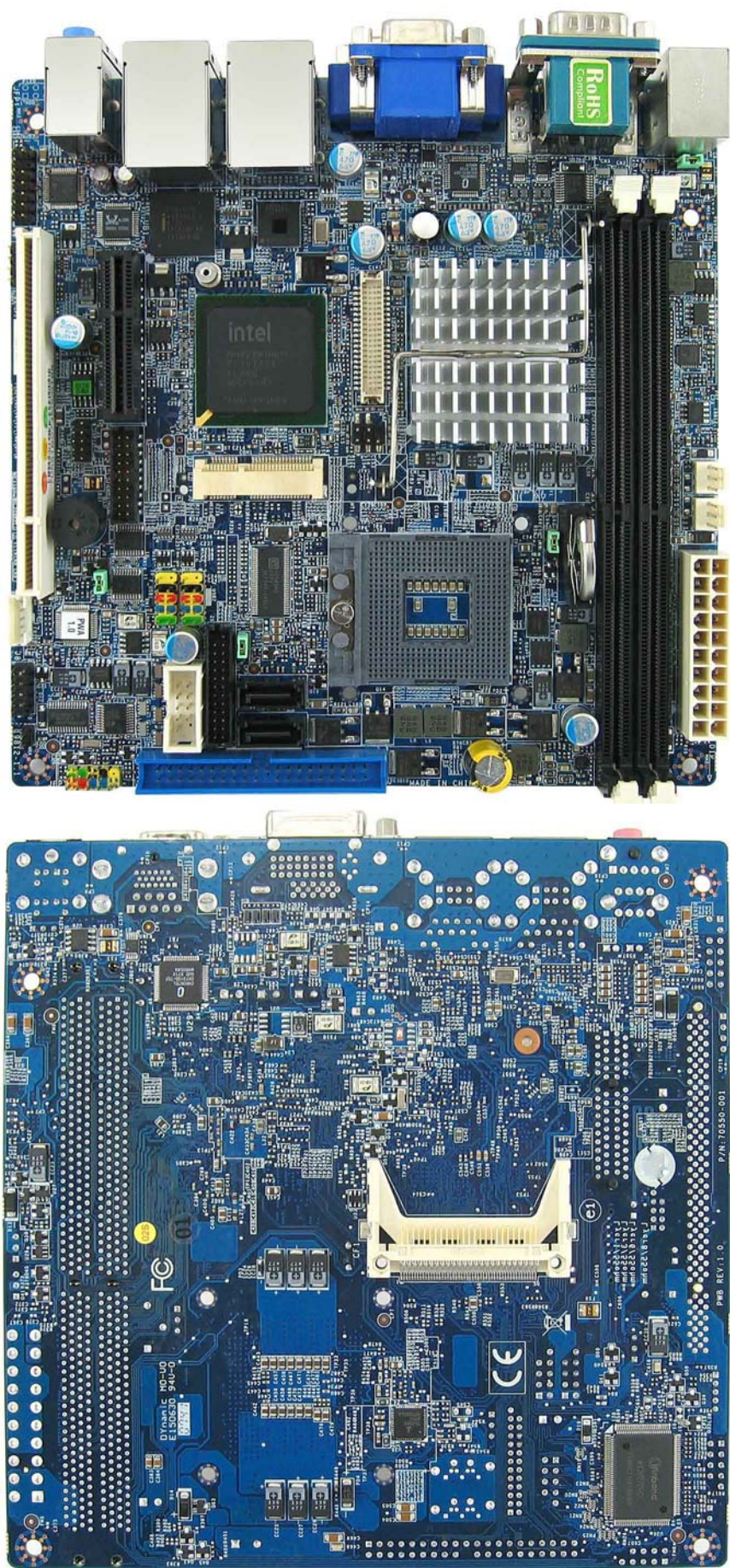
- **Storage Temperature**

- Temperature: -20°C ~ 80°C
- Humidity: 0% RH ~ 95% RH

- **Operation Temperature**

- Temperature: 0°C ~ 55°C
- Humidity: 0% RH ~ 85% RH

Motherboard Layout





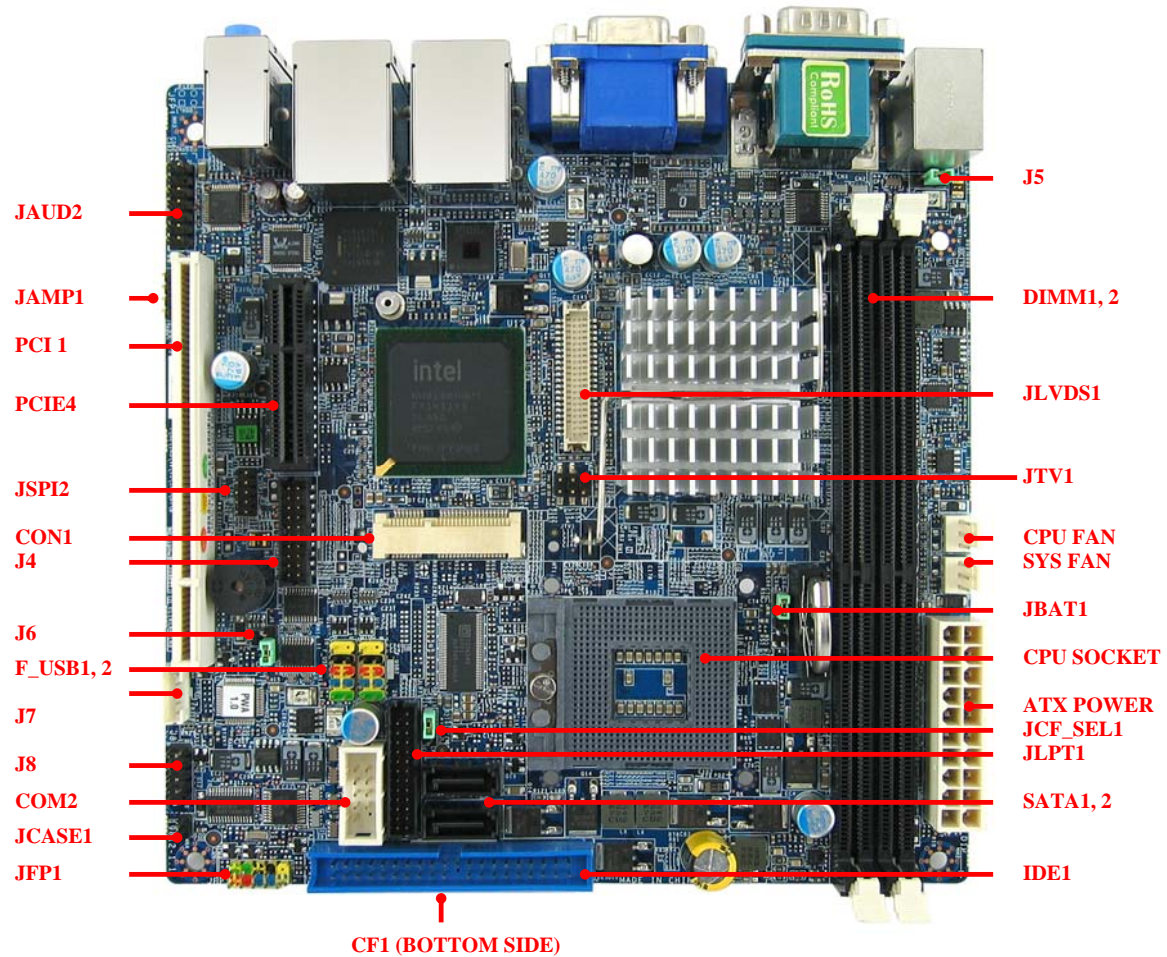
Chapter 2

Hardware Setup

This chapter provides you with the information about hardware setup procedures. While doing the installation, be careful in holding the components and follow the installation procedures. For some components, if you install in the wrong orientation, the components will not work properly.

Use a grounded wrist strap before handling computer components. Static electricity may damage the components.

Quick Components Guide



MX965GME Mini ITX Motherboard

CPU (Central Processing Unit)

The mainboard supports **Intel® Core 2 Duo/Pentium® Dual-Core/Celeron® 5xx** processors in Socket P. When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.



Important

1. *Overheating will seriously damage the CPU and system. Always make sure the cooling fan can work properly to protect the CPU from overheating.*
2. *Make sure that you apply an even layer of heat sink paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.*
3. *While replacing the CPU, always turn off the power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.*

CPU & Cooler Installation for Socket P

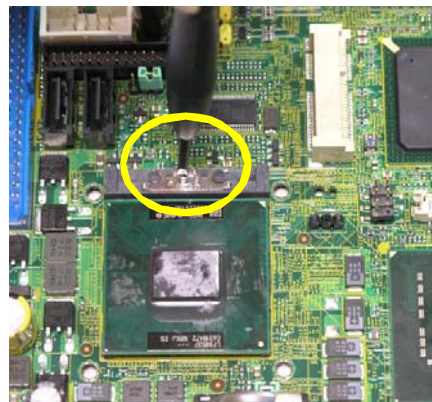
1. Locate the CPU socket on the mainboard.



2. Place the CPU on top of the socket. Make sure to align the gold arrow on the CPU with the arrow key on the socket.
3. Push the CPU down until its pins securely fit into the socket.



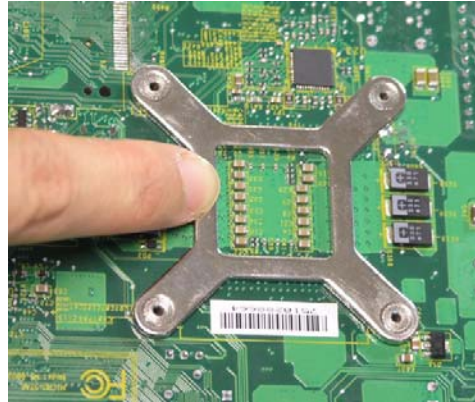
4. On the front end of the CPU socket is a locking mechanism designed into the form of a screw head. Make sure that you actuate or deactivate this mechanism with a screwdriver before and after installing the CPU.



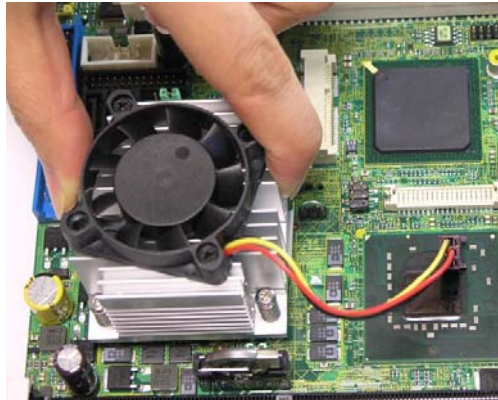
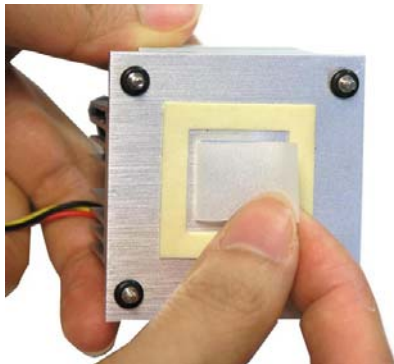
5. Flip over the mainboard and locate the position of the CPU socket.
6. Install the backplate to the back of the CPU socket with holes aligned.



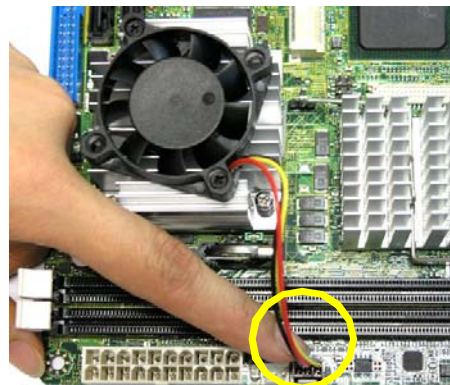
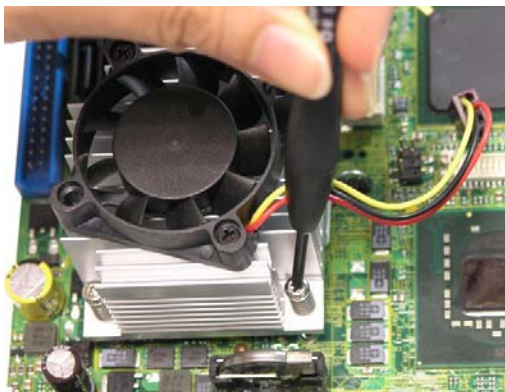
CPU cooler backplate



7. The heatsink paste helps to enhance heat dissipation of the CPU. Before installing the cooler set (fan & heatsink bundled), make sure that you detach the shield of the heatsink paste under the cooler set.
8. Locate the four screw holes around the CPU socket where the CPU cooler backplate was installed. Align the cooler set with the screw holes and mount it on top of the CPU.

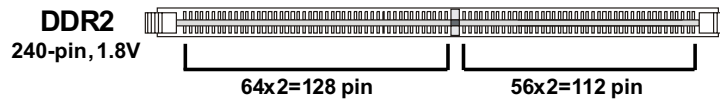


9. Screw to secure the cooler set to the mainboard.
10. Connect the fan power cable to the CPUFAN1 connector on the mainboard.



Memory

The DIMM slots are intended for system memory modules.



Installing DDR2 Modules

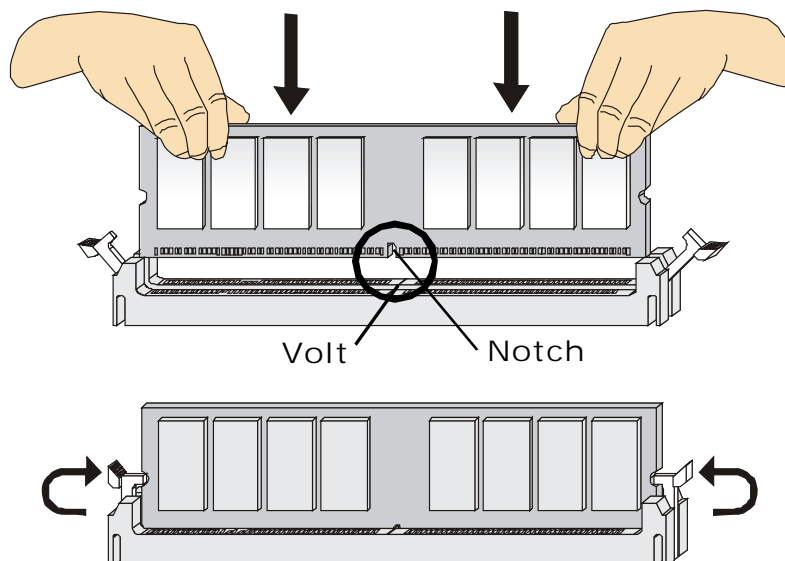
1. The memory module has only one notch on the center and will only fit in the right orientation.
2. Insert the memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the DIMM slot.



Important

You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.

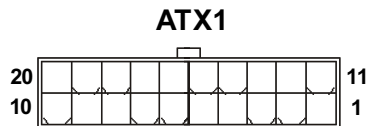
3. The plastic clip at each side of the DIMM slot will automatically close.



Power Supply

ATX 20-Pin System Power Connector: ATX1

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



ATX1 Pin Definition

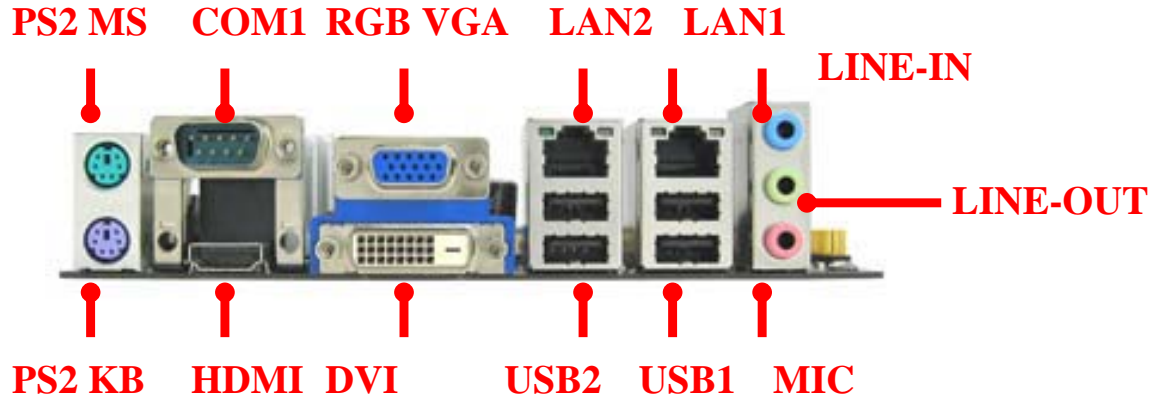
PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V



Important

Power supply of **350watts** (and above) is highly recommended for system stability.

Back Panel



► Mouse/Keyboard

The standard PS/2® mouse/keyboard DIN connector is for a PS/2® mouse/keyboard.

► Serial Port

The serial port is a 16550A high speed communications port that sends/ receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.

► VGA Port

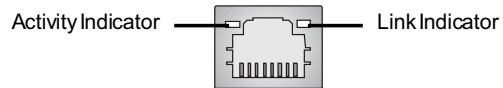
The DB15-pin female connector is provided for monitor.

► USB Port

The USB (Universal Serial Bus) port is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices.

► LAN

The standard RJ-45 LAN jack is for connection to the Local Area Network (LAN). You can connect a network cable to it.



LED	Color	LED State	Condition
Left	Orange	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (brighter & pulsing)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.
	Orange	On	1000 Mbit/sec data rate is selected.

► Audio Ports

These audio connectors are used for audio devices. You can differentiate the color of the audio jacks for different audio sound effects.

- **Line-In (Blue)** - Line In / Side-Surround Out in 7.1 channel mode, is used for external CD player, tapeplayer or other audio devices.
- **Line-Out (Green)** - Line Out, is a connector for speakers or headphones.
- **Mic (Pink)** - Mic, is a connector for microphones.

► HDMI and DVI Ports

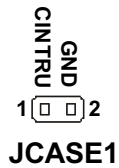
This The HDMI and DVI ports are for digital video output.

Note: It is not recommended to use a HDMI-to-DVI adaptor on HDMI port

Connector

Chassis Intrusion Connector: JCASE1

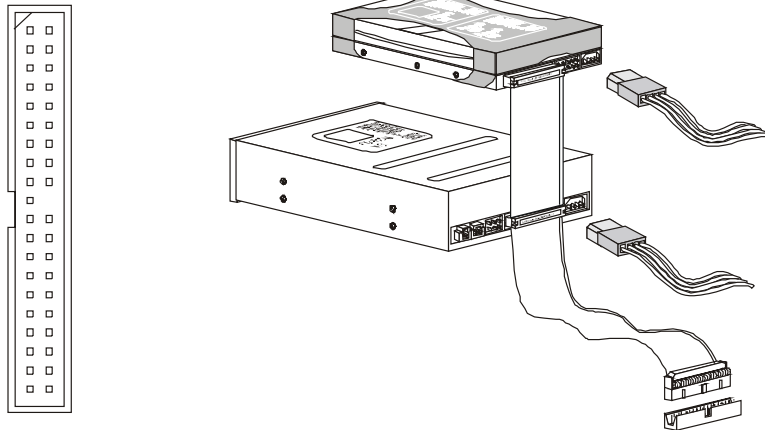
This connector connects to the chassis intrusion switch cable. If the chassis is opened, the chassis intrusion mechanism will be activated. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.



IDE Connector: IDE1

This connector supports IDE hard disk drives, optical disk drives and other IDE devices.

IDE1



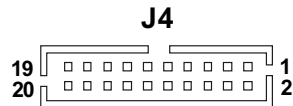
Important

If you install two IDE devices on the same cable, you must configure the drives separately to master / slave mode by setting jumpers. Refer to IDE device's documentation supplied by the vendors for jumper setting instructions.

Digital IO Connector: J4

The J4 is designed to connect the General-Purpose Input/Output (GPIO) peripheral module.

Pin Definition

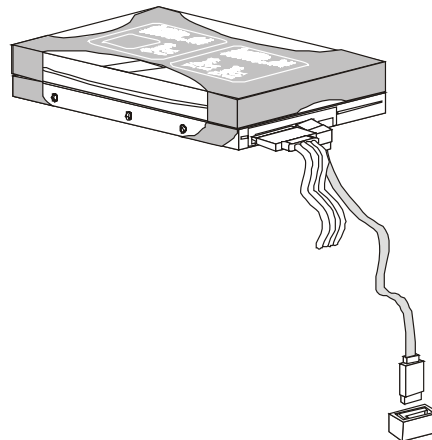
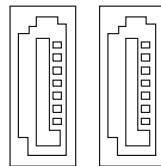


PIN	SIGNAL	PIN	SIGNAL
1	VCC3	2	VCC5
3	N_GPIO10	4	N_GPIO20
5	N_GPIO11	6	N_GPIO21
7	N_GPIO12	8	N_GPIO22
9	N_GPIO13	10	N_GPIO23
11	N_GPIO14	12	N_GPIO24
13	N_GPIO15	14	N_GPIO25
15	N_GPIO16	16	N_GPIO26
17	N_GPIO17	18	N_GPIO27
19	GND	20	NC

Serial ATA II Connector: SATA1, SATA2

This connector is a high-speed Serial ATA II interface port. Each connector can connect to one Serial ATA II device.

SATA2 SATA1



Important

Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, data loss may occur during transmission.

Audio Amplifier Connector: JAMP1

The JAMP1 is used to connect audio amplifiers to enhance audio performance.



PIN	SIGNAL
1	AMP_L-
2	AMP_L+
3	AMP_R-
4	AMP_R+

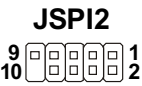
Front Audio Connector: JAUD2

The JAUD2 is used to connect audio to front panel.

Pin	Signal Name	Pin	Signal Name
1	AVDD5V	2	VCC3
3	PDF0	4	NA
5	GND	6	SPDF1
7	LEF_OUT	8	SUR_OUT_R
9	CEN_OUT	10	SUR_OUT_L
11	JAUD_DET	12	AUDIO_GND
13	SIDE_L	14	SIDE_R

SPI Flash ROM Connector: JSPI2

This connector is used to flash SPI flash ROM.

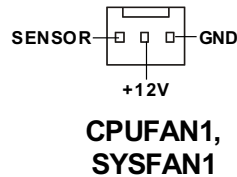


Pin Definition

Pin	Description	Pin	Description
1	VCC3_SB	2	VCC3_SB
3	SPI_MISO_F	4	SPI_MOSI_F
5	SPI_CS0_F#	6	SPI_CLK_F
7	GND	8	GND
9	SPI_HOLD#	10	NC

Fan Power Connectors: CPUFAN1, SYSFAN1

The fan power connectors support system cooling fan with +12V. When connecting the wire to the connectors, always note that the red wire is the positive and should be connected to the +12V; the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.

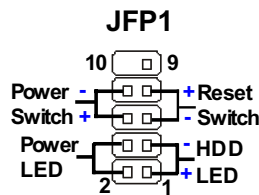


Important

Please refer to the recommended CPU fans at Intel® official website or consult the vendors for proper CPU cooling fan.

Front Panel Connector: JFP1

The mainboard provides one front panel connector for electrical connection to the front panel switches and LEDs. The JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.



JFP1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	HD_LED +	Hard disk LED pull-up
2	FPPWR/SLP	MSG LED pull-up
3	HD_LED -	Hard disk active LED
4	FPPWR/SLP	MSG LED pull-up
5	RST_SW -	Reset Switch low reference pull-down to GND
6	PWR_SW +	Power Switch high reference pull-up
7	RST_SW +	Reset Switch high reference pull-up
8	PWR_SW -	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

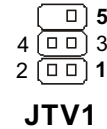
TV-Out Connector: JTV1

This connector is for you to attach an optional TV-Out bracket that offers two types of TV-Out connectors: S-Video and RCA Composite connectors. Select the appropriate one to connect the standard television or the HDTV (High-Definition TeleVision).

Display Matrix (For Windows Display)

	CRT	LVDS	TV-OUT	HDMI	DVI (Digital)
CRT		V	V	V	V
LVDS	V		V	V	V
TV-OUT	V	V		V	V
HDMI	V	V	V		V
DVI	V	V	V	V	

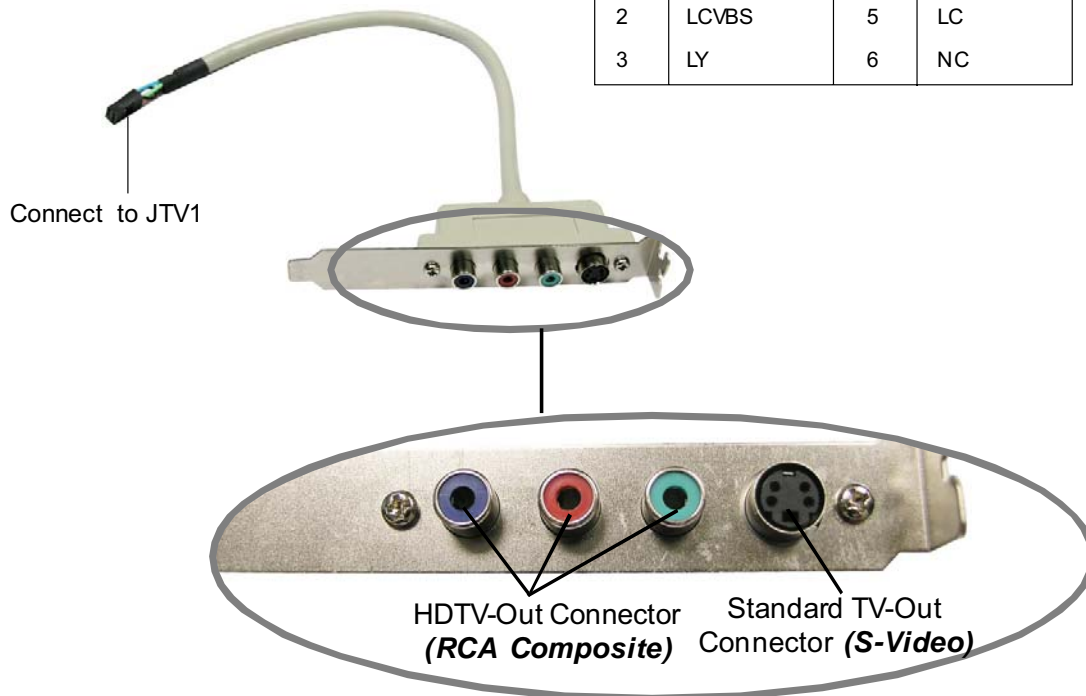
V : Support



Pin Definition

Pin	Description	Pin	Description
1	GND	4	GND
2	LCVBS	5	LC
3	LY	6	NC

TV-Out Bracket (Optional)

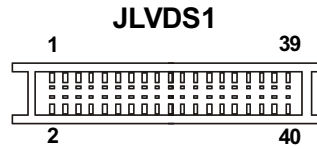


Important

Please note that the TV-Out bracket can connect to one TV only. Users have to choose either the RCA Composite or the S-Video to connect. Simultaneously connecting two TVs to this bracket is prohibited and may lead to the malfunction of the TVs.

LVDS Flat Panel Connector: JLVDS1

The LVDS (Low Voltage Differential Signal) connector provides a digital interface typically used with flat panels.



LVDS Connector (JLVDS1)

Signal	Pin	Pin	Signal
VDD_SAFE3	2	1	VDD_SAFE3
VDD_SAFE5	4	3	VDD_SAFE5
DDC_DATA	6	5	DDC_CLK
GND	8	7	GND
LA_DATA0	10	9	LA_DATA1
LA_DATA0#	12	11	LA_DATA1#
GND	14	13	GND
LA_DATA2	16	15	LA_DATA3
LA_DATA2#	18	17	LA_DATA3#
GND	20	19	GND
LB_DATA0	22	21	LB_DATA1
LB_DATA0#	24	23	LB_DATA1#
GND	26	25	GND
LB_DATA2	28	27	LB_DATA3
LB_DATA2#	30	29	LB_DATA3#
GND	32	31	GND
LA_CLK	34	33	LB_CLK
LA_CLK#	36	35	LB_CLK#
GND	38	37	GND
+12V	40	39	+12V

Inverter Power/ Control Connector: J7

Provide the Power and brightness control to the inverter and output to LVDS panel.

Pin	Signal
1	12V
2	GND
3	INV_ON
4	BKLT_CTRL
5	VCC5

Front USB Connector: F_USB1, F_USB2

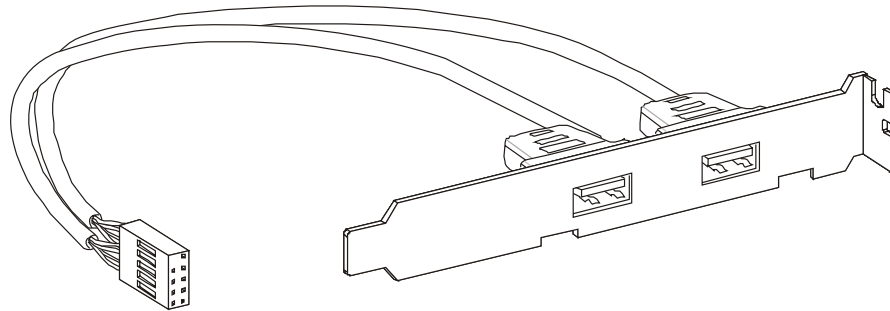
This connector, compliant with Intel® I/O Connectivity Design Guide, is ideal for connecting high-speed USB interface peripherals such as **USB HDD, digital cameras, MP3 players, printers, modems and the like.**

Pin Definition



PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key (no pin)	10	NC

USB 2.0 Bracket
(Optional)

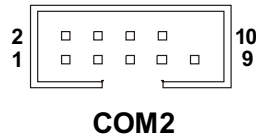


Important

Note that the pins of VCC and GND must be connected correctly to avoid possible damage.

Serial Port Connector: COM 2

This connector is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. You can attach a serial device to it through the optional serial port bracket.

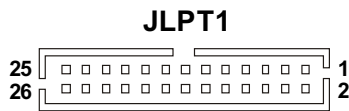


Pin Definition

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	VCC_COM3	Power Source

Parallel Port Connector: JLPT1

The mainboard provides a 26-pin header for connection to an optional parallel port bracket. The parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.



Pin	Signal Name	Pin	Signal Name
1	RSTB#	2	AFD#
3	PRND0	4	ERR#
5	PRND1	6	PINIT#
7	PRND2	8	LPT_SLIN#
9	PRND3	10	GND
11	PRND4	12	GND
13	PRND5	14	GND
15	PRND6	16	GND
17	PRND7	18	GND
19	ACK#	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	GND



Parallel/Serial Port Bracket

Jumper

Front Panel LAN LED: J8

Provide LAN Status to the front panel.

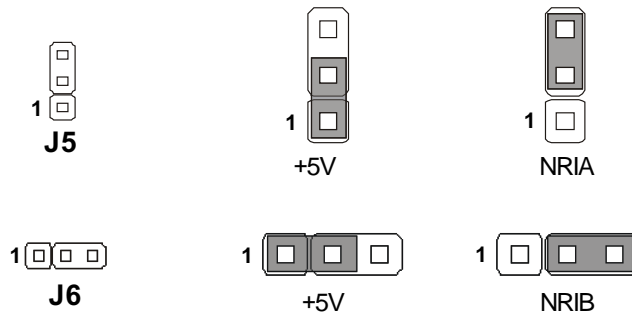
9 10 1 2

Pin Definition

Pin	Description	Pin	Description
1	LAN1_LED	2	LAN2_LED
3	LAN1_LED_1	4	LAN2_LED_1
5	LAN1_LED	6	LAN2_LED
7	LAN1_LED_11	8	LAN2_LED_11
9	NC	10	NC

COM Port Power Jumpers: J5, J6

These jumpers specify the operation voltage of the onboard serial ports.



Clear CMOS Jumper: JBAT1

There is a CMOS RAM onboard that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, set this jumper to clear data.



Important

You can clear CMOS by shorting 1-2 pin while the system is off. Then return to 2-3 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

Slot

PCI (Peripheral Component Interconnect) Express Slot

The PCI Express x 4 slot supports PCI Express interface expansion card up to 2.0 GB/s transfer rate. (Note: Must use a right angle PCIE x4 riser card when using this slot.)

The CON1 is Mini PCI-E connector for wireless LAN, TV tuner, and Robson NAND Flash.



PCI Express x4 Slot



Mini PCI-E Slot

PCI (Peripheral Component Interconnect) Slot

The PCI slot supports LAN card, SCSI card, USB card, and other add-on cards that comply with PCI specifications.



32-bit PCI Slot

PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus pins as follows:

DEVICE	INT Pin	IDSEL	CLOCK	REQ# / GNT#
32-bit PCI Slot	PIRQA	AD17	PCICLK 0	REQ#0 / GNT#0
32-bit PCI Riser	PIRQC	AD18	PCICLK 1	REQ#1 / GNT#1
32-bit PCI Riser	PIRQD	AD19	PCICLK 2	REQ#2 / GNT#2

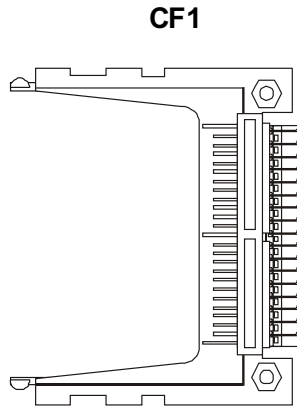


Important

When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

CompactFlash Card Slot: CF1

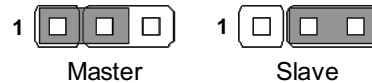
This CompactFlash slot shares one channel of the IDE controller. You can install one CompactFlash type I / type II device.



CF Mode Selecting Jumper: JCF_SEL1

This jumper is used to select Master/ Slave mode of the CF device.

JCF_SEL1



Important

- * The CF1 slot and the IDE1 connector shares and uses the same channel. CF1 and IDE1 can support up to 2 IDE devices without CF device or 1 IDE device with 1 CF device.
- * If you install two IDE devices, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.
- * If you install one IDE device with ATA133 IDE cable and one CF device, you must configure the CF drive to Master mode by setting jumper JCF_SEL1. CF only supports Master mode by using the ATA133 IDE cable.
- * CF only supports Slave mode by using ATA33 IDE cable.

Chapter 3

BIOS Setup

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use.

You may need to run the Setup program when:

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

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press key to enter Setup.

Press Del to enter SETUP

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



Important

1. *The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.*
2. *Upon boot-up, the 1st line appearing after the memory count is the BIOS version. It is usually in the format:*

MX965GME #70551 BIOS V1.0 where:

*1st word refers to model name.
2nd word refers to the model number.
V1.0 refers to the BIOS version.*

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F6>	Load Optimized Defaults
<F7>	Load Fail-Safe Defaults
<F10>	Save all the CMOS changes and exit

Getting Help

After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub-Menu

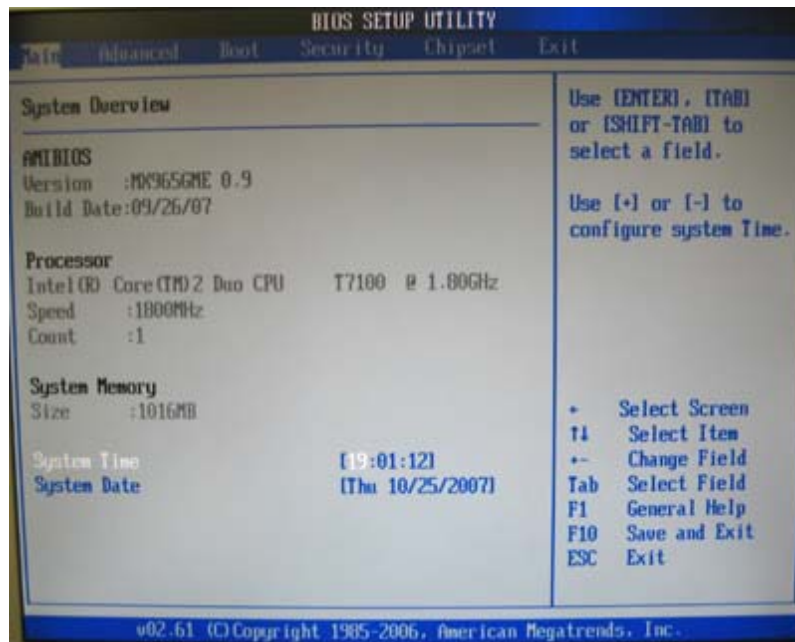
If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc>.

► Primary IDE Master
► Primary IDE Slave

General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

The Menu Bar



► Main

Use this menu for basic system configurations, such as time, date etc.

► Advanced

Use this menu to set up the items of special enhanced features.

► Boot

Use this menu to specify the priority of boot devices.

► Security

Use this menu to set supervisor and user passwords.

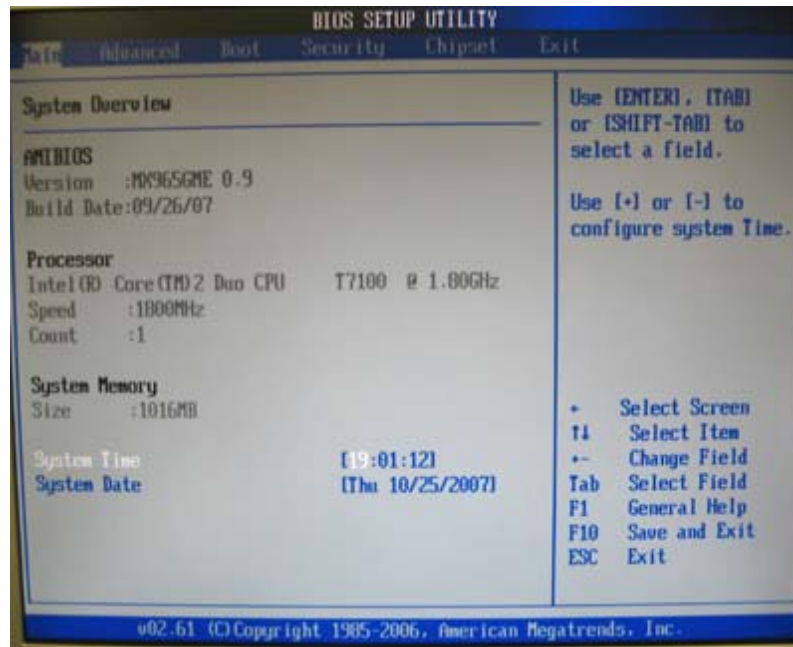
► Chipset

This menu controls the advanced features of the onboard Northbridge and Southbridge.

► Exit

This menu allows you to load the BIOS default values or factory default settings into the BIOS and exit the BIOS setup utility with or without changes.

Main



► AMI BIOS, Processor, System Memory

These items show the firmware and hardware specifications of your system. Read only.

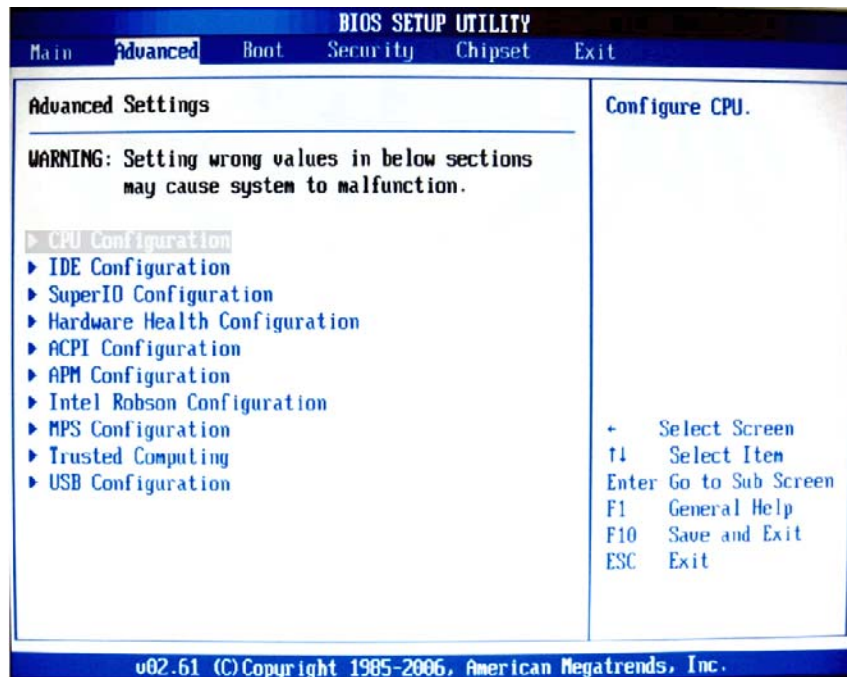
► System Time

The time format is <Hour> <Minute> <Second>.

► System Date

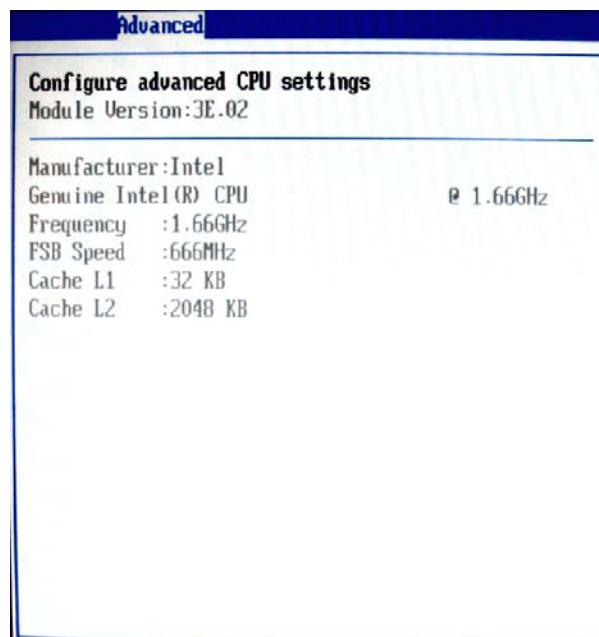
The date format is <Day>, <Month> <Date> <Year>.

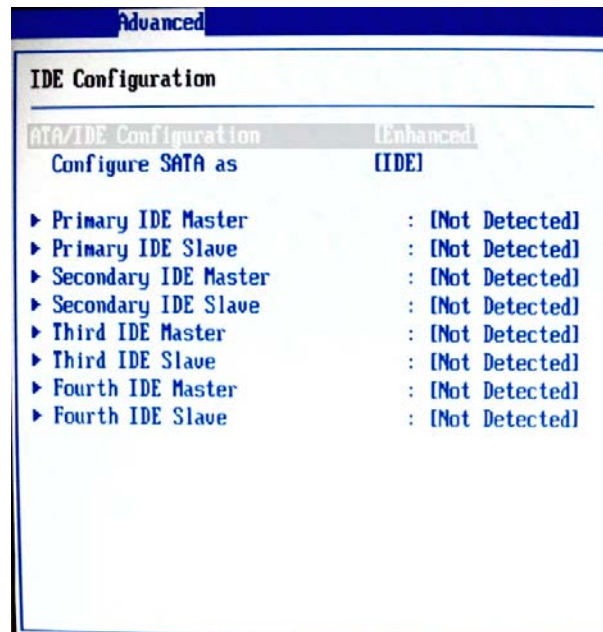
Advanced



► CPU Configuration

These items show the advanced specifications of your CPU. Read only.



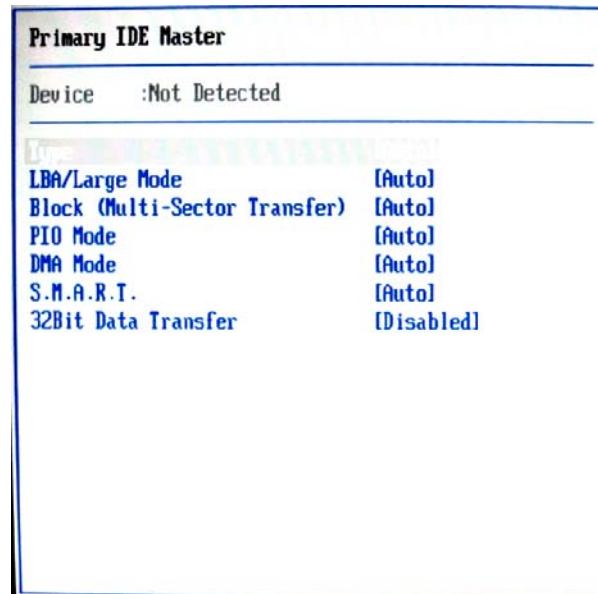
► IDE Configuration**► ATA/IDE Configuration**

This setting specifies the modes of the PATA & SATA ports.

► Configure SATA as

This setting specifies the function of the on-chip SATA controller.

► Primary/Secondary/Third/Fourth IDE Master/Slave



[Type]

Press PgUp/<+> or PgDn/<-> to select [Manual], [None] or [Auto] type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use [Manual] to define your own drive type manually.

[LBA/Large Mode]

Enabling LBA causes Logical Block Addressing to be used in place of Cylinders, Heads and Sectors

[Block(Multi-Sector Transfer)]

Any selection except Disabled determines the number of sectors transferred per block. Indicates the type of PIO (Programmed Input/Output)

[PIO Mode]

[DMA Mode]

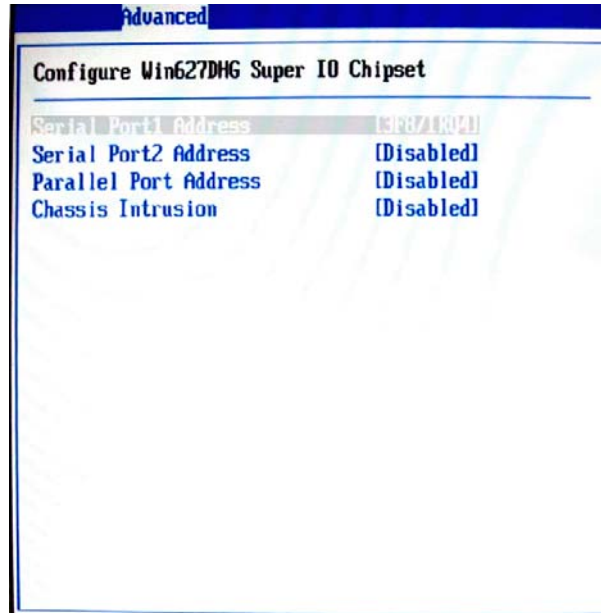
Indicates the type of Ultra DMA

[S.M.A.R.T.]

This allows you to activate the S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for the hard disks. S.M.A.R.T is a utility that monitors your disk status to predict hard disk failure. This gives you an opportunity to move data from a hard disk that is going to fail to a safe place before the hard disk becomes offline.

[32 Bit Data Transfer]

Enables 32-bit communication between CPU and IDE card

► Super IO Configuration**► Serial Port 1 / 2 Address**

Select an address and a corresponding interrupt for the serial port 1/2.

► Parallel Port Address

This setting specifies the I/O port address and IRQ of the onboard parallel port.

► Chassis Intrusion

The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to [Reset]. The setting of the field will automatically return to [Enabled] later.

► Hardware Health Configuration

Advanced	
Hardware Health Configuration	
System1 Temperature	:38°C/100°F
CPU Temperature	:59°C/138°F
System2 Temperature	:46°C/114°F
CPUFAN Speed	:4560 RPM
Vcore	:1.224 V
AVCC	:3.312 V
3VCC	:3.312 V
+12V	:11.721 V
5V	:4.966 V
USB	:3.312 V
VBAT	:3.232 V
CPUFAN0 Mode Setting	(Manual Mode)
CPUFAN0 PWM Control	[250]
CPUFAN1 Mode Setting	(Manual Mode)
CPUFAN1 PWM Control	[250]

► System 1 / 2 Temperature, CPU Temperature, CPUFAN Speed, Vcore, AVCC, 3VCC, +12V, 5V, VSB, VBAT

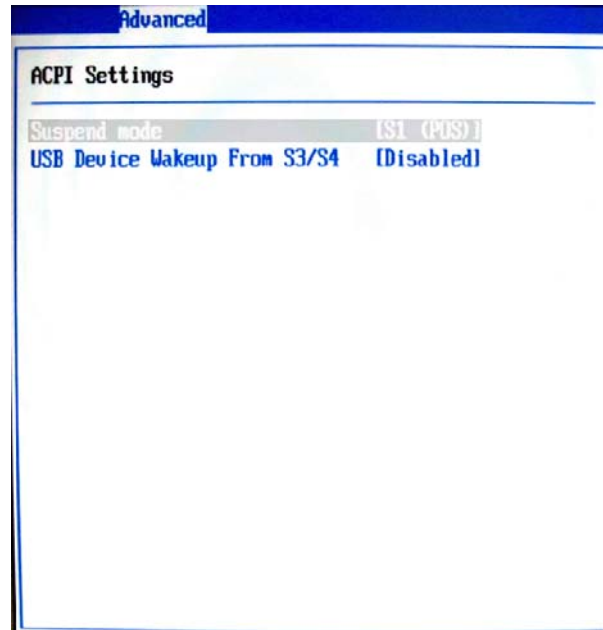
These items display the current status of all of the monitored hardware devices/components such as CPU voltage, temperatures and all fans' speeds.

► CPUFAN0 / CPUFAN1 Mode Setting

These settings specify the operation mode of the CPU fans.

► CPUFAN0 / CPUFAN1 PWM Control

These settings control the PWM duty cycle of the CPU fans.

► ACPI Configuration**► Suspend Mode**

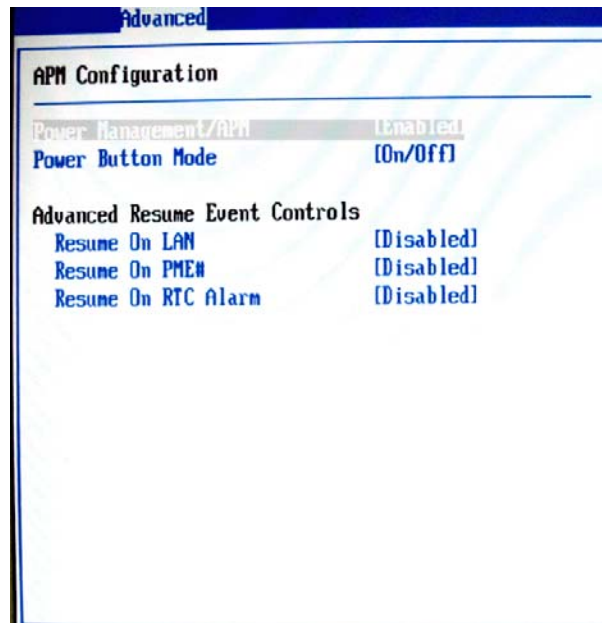
This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

- | | |
|------------|--|
| [S1 (POS)] | The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context. |
| [S3 (STR)] | The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a "wake up" event occurs. |

► USB Device Wakeup from S3/S4

This setting allows the activity of the USB device to wake up the system from S3/S4 sleep state.

► APM Configuration



► Power Management/APM

Setting to [Enabled] will activate an Advanced Power Management (APM) device to enhance Max Saving mode and stop CPU internal clock.

► Power Button Mode

This setting controls the operation of the power button.

► Resume On LAN

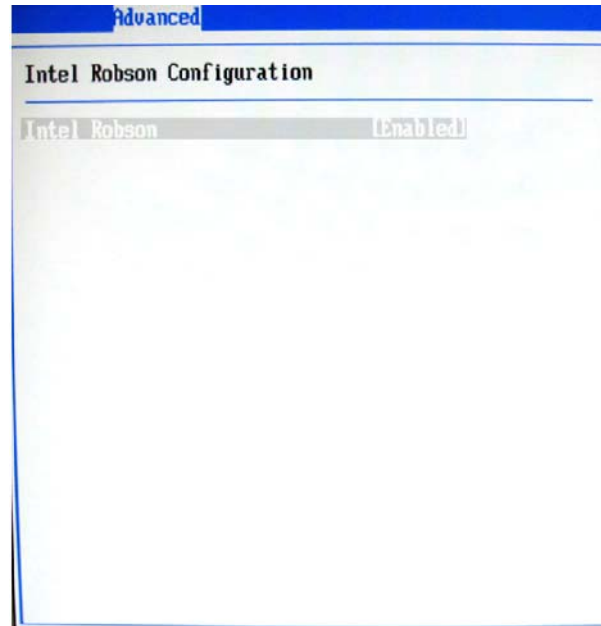
This field specifies whether the system will be awakened from power saving modes when activity or input signal of onboard LAN is detected.

► Resume On PME#

When setting to [Enabled], this setting allows your system to be awakened from the power saving modes through any event on PME (Power Management Event).

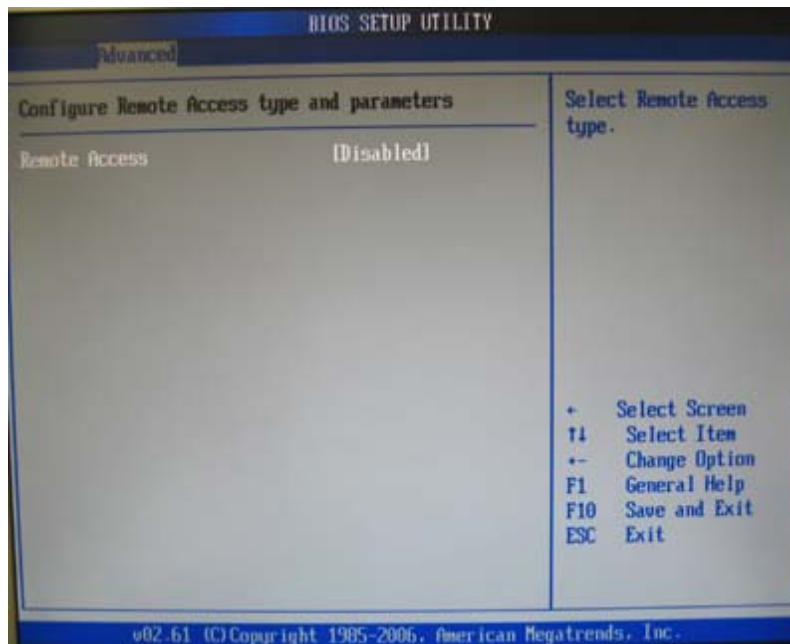
► Resume On RTC Alarm

When [Enabled], you can set the date and time at which the RTC (real-time clock) alarm awakens the system from suspend mode.

► Intel Robson Configuration**► Intel Robson**

Robson is the code name for a new Intel platform technology that uses non-volatile memory (Flash memory) to increase system responsiveness, make multi-tasking faster, and extend battery life. Intel Robson technology is poised to eliminate many of the bottlenecks associated with HDD latency. By enabling the majority of application workload to be written and read from a system cache instead of the HDD, Robson will offer users of mobile computers built on the Santa Rosa platform significantly increased performance -- particularly in application load and run time, the speed in which systems resume operation after hibernation or boot, and in system-level power usage.

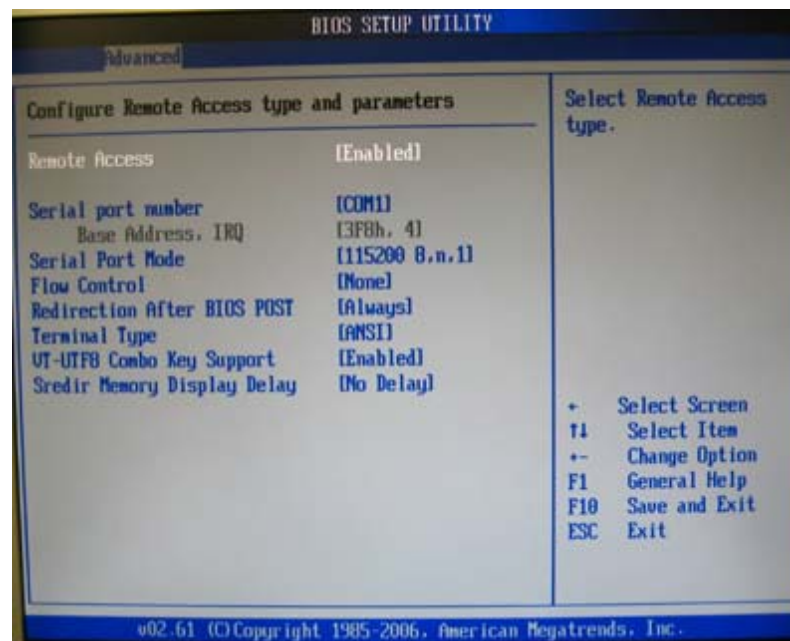
► Remote Access Configuration

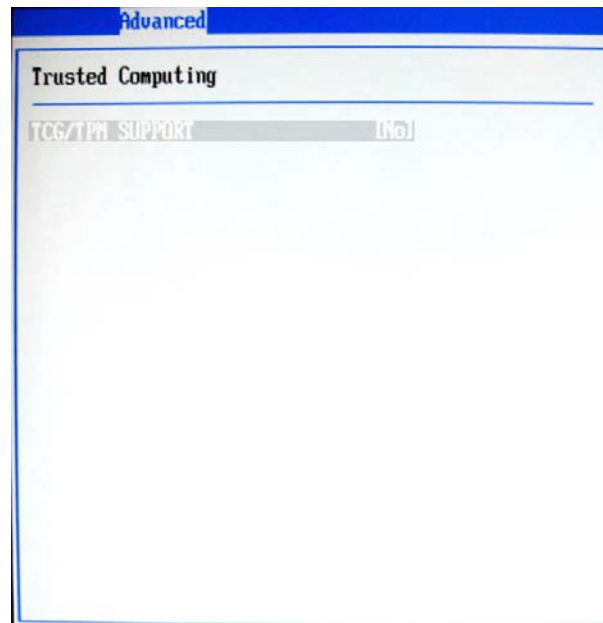


► Remote Access

This field allows you to Enabled or Disabled Remote Access for console redirection via serial ports.

Set the desired port and setting in each field.



► Trusted Computing**► TCG/TPM Support**

This setting controls the Trusted Platform Module (TPM) designed by the Trusted Computing Group (TCG). TPMs are special-purpose integrated circuits (ICs) built into a variety of platforms to enable strong user authentication and machine attestation—essential to prevent inappropriate access to confidential and sensitive information and to protect against *compromised networks*.

► USB Configuration



► Legacy USB Support

Set to [Enabled] if you need to use any USB 1.1/2.0 device in the operating system that does not support or have any USB 1.1/2.0 driver installed, such as DOS and SCO Unix.

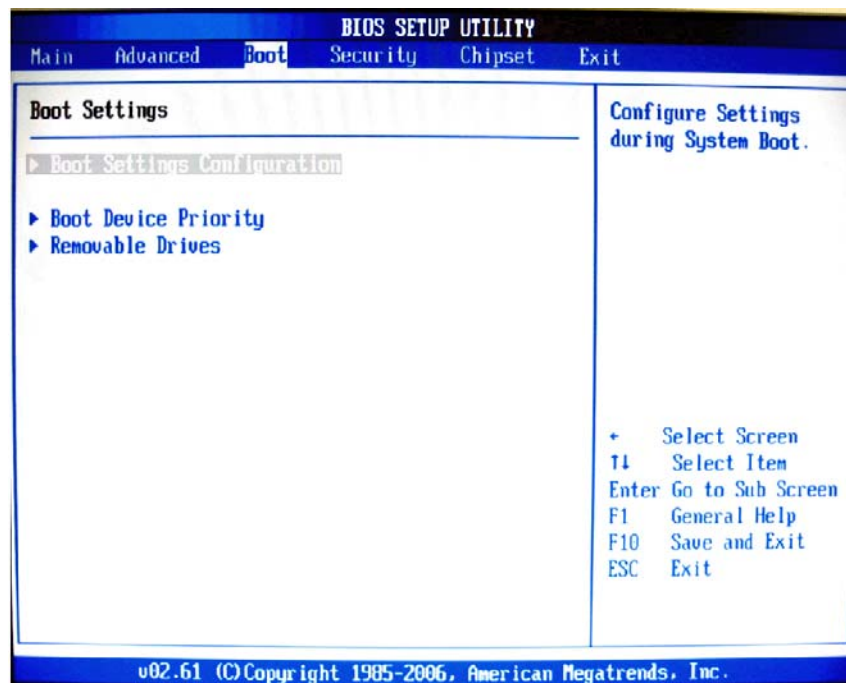
► USB 2.0 Controller Mode

This setting specifies the operation mode of the onboard USB 2.0 controller.

► Hotplug USB FDD Support

Set to [Enabled] if your need to use a hotplug USB-interfaced FDD in the operating system that does not support or have any USB driver installed, such as DOS and SCO Unix.

Boot



▶ Boot Settings Configuration



► Quick Boot

Enabling this setting will cause the BIOS power-on self test routine to skip some of its tests during bootup for faster system boot.

► Quiet Boot

This BIOS feature determines if the BIOS should hide the normal POST messages with the motherboard or system manufacturer's full-screen logo.

When it is enabled, the BIOS will display the full-screen logo during the boot-up sequence, hiding normal POST messages.

When it is disabled, the BIOS will display the normal POST messages, instead of the full-screen logo.

Please note that enabling this BIOS feature often adds 2-3 seconds of delay to the booting sequence. This delay ensures that the logo is displayed for a sufficient amount of time. Therefore, it is recommended that you disable this BIOS feature for a faster boot-up time.

► AddOn ROM Display Mode

This item is used to determine the display mode when an optional ROM is initialized during POST. When set to [Force BIOS], the display mode used by AMI BIOS is used. Select [Keep Current] if you want to use the display mode of optional ROM.

► Bootup Num-Lock

This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.

► PS/2 Mouse Support

Select [Enabled] if you need to use a PS/2-interfaced mouse in the operating system.

► Wait For 'F1' If Error

When this setting is set to [Enabled] and the boot sequence encounters an error, it asks you to press F1. If disabled, the system continues to boot without waiting for you to press any keys.

► Hit 'DEL' Message Display

Set this option to [Disabled] to prevent the message as follows:

Hit Del if you want to run setup

It will prevent the message from appearing on the first BIOS screen when the computer boots. Set it to [Enabled] when you want to run the BIOS Setup Utility.

► Interrupt 19 Capture

Interrupt 19 is the software interrupt that handles the boot disk function. When enabled, this BIOS feature allows the ROM BIOS of these host adaptors to "capture" Interrupt 19 during the boot process so that drives attached to these adaptors can function as bootable disks. In addition, it allows you to gain access to the host adaptor's ROM setup utility, if one is available.

When disabled, the ROM BIOS of these host adaptors will not be able to "cap-

ture" Interrupt 19. Therefore, you will not be able to boot operating systems from any bootable disks attached to these host adaptors. Nor will you be able to gain access to their ROM setup utilities.

► Flash Write Protection

Select [Enabled] if you need to program data into the flash chip.

Select [Disabled] if you need to protect the data from being overwritten.

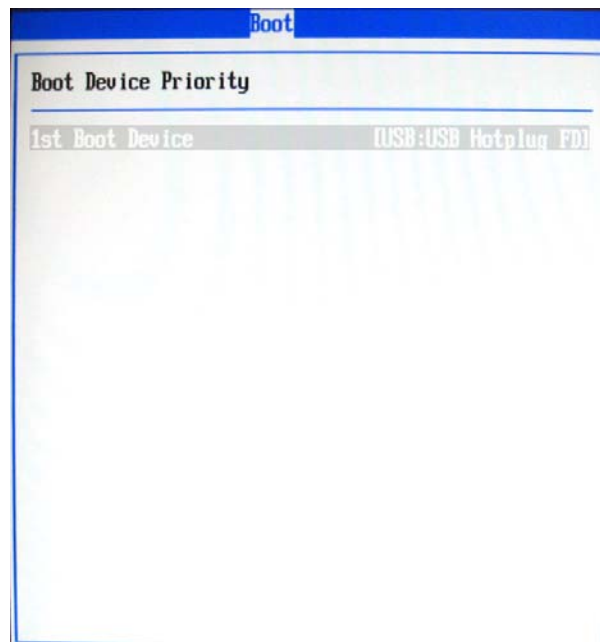
► Chassis Instruction

Select [Enabled] to enable the chassis instruction function.

Select [Disabled] to disable the chassis instruction function.

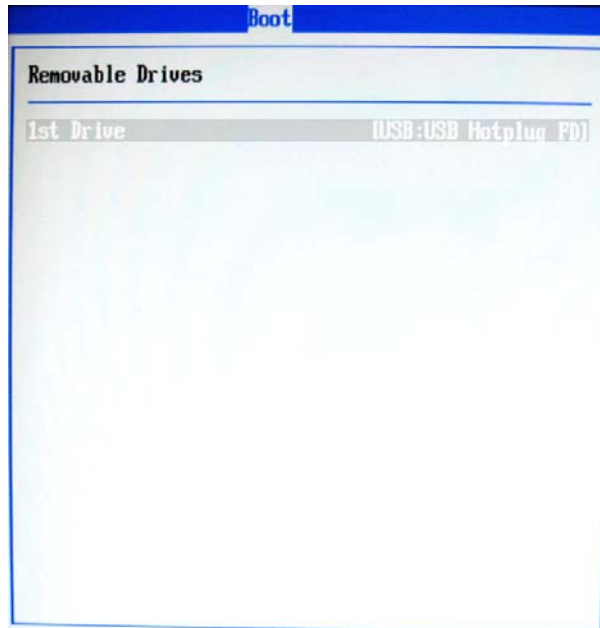
Select [Reset] to clear the chassis instruction status.

► Boot Device Priority



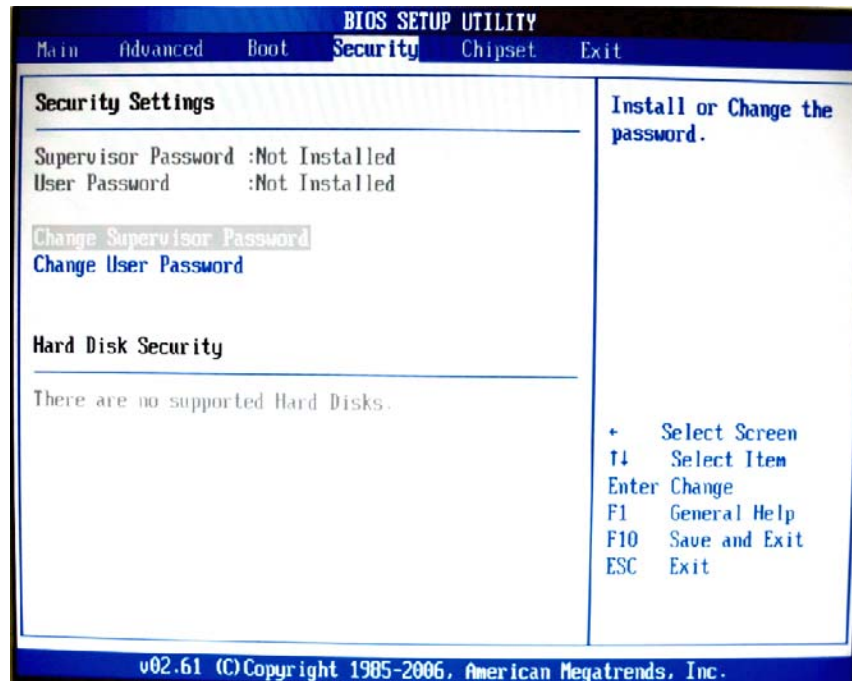
► 1st Boot Device

The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system. First press <Enter> to enter the sub-menu. Then you may use the arrow keys (↑↓) to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list.

► Removable Drives**► 1st Drive**

This setting allows users to set the priority of the removable devices. First press <Enter> to enter the sub-menu. Then you may use the arrow keys (↑↓) to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list.

Security



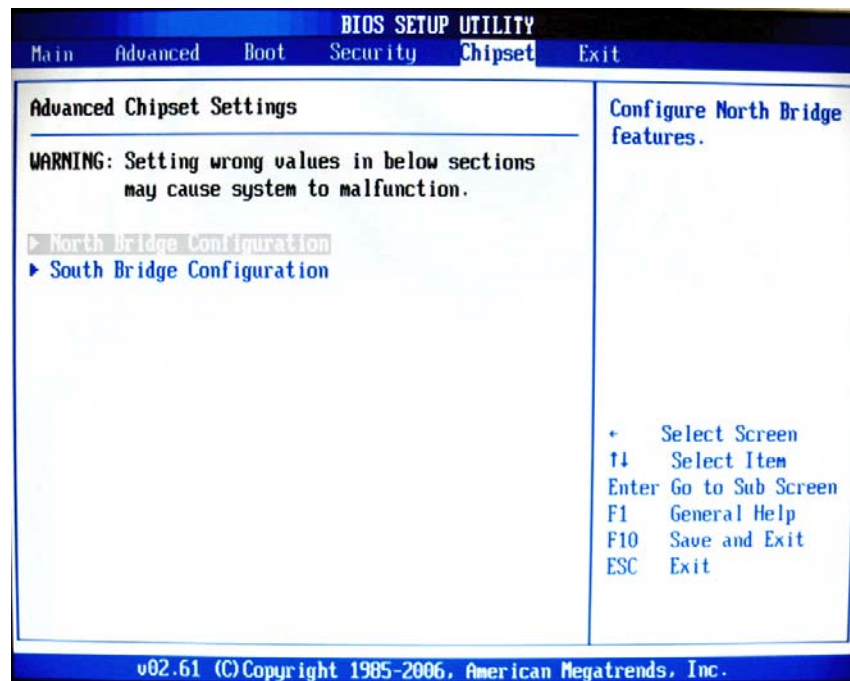
► Supervisor Password / Change Supervisor Password

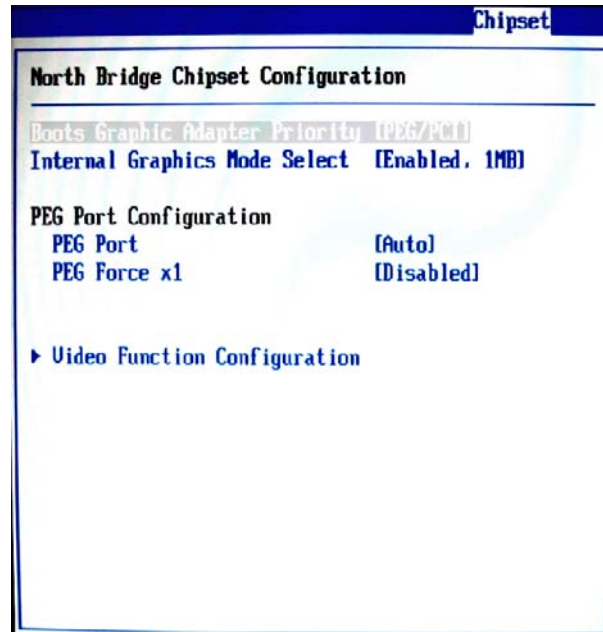
Supervisor Password controls access to the BIOS Setup utility. These settings allow you to set or change the supervisor password.

► User Password / Change User Password

User Password controls access to the system at boot. These settings allow you to set or change the user password.

Chipset



► North Bridge Configuration**► Boot Graphics Adapter Priority**

This item specifies which VGA card is your primary graphics adapter.

► Internal Graphics Mode Select

The field specifies the size of system memory allocated for video memory.

► PEG Port

This setting allows you to select whether to use the onchip graphics processor or the PCI Express card. When set to [Auto], the BIOS checks to see if a PCI Express graphics card is installed. If it detects that a PCI Express graphics card is present, the motherboard boots up using that card. Otherwise, it defaults to the onboard graphics processor.

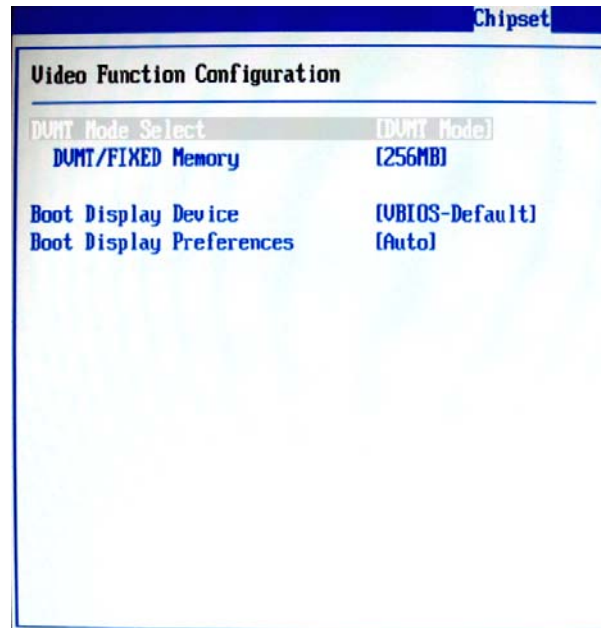
► PEG Force X1

This BIOS feature allows you to convert a PCI Express X4 slot into a PCI Express X1 slot. When [Enabled], the PCI Express X4 slot will be forced to run in the PCI Express X1 mode. When [Disabled], the PCI Express X4 slot will be allowed to run in its normal PCI Express X4 mode.

If you have a PCI Express X4 card installed in your system, you should disable this BIOS feature. This allows for optimal performance of the card by ensuring maximum transfer rates between the card and the motherboard.

But if you need to install a PCI Express X1 card into the PCI Express X4 slot, you should enable this BIOS feature to ensure maximum compatibility.

► Video Function Configuration



► DVMT Mode Select

Intel's Dynamic Video Memory Technology (DVMT) allows the system to dynamically allocate memory resources according to the demands of the system at any point in time. The key idea in DVMT is to improve the efficiency of the memory allocated to either system or graphics processor.

It is recommended that you set this BIOS feature to DVMT Mode for maximum performance. Setting it to DVMT Mode ensures that system memory is dynamically allocated for optimal balance between graphics and system performance.

► DVMT/FIXED Memory

When set to DVMT/FIXED Mode, the graphics driver will allocate a fixed amount of memory as dedicated graphics memory, as well as allow more system memory to be dynamically allocated between the graphics processor and the operating system.

► Boot Display Device

Use the field to select the type of device you want to use as the display(s) of the system.

► Flat Panel Type

This setting allows you to set your preferences for the flat panel display device.

► South Bridge Configuration**► USB Functions**

This setting specifies the function of the onboard USB controller.

► USB 2.0 Controller

Set to [Enabled] if you need to use any USB 2.0 device in the operating system that does not support or have any USB 2.0 driver installed, such as DOS and SCO Unix.

► GbE Controller

This setting disables/enables the onboard Gigabit Ethernet controller.

► GbE LAN Boot

When [Enabled], the BIOS attempts to boot from a LAN boot image before it attempts to boot from a local storage device.

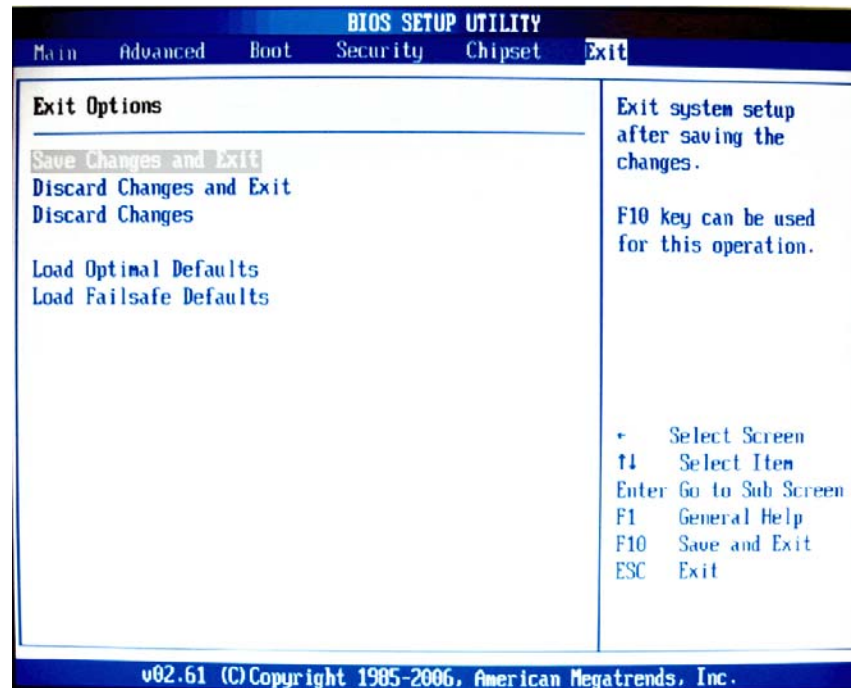
► GbE Wake Up From S5

This field specifies whether the system will be awakened from the S5 power saving mode when activity or input signal of onboard LAN is detected.

► HDA Controller

This setting controls the High Definition Audio interface integrated in the Southbridge.

Exit



► Save Changes and Exit

Save changes to CMOS and exit the Setup Utility.

► Discard Changes and Exit

Abandon all changes and exit the Setup Utility.

► Discard Changes

Abandon all changes and continue with the Setup Utility.

► Load Optimal Defaults

Use this menu to load the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

► Load Failsafe Defaults

Use this menu to load the default values set by the BIOS vendor for stable system performance.