

ASUS[®] POLO
SiS630(E) Ultra-AGP
Socket 370 Motherboard

USER'S MANUAL

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Product Name: **ASUS POLO**
Manual Revision: **1.00 E664**
Release Date: **December 2000**

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FCC & DOC COMPLIANCE

Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

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

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

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

WARNING! Any changes or modifications to this product not expressly approved by the manufacturer could void any assurances of safety or performance and could result in violation of Part 15 of the FCC Rules.

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Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

1. INTRODUCTION

1.1 How This Manual Is Organized

This manual is divided into the following sections:

1. INTRODUCTION	Manual information and checklist
2. FEATURES	Production information and specifications
3. HARDWARE SETUP	Instructions on setting up the motherboard.
4. BIOS SETUP	Instructions on setting up the BIOS
5. SOFTWARE SETUP	Instructions on setting up the included software
6. SOFTWARE REFERENCE	Reference material for the included software
7. APPENDIX	Optional items and general reference

1.2 Item Checklist

Check that your package is complete. If you discover damaged or missing items, contact your retailer.

Package Contents

- (1) ASUS Motherboard
- (1) 40-pin 80-conductor ribbon cable for internal UltraDMA/66 or UltraDMA/33 IDE drives
- (1) 40-pin 40-conductor ribbon cable for internal UltraDMA/33 IDE drives
- (1) Ribbon cable for one 5.25" and two 3.5" floppy disk drives
- (1) ASUS Support CD with drivers and utilities
- (1) User's Manual

2. FEATURES

2.1 ASUS POLO Motherboard

The ASUS POLO motherboard targets users that require non-complicated yet flexible system. This motherboard includes the basic features that are sufficient for an entry-level system while employing the latest technologies.

2.1.1 Specifications

- **Latest Processor Support**

Intel Pentium® III	133MHz FSB	Coppermine core	FC-PGA
Intel Pentium® III	100MHz FSB	Coppermine core	FC-PGA
Intel Celeron™	66MHz FSB	Mendocino core	PPGA

- **System Chipset:** Features the SiS630(E) 3C Integration Single Chip that incorporates SiS300 AGP graphics controller and SiS 900 LAN controller, and PCI audio controller. The SiS630(E) chipset also supports 133/100/66MHz Front Side Bus (FSB), Ultra-DMA/66, and the Suspend-to-RAM feature.
- **PC100/133 Memory Support:** Equipped with two Dual Inline Memory Module (DIMM) sockets to support Intel PC133/PC100-compliant SDRAMs (available in 64, 128, 256, or 512MB densities) up to 1GB.
- **UltraDMA/66 Support:** Comes with an onboard PCI Bus Master IDE controller with two connectors that support four IDE devices on two channels. Supports UltraDMA/66, UltraDMA/33, PIO Modes 3 & 4, and Enhanced IDE devices, such as DVD-ROM, CD-ROM, CD-R/RW, LS-120, and Tape Backup drives.
- **LAN Support:** Features the SiS900 10/100Mbps Fast-Ethernet LAN controller built-in the SiS630(E) chipset and an RJ-45 connector to allow convenient connection to a Local Area Network (LAN). The chipset also supports Wake-on-LAN and Remote Wake-up functions.
- **Wake-On-LAN Connector:** Supports Wake-On-LAN activity through an optional ASUS PCI-L101 10/100 Fast Ethernet PCI card.
- **Onboard Audio:** AC '97-compliant PCI audio controller built-in the SiS630(E) system controller and LM4880M amplifier for internal speaker.
- **Onboard Video:** Features the SiS300 2D/3D AGP VGA controller built-in the system chipset to support high performance graphical applications.
- **PCI Expansion Slot:** One 32-bit PCI (Rev. 2.2) riser card slot to accommodate one Bus Master PCI card, such as a SCSI or a LAN card (PCI supports up to 133MB/s maximum throughput).
- **Super I/O Chipset:** Equipped with the SiS950 super I/O controller chipset to support one fast UART compatible serial port, one parallel port with EPP and ECP capabilities, and four USB ports.

2. FEATURES

- **Smart BIOS:** 2MB firmware provides Vcore and CPU/SDRAM frequency adjustments, boot block write protection, and HD/SCSI/MO/ZIP/CD/Floppy boot selection.
- **Enhanced ACPI and Anti-Boot Virus Protection:** Programmable BIOS (Flash EEPROM), offering enhanced ACPI for Windows 98/2000 compatibility, built-in firmware-based virus protection, and autodetection of most devices for a virtual automatic setup.
- **Suspend-to-RAM:** Comes with Suspend-to-RAM (STR) feature that provides maximum power savings while leaving your computer ON. STR allows QuickStart when you get back, so you don't have to go through the long boot process.
- **Desktop Management Interface (DMI):** Supports DMI through BIOS, which allows hardware to communicate within a standard protocol creating a higher level of compatibility. (Requires DMI-enabled components.)
- **PC Health Monitoring:** Includes one CPU fan and one chassis fan for maintaining optimal system voltage and temperature.
- **Video Bridge (optional):** The optional SiS301 video bridge chip is a companion to the SiS300 graphic chip. SiS301 comes with built-in NTSC/PAL video encoder for Macro Vision 7.1 for TV display and built-in TMDS transmitter with Bi-Linear scaling capability for TFT LCD panel.

2. FEATURES

2.1.2 Special Features

- **ACPI Support:** Advanced Configuration Power Interface (ACPI) provides more Energy Saving Features for operating systems that support OS Direct Power Management (OSPM) functionality. With these features implemented in the OS, PCs can be ready around the clock, yet satisfy all the energy saving standards. To fully utilize the benefits of ACPI, an ACPI-supported OS, such as Windows 98 must be used.
- **Easy Installation:** Incorporates BIOS that supports autodetection of hard disk drives, PS/2 mouse, and Plug and Play devices to make the setup of hard disk drives, expansion cards, and other devices virtually automatic.
- **PC'99 Compliant:** Both the BIOS and hardware levels of ASUS smart series motherboards are PC'99 compliant. The new PC'99 requirements for systems and components are based on the following high-level goals: Support for Plug-n-Play compatibility and power management for configuring and managing all system components, and 32-bit device drivers and installation procedures for Windows 95/98/2000/NT. Color-coded connectors and descriptive icons make identification easy as required by PC'99.
- **Wake-Up Feature:** Supports Wake-On-LAN, Keyboard/Mouse Wake-Up, and BIOS Wake-Up.

2.1.3 Performance Features

- **High-Speed Data Transfer Interface:** IDE transfers using UltraDMA/33 Bus Master IDE can handle rates up to 33MB/s. This motherboard with its chipset and support for UltraDMA/66 doubles the UltraDMA/33 burst transfer rate to 66.6MB/s. UltraDMA/66 is backward compatible with both DMA/33 and with existing DMA devices so there is no need to upgrade current EIDE/IDE drives. (UltraDMA/66 requires a 40-pin 80-conductor cable).
- **VCM/SDRAM Optimized Performance:** This motherboard supports the new generation memory, NEC 64Mb Virtual Channel Memory (VCM) Synchronous Dynamic Random Access Memory (SDRAM), that is compatible to the industry standard SDRAM. The VCM's core design provides up to 50% higher SDRAM speed at reduced power consumption of about 30%. This motherboard also supports the standard SDRAM for a the data transfer rate of up to 1.064GB/s using PC133-compliant SDRAMs and up to 800MB/s using PC100-compliant SDRAMs).

2. FEATURES

2.1.4 Intelligence

- **Auto Fan Off:** The system fans powers off automatically **even in sleep mode**. This function reduces both energy consumption and system noise, and is an important feature in implementing silent PC systems.
- **Dual Function Power Button:** Pushing the power button for less than 4 seconds when the system is in the working state places the system into one of two states: sleep mode or soft-off mode, depending on the BIOS or OS setting (see **PWR Button < 4 Secs** in **4.5 Power Menu**). When you press the power button for more than 4 seconds, the system enters the soft-off mode regardless of the BIOS setting.
- **Fan Status Monitoring and Alarm:** To prevent system overheat and system damage, the CPU and system fans can be monitored for RPM and failure. All fans are set for its normal RPM range and alarm thresholds.
- **Power LED (requires ACPI OS support):** The power LED indicates the system status.
- **Remote Ring On (requires modem):** This allows a computer to be turned on remotely through an internal or external modem. With this benefit on-hand, users can access vital information from their computers anywhere.
- **System Resources Alert:** Today's operating systems such as Windows 95/98/2000/NT and OS/2, require much more memory and hard drive space to present enormous user interfaces and run large applications. The system resource monitor warns the user before the system resources are used up to prevent possible application crashes. Suggestions provide the user some information on managing their limited resources more efficiently.
- **Voltage Monitoring and Alert:** System voltage levels are monitored to ensure stable voltage to critical motherboard components. Voltage specifications are more critical for future processors, so monitoring is necessary to ensure proper system configuration and management.

2. FEATURES

2.2 Motherboard Components

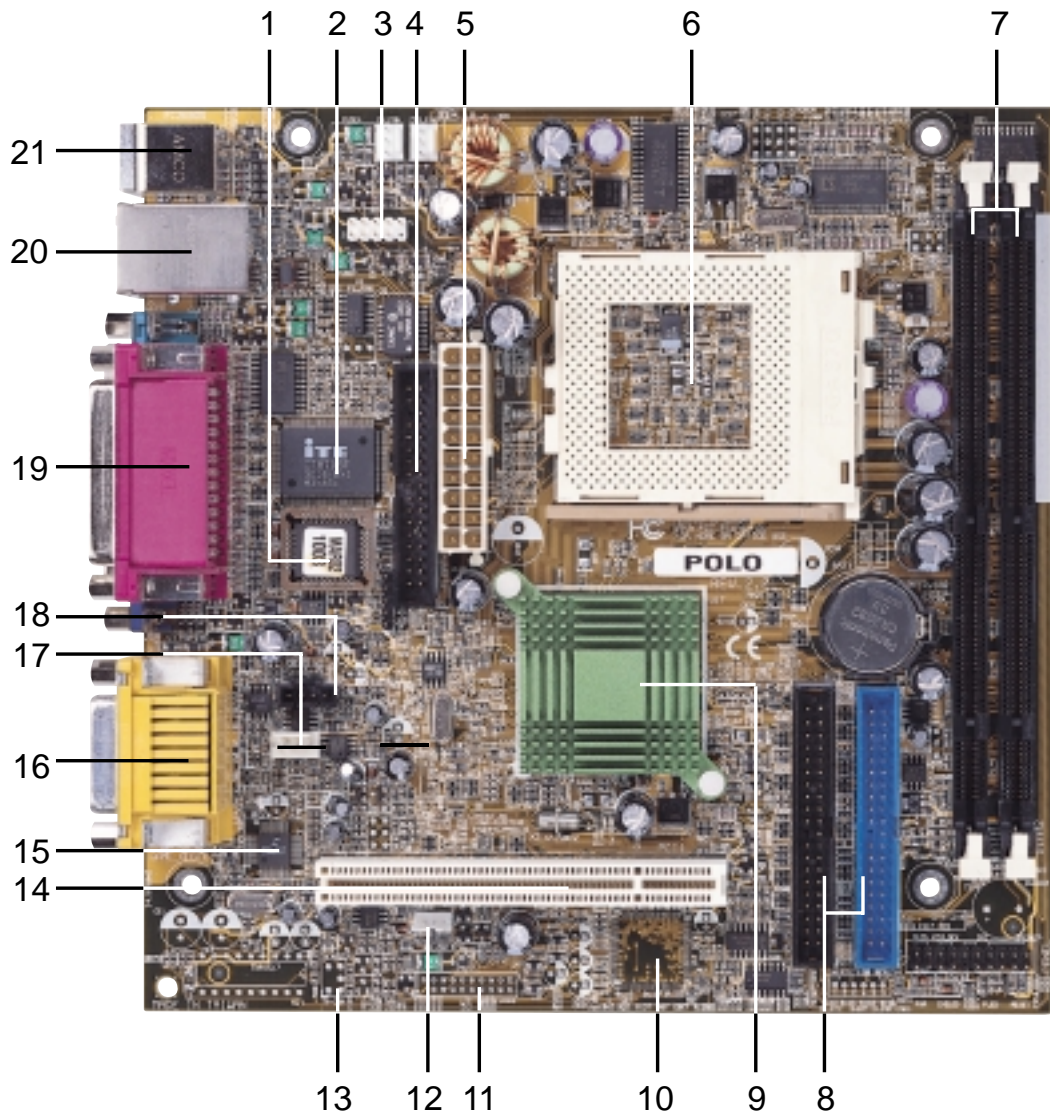
See opposite page for locations.

Location

Processor Support	Socket 370 for Pentium III/Celeron Processor	6
Chipsets	SiS630(E) 3C Integration Single Chip	9
	SiS950 Super I/O Controller	2
	2Mbit Programmable Flash EEPROM	1
Main Memory	Maximum 1GB support 2 DIMM Sockets	7
	PC133 SDRAM support	
Expansion Slot	1 Riser PCI Slot	14
System I/O	1 Floppy Disk Drive Connector	4
	2 IDE Connectors (UltraDMA66 Support)	8
	1 Parallel Port	(Top) 19
	1 Serial Port (COM1)	(Bottom) 19
	1 VGA Connector	(Bottom) 19
	2 USB Connectors (Port 0 & Port 1)	(Bottom) 20
	1 USB Header (Port 2 & Port 3)	3
	1 PS/2 Mouse Connector	(Top) 21
	1 PS/2 Keyboard Connector	(Bottom) 21
Audio Features	Crystal AC '97 v2.1 Audio Codec	15
	Game/MIDI Port	(Top) 16
	Line Out Connector	(Bottom) 16
	Line In Connector	(Bottom) 16
	Microphone Connector	(Bottom) 16
	Modem Connector (internal)	17
	CD Connector (internal)	18
Network Features	LAN Connector (RJ-45)	(Top) 20
	Wake-On-LAN Connector	12
Video Features	(optional) SiS301 Video Bridge	10
	LCDHD Connector	11
	TV-CON	13
Power	ATX Power Supply Connector	5
Form Factor	FlexATX	

2. FEATURES

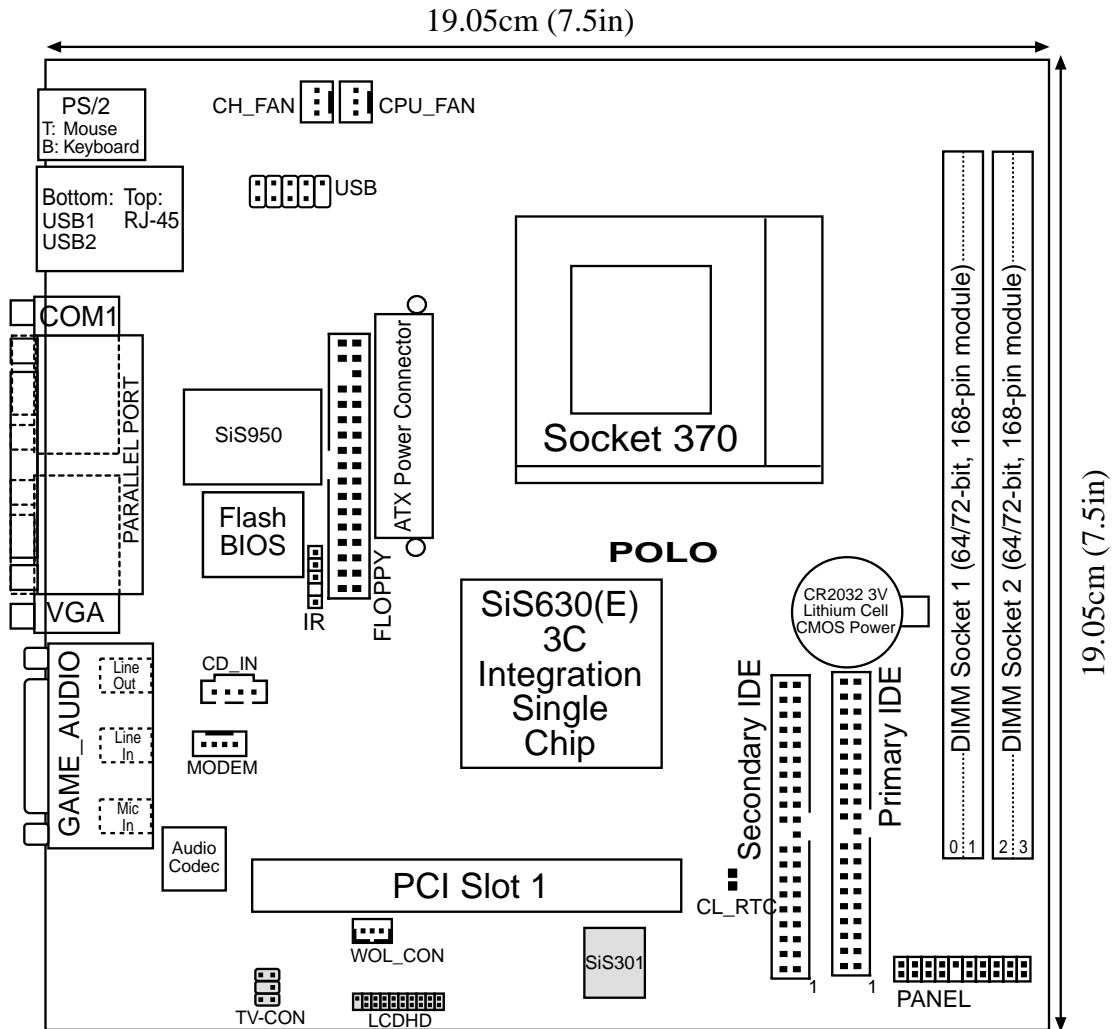
2.2.1 Component Locations



2. FEATURES
M/B Components

3. HARDWARE SETUP

3.1 Motherboard Layout



NOTE: The SiS301 chipset, LCDHD connector, and TV-CON are optional components.

3. HARDWARE SETUP

3.2 Layout Contents

Motherboard Settings

- 1) CL_RTC p. 17 Clear RTC RAM

Expansion Slots/Sockets

- 1) DIMM 1/2 p. 19 DIMM Support
2) Socket 370 p. 20 CPU Support
3) PCI p. 22 32-bit PCI Bus Expansion Slot

Connectors

- 1) PS2KBMS p. 25 PS/2 Mouse Port Connector (6 pin-female)
2) PS2KBMS p. 25 PS/2 Keyboard Port Connector (6-pin female)
3) LAN p. 26 Fast Ethernet LAN Connector (RJ45)
4) USB1 p. 26 Universal Serial Bus Connectors 1 & 2 (two 4-pin female)
5) PRINTER p. 26 Parallel Port Connector (25-pin female)
6) COM1 p. 27 Serial Port Connector (9-pin male)
7) VGA p. 27 VGA Connector (15-pin female)
8) GAME_AUDIO p. 27 Game and Audio Connectors (gold 15-pin, three 1/8")
9) WOL_CON p. 28 Wake-On-LAN Connector (3-pin)
10) FLOPPY p. 28 Floppy Disk Drive Port Connector (34-pin)
11) PRIMARY IDE p. 29 IDE Connectors (two 40-1 pins)
 SECONDARY IDE
12) USB2 p. 30 USB Header (10-1 pins)
13) IR p. 30 Infrared Module Connector (5-pin)
14) CPU_FAN, CHA_FAN p. 31 Chassis and CPU Fan Connectors (3-pin)
15) IDELED p. 31 IDE Activity LED (2-pin)
16) CD_IN, MODEM p. 32 Internal Audio Connectors (two 4-pin)
17) ATXPWR p. 32 ATX Power Supply Connector (20-pin)
18) LCDHD p. 33 LCD Header (20-pin)
19) TV-CON p. 33 TV Connector (5-pin)
20) PWR.LED (PANEL) p. 34 System Power LED Lead (3-pin)
21) SPEAKER (PANEL) p. 34 System Warning Speaker Connector (4-pin)
22) MSG.LED (PANEL) p. 34 System Message LED (2-pin)
23) SMI (PANEL) p. 34 System Management Interrupt Lead (2-pin)
24) PWR.SW (PANEL) p. 34 ATX / Soft-Off Switch Lead (2-pin)
25) RESET (PANEL) p. 34 Reset Switch Lead (2-pin)

3. HARDWARE SETUP

3.3 Hardware Setup Procedure

Before using your computer, you must complete the following steps:

1. Check motherboard settings
2. Install memory modules
3. Install the Central Processing Unit (CPU)
4. Install an expansion card
5. Connect ribbon cables, panel wires, and power supply
6. Setup the BIOS software

WARNING! Computer motherboards and expansion cards contain very delicate Integrated Circuit (IC) chips. To protect them against damage from static electricity, you should follow some precautions whenever you work on your computer.

1. Unplug your computer when working on the inside.
2. Use a grounded wrist strap before handling computer components. If you do not have one, touch both of your hands to a safely grounded object or to a metal object, such as the power supply case.
3. Hold components by the edges and try not to touch the IC chips, leads or connectors, or other components.
4. Place components on a grounded antistatic pad or on the bag that came with the component whenever the components are separated from the system.
5. Ensure that the ATX power supply is switched off before you plug in or remove the ATX power connector on the motherboard.

WARNING! Make sure that you unplug the power supply when adding or removing system components. Failure to do so may severely damage the motherboard, peripherals, and/or components. When lit, the onboard LED indicates that the system is in suspend or soft-off mode, not powered OFF.

3. HARDWARE SETUP

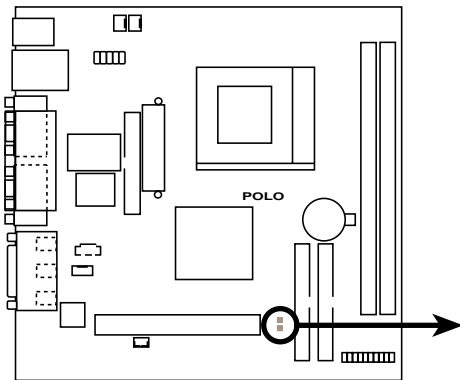
3.4 Motherboard Settings

This motherboard does not have jumpers nor switches to configure. However, there are two solder points onboard that allow you to clear the RTC RAM when necessary.

Clear RTC RAM

These two solder points allow you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The RAM data in CMOS, that include system setup information such as system passwords, is powered by the onboard button cell battery.

To erase the RTC RAM: (1) unplug the computer, (2) short the solder points, (3) turn ON the computer, (4) hold down the key during the boot process and enter BIOS setup to re-enter data.



POLO Clear RTC RAM Setting

CL_RTC



Short solder points
to Clear CMOS

3. HARDWARE SETUP

3.5 System Memory

This motherboard uses only Dual Inline Memory Modules (DIMMs). Two DIMM sockets are available for **3.3Volt** (power level) unbuffered Synchronous Dynamic Random Access Memory (SDRAM) of 16, 32, 64, 128, 256, or 512MB densities for a system memory configuration of 16MB up to 1GB. One side (with memory chips) of the DIMM takes up one row on the motherboard. This motherboard also supports NEC's Virtual Channel SDRAMs and Enhanced Memory System's High-speed DRAMs.

IMPORTANT

- **Make sure to use SDRAMs that are compatible with the current Intel PC133 SDRAM specifications.**
- **DO NOT attempt to mix registered SDRAMs with VCM SDRAMs.**

Install memory in any combination as follows:

DIMM Location	168-pin DIMM	Total Memory
Socket 1 (Rows 0&1)	SDRAM 16, 32, 64, 128, 256, 512MB	x1
Socket 2 (Rows 2&3)	SDRAM 16, 32, 64, 128, 256, 512MB	x1
Total System Memory (Max. 1GB)		=

3.5.1 General DIMM Notes

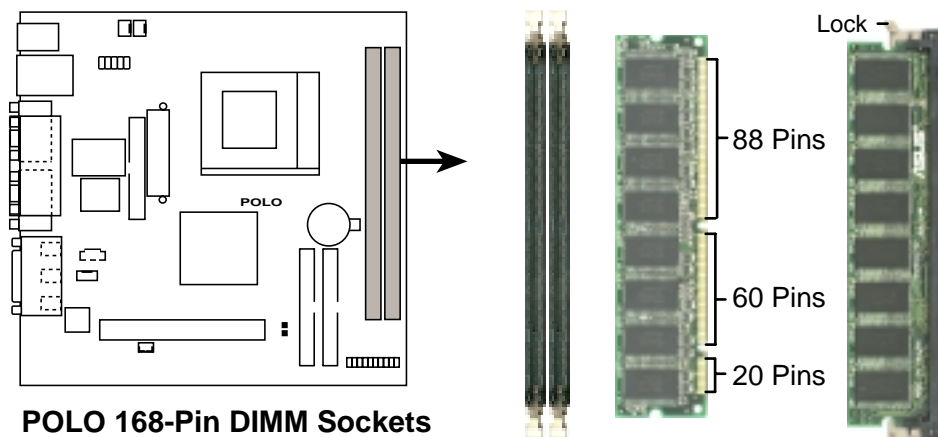
- **DIMMs that have more than 18 chips are not supported on this motherboard.**
- **For the system CPU bus to operate 100MHz/133MHz, use only PC100-/PC133-compliant DIMMs.**
- ASUS motherboards support Serial Presence Detect (SPD) DIMMs. This is the memory of choice for best performance vs. stability.
- SDRAM chips are generally thinner with higher pin density than EDO (Extended Data Output) chips.
- BIOS shows SDRAM memory on bootup screen.
- Single-sided DIMMs come in 16, 32, 64, 128, 256MB; double-sided come in 32, 64, 128, 256, 512MB.

3. HARDWARE SETUP

3.5.2 Memory Installation

WARNING! Make sure that you unplug the power supply when adding or removing memory modules or other system components. Failure to do so may cause severe damage to both the motherboard and expansion cards (see **3.3 Hardware Setup Procedure** for more information).

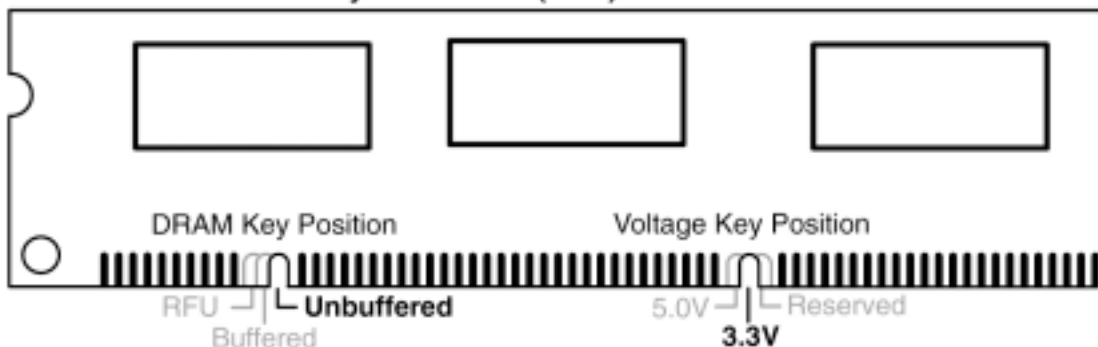
Insert the module(s) into the DIMM sockets as shown. Because the number of pins are different on either side of the breaks, the module only fits in one direction. SDRAM DIMMs have different pin contacts on each side and have a higher pin density than DRAM SIMMs.



3. HW SETUP
System Memory

The DIMMs must be 3.3Volt unbuffered SDRAMs. To determine the DIMM type, check the notches on the DIMMs (see the figure below).

168-Pin DIMM Notch Key Definitions (3.3V)

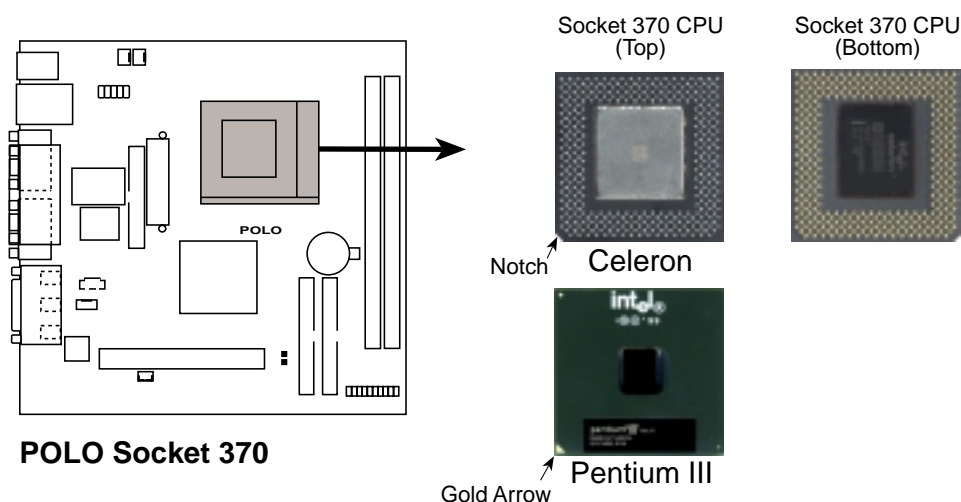


The notches on the DIMM shifts between left, center, or right to identify the type and also to prevent the wrong type from being inserted into the DIMM slot on the motherboard. You must tell your retailer the correct DIMM type before purchasing. This motherboard supports four clock signals per DIMM.

3. HARDWARE SETUP

3.6 Central Processing Unit (CPU)

The motherboard comes with a ZIF Socket for the supported CPUs listed in section *2.1.1 Specifications*. The following illustration shows the CPU socket location on the motherboard and the correct CPU orientation.



Note in the illustration that CPUs have marks (usually a notch or a gold mark on one corner) to help you identify the proper orientation and enable you to correctly install a CPU. It is important that you match the marked corner of the CPU with the corresponding corner on the socket so as not to damage the CPU pins.

The CPU picture above is for reference only. Usually, when you buy a CPU, the heatsink and fan are already attached to the CPU. If a heatsink and fan did not come with the package, make sure you obtain one before installing the CPU.

WARNING! You must install the proper heatsink and fan to the CPU. Failure to do so will cause the CPU to overheat and may damage both the CPU and the motherboard. Install an auxiliary fan, if necessary.

CAUTION! Be careful not to scrape the motherboard when mounting/unmounting a clamp-style processor fan to avoid damaging the motherboard.

Proceed to the next section for the steps on how to properly install a CPU.

3. HARDWARE SETUP

3.6.1 CPU Installation

Follow these steps to install a CPU.

1. Locate the ZIP socket on the motherboard.
2. Unlock the socket by pressing the lever sideways then lifting it up to a 90°-100° angle.
3. Position the CPU above the socket such that its notched or marked corner matches the socket corner near the end of the lever, while making sure that the CPU is parallel to the socket.
4. Carefully insert the CPU into the socket until it fits in place.

CAUTION! The CPU fits only in one orientation. Do not force the CPU into the socket to prevent bending the pins and damaging the CPU. If the CPU does not fit completely, check its orientation or check for bent pins.

5. Secure the CPU into the socket by pushing the socket lever all the way down. You will hear a click indicating that the lever is in place.
6. Attach the heatsink and fan to the CPU, if they were not pre-installed by the vendor. Refer to the installation instructions that came with the heatsink and fan.

NOTE: Do not forget to set the correct Bus Frequency and Multiple (frequency multiple setting is available only on unlocked processors) for the processor to avoid start-up problems.

3. HARDWARE SETUP

3.7 Expansion Cards

In the future, you may need to install expansion cards. The motherboard has one PCI riser card slot to support a PCI card. Follow the steps in the next section when installing an expansion card.

WARNING! Unplug the system power cord when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both the motherboard and the expansion card.

3.7.1 Installing an Expansion Card

1. Read the documentation that comes with the expansion card and make any necessary hardware settings for the card before installing it.
2. Remove the system unit cover and the bracket plate on the slot you intend to use. Keep the screw for later use.
3. Detach the riser card from the PCI card slot on the motherboard.
4. Carefully insert the golden fingers of the expansion card into the connector on the riser card.
5. Insert the golden fingers of the riser card to the PCI slot on the motherboard until it fits in place.
6. Secure the card to the slot with the screw you removed earlier.
7. Replace the system cover.
8. Change the necessary BIOS settings, if any.
(see section **4.4.3 PCI Configuration** to change the settings.)
9. Install the necessary software drivers for the expansion card.

3. HARDWARE SETUP

3.7.2 Assigning IRQs for Expansion Cards

Some expansion cards need an IRQ to operate. Generally, an IRQ must be exclusively assigned to one use. In a standard design, there are 16 IRQs available but most of them are already in use, leaving 6 IRQs free for expansion cards. If the motherboard has **PCI** audio onboard, an additional IRQ will be used. If the motherboard also has **MIDI** enabled, another IRQ will be used, leaving 4 IRQs free.

The following table lists the default IRQ assignments for standard PC devices. Use this table when configuring your system and for resolving IRQ conflicts.

Standard Interrupt Assignments

IRQ	Priority	Standard Function
0	1	System Timer
1	2	Keyboard Controller
2	N/A	Programmable Interrupt
3*	11	Communications Port (COM2)
4*	12	Communications Port (COM1)
5*	13	Sound Card (sometimes LPT2)
6	14	Floppy Disk Controller
7*	15	Printer Port (LPT1)
8	3	System CMOS/Real Time Clock
9*	4	ACPI Mode when used
10*	5	IRQ Holder for PCI Steering
11*	6	IRQ Holder for PCI Steering
12*	7	PS/2 Compatible Mouse Port
13	8	Numeric Data Processor
14*	9	Primary IDE Channel
15*	10	Secondary IDE Channel

*These IRQs are usually available for ISA or PCI devices.

3. HARDWARE SETUP

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3. HARDWARE SETUP

3.8 Connectors

3.8.1 External Connectors

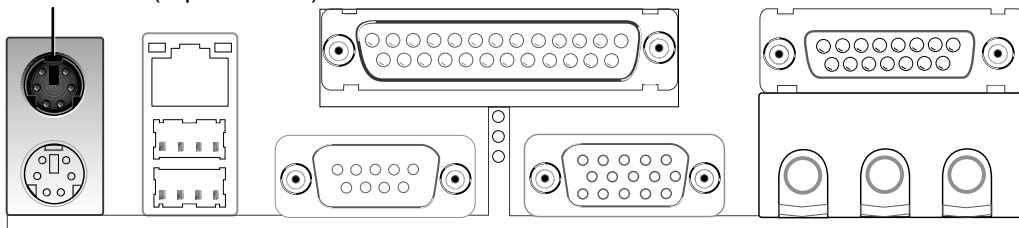
WARNING! Some pins are used for connectors or power sources. These are clearly distinguished from jumpers in the Motherboard Layout. Placing jumper caps over these connector pins will cause damage to your motherboard.

IMPORTANT: Ribbon cables should always be connected with the red stripe to Pin 1 on the connectors. Pin 1 is usually on the side closest to the power connector on hard drives and CD-ROM drives, but may be on the opposite side on floppy disk drives. Check the connectors before installation because there may be exceptions. IDE ribbon cable must be less than 46 cm (18 in.), with the second drive connector no more than 15 cm (6 in.) from the first connector.

1) PS/2 Mouse Connector (Green 6-pin PS2KBMS)

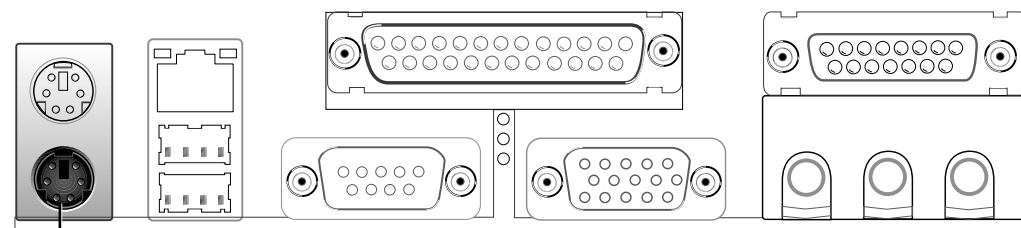
The system automatically directs IRQ12 to the PS/2 mouse if one is detected. If no mouse is detected, IRQ12 become available to expansion cards. See **PS/2 Mouse Function Control** in *4.4 Advanced Menu*.

PS/2 Mouse (6-pin female)



2) PS/2 Keyboard Connector (Purple 6-pin PS2KBMS)

This connection is for a standard keyboard using an PS/2 plug (mini DIN). **This connector does not allow standard AT size (large DIN) keyboard plugs. You may use a DIN to mini DIN adapter on standard AT keyboards.**

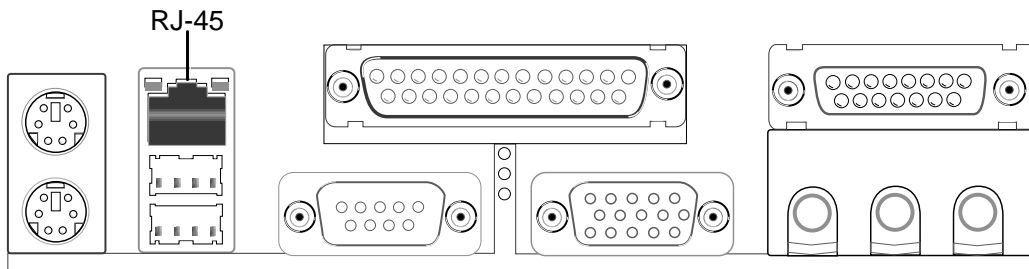


PS/2 Keyboard (6-pin female)

3. HARDWARE SETUP

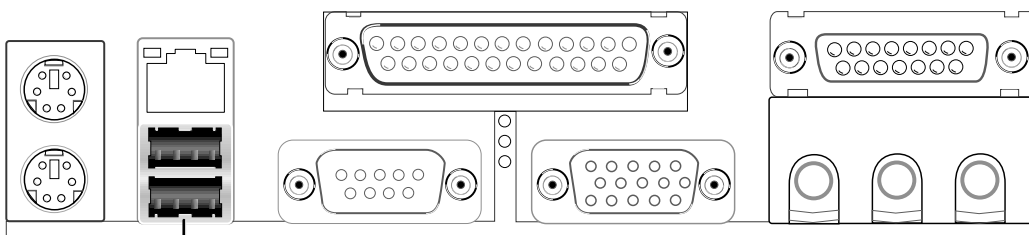
3) Fast Ethernet LAN Connector (R-J45)

The RJ-45 connector allows connection to a Local Area Network (LAN) through a network hub.



4) Universal Serial BUS Ports 1 & 2 (Black two 4-pin USB)

Two USB ports are available for connecting USB devices.

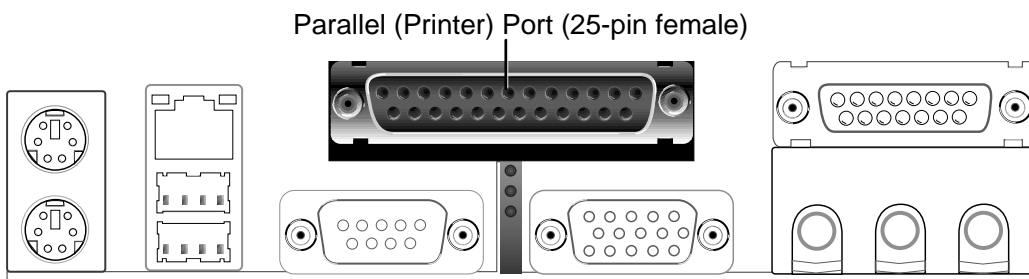


Universal Serial Bus (USB)

5) Parallel Port Connector (Burgundy 25-pin PRINTER)

You can enable the parallel port and choose the IRQ through **Onboard Parallel Port** (see **4.4.2 I/O Device Configuration**).

NOTE: Serial printers must be connected to the serial port.

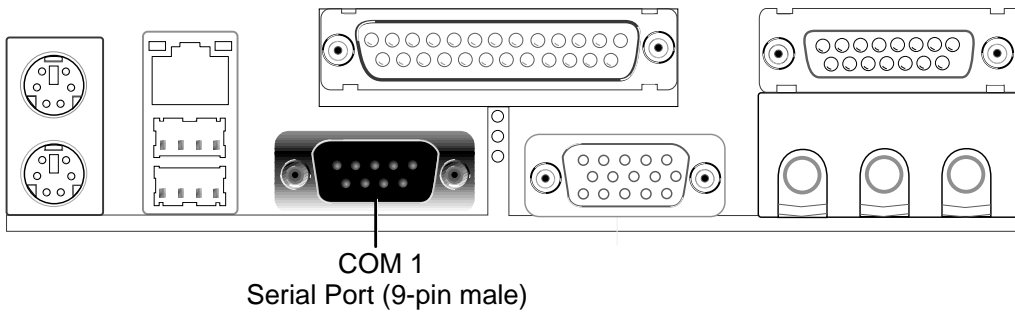


Parallel (Printer) Port (25-pin female)

3. HARDWARE SETUP

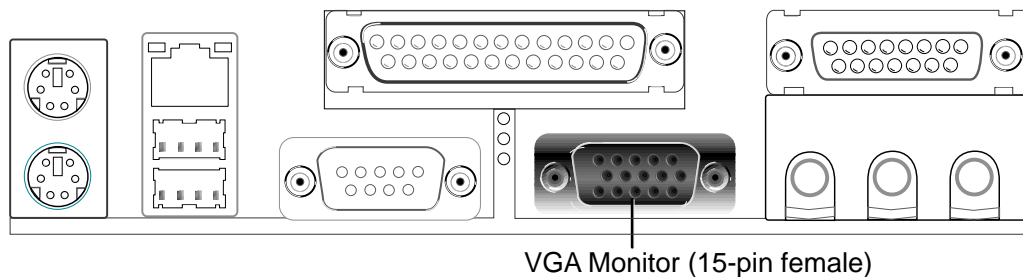
6) Serial Port Connector (Teal/Turquoise 9-pin COM1)

One serial port is available for pointing devices or other serial devices. To enable the port, see **Onboard Serial Port 1** in *4.4.2 I/O Device Configuration*.



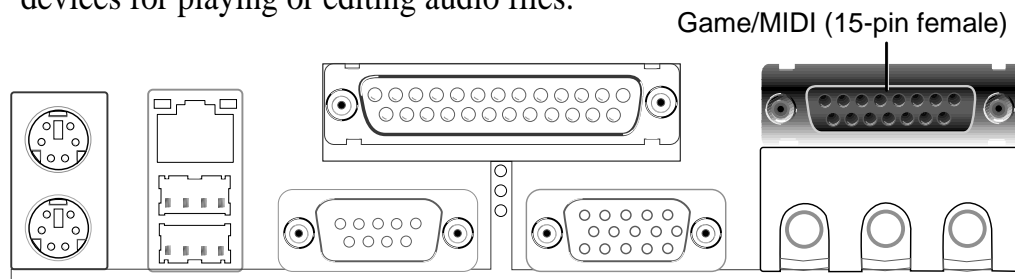
7) VGA Connector (Blue 15-pin VGA)

This connector is for a VGA monitor and other VGA-compatible devices.



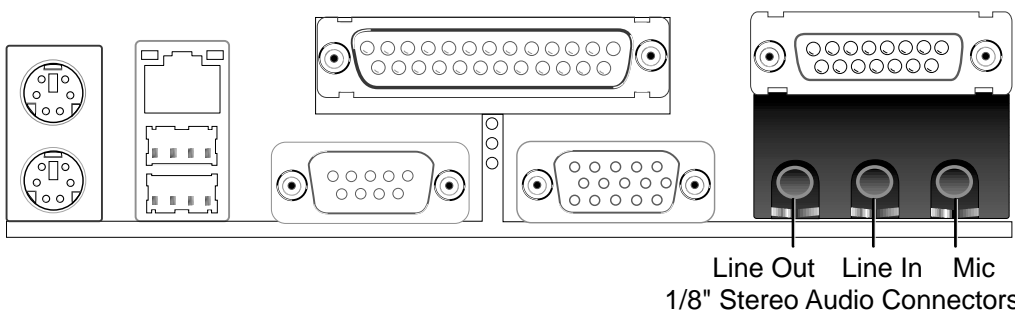
8) Game/MIDI Connector (Gold 15-pin GAME_AUDIO)

This connector supports a joystick or a game pad for playing games, and MIDI devices for playing or editing audio files.



9) Audio Connectors (Three 1/8" AUDIO)

The **Line Out** (lime) connects a headphone or speakers. The **Line In** (light blue) connects a tape players or other audio sources. The **Mic** (pink) connects a microphone.



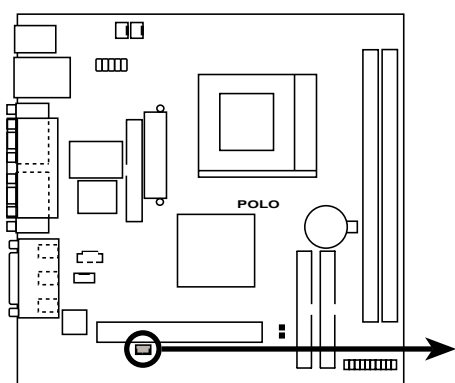
3. HARDWARE SETUP

3.8.2 Internal Connectors

1) Wake-On-LAN Connector (3-pin WOL_CON)

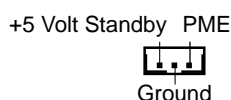
This connector connects to a LAN card with a Wake-On-LAN output, such as the ASUS PCI-L101 Ethernet card (see **7. Appendix**). The connector powers up the system when a wakeup packet or signal is received through the LAN card.

IMPORTANT: To use this feature, enable the Wake-On-LAN feature in BIOS (see **4.5.1 Power Up Control**) and make sure that system has an ATX power supply with at least 720mA +5V standby power.



IMPORTANT: Requires an ATX power supply with at least 720mA +5 volt standby power

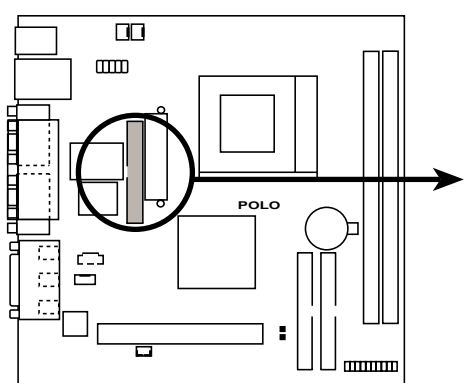
WOL_CON



POLO Wake-On-LAN Connector

2) Floppy Disk Drive Connector (34-1 pin FLOPPY)

This connector supports the provided floppy drive ribbon cable. After connecting the single end to the board, connect the two plugs on the other end to the floppy drives. (**Pin 5 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 5 plugged**).



NOTE: Orient the red markings on the floppy ribbon cable to PIN 1.

POLO Floppy Disk Drive Connector

3. HARDWARE SETUP

3) Primary (Blue) / Secondary IDE Connectors (40-1 pin IDE1/IDE2)

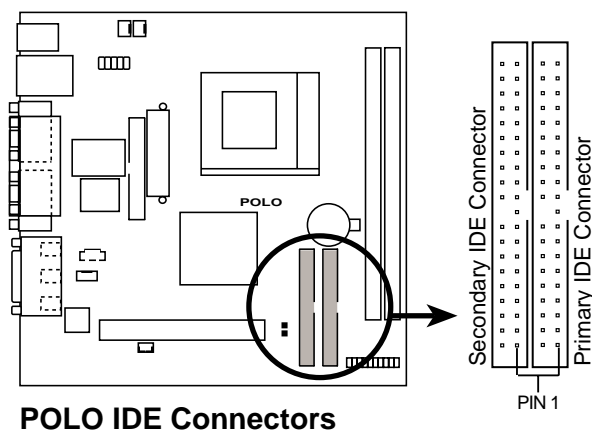
These connectors support the provided UltraDMA/66/33 IDE hard disk ribbon cable. Connect the cable's blue connector to the primary (recommended) or secondary IDE connector, then connect the gray connector to the UltraDMA/66/33 slave device (hard disk drive) and the black connector to the UltraDMA/66/33 master device. It is recommended that non-UltraDMA/66/33 devices be connected to the secondary IDE connector. If you install two hard disks, you must configure the second drive as a slave device by setting its jumper accordingly. Refer to the hard disk documentation for the jumper settings. BIOS supports specific device bootup (see **4.6. Boot Menu**). If you have more than two UltraDMA/66/33 devices, purchase another UltraDMA/66/33 cable.

NOTES:

1. Pin 20 on each IDE connector is removed to match the covered hole on the UltraDMA cable connector. This prevents incorrect orientation when you connect the cables.
2. The hole near the blue connector on the UltraDMA/66 cable is intentional.

TIP: You may configure two hard disks to be both Masters with two ribbon cables – one for the primary IDE connector and another for the secondary IDE connector.

IMPORTANT: Use only 40-pin 80-conductor IDE cables for UltraDMA/66 IDE devices.

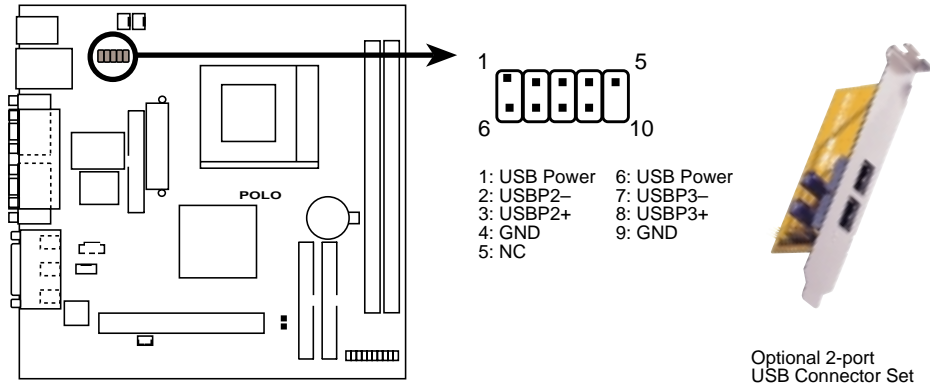


NOTE: Orient the red markings on the IDE ribbon cable to PIN 1

3. HARDWARE SETUP

4) USB Header (10-1 pin USBPORT)

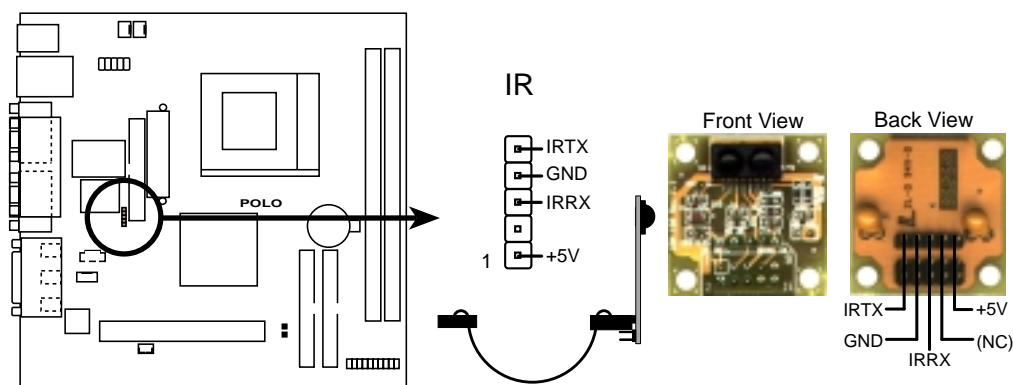
If the USB port connectors on the back panel are inadequate, one USB header is available for two additional USB port connectors. Connect the USB header to a 2-port USB connector set and mount the bracket to an open slot on the chassis. (The USB connector set does not come with the motherboard package.)



POLO USB Header

5) Infrared Module Connector (5-pin IR)

This connector supports an optional wireless transmitting and receiving infrared module. This module mounts to a small opening on a system chassis that supports this feature. You must also configure the setting through **UART2 Use Infrared** (see **4.4.2 I/O Device Configuration**) to select whether UART2 is directed for use with COM2 or IrDA. Use the five pins as shown in Back View and connect a ribbon cable from the module to the motherboard SIR connector according to the pin definitions.



POLO Infrared Module Connector

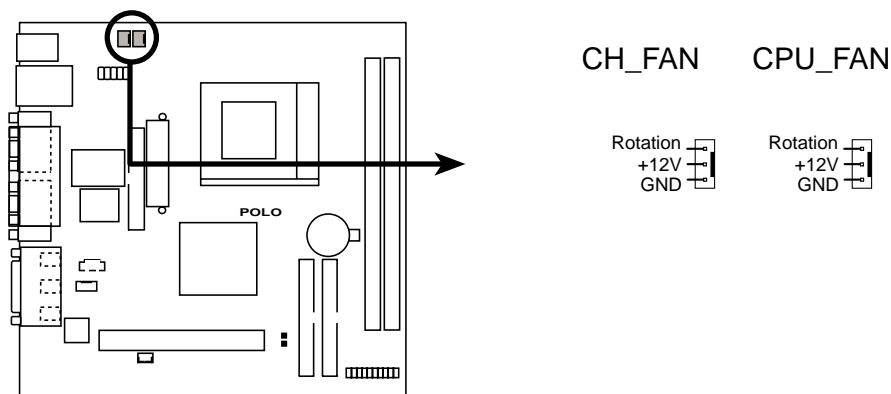
3. HARDWARE SETUP

6) CPU and Chassis Fan Connectors

The two 3-pin fan connectors (CPU_FAN, CHA_FAN) support cooling fans of 350mA (4.2 Watts) or less. Orient the fans so that the heat sink fins allow airflow to go across the onboard heat sink(s) instead of the expansion slots. The fan wiring and plug may vary depending on the fan manufacturer. The red wire should be positive while the black should be ground. Connect the fan plug to the board taking into consideration the polarity of the connector.

NOTE: Use the “Rotation” signal only with a specially designed fan with a rotation signal. The Rotations Per Minute (RPM) can be monitored using ASUS PC Probe (see 6. *SOFTWARE REFERENCE*).

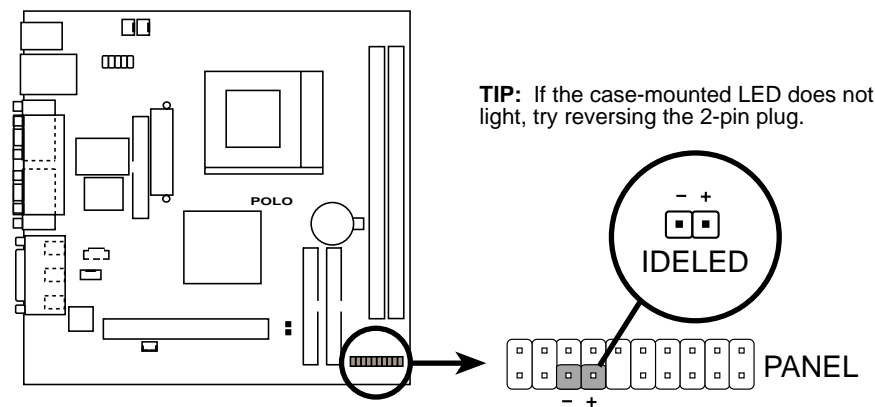
WARNING! The CPU and/or motherboard will overheat if there is no airflow across the CPU and onboard heatsinks. Damage may occur to the motherboard and/or the CPU fan if these pins are incorrectly used. **These are not jumpers, do not place jumper caps over these pins.**



POLO 12-Volt Cooling Fan Power

7) IDE Activity LED (2-pin IDELED)

This connector supplies power to the cabinet’s IDE activity LED. Read and write activity by devices connected to the Primary or Secondary IDE connectors cause the IDE LED to light up.

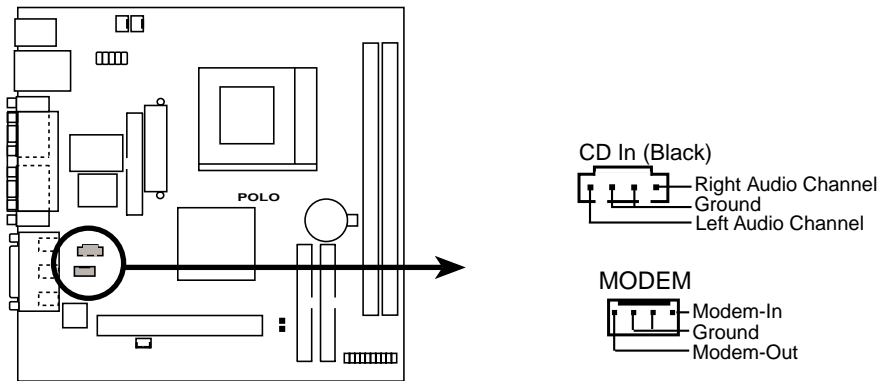


POLO IDE Activity LED

3. HARDWARE SETUP

8) Internal Audio Connectors (4-1 pin CD_IN, MODEM)

These connectors allow you to receive stereo audio input from sound sources such as a CD-ROM. The MODEM connector allows the onboard audio to interface with a voice modem card with a similar connector. It also allows the sharing of mono_in (such as a phone) and a mono_out (such as a speaker) between the audio and a voice modem card.

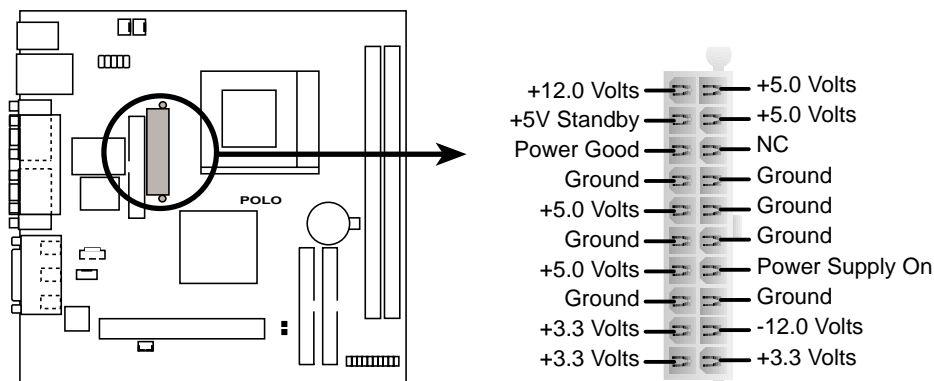


POLO Internal Audio Connectors

9) ATX Power Supply Connector (20-pin block ATXPWR)

This connector connects to an ATX power supply. The plug from the power supply fits in only one orientation because of the different hole sizes. Find the proper orientation and push down firmly making sure that the pins are aligned.

IMPORTANT: Make sure that the ATX power supply can supply at least 10mA on the +5-volt standby lead (+5VSB). You may experience difficulty in turning the system ON if the power supply cannot support the load. For Wake-On-LAN support, the ATX power supply must supply at least 720mA +5VSB.

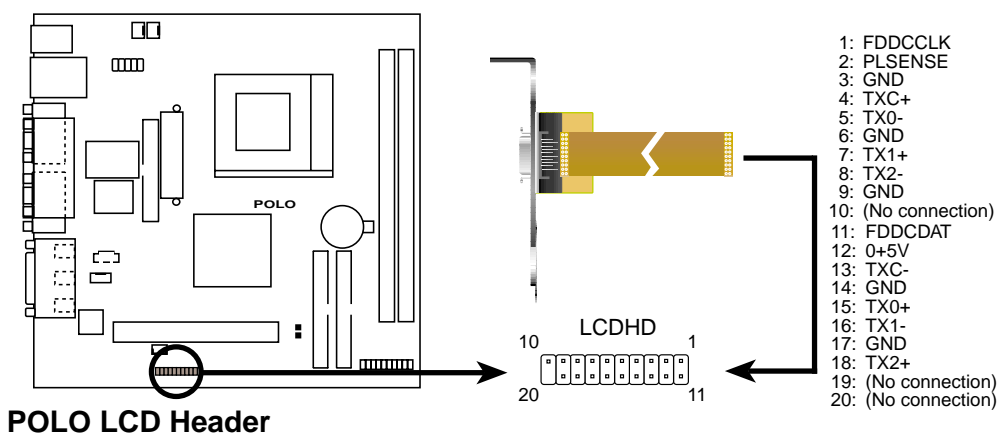


POLO ATX Power Connector

3. HARDWARE SETUP

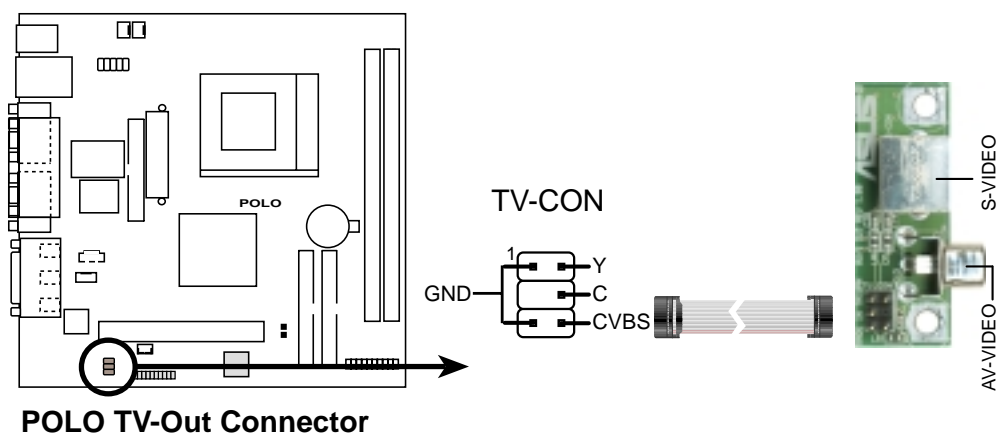
10) LCD Header (20-pin LCDHD) (optional)

This 20-pin header allows you to connect the PC to a digital LCD monitor using a 20-pin LCD interface cable and a Digital Flat Panel (DFP) connector bracket. (NOTE: The LCD interface cable and DFP connector bracket do not come with the motherboard package).



11) TV Connector (5-pin TV-CON) (optional)

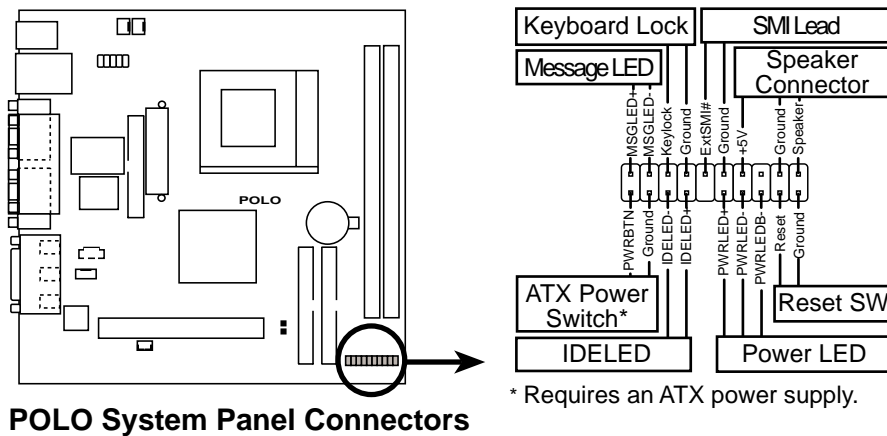
Connect the optional TV connector module to this header using a 5-pin interface cable. The TV connector module allows you to connect the PC to a television with NTSC or PAL video format to display graphics and video of higher quality. (NOTE: The TV connector module does not come with the motherboard package).



3. HW SETUP
Connectors

3. HARDWARE SETUP

The following 20-pin PANEL illustration is for items 12-17.



12) System Power LED Connector(3-1 pin PWR.LED)

This 3-1 pin connector connects to the system power LED. The LED lights up when you turn on the system power, and blinks when the system is in sleep or soft-off mode.

13) System Warning Speaker Connector (4-pin SPEAKER)

This 4-pin connector connects to the case-mounted speaker.

14) System Message LED Connector (2-pin MSG.LED)

This 2-pin connector is for the system message LED that indicates receipt of messages from a fax/modem. The normal status for this LED is ON, when there is no incoming data signal. The LED blinks when there is data received. The system message LED feature requires an ACPI OS and driver support.

15) System Management Interrupt Connector (2-pin SMI)

This 2-pin connector allows you to manually place the system into a suspend mode, or “Green” mode, where system activity is instantly decreased to save power and to expand the life of certain system components. Attach the case-mounted suspend switch this 2-pin connector.

16) ATX Power Switch / Soft-Off Switch Connector (2-pin PWR.SW)

The system power is controlled by a momentary switch attached to this connector. Pressing the button switches the system between ON and SLEEP, or ON and SOFT OFF, depending on the BIOS or OS settings. Pressing the button while in the ON mode for more than 4 seconds turns the system off.

17) Reset Switch Connector (2-pin RESET)

This 2-pin connector connects to the case-mounted reset switch for rebooting the system without turning off the power switch. This is a preferred method

3. HARDWARE SETUP

3.9 Starting Up the First Time

1. After making all the connections, replace the system case cover.
2. Be sure that all switches are off (in some systems, marked with ○).
3. Connect the power cord to the power supply located at the back of the system chassis.
4. Connect the power cord to a power outlet that is equipped with a surge protector.
5. Turn on the devices in the following order:
 - a. Monitor
 - b. External SCSI devices (starting with the last device on the chain)
 - c. System power (For ATX power supplies, you need to switch on the power supply as well as press the ATX power switch on the front of the chassis.)
6. The power LED on the front panel of the system case lights up. For ATX power supplies, the system LED lights up when you press the ATX power switch. If the monitor complies with “green” standards or if it has a power standby feature, the monitor LED may light up or switch between orange and green after the system LED does. The system then runs the power-on tests. While the tests are running, the BIOS beeps or additional messages appears on the screen. If you do not see anything within 30 seconds from the time you turn on the power, the system may have failed a power-on test. Recheck your jumper settings and connections or call your retailer for assistance.

Award BIOS Beep Codes

Beep	Meaning
One short beep when displaying logo	No error during POST
Long beeps in an endless loop	No DRAM installed or detected
One long beep followed by three short beeps	Video card not found or video card memory bad
High frequency beeps when system is working	CPU overheated System running at a lower frequency

3. HARDWARE SETUP

7. At power on, hold down <Delete> to enter BIOS Setup. Follow the instructions in **4. BIOS SETUP**.

- * **Powering Off the Computer:** You must first exit or shut down the system before switching off the power switch. For ATX power supplies, you can press the ATX power switch after exiting or shutting down the operating system. If you use Windows 9X, click the **Start** button, click **Shut Down**, and then click **Shut down the computer?** The power supply should turn off after Windows shuts down.

NOTE: The message “You can now safely turn off your computer” does not appear when shutting down with ATX power supplies.

4. BIOS SETUP

4.1 Managing and Updating Your BIOS

4.1.1 Upon First Use of the Computer System

It is recommended that you save a copy of the original motherboard BIOS along with a Flash Memory Writer utility (AFLASH.EXE) to a bootable floppy disk in case you need to reinstall the BIOS later. **AFLASH.EXE** is a Flash Memory Writer utility that updates the BIOS by uploading a new BIOS file to the programmable flash ROM on the motherboard. This file works only in DOS mode. To determine the BIOS version of your motherboard, check the last four numbers of the code displayed on the upper left-hand corner of your screen during bootup. Larger numbers represent a newer BIOS file.

1. Type **FORMAT A:/S** at the DOS prompt to create a bootable system disk. **DO NOT** copy AUTOEXEC.BAT and CONFIG.SYS to the disk.
2. Type **COPY D:\AFLASH\AFLASH.EXE A:** (assuming D is your CD-ROM drive) to copy AFLASH.EXE to the boot disk you created.
NOTE: AFLASH works only in DOS mode. It does not work in the DOS prompt within Windows and does not work with certain memory drivers that may be loaded when you boot from the hard drive. It is recommended that you reboot using a floppy disk.
3. Reboot the computer from the floppy disk.

NOTE: BIOS setup must specify “Floppy” as the first item in the boot sequence.

4. In DOS mode, type **A:\AFLASH <Enter>** to run AFLASH.



```
ASUS ACPI BIOS
FLASH MEMORY WRITER V1.29
Copyright (C) 1994-99, ASUSTeK COMPUTER INC.

Flash Memory: Winbond W29C02B or SST Z9EE02B or Intel B2062AB
Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model          : XXX-XX
BIOS Built Date     : 89/25/98

Choose one of the followings:
1. Save Current BIOS To File
2. Update BIOS including Boot Block and ESCD

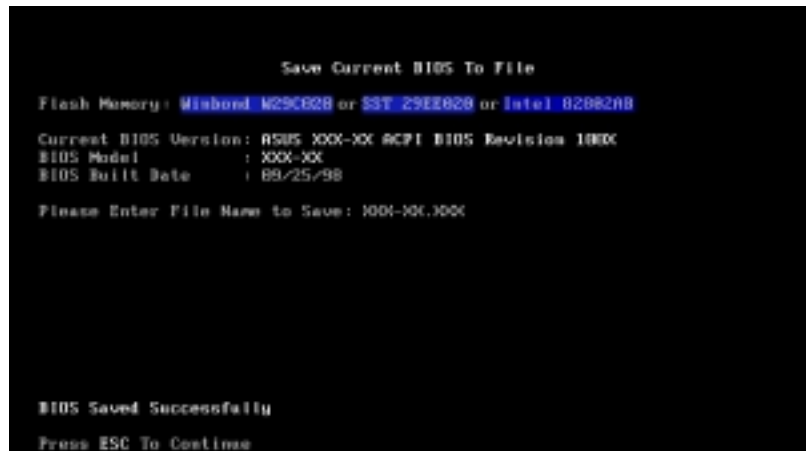
Enter choice: [1]

Press ESC To Exit
```

IMPORTANT! If the word “unknown” appears after **Flash Memory:**, the memory chip is either not programmable or is not supported by the ACPI BIOS and therefore, cannot be programmed by the Flash Memory Writer utility.

4. BIOS SETUP

5. Select **1. Save Current BIOS to File** from the Main menu and press <Enter>. The **Save Current BIOS To File** screen appears.



6. Type a filename and the path, for example, **A:\XXX-XX.XXX** and then press <Enter>.

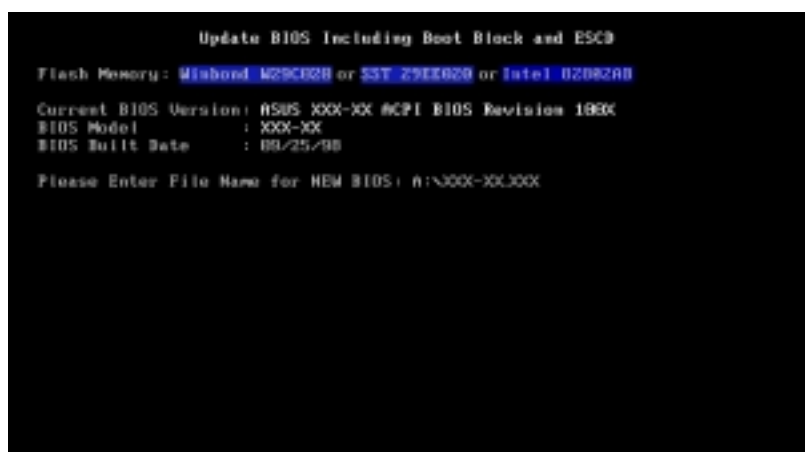
4. BIOS SETUP

4.1.2 Updating BIOS Procedures

WARNING! Only update your BIOS if you have problems with your motherboard and you know that the new BIOS revision will solve your problems. Careless updating can result in your motherboard having more problems!

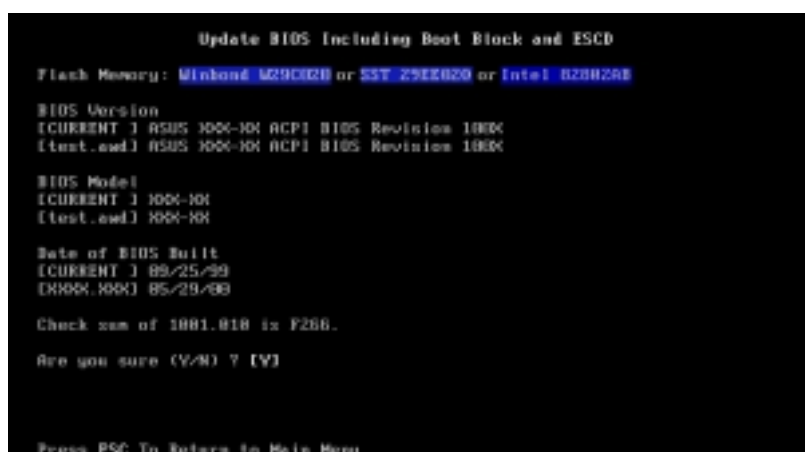
1. Download an updated ASUS BIOS file from the Internet (WWW or FTP) (see ASUS CONTACT INFORMATION on page 3 for details) and save to the disk you created earlier.
2. Boot from the disk you created earlier.
3. At the “A:\” prompt, type **AFLASH** and then press <Enter>.
4. At the **Main Menu**, type **2** and then press <Enter>. The **Update BIOS Including Boot Block and ESCD** screen appears.
5. Type the filename of your new BIOS and the path, for example, **A:\XXX-XX.XXX**, and then press <Enter>.

NOTE: To cancel this operation, press <Enter>.



4. BIOS SETUP
Updating BIOS

6. When prompted to confirm the BIOS update, press **Y** to start the update.



4. BIOS SETUP

- The utility starts to program the new BIOS information into the flash ROM. The boot block will be updated automatically only when necessary. This will minimize the chance that a failed update prevents the system from booting up. When the programming is finished, *Flashed Successfully* appears.

```
Update BIOS Including Boot Block and ESCD
Flash Memory: Winbond W29C020 or SST 25E020 or Intel B20820B
BIOS Version
(CURRENT) ASUS XXX-XX ACPI BIOS Revision 100K
(test.asd) ASUS XXX-XX ACPI BIOS Revision 100K
BIOS Model
(CURRENT) XXX-XX
(test.asd) XXX-XX
Date of BIOS Built
(CURRENT) 09/25/99
(XXXX,XXX) 05/29/98
Check sum of 1001.810 is F286.
Are you sure (Y/N) ? [Y]
Block Erasing -- Done
Programming -- 3FFFF
Flashed Successfully
Press ESC To Continue
```

- Follow the onscreen instructions to continue.

```
ASUS ACPI BIOS
FLASH MEMORY WRITER V1.29
Copyright (C) 1994-99, ASUSTeK COMPUTER INC.
Flash Memory: Winbond W29C020 or SST 25E020 or Intel B20820B
Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100K
BIOS Model : XXX-XX
BIOS Built Date : 05/29/99
Choose one of the followings:
1. Save Current BIOS To File
2. Update BIOS Including Boot Block and ESCD
Enter choice: [1]
You have flashed the EPROM. It is recommended that you turn off
the power, enter SETUP and LOAD Setup Defaults to have CMOS
updated with new BIOS when exits.
Press ESC To Exit
```

WARNING! If you encounter problems while updating the new BIOS, DO NOT turn off the system since this might prevent your system from booting up. Just repeat the process, and if the problem still persists, update the original BIOS file you saved to the disk above. If the Flash Memory Writer utility was not able to successfully update a complete BIOS file, the system may not boot. If this happens, the system will need servicing.

4. BIOS SETUP

4.2 BIOS Setup Program

This motherboard supports a programmable EEPROM that can be updated using the provided utility as described in *4.1 Managing and Updating Your BIOS*.

The utility is used if you are installing a motherboard, reconfiguring your system, or prompted to “**Run Setup**”. This section describes how to configure your system using this utility.

Even if you are not prompted to use the Setup program, at some time in the future you may want to change the configuration of your computer. For example, you may want to enable the Security Password Feature or make changes to the power management settings. It will then be necessary to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the EEPROM.

The EEPROM on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. This appears during the Power-On Self Tests (POST). Press <Delete> to call up the Setup utility. If you are a little bit late in pressing the mentioned key, POST continues to run the test routine, thus preventing you from launching the Setup program. If you intend to enter Setup, restart the system by pressing <Ctrl> + <Alt> + <Delete>, or by pressing the Reset button on the system chassis. You can also restart by turning the system off and then back on again. But do so only if the first two methods fail.

The Setup program is designed to make it as easy to use as possible. It is a menu-driven program, which means you can scroll through the various sub-menus and make your selections among the predetermined choices.

To access the BIOS Setup program, press the <Delete> key after the Power-On Self Tests (POST).

NOTE: Because the BIOS software is constantly being updated, the following BIOS setup screens and descriptions are for reference purposes only, and may not exactly match what you see on your screen.

4. BIOS SETUP

4.2.1 BIOS Menu Bar

The top of the screen has a menu bar with the following selections:

- MAIN** Use this menu to make changes to the basic system configuration.
- ADVANCED** Use this menu to enable and make changes to the advanced features.
- POWER** Use this menu to configure and enable Power Management features.
- BOOT** Use this menu to configure the default system device used to locate and load the Operating System.
- EXIT** Use this menu to exit the current menu or specify how to exit the Setup program.

To access the menu bar items, press the right or left arrow key on the keyboard until the desired item is highlighted.

4.2.2 Legend Bar

At the bottom of the Setup screen you will notice a legend bar. The keys in the legend bar allow you to navigate through the various setup menus. The following table lists the keys found in the legend bar with their corresponding alternates and functions.

Navigation Key(s)	Function Description
<F1> or <Alt + H>	Displays the General Help screen from anywhere in the BIOS Setup
<Esc>	Jumps to the Exit menu or returns to the main menu from a sub-menu
← or → (keypad arrow)	Selects the menu item to the left or right
↑ or ↓ (keypad arrow)	Moves the highlight up or down between fields
- (minus key)	Scrolls backward through the values for the highlighted field
+ (plus key) or spacebar	Scrolls forward through the values for the highlighted field
<Enter>	Brings up a selection menu for the highlighted field
<Home> or <PgUp>	Moves the cursor to the first field
<End> or <PgDn>	Moves the cursor to the last field
<F5>	Resets the current screen to its Setup Defaults
<F10>	Saves changes and exits Setup

4. BIOS SETUP

General Help

In addition to the Item Specific Help window, the BIOS setup program also provides a General Help screen. This screen can be called up from any menu by simply pressing <F1> or the <Alt> + <H> combination. The General Help screen lists the legend keys with their corresponding alternates and functions.

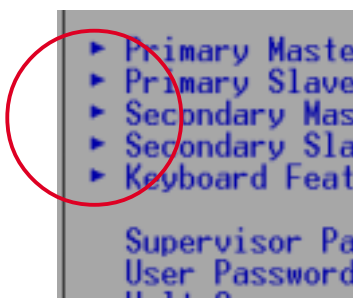
Saving Changes and Exiting the Setup Program

See *4.7 Exit Menu* for detailed information on saving changes and exiting the setup program.

Scroll Bar

When a scroll bar appears to the right of a help window, it indicates that there is more information to be displayed that will not fit in the window. Use <PgUp> and <PgDn> or the up and down arrow keys to scroll through the entire help document. Press <Home> to display the first page, press <End> to go to the last page. To exit the help window, press <Enter> or <Esc>.

Sub-Menu



Note that a right pointer symbol (as shown on the left) appears to the left of certain fields. This pointer indicates that you can launch a sub-menu from this field. A sub-menu contains additional options for a field parameter. To display a sub-menu, simply move the highlight to the field and press <Enter>.

Use the legend keys to enter values or move from field to field within a sub-menu just as you would within a menu. Use the <Esc> key to return to the main menu.

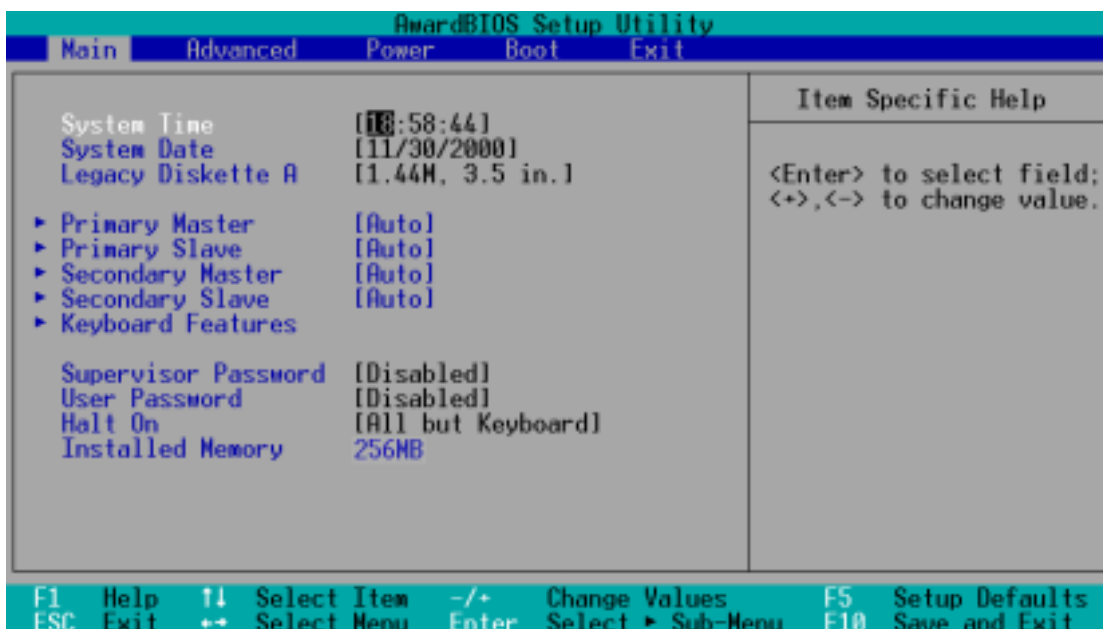
Take some time to familiarize yourself with each of the legend keys and their corresponding functions. Practice navigating through the various menus and sub-menus. If you accidentally make unwanted changes to any of the fields, use the set default hot key <F5>. While moving around through the Setup program, note that explanations appear in the Item Specific Help window located to the right of each menu. This window displays the help text for the currently highlighted field.

NOTE: The item heading in square brackets represents the default setting for that field.

4. BIOS SETUP

4.3 Main Menu

When the Setup program is accessed, the following screen appears:



System Time [XX:XX:XX]

Sets your system to the time that you specify (usually the current time). The format is hour, minute, second. Valid values for hour, minute and second are **Hour: (00 to 23)**, **Minute: (00 to 59)**, **Second: (00 to 59)**. Use the **<Tab>** or **<Shift> + <Tab>** keys to move between the hour, minute, and second fields.

System Date [XX/XX/XXXX]

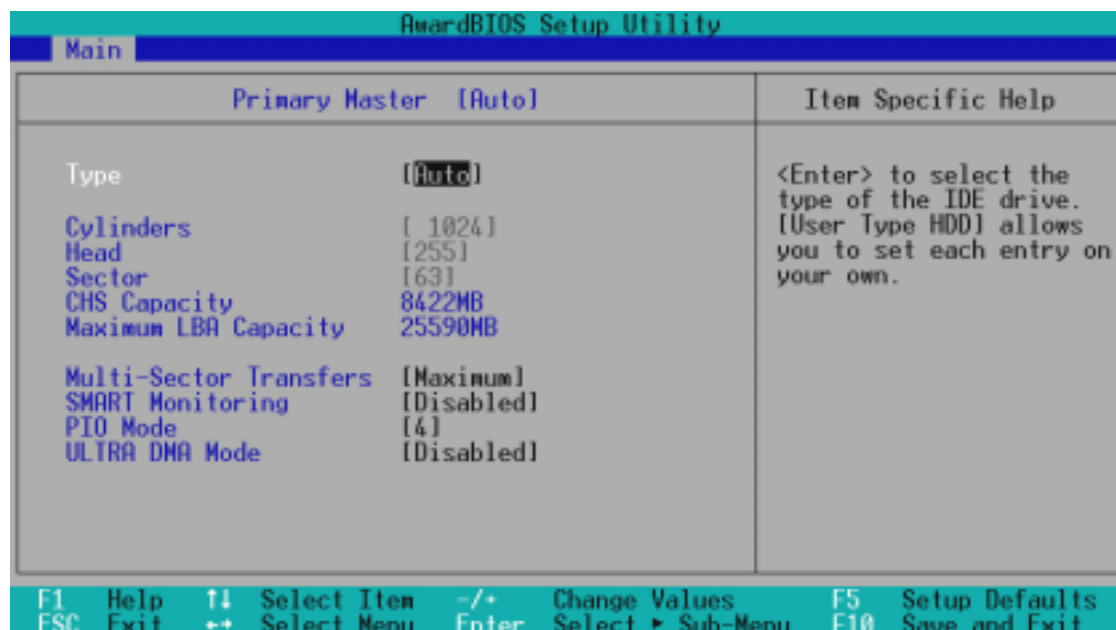
Sets your system to the date that you specify (usually the current date). The format is month, day, year. Valid values for month, day, and year are **Month: (1 to 12)**, **Day: (1 to 31)**, **Year: (100 year range)**. Use the **<Tab>** or **<Shift> + <Tab>** keys to move between the month, day, and year fields.

Legacy Diskette A [1.44M, 3.5 in.], Legacy Diskette B [None]

Sets the type of floppy drives installed. Configuration options: [None] [1.44M, 3.5 in.]

4. BIOS SETUP

4.3.1 Primary & Secondary Master/Slave



NOTE: Before attempting to configure a hard disk drive, make sure you have the configuration information supplied by the manufacturer of the drive. Incorrect settings may cause your system to fail to recognize the installed hard disk. To allow the BIOS to detect the drive type automatically, select [Auto].

Type [Auto]

Select [Auto] to automatically detect an IDE hard disk drive. If automatic detection is successful, the correct values will be filled in for the remaining fields on this sub-menu. If automatic detection fails, your hard disk drive may be too old or too new. You can try updating your BIOS or enter the IDE hard disk drive parameters manually.

NOTE: After the IDE hard disk drive information has been entered into BIOS, new IDE hard disk drives must be partitioned (such as with FDISK) and then formatted before data can be read from and write on. Primary IDE hard disk drives must have its partition set to *active* (also possible with FDISK).

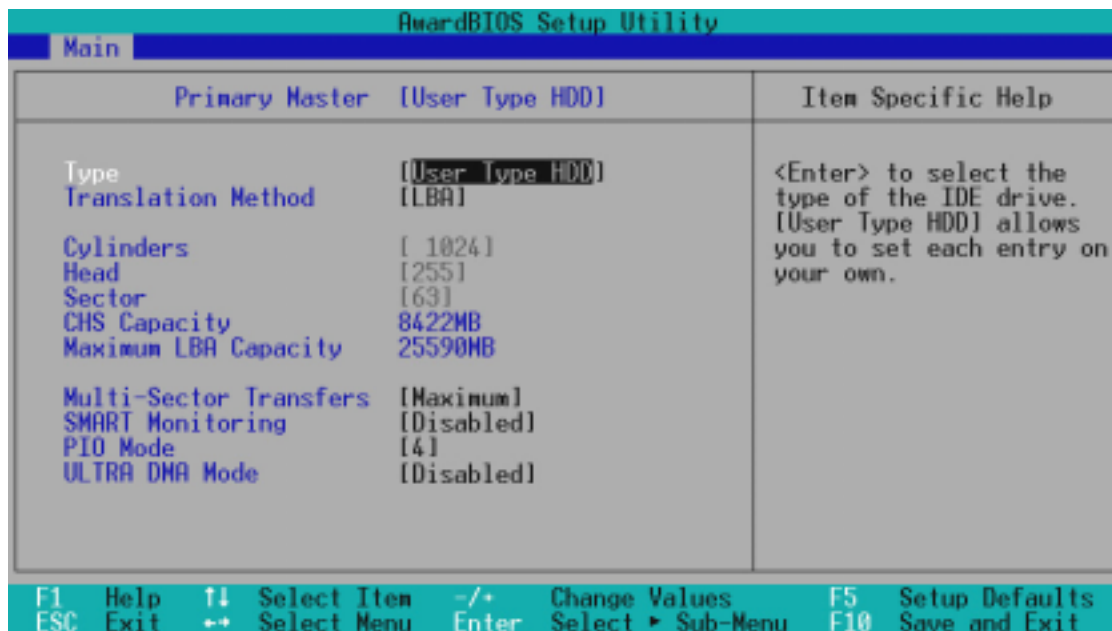
Other options for the **Type** field are:

[None] - to disable IDE devices

4. BIOS SETUP

IMPORTANT: If your hard disk was already formatted on an older previous system, incorrect parameters may be detected. You will need to enter the correct parameters manually or use low-level format if you do not need the data stored on the hard disk. If the parameters listed differ from the ones used when the disk was formatted, the disk will not be readable. If the auto-detected parameters do not match the ones that should be used for your disk, you should enter the correct ones manually by setting [User Type HDD].

[User Type HDD]



Manually enter the number of cylinders, heads and sectors per track for your drive. Refer to your drive documentation or look on the drive for this information. If no drive is installed or if you are removing a drive and not replacing it, select [None].

Translation Method [LBA]

Select the hard disk drive type in this field. When Logical Block Addressing is enabled, 28-bit addressing of the hard drive is used without regard for cylinders, heads, or sectors. Note that LBA Mode is necessary for drives with greater than 504MB in storage capacity. Configuration options: [LBA] [LARGE] [Normal] [Match Partition Table] [Manual]

Cylinders

This field configures the number of cylinders. Refer to your drive documentation to determine the correct value to enter into this field. **NOTE:** To make changes to this field, the **Type** field must be set to [User Type HDD] and the **Translation Method** field must be set to [Manual].

4. BIOS SETUP

Head

This field configures the number of read/write heads. Refer to your drive documentation to determine the correct value to enter into this field. **NOTE:** To make changes to this field, the **Type** field must be set to [User Type HDD] and the **Translation Method** field must be set to [Manual].

Sector

This field configures the number of sectors per track. Refer to your drive documentation to determine the correct value to enter into this field. **NOTE:** To make changes to this field, the **Type** field must be set to [User Type HDD] and the **Translation Method** field must be set to [Manual].

CHS Capacity

This field shows the drive's maximum CHS capacity calculated automatically by the BIOS from the drive information you entered.

Maximum LBA Capacity

This field shows the drive's maximum LBA capacity calculated automatically by the BIOS from the drive information you entered.

Multi-Sector Transfers [Maximum]

This option automatically sets the number of sectors per block to the highest number supported by the drive. This field can also be configured manually. Note that when this field is automatically configured, the set value may not always be the fastest value for the drive. Refer to the documentation that came with your hard drive to determine the optimal value and set it manually. **NOTE:** To make changes to this field, the **Type** field must be set to [User Type HDD]. Configuration options: [Disabled] [2 Sectors] [4 Sectors] [8 Sectors] [16 Sectors] [32 Sectors] [Maximum]

SMART Monitoring [Disabled]

This allows the enabling or disabling of the S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) system which utilizes internal hard disk drive monitoring technology. This feature is normally disabled because system resources used in this feature may decrease system performance. Configuration options: [Disabled] [Enabled]

PIO Mode [4]

This option lets you set a PIO (Programmed Input/Output) mode for the IDE device. Modes 0 through 4 provide successively increased performance. Configuration options: [0] [1] [2] [3] [4]

Ultra DMA Mode [Disabled]

Ultra DMA capability allows improved transfer speeds and data integrity for compatible IDE devices. Set to [Disabled] to suppress Ultra DMA capability. **NOTE:** To make changes to this field, the **Type** field must be set to [User Type HDD]. Configuration options: [0] [1] [2] [3] [4] [Disabled]

4. BIOS SETUP

Other options for “Type:” are:

[CD-ROM] - for IDE CD-ROM drives

[LS-120] - for LS-120 compatible floppy disk drives

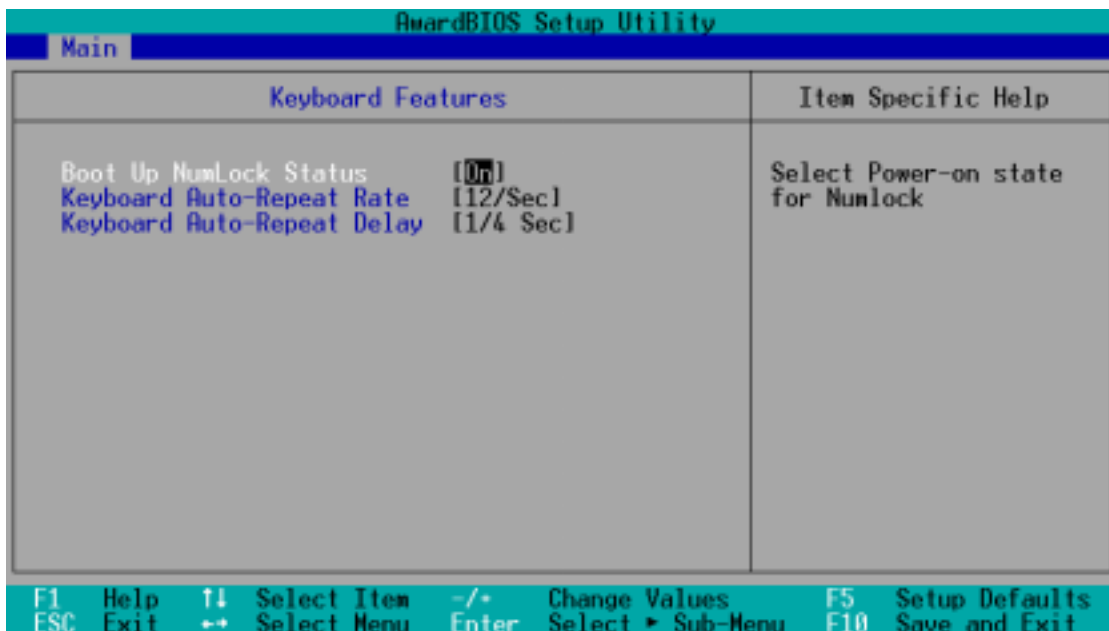
[ZIP-100] - for ZIP-100 compatible disk drives

[MO] - for IDE magneto optical disk drives

[Other ATAPI Device] - for IDE devices not listed here

After using the legend keys to make your selections on this sub-menu, press the <Esc> key to return to the Main menu. When the Main menu appears, you will notice that the drive size appear in the field for the hard disk drive that you just configured.

4.3.2 Keyboard Features



Boot Up NumLock Status [On]

This field enables users to activate the Number Lock function upon system boot. Configuration options: [Off] [On]

Keyboard Auto-Repeat Rate [12/Sec]

This controls the speed at which the system registers repeated keystrokes. Options range from 6 to 30 characters per second. Configuration options: [6/Sec] [8/Sec] [10/Sec] [12/Sec] [15/Sec] [20/Sec] [24/Sec] [30/Sec]

Keyboard Auto-Repeat Delay [1/4 Sec]

This field sets the time interval for displaying the first and second characters. Configuration options: [1/4 Sec] [1/2 Sec] [3/4 Sec] [1 Sec]

4. BIOS SETUP

Supervisor Password [Disabled] / User Password [Disabled]

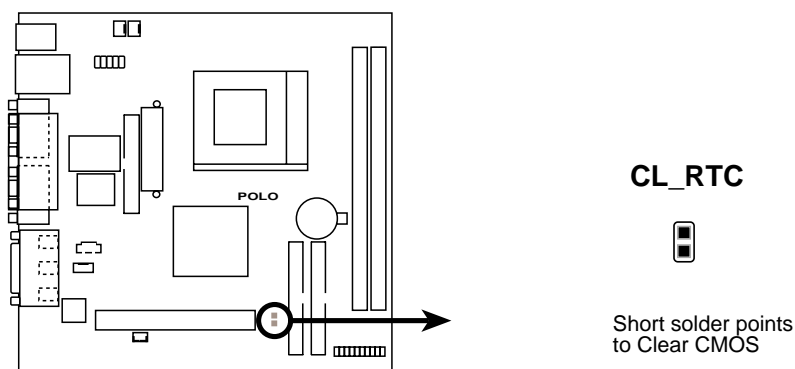
These fields allow you to set the passwords. To set the password, highlight the appropriate field and press <Enter>. Type in a password and press <Enter>. You can type up to eight alphanumeric characters. Symbols and other keys are ignored. To confirm the password, type the password again and press the <Enter>. The password is now set to [Enabled]. This password allows full access to the BIOS Setup menus. To clear the password, highlight this field and press <Enter>. The same dialog box as above will appear. Press <Enter> and the password will be set to [Disabled].

A Note about Passwords

The BIOS Setup program allows you to specify passwords in the Main menu. The passwords control access to the BIOS during system startup. The passwords are not case sensitive. In other words, it makes no difference whether you enter a password using upper or lowercase letters. The BIOS Setup program allows you to specify two separate passwords: a Supervisor password and a User password. When disabled, anyone may access all BIOS Setup program functions. When enabled, the Supervisor password is required for entering the BIOS Setup program and having full access to all configuration fields.

Forgot the Password?

If you forgot the password, you can clear the password by erasing the CMOS Real Time Clock (RTC) RAM. The RAM data containing the password information is powered by the onboard button cell battery. To erase the RTC RAM: (1) Unplug your computer, (2) Short the solder points, (3) Turn ON your computer, (4) Hold down <Delete> during bootup and enter BIOS setup to re-enter user preferences.



POLO Clear RTC RAM Setting

Halt On [All but Keyboard]

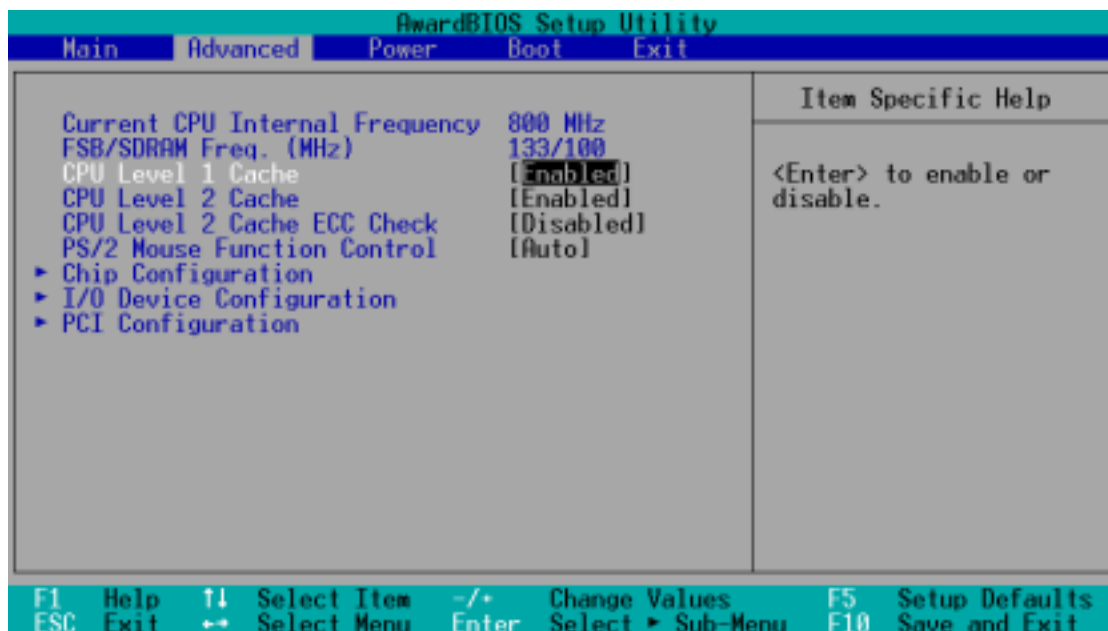
This field determines which types of errors will cause the system to halt. Configuration options: [All Errors] [No Error] [All but Keyboard] [All but Disk] [All but Disk/Keyboard]

Installed Memory [XXX MB]

This display-only field displays the amount of conventional memory detected by the system during bootup. You do not need to make changes to this field.

4. BIOS SETUP

4.4 Advanced Menu



Current CPU Internal Frequency

This parameter displays the internal frequency of the processor installed in the system.

FSB/SDRAM Frequency (MHz)

This parameter displays the memory clock frequency in relation to the Front Side Bus (FSB) frequency.

CPU Level 1 Cache, CPU Level 2 Cache [Enabled]

These fields allow you to choose from the default of [Enabled] or choose [Disabled] to turn on or off the CPU's Level 1 and Level 2 built-in cache. Configuration options: [Disabled] [Enabled]

CPU Level 2 Cache ECC Check [Disabled]

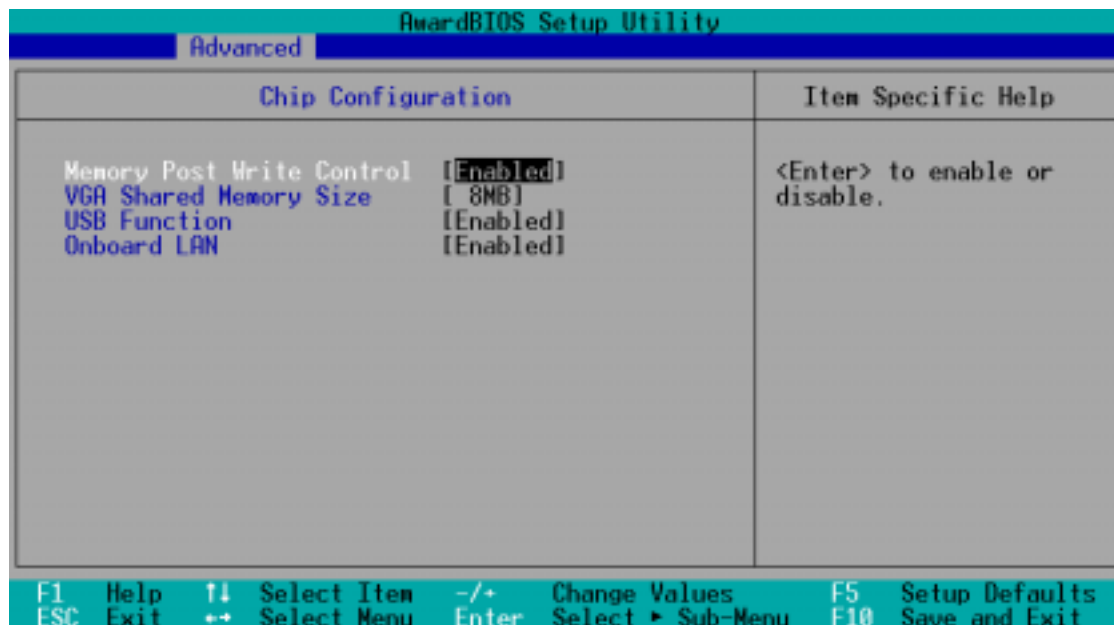
This field controls the ECC capability in the CPU level 2 cache. Configuration options: [Disabled] [Enabled]

PS/2 Mouse Function Control [Auto]

The default of [Auto] allows the system to detect a PS/2 mouse on startup. If detected, IRQ12 will be used for the PS/2 mouse. IRQ12 is reserved for expansion cards only if a PS/2 mouse is not detected. The setting [Enabled] always reserves IRQ12, whether on startup a PS/2 mouse is detected or not. Configuration options: [Enabled] [Auto]

4. BIOS SETUP

4.4.1 Chip Configuration



Memory Post Write Control [Enabled]

Leave this parameter on the default setting [Enabled].

VGA Shared Memory Size [8MB]

This parameter allows you to select the size of system memory to allocate for video memory. Configuration options: [2MB] [4MB] [8MB] [16MB] [32MB] [64MB]

USB Function [Enabled]

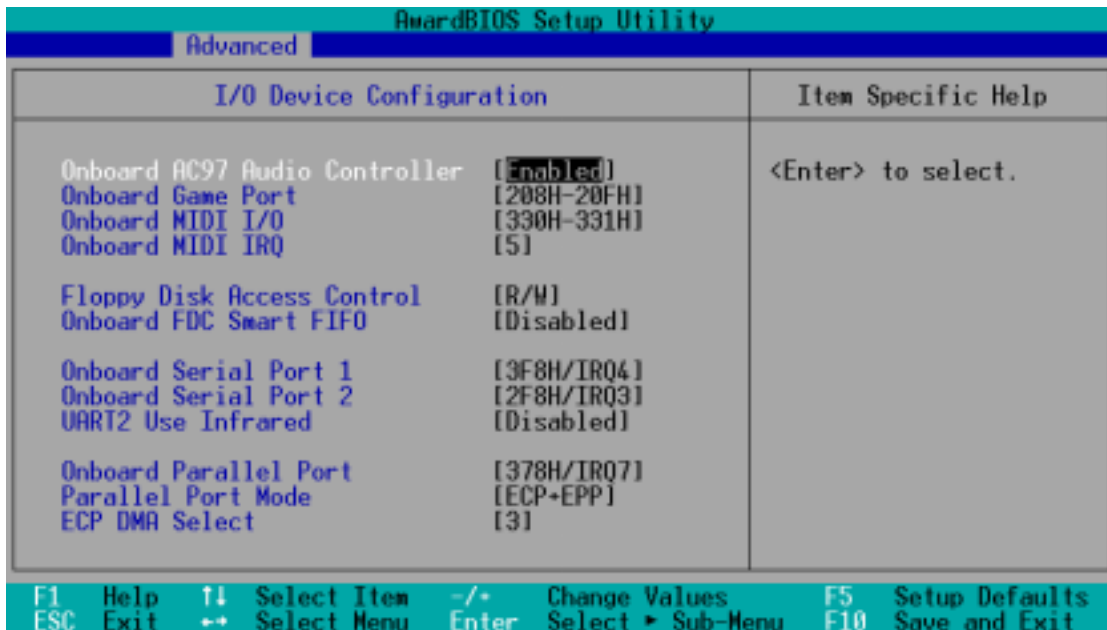
This motherboard supports Universal Serial Bus (USB) devices. Set to [Enabled] if you intend to use USB devices. Configuration options: [Enabled] [Disabled]

Onboard LAN [Enabled]

This motherboard has embedded LAN controller. If you intend to use the onboard LAN feature, leave this parameter to the default setting [Enabled]. If you plan to install a LAN add-on card, select [Disabled]. Configuration options: [Enabled] [Disabled]

4. BIOS SETUP

4.4.2 I/O Device Configuration



Onboard AC97 Audio Controller [Enabled]

This field allows you to enable or disable the onboard audio controller. Configuration options: [Enabled] [Disabled]

Onboard Game Port (208H-20FH)

This field allows you to set the I/O address for the game port. Configuration options: [200H-207H] [208H-20FH] [Disabled]

Onboard MIDI I/O [330H-331H]

This field allows you to set the I/O address for the MIDI device. Configuration options: [300H-301H] [330H-331H] [Disabled]

Onboard MIDI IRQ [5]

This field allows you to set the IRQ assignment for the onboard MIDI device. Note that this parameter appears only when you set the Onboard MIDI I/O address. Configuration options: [3] [4] [5] [7] [9] [10] [11] [12] [14] [15]

Floppy Disk Access Control [R/W]

When set to [Read Only], this field protects files from being copied to floppy disks by allowing reads from the floppy disk drive but does not allow writes. The setup default [R/W] allows both reads and writes. Configuration options: [R/W] [Read Only]

4. BIOS SETUP

Onboard FDC Smart FIFO [Disabled]

Leave this parameter on the default setting [Disabled].

Onboard Serial Port 1 [3F8H/IRQ4]

Onboard Serial Port 2 [2F8H/IRQ3]

These fields allow you to set the addresses for the onboard serial connectors. Serial Port 1 and Serial Port 2 must have different addresses. Configuration options: [3F8H/IRQ4] [2F8H/IRQ3] [3E8H/IRQ4] [2E8H/IRQ10] [Disabled]

UART2 Use Infrared [Disabled]

When enabled, this field activates the onboard standard infrared feature and sets the second serial UART to support the infrared module connector on the motherboard. If your system already has a second serial port connected to the onboard COM2 connector, it will no longer work if you enable the infrared feature. See **IrDA-Compliant Infrared Module Connector** in 3.8 *External Connectors*. Configuration options: [Disabled] [Enabled]

Onboard Parallel Port [378H/IRQ7]

This field sets the address of the onboard parallel port connector. If you disable this feature, **Parallel Port Mode** and **ECP DMA Select** configurations are not available. Configuration options: [Disabled] [378H/IRQ7] [278H/IRQ5]

Parallel Port Mode [Normal]

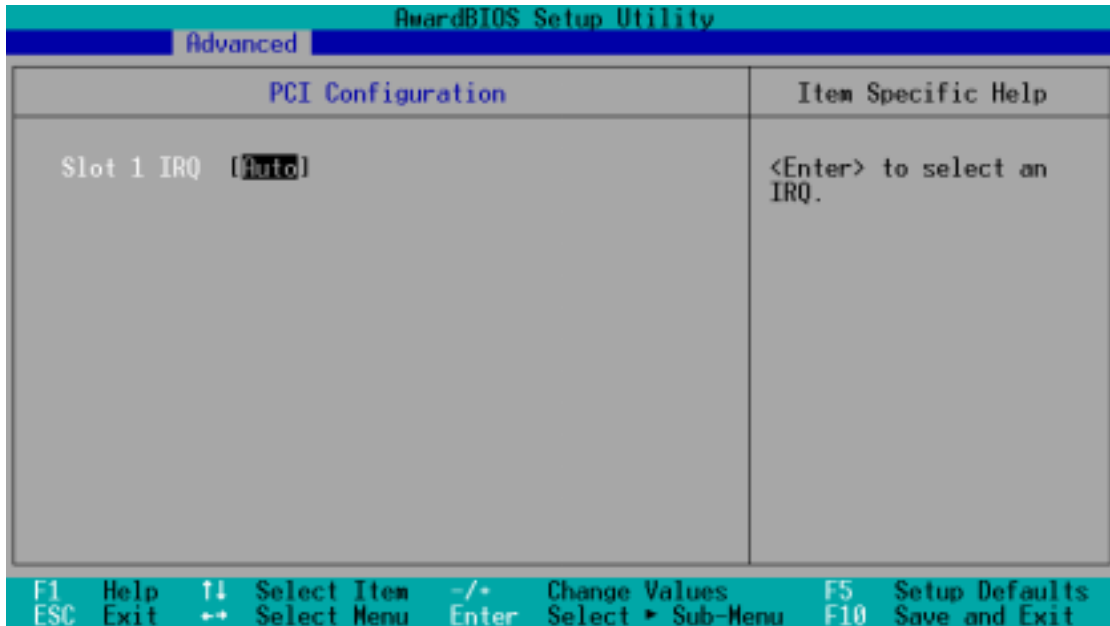
This field allows you to set the operation mode of the parallel port. [Normal] allows normal-speed operation but in one direction only; [EPP] allows bidirectional parallel port operation; [ECP] allows the parallel port to operate in bidirectional DMA mode; [ECP+EPP] allows normal speed operation in a two-way mode. Configuration options: [Normal] [EPP] [ECP] [ECP+EPP]

ECP DMA Select [3]

This field allows you to configure the parallel port DMA channel for the selected **ECP** mode. This selection is available only if you select [ECP] or [ECP+EPP] in **Parallel Port Mode** above. Configuration options: [1] [3] [Disabled]

4. BIOS SETUP

4.4.3 PCI Configuration



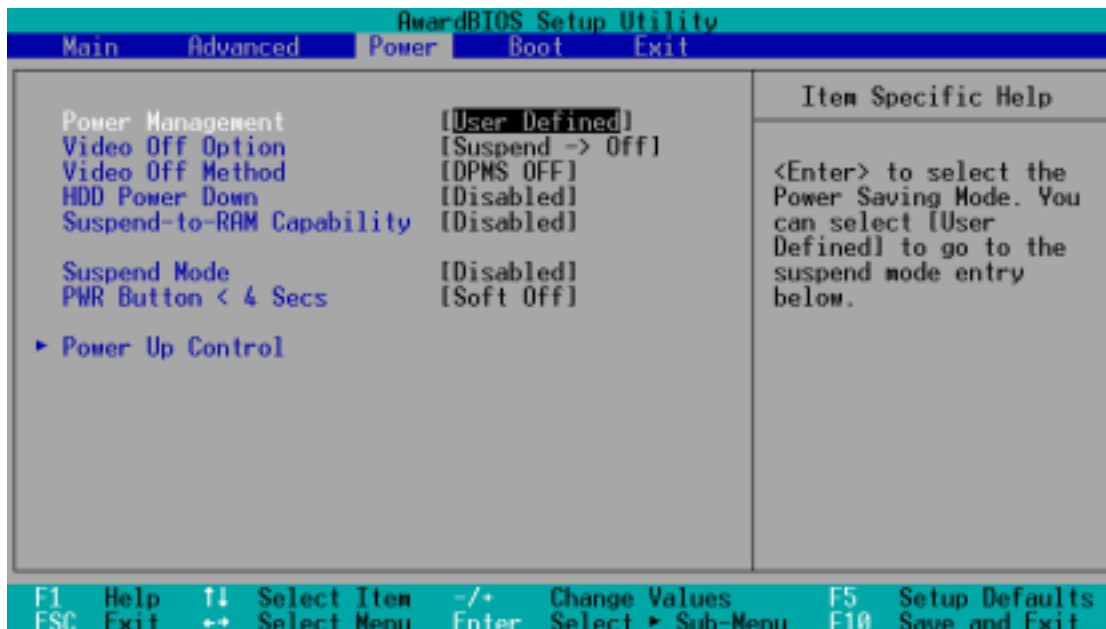
Slot 1 IRQ [Auto]

When set to [Auto], this field automatically determines the IRQ assignment for the PCI slot. Configuration options: [Auto] [NA] [3] [4] [5] [7] [9] [10] [11] [12] [14] [15]

4. BIOS SETUP

4.5 Power Menu

The Power menu allows you to reduce power consumption. This feature turns off the video display and shuts down the hard disk after a period of inactivity.



Power Management [User Defined]

This option must be enabled to use any of the automatic power saving features. If this menu item is set to [Disabled], power management features will not function regardless of other field settings on this menu. The [User Define] option allows you to make your own selections in the Power menu. When set to [Max Saving], system power will be conserved to its greatest amount. The **Suspend Mode** field will then be set to predefined value that ensures maximum power savings.

This field acts as the master control for the power management modes. [Max Saving] puts the system into power saving mode after a brief period of system inactivity; [Min Saving] is almost the same as [Max Saving] except that the system inactivity period is longer; [Disabled] disables the power saving features; [User Define] allows you to set power saving options according to your preference. Configuration options: [User Define] [Disabled] [Min Saving] [Max Saving]

IMPORTANT: Advanced Power Management (APM) should be installed to keep the system time updated when the computer enters suspend mode activated by the BIOS Power Management. For DOS environments, you need to add the statement, `DEVICE=C:\DOS\POWER.EXE`, to your `CONFIG.SYS` file. For Windows 3.x and Windows 95, you need to install Windows with the APM feature. For Windows 98 and later, APM is automatically installed. A battery and power cord icon labeled “Power Management” appears in the “Control Panel.” Choose “Advanced” in the Power Management Properties dialog box.

4. BIOS SETUP

Video Off Option [Suspend -> Off]

This field determines when to activate the video off feature for monitor power management. Configuration options: [Always On] [Suspend -> Off]

Video Off Method [DPMS OFF]

This field defines the video off features. The DPMS (Display Power Management System) feature allows the BIOS to control the video display card if it supports the DPMS feature. [Blank Screen] only blanks the screen (use this for monitors without power management or “green” features. If set up in your system, your screen saver does not run with [Blank Screen] selected). [V/H SYNC+Blank] blanks the screen and turns off vertical and horizontal scanning. Configuration options: [Blank Screen] [V/H SYNC+Blank] [DPMS Standby] [DPMS Suspend] [DPMS OFF] [DPMS Reduce ON]

HDD Power Down [Disabled]

Shuts down any IDE hard disk drives in the system after a period of inactivity as set in this user-configurable field. This feature does not affect SCSI hard drives. Configuration options: [Disabled] [1 Min] [2 Min] [3 Min]...[15 Min]

Suspend-to-RAM Capability [Disabled]

Suspend-to-RAM (STR) is an energy-saving feature. In Suspend-to-RAM state, all devices on the computer are turned off, except for the system RAM. Thus, the PC only consumes less than 5 watts of power. Select [Enabled] if your power supply can provide at least 720mA on the +5VSB lead to support the STR function. If the expansion card you use on the motherboard do not support the STR function, you must leave this field to the default setting [Disabled]. Note that this field is only effective if you are using Windows 98. Configuration options: [Enabled] [Disabled]

Suspend Mode [Disabled]

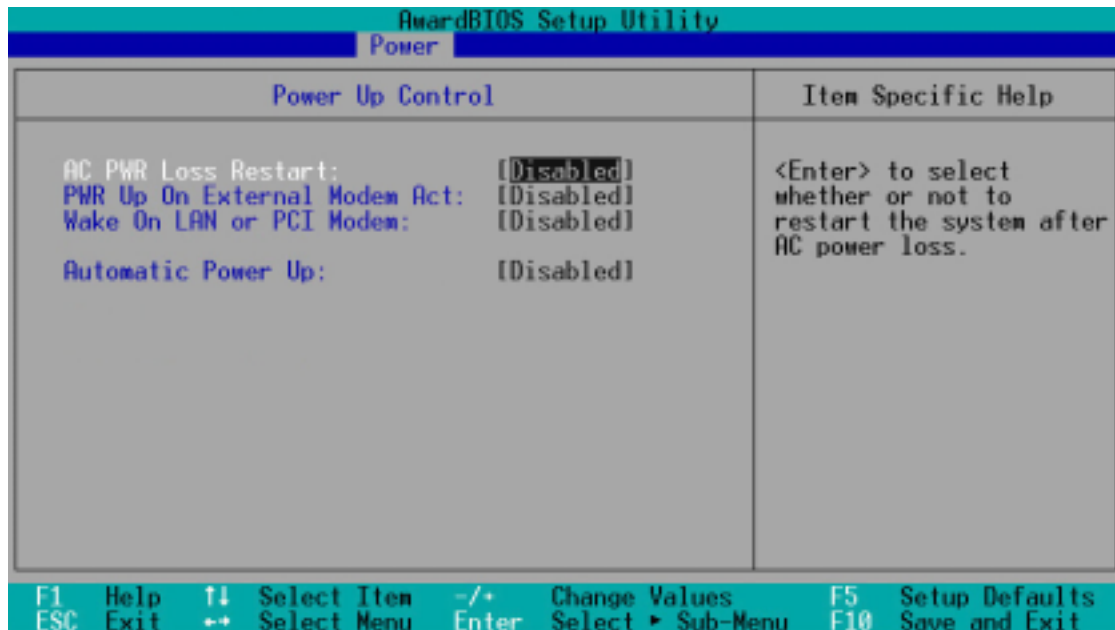
Sets the time period before the system goes into suspend mode. Configuration options: [Disabled] [30 Sec] [1 Min] [2 Min]...[1 Hour]

PWR Button < 4 Secs [Soft Off]

When set to [Soft off], the ATX switch can be used as a normal system power-off button when pressed for less than 4 seconds. [Suspend] allows the button to have a dual function where pressing less than 4 seconds will place the system in sleep mode. Regardless of the setting, holding the ATX switch for more than 4 seconds will power off the system. Configuration options: [Soft off] [Suspend]

4. BIOS SETUP

4.5.1 Power Up Control



AC PWR Loss Restart [Disabled]

This allows you to set whether you want your system to reboot after the power has been interrupted. [Disabled] leaves your system off and [Enabled] reboots your system. [Previous State] sets your system back to the state it is before the power interruption. Configuration options: [Disabled] [Enabled] [Previous State]

PWR Up On External Modem Act [Disabled]

This allows either settings of [Enabled] or [Disabled] for powering up the computer when the external modem receives a call while the computer is in Soft-off mode. **NOTE:** The computer cannot receive or transmit data until the computer and applications are fully running. Thus connection cannot be made on the first try. Turning an external modem off and then back on while the computer is off causes an initialization string that will also cause the system to power on. Configuration options: [Disabled] [Enabled]

Wake On LAN or PCI Modem [Disabled]

Wake-On-LAN/PCI Modem allows your computer to be booted from another computer via a network by sending a wake-up frame or signal. Configuration options: [Disabled] [Enabled]

IMPORTANT: This feature requires an optional network interface with Wake-On-LAN and an ATX power supply with at least 720mA +5V standby power.

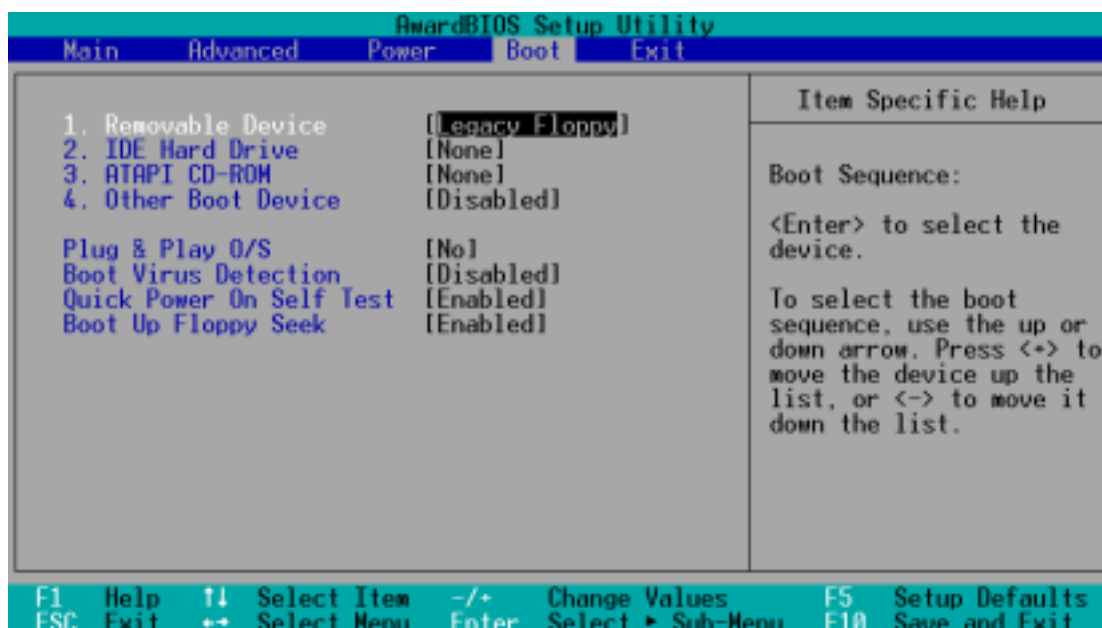
4. BIOS SETUP

Automatic Power Up [Disabled]

This allows an unattended or automatic system power up. You may configure your system to power up at a certain time of the day by selecting [Everyday] or at a certain time and day by selecting [By Date]. *Automatic Power Up* does not work if the system is powered down by operating systems with ACPI feature, such as Windows 98. Configuration options: [Disabled] [Everyday] [By Date]

4. BIOS SETUP

4.6 Boot Menu



Boot Sequence

The Boot menu allows you to select among the four possible types of boot devices listed using the up and down arrow keys. By using the <+> or <Space> key, you can promote devices and by using the <-> key, you can demote devices. Promotion or demotion of devices alters the priority that the system uses to search for a boot device on system power up. Configuration fields include **Removable Devices**, **IDE Hard Drive**, **ATAPI CD-ROM**, and **Other Boot Device**.

Removable Device [Legacy Floppy]

Configuration options: [Disabled] [Legacy Floppy]

IDE Hard Drive [None]

This field allows you to select which IDE hard disk drive to use in the boot sequence. Pressing [Enter] shows the product IDs of all connected IDE hard disk drives. Configuration options: [Disabled] [None]

ATAPI CD-ROM [None]

This field allows you to select which ATAPI CD-ROM drive to use in the boot sequence. Pressing [Enter] shows the product IDs of all your connected ATAPI CD-ROM drives. Configuration options: [Disabled] [None]

Other Boot Device Select [Disabled]

Configuration options: [Disabled] [SCSI Boot Device]

4. BIOS SETUP

Plug & Play O/S [No]

This field allows using a Plug-and-Play (PnP) operating system to configure non-bootable devices. Select the option [Yes] if you use a PnP operating system. Select the option [No] if you are using a non-PnP operating system to let BIOS configure non-bootable devices. Configuration options: [No] [Yes]

Boot Virus Detection [Disabled]

This field allows you to set boot virus detection, ensuring a virus-free boot sector. The system halts and displays a warning message when it detects a virus. If this occurs, you can either allow the operation to continue or use a virus-free bootable floppy disk to restart and examine the system. Configuration options: [Disabled] [Enabled]

Quick Power On Self Test [Enabled]

When set to [Enabled], this field speeds up the Power-On-Self Test (POST) routine by skipping some tests. Configuration options: [Disabled] [Enabled]

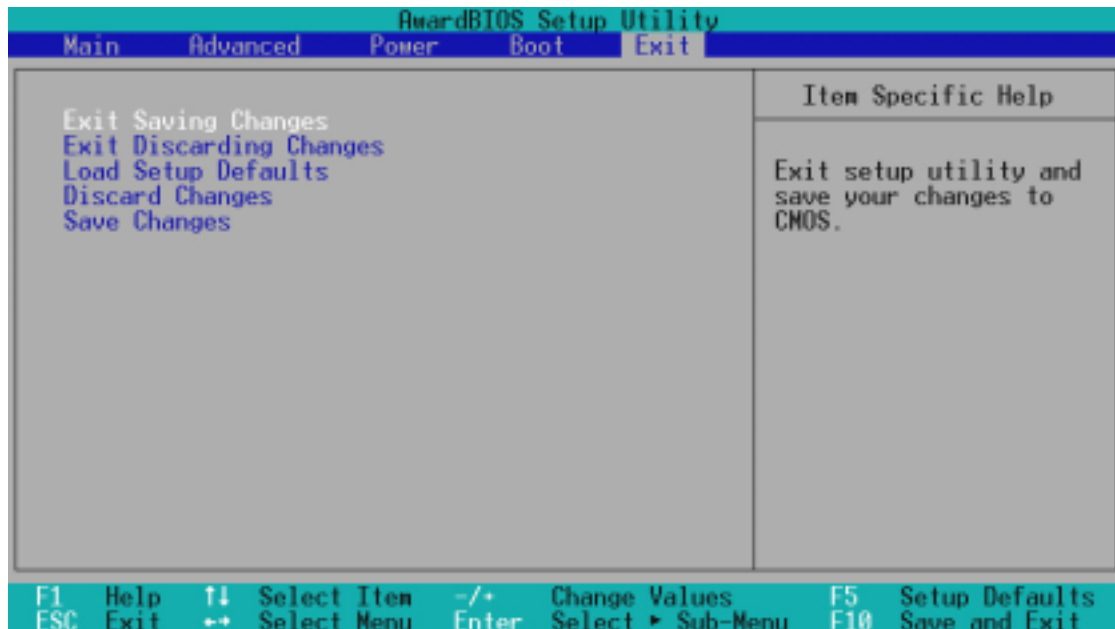
Boot Up Floppy Seek [Enabled]

When enabled, the BIOS seeks the floppy disk drive to determine whether the drive has 40 or 80 tracks. Configuration options: [Disabled] [Enabled]

4. BIOS SETUP

4.7 Exit Menu

Once you have made all of your selections from the various menus in the Setup program, you should save your changes and exit Setup. Select **Exit** from the menu bar to display the following menu:



NOTE: Pressing <Esc> does not exit this menu. You must select one of the options from this menu or <F10> from the legend bar to exit this menu.

Exit Saving Changes

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. The CMOS RAM is sustained by an onboard backup battery and stays on even when the PC is turned off. Once this option is selected, a confirmation is asked. Select [Yes] to save changes and exit.

NOTE: If you attempt to exit the Setup program without saving your changes, the program prompts you with a message asking if you want to save your changes before exiting. Pressing <Enter> saves the changes while exiting.

Exit Discarding Changes

This option should only be used if you do not want to save the changes you have made to the Setup program. If you have made changes to fields other than system date, system time, and password, the system asks you to confirm the changes before exiting.

4. BIOS SETUP

Load Setup Defaults

This option allows you to load the default values for each of the parameters on the Setup menus. When this option is selected or if <F5> is pressed, a confirmation is requested. Select [Yes] to load default values. You can now select **Exit Saving Changes** or make other changes before saving the values to the non-volatile RAM.

Discard Changes

This option allows you to discard the selections you made and restore the values you previously saved. After selecting this option, a confirmation is requested. Select [Yes] to discard any changes and load the previously saved values.

Save Changes

This option saves your selections without exiting the Setup program. You can then return to other menus and make changes. After selecting this option, all selections are saved and a confirmation is requested. Select [Yes] to save any changes to the non-volatile RAM.

5. SOFTWARE SETUP

5.1 Install the Operating System

You should always use the latest operating system and updates when using new hardware to ensure full compliance. You may use any version of Windows 98, but for Windows 95, you must use OSR 2.0 or later. For Windows NT 4.0, you must use Service Pack 3.0 or later.

5.2 Start Windows

When you start Windows 98 for the first time after installing the motherboard, Windows 98 detects all the Plug-n-Play devices. Follow the Add New Hardware Wizard to install all the necessary device drivers. When prompted to restart, select **No**, then follow the normal setup procedures on the screen.

5.3 POLO Motherboard Support CD

To begin using the support CD, insert it into the CD-ROM drive. The support installation menu should appear. If the menu does not appear, double-click or run **D:\ASSETUP.EXE** (assuming that your CD-ROM drive is drive D).

NOTE: The support CD contents are subject to change at any time without notice.

5.3.1 Installation Menu



5. SOFTWARE SETUP

5.3.2 Applications

- **Display Driver:** Installs the SiS Display Drivers.
- **SiS AGP Driver:** Installs the SiS 2D/3D AGP video driver to support high-performance graphical applications.
- **SiS 7018 PCI Audio Driver:** Installs the SiS 7018 PCI audio drivers to activate the AC '97 compliant audio features.
- **Lan Driver:** Installs the driver for the onboard LAN controller. **NOTE:** If you do not see this item among the applications on the support CD, check the **Onboard LAN** parameter in BIOS and make sure it is set to [Enabled] (see *4.4.1 Chip Configuration*).
- **SiS IDE Utility:** Installs the SiS IDE Utility for the two IDE channels.
- **ASUS PC Probe V2.12.07:** Installs a smart utility that can monitor the computer fan, temperature, and voltages.
- **Install ASUS Update V3.27.06:** Installs the ASUS Update program. This program allows you download the latest version of Flash BIOS from the ASUS website. Before using ASUS Update, you should install a network card and a TCP/IP network driver.
- **PC-Cillin 2000 V7.0:** Installs the PC-cillin virus protection software. View the online help for more information.
- **ADOBE Acrobat Reader V4.0:** Installs the Adobe Acrobat Reader software necessary to view user's manuals in PDF format.
- **ASUS Screen Saver:** Installs the ASUS monitor screen saver.

NOTE: To see the following items, click on the arrow (pointing to the right) on the lower right corner of the screen. To return to the first menu screen, click on the arrow (pointing to the left) on the lower right corner of the second screen.

- **Show Mainboard Information:** Allows you to view information about the motherboard, such as product name, BIOS version, and CPU.
- **Browse Support CD:** Allows you to view the contents of the support CD.
- **ReadMe:** Allows you to view a list of the files included in the support CD and ASUS contact information.
- **Exit:** Exits the CD installation menu.

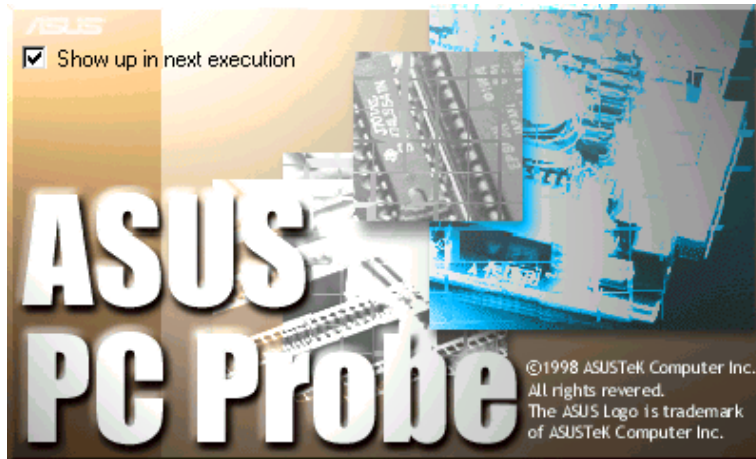
6. SOFTWARE REFERENCE

6.1 ASUS PC Probe


ASUS PC Probe is a convenient utility to continuously monitor your computer system's vital components, such as fan rotations, voltages, and temperatures. It also has a utility that lets you review useful information about your computer, such as hard disk space, memory usage, and CPU type, CPU speed, and internal/external frequencies through the DMI Explorer.

6.1.1 Starting ASUS PC Probe

When ASUS PC Probe starts, a splash screen appears allowing you to select whether to show the screen again when you open PC Probe or not. To bypass this startup screen, clear the **Show up in next execution** check box.



To launch **ASUS PC Probe**, click the Windows **Start** button, point to **Programs**, and then **ASUS Utility**, and then click **Probe Vx.xx**.

The PC Probe icon  appears on the taskbar system tray indicating that ASUS PC Probe is running. Clicking the icon allows you to see the status of your PC.



6. SOFTWARE REFERENCE

6.1.2 Using ASUS PC Probe

Monitoring

Monitor Summary

Shows a summary of the items being monitored.



Temperature Monitor

Shows the PC temperature (for supported processors only).

Temperature Warning threshold adjustment
(Move the slider up to increase the threshold level or down to decrease the threshold level)



Fan Monitor

Shows the PC fan rotation.

Fan Warning threshold adjustment
(Move the slider up to increase the threshold level or down to decrease the threshold level)



Voltage Monitor

Shows the PC voltages.



6. SOFTWARE REFERENCE

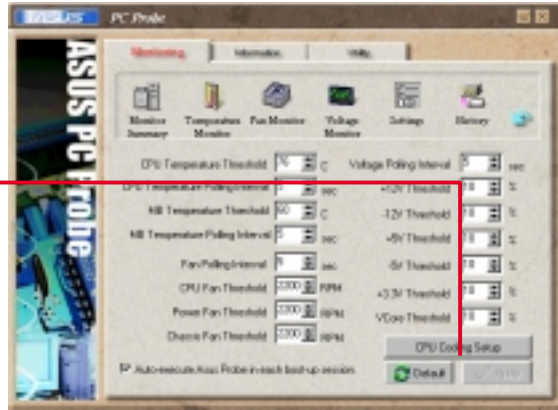
Settings

Lets you set threshold levels and polling intervals or refresh times of the PC's temperature, fan rotation, and voltages.



CPU Cooling System Setup

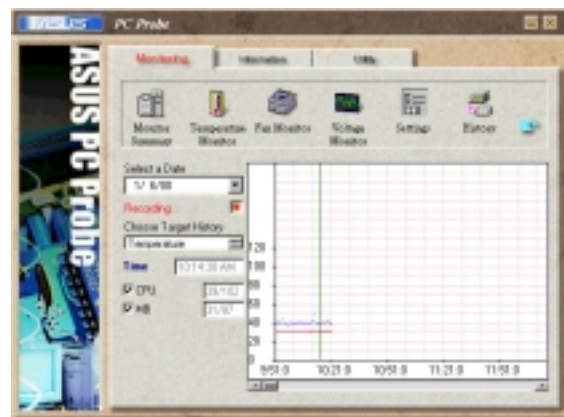
Lets you select when to enable software CPU cooling. When **When CPU Overheated** is selected, the CPU cooling system is enabled whenever the CPU temperature reaches the threshold value.



6. S/W REFERENCE
ASUS PC Probe

History

Lets you record the monitoring activity of a certain component of your PC for future reference.



Fan Control

Lets you enable/disable Smart Fan Control. Smart Fan Control adjusts the fan speed automatically based on the current CPU temperature and predefined threshold.



Information

Hard Drives

Shows the used and free space of the PC's hard disk drives and the file allocation table or file system used.



6. SOFTWARE REFERENCE

Memory

Shows the PC memory load, memory usage, and paging file usage.



Device Summary

Shows a summary of devices present in your PC.



DMI Explorer

Shows information pertinent to the PC, such as CPU type, CPU speed, and internal/external frequencies, and memory size.



Utility

Lets you run programs outside of the ASUS Probe modules. To run a program, click **Execute Program**. **NOTE:** This feature is currently unavailable.



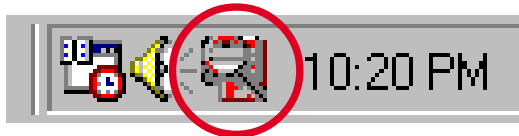
6. SOFTWARE REFERENCE

6.1.3 ASUS PC Probe Task Bar Icon

Right clicking the PC Probe icon brings up a menu to open or exit ASUS PC Probe and pause or resume all system monitoring.



When the ASUS PC Probe senses a problem with your PC, portions of the ASUS PC Probe icon changes to red, the PC speaker beeps, and the ASUS PC Probe monitor appears.

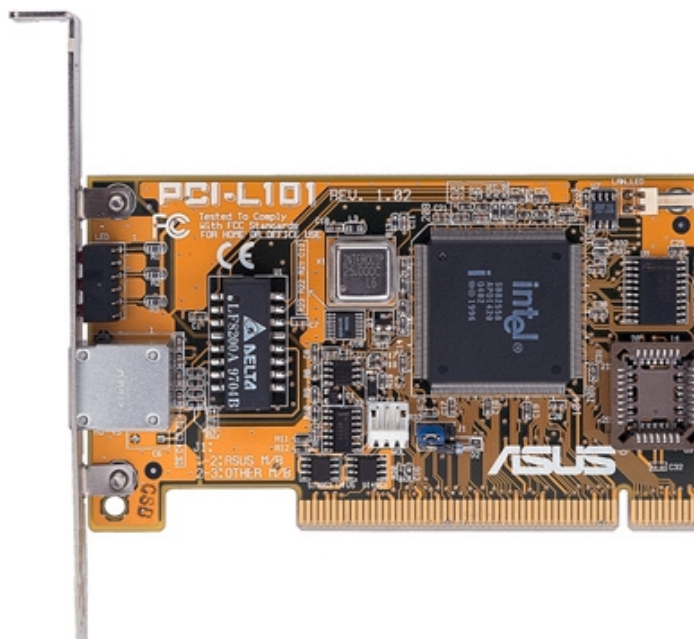


6. SOFTWARE REFERENCE

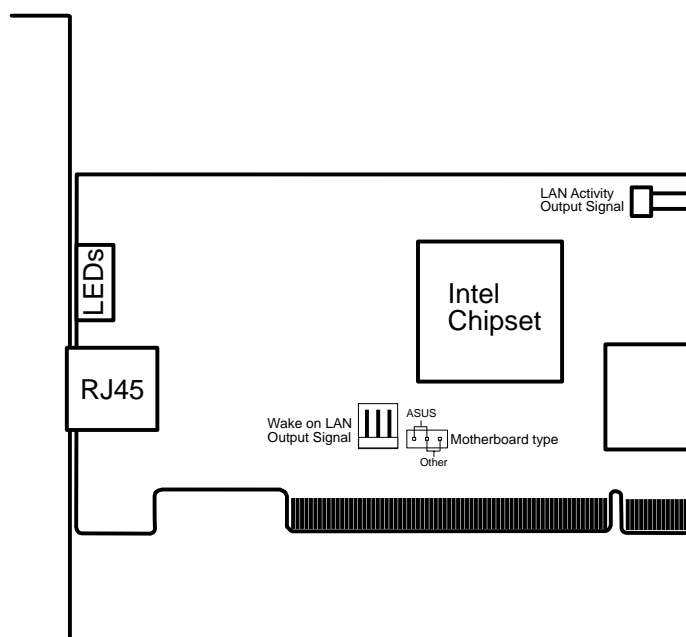
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7. APPENDIX

7.1 PCI-L101 Fast Ethernet Card



7. APPENDIX
ASUS LAN Card



If you are using the ASUS PCI-L101 on an ASUS motherboard, leave the jumper on its default setting “ASUS.” If you are using another brand of motherboard, set the jumper to “Other.” Connect the Wake-On-LAN (WOL) output signal to the WOL_CON connector on the motherboard to use the Wake-On-LAN feature. Connect the LAN activity output signal (LAN_LED) to the LAN_LED connector on the system chassis front panel to display the LAN data activity.

7. APPENDIX

7.1.1 Features

- Intel 82558 Ethernet LAN Controller (Fully integrated 10BASE-T/100BASE-TX)
- Wake-On-LAN Remote Control Function Supported
- PCI Bus Master Complies to PCI Local Bus Rev. 2.1 specifications
- Consists of MAC & PHY (10/100Mbps) interfaces
- Complies to IEEE 802.3 10BASE-T and IEEE 802.3u 100BASE-TX interfaces
- Fully supports 10BASE-T & 100BASE-TX operations through a single RJ45 port
- Supports 32-bit Bus Master Technology / PCI Rev. 2.1
- Enhancements on ACPI & APM
- Adheres to PCI Bus Power Management Interface Rev. 1.0, ACPI Rev. 1.0, and Device Class Power Management Rev. 1.0
- IEEE 802.3u auto-negotiation for 10Mbps/100Mbps Network Data Transfer Rates.
- Provides LED indicators for monitoring network conditions
- Plug and Play

7.1.2 Software Driver Support

- **NetWare ODI Drivers** - Novell Netware 3.x, 4.x, DOS, OS/2 Client
- **NDIS 2.01 Drivers** - Microsoft LAN Manager, Microsoft Windows 3.11, IBM LAN Server
- **NDIS 3.0 Drivers** - Microsoft Windows NT, Microsoft Windows 95, Microsoft Windows 3.11

7.1.3 Question and Answer

Q: What is Wake-On-LAN ?

A: The Wake-On-LAN feature provides the capability to remotely power on systems supporting Wake-On-LAN by simply sending a wake-up frame. With this feature, remotely uploading/downloading data to/from systems during off-peak hours will be feasible.

Q: What can Wake-On-LAN do for you ?

A: Wake-On-LAN is a remote management tool with advantages that can reduce system management workload, provide flexibility to the system administrator's job, and then of course save you time-consuming efforts and costs.

Q: What components does Wake-On-LAN require to be enable?

A: To enable Wake-On-LAN function, your system requires Ethernet LAN adapter card that can activate Wake-On-LAN function, a client with Wake-On-LAN capability, and software such as LDCM Rev. 3.10 or up that can trigger wake-up frame.

7. APPENDIX

7.2 Glossary

1394

1394 is the IEEE designation for the high performance serial bus at 12.5, 25 or 50MBytes/sec speeds. This serial bus defines both a back plane physical layer and a point-to-point cable-connected virtual bus. The primary application of the cable version is the integration of I/O connectivity at the back panel of personal computers using a low-cost, scalable, high-speed serial interface. The 1394 standard also provides new services such as live connect/disconnect capability for external devices including disk drives, printers and hand-held peripherals such as scanners and cameras. This is a new standard to complement the slower USB interface and to compete with the more expensive SCSI interface.

AC97 (Audio Codec '97)

AC '97 is the next step in enabling PCs with audio quality comparable to consumer electronics devices. The specification defines new cost-effective options to help integrate the components necessary to support next-generation auto-intensive PC applications such as DVD, 3-D multiplayer gaming and interactive music. The specification also defines new extensions supporting modem and docking to help both desktop and mobile manufacturers adopt these new technologies more quickly and cost-effectively. This specification uses software emulation to compete with the PCI SoundBlaster specification.

ACPI (Advanced Configuration and Power Interface)

The ACPI specification defines a cross-platform interface designed to support many operating systems. ACPI defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including hardware, operating system and application software. This enables the system to automatically turn ON and OFF peripherals such as CD-ROMs, network cards, hard disk drives, and printers, as well as consumer devices connected to the PC such as VCRs, TVs, phones, and stereos. With this technology, peripherals will also be able to activate the PC. For example, inserting a tape into a VCR can turn on the PC, which could then activate a large-screen TV and high-fidelity sound system.

AGP (Accelerated Graphics Port)

An interface specification that enables high-performance 3D graphics on mainstream PCs. AGP was designed to offer the necessary bandwidth and latency to perform texture mapping directly from system memory.

Bus	Bus Frequency	Bandwidth	Data Transfer Rate
PCI	33MHz	33MHz	133MByte/sec
AGP 1X	66MHz	66MHz	266MByte/sec
AGP 2X	66MHz	133MHz	512MByte/sec
AGP 4X	66MHz	266MHz	1024MByte/sec

BIOS (Basic Input/Output System)

BIOS is a set of routines that affect how the computer transfers data between computer components, such as memory, disks, and the display adapter. The BIOS instructions are built into the computer's read-only memory. BIOS parameters can be configured by the user through the BIOS Setup program. The BIOS can be updated using the provided utility to copy a new BIOS file into the EEPROM.

Bit (Binary Digit)

Represents the smallest unit of data used by the computer. A bit can have one of two values: 0 or 1.

7. APPENDIX

Boot

Boot means to start the computer operating system by loading it into system memory. When the manual instructs you to “boot” your system (or computer), it means to turn ON your computer. “Reboot” means to restart your computer. When using Windows 95 or later, selecting “Restart” from “Start | Shut Down...” will reboot your computer.

Bus Master IDE

PIO (Programmable I/O) IDE requires that the CPU be involved in IDE access and waiting for mechanical events. Bus master IDE transfers data to/from the memory without interrupting the CPU. Bus master IDE driver and bus master IDE hard disk drives are required to support bus master IDE mode.

Byte (Binary Term)

One byte is a group of eight contiguous bits. A byte is used to represent a single alphanumeric character, punctuation mark, or other symbol.

COM Port

COM is a logical device name used by to designate the computer serial ports. Pointing devices, modems, and infrared modules can be connected to COM ports. Each COM port is configured to use a different IRQ and address assignment.

Concurrent PCI

Concurrent PCI maximizes system performance with simultaneous CPU, PCI and ISA bus activities. It includes multi-transaction timing, enhanced write performance, a passive release mechanism and support for PCI 2.1 compliant delayed transactions. Concurrent PCI provides increased bandwidth, reduced system latencies, improves video and audio performance, and improves processing of host based applications.

CPU (Central Processing Unit)

The CPU, sometimes called “Processor,” actually functions as the “brain” of the computer. It interprets and executes program commands and processes data stored in memory. Currently, there are socket 370 (for Pentium III FC-PGA and Celeron-PPGA), socket 7 (for Pentium, AMD, Cyrix, IBM), slot 1 (for Pentium II and III), slot 2 (for Xeon), and slot A (for AMD) processors.

Device Driver

A device driver is a special set of instructions that allows the computer’s operating system to communicate with devices such as VGA, audio, printer, or modem.

DOS (Disk Operating System)

DOS is the foundation on which all other programs and software applications operate, including Windows. DOS is responsible for allocating system resources such as memory, CPU time, disk space, and access to peripheral devices. For this reason, DOS constitutes the basic interface between you and your computer.

DRAM (Dynamic Random Access Memory)

There are several different types of DRAM such as, EDO DRAM (Extended Data Output DRAM), SDRAM (Synchronous DRAM), and RDRAM (Rambus DRAM).

Flash ROM

The flash ROM is designed to be a resident program and can be updated by a specific programming method. Normally, the flash ROM is used for system BIOS which initiates hardware devices and sets up necessary parameters for the OS. Since the contents of flash ROM can be modified, users are able to update the BIOS by themselves.

IDE (Integrated Drive Electronics)

IDE devices integrate the drive control circuitry directly on the drive itself, eliminating the need for a separate adapter card (in the case for SCSI devices). UltraDMA/33 IDE devices can achieve up to 33MB/Sec transfer.

7. APPENDIX

LPT Port (Line Printer Port)

Logical device name reserved by DOS for the computer parallel ports. Each LPT port is configured to use a different IRQ and address assignment.

MMX

A set of 57 new instructions based on a technique called Single Instruction, Multiple Data (SIMD), which is built into the new Intel Pentium PP/MT (P55C) and Pentium II (Klamath) CPU as well as other x86-compatible microprocessors. The MMX instructions are designed to accelerate multimedia and communications applications, such as 3D video, 3D sound, video conference.

OnNow

The OnNow design initiative is a comprehensive, system-wide approach to system and device power control. OnNow is a term for PC that is always ON but appears OFF and responds immediately to user or other requests. The OnNow design initiative involves changes that will occur in the Microsoft Windows operating system, device drivers, hardware, and applications, and also relies on the changes defined in the Advanced Configuration and Power Interface (ACPI) specification.

PC100

SDRAM is Intel's goal is to ensure that memory subsystems continue to support evolving platform requirements and to assure that memory does not become a bottleneck to system performance. It is especially important to ensure that the PC memory roadmap evolves together with the performance roadmaps for the processors, I/O and graphics.

PCI Bus (Peripheral Component Interconnect Local Bus)

PCI bus is a specification that defines a 32-bit data bus interface. PCI is a standard widely used by expansion card manufacturers.

PCI Bus Master

The PCI Bus Master can perform data transfer without local CPU help and furthermore, the CPU can be treated as one of the Bus Masters. PCI 2.1 supports concurrent PCI operation to allow the local CPU and bus master to work simultaneously.

Plug and Play BIOS

The ISA bus architecture requires the allocation of memory and I/O address, DMA channels and interrupt levels among multiple ISA cards. However, configuration of ISA cards is typically done with jumpers that change the decode maps for memory and I/O space and steer the DMA and interrupt signals to different pins on the bus. Further, system configuration files may need to be updated to reflect these changes. Users typically resolve sharing conflicts by referring to documentation provided by each manufacturer. For the average user, this configuration process can be unreliable and frustrating. Plug and play (PnP) BIOS eliminates the ISA add-on card hardware conflict problem. The PnP BIOS uses a memory block to define and remember each card's configuration, which allows the user to change the card's IRQs and DMA in BIOS either automatically or manually.

POST (Power On Self Test)

When you turn ON the computer, it will first run through the POST, a series of software-controlled diagnostic tests. The POST checks system memory, the motherboard circuitry, the display, the keyboard, the diskette drive, and other I/O devices.

PS/2 Port

PS/2 ports are based on IBM Micro Channel Architecture. This type of architecture transfers data through a 16-bit or 32-bit bus. A PS/2 mouse and/or keyboard may be used on ATX motherboards.

RDRAM (Rambus DRAM)

Developed by Rambus, Inc., this type of memory can deliver up to 1.6GB of data per second. RDRAM is the first interface standard that can be directly implemented on high performance VLSI components such as, CMOS DRAMs, memory controllers, and graphics/video ICs.

7. APPENDIX

ROM (Read Only Memory)

ROM is nonvolatile memory used to store permanent programs (called firmware) used in certain computer components. Flash ROM (or EEPROM) can be reprogrammed with new programs (or BIOS).

SCSI (Small Computer System Interface)

High speed multi-threaded I/O interface defined by the X3T9.2 committee of the American National Standards Institute (ANSI) for connecting many peripheral devices. The standard started from 10MBytes/sec to 160MBytes/sec available today.

SDRAM (Synchronous DRAM)

The SDRAM features a fully synchronous operation referenced to a positive edge clock whereby all operations are synchronized at a clock input which enables the coexistence of high performance and a simple user interface. SDRAM takes memory access away from the CPU's control; internal registers in the chips accept the request, and let the CPU do something else while the data requested is assembled for the next time the CPU talks to the memory. As they work on their own clock cycle, the rest of the system can be clocked faster. There is a version optimized for video cards, and main memory for motherboards.

SPD for SDRAM module

Serial Presence Detect (SPD) is most like an ID detect for SDRAM module, it using a EEPROM component on DIMM module for storing module configuration information inside. The Serial Presence Detect function is implemented using a 2048 bit EEPROM component. This nonvolatile storage device contains data programmed by the DIMM manufacturer that identifies the module type and various SDRAM organization and timing parameters.

SSE (Streaming SIMD Extensions)

A set of new instructions added to existing architectures that enables a better visual experience with an accelerated 3D geometry pipeline and support for new applications, such as real-time video encoding and speech recognition.

System Disk

A system disk contains the core file of an operating system and is used to boot up the operating system.

UltraDMA

Ultra DMA/33 is a "synchronous DMA" protocol designed by Intel. This function is included into Intel's PIIX4 chipset. The traditional IDE transfer only uses one edge of the data stroke as the data transfer. Ultra DMA/33 uses both edges of data strobe when the data is transferred. Hence, the data transfer rate is double of the PIO mode 4 or DMA mode 2 (16.6MB/s x2 = 33MB/s) on ATA-2 devices.

Ultra ATA/66, also known as Ultra DMA/66, is an extension of current Ultra ATA/33 interface. This new high-speed interface has doubled the Ultra ATA/33 burst data transfer rate to 66.6 Mbytes/sec and maximized disk performance under current PCI local bus environment

USB (Universal Serial Bus)

A 4-pin serial cable bus that allows up to 127 plug and play computer peripherals such as keyboard, mouse, joystick, scanner, printer, modem, and monitor to share a bandwidth through a host scheduled token based protocol. This allows attaching or detaching while the host and other peripherals are in operation. Supports synchronous and asynchronous transfer types over the same set of wires up to 12Mbit/sec. USB 2.0 provides twice the transfer rate compared to USB 1.0 and competes with the 1394 standard.

Wake-On-LAN

The computer automatically wakes up upon receiving a wake-up packet through a Network interface when it is under power soft-off, suspend or sleep mode.

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