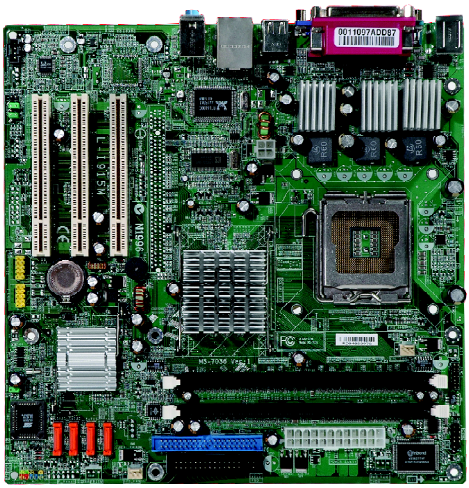
MS-7036 (v1.X) M-ATX Mainboard



G52-M7036X3

Manual Rev: 1.1
Release Date: September 2004

CE N1996

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference 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 1
The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2
Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

FC **Micro-Star International**
MS-7036

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 interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation

Copyright Notice

Trademarks

Revision History

Revision	Revision History	Date
V1.0	First release for PCB 1.X with Intel 915P/915G/915GV/910GL & ICH6	June 2004
V1.1	Add marketing name	September 2004

Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.

- Visit the MSI homepage & FAQ site for technical guide, BIOS updates, driver updates, and other information: **http://www.msi.com.tw** & **http://www.msi.com.tw/program/service/faq/faq/esc_faq_list.php**
- Contact our technical staff at: **support@msi.com.tw**

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. **Do not cover the openings.**
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment has not work well or you can not get it work according to User's Manual.
    - The equipment has dropped and damaged.
    - The equipment has obvious sign of breakage.
12. **Do not leave this equipment in an environment unconditioned, storage temperature above 60^{0}C (140^{0}F), it may damage the equipment.**

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

CONTENTS

Getting Started

Thank you for purchasing 915PM2 / 915GM2 Series (MS-7036 v1.X) M-ATX mainboard. The 915PM2 / 915GM2 Series is based on **Intel® 915P/915G/915GV/910GL** and **Intel® ICH6** chipsets for optimal system efficiency. Designed to fit the advanced **Intel® Pentium 4 Prescott LGA775** processor, the 915PM2 / 915GM2 Series delivers a high performance and professional desktop platform solution.

Mainboard Specifications

CPU

- Supports Intel® Pentium 4/Celeron D™ (LGA775) processors in LGA775 package
- Supports 533MHz, 800MHz FSB (910GL supports 533MHz only)
- Supports 2004 Performance FMB CPU VR Design
- Supports 3/4 pin CPU Fan Pin-Header with Fan Speed Control

(For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php)

Chipset

- Intel® 915G/915P/915GV/910GL Chipset
  - Supports 533/800MHz Intel NetBurst micro-architecture bus
  - Supports PCI Express x16 interface (not available for 915GV)
  - Supports DDR 333/400 memory interface
  - Integrated Intel GMA 900 graphic controller (not available for 915P)
- Intel® ICH6 chipset
  - High Definition Audio interface
  - 4 Serial ATA Host Controllers
  - 1 channel Ultra ATA 100 bus Master IDE controller
  - 8 USB 2.0/1.1 ports
  - Supports SMBus 2.0

Main Memory

- Supports two 64-bit wide DDR data channels
- Available bandwidth up to 3.2GB/s (DDR 400) for single-channel mode and 6.4 GB/s (DDR 400) for dual-channel mode
- Supports 256MB or 512MB DDR technologies
- Supports only x8, x16 DDR devices with 2-bank

(For the updated supporting memory modules, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php.)

Slots

- One PCI Express x16 slot (supports PCI Express Bus specification v1.0a compliant)
- Three 32-bit v2.2 Master PCI bus slots (supports 3.3v/5v PCI bus interface)

On-Board IDE

- One IDE controller on the ICH6 chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA66/100 operation modes
- Supports 4 Serial ATA ports

On-Board Peripherals

- On-Board Peripherals include:
  - 1 floppy port supports 1 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
  - 2 serial ports, Com1 on Rear IO, Com2 via pin header(IO bracket is optional)
  - 1 parallel port supports SPP/EPP/ECP mode
  - 1 Line-In / Line-Out / MIC-In / Surround Speaker Out / Center-Subwoofer Speaker Out / Surround Back Speaker Out
  - 8 USB ports (Rear * 4/ Front * 4)
  - 1 RJ-45 LAN jack
  - 3 * 1394 ports (optional)

On-board LAN (optional)

- Realtek 8100C / 8110S (optional)
  - Integrated Fast Ethernet MAC and PHY in one chip
  - Supports 10Mb/s, 100Mb/s and 1000Mb/s (1000Mb/s for 8100S only)
  - Compliance with PCI 2.2
  - Supports ACPI Power Management

Audio

- High Definition link controller integrated in ICH6
- 5.1 channels S/W audio codec Realtek ALC655 codec

1394 (optional)

- Supports up to 3 * 1394 ports, one 6-pin 1394 connector on rear I/O, the other is supported by onboard pinheader. Transfer rate is up to 400Mbps
- Controlled by Ti TSB43AB23 chipset

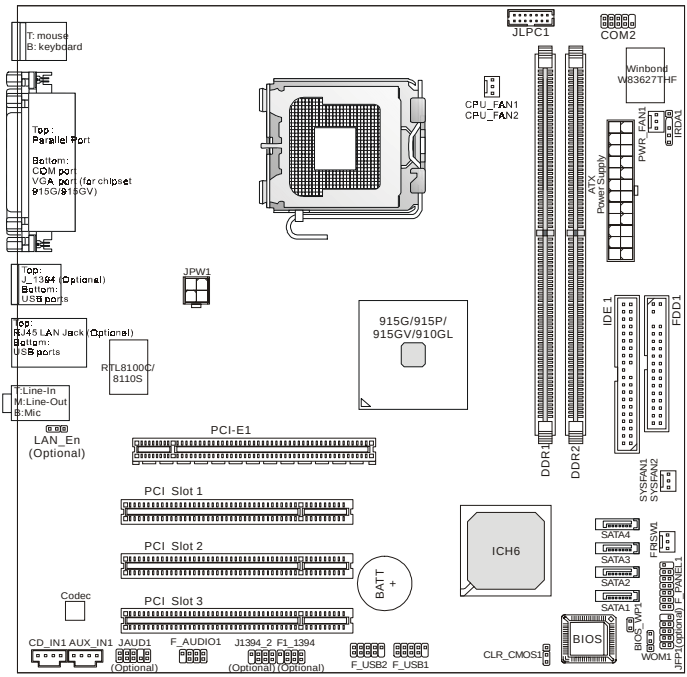
BIOS

- 4Mb FWH
- Provides DMI2.0, WfM2.0, WOL, WOR, chassis intrusion, and SMBus for system management

Mounting and Dimension

- M-ATX Form Factor: 24.5 cm (W) x 24.5 cm (L)
- 6 mounting holes

Mainboard Layout



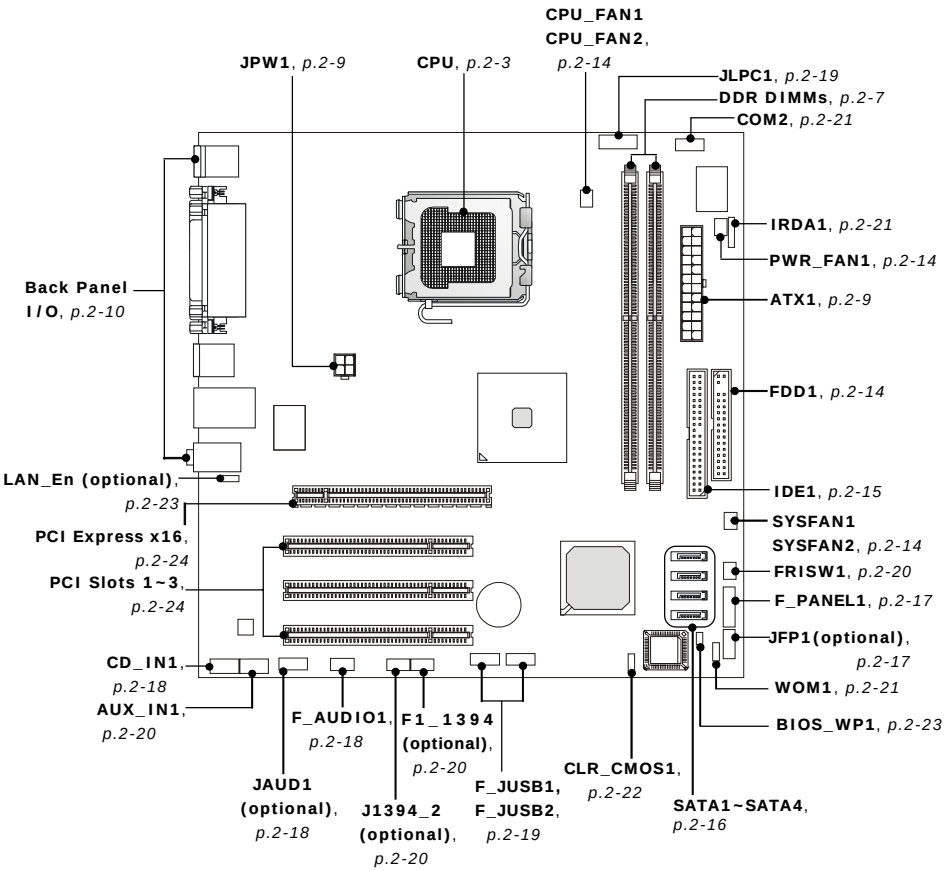
MS-7036 v1.X M-ATX Mainboard

Hardware Setup

This chapter tells you how to install the CPU, memory modules, and expansion cards, as well as how to setup the jumpers on the mainboard. Also, it provides the instructions on connecting the peripheral devices, such as the mouse, keyboard, etc.

While doing the installation, be careful in holding the components and follow the installation procedures.

Quick Components Guide



Central Processing Unit: CPU

The mainboard supports Intel® Pentium 4 Prescott/Tejas processor. The mainboard uses a CPU socket called LGA775. When you are installing the CPU, **make sure to install the cooler to prevent overheating.** If you do not have the CPU cooler, contact your dealer to purchase and install them before turning on the computer.

For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php.

MSI Reminds You...

Overheating

Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.

Replacing the CPU

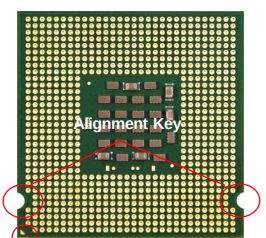
While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from grounded outlet first to ensure the safety of CPU.

Overclocking

This motherboard is designed to support overclocking. However, please make sure your components are able to tolerate such abnormal setting, while doing overclocking. Any attempt to operate beyond product specifications is not recommended. ***We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

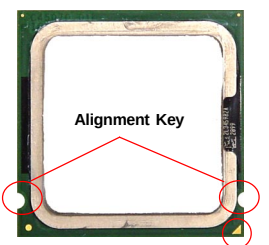
Introduction to LGA 775 CPU

The pin-pad side of LGA 775 CPU.



Yellow triangle is the Pin 1 indicator

The surface of LGA 775 CPU. Remember to apply some silicone heat transfer compound on it for better heat dispersion.



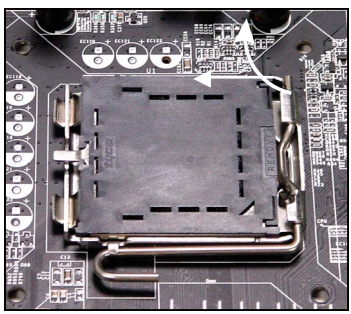
Yellow triangle is the Pin 1 indicator

CPU & Cooler Installation

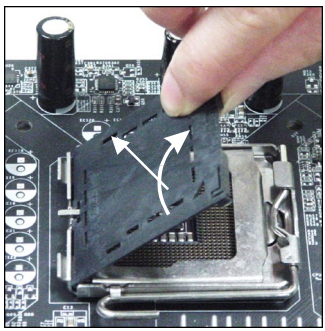
When you are installing the CPU, **make sure the CPU has a cooler attached on the top to prevent overheating.** If you do not have the cooler, contact your dealer to purchase and install them before turning on the computer. Meanwhile, do not forget to apply some silicon heat transfer compound on CPU before installing the heat sink/cooler fan for better heat dispersion.

Follow the steps below to install the CPU & cooler correctly. Wrong installation will cause the damage of your CPU & mainboard.

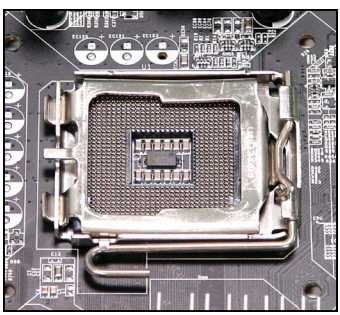
1. The CPU has a plastic cap on it to protect the contact from damage. Before you install the CPU, always cover it to protect the socket pin.



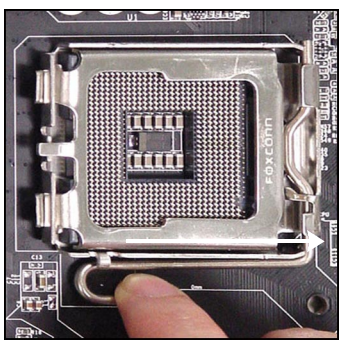
2. Remove the cap from lever hinge side (as the arrow shows).



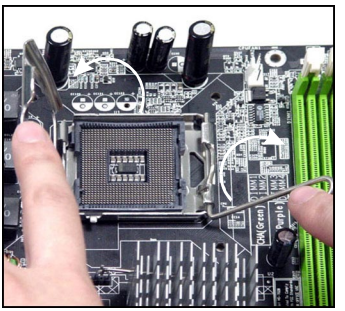
3. The pins of socket reveal.



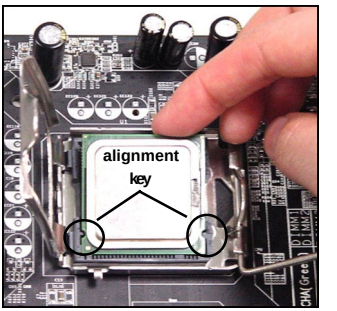
4. Open the load lever.



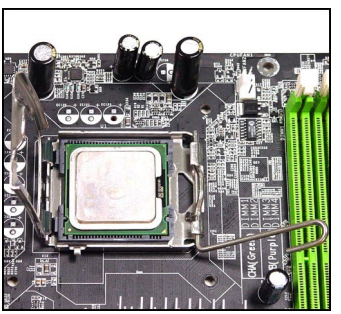
5. Lift the load lever up and open the load plate.



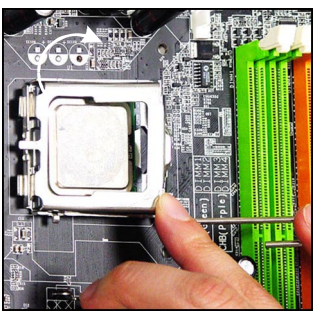
6. After confirming the CPU direction for correct mating, put down the CPU in the socket housing frame. Be sure to grap on the edge of the CPU base. Note that the alignment keys are matched.



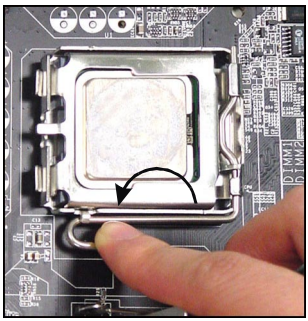
7. Visually inspect if the CPU is seated well into the socket. If not, take out the CPU with pure vertical motion and reinstall.



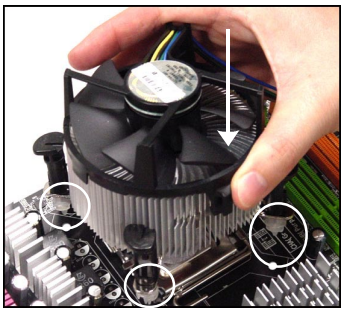
8. Cover the load plate onto the package.



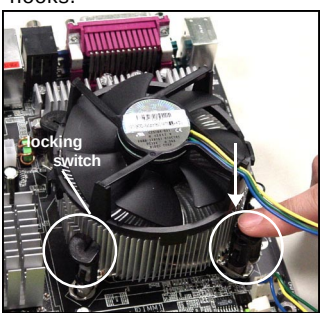
9. Press down the load lever lightly onto the load plate, and then secure the lever with the hook under retention tab.



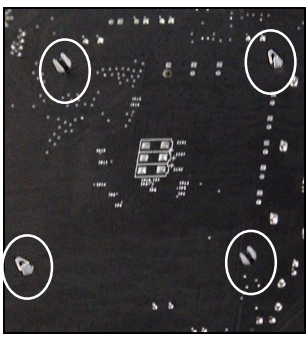
10. Align the holes on the mainboard with the heatsink. Push down the cooler until its four clips get wedged into the holes of the mainboard.



11. Press the four hooks down to fasten the cooler. Then rotate the locking switch (refer to the correct direction marked on it) to lock the hooks.



12. Turn over the mainboard to confirm that the clip-ends are correctly inserted.



MSI Reminds You...

1. *Confirm if your CPU cooler is firmly installed before turning on your system.*
2. *Check the information in **PC Health Status** or **H/W Monitor** in BIOS (refer to p.3-26 for details) for the CPU temperature.*
3. *Do not touch the CPU socket pins to avoid damage.*
4. *Whenever CPU is not installed, always protect your CPU socket pin with the plastic cap covered (shown in Figure 1) to avoid damaging.*
5. *Please note that the mating/unmating durability of the CPU is 20 cycles. Therefore we suggest you do not plug/unplug the CPU too often.*

Memory

The mainboard provides two 184-pin unbuffered DDR266/DDR333/DDR400 DDR SDRAM, and supports the memory size up to 2GB without ECC. To operate properly, at least one DIMM module must be installed.

(For the updated supporting memory modules, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php)

DDR DIMM Slots
(DDR 1~2)

Introduction to DDR SDRAM

DDR (Double Data Rate) SDRAM is similar to conventional SDRAM, but doubles the rate by transferring data twice per cycle. It uses 2.5 volts as opposed to 3.3 volts used in SDR SDRAM, and requires 184-pin DIMM modules rather than 168-pin DIMM modules used by SDR SDRAM.

DIMM Module Combination (Only support DDR333/DDR400)

Install at least one DIMM module on the slots. You can install either single- or double-sided modules in any order to meet your own needs.

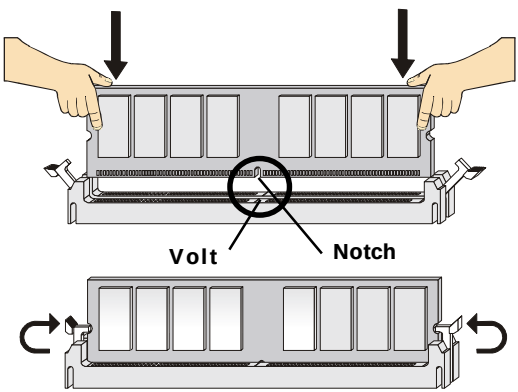
Memory modules can be installed in any combination as follows:

Slot	Memory Module	Total Memory
DDR 1 (Bank 0 & 1)	S/D	128MB~1GB
DDR 2 (Bank 2 & 3)	S/D	128MB~1GB
Maximum System Memory Supported		128MB~2GB

S: Single Side **D: Double Side**

Installing DDR Modules

1. The DDR DIMM has only one notch on the center of module. The module will only fit in the right orientation.
2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the socket.
3. The plastic clip at each side of the DIMM slot will automatically close.



MSI Reminds You...

You can barely see the golden finger if the module is properly inserted in the socket.

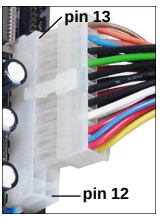
Power Supply

The mainboard supports ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

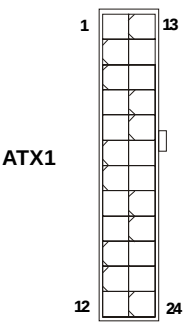
ATX 24-Pin Power Connector: ATX1

This connector allows you to connect an ATX 24-pin power supply. To connect the ATX 24-pin 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.

You may use the 20-pin ATX power supply as you like. If you'd like to use the 20-pin ATX power supply, please plug your power supply along with pin 1 & pin 13 (refer to the image at the right hand). There is also a foolproof design on pin 11, 12, 23 & 24 to avoid wrong installation.



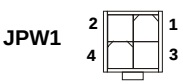
Pin Definition



PIN	SIGNAL	PIN	SIGNAL
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS-ON#
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWR OK	20	Res
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

ATX 12V Power Connector: JPW1

This 12V power connector is used to provide power to the CPU.



JPW1 Pin Definition

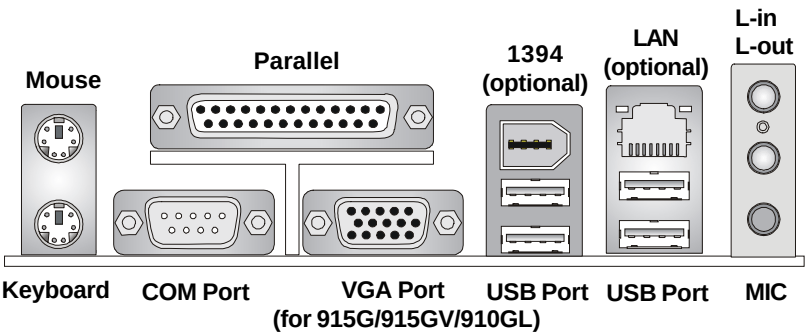
PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

MSI Reminds You...

1. *These two connectors connect to the ATX power supply and have to work together to ensure stable operation of the mainboard.*
2. *Power supply of 350 watts (and above) is highly recommended for system stability.*
3. *ATX 12V power connection should be greater than 18A.*

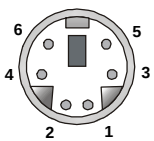
Back Panel

The back panel provides the following connectors:



Mouse/Keyboard Connector

The mainboard provides a standard PS/2® mouse/keyboard mini DIN connector for attaching a PS/2® mouse/keyboard. You can plug a PS/2® mouse/keyboard directly into this connector. The connector location and pin assignments are as follows:



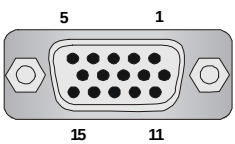
PS/2 Mouse / Keyboard (6-pin Female)

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	Mouse/Keyboard Data	Mouse/Keyboard data
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Mouse/Keyboard Clock	Mouse/Keyboard clock
6	NC	No connection

VGA Connector (for chipset 915G/915GV)

The mainboard provides a DB 15-pin female connector to connect a VGA monitor.

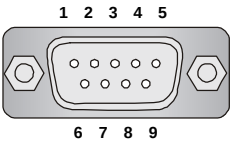


VGA Connector
(DB 15-pin)

Pin	Signal Description	Pin	Signal Description
1	RED	2	GREEN
3	BLUE	4	N/C
5	GND	6	GND
7	GND	8	GND
9	+5V	10	GND
11	N/C	12	SDA
13	Horizontal Sync	14	Vertical Sync
15	SCL		

Serial Port Connector

The mainboard offers one 9-pin male DIN connector as the serial port. The port is a 16550A high speed communication port that sends/receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.



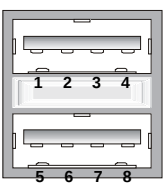
9-Pin Male DIN Connector

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	RI	Ring Indicate

USB Connectors

The mainboard provides an OHCI (Open Host Controller Interface) Universal Serial Bus root for attaching USB devices such as keyboard, mouse or other USB-compatible devices. You can plug the USB device directly into the connector.



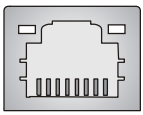
USB Ports

USB Port Description

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	+Data0	Positive Data Channel 0
4	GND	Ground
5	VCC	+5V
6	-Data 1	Negative Data Channel 1
7	+Data 1	Positive Data Channel 1
8	GND	Ground

LAN (RJ-45) Jack (optional)

The mainboard provides 1 standard RJ-45 jack for connection to single Local Area Network (LAN). This Giga-bit LAN enables data to be transferred at 1000, 100 or 10Mbps. You can connect a network cable to it.



RJ-45 LAN Jack

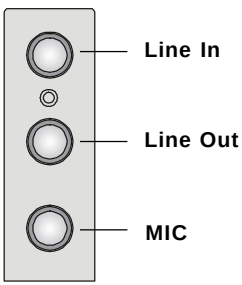
Giga-bit LAN Pin Definition

PIN	SIGNAL	DESCRIPTION
1	D0P	Differential Pair 0+
2	D0N	Differential Pair 0-
3	D1P	Differential Pair 1+
4	D2P	Differential Pair 2+
5	D2N	Differential Pair 2-
6	D1N	Differential Pair 1-
7	D3P	Differential Pair 3+
8	D3N	Differential Pair 3-

Audio Port Connectors

Line Out is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic** is a connector for microphones.

1/8" Stereo Audio Connectors

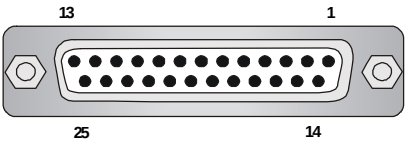


MSI Reminds You...

*For advanced audio application, Realtek ALC 655 is provided to offer support for **6-channel audio operation** and can turn rear audio connectors from 2-channel to 4-/6-channel audio.*

Parallel Port Connector: LPT1

The mainboard provides a 25-pin female centronic connector as LPT. A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.



Pin Definition

PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	PaperEnd
13	SELECT	Select
14	AUTO FEED#	AutomaticFeed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select In
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground

Connectors

The mainboard provides connectors to connect to FDD, IDE HDD, case, LAN, and USB Ports.

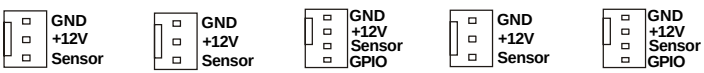
Floppy Disk Drive Connector: FDD1

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.

FDD1

Fan Power Connectors: PWR_FAN1 / CPU_FAN1 / CPU_FAN2 (optional) / SYS_FAN1 / SYS_FAN2 (optional)

The CPU_FAN1/CPU_FAN2 (processor fan), SYS_FAN1/SYS_FAN2(system fan) and PWRFAN1 (power fan) support system cooling fan with +12V. It supports three-pin head connector. When connecting the wire to the connectors, always take 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.

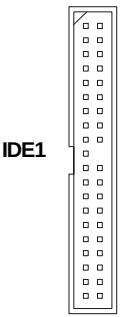


MSI Reminds You...

1. *Always consult the vendors for proper CPU cooling fan.*
2. *CPU_FAN1 CPU_FAN2 supports fan control. Fan/heatsink with 3 or 4 pins are both available.*
3. *Be sure to configure the **CPU FAN PIN Select** in BIOS for the CPU Fan you are using .*
4. *Please refer to the recommended CPU fans at Intel® official website.*

Hard Disk Connectors: IDE1

The mainboard has one 32-bit Ultra DMA 66/100 IDE controller integrated in ICH6, which supports PIO & Bus Master operation modes and it can connect up to two Ultra ATA drives.



IDE1 (Primary IDE Connector)

IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

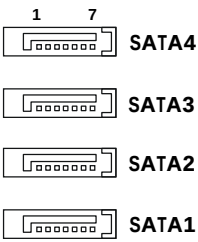
MSI Reminds You...

If you install two hard disks on cable, 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.

Serial ATA/Serial ATA RAID Connectors controlled by Intel ICH6: SATA1~SATA4

The SouthBridge of this mainboard is Intel ICH6 which supports four serial ATA connectors SATA1~SATA4.

SATA1~SATA4 are dual high-speed Serial ATA interface ports. Each supports 1st generation serial ATA data rates of 150 MB/s. Both connectors are fully compliant with Serial ATA 1.0 specifications. Each Serial ATA connector can connect to 1 hard disk device.



SATA1~ SATA4 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

Serial ATA cable

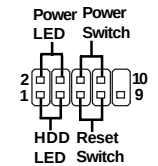
Take out the dust cover and connect to the hard disk devices

MSI Reminds You...

Please do not fold the serial ATA cable in a 90-degree angle, since this might cause the loss of data during transmission.

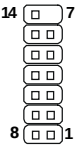
Front Panel Connector: F_PANEL1 or JFP1 (optional)

The mainboard provides one front panel connector, JFP1 or F_PANEL1, for electrical connection to the front panel switches and LEDs. JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.



JFP1 (optional)

or



F_PANEL1

F_PANEL1 Pin Definition

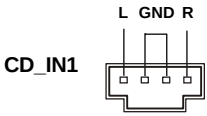
PIN	SIGNAL	PIN	SIGNAL
1	HDD+	8	HDD-
2	PLED2	9	SPEAKER
3	PLED1	10	BUZ+
4	PLED3	11	BUZ-
5	PWSW+	12	VCCSPK
6	PWSW-	13	RESET
7	NC	14	GNDR

JFP1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up
2	FP PWR/SLP	MSG LED pull-up
3	HD_LED_N	Hard disk active LED
4	FP PWR/SLP	MSG LED pull-up
5	RST_SW_N	Reset Switch low reference pull-down to GND
6	PWR_SW_P	Power Switch high reference pull-up
7	RST_SW_P	Reset Switch high reference pull-up
8	PWR_SW_N	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

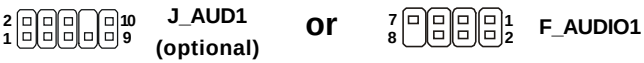
CD-In Connector: CD_IN1

The connector is for CD-ROM audio connector.



Front Panel Audio Connector: J_AUD1 (optional) or F_AUDIO1

The mainboard provides one front panel audio connector for connection to the front panel audio. Users can choose either the J_AUD1 or the F_AUDIO1 depending on their needs. The difference between J_AUD1 & F_AUDIO1 is that J_AUD1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.



F_AUDIO1 Pin Definition

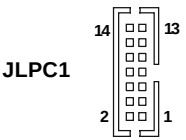
Pin	Description	Pin	Description
1	MIC	2	GND (MIC)
3	Front Line Out (R)	4	Line Next (R)
5	Front Line Out (L)	6	Line Next (L)
7	GND	8	(Cut away)

J_AUD1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	AUD_MIC	Front panel microphone input signal
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC_BIAS	Microphone power
4	AUD_VCC	Filtered +5V used by analog audio circuits
5	AUD_FPOUT_R	Right channel audio signal to front panel
6	AUD_RET_R	Right channel audio signal return from front panel
7	NC	No connection
8	KEY	No pin
9	AUD_FPOUT_L	Left channel audio signal to front panel
10	AUD_RET_L	Left channel audio signal return from front panel

FWH/LPC Debugging Pin Header: JLPC1

The pin header is for internal debugging only.

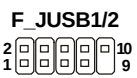


JLPC1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	LCLK	2	Key (no pin)
3	LRST#	4	VCC3
5	LAD0	6	FID0_LRST
7	LAD1	8	VCC5
9	LAD2	10	Key (no pin)
11	LAD3	12	GND
13	LFRAME#	14	GND

Front USB Connectors: F_JUSB1 & F_ JUSB2

The mainboard provides two standard USB 2.0 pin headers *F_JUSB1& F_JUSB2* . USB 2.0 technology increases data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than USB 1.1, and is ideal for connecting high-speed USB interface peripherals such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems and the like**.

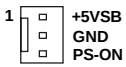


F_JUSB1 & F_JUSB2 Pin Definition

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	USBOC

Independent Power Switch Connector: FRISW1

The connector is connected to an independent power switch on the case. Touch the power switch's touch pad to turn on/off the computer.



FRISW1

IEEE 1394 Connectors: F1_1394 or J1394_2 (optional)

The mainboard provides one 1394 pin headers that allows you to connect IEEE 1394 ports via an external IEEE1394 bracket.

F1_1394
(optional)

F1_1394 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	Power	2	GND
3	TPB-	4	TPB+
5	TPA-	6	TPA+
7	GND	8	Key (no pin)

or

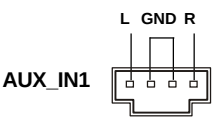
J1394_2
(optional)

J1394_2 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	TPA+	2	TPA-
3	Ground	4	Ground
5	TPB+	6	TPB-
7	Cable power	8	Cable power
9	Key (no pin)	10	Ground

Aux Line-In Connector: AUX_IN1

The connector is for DVD add-on card with Line-in connector.



Serial Port Connector: COM2

The mainboard offers one serial port COM2. It is 16550A high speed communication ports that sends/receives 16 bytes FIFOs. You can attach a serial mouse or other serial device directly to it.

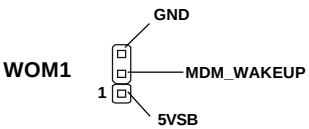
COM2

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	RI	Ring Indicate

Wake On Ring Connector: WOM1

This connector allows you to connect to a modem card with Wake On Ring function. The connector will power up the system when a signal is received through the modem card.



IrDA Infrared Module Header: IRDA1

The connector allows you to connect to IrDA Infrared module. You must configure the setting through the BIOS setup to use the IR function.

IRDA1

IRDA1 Pin Definition

Pin	Signal
1	VCC5
2	NC
3	IRRX
4	GND
5	IRTX

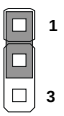
Jumpers

The motherboard provides the following jumpers for you to set the computer's function. This section will explain how to change your motherboard's function through the use of jumpers.

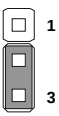
Clear CMOS Jumper: CLR_CMOS1

There is a CMOS RAM on board that has a power supply from external battery to keep the system configuration data. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, use the CLR_CMOS1 (Clear CMOS Jumper) to clear data. Follow the instructions below to clear the data:

CLR_CMOS1



Clear Data



Keep Data

MSI Reminds You...

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.

LAN Enable/Disable Jumper: LAN_En (Optional)

The jumper is used to enable or disable the onboard LAN function. The jumper is available only when LAN is integrated on the board.

LAN_En

Enable LAN

Disable LAN

BIOS Flash Jumper: BIOS_WP1

This jumper is used to lock or unlock the boot block area on BIOS. When unlocked, the BIOS boot block area can be updated. When locked, the BIOS boot block area cannot be updated.

BIOS_WP1

BIOS Flash Locked

BIOS Flash Unlocked

Slots

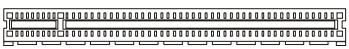
The mainboard provides one PCI Express x16 slot and three 32-bit PCI bus slots.

PCI Express Slots

The PCI Express slots, as a high-bandwidth, low pin count, serial, interconnect technology, support Intel highest performance desktop platforms utilizing the Intel Pentium 4 processor with HT Technology.

PCI Express architecture provides a high performance I/O infrastructure for Desktop Platforms with transfer rates starting at 2.5 Giga transfers per second over a PCI Express x1 lane for Gigabit Ethernet, TV Tuners, 1394 controllers, and general purpose I/O. Also, desktop platforms with PCI Express Architecture will be designed to deliver highest performance in video, graphics, multimedia and other sophisticated applications. Moreover, PCI Express architecture provides a high performance graphics infrastructure for Desktop Platforms doubling the capability of existing AGP8x designs with transfer rates of 4.0 GB/s over a PCI Express x16 lane for graphics controllers, while PCI Express x1 supports transfer rate of 250 MB/s.

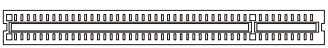
You can insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first.



PCI Express x16 slot

PCI (Peripheral Component Interconnect) Slots

The PCI slots allow you to insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.



PCI Slots

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 INT A# ~ INT D# pins as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT A#	INT B#	INT C#	INT D#
PCI Slot 2	INT B#	INT C#	INT D#	INT A#
PCI Slot 3	INT C#	INT D#	INT A#	INT B#

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.

MSI Reminds You...

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. While booting up, the BIOS version is shown in the 1st line appearing after the memory count. It is usually in the format:
example: W7030MS V1.1 040104

where:
1st digit refers to BIOS maker as A=AMI(R); W=AWARD(R)
2nd - 5th digit refers to the model number.
6th - 7th digit refers to the customer, MS=all standard customers.
V2.0 refers to the BIOS version.
040104 refers to the date this BIOS is released.

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 <DEL> 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.

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
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F5>	Load Previous Values
<F6>	Load Fail-Safe Defaults
<F7>	Load Optimized Defaults

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 control 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 field that means a sub-menu containing additional options can be launched from this field. You can use control 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 <Esc >.

General Help <F1>

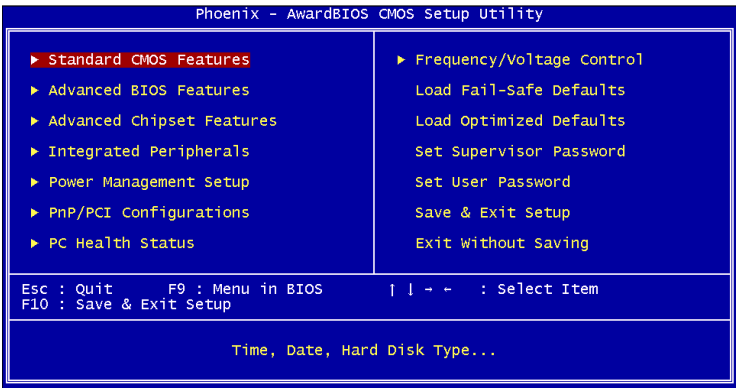
The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

MSI Reminds You...

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.

The Main Menu

Once you enter Award® BIOS CMOS Setup Utility, the Main Menu (figure below) will appear on the screen. The Main Menu allows you to select from twelve setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



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

Advanced BIOS Features
Use this menu to setup the items of Award® special enhanced features.

Advanced Chipset Features
Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals
Use this menu to specify your settings for integrated peripherals.

Power Management Setup
Use this menu to specify your settings for power management.

PNP/PCI Configurations
This entry appears if your system supports PnP/PCI.

PC Health Status
This entry shows your PC health status.

Frequency/Voltage Control
Use this menu to specify your settings for frequency/voltage control.

Load Fail-Safe Defaults
Use this menu to load the BIOS values for the best system performance, but the system stability may be affected.

Load Optimized Defaults
Use this menu to load factory default settings into the BIOS for stable system performance operations.

Set Supervisor Password
Use this menu to set Supervisor Password.

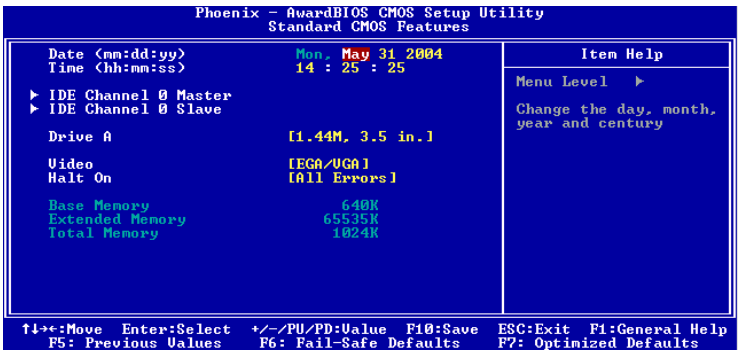
Set User Password
Use this menu to set User Password.

Save & Exit Setup
Save changes to CMOS and exit setup.

Exit Without Saving
Abandon all changes and exit setup.

Standard CMOS Features

The items in Standard CMOS Features Menu are divided into 11 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.



Date

The date format is <day> <month> <date> <year>.

day	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
month	The month from Jan. through Dec.
date	The date from 1 to 31 can be keyed by numeric function keys.
year	The year can be adjusted by users.

Time

The time format is <hour> <minute> <second>.

IDE Channel 0 Master/Slave

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.

If you select [Manual], related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

Access Mode	The settings are CHS, LBA, Large, Auto.
Capacity	The formatted size of the storage device.
Cylinder	Number of cylinders.
Head	Number of heads.
Precomp	Write precompensation.
Landing Zone	Cylinder location of the landing zone.
Sector	Number of sectors.

Drive A
This item allows you to set the type of floppy drives installed. Setting options: [None], [360K, 5.25 in.], [1.2M, 5.25 in.], [720K, 3.5 in.], [1.44M, 3.5 in.], [2.88M, 3.5 in.]

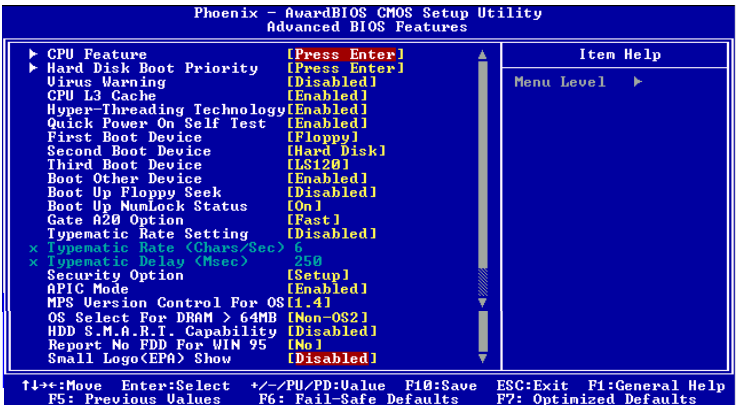
Video
The setting controls the type of video adapter used for the primary monitor of the system. Setting options: [EGA/VGA], [CGA 40], [CGA 80], [MONO].

Halt On
The setting determines whether the system will stop if an error is detected at boot. Setting options are:

All Errors	The system stops when any error is detected.
No Errors	The system doesn't stop for any detected error.
All, But Keyboard	The system doesn't stop for a keyboard error.
All, But Diskette	The system doesn't stop for a disk error.
All, But Disk/Key	The system doesn't stop for either a disk or a keyboard error.

Base/Extended/Total Memory
The three items show the memory status of your system (read only).

Advanced BIOS Features



CPU Feature

Press <Enter> and the following sub-menu appears.

Delay Prior to Thermal

When the CPU temperature reaches a factory preset level, a thermal monitoring mechanism will be enabled following the appropriate timing delay specified in this field. With the thermal monitoring enabled, clock modulation controlled by the processor's internal thermal sensor is also activated to keep the processor within allowable temperature limit. Setting options: [4 Min], [8 Min], [16 Min], [32 Min].

Thermal Management

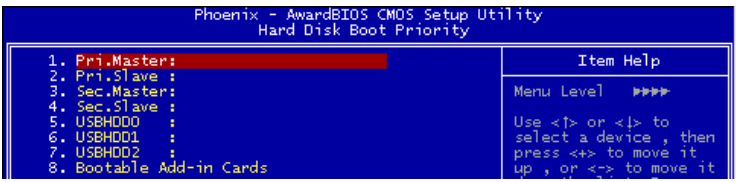
When CPU's temperature is higher than the predefined thermal level, the thermal monitoring mechanism will slow down the CPU speed to the percentage specified in the field.

Limit CPUID MaxVal

If installing Windows NT series OS with Prescott CPU, you must [Enable] this item function; if you use other OS except Windows NT, you have to [Disable] this item function. Setting options: [Enabled], [Disabled].

Hard Disk Boot Priority

Press <Enter> and the following sub-menu appears.



Pri.Master/Slave, Sec,Master/Slave, USBHDD0/1/2, Bootable Add-in Cards

You can see a list of the current status of Pri.Master/Slave, Sec,Master/Slave, USBHDD0/1/2, Bootable Add-in Cards.

Virus Warning

The item is to set the Virus Warning feature for IDE Hard Disk boot sector protection. If the function is enabled and any attempt to write data into this area is made, BIOS will display a warning message on screen and beep. Settings: [Disabled], [Enabled].

MSI Reminds You...

Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you first disable the virus warning.

Hyper-Threading Technology
The processor uses Hyper-Threading technology to increase transaction rates and reduces end-user response times. The technology treats the two cores inside the processor as two logical processors that can execute instructions simultaneously. In this way, the system performance is highly improved. If you disable the function, the processor will use only one core to execute the instructions. Settings: [Enabled], [Disabled].

MSI Reminds You...
Enabling the functionality of Hyper-Threading Technology for your computer system requires ALL of the following platform Components:
* ***CPU:*** *An Intel® Pentium® 4 Processor with HT Technology;*
* ***Chipset:*** *An Intel® Chipset that supports HT Technology;*
* ***BIOS:*** *A BIOS that supports HT Technology and has it enabled;*
* ***OS:*** *An operating system that supports HT Technology.*

For more information on Hyper-threading Technology, go to: www.intel.com/info/hyperthreading

Quick Power On Self Test
Select Enabled to reduce the amount of time required to run the power-on self-test (POST). A quick POST skips certain steps. We recommend that you normally disable quick POST. Better to find a problem during POST than lose data during your work.

First/Second Third Boot Device
The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system.

MSI Reminds You...
1. *Available settings for "1st/2nd/3rd Boot Device" vary depending on the bootable devices you have installed. For example, if you did not install a floppy drive, the setting "Floppy" does not show up.*
2. *If you want to boot from any of the USB-interface devices, please set* ***USB Keyboard/Mouse Support*** *in* ***SiS OnChip PCI Device*** *of* ***Integrated Peripherals*** *to* ***Enabled.***

Boot Other Device
Setting the option to [Enabled] allows the system to try to boot from other device if the system fails to boot from the 1st/2nd/3rd boot device. Setting options: [Enabled], [Disabled].

Boot Up Floppy Seek
Setting to [Enabled] will make BIOS seek floppy drive A: before booting the system. Setting options: [Disabled], [Enabled].

Boot Up NumLock Status
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. Setting options: [On], [Off].

Gate A20 Option
This item is to set the Gate A20 status. A20 refers to the first 64KB of extended memory. When the default value [Fast] is selected, the Gate A20 is controlled by Port92 or chipset specific method resulting in faster system performance. When [Normal] is selected, A20 is controlled by a keyboard controller or chipset hardware.

Typematic Rate (Chars/Sec)
After ***Typematic Rate Setting*** is enabled, this item allows you to set the rate (characters/second) at which the keys are accelerated. Settings: [6], [8], [10], [12], [15], [20], [24], [30].

Typematic Delay (Msec)
This item allows you to select the delay between when the key was first pressed and when the acceleration begins. Settings: [250], [500], [750], [1000].

Security Option
This specifies the type of BIOS password protection that is implemented. Settings are described below:

Option	Description
[Setup]	The password prompt appears only when end users try to run Setup.
[System]	A password prompt appears every time when the computer is powered on or when end users try to run Setup.

APIC Mode
This field is used to [Enabled] or [Disabled] the APIC (Advanced Programmable Interrupt Controller). Due to compliance to PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQs resources for the system. Setting options: [Enabled], [Disabled].

MPS Version Control For OS
This field allows you to select which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version supported by your operating system. To find out which version to use, consult the vendor of your operating system. Setting options: [1.4], [1.1].

OS Selection For DRAM > 64MB
This allows you to run the OS/2® operating system with DRAM larger than 64MB. When you choose [Non-OS2], you cannot run the OS/2® operating system with DRAM larger than 64MB. But it is possible if you choose [OS2]. Setting options: [Non-OS2], [OS2].

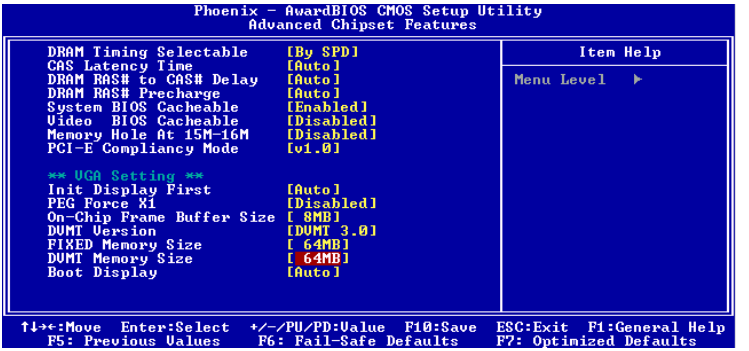
Hard Disk S.M.A.R.T.
This allows you to activate the S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for the hard disks. S.M.A.R.T is a utility that monitors your disk status to predict hard disk failure. This gives you an opportunity to move data from a hard disk that is going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

Report No FDD For WIN 95
For compatibility with Windows 95 logo certification, select *Yes* to release IRQ6 when the system contains no floppy drive. When this setting is set to *Yes*, users have to select *Disabled* for the Onboard FDC Controller in the Integrated Peripherals menu. Setting options: *No, Yes*.

Small LOGO show
This item enables you to show the company logo on the bootup screen. Settings are:

[Enabled]	Shows a still image (logo) on the full screen at boot.
[Disabled]	Shows the POST messages at boot.

Advanced Chipset Features



DRAM Timing Selectable

This field allows you to select the DRAM timing setting. Setting to [By SPD] enables Max Memclock (Mhz) automatically to be determined by SPD. Selecting [Manual] allows users to configure these fields manually. Setting options: [By SPD] , [Manual].

CAS Latency

When the ***DRAM Timing Control*** is set to [Manual], this field is adjustable. The field controls the CAS latency, which determines the timing delay before SDRAM starts a read command after receiving it. Setting options: [2T], [2.5T], [3T]. [2T] increases system performance while [3T] provides more stable system performance.

DRAM RAS# to CAS# Delay

When the ***DRAM Timing Control*** is set to [Manual], this field is adjustable. When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe). The less the clock cycles, the faster the DRAM performance. Setting options: [2T] to [5T].

DRAM RAS# Precharge

When the ***DRAM Timing Control*** is set to [Manual], this field is adjustable. This setting controls the number of cycles for Row Address Strobe (RAS) to be allowed to precharge. If insufficient time is allowed for the RAS to accumulate its charge before DRAM refresh, refreshing may be incomplete and DRAM may fail to retain data. This item applies only when synchronous DRAM is installed in the system. Setting options: [2T] to [5T], [Auto].

System BIOS Cacheable
Selecting [Enabled] allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. Setting options: [Enabled], [Disabled].

Video BIOS Cacheable
Selecting [Enabled] allows caching of the video memory (RAM) at A0000h to AFFFFh, resulting in better video performance. However, if any program writes to this memory area, a memory access error may result. Setting options: [Disabled], [Enabled].

Memory Hole AT 15M-16M
In order to improve performance, certain space in memory can be reserved for ISA peripherals. This memory must be mapped into the memory space below 16MB. When this area is reserved, it cannot be cached. Settings: [Disabled], [15MB-16MB].

PCI-E Compliancy Mode
It allows you select the PCI-E compliant mode. Setting options: [v1.0], [v1.0a].

**** VGA Setting ****

Init Display First
This item specifies which VGA card is your primary graphics adapter. Setting options: [IGD], [PEG].

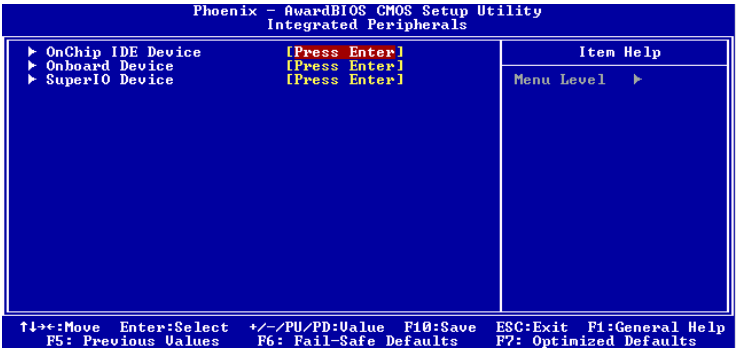
On-Chip Frame Buffer Size
Frame Buffer is the video memory that stores data for video display (frame). This field is used to determine the memory size for Frame Buffer. Larger frame buffer size increases video performance. Settings: [1MB], [4MB], [8M], [16M], [32MB].

FIXED Memory Size
Specify the size of system memory to allocate for video memory, Settings: [64MB], [128MB].

DVMT Memory Size
Specify the size of DVMT memory to allocate for video memory, Settings: [64MB], [128MB].

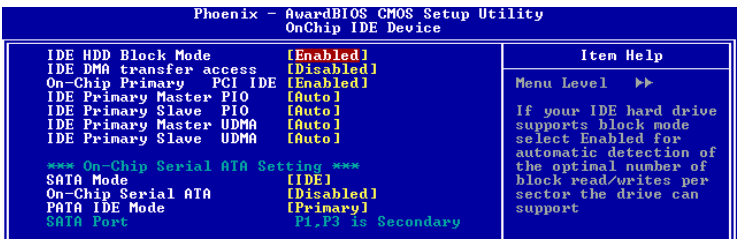
Boot Display
Use the field to select the type of device you want to use as the display(s) of the system. Setting options: [Auto], [CRT], [TV], [EFP]. The option [EFP] refers to the LCD display.

Integrated Peripherals



OnChip IDE Device

Press <Enter> and the following sub-menu appears:



IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select [Enabled] for automatic detection of the optimal number of block read/ writes per sector the drive can support. Settings: [Enabled], [Disabled].

IDE DMA transfer access

Setting to [Enabled] will open DMA bus master and execute DMA action in DOS, which will make the data transferring faster. Setting options: [Disabled], [Enabled].
IDE Primary/Secondary Master/Slave PIO
The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In [Auto] mode, the system automatically determines the best mode for each device. Setting options: [Auto], [Mode 0], [Mode 1], [Mode 2], [Mode 3], [Mode 4].

On-Chip Primary PCI IDE
The integrated peripheral controller contains an IDE interface with support for two IDE channels. Choose [Enabled] to activate each channel separately. Settings: [Enabled], [Disabled].

IDE Primary/Secondary Master/Slave PIO
The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In [Auto] mode, the system automatically determines the best mode for each device. Setting options: [Auto], [Mode 0], [Mode 1], [Mode 2], [Mode 3], [Mode 4].

Primary/Secondary Master/Slave Ultra DMA
Ultra DMA 33/66/100/133 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows ME, XP or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, Ultra DMA/66, Ultra DMA/100 and Ultra DMA/133, select [Auto] to enable BIOS support. Setting options: [Auto], [Disabled].

**** On-Chip ATA Setting ****

SATA Mode
This setting is used to set SATA mode. Setting options: [IDE], [RAID], [AHCI].

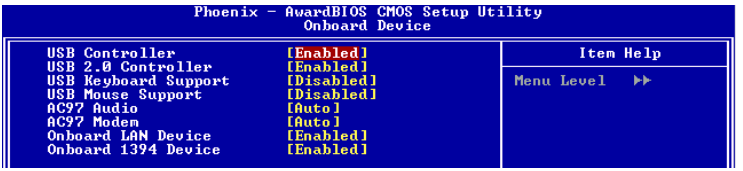
On-Chip Serial ATA
This setting is used to specify the SATA controller. The settings are:
[Disabled] Disable the SATA controller.

[Auto]	PATA and SATA will be arranged by BIOS, and you will be able to see the IDE Device status listed in **Standard COMS Features**.
[Combined]	PATA and SATA will be combined. Max. of 2 IDE drives in each channel are available.
[Enhanced]	PATA and SATA will both be enabled. Max. of 6 IDE drives are supported.
[SATA only]	Only SATA is operating in legacy mode.

PATA IDE Mode
This item is available for you to select the parallel ATA channel. Setting options: [Primary], [Secondary].

SATA Port
This allows you to set the boot sequence of serial ATA port.

Onboard Device
Press <Enter> and the following sub-menu appears:



USB Controller
Select [Enabled] if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals. Setting options: [Enabled], [Disabled].

USB 2.0 Controller
This item is used to [Enabled] / [Disabled] the USB 2.0 Support. Setting options: [Enabled], [Disabled].

USB Keyboard/Mouse Support
Set to [Enabled] if you need to use a USB keyboard/mouse in the operating system that does not support or does not have any USB driver installed, such as DOS and SCO Unix.

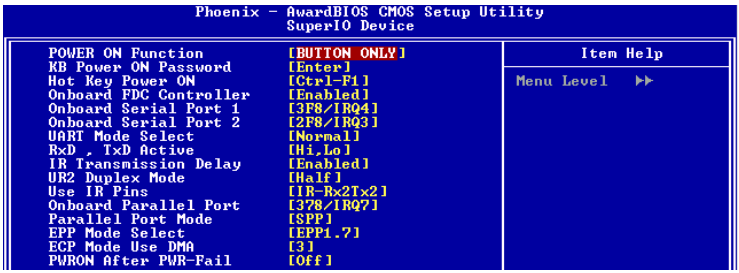
AC97 Audio
[Auto] allows the mainboard to detect whether an audio device is used. If an audio device is detected, the onboard AC97 (Audio Codec'97) controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect an audio device. Setting options: [Auto], [Disabled].

AC'97 Modem
[Auto] allows the mainboard to detect whether a modem is used. If a modem is used, the onboard MC'97 (Modem Codec'97) controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect to a modem. Settings: [Auto], [Disabled].

Onboard LAN Device
The item enables or disables the onboard LAN controller. Setting options: [Enabled], [Disabled].

OnBoard 1394 Device
This setting is used to enable/disable the onboard IEEE 1394 controller. Setting options: [Enabled], [Disabled].

SuperIO Device
Press <Enter> and the following sub-menu appears:



POWER ON Function
This controls how the PS/2 mouse or keyboard can power on the system. Settings: [Password], [Hot KEY], [Mouse Left], [Mouse Left], [Mouse Right], [any KEY], [BUTTON ONLY], [Keyboard 98].

KB Power ON Password
If POWER ON Function is set to *Password*, then you can set a password in the field for the PS/2 keyboard to power on the system.

Hot Key Power ON
If ***POWER ON Function*** is set to [Hot KEY], you can assign a hot key combination in the field for the PS/2 keyboard to power on the system. Settings: [Ctrl-F1] through [Ctrl-F12].

Onboard FDC Controller
Select [Enabled] if your system has a floppy disk controller (FDD) installed on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select [Disabled] in this field. Setting options: [Enabled], [Disabled].

Onboard Serial Port 1/Serial Port 2
This item specifies the base I/O port address and IRQ for the onboard Serial Port 1 (LPT1B)/Serial Port 2 (JCOM1). Selecting [Auto] allows BIOS to automatically determine the correct base I/O port address. Setting options: [Disabled], [3F8/IRQ4], [2F8/IRQ3], [3E8/IRQ4], [2E8/IRQ3], [Auto].

UART Mode Select
This setting allows you to specify the operation mode for serial port 2. Setting options: *IrDA, ASKIR, Normal*.

Normal	RS-232C Serial Port
IrDA	IrDA-compliant Serial Infrared Port
ASKIR	Amplitude Shift Keyed Infrared Port

RxD, TxD Active
This setting controls the receiving and transmitting speed of the IR peripheral in use. Setting options: [Hi,Hi], [Hi,Lo], [Lo,Hi], [Lo,Lo].

IR Transmission Delay
This setting determines whether the IR transmission rate will be delayed while converting to receiving mode. Setting options: [Disabled], [Enabled].

UR2 Duplex Mode
In an infrared port mode, this field appears. Full-duplex mode permits simultaneous two-direction transmission. Half-duplex mode permits transmission in one direction only at a time. Select the value required by the IR device connected to the IR port. Setting options: [Full], [Half].

Use IR Pins
Consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals.

Onboard Parallel Port
This specifies the I/O port address and IRQ of the onboard parallel port. Setting options: [378/IRQ7], [278/IRQ5], [3BC/IRQ7], [Disabled].

Parallel Port Mode
This item selects the operating mode for the parallel port: [Normal], [SPP], [EPP], [ECP], or [ECP+EPP].

[SPP]	Standard Parallel Port
[EPP]	Enhanced Parallel Port
[ECP]	Extended Capability Port
[ECP+EPP]	Extended Capability Port + Enhanced Parallel Port
[Normal]	Standard Parallel Port + Bi-Directional Mode.

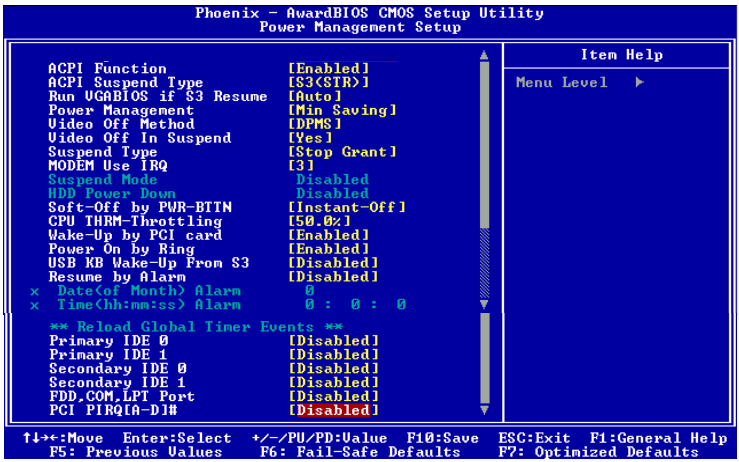
EPP Mode Select
This item selects the EPP mode. Setting options: [EPP1.9], [EPP1.7].

ECP Mode Use DMA
The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: "ECP Mode Use DMA." At this time, the user can choose between DMA channel [3] or [1].

PWRON After PWR-fail
This item specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

[Off]	Leaves the computer in the power off state.
[On]	Leaves the computer in the power on state.
[Former-sts]	Restores the system to the status before power failure or interrupt occurred.

Power Management Setup



ACPI Function

This item is to activate the ACPI (Advanced Configuration and Power Management Interface) function. If your operating system is ACPI-aware, such as Windows 98SE/ 2000/ME, select [Enabled]. Setting options: [Enabled], [Disabled].

ACPI Standby State

This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, 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.

[S1&S3]

Run VGA BIOS if S3 Resume
When ***ACPI Standby State*** is set to [S3/STR], users can select the options in this field. Selecting [Yes] allows BIOS to call VGABIOS to initialize the VGA card when system wakes up (resumes) from S3 sleep state. The system resume time is shortened when you disable the function, but system will need an AGP driver to initialize the VGA card. Therefore, if the AGP driver of the card does not support the initialization feature, the display may work abnormally or not function after resuming from S3. Options: [Auto], [Yes], [No].

Power Management
This item is used to select the degree (or type) of power saving and is related to the mode: ***Suspend Mode***. There are three options for power management:

[Min Saving]	Minimum Power Management. Suspend Mode = 1 Hour.
[Max Saving]	Maximum Power Management. Suspend Mode = 1 Min.
[User Define]	Allows end users to configure the Suspend Mode field.

Video Off Method
This determines the manner in which the monitor is blanked.

[V/H SYNC+Blank]	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
[Blank Screen]	This option only writes blanks to the video buffer.
[DPMS Support]	Initial display power management signalling.

Video Off In Suspend
This option enables the monitor to be turned off during the suspend mode. Settings: [Yes], [No].

Suspend Type
This item allows you to select the suspend type for system power management. Settings: [Stop Grant], [PwrOn Suspend].

MODEM Use IRQ
This setting names the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system. Setting options: [3], [4], [5], [7], [9], [10], [11], [NA].

Suspend Mode
When you choose [User Define] in the ***Power Management*** item, this item is selectable. This setting allows you to select the type of Suspend mode. Setting options: [Disabled] (default setting), [1 min] to [1 hour].

HDD Power Down
If HDD activity is not detected for the length of time specified in this field, the hard disk drive will be powered down while all other devices remain active. Settings are [Disabled] and [1] through [15] Min.

Soft-Off by PWR-BTTN
When Enabled, turning the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity.

CPU THRM-Throttling
The item allows you to specify the CPU speed (at percentage) to which it will slow down when the CPU reaches the predetermined overheat temperature. Settings range from [25.0%] to [50.0%] at [75.0%] increment.

Wake-Up by PCI card
These fields specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected. Options: [Enabled], [Disabled].

Power On by Ring, USB KB Wakeup From S3
These fields specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected. Setting options: [Enabled], [Disabled].

Resume By Alarm
The field is used to enable or disable the function of Resume By Alarm. Setting options: [Disabled], [Enabled].

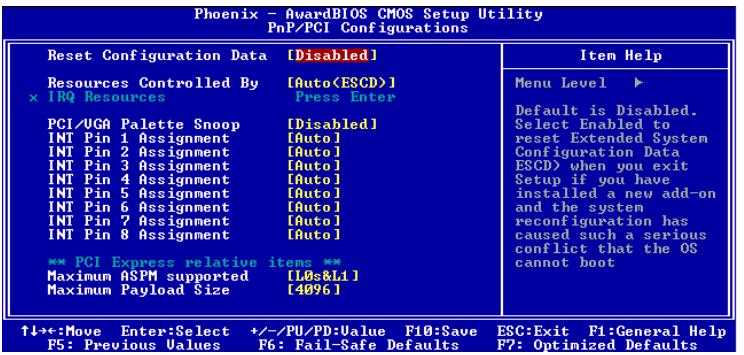
Date (of Month) Alarm
When Resume By Alarm is set to Enabled, the field specifies the date for ***Resume By Alarm***. Setting options: [0]~[31].

Time (hh:mm:ss) Alarm
When Resume By Alarm is set to Enabled, the field specifies the time for ***Resume By Alarm***. Format is <hour><minute><second>.

**** Reload Global Timer Events ****
Primary/Secondary IDE 0/1, FDD/COM/LPT Ports, PCI PIRQ [A-D]#
The global timer is the hardware timer that counts down to the power saving modes. If the monitoring of the listed hardware peripherals or components is enabled, the activity of the specified peripherals or components will awaken the system or reload the original count of global timer when they are accessed. Setting options: [Disabled], [Enabled]

PNP/PCI Configurations

This section describes configuring the PCI bus system and PnP (Plug & Play) feature. PCI, or Peripheral Component Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.



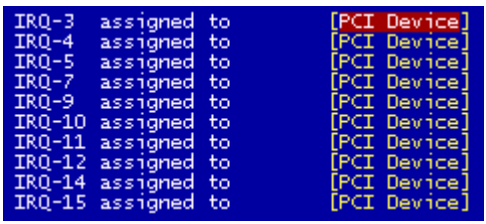
Reset Configuration Data

The ESCD (Extended System Configuration Data) NVRAM (Non-volatile Random Access Memory) is where the BIOS stores resource information for both PNP and non-PNP devices in a bit string format. When the item is set to [Enabled], the system will reset ESCD NVRAM right after the system is booted up and then set the setting of the item back to [Disabled] automatically. Settings: [Disabled], [Enabled].

Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows® 98/ 2000. If you set this field to [Manual], choose specific resources by going into each sub-menu that follows this field. Setting options: [Auto(ESCD)], [Manual].

IRQ Resources
The items are adjustable only when *Resources Controlled By* is set to *Manual*. Press <Enter> and you will enter the sub-menu of the items.



IRQ Resources list IRQ 3/4/5/7/9/10/11/12/14/15 for users to set each IRQ a type depending on the type of device using the IRQ. Setting options:

[PCI Device]	For Plug & Play compatible devices designed for PCI bus architecture.
[Reserved]	The IRQ will be reserved for further request.

PCI/VGA Palette Snoop
When set to [Enabled], multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example, if there are two VGA devices in the computer (one PCI and one ISA) and the:

VGA Palette Snoop Bit Setting	Action
[Disabled]	Data read or written by the CPU is only directed to the PCI VGA device's palette registers.
[Enabled]	Data read or written by the CPU is directed to both the PCI VGA device's palette registers and the ISA VGA device's palette registers, permitting the palette registers of both VGA devices to be identical.

The setting must be set to [Enabled] if any ISA bus adapter in the system requires VGA palette snooping.

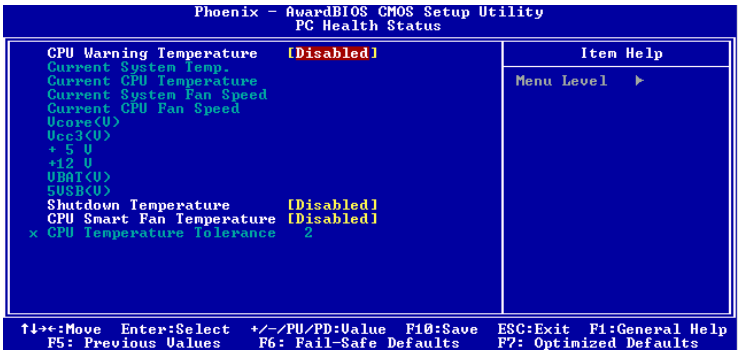
INT Pin1~8 Assignment
These items specify the IRQ line for each PCI slot. Setting options: [3], [4], [5], [7], [9], [10], [11], [12], [14], [15], [Auto]. Selecting [Auto] allows BIOS to automatically determine the IRQ line for each PCI slot.

**** PCI Express relative items ****
Maximum ASPM Supported
It controls maximum level of ASPM supported on the given PCI Express links on the system. Setting options: [L0], [L0s], [L1], [L0s&L1].

Maximum Payload size
It allows you to set the maximum TLP payload size for the PCI Express devices. Setting options: [128 bytes], [256 bytes], [512 bytes], [1024 bytes], [2048 bytes], [4096 bytes].

PC Health Status

This section shows the status of your CPU, fan, overall system status, etc. Monitor function is available only if there is hardware monitoring mechanism onboard.



CPU Warning Temperature

This item is used to specify a thermal limit for CPU. If CPU temperature reaches the specified limit, the system will issue a warning and allows you to prevent the CPU overheating problem. Settings: [Disabled], [50°C/122°F], [53°C /127°F], [56°C /133°F], [60°C /140°F], [63°C /145°F], [66°C /151°F] and [70°C /158°F].

Current System/CPU Temperature, Current CPU/System FAN Speed, Vcore, Vcc3 (V), +5 V, +12 V, VBAT(V), 5VSB(V)

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

Shutdown Temperature

If the CPU temperature reaches the limit preset in this setting, the system will shut-down automatically. Settings: [Disabled], [60°C/140°F], [65°C /149°F], [70°C /158°F], [75°C /167°F].

CPU Smart Fan Temperature

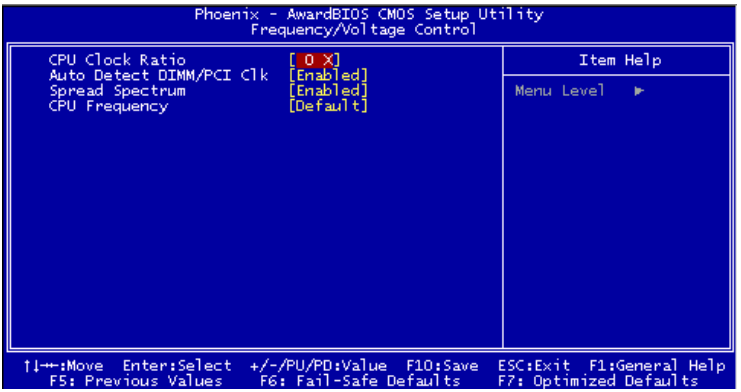
Select a temperature setting here, and if the temperature of the CPU climbs up to the selected temperature setting, the system will automatically increase the speed of the CPU fan to cool down the overheated CPU. Settings: [Disabled], [30°C/86°F], [35°C / 95°F], [40°C /104°F], [45°C /113°F], [50°C /122°F], [55°C /131°F], [60°C /140°F], [65°C /149°F], [70°C /158°F].

CPU Temperature Tolerance

You can select a fan tolerance value here for the specific range for the "Smart Fan Target Temp. (ºC)" item. If the current temperature of the fan reaches the maximum threshold (the temperature set in the "Smart Fan Target Temp.(ºC)" plus the tolerance values you set here), the fan will speed up for cooling down. On the contrary, if the current temperature reaches the minimum threshold (the set temperature minus the tolerance value), the fan will slow down to keep the temperature stable. Setting options: Min: [0](ºC), Max: [15](ºC).

Frequency/Voltage Control

Use this menu to specify your settings for frequency/voltage control.



CPU Clock Ratio
End users can overclock the processor (only if the processor supports so) by specifying the CPU ratio (clock multiplier) in this field. It is available only when ***Set CPU Ratio*** is set to [Manual]. Setting options: Min: [8], Max: [50].

Auto Detect PCI Clk
This item is used to auto detect the PCI slots. When set to [Enabled], the system will remove (turn off) clocks from empty PCI slots to minimize the electromagnetic interference (EMI). Setting options: [Enabled], [Disabled].

Spread Spectrum
When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The Spread Spectrum function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves. If you do not have any EMI problem, leave the setting at [Disabled] for optimal system stability and performance. But if you are plagued by EMI, set to [Enabled] for EMI reduction. Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clock speed which may just cause your overclocked processor to lock up. Setting options: [Enabled], [Disabled].

CPU Host/PCI EX/PCI Clock
Use this item to select the appropriate clock frequency of the CPU host/PCI EX/PCI bus. Setting options: [100/100/33MHz], [100/133/133MHz], [133/100/133MHz], [137/103/34MHz], [166/100/33MHz], [171/103/34MHz], [200/100/33MHz], [202/133/33MHz], [206/103/34MHz], [210/105/35MHz].

Load Fail-Safe/Optimized Defaults

The two options on the main menu allow users to restore all of the BIOS settings to the default Fail-Safe or Optimized values. The Optimized Defaults are the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard. The Fail-Safe Defaults are the default values set by the BIOS vendor for stable system performance.

When you select Load Fail-Safe Defaults, a message as below appears:

Pressing *Y* loads the BIOS default values for the most stable, minimal system performance.

When you select Load Optimized Defaults, a message as below appears:

Pressing *Y* loads the default factory settings for optimal system performance.

Set Supervisor/User Password

When you select this function, a message as below will appear on the screen:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will replace any previously set password from CMOS memory. You will be prompted to confirm the password. Retype the password and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also have BIOS to request a password each time the system is booted. This would prevent unauthorized use of your computer. The setting to determine when the password prompt is required in the ***Security Option*** of the Advanced BIOS Feature menu. If the ***Security Option*** is set to [System], the password is required both at boot and at entry to Setup. If set to [Setup], password prompt only occurs when you try to enter Setup.

MSI Reminds You...
About Supervisor Password & User Password:

Supervisor password:	*Can enter and change the settings of the setup menu.*
User password:	*Can only enter but do not have the right to change the settings of the setup menu.*