



SY-P4ISR

Motherboard

mPGA Socket 478 Processor supported

Intel i845 AGP/PCI/CNR

400 MHz Front Side Bus supported

ATX Form Factor

User's Manual

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About This Guide:

This Quick Start Guide can help system manufacturers and end users in setting up and installing the Motherboard. Information in this guide has been carefully checked for reliability; however, to the correctness of the contents there is no guarantee given. The information in this document is subject to amend without notice.

For further information, please visit our **Web Site** on the Internet. The address is "<http://www.soyo.com.tw>".

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P4ISR SERIAL

FC Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

100% POST CONSUMER
RECYCLED PAPER

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Chapter 1

MOTHEBOARD DESCRIPTION

1-1 INTRODUCTION

- The **SY-P4ISR** AGP/PCI/CNR Motherboard is a high-performance Socket 478 processor supported ATX form-factor system board. **SY-P4ISR** uses the Intel i845 Chipset technology. This Motherboard is fully compatible with industry standards
 - Supports Intel® mPGA Socket 478 processors
 - FSB 400MHz: Pentium® 4
- Supports 400 MHz Front Side Bus Frequency
- PC99, ACPI
- Ultra DMA33/66/100 (ATA 33/66/100)
- Supports Wake-On-LAN (WOL)
- Supports PC-133 Unbuffer SDRAM and ECC
- Supports ACPI Suspend Indicator
- Power-on by modem, alarm and PS/2 Keyboard
- Power failure resume
- Supports Suspend to RAM
- Supports onboard hardware monitoring and includes Hardware Doctor™ utility
- Supports AC97 Codec
- Easy CPU settings in BIOS with the “SOYO COMBO Setup”
 - CPU voltage adjust
 - CPU ratio adjust
 - CPU FSB adjust
- Supports multiple-boot function
- AGP 2.0 Compliant;

AGP Connector supports:

- 1.5V only AGP card
- 1X/2X/4X data transfer

- Supports Communication Networking Riser Slot (CNR 1.0 compliant) *
- Smart Card Reader
 - Compliant with Personal Computer Smart Card (PC/SC) Working Group standard
 - Compliant with smart card (ISO 7816) protocols
 - Supports card present detect
 - Supports Smart Card insertion power-on feature
- 3 x DIMM slots for SDRAM memory
- 1 x 32-bit AGP slot
- 6 x 32-bit bus master PCI slots
- 4 x USB ports onboard
- 1 x IrDA port
- ATX 12V power connector
- Promise IDE RAID

Warning: This M/B can only support 1.5V AGP card.

1-2 HANDLING THE MOTHERBOARD

To avoid damage to your Motherboard, follow these simple rules while unpacking:

- Before handling the Motherboard, ground yourself by grasping an unpainted portion of the system's metal chassis.
- Remove the Motherboard from its anti-static packaging. Hold the Motherboard by the edges and avoid touching its components.
- Check the Motherboard for damage. If any chip appears loose, press carefully to seat it firmly in its socket.



Warning: Do not apply power if the Motherboard appears damaged. If there is damage to the board, contact your dealer immediately.

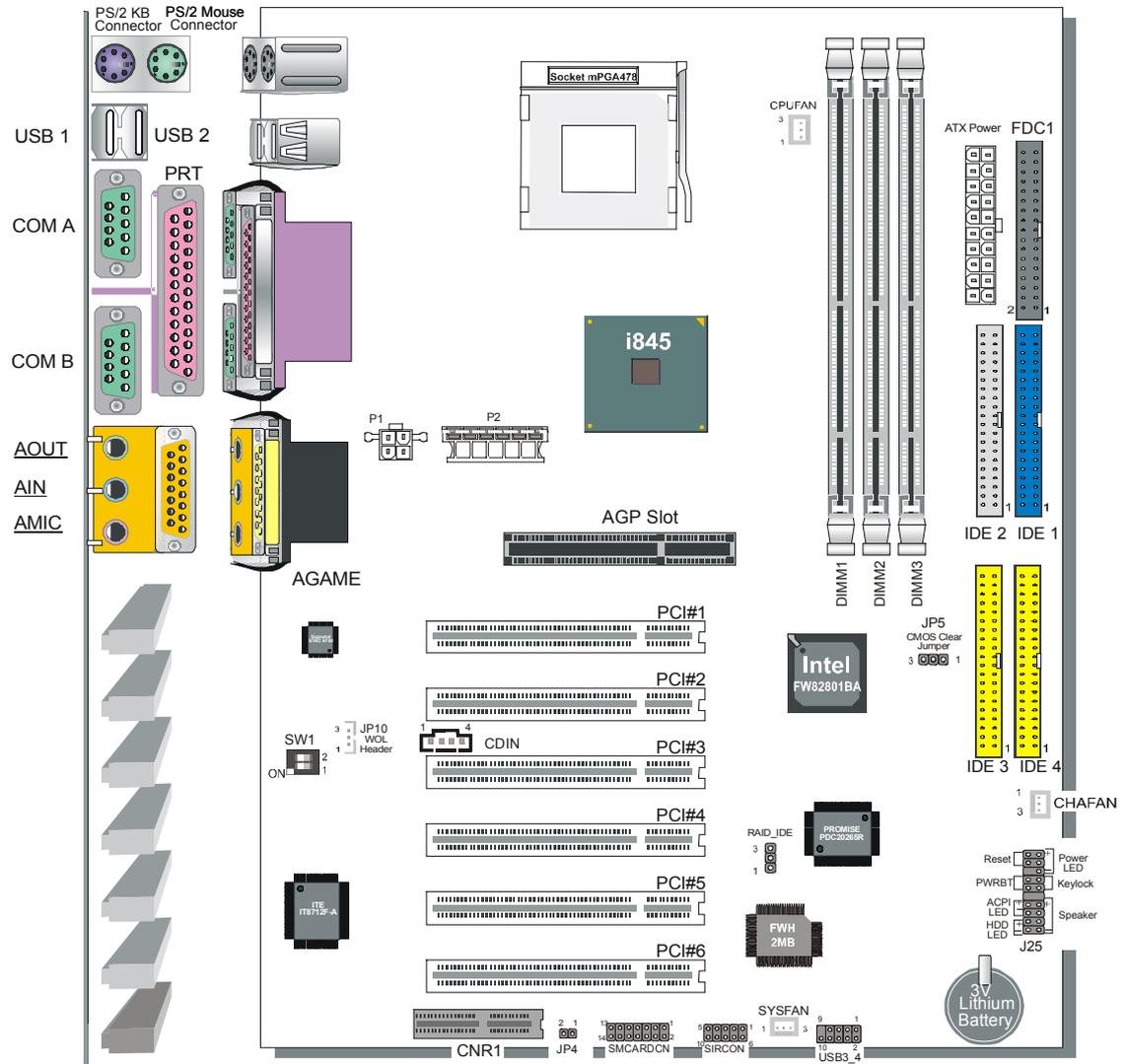
1-3 ELECTROSTATIC DISCHARGE PRECAUTIONS

Make sure to ground yourself before handling the Motherboard or other system components. Electrostatic discharge can easily damage the components. Note that you must take special precautions when handling the Motherboard in dry or air-conditioned environment.

To protect your equipment from electrostatic discharge, take the following precautions:

- Do not remove the anti-static packaging until you are ready to install.
- Ground yourself before removing any system component from its protective anti-static packaging. (To ground yourself, grasp the expansion slot covers or other unpainted portions of the computer chassis.)
- Frequently ground yourself while working or use a grounding strap.
- Handle the Motherboard by its edges and avoid touching its components.

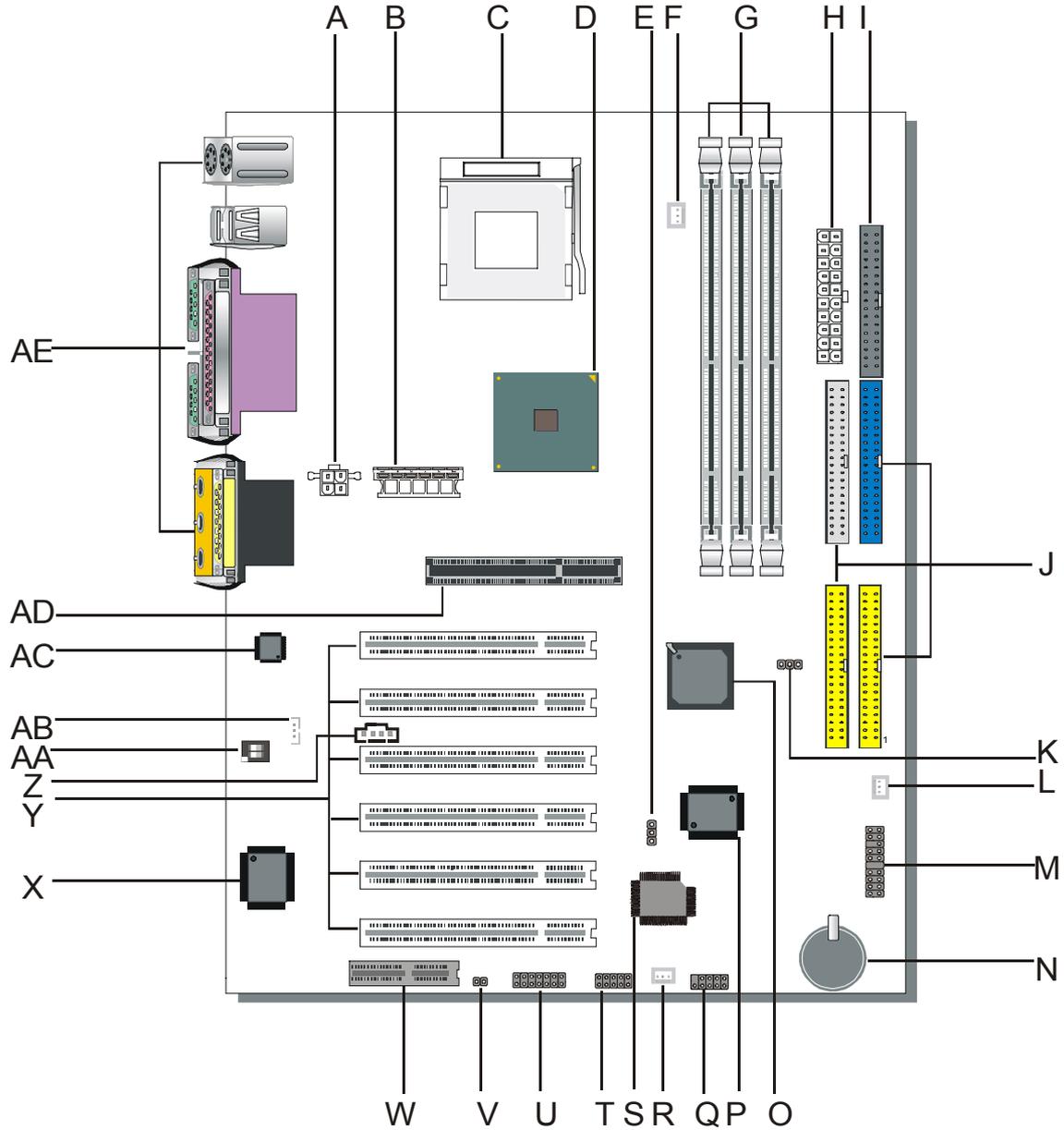
1-4 SY-P4ISR MOTHERBOARD LAYOUT



Back Panel

SY-P4ISR Platform

1-5 SY-P4ISR MOTHERBOARD COMPONENTS



- A ATX12V 4-Pin(+12V) Connector**
- B ATX12V 6-Pin(+3.3V, +5V) Connector**
- C Socket 478 Connector**
- D Intel i845 North Bridge Chip**
- E IDE RAID Jumper**
- F CPU Cooling Fan Connector**
- G DIMM Bank**
- H ATX Power Connector**
- I Floppy Disk Drive (FDD)**
- J Bus Mastering E-IDE/ATAPI Ports**
- K CMOS Clear Jumper**
- L Chassis Cooling Fan Connector**
- M Front panel connectors**
- N 3V Lithium Battery**
- O Intel FW82801BA South Bridge Chip**
- P Promise IDE RAID Chip**
- Q USB Connector**
- R System Fan Connector**
- S Flash BIOS**
- T Serial Infrared (IrDA) Device Header**
- U Smart Card Reader Connector**
- V CNR MR Card-CODEC OPTION Setting Jumper**
- W Communication Networking Riser Slot**
- X ITE I/O Chip**
- Y 32-bit PCI Mastering Slots**
- Z CD-IN Connectors**
- AA On Board Codec Enabled/Disabled Setting Switch**
- AB Wake-On-LAN(WOL) Header**
- AC AC97 Codec Chip**
- AD 32-bit AGP slot**
- AE Back panel Connectors**

1-6 CHIPSET

The Intel® 845 chipset Memory Controller Hub (MCH) is designed for use with the Intel® Pentium 4 processor and Northwood processor in the 478-pin package. The Intel® 845 chipset MCH role in a system is to manage the flow of information between its four interfaces: the System Bus, the memory interface, the AGP port, and the Hub Interface. The MCH arbitrates between the four interfaces, when each initiates an operation. While doing so, the MCH must support data coherency via snooping and must perform address translation for access to AGP Aperture memory. To increase system performance, the MCH incorporates several queues, and a write cache.

The Intel® 845 chipset Memory Controller Hub (MCH) may contain design defects or errors known as errata which may cause the product to deviate from published specifications.

1-6.1 System Architecture

The Intel® 845 chipset Memory Controller Hub (MCH) component provides the processor interface, DRAM interface, AGP interface, and Hub Interface in an Intel® 845 chipset desktop platform. The processor interface supports the Intel® Pentium 4 processor subset of the Extended Mode of the Scalable Bus Protocol. Intel® 845 chipset is optimized for the Intel® Pentium 4 processor and Northwood processor. It supports a single channel of PC133 SDRAM. The MCH contains advanced power management logic. The Intel® 845 chipset platform supports the second generation I/O Controller Hub (Intel ICH2) to provide the features required by a desktop platform.

The Intel® 845 chipset MCH is in a 593-pin FC-BGA package and contains the following functionality:

- Supports single Intel® Pentium 4 processor/Northwood processor configurations at 400MHz

- AGTL+ system bus with integrated termination supporting 32-bit system bus addressing
- Up to 3GB (w/ 512-Mb technology) of PC133 SDRAM
- 1.5V AGP interface with 4x SBA/Data Transfer and 2x/4x Fast Write capability
- 8 bit, 66 MHz 4x Hub Interface to Intel ICH2
- Distributed arbitration for highly concurrent operation

1-6.2 Intel® Pentium® 4 Processor/Northwood Processor System Bus Interface

The Intel® 845 chipset MCH is optimized for the Intel® Pentium 4 processor/Northwood processor in the 478-pin package. The primary enhancements over the Compatible Mode P6 bus protocol are:

- Source synchronous double pumped address
- Source synchronous quad pumped data
- System bus interrupt and side-band signal delivery

In this mode, the MCH supports a 64B cache line size. Only one processor is supported at a System bus frequency of 400 MHz. The MCH supports a 3:4 Host-to-Memory frequency ratio (using the 100 MHz clock). The MCH integrates AGTL+ termination resistors on all of the AGTL+ signals. The MCH supports 32-bit system bus addresses, allowing the processor to access the entire 4GB of the MCH memory address space.

The MCH has a 12-deep In-Order Queue to support up to twelve outstanding pipelined address requests on the system bus. The MCH supports two outstanding defer cycles at a time, however only one to any particular IO interface. Processor initiated I/O cycles are positively decoded to AGP/PCI or MCH configuration space and subtractively decoded to the Hub Interface. Processor initiated memory cycles are positively decoded to AGP/PCI or DRAM, and are again subtractively decoded to the Hub Interface if under 4GB. AGP semantic memory accesses initiated from AGP/PCI to DRAM are not snooped on the system bus. Memory accesses initiated from

AGP/PCI using PCI semantics and from the Hub Interface to Dram will be snooped on the system bus. Memory accesses whose addresses lie within the AGP aperture are translated using the AGP address translation table, regardless of the originating interface.

1-6.3 DRAM Interface

The Intel® 845 chipset memory controller directly supports one channel of PC133 SDRAM memory. The Intel® 845 chipset memory interface supports SDR SDRAM devices with densities of 64-Mb, 128-Mb, 256-Mb, and 512-Mb technology. The Intel® 845 chipset memory interface also supports variable page sized of 2KB, 4KB, 8KB, and 16KB. Page size is individually selected for every row and a maximum of 8 pages per DIMM may be opened simultaneously.

Technology	SDR (PC133) Maximum
64 Mb	384 MB
128 Mb	768 MB
256 Mb	1.5 GB
512 Mb	3 GB

The memory interface provides optional ECC error checking for DRAM data integrity. During DRAM writes, ECC is generated on a QWORD (64bit) basis. Because the Intel® 845 chipset MCH stores only entire cache lines in its internal buffers, partial QWORD writes initially cause a read of the underlying data, and their write-back into memory is no different from that of a complete cache line. During DRAM reads, and the read of the data that underlies partial writes, the MCH supports detection of single-bit and multiple-bit errors, and will correct single bit errors when correction is enabled.

1-6.4 AGP Interface

A single AGP component or connector (not both) is supported by the Intel® 845 chipset MCH AGP interface. The AGP buffers operate **only** in 1.5V mode. They are not 3.3V safe.

The AGP interface supports 1x/2x/4x AGP signaling and 2x/4x Fast

Writes. AGP semantic cycles to DRAM are not snooped on the system bus. PCI semantic cycles to DRAM are snooped on the system bus. The MCH supports PIPE# or SBA[7:0] AGP address mechanisms, but not both simultaneously. Either the PIPE# or the SBA[7:0] mechanism must be selected during system initialization. Both upstream and downstream addressing is limited to 32 bits for AGP and AGP/PCI transactions. The MCH contains a 32 deep AGP request queue. High priority accesses are supported. All accesses from the AGP/PCI interface that fall within the Graphics Aperture address range pass through an address translation mechanism with fully associative 20 entry TLB. Accesses between AGP and Hub Interface are limited to memory writes originating from the Hub Interface destined for AGP. The AGP interface is clocked from a dedicated 66MHz clock (66 IN). The AGP-to-host/core interface is asynchronous.

1-6.5 Hub Interface

The 8-bit Hub Interface connects the MCH to the Intel ICH2. All communication between the MCH and the Intel ICH2 occurs over the Hub Interface. The Hub Interface runs at 66 MHz/266 MB/s. Aside from the obvious traffic types, the following communication also occur over Hub Interface:

- Interrupt related messages
- Power management events as messages
- SMI, SCI, and SERR error indication messages

It is assumed that the Hub Interface is always connected to an Intel ICH2.

1-6.6 MCH Clocking

The MCH has the following clock input pins:

- Differential BCLK for the host interface
- 66MHz clock input for the AGP and Hub Interface

Clock Synthesizer chip(s) are responsible for generating the system Host clocks, AGP and Hub Interface clocks, and PCI clocks. The

system bus target speed is 400MHz. The MCH does not require any relationship between the HCLKIN host clock and the 66MHz clock generated for AGP and Hub Interface; they are totally asynchronous from each other. The AGP and Hub Interface runs at a constant 66MHz base frequency. The Hub Interface runs at 4x. AGP transfers may be 1x, 2x, or 4x.

The following table indicates the frequency ratios between the various interfaces that the MCH supports:

Interface	Speed	Processor BCLK (100 MHz)
Memory	SDR 133 MHz	3:4 synchronous
AGP	66 MHz	Asynchronous
Hub interface	66 MHz	Asynchronous

1-6.7 System Interrupts

The Intel® 845 chipset MCH supports both 8259 and Intel® Pentium 4 processor interrupt delivery mechanisms. The serial APIC interrupt mechanism is not supported.

8259 support consists of flushing inbound Hub Interface write buffers when an Interrupt Acknowledge cycle is forwarded from the system bus to the Hub Interface.

The Intel® 845 chipset MCH supports the Intel® Pentium 4 processor interrupt delivery mechanism. IOxAPIC and PCI MSI interrupts are generated as Memory Writes. The MCH decodes upstream Memory Writes to the range 0FEE0_0000h – 0FEEF_FFFFh from AGP and the Hub Interface as message based interrupts. The MCH forwards the Memory Writes, along with the associated write data, on the system bus as an Interrupt Message transaction. Note that since this address does not decode as part of main memory, the write cycle and the write data does not get forwarded to DRAM via the write buffer. The Intel® 845 chipset MCH provides the response and TRDY# for all Interrupt Message cycles

including the ones originating from the MCH. The Intel® 845 chipset MCH supports interrupt re-direction for inter-processor interrupts (IPIs) as well as upstream interrupt memory writes.

For message based interrupts, system write buffer coherency is maintained by relying on strict ordering of Memory Writes. The Intel® 845 chipset MCH ensures that all Memory Writes received from a given interface prior to an interrupt message Memory Write are delivered to the system bus for snooping in the same order that they occur on the given interface.

1-6.8 Powerdown Flow

Since the Intel® 845 chipset MCH will be powered down during STR, the MCH can't maintain any state information when exiting STR. This means that the entire initialization process when exiting STR must be performed by the BIOS via accesses to the DRC2 register.

Entry into STR (ACPI S3) is initiated by the (OS) Operating System, based on detecting a lack of system activity. The OS unloads all system device drivers as part of the process of entering STR. The OS then writes to the PM1_CNT I/O register in the ICH2 to actually trigger the transition into STR.

1-6.9 IDE support

The motherboard has two independent bus-mastering PCI IDE interfaces. These interfaces support PIO Mode3, PIO Mode4, PIO Mode5 ATAPI devices (e.g., CD-ROM), and Ultra DMA 33/66/100 synchronous-DMA mode transfers. The BIOS supports logical block addressing (LBA) and extended cylinder head sector (ECHS) translation modes. The BIOS automatically detects the IDE device transfer rate and translation mode. Programmed I/O operations usually require a substantial amount of processor bandwidth freed by bus mastering IDE can be devoted to other tasks while disk transfers are occurring.

The motherboard also supports laser servo (LS120) drivers. LS-120 technology allows the user to perform read/write operations to LS-120 (120MB) and conventional 1.44MB and 720KB diskettes. An optical servo system is used to precisely position a dual-gap head to access the diskett's

2,490 tracks per inch (tpi) containing up to 120MB of data storage. A conventional diskette uses 135 tpi for 1.44MB of data storage. LS-120 drivers are ATAPI-compatible and connect to the motherboard's IDE interface. (LS-120 drivers are also available with SCSI and parallel port interfaces.) Some versions of Windows 95 and Windows NT operating systems recognize the LS-120 drive as a bootable device in both 120MB and 1.44MB mode.

Connection of an LS-120 drive and a standard 3.5-inch diskette drive is allowed. The LS-120 drive can be configured as a boot device if selected as Drive A in the BIOS setup program.

 **Note**

If you connect a LS-120 drive to an IDE connector and configure it as the :boot: drive and configure a standard 3.5-inch diskette drive as a "B" drive, the standard diskette drive is not seen by the operating system.

When the LS-120 drive is configured as the "boot: device, the system will recognize it as both the A and B drive.

1-6.10 Real-Time Clock

The real-time clock supports 256 bytes of battery-backed CMOS SRAM. Hardware implementation to indicate century rollover.

1-7 I/O INTERFACE CONTROLLER

The motherboard uses the ITE IT8712F I/O controller which features:

- Low Pin Count Interface
- PC98/99, ACPI & LANdesk Compliant
- Enhanced Hardware Monitor
- Fan Speed Controller
- SmartGuardian Controller
- Two 16C550 UARTs
- Smart Card Reader
- IEEE1284 Parallel Port
- Floppy Disk Controller

- Keyboard Controller
- 38 General Purpose I/O Pins
- External IRQ Input Routing Capability
- ITE innovative automatic power-failure resume and power button de-bounce

The Setup program provides configuration option for the I/O controller.

1-7.1 Low Pin Count Interface

- Comply with Intel Low Pin Count Interface Specification Rev. 1.0
- Supports LDRQ#, SERIRQ protocols
- Supports LPCPD#, CLKRUN#, PCI PME# Interfaces

1-7.2 PC98/99, ACPI & LANDesk Compliant

- Comply with Microsoft PC98/99 Design Guide
- ACPI V. 1.0 compliant
- Register sets compatible with “Plug and Play ISA Specification V. 1.0a”
- Supports 12 logical devices

1-7.3 Enhanced Hardware Monitor

- Built-in 8-bit Analog to Digital Converter
- 3 thermal inputs from remote thermal resistor or thermal diode or diode-connected transistor
- 8 voltage monitor inputs (VBAT is measured internally.)
- 1 chassis open detection input with low power Flip-Flop backed by the battery
- Watch Dog comparison of all monitored values
- Provides VID0 – VID4 support for the CPU
- SM Bus slave mode supported

1-7.4 Fan Speed Controller

- Provides fan on-off and PWM control
- Supports mix-and-match for temperature inputs and fan speed control outputs
- Overrides fan speed controller during catastrophic situations

- Provides over temperature beep tone warning

1-7.5 Two 16C550 UARTs

- Supports two standard Serial Ports
- Supports IrDA 1.0/ASKIR protocols
- Supports Smart Card Reader protocols

1-7.6 Smart Card Reader

- Compliant with Personal Computer Smart Card (PC/SC) Working Group standard
- Compliant with smart card (ISO 7816) protocols
- Supports card present detect
- Supports Smart Card insertion power-on feature
- Supports one programmable clock frequency, and 7.1 MHz and 3.5 MHz (Default) card clocks

1-7.7 IEEE 1284 Parallel Port

- Standard mode – Bi-directional SPP compliant
- Enhanced mode – EPP V. 1.7 and V. 1.9 compliant
- High speed mode – ECP, IEEE 1284 compliant
- Back-drive current reduction
- Printer power-on damage reduction
- Supports POST (Power-On Self Test) Data Port

1-7.8 Floppy Disk Controller

- Supports two 360K/720K/1.2M/1.44M/2.88M floppy disk drivers
- Enhanced digital data separator
- 3-Mode drives supported
- Supports automatic write protection via software

1-7.9 Keyboard Controller

- 8042 Compatible for PS/2 keyboard and mouse
- 2KB of custom ROM and 256-byte data RAM
- GateA20 and Keyboard reset output

1-7.10 38 General Purpose I/O Pins

- Input mode supports either switch de-bounce or programmable external IRQ input routing
- Output mode supports 2 sets of programmable LED blinking periods

1-7.11 External IRQ Input Routing Capability

- Provides IRQ input routing through GPIO input mode
- Programmable registers for IRQ routing

Note

The mouse and keyboard can be plugged into either PS/2 connector. Power to the computer should be turned off before a keyboard or mouse is connected or disconnected.

The keyboard controller contains code, which provides the traditional keyboard and mouse control functions, and also supports Power On/Reset password protection. Power On/Reset password can be specified in the BIOS Setup program.

The keyboard controller also supports the hot-key sequence <Ctrl><Alt>, software reset. This key sequence resets the computer's software by jumping to the beginning of the BIOS code and running the Power On Self Test (POST).

1-8 WAKE ON LAN TECHNOLOGY

Wake on LAN technology enables remote wakeup of the computer through a network. Wake on LAN technology requires a PCI add-in network interface card (NIC) with remote wakeup capabilities. The remote wakeup connector on the NIC must be connected to the onboard Wake on LAN technology connector. The NIC monitors network traffic at the MII interface; upon detecting a Magic Packet, the NIC asserts a wakeup signal that powers up the computer. To access this feature uses the Wake on LAN technology connector.

CAUTION

For Wake on LAN, the 5-V standby line for the power supply must be

capable of delivering $+5V \pm 5\%$ at 720 mA. Failure to provide adequate standby current when implementing Wake on LAN can damage the power supply.

Chapter 2

HARDWARE INSTALLATION

Congratulations on your purchase of **SY-P4ISR** Motherboard. You are about to install and connect your new Motherboard.



Note: Do not unpack the Motherboard from its protective anti-static packaging until you have made the following preparations.

2-1 PREPARATIONS

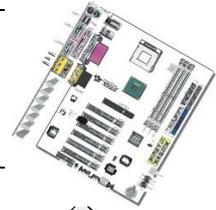
Gather and prepare all the following hardware equipment to complete the installation successfully:

1. Socket mPGA478 processor with built-in CPU cooling fan.
2. SDRAM memory module(s)
3. Computer case and chassis with adequate power supply unit
4. Monitor
5. PS/2 Keyboard
6. Pointing Device (PS/2 mouse)
7. Disk Drives: HDD, CD-ROM, Floppy drive...
8. External Peripherals: Printer, Plotter, and Modem (optional)
9. Internal Peripherals: Modem and LAN cards (optional)
10. VGA Card (AGP, PCI)

2-2 UNPACKING THE MOTHERBOARD

When unpacking the Motherboard, check for the following items:

◆ The SY-P4ISR Intel i845 AGP/PCI/CNR Motherboard



◆ The User Manual



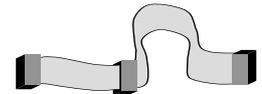
◆ The Installation CD-ROM



◆ SOYO Bonus Pack CD-ROM



◆ Three IDE Device ATA 100 Flat Cable



◆ One Floppy Disk Drive Flat Cable



◆ One Heat Sink Compound



Warning: Do not unpack the Motherboard from its anti-static packaging until you are ready to install it.

Like most electronic equipment, your Motherboard may be damaged by electrostatic discharge. To avoid permanent damage to components ground yourself while working by using a grounding strap. Otherwise, ground yourself frequently by touching the unpainted portion of the computer chassis to drain the static charges.

Handle the Motherboard carefully, holding it by the edges. You are now ready to start the installation.

2-3 INSTALLATION GUIDE

We will now begin the installation of the Motherboard. Please follow the step-by-step procedure designed to lead you to a complete and correct installation.



Warning: Turn off the power to the Motherboard, system chassis, and peripheral devices before performing any work on the Motherboard or system.

BEGIN THE INSTALLATION

2-3.1 CPU Installation

To perform the installation of your new **SY-P4ISR** Motherboard, follow the steps below:

Mark your CPU Frequency: Record the working frequency of your mPGA CPU that should be clearly marked on the CPU cover.

FSB 400MHz

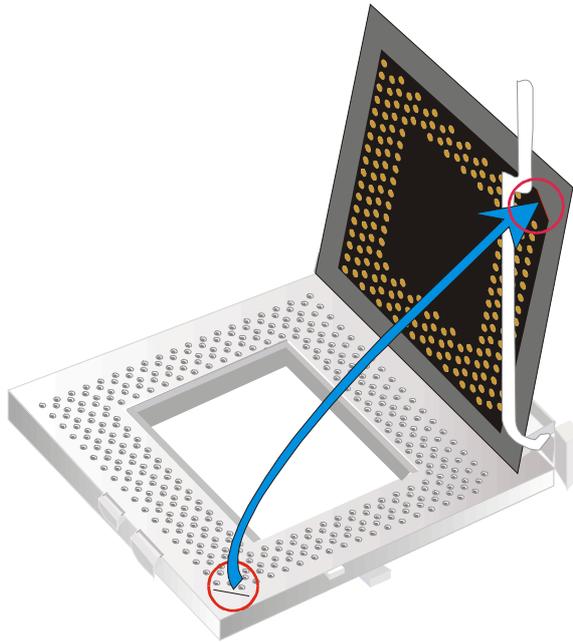
<input type="checkbox"/> 1.5GHz (100 x 15.0)	<input type="checkbox"/> 1.6GHz (100 x 16.0)	<input type="checkbox"/> 1.7GHz (100 x 17.0)	<input type="checkbox"/> 1.8GHz (100 x 18.0)
<input type="checkbox"/> 1.9GHz (100 x 19.0)	<input type="checkbox"/> 2.0GHz (100 x 20.0)	<input type="checkbox"/>	<input type="checkbox"/>

CPU Mount Procedure: To mount the Pentium® 4 Socket mPGA478 processor that you have purchased separately, follow these instructions.

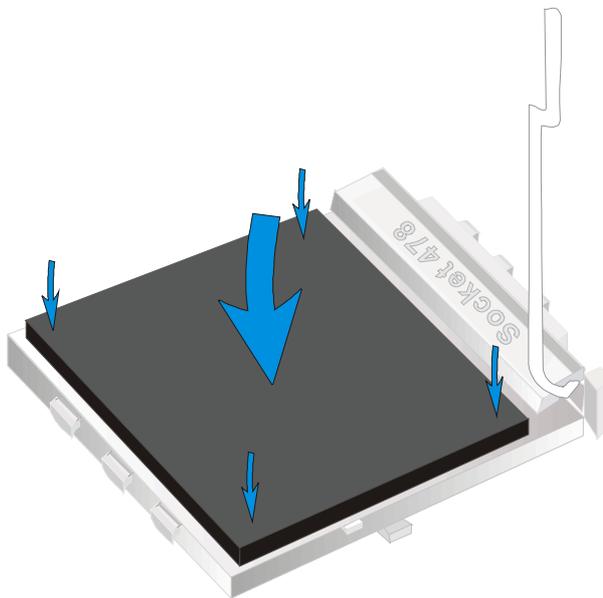
1. Lift the socket handle up to a vertical position.



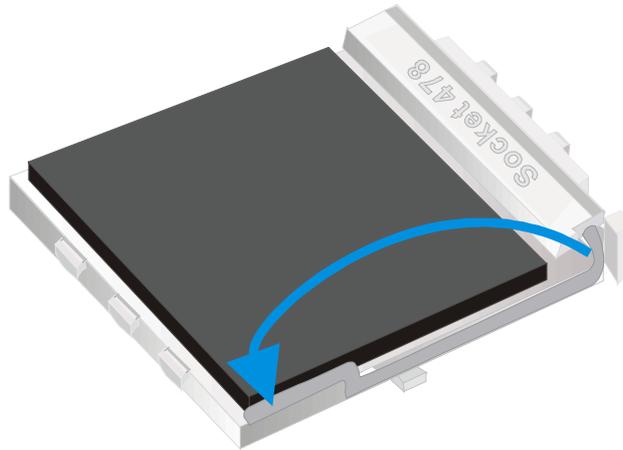
2. Align the blunt edge of the CPU with the matching pinhole distinctive edge on the socket.



3. Seat the processor in the socket completely and without forcing.



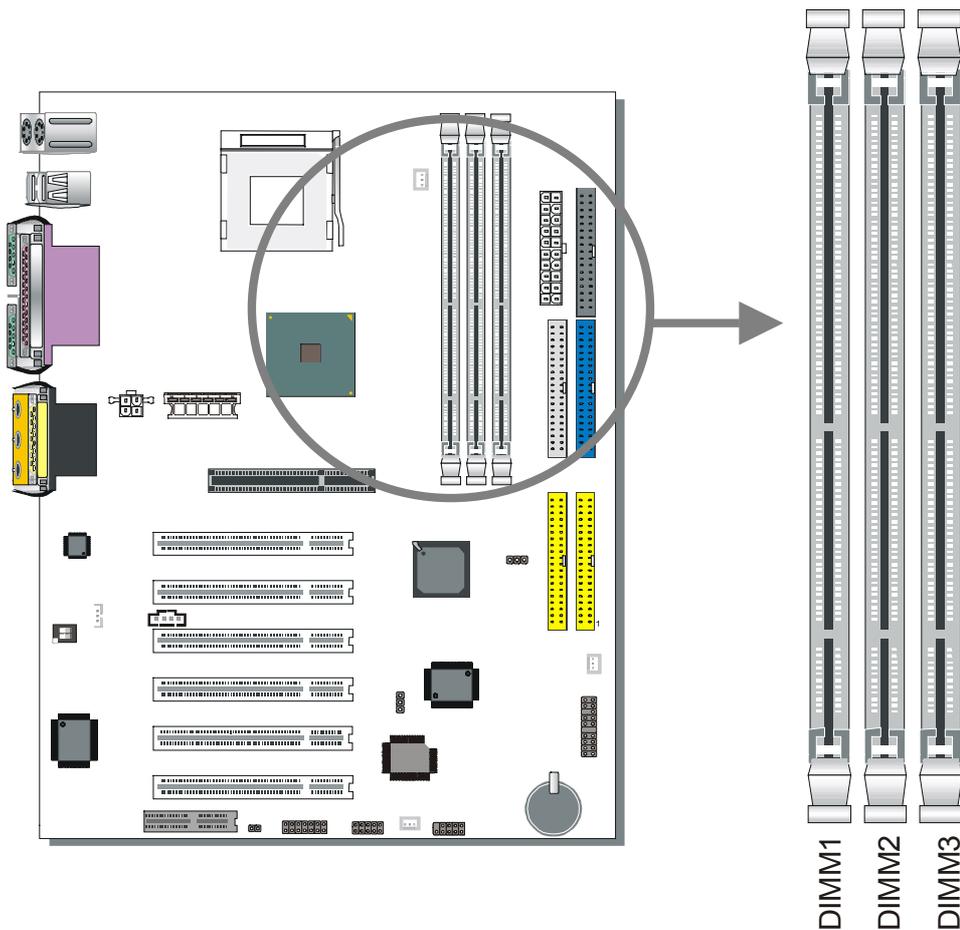
4. Then close the socket handle to secure the CPU in place.



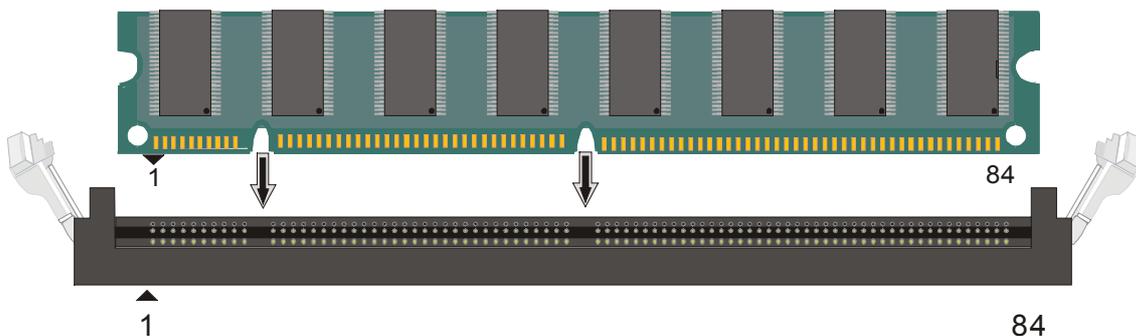
HOT

Remember to connect the CPU Cooling Fan to the appropriate power connector on the Motherboard. *The fan is a key component that will ensure system stability. The fan prevents overheating, therefore prolonging the life of your CPU.*

2-3.2 SDRAM Memory Module Installation



Directly supports one SDR SDRAM channel, 64b wide (72b with ECC), providing support max of 3 Double-Sided DIMMs with unbuffered PC133, No registered DIMM support. ***The largest memory capacity possible is 3GB using 512Mb technology maximum memory bandwidth of 1GB/s with PC133.*** On this motherboard, DRAM speed can be set independent from the CPU front side bus speed. Depending on the DRAM clock speed setting in the BIOS setup.

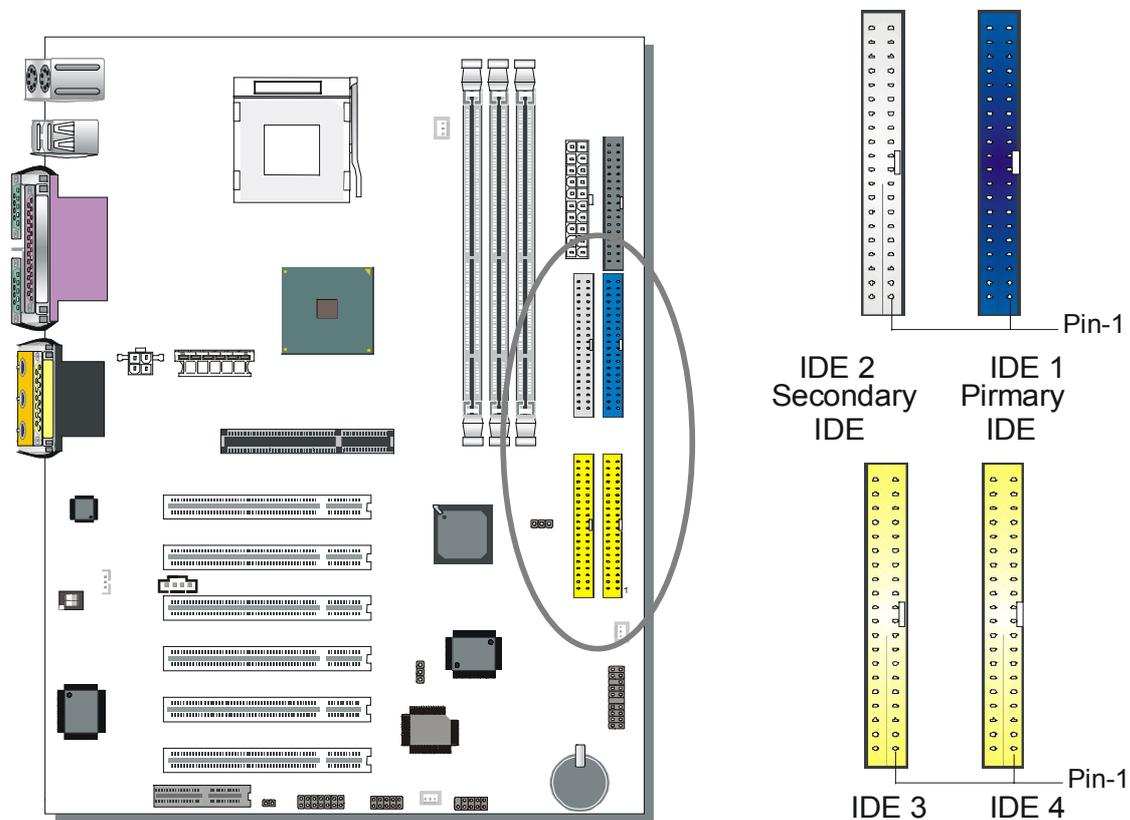


Memory Configuration Table

Number of Memory Modules	DIMM 1	DIMM 2	DIMM 3
RAM Type	SDRAM		
Memory Module Size (MB)	32/64/128/256/512 MB/1 GB		

2-3.3 Motherboard Connector

2-3.3.1 IDE Device Installation (HDD, CD-ROM)

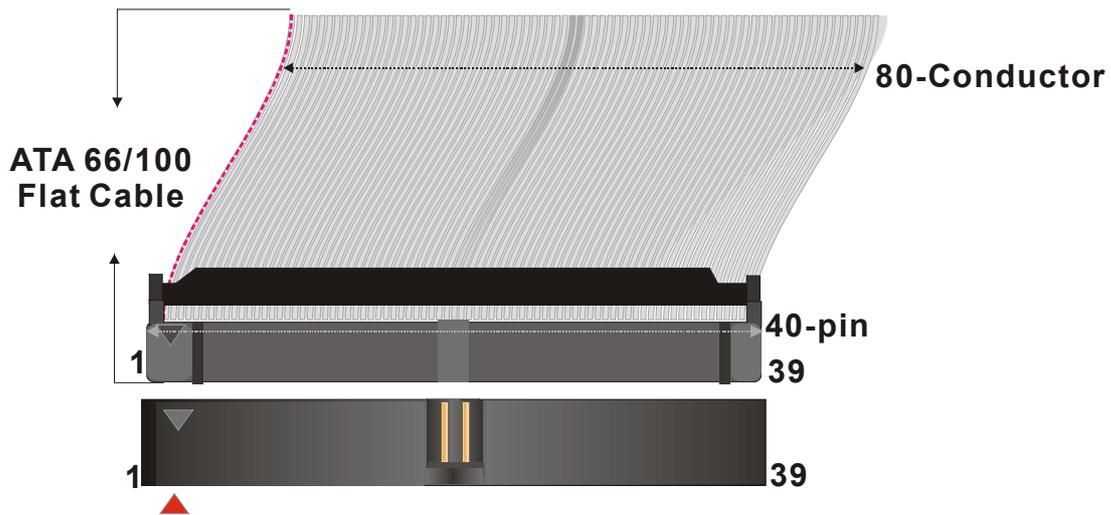


This Motherboard offers two primary and secondary IDE device connectors (IDE1, IDE2). It can support up to four high-speed Ultra DMA 33/66/100HDD or CD-ROM.

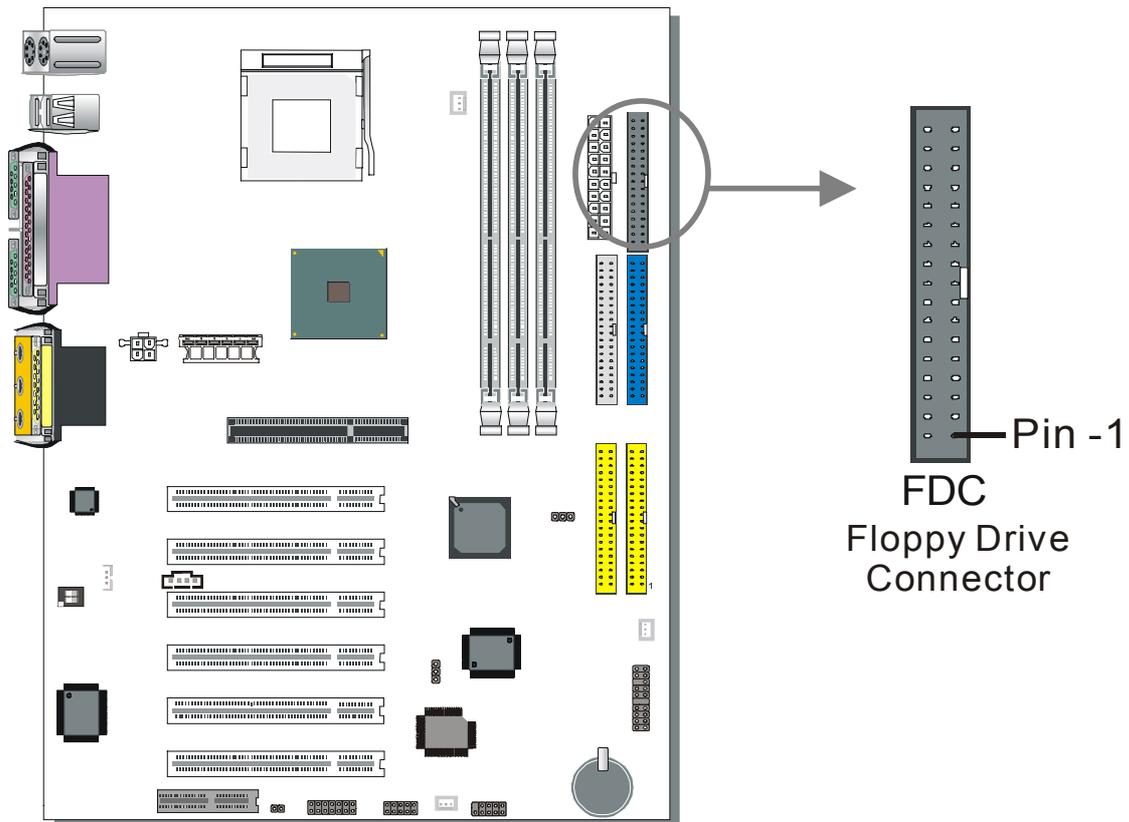
Connect one side of the ATA66/100 flat cable to the IDE device (HDD or CD-ROM) and plug the other end to the primary (IDE1) or secondary (IDE2) directionally keyed IDE connector on the Motherboard. The ATA66/100 cable is backward compatible with ATA33 HDDs.

This Motherboard can support up to 8 HDDs.

There are four HDD connectors (IDE1, IDE2, IDE3, IDE4) on motherboard. IDE3 & IDE4 are provided for IDE RAID function. Please refer to 2-3.4 on page 42 and the FASTTRAK-100-LITE Manual for more information on IDE RAID function.



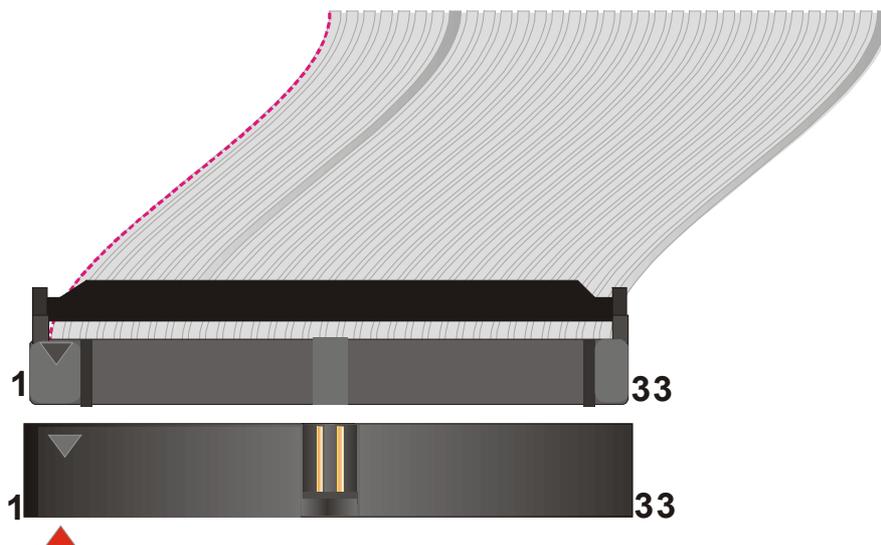
2-3.3.2 Floppy Drive Installation



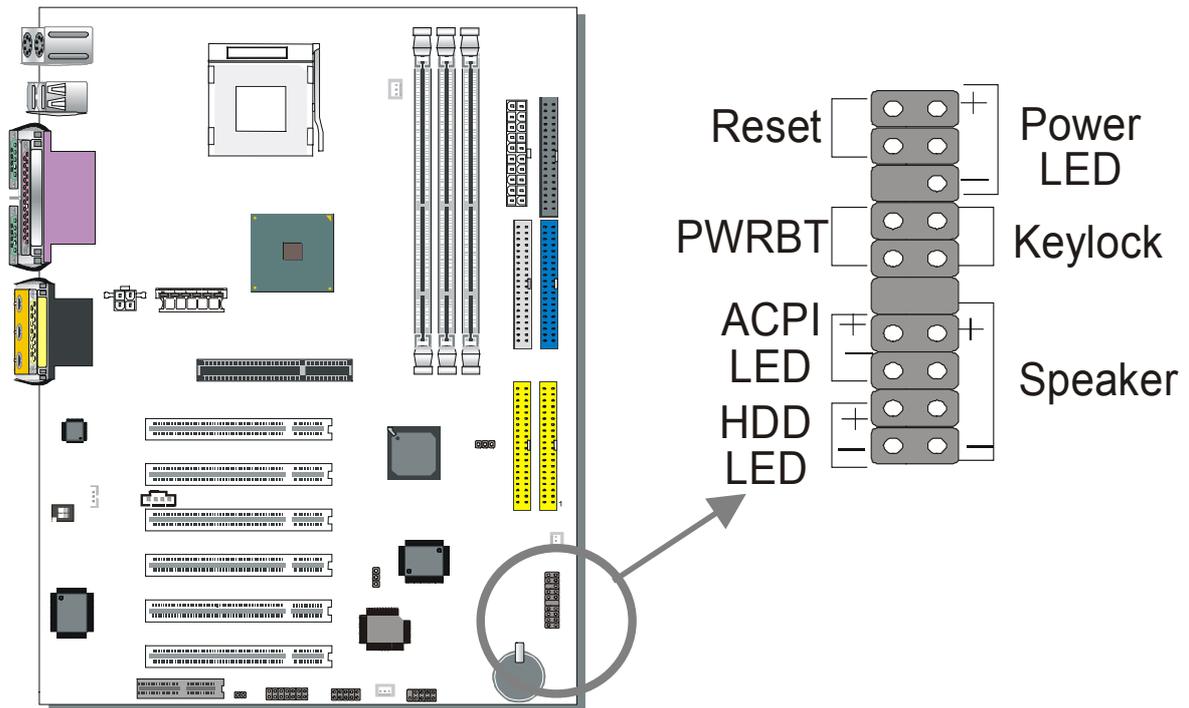
The system supports 5 possible floppy drive types: 720 KB, 1.2 MB, 1.44 MB, 2.88 MB, and LS-120. In addition, this Motherboard supports a 3-mode (720KB/1.2MB/1.44MB) floppy commonly used in Japan.

Connect one side of the 34-pin flat cable to the floppy drive and plug the other end to the floppy drive connector on the Motherboard.

This Motherboard can support up to 2 floppy drives.



2-3.3.3 Front Panel Connections



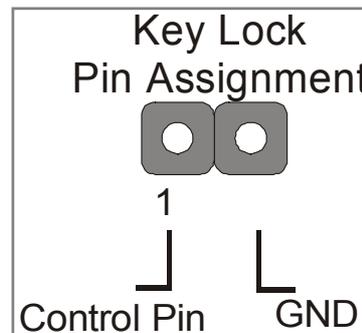
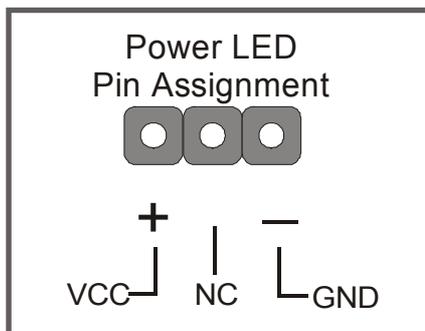
Plug the computer case's front panel devices to the corresponding headers on the Motherboard.

1. Power LED & KeyLock

Plug the Power LED cable into the 5-pin Keylock header.

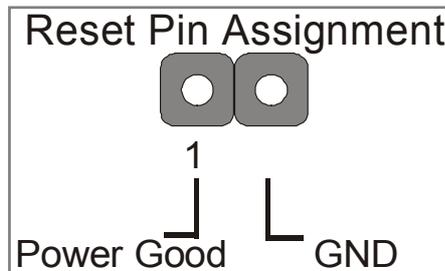
Some systems may feature a KeyLock function with a front panel switch for enabling or disabling the keyboard. Connect the KeyLock switch to the 5-pin Keylock header on the Motherboard.

Please install according to the following pin assignment: pin 1,3 are for Power LED and pin 4,5 are for Keylock.



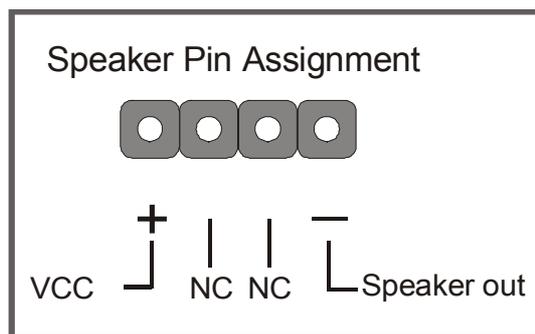
2. Reset

Plug the Reset push-button cable into the 2-pin Reset header on the Motherboard. Pushing the Reset button on the front panel will cause the system to restart the boot-up sequence.



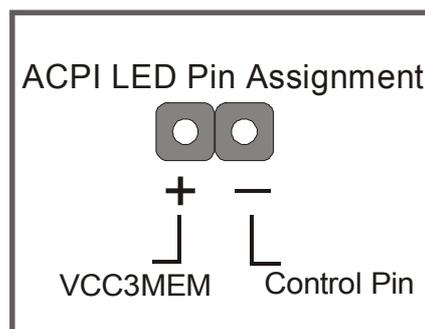
3. Speaker

Attach the 4-pin PC speaker cable from the case to the Speaker header on the Motherboard.



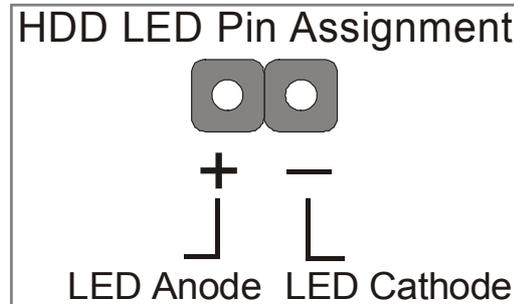
4. ACPI LED

Connecting the 2-pin ACPI LED cable to the corresponding ACPI LED header will cause the LED to light whenever the system is in ACPI mode. The manufacturer has permanently set this Motherboard in ACPI mode due to most hardware and software compliance to ACPI mode.



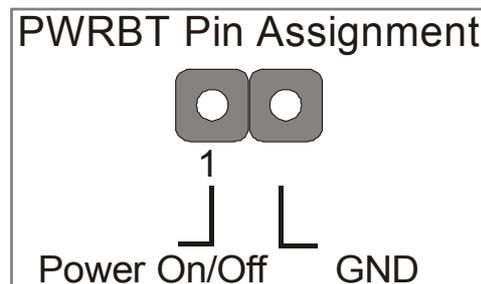
5. IDE LED

Attach the 2-pin IDE device LED cable to the corresponding IDE LED header on the Motherboard. This will cause the LED to lighten when an IDE (HDD, CD-ROM) device is active.



6. ATX Power On/Off Switch

Attach the 2-pin momentary type switch to the PWRBT header for turning On or Off your ATX power supply.

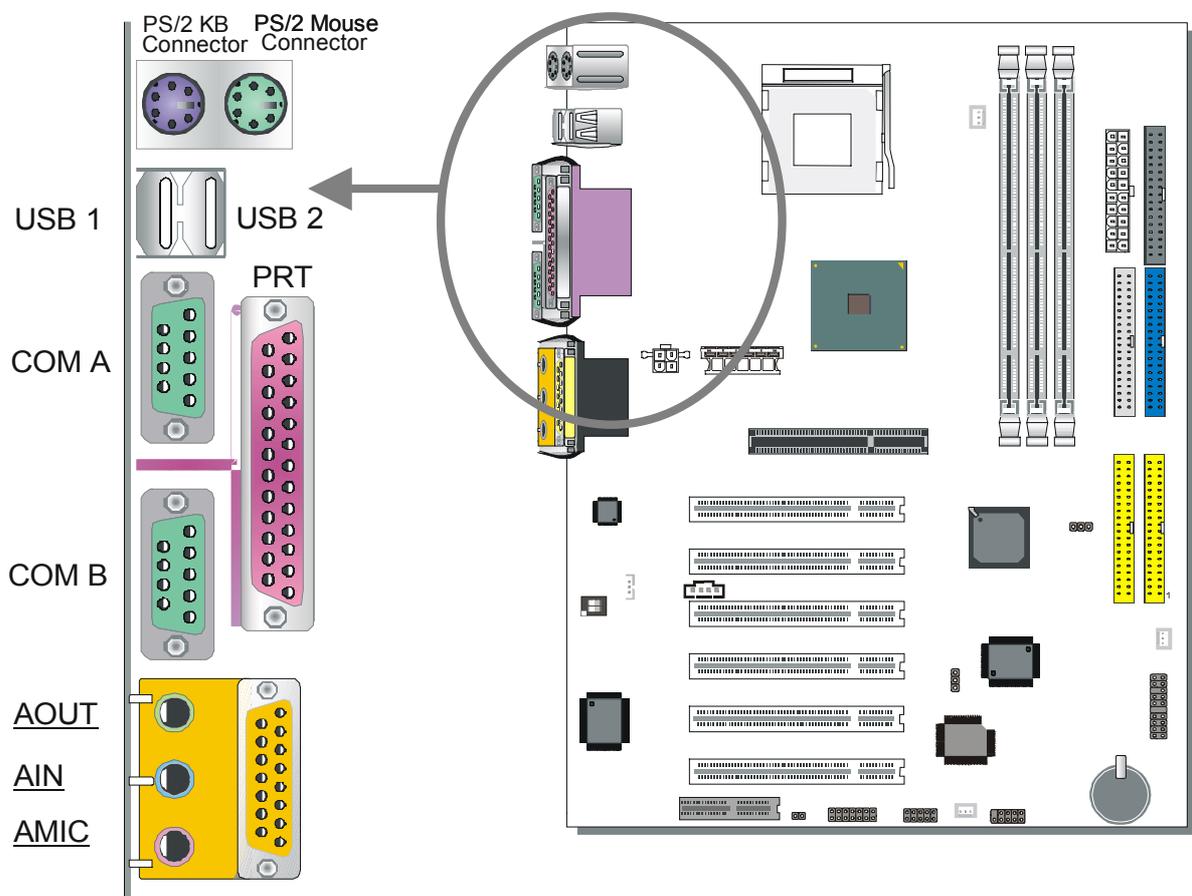


2-3.3.4 Back Panel Connections

All external devices such as the PS/2 keyboard, PS/2 mouse, printer, modem, USB can be plugged directly onto the Motherboard back panel.

Only after you have fixed and locked the Motherboard to the computer case can you start connecting the external peripheral devices.

When connecting an external device, use the following figure to locate and identify which back panel connector to plug the device to.



1. Onboard Serial Ports COMA/COMB

External peripherals that use serial transmission scheme include:

- serial mouse,
- and modem.

Plug the serial device cables directly into the COMA/COMB 9-pin male connectors located at the rear panel of the Motherboard.

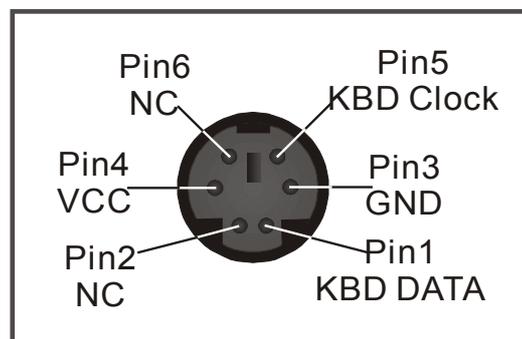
2. Parallel Port PRT

This parallel port is used to connect the printer or other parallel devices.

Plug the parallel device cable into the 25-pin female connector located at the rear panel of the Motherboard.

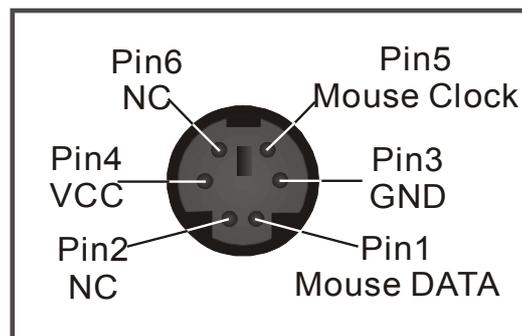
3. PS/2 Keyboard

Plug the keyboard jack directly into the 6-pin female PS/2 keyboard connector located at the rear panel of the Motherboard.



4. PS/2 Mouse

Similarly, plug the mouse jack directly into the 6-pin female PS/2 mouse connector.

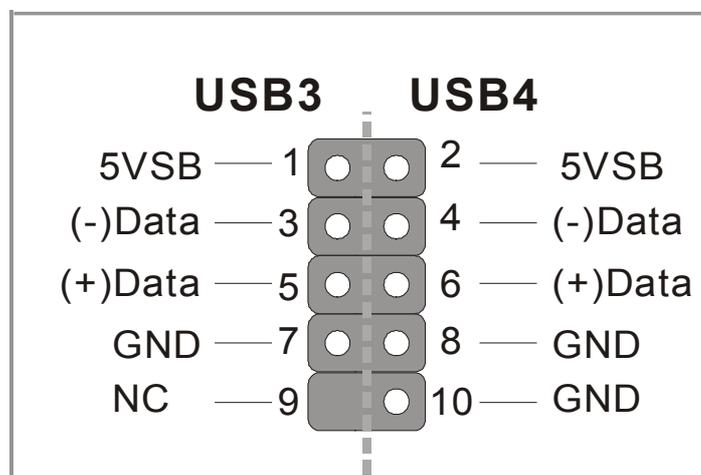


5. Universal Serial Bus USB1/USB2/(USB3, USB4)

This Motherboard provides four USB ports for your additional devices. Plug the USB device jack into the available USB connector USB1 or USB2.

- Standard device drivers come with the Win98 for commonly used USB devices.
- With Win95, use the flow UHCI specifications. To use USB devices under Win95, usually you have to install the device that driver comes with the USB device you have purchased.

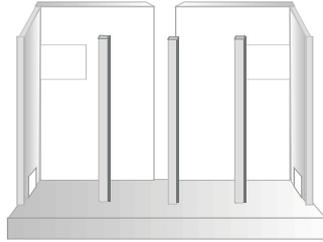
USB3 and 4 are available. To make use of these USB ports, purchase a USB cable from your dealer. The lay-out of USB3 and 4 is as follows:



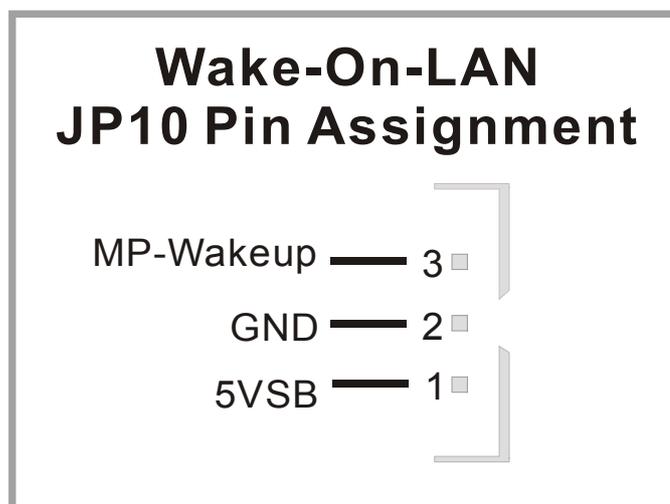
2-3.3.5 Other Connections

1. Wake-On-LAN (WOL)

Attach the 3-pin connector from the LAN card which supports the Wake-On-LAN (WOL) function to the JP10 header on the Motherboard. This WOL function lets users wake up the connected computer through the LAN card.

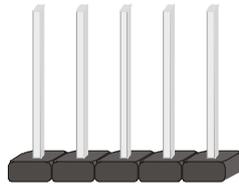


Please install according to the following pin assignment:



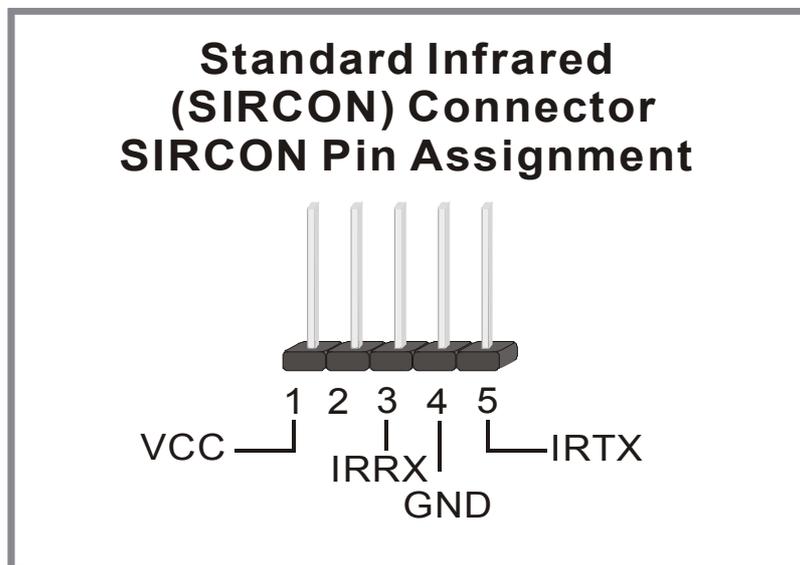
2. Standard Infrared (SIRCON)

Plug the 5-pin infrared device cable to the SIRCON header.

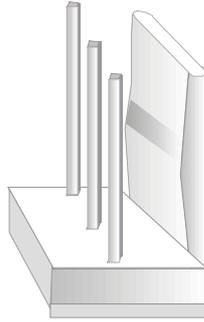


This will enable the infrared transfer function. This Motherboard meets both the ASKIR and HPSIR specifications.

Please install according to the following pin assignment:



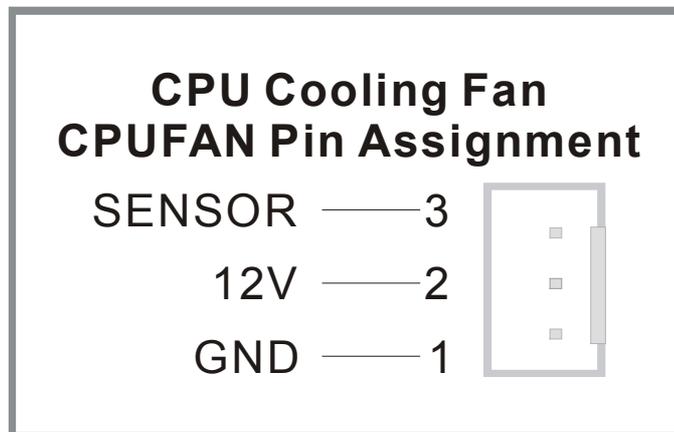
3. Cooling Fan Installation



(1) CPU Cooling Fan

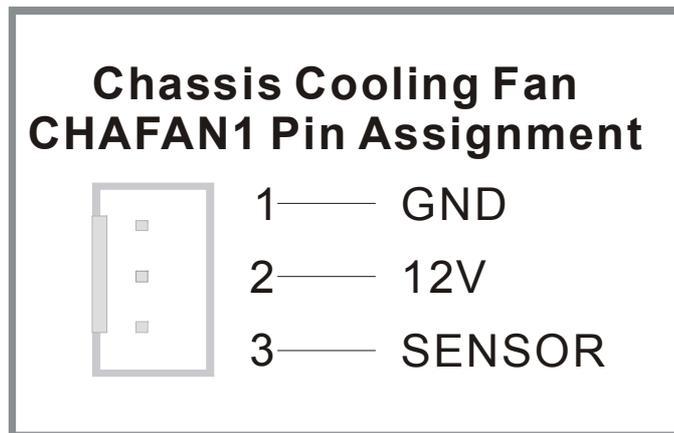
After you have seated the CPU properly on the processor, attach the 3-pin fan cable to the CPUFAN connector on the Motherboard. The fan will stop when the system enters into Suspend Mode. (Suspend mode can be enabled from the BIOS Setup Utility, [SOYO COMBO] menu.)

To avoid damage to the system, install according to the following pin assignment:



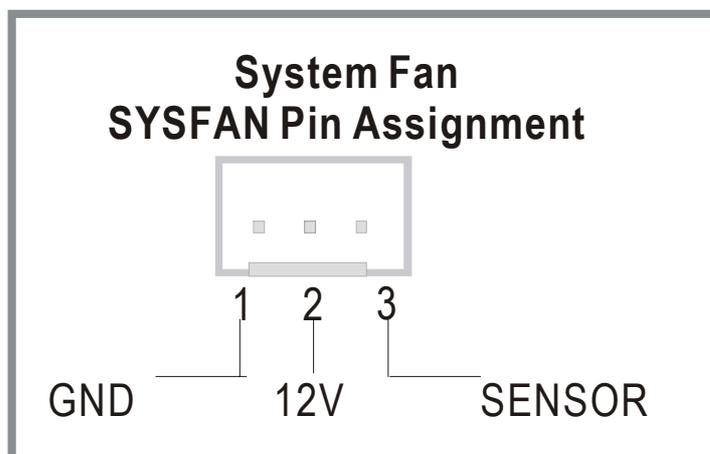
(2) Chassis Cooling Fan

Some chassis also feature a cooling fan. This Motherboard features a CHAFAN connector to provide 12V power to the chassis fan. Connect the cable from the chassis fan to the CHAFAN 3-pin connector. Install according to the following pin assignment:

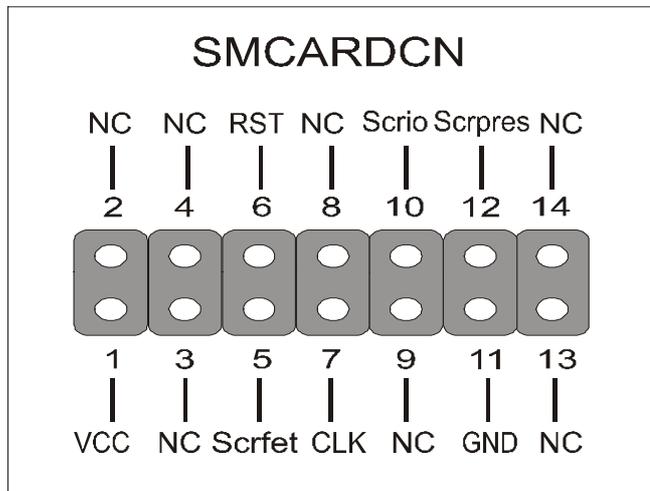


Note: CPU cooling fan must be installed to prevent CPU from overheating and ensure system stability. Chassis cooling fan is optional, depending on whether there is cooling fan in your chassis.

(3) System Fan



4. Smart Card Reader

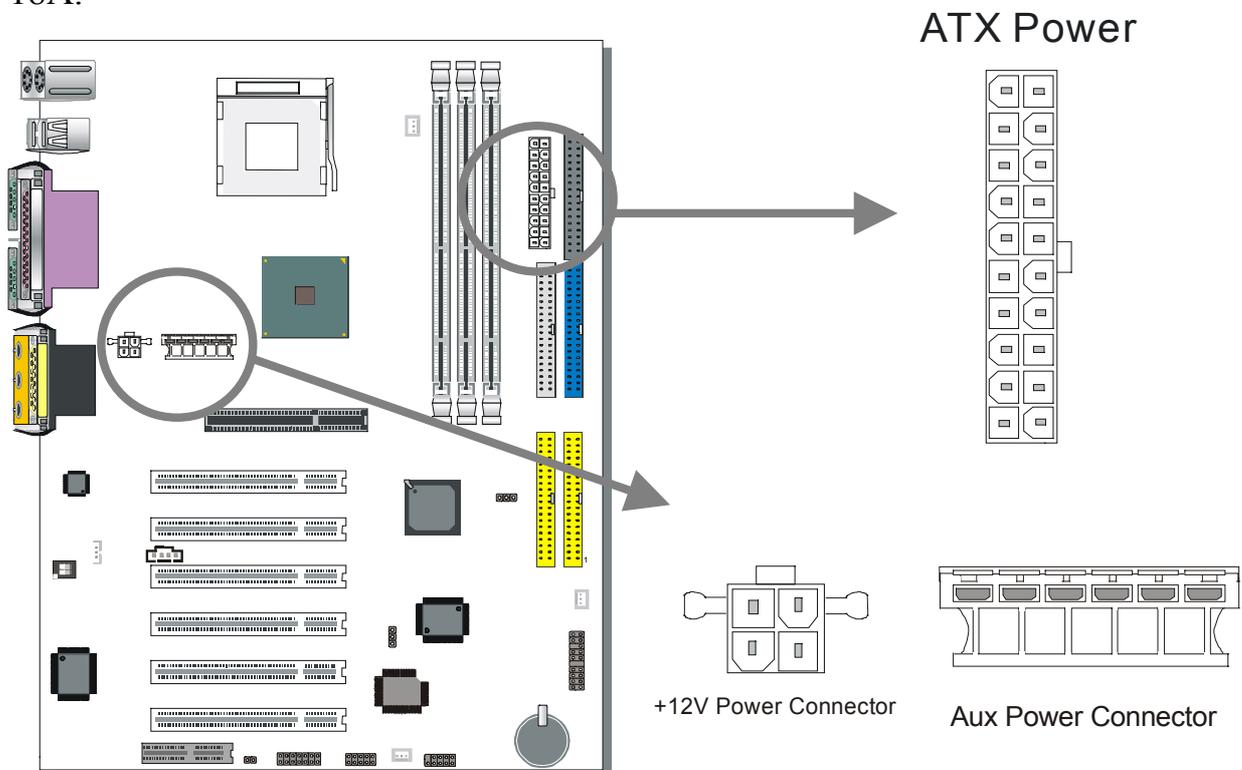


2-3.3.6 AGP VGA Card

Insert VGA card into the AGP or PCI expansion slots according to card specifications.

2-3.3.7 ATX12V Power Supply

The ATX12V power supply includes a 20-pin ATX connector that comply with the ATX specification, Version 2.03 for M/B specification, a new 4-pin receptacle/header combination--the +12V power connector--has been defined. The presence of the +12V power connector indicates that a power supply is ATX12V; the absence of the +12V power connector indicates that a supply is ATX. To allow for greater than +3.3V current, the Aux power connector is recommended for ATX and ATX12V power supplies with +3.3V current >18A.



Warning: Follow these precautions to preserve your Motherboard from any remnant currents when connecting to ATX power supply: **Turn off the power supply and unplug the power cord of the ATX power supply before connecting to ATX PW connector.**

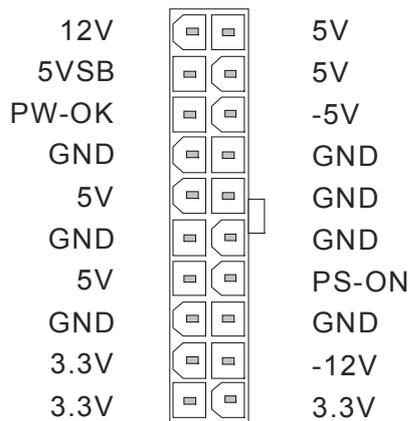
The Motherboard requires a power supply with at least 200 Watts and a "power good" signal. Make sure the ATX power supply can take at 1.5 A max current * load on the 5V Standby lead (5VSB) to meet the standard ATX

specification.

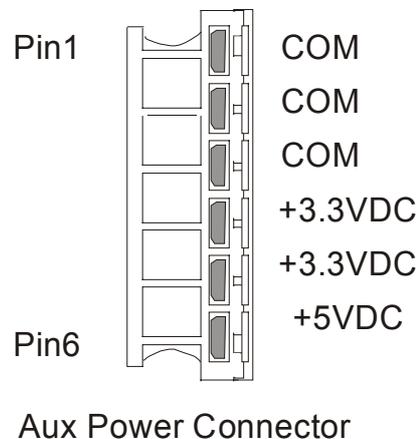
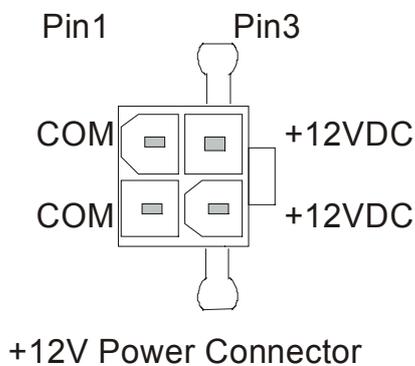
* **Note:** If you use the Wake-On-LAN (WOL) function, make sure the ATX power supply can support at least 720 mA on the 5V Standby lead (5VSB).

Please install the ATX power according to the following pin assignment:

ATX Power

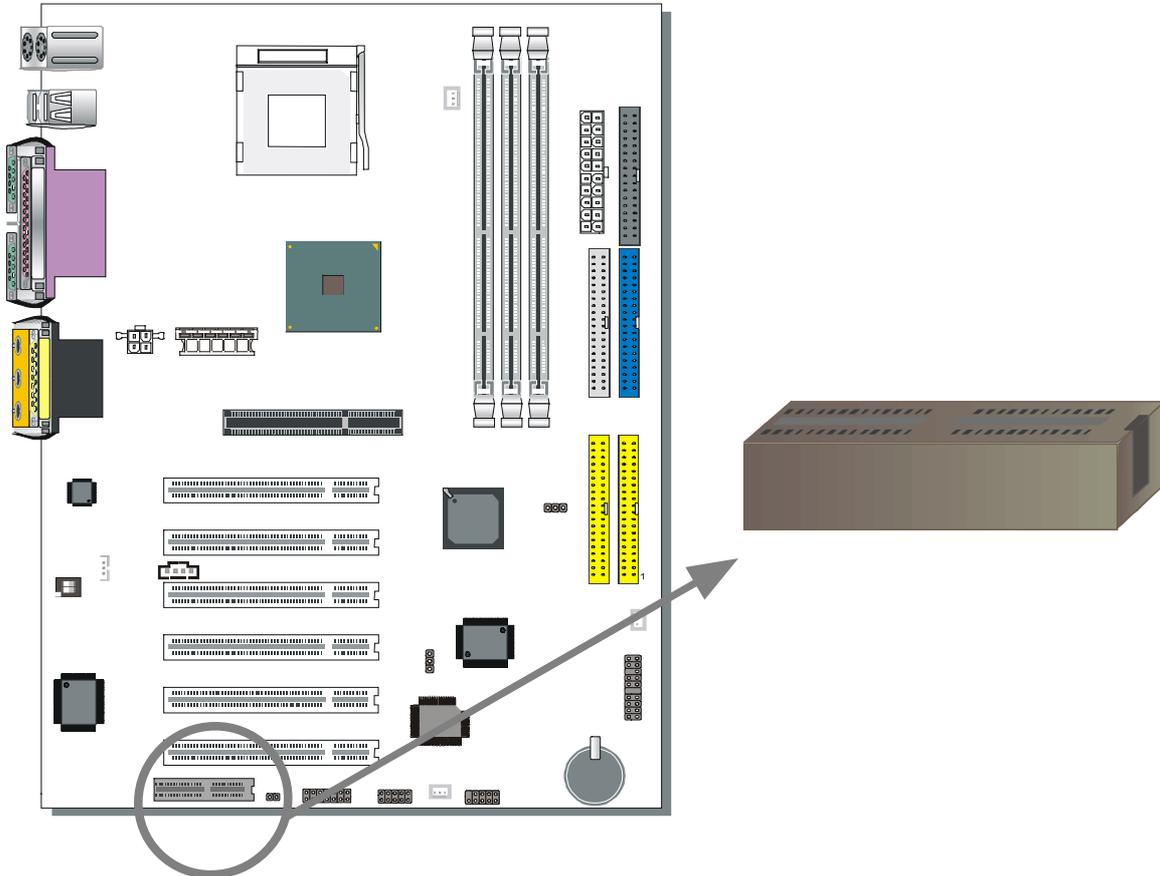


➤ **Pay special care to the directionality.**



2-3.3.8 CNR (Communication Networking Riser) Connector

This motherboard supports CNR (Communication Networking Riser) slot



2-3.4 Jumper Setting

Step 1. On Board Audio Codec Enable/Disable (SW1)

SW1	Pin 1	Pin 2
Enable	On	On
Disable	Off	Off

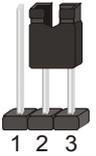
Step 2. CNR MR Card-CODEC OPTION (JP4)

CNR MR Card-CODEC OPTION	Primary	Secondary
JP4 Setting	Open JP4  1 2	Short JP4  1 2

Step 3. RAID_IDE(IDE3,4) Function Selector

- Short pin 1-2 enables RAID function on IDE 3,4 port.
- Short pin 2-3 enables regular IDE, RAID function is disabled.

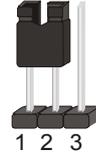
IDE 3,4 will function as normal IDE port (need to install Ultra Family Driver), please check page 94.

RAID Function	Enable	Disable
RAID_IDE	Short pin 1-2 to support RAID 0 or 1  1 2 3	Short pin 2-3 support Ultra 33/66/100  1 2 3

CMOS Clear (JP5)

In some cases the CMOS memory may contain wrong data, follow the steps below to clear the CMOS memory.

1. Clear the CMOS memory by momentarily shorting pin 2-3 on jumper JP5. This jumper can be easily identified by its white colored cap.
2. Then put the jumper back to 1-2 to allow writing of new data into the CMOS memory.

CMOS Clearing	Clear CMOS Data	Retain CMOS Data
JP5 Setting	Short pin 2-3 for at least 5 seconds to clear the CMOS 	Short pin 1-2 to retain new settings 
<p><i>Note: You must unplug the ATX 12V power cable from the ATX 12V power connector when performing the CMOS Clear operation.</i></p>		

2-3.5 Power On

You have now completed the hardware installation of your Motherboard successfully.

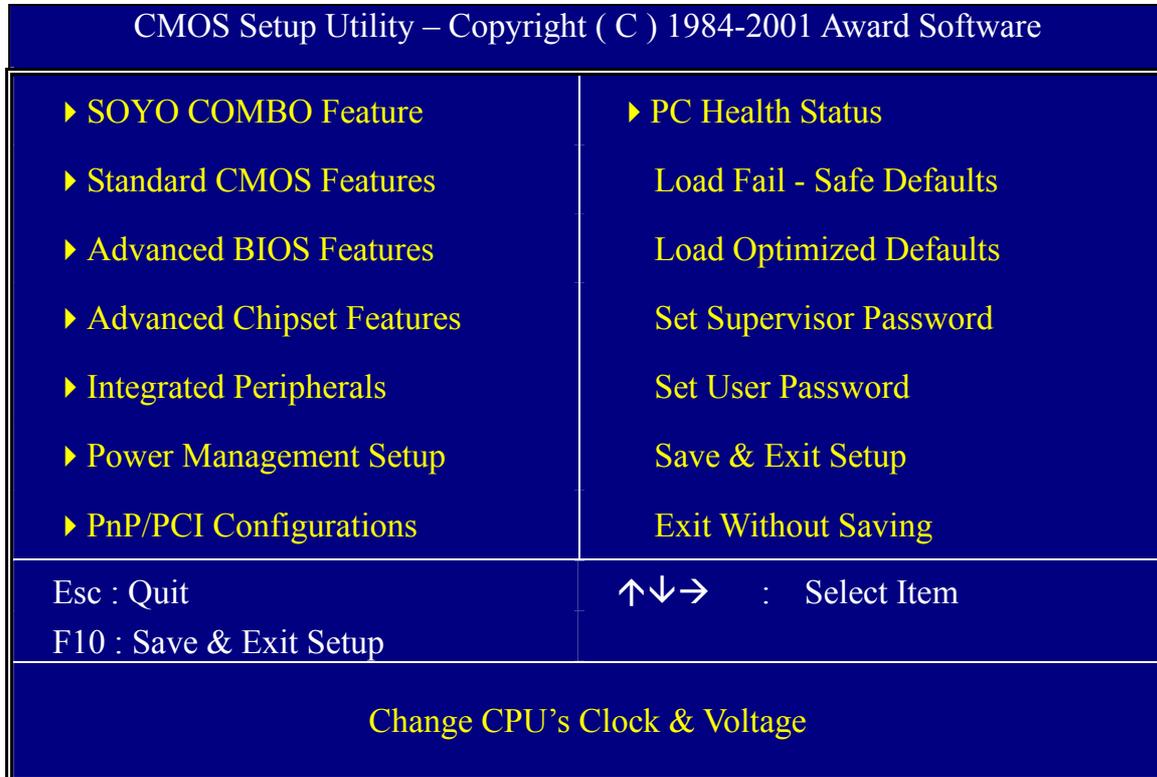
1. Turn the power on
2. To enter the BIOS Setup Utility, press the key while the system is performing the diagnostic checks,



Note: If you have failed to enter the BIOS, wait until the boot up sequence is completed. Then push the RESET button and press key again at the beginning of boot-up, during diagnostic checks.

Repeat this operation until you get the following screen.

3. The BIOS Setup screen appears:



2-3.6 Quick BIOS Setup

This Motherboard does not use any hardware jumpers to set the CPU frequency. Instead, CPU settings are software configurable with the BIOS [SOYO COMBO SETUP]. The [SOYO COMBO SETUP] combines the main parameters that you need to configure, all in one menu, for a quick setup in BIOS.

After the hardware installation is complete, turn the power switch on, then press the key during the system diagnostic checks to enter the Award BIOS Setup program. The CMOS SETUP UTILITY will be shown on the screen. Then, follow these steps to configure the CPU settings.

Step 1. Select [STANDARD CMOS SETUP]

Set [Date/Time] and [Floppy drive type], then set [Hard Disk Type] to “Auto”.

Step 2. Select [LOAD OPTIMIZED DEFAULTS]

Select the “LOAD OPTIMIZED DEFAULTS” menu and type “Y” at the prompt to load the BIOS optimal setup.

Step 3. Select [SOYO COMBO FEATURE]

Set the [CPU Frequency Select] field to “Manual”, to be able to change the CPU frequency 1 MHz stepping.

Step 4. Select [SAVE & EXIT SETUP]

Press <Enter> to save the new configuration to the CMOS memory, and continue the boot sequence.

2-3.7 Troubleshooting at First Start

Video (no display) related issues

I built a new computer system using a Soyo board and nothing happens when turning it on, no video and no beeps from the PC speaker. What is happening and how can it be fixed?

No screen and no beeps mean that your CPU and motherboard do not work at all. It could be that the CPU is not seated correctly or that a component on the M/B is grounded (shorted) with the case. Also make sure to check the voltage setting switch (110V/220V) on the back of the power supply. To isolate the problem do the following:

1. Press and hold down on the “Ins” (insert) key while turning on the computer until you get video. If you do not get video then,
2. Double-check jumpers setting on you motherboard and remove all add-on cards, unplug all hard-disk and floppy-disk drive cables and see if you can hear some beeps. If you still do not get any beeps, then try putting the motherboard on the table (to isolate it from the case) with the CPU and speaker only, and give it one more try.

I hear a series of beeps and I do not get anything from my monitor. What could be wrong?

The following lists some basic beep codes and their possible meanings:

- One long beep and 3 very short beeps - The video card is not detected by the motherboard. Please re-seat your video card. If you are using an AGP card, please push your AGP card down real hard. You may have to push VERY hard without the AGP card mounting screw. Make sure not to insert the card the other way around.
- Continuous beeps – One or more of the memory modules is not seated correctly in its socket.

My PCI VGA card works fine with my system, but when I put in a new AGP card, it does not give me any video. Is my AGP slot bad?

This is a common problem with AGP video cards. The reason is that your AGP card did not get seated into the AGP slot fully and firmly. Please push your AGP card down into the socket real hard, it should snap twice. You may have to unscrew the AGP card to allow the card to go further down. Do take care not to damage the card by using too much force.

I get distorted video my AGP card right after I save my bios. Why is that?

The cause is likely that your AGP card is not running at the correct bus speed. To fix this, please clear the CMOS via JP5 and if it still does not work, please upgrade your motherboard bios to the latest version.

BIOS Issues

Where can I find the BIOS revision of my mainboard?

It will be displayed on the up-left corner on the screen during boot-up. It will show as your board type followed by the revision number, such as 5EH_2CA1 (meaning revision 2CA1 for the SY-5EH board) or 6BA+ IV_2AA2 which means SY-6BA+ IV motherboard with 2AA2 bios.

Where can I find the latest BIOS of my motherboard?

Please go to the technical support page of one of the SOYO websites (Taiwan: www.soyo.com.tw), and look up your motherboard to find the latest BIOS revision.

Hard disk, floppy drive, CD-ROM etc

When I boot up my new computer I got "floppy boot failure" and the LED on the floppy stays on

Make sure the red wire of floppy ribbon cable goes to Pin1 on the floppy drive side (don't trust the "key lock" or "notch") and use the end-connector of the cable (don't use middle one).

Modem issues

I get an "I/O Conflict" message when I turn on my system and I can not get my modem to work

What you need to do is to disable 'COM2' (or UART2 or serial port 2) in the bios under integrated peripheral setup.

I have installed my modem drivers several times and I still cannot get my modem to work. Why?

If you are sure that the modem driver has been installed correctly, then you need to install the south bridge driver from the SOYO CD, this is because Windows does not properly recognize relatively new chipsets.

Audio Issues

I do not get any sound from my sound card. What could be wrong?

Please make sure the speaker is connected to the speaker out port on your sound card.

In Device Manager, I keep getting yellow exclamation signs on my sound port even though I have installed my sound driver several times and I could not get my sound card to work. What is wrong?

It is likely that you did not have the correct driver installed. If you are sure that the correct sound driver has been installed, then please install the 'south bridge' driver for the motherboard.

The sound is working in my system, but when I play CD music from the CD-ROM, I do not get any sound. What is wrong?

This is because the 3-wire audio cable from the CD-ROM to the sound card is not connected or it is loose.

The sound and everything else works fine except that the recorder and microphone do not work. What is wrong?

This is because the recorder and microphone in the Windows are not enabled. Please go to sound properties and enable them.

RAID

Can I use my CD-ROM on IDE 3 & 4?

Yes, you can use the CD-ROM on IDE 3 & 4. First, you need to short pin 2-3 of the RAID_IDE jumper.

Can I use IDE 3 & 4 to boot from CD-ROM?

No.

Lock up (freeze)

When I boot up my system, everything works fine. It sees my CPU and memory, detects my hard drive, floppy drive and CD-ROM but locks up at "Verify DMI pool data...", and it won't go any further.

What should I do?

Please clear the CMOS via JP5 then choose 'load optimized default' in the bios and save the bios and exit. Next, unplug all other add-on cards except the video card and floppy drive controller, and see if it can boot from floppy. Then put back the peripherals one by one to identify which one causes the lockup.

I can not get my board to run properly.

Please make sure you have the latest bios and driver from the SOYO web site at: <http://www.soyo.com>

***Note on Over-clocking Capability***

The SY-P4ISR provides over-clocking capability. Due to the over-clocking setting your system may fail to boot up or hang during run time. Please perform the following steps to recover your system from the abnormal situation :

1. Turn off system power (If you use an ATX power supply, and depending on your system, you may have to press the power button for more than 4 seconds to shut down the system.)
2. Press and hold down the <Insert> key while turning on the system power. Keep holding down the <Insert> key until you see the message of the CPU type and frequency shown on the screen.
3. Press the key during the system diagnostic checks to enter the Award BIOS Setup program.
4. Select [Save & Exit SETUP] and press <Enter> to save the new

configuration to the CMOS memory, and continue the boot sequence.

Note: SOYO does not guarantee system stability if the user over clocks the system. Any malfunctions due to over-clocking are not covered by the warranty.

2-3.8 Power Off

There are two possible ways to turn off the system:

1. Use the **Shutdown** command in the **Start Menu** of Windows 95/98 to turn off your computer.
2. Press the mechanical power-button and **hold down for over 4 seconds**, to shutdown the computer. If you press the power-button for less than 4 seconds, then your system will enter into **Suspend Mode**.

You are now ready to configure your system with the BIOS setup program. Go to *Chapter 3: BIOS SETUP*

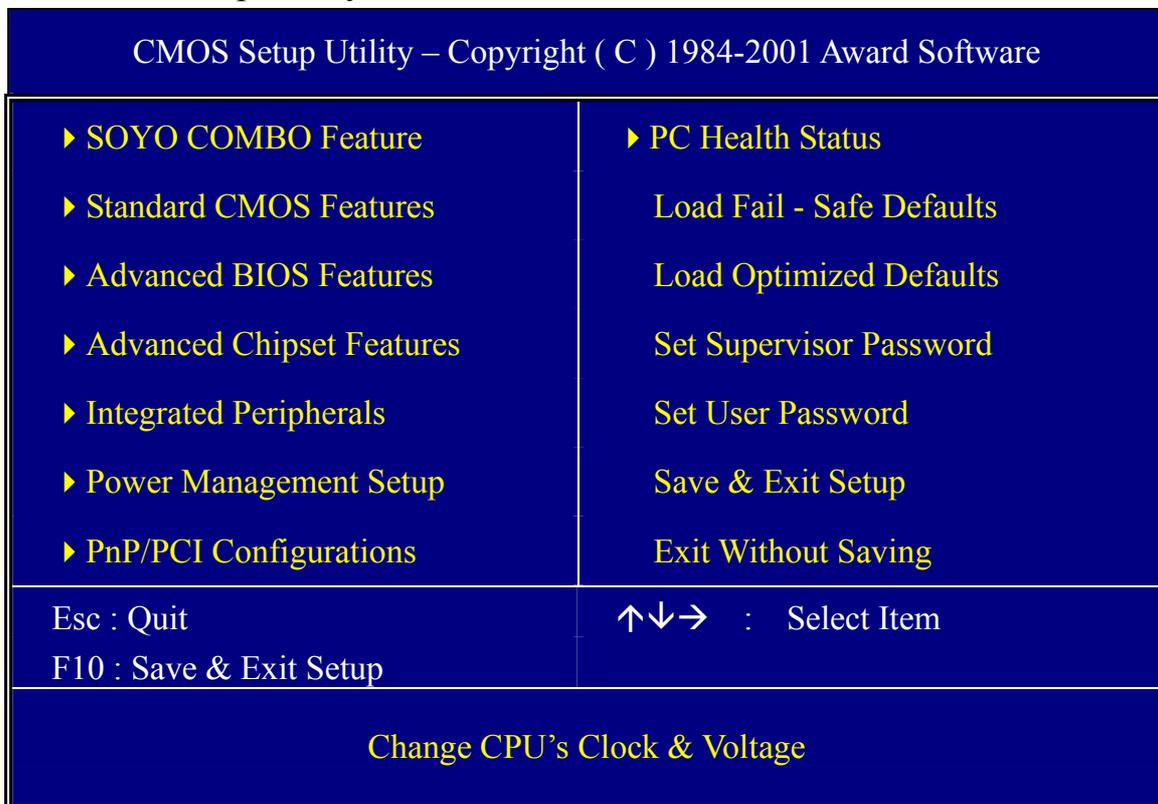
Chapter 3

BIOS SETUP UTILITY

This Motherboard's BIOS setup program uses the ROM PCI BIOS program from Award Software Inc.

To enter the Award BIOS program's Main Menu:

1. Turn on or reboot the system.
2. After the diagnostic checks, press the [Del] key to enter the Award BIOS Setup Utility.



Selecting items

- Use the arrow keys to move between items and select fields.
- From the Main Menu press arrow keys to enter the selected submenu.

Modifying selected items

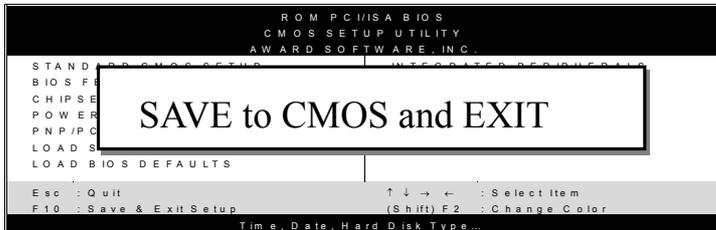
- Use the [Up]/[Down] keys to modify values within the selected fields. Some fields let you enter values directly.

Hot Keys: Function keys give you access to a group of commands throughout the BIOS utility.

Function	Command	Description
F1	General Help	Gives the list of options available for each item.
F5	Previous Values	Restore the old values. These are the values that the user started the current session with.
F6	Load Fail-Safe Defaults	Loads all items with the most conservative values.
F7	Load Optimized Defaults	Loads all options with the optimize values.
F10	Save	Saves your changes and reboots the system.
[Esc]	Exit	Returns at anytime and from any location to the Main Menu.
[Enter]	Select	Will display a overlapping window with all options for the current item.
[+/-/PU/PD]	Value	Using the +, -, Page Up and Page Down keys the user can toggle the value of the current item.

SAVE AND EXIT SETUP

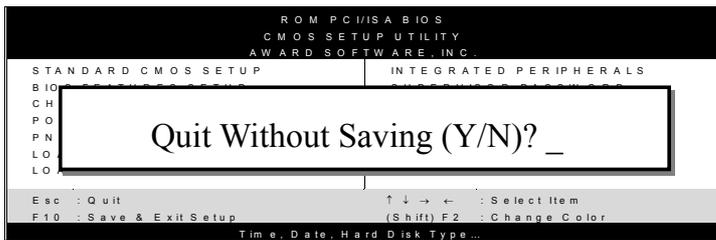
Select the [SAVE & EXIT SETUP] option from the Main Menu to save data to CMOS and exit the setup utility. This option saves all your changes and causes the system to reboot.



Type [Y] to save the changes and exit or [N] to return to the Main Menu and keep current values.

EXIT WITHOUT SAVING

Selecting the [EXIT WITHOUT SAVING] option allows you to abandon all data and exit setup, therefore ignoring all your changes.



Type [Y] to abandon changes and exit or [N] to return to the Main Menu and keep current values.

3-1 SOYO COMBO SETUP

This Motherboard does not use any hardware jumpers to set the CPU frequency. Instead, CPU settings are software configurable with the BIOS [SOYO COMBO SETUP].

After the hardware installation is complete, turn the power switch on, then press the key during the system diagnostic checks to enter the Award BIOS Setup program. The CMOS SETUP UTILITY will display on screen. Then, select the [SOYO COMBO SETUP] option from the main menu and press the <Enter> key.

CMOS Setup Utility – Copyright (C) 1984-2001 Award Software SOYO COMBO Feature		
CPU Frequency Select	Auto	Item Help
Frequency 1MHz Stepping	100MHz	
CPU Clock Ratio	X 17	Menu Level ▶
Spread Spectrum	Disabled	
System Performance	Normal	
Quick Power On Self Test	Enabled	
CPU Vcore Select	Default	
C.I.H. 4-WAY Protection	Enabled	
SOYO Mighty Bolt	Disabled	
Memory Frequency For DRAM Timing Selectable	Auto By SPD	
x CAS Latency Time	2	
x Active to Precharge Delay	7	
x DRAM RAS# to CAS# Delay	3	
x DRAM RAS# Precharge	3	
First Boot Device	Floppy	
Second Boot Device	CDROM	
Third Boot Device	LS120	
Boot Other Device	Enabled	
AC97 Audio	Auto	
AC97 Modem	Auto	

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

The [SOYO COMBO SETUP] menu combines the main parameters that you need to configure, all in one menu, for a quick setup in BIOS.

3-1.1 Quick CPU Frequency Setup

	Setting	Description	Note
CPU Frequency Select	Auto	Set the [CPU Frequency Select] field to “Manual”, to be able to change the CPU frequency 1 MHz stepping.	Default
	Manual		
Frequency 1MHz Stepping	Min=100 ~ Max=255	Press “Page Up”/”Page Down” key to Over Clock the CPU Front Side Bus in 1MHz increment or Press “Enter” key, then type the desired CPU Front Side Bus.	
CPU Clock Ratio	x 8, x 10, x 11, x 12, x 13, x 14, x 15, x 16 , x 17, x 18, x 19, x 20, x 21, x 22, x 23, x 24	The available CPU ratio you can select will depends on your CPU ID.	
Spread Spectrum	Disabled	This item allows you to enable/disable the spread spectrum modulate.	Default
	Enabled		

3-1.2 System Performance

	Setting	Description	Note
System Performance	Normal	Adjust your computer performance.	Default
	Maxium		
Quick Power On Self Test	Disabled	Provides a fast POST at boot-up.	Default
	Enabled		

3-1.3 CPU Vcore Select

	Setting	Description	Note
CPU Vcore Select	Default	This function adjust the CPU voltage.	Default
	1.100V, 1.125V, 1.150V, 1.175V, 1.200V, 1.225V, 1.250V, 1.275V, 1.300V, 1.325V, 1.350V, 1.375V, 1.400V, 1.425V, 1.450V, 1.475V, 1.500V, 1.525V, 1.550V, 1.575V, 1.600V, 1.625V, 1.650V, 1.675V, 1.700V, 1.725V, 1.750V, 1.775V, 1.800V, 1.825V, 1.850V		

3-1.4 C.I.H. 4-WAY Protection Settings

	Setting	Description	Note
C.I.H. 4-WAY Protection	Disabled	When set to enabled, the BIOS can only be programmed through AWDFLASH, making sure that any virus is unable to program the system BIOS. Set to disable the BIOS can be programmed the traditional way.	Default
	Enabled		
SOYO Mighty Bolt	Disabled	Enabled SOYO Mighty Bolt security function, Check manual for more info on this function.	Default
	Enabled		
Memory Frequency For	Auto	This item allows you to control the DRAM speed.	Default
	PC133		
	PC100		
DRAM Timing Selectable	By SPD	If enable the DRAM will auto detect the DRAM timing.	Default
	Manual		
CAS Latency Time	2	This item allows you to control the DRAM CAS Latency time.	Default
	3		



Active to Precharge Delay	5	This item allows you to control the DRAM Precharge Delay time.	
	6		
	7		Default
DRAM RAS# to CAS# Delay	2	This item allows you to control DRAM RAS to CAS delay time.	
	3		Default
DRAM RAS# Precharge	2	This item allow you to control DRAM RAS precharge time.	
	3		Default

3-1.5 System Boot Control Settings

System Boot Control Settings	Setting	Description	Note
First /Second/Third Boot Device	Floppy	Select Your Boot Device Priority	
	LS/ZIP		
	HDD-0		
	SCSI		
	CDROM		
	HDD-1		
	HDD-2		
	HDD-3		
	LAN		
Boot Other Device	Disabled	Select Your Boot Device Priority	
	Enabled		Default
AC97 Audio/Modem	Disabled	This item allows you to decide to auto/disable the 810 chipset family to support AC97 Audio/ Modem.	
	Auto		Default

3-2 STANDARD CMOS SETUP

Select the [STANDARD CMOS SETUP] option from the Main Menu and press [Enter] key.

CMOS Setup Utility – Copyright (C) 1984-2001 Award Software
 Standard CMOS Features

Date (mm:dd:yy)	Mon, May 7 2001	Item Help
Time (hh:mm:ss)	2 : 30 : 20	
▶ IDE Primary Master	None	Menu Level ▶ Change the day, month, year and century.
▶ IDE Primary Slave	None	
▶ IDE Secondary Master	None	
▶ IDE Secondary Slave	None	
Drive A	1.44M, 3.5 in.	
Drive B	None	
Floppy 3 Mode Support	Disabled	
Video	EGA/VGA	
Halt On	All Errors	
Base Memory	640K	
Extended Memory	326656K	
Total Memory	327680K	

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

This screen allows you to modify the basic CMOS settings.

After you have completed the changes, press [Esc] key to return to the Main Menu.

3-2.1 Date & Time

	Display	Setting	Please Note
Date	mm/dd/yyyy	Type the current date	You can also the PUp/PDn keys to toggle
Time	hh:mm:ss	Type the current time	24-hour clock format 3:15 PM is displayed as 15:15:00

3-2.2 Hard Disks Type & Mode

Choose the type and mode for the hard disks that you have already installed.

Primary (Secondary) Master & Slave	Setting	Description	Note
IDE HDD Auto-Detection	Press Enter	To auto-detect the HDD's size, head... on this channel	
IDE Primary Slave (User Type)	Auto	BIOS detects hard disk type automatically.	Default
	User	User defines the type of hard disk.	
	None		
Access Mode	Auto	BIOS detects hard disk mode automatically.	Default
	CHS	Normal IDE hard disk	<528MB
	LBA	Enhanced IDE hard disk	>528MB
	Large	Large IDE hard disk (for certain hard disk)	



Note: If you have any questions on your hard disk type or mode, ask your hard disk provider or previous user for details.

3-2.3 Floppy Drives

Floppy Drives	Setting	Description	Note
Drives A & B	360KB, 5.25 in.		
	1.2MB, 5.25 in.		
	720KB, 3.5 in.		
	1.44MB, 3.5 in.		Default
	2.88MB, 3.5 in.		
	None	Not installed	
Floppy 3-Mode Support	Disabled		Default
	Drive A Drive B Both	Supports 3-mode floppy diskette: 740KB/1.2MB/ 1.44MB on selected disk drive.	Special disk drive commonly used in Japan

3-2.4 Others Optional

	Setting	Description	Note
Video	EGA/VGA	Select the video mode.	Default
	CGA 40		
	CGA 80		
	MONO (Monochrome)		
Halt On	ALL Errors	When the BIOS detects system errors, this function will stop the system. Select which type of error will cause the system halt.	Default
	No Errors		
	All, But Keyboard		
	All, But Diskette		
	All, But Disk/Key		

3-3 ADVANCED BIOS FEATURES

Select the [Advanced BIOS Features] option from the Main Menu and press [Enter] key.

CMOS Setup Utility – Copyright (C) 1984-2001 Award Software Advanced BIOS Features					
Virus Warning	Disabled	Item Help			
CPU L1 & L2 Cache	Enabled				
Swap Floppy Drive	Disabled	Menu Level ▶ Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.			
Boot Up Floppy Seek	Enabled				
Boot Up NumLock Status	On				
Gate A20 Option	Fast				
Typematic Rate Setting	Disabled				
x Typematic Rate (Chars/Sec)	6				
x Typematic Delay (Msec)	250				
Security Option	Setup				
APIC Mode	Enabled				
MPS Version Control For OS	1.4				
OS Select For DRAM > 64MB	Non-OS2				
Report No FDD For WIN 95	No				
EPA LOGO SELECT	LOGO-0				
Small Logo (EPA) Show	Enabled				
↑↓→ Move	Enter : Select		+ / - / PU / PD : Value	F10 : Save	ESC : Exit
F5 : Previous Values		F6 : Fail - Safe Defaults		F7 : Optimized Defaults	

After you have completed the changes, press [Esc] key and follow the instructions on your screen to save your settings or exit without saving.

3-3.1 Virus Warning

	Setting	Description	Note
Virus Warning	Disabled	Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.	Default
	Enabled		

3-3.2 Cache Memory Options

	Setting	Description	Note
CPU L1 & L2 Cache	Disabled	Enables the CPU's L1 & L2 cache.	
	Enabled		Default

3-3.3 Floppy Driver Settings

	Setting	Description	Note
Swap Floppy Drive	Disabled	Changes the sequence of A and B drives.	Default
	Enabled		

3-3.4 Boot Up Floppy Seek

	Setting	Description	Note
Boot Up Floppy Seek	Disabled	Seeks disk drives during boot up. Disabling speeds boot up.	
	Enabled		Default

3-3.5 Boot Up NumLock Status

	Setting	Description	Note
Boot Up NumLock Status	On	Puts numeric keypad in NumLock mode at boot-up.	Default
	Off		Puts numeric keypad in arrow key mode at boot-up.

3-3.6 Gate A20 Options

	Setting	Description	Note
Gate A20 Options	Normal	A pin in the keyboard controller controls GateA20.	
	Fast	Lets chipset control GateA20.	Default

3-3.7 Typematic Settings

Typematic Settings	Setting	Description	Note
Typematic Rate Setting	Disabled	Keystrokes repeat at a rate determined by the keyboard.	Default
	Enabled	When enables , the typematic rate and typematic delay can be selected.	
The following [Typematic Rate] and [Typematic Delay] fields are active only if [Typematic Rate Setting] is set to [Enabled]			
Typematic Rate	6 (Char/sec)	Choose the rate at which a character is repeated when holding down a key.	Default
	8 (Char/sec)		
	10 (Char/sec)		
	12 (Char/sec)		
	15 (Char/sec)		
	20 (Char/sec)		
	24 (Char/sec)		
	30 (Char/sec)		
Typematic Delay	250 (msec)	Choose how long after you press a key down the character begins repeating.	Default
	500 (msec)		
	750 (msec)		
	1000 (msec)		

3-3.8 Security Option

Use this feature to prevent unauthorized system boot-up or use of BIOS Setup. The following table describes the security settings.

	Setting	Description	Note
Security Option	System	Each time the system is booted, the password prompt appears.	
	Setup	If a password is set, the password prompt only appears when you attempt to enter the BIOS Setup program.	Default
ACPI Mode			
	Disabled	Enabled the Advanced Programmable	
	Enabled	Interrupt Controller (APIC) mode.	Default
MPS Version Control for OS	1.1	Allows you to choose the Multi Processor Specification (MPS) version.	
	1.4		Default

Other Control Options

Other Control Options	Setting	Description	Note
OS Select for DRAM>64MB	OS2	When using an OS2 operating system.	
	Non-OS2	When using another, non-OS2 operating system.	Default
Report No FDD For WIN 95	Yes	Windows will release IRQ line 6 (normally used by the Floppy Disk Drive) after you disable your on-board FDD and set this field to [Yes].	
	No	Windows will reserve INT 6 for your FDD, whether it is disabled or not.	Default

Small Logo(EPA) Show

	Setting	Description	Note
EPA LOGO SELECT	LOG0	Allows user to display SOYO logo or own logo. Logo-0 shows SOYO logo, Logo-1 shows user logo.	Default
	LOG1		
Small Logo(EPA) Show	Disabled	Set Enabled to Show Logo(EPA).	
	Enabled		Default

3-4 ADVANCED CHIPSET FEATURES



Caution: Change these settings only if you are already familiar with the Chipset.

The [Advanced Chipset Features] option changes the values of the chipset registers. These registers control the system options in the computer.

CMOS Setup Utility – Copyright (C) 1984-2001 Award Software Advanced Chipset Features		
System BIOS Cacheable	Disabled	Item Help
Video BIOS Cacheable	Disabled	Menu Level ▶
Video RAM Cacheable	Disabled	
AGP Aperture Size (MB)	128	
Delay Prior to Thermal	16 Min	
↑↓→ Move Enter : Select + / - / PU / PD : Value F10 : Save ESC : Exit F1 : General Help F5 : Previous Values F6 : Fail - Safe Defaults F7 : Optimized Defaults		

After you have completed the changes, press [Esc] and follow the instructions on your screen to save your settings or exit without saving. The following table describes each field in the Advanced Chipset Features Menu and how to configure each parameter.

3-4.1 CHIPSET FEATURES SETUP

CHIPSET FEATURES	Setting	Description	Note
System BIOS Cacheable	Disabled		Default
	Enabled	The ROM area F0000H-FFFFFFH is cacheable.	
Video BIOS Cacheable	Disabled		Default
	Enabled	The video BIOS C0000H-C7FFFH is cacheable.	
Video RAM Cacheable	Disabled	Allows user enabled Video RAM	Default
	Enabled	Cacheable.	

CHIPSET FEATURES SETUP(Continued)

CHIPSET FEATURES	Setting	Description	Note
AGP Aperture Size (MB)	32	Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.	
	64		
	128		Default
	256		
Delay Prior to Thermal	4Min	Set the time for the system to decrease performance to avoid reaching maximum thermal temp. Ex. If you set it to 16 minutes the system will start decreasing the performance 16 minutes before reaching max thermal temp.	
	8Min		
	16Min		Default
	32Min		

3-5 INTEGRATED PERIPHERALS



Caution: Change these settings only if you are already familiar with the Chipset.

The [INTEGRATED PERIPHERALS] option changes the values of the chipset registers. These registers control the system options in the computer.

The following screen shows setup default settings.

CMOS Setup Utility – Copyright (C) 1984-2001 Award Software		
Integrated Peripherals		
On-Chip Primary PCI IDE	Enabled	Item Help Menu Level ▶
IDE Primary Master PIO	Auto	
IDE Primary Slave PIO	Auto	
IDE Primary Master UDMA	Auto	
IDE Primary Slave UDMA	Auto	
On-Chip Secondary PCI IDE	Enabled	
IDE Secondary Master PIO	Auto	
IDE Secondary Slave PIO	Auto	
IDE Secondary Master UDMA	Auto	
IDE Secondary Slave UDMA	Auto	
USB Controller	Enabled	
USB Keyboard Support	Disabled	
Init Display First	AGP	
IDE HDD BlockMode	Enabled	
POWER ON Function	BUTTON ONLY	
x KB Power ON Password	Enter	
x Hot Key Power ON	Ctrl-F1	
Onboard FDC Controller	Enabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
UART Mode Select	Normal	
x UR2 Duplex Mode	Half	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
x ECP Mode Use DMA	3	
PWRON After PWR-Fail	OFF	
Game Port Address	201	
Midi Port Address	330	
Midi Port IRQ	10	

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

The following tables describe each field in the INTEGRATED PERIPHERALS Menu and provide instructions on how to configure the IDE controls, FDC controls, and the onboard serial and parallel ports.

3-5.1 IDE Device Controls

IDE Controls	Setting	Description	Note
On-Chip PCI IDE ➤ Primary ➤ Secondary	Disabled	Turn off the on-board IDE	
	Enabled	Use the on-board IDE	Default
IDE ➤ Primary Master PIO ➤ Primary Slave PIO ➤ Secondary Master PIO ➤ Secondary Slave PIO	mode 0-4	0 is the slowest speed 4 is the fastest speed	
	Auto	For better performance and stability, we suggest you use the Auto setting to set the HDD control timing.	Default
IDE ➤ Primary Master UDMA ➤ Primary Slave UDMA ➤ Secondary Master UDMA ➤ Secondary Slave UDMA	Disabled		
	Auto	Select Auto to enable Ultra DMA Mode support.	Default

3-5.2 Keyboard Controls

Keyboard Controls	Setting	Description	Note
USB Controller	Disabled		
	Enabled	Select <i>Enabled</i> if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.	Default
USB Keyboard Support	Disabled	Turn off the on-board IDE	Default
	Enabled	Use a USB keyboard	
Init Display First	PCI Slot	Choose which card – AGP	
	AGP	Display card or PCI VGA card – to initialize first.	Default

3-5.3 IDE HDD Block Mode

	Setting	Description	Note
IDE HDD Block Mode	Disabled		
	Enabled	Invokes multi-sector transfer instead of one sector per transfer. Not all HDDs support this function.	Default

3-5.4 Others Optional

	Setting	Description	Note
POWER ON Function	Password	Enables you to wake-up the system by entering a password at the keyboard.	
	Hot KEY	You can wake-up the system by pressing the key combination of your choice (Ctrl-F1~F12).	
	Mouse Left	Enables waking up the system by pressing either the right or left mouse button.	
	Mouse Right		
	BUTTON-ONLY	Disables the Wake-Up by Keyboard function.	Default
	Keyboard 98		
If [POWER ON Function] is set to [Password]			
KB Power ON Password	Enter (your password)	Set the password that will wake-up your system.	
If [POWER ON Function] is set to [Hot Key]			
Hot Key Power ON	Ctrl-F1~F12	Choose the key combination that will wake-up the system. [Ctrl-F1 to Ctrl-F12]	

3-5.5 FDC Controls

FDC Controls	Setting	Description	Note
Onboard FDC controller	Disabled	Turn off the on-board floppy controller	
	Enabled	Use the on-board floppy controller	Default

3-5.6 Onboard Serial Ports

Onboard Serial Ports	Setting	Description	Note
Onboard Serial Port 1 / Serial Port 2	Disabled		
	3F8/IRQ4	Choose serial port 1 & 2's I/O address.	Default (port 1)
	2F8/IRQ3	Do not set port 1 & 2 to the same address except for	Default (port 2)
	3E8/IRQ4	Disabled or Auto.	
	2E8/IRQ3		
	Auto		
UART Mode Select	Normal	The second serial port offers these InfraRed interface modes.	Default
	IrDA		
	ASKIR		
	SCR		
If [UART Mode Select] is set to [IrDA]/[ASKIR]			
UR2 Duplex Mode	Half	Choose [Half] or [Duplex] to set UR2 in half duplex mode or full duplex mode respectively. Refer to your IR device specifications to select the suitable mode.	Default
	Full		

3-5.7 Onboard Parallel Ports

Onboard Parallel Ports	Setting	Description	Note
Onboard Parallel Port	Disabled	Choose the printer I/O address.	
	378/IRQ7		Default
	3BC/IRQ7		
	278/IRQ5		
Parallel Port Mode	SPP	The mode depends on your external device that connects to this port.	Default
	EPP		
	ECP		
	ECP+EPP		
If [Parallel Port Model] is set to [ECP] mode			
ECP Mode use DMA	3	Choose DMA3	Default
	1	Choose DMA1	

3-5.8 Others Optional

	Setting	Description	Note
PWRON After PWR-Fail	On	The system will switch on when power comes back after a power failure.	
	Off	The system will remain off when power comes back after a power failure.	Default
	Former-Sts	The system will return to the state it was in before the power failure when power returns. (i.e: If the system was on, it will switch on again, if it was off, it will remain off)	
Game Port Address	Disabled	Set the I/O base address for the ON board game port under this item.	
	201		Default
	209		
Midi Port Address	Disabled	Set the I/O address for the on board Midi port here.	
	330		Default
	300		
If [Midi Port Address] is set to [330]/[300] mode			
Midi Port IRQ	5	Select the IRQ that the Midi port uses under this them.	
	10		Default

3-6 POWER MANAGEMENT SETUP

The [POWER MANAGEMENT SETUP] sets the system's power saving functions.

CMOS Setup Utility – Copyright (C) 1984-2001 Award Software
Power Management Setup

ACPI Suspend Type	S1(POS)		Item Help
Power Management	User Define		
Video Off Method	DPMS		
Video Off In Suspend	Yes		
Suspend Type	Stop Grant		
MODEM Use IRQ	3		
Suspend Mode	Disabled		
HDD Power Down	Disabled		
Soft-Off by PWR-BTTN	Instant-Off		
Wake-Up by PCI card	Enabled		
Power On by Ring	Enabled		
Resume by Alarm	Disabled		
x Date (of Month) Alarm	0		
x Time (hh:mm:ss) Alarm	0 : 0 : 0		
** Reload Global Timer Events **			
Primary IDE 0	Disabled		
Primary IDE 1	Disabled		
Secondary IDE 0	Disabled		
Secondary IDE 1	Disabled		
FDD,COM, LPT Port	Disabled		
PCI PIRQ[A-D]#	Disabled		

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

After you have completed the Power Management Setup, press [Esc] to return to the Main Menu.



3-6.1 Power Management Controls

Power Management Controls	Setting	Description				Note
ACPI Suspend Type	S1(POS)	The system will enter the S1 state during suspend. (Low latency wake up)				Default
	S3(STR)					
Power Management	User Define	Lets you define the HDD and system power down times.				Default
		Doze timer	Standby timer	Suspend timer	HDD power down	
	Min Saving	1 Hour	1 Hour	1 Hour	15 Min	
	Max Saving	1 Min	1 Min	1 Min	1 Min	
Video Off Method	V/H Sync+Blank	Selects the method by which the monitor is blanked.				
	Blank screen					
	DPMS					
					Default	
Video Off In Suspend	Yes	This determines the manner in which the monitor is blanked.				Default
	No					
Suspend Type	Stop Grant	The system can wake up through external events.				Default
	PwrOn Suspend	The system can only wake up through the Power-Button.				
MODEM Use IRQ	3	Assigns an IRQ# to the modem device.				Default
	3-11, NA					
Standby Mode	Disabled					Default
	1Min-1Hour	When the set time has elapsed, BIOS sends a command to the system to enter Standby Mode.				

Power Management Controls (Continued)

Power Management Controls	Setting	Description	Note
HDD Power Down	Disabled		Default
	1-15Min	When the set time has elapsed, BIOS sends a command to the HDD to power down. This turns off the HDD motor.	Some older model HDDs may not support this advanced function.
Soft-Off by PWR-BTTN	Instant-off		Default
	Delay 4 Sec.	Turns off the system power 4 seconds after pushing the power button.	
Wake-Up by PCI card	Disabled	If enabled any PCI interrupt will wake up the system.	
	Enabled		Default
Power On by Ring	Disabled		
	Enabled	The system will self-power on me when the modem is ringing.	Default
Resume by Alarm	Disabled	The system ignores the alarm.	Default
	Enabled	Set alarm to power on the system by the date (1-31) or time (hh:mm:ss). If the date is set to [0], the system will self-power on by alarm everyday at the set time.	

3-6.2 Reload Global Timer Events

Power Down & Resume Events	Setting	Description	Note
IDE0, IDE1 ➤ Primary ➤ Secondary	Disabled		Default
	Enabled	In effect, the system remains alert for anything which occurs to a device which is configured as <i>Enabled</i> .	
FDD, COM, LPT Port	Disabled		Default
	Enabled	In effect, the system remains alert for anything which occurs to a device which is configured as <i>Enabled</i> .	
PCI PIRQ [A-D]#	Disabled		Default
	Enabled	The system monitors these elements for activity. The system will resume if [IRQ activity] is detected.	

3-7 PNP/PCI CONFIGURATION SETUP

This option sets the Motherboard's PCI Slots.

CMOS Setup Utility – Copyright (C) 1984-2001 Award Software
 PnP/PCI Configurations

Reset Configuration Data	Disabled	Item Help Menu Level ▶ Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot.
Resources Controlled By * IRQ Resources	Auto (ESCD) Press Enter	
PCI/VGA Palette Snoop	Disabled	
Assign IRQ For VGA	Enabled	
Assign IRQ For USB	Enabled	
INT Pin 1 Assignment	Auto	
INT Pin 2 Assignment	Auto	
INT Pin 3 Assignment INT Pin 4 Assignment	Auto Auto	

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



Note: Starred (*) items will disappear when the [Resources Controlled By] option is set to [Auto].

After you have completed the PCI Slot Configuration, press [Esc] and follow the instructions on your screen to save your settings or exit without saving.



3-7.1 PNP/PCI Configuration Controls

PNP/PCI Controls	Setting	Description	Note
Reset Configuration Data	Disabled	Retain PnP configuration data in BIOS.	Default
	Enabled	Reset PnP configuration data in BIOS.	
Resources Controlled By	Manual	BIOS does not manage PCI/ISA PnP card IRQ assignment. Requires to assign IRQ-# and DMA-# to PCI or ISA PnP manually. IRQ-3,4,5,7,9,10,11,12,14,15 assigned to: _ DMA-0,1,3,5,6,7 assigned to: _	
	Auto (ESCO)	The Plug-and-Play BIOS auto manages PCI/ISA PnP card IRQ assignment automatically.	Default
If [Resources Controlled By] is set to [Manual]			
IRQ-# assigned to:	PCI device	Choose IRQ# assigned to PCI/ISA PnP card.	Default
	Reserved	Reserved IRQ	
<p>Under this item the user can assign an IRQ to a PCI slot. However, there under some conditions the IRQ will not be assigned as selected under this item:</p> <ol style="list-style-type: none"> 1. IRQs 0, 1, 2, 6, 8, 13 can NOT be assigned, because they are fixed. 2. IRQs 5, 9, 10, 11 are available 3. IRQs 3,4,7,12,14 and 15 will only be assigned if they are free. See the table below on how to free them: 			

PNP/PCI Configuration Setup (Continued)

PNP/PCI Setup	Setting	Description	Note
Interrupt Line	How to set the BIOS to release the IRQ to the PnP Interrupt pool:		
	PnP / PCI configuration	Integrated Peripherals	
IRQ 15	IRQ 15: PCI / ISA PnP	On-Chip Secondary PCI IDE:	disabled
IRQ 14	IRQ 14: PCI / ISA PnP	On-Chip Primary PCI IDE:	disabled
IRQ 12	IRQ 12: PCI / ISA PnP	<i>Interrupt 12 will be released by the PnP BIOS automatically if the PS/2 Mouse Port is not used.</i>	
IRQ 7	IRQ 7: PCI / ISA PnP	Onboard parallel port:	disabled
IRQ 4	IRQ 4: PCI / ISA PnP	Onboard Serial port 1:	disabled
IRQ 3	IRQ 3: PCI / ISA PnP	Onboard Serial port 2:	disabled
4. Your OS may reassign another interrupt to a PCI slot after BIOS passes control to the OS, especially if you use Windows 95, 98 or NT.			
Assign IRQ For VGA/USB	Disabled	BIOS will assign IRQ for USB port.	
	Enabled	BIOS won't assign IRQ for USB port.	Default
5. Your OS may reassign another interrupt to a PCI slot after BIOS passes control to the OS, especially if you use Windows 95, 98 or NT.			
INT Pin 1/2/3/4 Assignment	Auto	Set to Auto the BIOS will using IRQs Automatically.	Default

3-7.2 MULTI I/O ADDRESSES

Default settings for multi-I/O addresses are as follows:

Port	I/O Address	IRQ	Status
LPT1	378H	7	ECP/EPP
COM1	3F8H	4	
COM2	2F8H	3	



Warning: If a default I/O address conflicts with other I/O cards such as sound card, you must change one of the I/O addresses to remedy to this address conflict. (I/O addresses can be adjusted from the BIOS Setup Utility)

3-8 PC HEALTH STATUS

This option sets the Motherboard's PC Health Status.

CMOS Setup Utility – Copyright (C) 1984-2001 Award Software
 PC Health Status

Shutdown Temperature	Disabled	Item Help
Vcore	1.66 V	Menu Level ▶
VCC 1.8V	1.79 V	
3.3V	3.21 V	
+5V	5.02 V	
+12V	11.77 V	
5VSB	5.02 V	
Voltage Battery	3.10V	
CPU Temperature	40°C	
System Temperature	34°C	
CPUFAN Speed	4891 RPM	
CHAFAN Speed	0 RPM	
SYSFAN Speed	0 RPM	

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



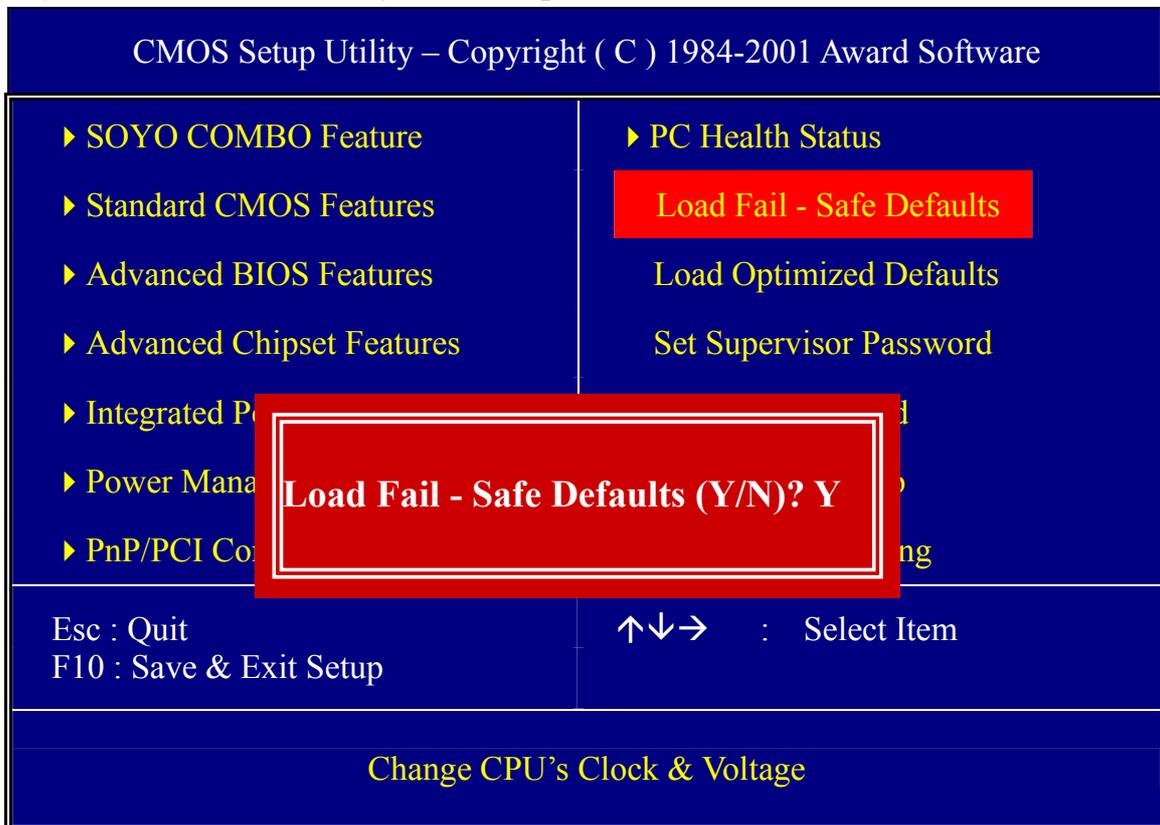
Note: Starred (*) items will disappear when the [Resources Controlled By] option is set to [Auto].

3-8.1 CPU Device Monitoring

CPU Device Monitoring	Setting	Description	Note
Shutdown Temperature	Disabled	This item allows you to set up the CPU shutdown Temperature. This item only effective under Windows 98 ACPI mode.	Default
	40°C/104°F, 45°C/113°F, 50°C/122°F, 55°C/131°F, 60°C/140°F, 65°C/149°F, 75°C/167°F		
Vcore, VCC 1.8V, 3.3V, +5V, +12V, 5VSB	V	Show the current voltage status.	
CPU Temperature	°C/°F	Show the current status of CPU temperature.	
System CPU Temperature	°C/°F	Show the current status of the system temperature.	
CPUFAN Speed	RPM	Show you the current CPUFAN operating speed.	
CHAFAN Speed	RPM	Show you the current CHAFAN operating speed.	
SYSFAN Speed	RPM	Show you the current SYSFAN operating speed.	

3-9 LOAD FAIL-SAFE DEFAULTS

Select the [Load Fail-Safe Defaults] option from the Main Menu to load the system values you have previously saved. This option is recommended if you need to reset the system setup and to retrieve the old values.



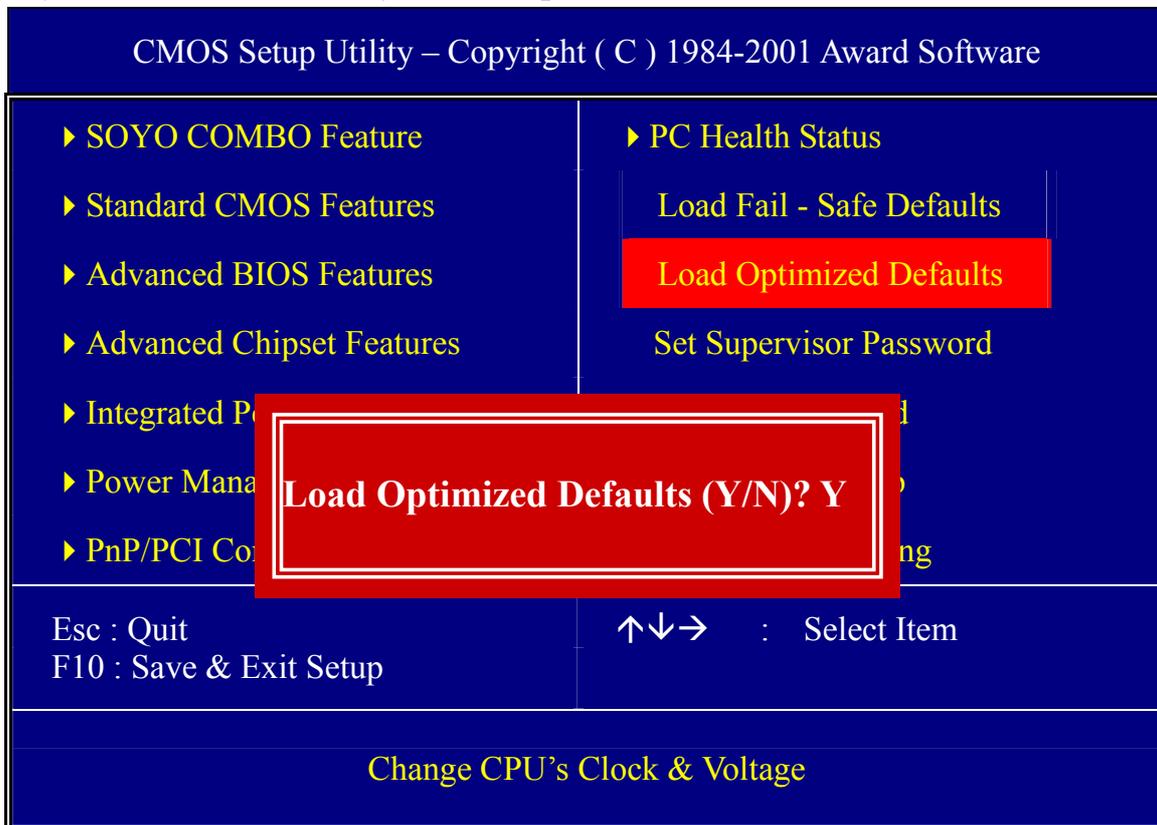
Type [Y] to use the Setup Defaults followed by [Enter] or otherwise [N] to return to the Main Menu and keep current values.



Warning: If you run into any problem after changing the BIOS configuration, please load the SETUP DEFAULTS for stable performance.

3-10 LOAD OPTIMIZED DEFAULTS

Select the [Load Optimized Defaults] option from the Main Menu to load the system values you have previously saved. This option is recommended if you need to reset the system setup and to retrieve the old values.



Type [Y] to use the Setup Defaults followed by [Enter] or otherwise [N] to return to the Main Menu and keep current values.



Warning: If you run into any problem after changing the BIOS configuration, please load the SETUP DEFAULTS for stable performance.

3-11 SUPERVISOR PASSWORD

Based on the setting you have made in the [Security Option] of the [BIOS FEATURES SETUP] section, the password prevents access to the system or the setup program by unauthorized users. Follow this procedure to set a new password or disable the password:

1. Choose [BIOS FEATURES SETUP] in the Main Menu and press [Enter]. Select the [Security Options] item and set the field to:
 - a. [System]: The password is required every time the system is booted. This means only a person who knows the password can use this computer.
 - b. [Setup]: The password is required only when you attempt to enter the BIOS Setup program.
2. Choose [SUPERVISOR PASSWORD] from the Main Menu and press [Enter]. The following prompt appear:

Enter Password:



Warning: If you forget or lose the password, the only way to access the system is to set jumper JP5 to clear the CMOS RAM. All setup information is lost and you must run the BIOS setup program again.



Note: If you do not wish to use the password function, press [Enter] directly and the following message appears:

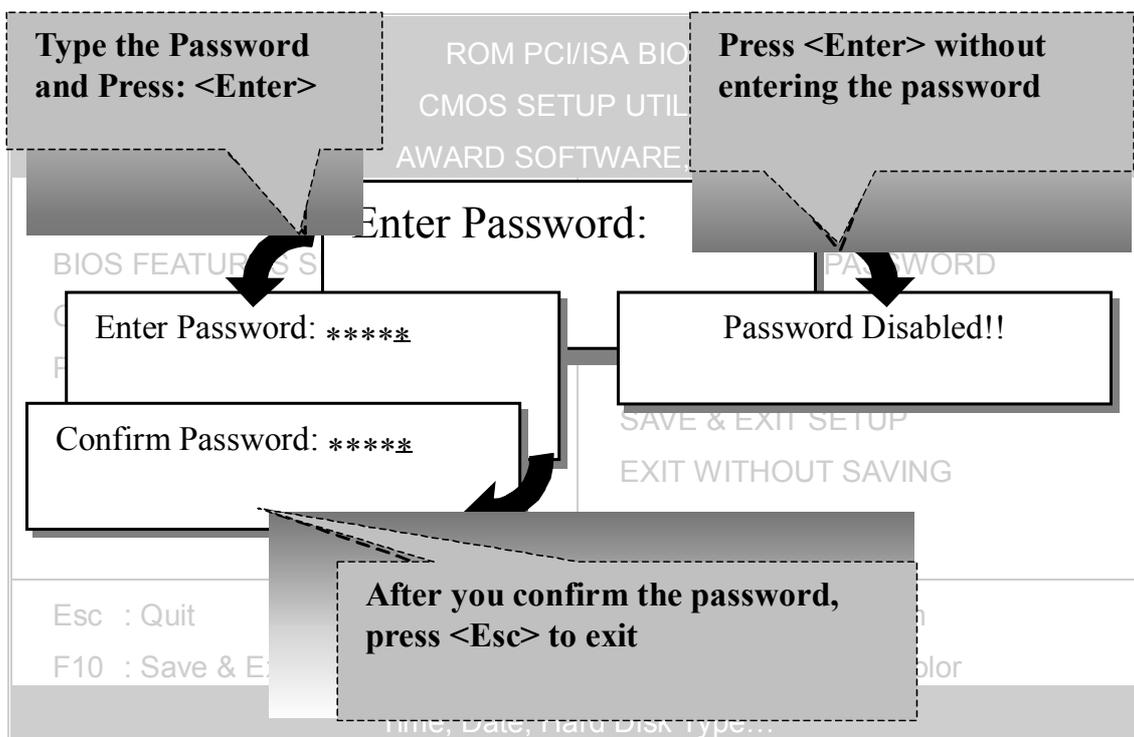
Password Disabled!!

3. Enter your new password and press [Enter]. The following message appears, prompting to confirm the new password:

Confirm Password:

4. Re-enter your password and then press [Enter] to exit to the Main Menu.

This diagram outlines the password selection procedure:



3-12 USER PASSWORD

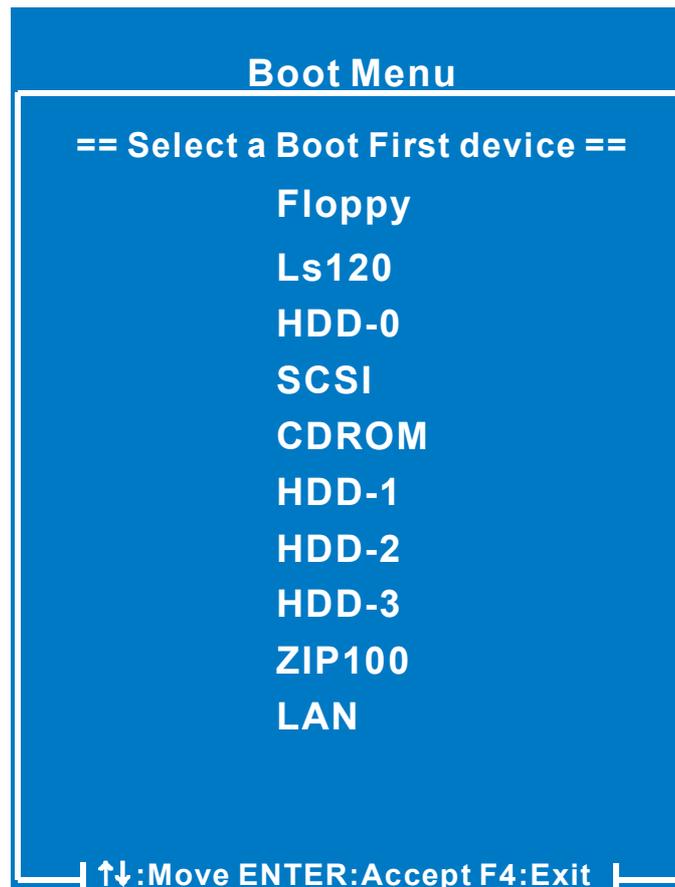
When the user password option is on, you are not allowed to change any setting in the [CMOS SETUP UTILITY] except for changing the user's password.

The password setting procedure is similar to that for the [SUPERVISOR PASSWORD] (Refer to section 3-9).

Boot Menu

Boot Menu enables user to boot-up on different boot device without going into the BIOS setup.

To enable boot Menu, press “ESC” after memory initialization, user will see a device menu, in which user can choose on which device they wish to boot from.



Chapter 4

DRIVERS INSTALLATION

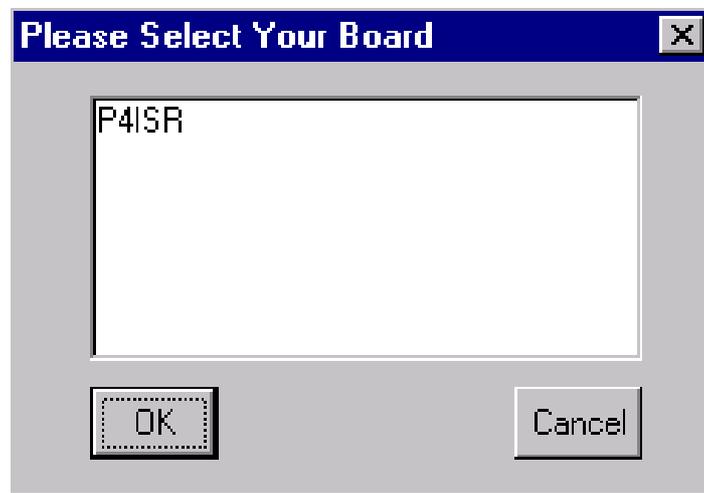


The SOYO-CD will NOT autorun if you use it on an Operating System other than Windows 95/98/98SE/ME.

Your SY-P4ISR Motherboard comes with a CD-ROM labeled "SOYO CD." The SOYO CD contains (1) the user's manual file for your new Motherboard, (2) the drivers software available for installation, and (3) a database in HTML format with information on SOYO Motherboards and other products.

Step 1. Insert the SOYO CD into the CD-ROM drive

If you use Windows NT or 2000, the SOYO-CD will not detect your motherboard type. In that case the following dialog will pop up, please choose your motherboard and press OK. Now the SOYO-CD Start Up Menu will be shown.



(SOYO CD Start Up Program Menu)

If you use Windows 95/98/98SE/ME, the SOYO CD Start Up Program automatically detects which SOYO Motherboard you own and displays the corresponding model name.

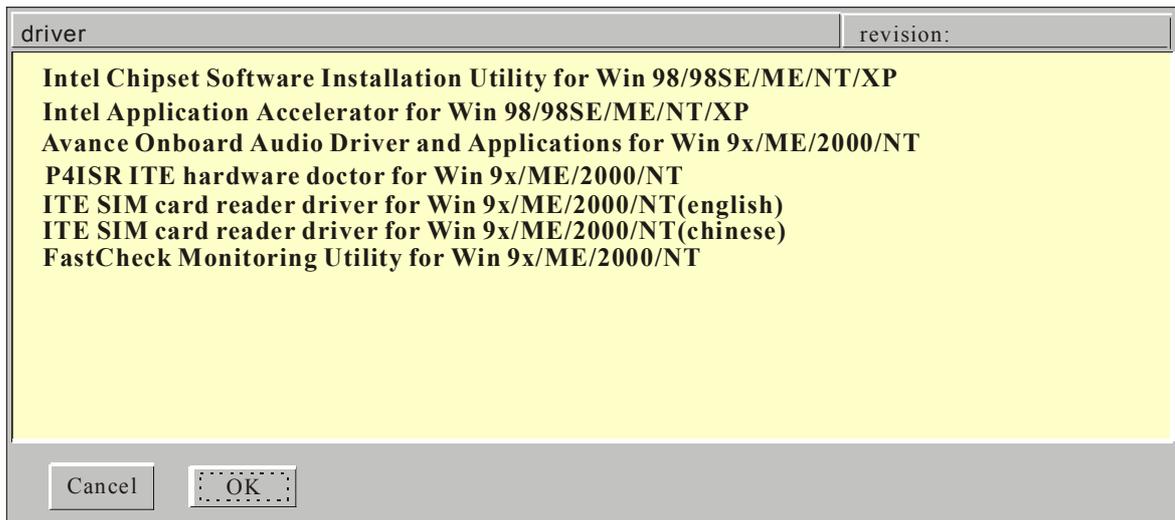


The user's manual files included on the SOYO CD are in PDF (Postscript Document) format. In order to read a PDF file, the appropriate Acrobat Reader software must be installed in your system.

Note: The Start Up program automatically detects if the Acrobat Reader utility is already present in your system, and otherwise prompts you on whether or not you want to install it. You must install the Acrobat Reader utility to be able to read the user's manual file. Follow the instructions on your screen during installation, then once the installation is completed, restart your system and re-run the SOYO CD.

Step 2. Install Drivers and Utilities

Click the **Install Drivers** button to display the list of drivers software that can be installed with your Motherboard. The Start Up program displays the drivers available for the particular model of Motherboard you own. We recommend that you only install those drivers.



(Driver Installation Menu)

A short description of all available drivers follows:

➤ **Intel Chipset Software Installation Utility for Win 98/98SE/ME/NT/XP**

Windows 95 and 98 will not recognize the new INTEL i845 chipset properly. To update the necessary .inf files that will help Windows recognize the i845 chipset, please run this utility.

➤ **Intel Application Accelerator for Win 98/98SE/ME/NT/XP**

The Intel(R) Application Accelerator is designed to improve performance of the storage sub-system and overall system performance. This software delivers improved performance through several ingredient technologies(components). Certain components will be available only on Pentium(R) 4 processor-based systems running Microsoft* Windows* 2000 Professional. Software installation is flexible and fully automated for Microsoft* Windows* 98, Windows 98 Second Edition(SE), Windows* 98

Millennium Edition(Me), Windows* NT4.0, and Windows 2000 operating systems.

➤ **Avance Onboard Audio Driver and Applications for Win 9x/ME/2000/NT**

This Onboard Audio drivers for Windows 9x/ME/2000/NT. You have to install the drivers before installing any application for the Onboard Audio.

➤ **P4ISR ITE hardware doctor for Win 9x/ME/2000/NT**

Your motherboard comes with a hardware monitoring IC. By installing this utility Temperature, Fan speed and Voltages can be monitored. It is also possible to set alarms when current system values exceed or fall below pre-set values.

➤ **ITE SIM card reader driver for Win 9x/ME/2000/NT(English)**

If you have reader card, it must be installed.

➤ **ITE SIM card reader driver for Win 9x/ME/2000/NT(Chinese)**

If you have reader card, it must be installed.

➤ **FastCheck Monitoring Utility for Win 9x/ME/2000/NT**

The fastCheck Monitoring utility is used to monitor or perform maintenance on a FastCheck Mirrored (RAID 1) or Striped/Mirrored (RAID 0/1) array. Visual and audible messages are available to warn of possible problems with the disk array or controller.

Select which driver you want to install and click **OK**, or click **Cancel** to abort the driver installation and return to the main menu.

Note : Once you have selected a driver, the system will automatically exit the SOYO CD to begin the driver installation program. When the installation is complete, most drivers require to restart your system before they can become active.

Step 3. Check the Latest Releases

Click the 'Check the latest Releases' button to go the SOYO Website to automatically find the latest BIOS, manual and driver releases for your motherboard. This button will only work if your computer is connected to the internet through a network or modem connection. Make sure to get your modem connection up before clicking this button.

Chapter 5

PROMISE RAID FAMILY DRIVER INSTALLATION



Note: When you need to use RAID function on IDE3 and 4, you must connect compatible IDE device with slot IDE3 and 4.

Promise RAID Family Drivers for Windows 98SE

1. Move cursor to my computer icon.
2. Press mouse right button then press “properties”.
3. Press “Device Manager”.
4. You will see an exclamation mark of yellow color at PCI RAID Controller.
5. Click it.
6. Press driver then press u[update driver.
7. Press next then press next.
8. The RAID driver path is in SOYO CD:\Raid\Promise\Raid Family Driver\Win 9x-ME.

Promise RAID Family Drivers for Windows ME

1. Move cursor to my computer icon.
2. Press mouse right button then press “properties”.
3. Press “Device Manager”.
4. You will see an exclamation mark of yellow color at PCI RAID Controller.
5. Click PCI RAID Controller.
6. Press driver then press update driver.
7. The RAID driver path is in SOYO CD:\Raid\Promise\Raid Family Driver\Win9x-ME.

Promise RAID Family Drivers for Windows 2000

1. First, please copy all files of folder under SOYO CD:\Raid\Promise\Raid Family Driver\Win2000, and fasttrak, readme.txt, and txtsetup.oem, 3 files under SOYO CD:\Raid\Promise\Raid Family Driver\to floppy disk for Win2000 Raid install.

2. When you into the system install screen, press “F6” key first.
3. Then press “S” key.
4. Insert floppy disk for 2000 driver to “A:” disk, then press “Enter” to continue.
5. Select “Win2000 Promise Fasttrak 100(tm) Lite Controller “then press “Enter”.
6. Press “Enter” to continue 2000 setup.

Promise RAID Family Drivers for Windows NT 4.0

1. First, please copy all files of folder under SOYO CD:\Raid\Promise\Raid Family Driver\NT4,and Fasttrak, readme.txt, and txtsetup.oem, 3 files under SOYO CD:\Raid\Promise\Raid Family Driver\ to floppy disk for WinNT Raid install.
2. When you into the system install screen, press “F6” key first.
3. Then press “S” key.
4. Select “Other”, then press “Enter”.
5. Insert floppy disk for NT driver to “A:” disk, then press “Enter”.
6. Select “WinNT Promise Fasttrak 100 (tm) Lite Controller” then press “Enter”.
7. Press “Enter” to continue NT setup.

Chapter 6

ULTRA FAMILY DRIVER INSTALLATION



Note: When you need to use regular IDE function on IDE3 and 4, you must connect compatible IDE device with slot IDE3 and 4.

Ultra Family Driver for Windows 98SE

1. Move cursor to my computer icon.
2. Press mouse right button, then press “properties”.
3. Press “Device Manager”.
4. You will see an exclamation mark of yellow color at PCI mass storage controller in other devices.
5. Click it.
6. Click “Driver” button, then click “Update Driver” button.
7. Press next, then press next.
8. The ultra family driver path is in SOYO CD:\Raid\Promise\ultra family Driver\Win95-98.
9. Click OK, then restart you system.

Ultra Family Driver for Windows NT4.0

1. First, please copy all files of folder under SOYO CD:\Raid\Promise\Ultra Family Driver\NT4, and Ultra, readme.txt, and txtsetup.oem, 3 files under SOYO CD:\Raid\Promise\Ultra Family Driver\to floppy disk for WinNT Ultra100 install.
2. When you into the system install screen, press “F6” key first.
3. Then press “S” key.
4. Select “Other”, then press “Enter”.
5. Insert floppy disk for NT driver to “A:”disk, then press “Enter.
6. Select “WinNT Promise Ultra100(tm) Controller(PDC20265R)”, then press “Enter”.
7. Press “Enter” to continue NT setup.

Ultra Family Driver for Windows ME

1. Move cursor to my computer icon.

2. Press mouse right button, then press “properties”.
3. Press “Device Manager”.
4. You will see an exclamation mark of yellow color at PCI mass storage controller in other devices.
5. Click it.
6. Click “Driver” button, then click “Update Driver” button.
7. Select specify the location of the driver [Advanced], then click next.
8. The ultra family driver path is in SOYO CD:\Raid\Promise\ultra family Driver\WinME.
9. Click finish, then restart you system.

Ultra Family Driver for Windows 2000

1. First, please copy all files of folder under SOYO CD:\Raid\Promise\Ultra Family Driver\Win2000, and Ultra, readme.txt, and txtsetup.oem, 3 files under SOYO CD:\Raid\Promise\Ultra Family Driver\to floppy disk for Win2000 Ultra100 install.
2. When you into the system install screen, press “F6” key first.
3. Then press “S” key.
4. Insert floppy disk for 2000 driver to “A:” disk, then press “Enter” to continue.
5. Select “Win2000 Promise Ultra100 (tm) Controller(PDC20265R)”, then press “Enter”.
6. Press “Enter” to continue 2000 setup.



APPENDIX A

FASTTRAK100

Introduction

WHAT IS THE FASTTRAK100-LITE RAID CONTROLLER?

FastTrak100-Lite provides a cost-effective, high performance onboard RAID solution that adds performance and/or reliability to PC desktops and/or servers using Ultra ATA/100, Ultra ATA/66, or EIDE drives.

FastTrak100-Lite supports striping (RAID 0) or mirroring (RAID 1) for master only.

With striping, identical drives can read and write data in parallel to increase performance. Mirroring increases read performance through load balancing and elevator sorting while creating a complete backup of your files.

A FastTrak100-Lite striped array can double the sustained data transfer rate of Ultra ATA/100 drives. FastTrak100-Lite fully supports Ultra ATA/100 specification of up to 100 MB/sec per drive, depending on individual drive specifications.

FastTrak100-Lite also offers fault tolerant, data redundancy for entry-level network file servers or simply for desktop PC users wanting to continually protect valuable data on their PC. FastTrak100-Lite offers RAID 1 mirroring (for two drives) to protect data. Should a drive that is part of a mirrored array fail, FastTrak100-Lite uses the mirrored drive (which contains identical data) to assume all data handling. When a new replacement drive is later installed, FastTrak100-Lite rebuilds data to the new drive from the mirrored drive to restore fault tolerance.

FastTrak100-Lite's bootable BIOS supports individual drives larger than 8.4GB. With FAT32 and NTFS partitioning, the array can be addressed as one large single volume.

KEYS FEATURES AND BENEFITS

The following information offers an overview of the major features of FastTrak100-Lite. It is divided into two areas: Advanced Hardware Design, and Compatibility.

Advanced Hardware Design	
Features	Benefits
Supports data striping (RAID 0) or mirroring (RAID 1)	Provides dramatic increase in drive performance and/or fault tolerant options. Offers performance customization and data rebuilds from the BIOS menu.
Supports Ultra DMA 5/4/3/2/1/0, DMA 2/1/0	Burst data transfer rates up to 100MB/sec from Ultra ATA/100 drives to boost overall system performance.
PCI Plug-n-Play, PCI Interrupt sharing and <i>coexists</i> with motherboard IDE controllers	Easy to install; support four ATA drives on the FastTrak100-Lite while still supporting 4 devices on motherboard ATA controller.
Supports concurrent dual IDE controller operation	Drive workload is distributed in parallel between members of the array.
Supports IDE bus master operation	Allows multitasking during disk transfers which increase CPU efficiency. The CPU is free to process tasks during IDE data transfers through the PCI Bus to/from system memory.
Utilizes FastBuild™ auto-menu from the FastTrak100-Lite BIOS	Offers pre-set application specific settings which can be optimized for Desktop, Server, or A/V Editing. Has "Auto Setup" option for quick and easy array builds.
Displays status and error checking messages during boot-up	Notifies user of possible errors and allows for recovery of mirrored drive arrays directly from FastBuild™.
Mirroring supports automatic background rebuilds	Fault tolerance can be restored automatically without rebooting

Compatibility	
Features	Benefits
Complies with PCI v2.1 Local Bus standard	Provides highest level of hardware compatibility.
Compliant with PCI IDE Bus Master standard. PCI IDE Bus Master support for Windows 98/95, Windows NT 3.5x, 4.0	Provides 32-bit I/O, IDE Bus Master, and Ultra ATA performance for optimal system performance.
Compatible with Ultra ATA/100, Ultra ATA/66, Ultra ATA/33, EIDE	Works with newest and current IDE drive specifications.
Features LBA and Extended Interrupt/13 drive translation in controller onboard BIOS	Breaks capacity barriers for support of drives greater than 8.4GB in capacity. Offers flexible storage options for space demanding applications.

Getting Started

This section is designed to get you started for installation of your FastTrak100-Lite.



WARNING: Before installing the driver into an existing system, backup any necessary data. Failure to follow this accepted PC practice could result in data loss.

INSTALLING THE HARD DRIVES



WARNING: If you wish to include your current bootable drive using the Windows NT 4.x or Windows 2000 operating system as part of a bootable Mirrored (RAID 1) array on your FastTrak100-Lite, do NOT connect the hard drive to the FastTrak100-Lite controller yet. You MUST install the Windows NT4 or 2000 driver software first to this drive while it is still attached to your regular IDE port.

Hard drives must be Ultra ATA/100, Ultra ATA/66, Ultra ATA/33, EIDE and/or Fast ATA-2 compatible to operate with FastTrak100-Lite RAID. For optimal performance, install all **identical** drives of the same model and capacity. The drives' **matched performance** allows the array to function better as a single drive.

1. *Promise recommends using identical drive as part of a FastTrak100-Lite array. If striping for performance, use two new drives. If mirroring for protection, you can use two new drives OR use an existing drive and a new drive (the new drive must be the same size or larger than the existing drive).*

2. Configure the jumpers of the hard drive you're preparing to connect to the FastTrak100-Lite using the correct "Master / Slave" or "Cable-Select" settings in the positions described in the table below.

NOTE: Sometimes the Master drive with no slave attached is called "Single." The master slave setting differentiates two drives chained on the same connector.

<i>Jumper Settings</i>		
<i># of Drives</i>	<i>IDE Channel 1</i>	<i>IDE Channel 2</i>
<i>1</i>	<i>M</i>	<i>----</i>
<i>2</i>	<i>M</i>	<i>M</i>
<i>3</i>	<i>M & S</i>	<i>M</i>
<i>4</i>	<i>M & S</i>	<i>M & S</i>

M = Master, S = Slave

3. Install the hard drives into the hard drive bays of your system, including the power cables.
4. Attach one Ultra ATA cable to each hard drive. Then attach one cable to the IDE port on the FastTrak100-Lite. The colored edge of the cable(s) indicates pin 1, and the blue cable connector must be attached to the FastTrak100-Lite IDE port.



NOTE: You must use an 80-wire, 40-pin cable when connecting an Ultra ATA/100 hard drive to the FastTrak100-Lite IDE port.

Checking CMOS Settings

For the FastTrak100-Lite to be the bootable IDE controller, confirm in the Standard CMOS Setup that the First Boot Device is set for "SCSI".

CREATING YOUR DISK ARRAY

You will now use the FastBuild BIOS utility to create your array using the attached drives. There are three different scenarios in creating this array. You can create an array for performance, you can create a Security array using new hard drives

(recommended), or you can create a Security array using an existing hard drive and a new hard drive.



WARNING: If creating a Security array using an existing hard drive, backup any necessary data. Failure to follow this accepted PC practice could result in data loss.

1. *Boot your system. If this is the first time you have booted with the FastTrak100-Lite and drives installed, the Promise onboard BIOS will display the following screen.*

FastTrak100-Lite (tm) BIOS Version 1.xx (Build xxxx)
(c) 1995-2000 Promise Technology, Inc. All Rights Reserved.

No array defined . . .

Press <Ctrl-F> to enter FastBuild (tm) Utility
Or press <ESC> key to continue booting the system.

2. *Press <Ctrl-F> keys to display the FastBuild (tm) Utility Main Menu*
3. *Press "1" to display the Auto Setup Menu below. This is the fastest and easiest method to creating your first array.*

FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.

[Auto Setup Options Menu]

Optimize Array for: Performance
Typical Application usage: A/V Editing

[Auto Setup Configuration]

ModeStripe
Drives used in Array2
Array Disk Capacity..... 16126

[Keys Available]

[↑] Up [↓] Down [←, →, Space] Change Option [ESC] Exit [Ctrl-Y] Save

Creating an Array for Performance

NOTE: FastTrak100-Lite allows users to create striped arrays with 1, 2 drives.

To create an array for best performance, follow these steps:

1. Using the Spacebar, choose "Performance" under the **Optimize Array for** section.
2. Select how you will use your PC most under the **Typical Application usage** section. The choices are A/V Editing, Server, and Desktop (the default).
3. Press <Ctrl-Y> keys to Save and create the array.
4. Reboot your system.
5. Once the array has been created, you will need to FDISK and format the array as if it were a new single hard drive.
6. Proceed to install the FastTrak RAID Drivers from the SOYO CD.

Creating a Security Array With New Drives

NOTE: FastTrak100-Lite permit only two drives to be used for a single Mirrored array in Auto Setup.

To create an array for data protection using new hard drives, follow these steps:

1. Using the Spacebar, choose "Security" under the **Optimize Array for** section.
2. Press <Ctrl-Y> keys to Save your selection.
3. The window below will appear.

Do you want the disk image to be duplicated to another? (Yes/No) Y - Create and Duplicate N - Create Only

4. Press "N" for the Create Only option.
5. A window will appear almost immediately confirming that your Security array has been created. Press any key to reboot the system

Array has been created. <Press Any Key to Reboot>
--

6. Proceed with normal FDISK and format procedures as if you had just installed a new hard drive.
7. Once the arrayed drives have been formatted, proceed to install your OS & then the FastTrak RAID Drivers from the SOYO CD.

Creating a Security Array With An Existing Data Drive

NOTE: FastTrak100-Lite permits only two drives to be used for a single Mirrored array in Auto Setup.

You would use this method if you wish to use a drive that already contains data and/or is the bootable system drive in your system. You will need another drive of identical or larger storage capacity.



WARNING: Backup any necessary data before proceeding. Failure to follow this accepted PC practice could result in data loss.



WARNING: If you wish to include your current bootable drive using the Windows NT 4.x or Windows 2000 operating system as part of a bootable Mirrored (RAID 1) array on your FastTrak100-Lite, do NOT connect the hard drive to the FastTrak100-Lite controller yet. You MUST install the Windows NT4 or 2000 driver first to this drive while it is still attached to the regular IDE port. For all other Operating Systems, proceed here.

Follow these steps:

1. *Using the Spacebar, choose “Security” under the **Optimize Array for** section.*
2. *Press <Ctrl-Y> keys to Save your selection. The window below will appear:*

Do you want the disk image to be duplicated to another? (Yes/No) Y - Create and Duplicate N - Create Only

3. *Press “Y” for the Create and Duplicate option. The window below will appear asking you to select the Source drive to use. FastBuild will copy all data from the Source drive to the Target drive.*

Source Disk		
Channel:ID (MB)	Drive Model	Capacity
Target Disk		
Channel:ID Capacity (MB)	Drive Model	
[Please Select A Source Disk]		
Channel:ID (MB)	Drive Model	Capacity
1 :Master	QUANTUMCR8.4A	8063
2 :Master	QUANTUMCR8.4A	8063
[↑] Up [↓] [ESC] Exit [Ctrl-Y] Save		

- Use the arrow keys to choose which drive contains the existing data to be copied.
- Press [Ctrl-Y] keys to Save selection and start duplication. The following progress screen will appear.

```

Start to duplicate the image . . .
Do you want to continue? (Yes/No)
Y – Continue  N – Abort

```

- Select “Y” to continue. If you choose “N” , you will be returned to step 1.
- Once complete, the following screen will appear confirming that your Security array has been created. Press any key to reboot the system

```

Array has been created.
<Press Any Key to Reboot>

```

- Proceed to install your OS & the FastTrak RAID drivers from the SOYO CD.

Using FastBuild™ Configuration Utility

The FastBuild™ Configuration Utility offers several menu choices to create and manage the drive array on the FastTrak100-Lite. For purposes of this manual, it is assumed you have already created an array in the previous chapter and now wish to make a change to the array or view other options.

VIEWING FASTTRAK100-LITE BIOS SCREEN

When you boot your system using the FastTrak100-Lite on-board RAID with drives installed, the FastTrak BIOS will detect the drives attached and show the following screen.

```
FastTrak100-Lite (tm) BIOS Version 1.xx (Build xx)
(c) 1995-2000 Promise Technology, Inc. All Rights Reserved.

Scanning IDE drives . . . . .
```

If an array exists already, the BIOS will display the following screen showing the card's BIOS version and status of the array.

```
FastTrak100-Lite (tm) BIOS Version 1.xx (Build xxxx)
(c) 1995-2000 Promise Technology, Inc. All Rights Reserved.

ID           MODE   SIZE   TRACK-MAPPING   STATUS
1 *         2+0 Stripe 16126M       611/128/32     Functional

Press <Ctrl-F> to enter FastBuild (tm) Utility....
```

The array status consists of three possible conditions: Functional, Critical, Offline.

Functional - *The array is operational.*

Critical - A mirrored array contains a drive that has failed or disconnected. The remaining drive member in the array is functional. However, the array has temporarily lost its ability to provide fault tolerance. The user should identify the failed drive through the FastBuild™ Setup utility, and then replace the problem drive.

Offline - A striped array has 1 drive that has failed or been disconnected. When the array condition is “offline,” the user must replace the failed drive(s), then restore data from a backup source.

NAVIGATING THE FASTBUILD™ SETUP MENU

When using the menus, these are some of the basic navigation tips: Arrow keys highlights through choices; [Space] bar key allows to cycle through options; [Enter] key selects an option; [ESC] key is used to abort or exit the current menu.

Using the Main Menu

This is the first option screen when entering the FastBuild™ Setup.

FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.

[Main Menu]

<i>Auto Setup</i>	<i>[1]</i>
<i>View Drive Assignments.....</i>	<i>[2]</i>
<i>View Array.....</i>	<i>[3]</i>
<i>Delete Array.....</i>	<i>[4]</i>
<i>Rebuild Array.....</i>	<i>[5]</i>
<i>Controller Configuration.....</i>	<i>[6]</i>

[Keys Available]

Press 1...6 to Select Option [ESC] Exit

To create a new array automatically, follow the steps under “Creating Arrays

Automatically”. SOYO recommends this option for most users.

To view drives assigned to arrays, see “Viewing Drive Assignments”.

To delete an array (but not delete the data contained on the array), see “Deleting An Array”.

To rebuild a mirrored array, see “Rebuilding an Array”.

To view controller settings, see “Viewing Controller Configuration”.



NOTE: After configuring an array using FastBuild, you should FDISK and format the arrayed drive(s) if you are using new, blank drives. Depending on the type of array you are using.

CREATING ARRAYS AUTOMATICALLY

The Auto Setup <1> selection from the Main Menu can intuitively help create your disk array. It will assign all available drives appropriate for the disk array you are creating. After making all selections, use Ctrl-Y to Save selections. FastBuild will automatically build the array.

FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.

[Auto Setup Options Menu]

Optimize Array for: Performance
Typical Application usage: A/V Editing

[Auto Setup Configuration]

ModeStripe
Spare Drive Count..... 1
Drives used in Array.....2
Array Disk Capacity..... 16126

[Keys Available]

[↑] Up [↓] Down [←, →, Space] Change Option [ESC] Exit [Ctrl-Y] Save

Optimize Array For

Select whether you want Performance (RAID 0), Security (RAID 1) under the “Optimize Array for” setting.

Performance (RAID 0 Striping)

Supports the maximum performance. The storage capacity equals the number of drives times the capacity of the smallest drive in the disk array.

NOTE: FastTrak100-Lite permits striped arrays using 1, 2 drive attached in Auto Setup mode.

Security (RAID 1 Mirroring)

Creates a mirrored (or fault tolerant) array for data security.

NOTE: Under the Security setting, FastTrak100-Lite permits two drives to be used for a single Mirrored array only.

Defining Typical Application Usage

Allows the user to choose the type of PC usage that will be performed in order to optimize how FastTrak100-Lite handles data blocks to enhance performance. Your choice will determine the block size used. You may choose from: A/V Editing (for audio/video applications, or any similar application that requires large file transfers), Server (for numerous small file transfers), or Desktop (a combination of large and small file sizes).

NOTE: *If you wish to customize the settings of individual disk arrays (such as block size), you must manually create disk arrays with the Define Array <3> option from the Main Menu.*

VIEWING DRIVE ASSIGNMENTS

The View Drive Assignments <2> option in the Main Menu displays whether drives are assigned to a disk arrays or are unassigned.

Under the “Assignment” column, drives are labeled with their assigned disk array or shown as “Free” if unassigned. Such “Free” drives can be used for a future array or used as a spare drive when a drive fails in a mirrored array. Unassigned drives are not accessible by the OS. The menu also displays the data transfer mode that relates to speed used by each drive (U5 refers to 100MB/sec transfers, U4 refers to 66MB/sec transfers, etc...)

FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.
[View Drive Assignments]

Channel:ID	Drive Model	Capacity(MB)	Assignment	Mode
1 : Master	QUANTUMCR8.4A	8063	Array 1	U5
1 : Slave	QUANTUMCR8.4A	8063	Free	U5
2 : Master	QUANTUMCR8.4A	8063	Array 1	U5

[Keys Available]

[↑] Up [↓] Down [ESC] Exit Mode (U=UDMA, P=PIO, D=DMA)

MANUALLY CREATING AN ARRAY

The Define Array <3> option from the Main Menu allows users to begin the process of manually defining the drive elements and RAID levels for one or multiple disk arrays attached to FastTrak100-Lite. Users will commonly create one or two drive arrays with FastTrak100-Lite, though this can support a maximum of four arrays¹.

NOTE: For most installations, Promise recommends the <1> Auto Setup for easy disk array creation.

¹ A user may use a single drive in either striping or spanning mode with FastTrak100. In this rare scenario, the card will create an individual array ID but will offer conventional controller performance, depending on the drive type. At a later time, a second drive can be added to the array and the array re-created to support RAID 1 mirroring.

FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.
[Define Array Menu]

Array No	RAID Mode	Total Drv	Capacity(MB)
Status			
Array 1	Stripe	2	16126
Functional			
Array 2	—	—	—
Array 3	—	—	—
Array 4	—	—	—

[Keys Available]

Note: * — Bootable Array

[↑] Up [↓] Down [ESC] Exit [Enter] Select [Space] Change Boot Drive

1. *To manually create an array from the Define Array Menu, use the arrow keys to highlight the array number you wish to define, and press [Enter] to select.*
2. *The Define Array Menu will next appear that allows drive assignments to the disk array (see next page).*

Selecting Array Type

1. *Under the Definition section of this menu, highlight the Array # for which you want to assign a RAID level.*
2. *Use the [Space] key to cycle through three array types: Performance (RAID 0 Striping), Security (RAID 1 Mirroring).*

FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.
[Define Array Definition Menu]

Array No	RAID Mode	Total Drv	Capacity(MB)
Status Array 1 Functional	Stripe	2	16126

Stripe Block: 64 KB

[Drive Assignments]

Channel:ID	Drive Model	Capacity (MB)
Assignment 1 : Master	QUANTUMCR8.4A	8063
1 : Slave	QUANTUMCR8.4A	8063
2 : Master	QUANTUMCR8.4A	8063

[Keys Available]

[↑] Up [↓] Down [ESC] Exit [Space] Select [Ctrl-Y] Save

Selecting Stripe Block

For RAID 0 Striped arrays only, you may manually select the “stripe block size.” Use the Spacebar to scroll through choices progressing as follows (1, 2, 4, 8 , 16 . . . 1024).

The size selected affects how FastTrak100-Lite sends and retrieves data blocks from the drives. You will need to perform your own testing to determine how the data block size is affecting your particular use of the array. In general, a larger block size is better when handling large data transfers (such as in A/V editing or graphics) while a smaller block size is better when handling e-mail and other common server data. The default is 64K.

Assigning Drive(s) to Array

1. Under the [Drive Assignments] section, highlight a drive using the [↑] Up [↓] keys.

2. *With the [Space] bar key, change the Assignable option to “Y” to add the drive to the disk array.*
3. *Press <Ctrl-Y> to save the disk array information. Depending on the array type selected, the following scenarios will take place:*
 - a) If choosing a Striping, array, the initial Define Array Menu screen will appear with the arrays defined. From there you may ESC to exit and return to the Main Menu of FastBuild.
 - b) If you selected a Mirroring array for two drives, there is an additional window that appears as described in order to create the array. To do this you will use either two brand new drives, or one drive that contains existing data that you wish to mirror.

Creating A Mirrored Array Using New Drives

As described in the Drive Assignments Option section above, if you selected a mirroring array and wish to use two new assigned drives, follow the directions here.

1. After assigning new drives to a Mirroring array and saving the information with <Ctrl-Y>, the window below will appear.

Do you want the disk image to be duplicated to another? (Yes/No)
Y - Create and Duplicate
N - Create Only

2. Press “N” for the Create Only option.
3. A window will appear almost immediately confirming that your Security array has been created. Press any key to reboot the system

Array has been created.
<Press Any Key to Reboot>

Adding Fault Tolerance to an Existing Drive

FastTrak100-Lite will create a mirrored array using an existing system drive with data. You must assign the existing drive and another drive of same or larger capacity to the Mirroring array. The BIOS will send the existing data to the new blank drive.



WARNING: Backup any necessary data before proceeding. Failure to follow this accepted PC practice could result in data loss.



WARNING: If you wish to include your current bootable drive using the Windows NT 4.x or Windows 2000 operating system as part of a bootable Mirrored (RAID 1) array on your FastTrak100-Lite, do NOT connect the hard drive to the FastTrak100-Lite controller yet. You MUST install the Windows NT4 or 2000 driver software first (see page 121) to this drive while it is still attached to the regular IDE port. For all other Operating Systems, proceed here.

1. *After assigning the drives to a Mirroring array, press <Ctrl-Y> keys to Save your selection. The window below will appear.*

Do you want the disk image to be duplicated to another? (Yes/No) Y - Create and Duplicate N - Create Only

2. *Press “Y” for the Create and Duplicate option. The window below will appear asking you to select the Source drive to use. FastBuild will copy all data from the Source drive to the Target drive.*

Source Disk	
Channel:ID	Drive Model
Capacity (MB)	
Target Disk	
Channel:ID	Drive Model
Capacity (MB)	
[Please Select A Source Disk]	
Channel:ID	Drive Model
Capacity (MB)	
1 :Master QUANTUMCR8.4A	8063
2 :Master QUANTUMCR8.4A	8063
[↑] Up [↓] [ESC] Exit [Ctrl-Y] Save	

- Use the arrow keys to choose which drive contains the existing data to be copied.



WARNING: All target drive data will be erased. Make sure you choose the correct drive.

- Press [Ctrl-Y] keys to Save selection and start duplication. The following confirmation screen will appear:

Start to duplicate the image . . . Do you want to continue? (Yes/No) Y – Continue N - Abort

- Select “Y” to continue. If you choose “N” , you will be returned to step 1.
- Once “Y” is selected, the following progress screen will appear. The process will take a few minutes.

Please Wait While Duplicating The Image  10% Complete

- Once mirroring is complete, the following screen will appear confirming that your Security array has been created. Press any key to reboot the system

Array has been created. <Press Any Key to Reboot>
--

Making a FastTrak100-Lite Disk Array Bootable



WARNING: In order for you to boot from an array on the FastTrak100-Lite, your PC or server must be configured in the CMOS Setup to use the FastTrak100-Lite as a bootable device (versus the onboard controller or another add-in card).

1. Once you have returned to the Define Array Menu window, you will see the array(s) you have created. You now may use the menu to select which previously-defined array will be used as the bootable array.

```
FastBuild (tm) Utility 1.xx DELL (c) 1995-2000 Promise Technology, Inc.
[ Define Array Menu ]

  Array No      RAID Mode    Total Drv  Capacity(MB)
  Status
*  Array 1      Stripe        2          13044
Functional

Note: * — Bootable Array

[↑] Up [↓] Down  [ESC] Exit  [Enter] Select  [Space] Change Boot Drive
```

2. Highlight the array which you want to boot from using the [↑] Up [↓] Down keys.
3. Press the [Space] bar key.
4. An * asterisk will appear next to the array number indicating it as bootable. The system will now recognize this array as the first array seen
5. The system will then use this bootable array as the (fixed) boot C: drive.

NOTE: The bootable array must contain your configured operating system.

DELETING AN ARRAY

The Delete Array <4> Menu option allows for deletion of disk array assignments.

This is not the same as deleting data from the drives themselves. If you delete an array by accident (and before it has been used again), the array can normally be recovered by defining the array identically as the deleted array.



WARNING: Deleting an existing disk array could result in its data loss. Make sure to record all array information including the array type, the disk members, and stripe block size in case you wish to undo a deletion.

FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.

[Delete Array Menu]

Array No	RAID Mode	Total Drv	Capacity(MB)
Array 1	Stripe	2	16126
Array 2	_____	_____	_____
Array 3	_____	_____	_____
Array 4	_____	_____	_____

[Keys Available]

[↑] Up [↓] Down [ESC] Exit [Del] Delete

1. To delete an array, highlight the Array you wish to delete and press the [Del] key.
2. The View Array Definition menu will appear (see below) showing which drives are assigned to this array.

FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.
[Define Array Menu]

Array No	RAID Mode	Total Drv	Capacity(MB)
Array 1	_____	_____	_____
Stripe Block: 64 KB			
[Drive Assignments]			
Channel:ID	Drive Model		Capacity (MB)
Assignment			
1 : Master	QUANTUMCR8.4A	8063	Y
2 : Master	QUANTUMCR8.4A	8063	Y

3. Confirm yes to the following warning message with the <Ctrl-Y> key to continue array deletion:

Are you sure you want to delete this array?
Press Ctrl-Y to Delete, others to Abort

4. After deleting the array, you should create a new array using Auto Setup or the Define Array menu from the FastBuild Main Menu.

REBUILDING A MIRRORED ARRAY

The Rebuild Array <5> Menu option is necessary to recover from an error in a mirrored disk array. You will receive an error message when booting your system from the FastTrak BIOS.

NOTE: Drives MUST be replaced if they contain any physical errors.

Follow these steps **BEFORE** using the Rebuild Array menu option:

1. On bootup, the FastTrak100-Lite Startup BIOS will display an error message identifying which drive has failed.
2. Press <Ctrl-F> keys to enter FastBuild Main Menu.
3. Select submenu Define Array <3>.
4. Select the failed array and identify the Channel and ID of the failed drive.
5. Power off and physically remove the failed drive.
6. Replace the drive with an identical model.
7. Reboot the system and enter the FastBuild Main Menu.
8. Select the <5> Rebuild Array option. The following screen will appear.

<i>FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.</i>				
[Rebuild Array Menu]				
Array No	RAID Mode	Total Drv	Capacity(MB)	Status
Array 1	Mirror		2	16126
Critical				
Array 2	—	—		
	—		—	
Array 3	—	—		
	—		—	
Array 4	—	—		
	—		—	
[Keys Available]				
[↑] Up [↓] Down [ESC] Exit [Enter] Select				

9. Highlight the array whose Status is “Critical”.
10. Press [Enter]. The following screen will then appear.

FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.
[Rebuild Array Menu]

Array No	RAID Mode	Total Drv	Status
Array 2	Mirror	2	Critical

Stripe Block: Not Available

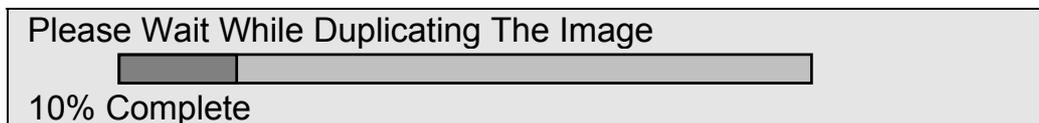
[Select Drive for Rebuild]

Channel:ID	Drive Model	Capacity (MB)
1 : Slave	QUANTUMCR8.4A	8063

[Keys Available]

[↑] Up [↓] Down [ESC] Exit [Enter] Select

11. Under [Select Drive for Rebuild], highlight the replacement drive.
12. Press [Enter] and confirm that the data will be copied on to the selected drive. All data on the replacement drive will be written over with mirrored information from the array drive. A progress bar will appear as below.



Please Wait While Duplicating The Image

10% Complete

13. Once the rebuild process is complete, the user will be asked to reboot the system.

VIEWING CONTROLLER SETTINGS

The Controller Configuration <6> menu selection allows you to enable or disable the FastTrak100-Lite BIOS from halting (the default) if it detects an error on boot up. You may also view the system resources (Interrupt and I/O port address) of FastTrak's data channels.

FastBuild (tm) Utility 1.xx (c) 1995-2000 Promise Technology, Inc.

[Adapter Configuration - Options]

Halt On Error: Enable

[System Resources Configuration]

Channel 1 (IDE1) Interrupt : AI/O Port : FFF0
Channel 2 (IDE2) Interrupt : AI/O Port : FFA8

[Keys Available]

[←, →, Space] Change Option [ESC] Exit

Halting FastTrak BIOS On Bootup Errors

The [Adapter Configuration – Options] section allows you to enable or disable FastTrak100-Lite to Halt operation at the BIOS startup screen should an error be detected. This is the only option that can be changed on this screen.

Installing Drivers

This section details the FastTrak100-Lite driver installation when used with various operating systems. The software includes the driver necessary to identify FastTrak100-Lite to the operating system.

- For Windows 2000, see below.
- For Windows 95/98, see page 124.
- For Windows 4.x, see page 127

WINDOWS 2000

Installing Driver During New Windows 2000 Installation

- 1a. Floppy Install: Boot the computer with the Windows 2000 installation diskettes.
- 1b. Floppyless Install: Boot from floppy and type “WINNT”. After files have been copied, the system will reboot. On the reboot, press <F6> after the message “Setup is inspecting your computer’s hardware configuration...” appears.

- 1c. CD-ROM Install: Boot from the CD-ROM. Press <F6> after the message “Press F6 if you need to install third party SCSI or RAID driver” appears.
2. When the “Windows 2000 Setup” window is generated, press “S” to Specify an Additional Device(s)
3. Press “O” to select “Other” and press the “Enter” key.
4. Insert the diskette* into drive A: and press “Enter” key.
5. Choose “Win2000 FastTrak100-Lite” from the list that appears on screen, then press the “Enter” key.
6. The Windows 2000 Setup screen will appear again saying “Setup will load support for the following mass storage devices:” The list will include “Promise FastTrak100-Lite”..

NOTE: If you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, continue to step 7.

7. From the Windows 2000 Setup screen, press the Enter key. Setup will now load all device files and then continue the Windows 2000 installation.

* Copy the FastTrak Win2000 drivers from the SOYO CD to a floppy disk.

Installing Driver in Existing Windows 2000 System



WARNING: If you will be moving the boot drive containing the existing Windows 2000 operating system to a mirrored RAID 1 array on the FastTrak100-Lite, the FastTrak100-Lite driver **MUST** be loaded to the hard drive while it is still attached to the regular IDE port. Do not attach this drive or any other hard drive to the FastTrak100-Lite controller card before completing this step.

During first boot in Window 2000, setup will show a “New Hardware Found” dialog box. Under Windows 2000, the “PCI Mass Storage Controller” will be displayed.

1. In the dialog box, choose “Driver from disk provided by hardware manufacturer” button.
2. In the CD-Rom drive, insert the SOYO CD Driver.
3. Type “D:\RAID\promise\Driver\Win2000” in the text box. Press “Enter”.
Assuming the D: is your CD-Rom.
4. Choose “Win2000 FastTrak100-Lite Controller” from the list that appears on screen, then press the “Enter” key.
5. The Windows 2000 Setup screen will appear again saying “Setup will load support for the following mass storage devices – Win2000 Promise FastTrak100-Lite controller”. The FastTrak100-Lite driver will now be copied on to the system and entered into the Windows 2000 driver database.
6. When the "System Settings Change" dialog box appears, remove the floppy diskette and click on “Yes” to restart the system. Windows 2000 will then restart for the driver installation to take effect.

Windows 95/98

Installing Drivers During Windows 95/98 Installation

The following three sections detail the installation of the FastTrak100-Lite drivers while installing Windows 95/98. If you're installing the FastTrak100-Lite drivers on a system with Windows 95/98 already installed, see "Installing Drivers with Existing Windows 95/98" on page 126.

Windows 98

1. After making an array & configuring the hard drive(s), partition and format your hard drive(s), if necessary.
2. Install Windows 98 normally.
3. After installation, go the "Start" menu and choose "Settings."
4. From the "Settings" menu, choose "Control Panel."
5. In the "Control Panel" window, double-click on the "System" icon.
6. In the "System" window, choose the "Device Manager" tab.
7. In the hierarchical display under "Other Devices" is a listing for "PCI RAID Controller." Choose it and then press the "Properties" button.
8. Choose the "Driver" tab in the "Properties" window, choose "Update Driver," and then press "Next."
9. Choose "Search for a better driver than the one your device is using now (recommended)," then press "Next."
10. Insert the "SOYO CD" into the CD-Rom drive, then press "Next."
11. Choose "Specify Location," and then type "D:\RAID\promise\Driver\Win9x-ME" in the text box. Assuming D: is your CD-Rom.
12. Press the "Next" button. A message informing you that Windows 98 has found "Win95-98 FastTrak100-Lite (tm) Controller" should appear.
13. Press "Next," then "Finish," then "Yes" when asked if you want to restart your computer.

Windows 95

1. After making an array & configuring the hard drives, partition and format your hard drive(s), if necessary.
2. Install Windows 95 normally.
3. After installation, go to the “Start” menu and choose “Settings.”
4. From the “Settings” menu, choose “Control Panel.”
5. In the “Control Panel” window, double-click on the “System” icon.
6. In the “System” window, choose the “Device Manager” tab.
7. In the hierarchical display under “Other Devices” is a listing for “PCI Mass Storage Controller.” Choose it and then press the “Properties” button.
8. Choose the “Driver” tab in the “Properties” window, and then press the “Update Driver” button.
9. When asked if you want Windows to search for the driver, choose “Yes (recommended).”
10. Insert the “SOYO CD” into the CD-Rom drive, then press “Next.”
11. When Windows informs you that it was unable to find the drivers, press “Other Locations...”
12. In the “Select Other Location” dialog box, type
“D:\RAID\promise\Driver\Win9x-ME”. Assuming D: is your CD-Rom drive.
13. Press the “Next” button. A message informing you that Windows 95 has found
“Win95-98 FastTrak100-Lite (tm) Controller” should appear then press “Finish”
14. Choose “Yes” when asked if you wish to restart the system.

Installing Drivers with Existing Windows 95/98

The following three sections detail the installation of FastTrak100-Lite drivers on a system that has Windows 95/98 already installed. If you're installing the FastTrak100-Lite drivers on a system during a Windows 95/98 installation, see "Installing Drivers During Windows 95/98 Installation" on page 124.

Windows 98

1. The "Add New Hardware Wizard" will appear, informing you that it has found a "PCI RAID Controller."
2. Check the "Search for the best driver for your device" box and click the Next button.
3. Check the "Specify a Location" box and click Next button.
4. Type "D:\RAID\promise\Driver\Win9x-ME" in the text box. Assuming that D: is your CD-Rom.
5. Insert the "SOYO CD" in the CD-Rom drive.
6. Click on "Next." The Add New Hardware wizard will say it has found "Win95-98 FastTrak100-Lite controller".
7. Click on "Next," and then on "Finish."
8. Choose "Yes" when asked if you want to restart your computer.

Windows 95

1. After making an array and configuring the hard drives, power up the system and boot Windows.
2. The "Update Device Drive Wizard" will appear, informing you that it has found a "PCI Mass Storage Controller."
3. Insert the "SOYO CD" in the CD-Rom drive.
4. Type "D:\RAID\promise\Driver\Win9x-ME" in the text box, then click on "Next." Assuming the D: is your CD-Rom. Windows will inform you that it has found the "Win95-98 FastTrak100-Lite controller".
5. Click on "Finish" and re-start the system.

Confirming Driver Installation in Windows 98/95

To confirm that the driver has been properly loaded in Win 95/98, perform the following steps:

1. Choose "Settings" from the "Start" menu.
2. Choose "Control Panel," and then double-click on the "System" icon.
3. Choose the "Device Manager" tab, and then click the "+" in front of "SCSI & RAID controllers." "Win95-98 Promise FastTrak100-Lite controller" should appear

WINDOWS NT4

Installing Drivers During Windows NT 4.0 Installation

1. Start the system installation by booting from the Windows NT disk:
 - a) Floppy install: boot the system with the Windows NT installation diskettes.
 - b) Floppyless install: boot from floppy and type "WINNT /B". After files have been copied, the system will reboot. On the reboot, press the "F6" key when the message "Setup is inspecting your computer's hardware configuration..." appears.
 - c) CD-ROM disk install: boot from the CD-ROM disk and press the "F6" key when the message "Setup is inspecting your computer's hardware configuration..." appears.
2. When the "Windows NT Setup" window is generated, press "S" to Specify an Additional Device(s).
3. Press "O" to select "Other" and press the "Enter" key.
4. Insert the diskette* into drive A: and press the "Enter" key.
5. Choose "Win NT FastTrak100-Lite (tm) Controller" from the list that appears on screen, then press the "Enter" key.

6. The Windows NT Setup screen will appear again saying "Setup will load support for the following mass storage devices:" The list will include "Win NT FastTrak100-Lite (tm) controller".

NOTE: If you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, continue to step 7.

7. From the Windows NT Setup screen, press the Enter key. Setup will now load all device files and then continue the Windows NT installation.
8. After a successful installation, the "SCSI Adapter Setup" box will show that the "Win NT FastTrak100-Lite (tm) Controller" driver has been installed.

* Copy the Windows NT drivers from the SOYO CD to a floppy disk.

Installing Driver with Existing Windows NT 4.0



WARNING: If you plan to move your boot drive to a mirrored RAID 1 FastTrak array, hard drives should NOT be connected to the FastTrak100-Lite controller before performing the following procedure. The FastTrak100-Lite drivers must be loaded on the system hard drive (running under the existing hard drive controller) before any hard drives are connected to the FastTrak100-Lite controller card.

1. Choose "Settings" from the "Start" menu.
2. Choose "Control Panel" from the "Settings" menu.
3. Double-click on the "SCSI Adapters" icon, which generates the "SCSI Adapters" dialog box.
4. Choose "Drivers," and then press "Add."
5. In the "Install Drivers" dialog box, press "Have Disk..."
6. When the "Install From Disk" appears, insert the "SOYO CD" in the CD-Rom drive.

7. Type "D:\RAID\promise\Driver\Win9x-ME" in the text box window, then choose "OK." Assuming that D: is your CD-Rom.
8. When the "Install Driver" dialog box appears, select "Win NT FastTrak100-Lite Controller" and then press "OK."
9. When the "Select SCSI Adapter Option" dialog box appears, press "Install."
10. After a successful installation, the "SCSI Adapter Setup" box will show that the "Win NT FastTrak100-Lite Controller" has been installed.
11. Power off your system and install the hard disk in the FastTrack-100-Lite Controller.

Removing the Driver from Windows NT 4.x

1. In "Start" Button choose "Control Panel" in "Setup" group.
2. In "Control Panel," select "SCSI Adapter," next choose "Drivers" label
3. Choose "Remove" button.
4. After successful removing, the "SCSI Adapter Setup" box will show that "Win NT FastTrak100-Lite RAID Controller" has been removed.

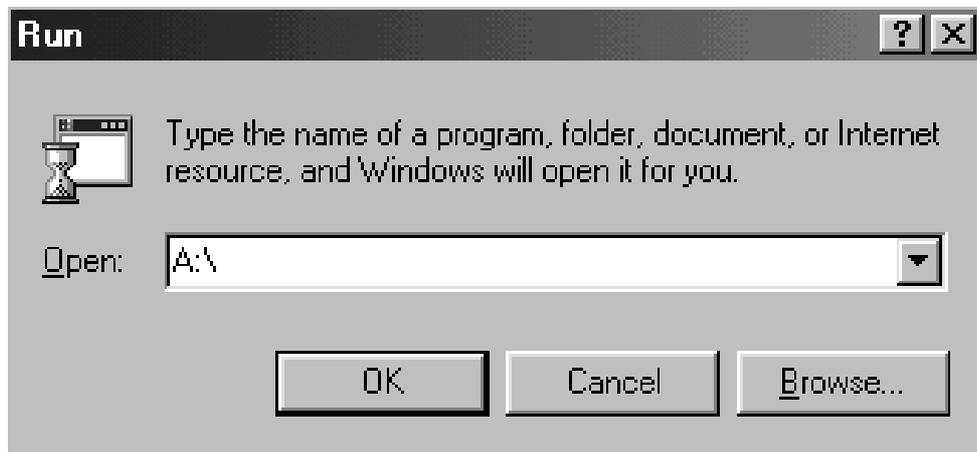
Using The FastCheck™ Monitoring Utility

You can monitor the operating status of all arrays and drives configured on the FastTrak100-Lite using the supplied FastCheck monitoring utility for Windows-based operating systems. FastCheck generates visual and audible messages alerting you of possible problems with the disk array or controller.

FastCheck visually identifies the physical location of attached drives on the FastTrak100-Lite by IDE channel (1 or 2) and setting (Master/Slave/Cable-Select). It also displays which drives are included as part of individual arrays. Administrators can customize FastCheck to maintain operating logs and event notification, set Password access to the utility, and schedule maintenance on Mirrored (RAID 1) or a Striped/Mirrored (RAID 0/1) arrays.

INSTALLING FASTCHECK

1. *From the Start Button on the Windows Taskbar, choose Run.*
2. *Insert Promise FastCheck Utility Diskette.*
3. *In the Run dialog box, type in "A:\\" and click OK.*



4. *Follow the directions from the setup program.*
5. *During installation, click YES when prompted to run the utility on every startup. If NO is selected, FastCheck will not initialize during startup. You may manually execute the utility via the Start button.*

NOTE: Promise recommends to have FastCheck load during Startup. This insures you that it will be ready to post alerts on errors.

RUNNING FASTCHECK

As described in the Installation section, the default option for FastCheck is to load during startup of Win95/98/NT/2000. It appears minimized on the taskbar under Win 95/98/NT4/2000/Millennium (see below).



To start FastCheck, double-click on the FastCheck icon on the taskbar (above) or you may also use the Taskbar Start/Promise/FastTrak/FastCheck menus shown below.



CLOSING FASTCHECK

Once FastCheck is opened (either automatically on startup or manually), the monitoring utility remains running in the background even if the user “closes” the FastCheck window.

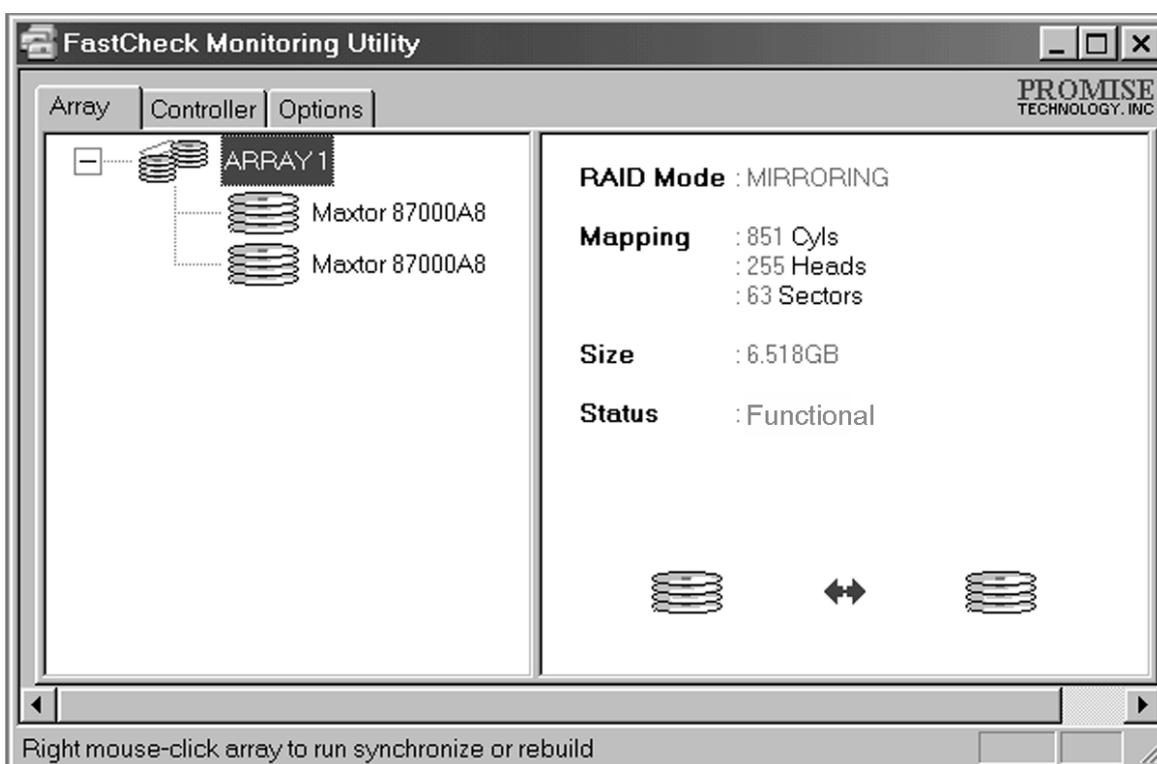
To completely shut down FastCheck, perform the following steps.

1. Right-click the FastCheck icon on the Taskbar.
2. Select Exit from the pop-up window.

3. FastCheck will no longer be running and will no longer be monitoring the array.

USING FASTCHECK ARRAY WINDOW

Once FastCheck is selected, the FastCheck Monitoring Utility window will appear. The main pane has three information window tabs: Array, Controller, and Options. The user can switch screens by clicking on the tab. The Array Window is the active screen by default as shown below:



The Array Window (see above) displays information about the arrays configured on your FastTrak100-Lite through the FastBuild BIOS. From this window, you can also perform data Synchronization of mirrored arrays, or Rebuild data from one drive to a replacement drive within a mirrored array.

While the Array Window does not allow you to change the array configurations directly, it clearly identifies which drives are associated with each array shown in the left pane.

Viewing Array Information

By left-clicking on the Array #, the right pane shows the following information categories for that array:

RAID mode: (*Striping, Mirroring, Mirroring & Striping, Spanning*)

Mapping: (*similar to physical drive specifications*) describing # of cylinders, heads, and sectors of the array's "virtual" drive as seen by the system

Size: *Storage capacity of the array*

Status: (*Functional, Critical, Offline*)

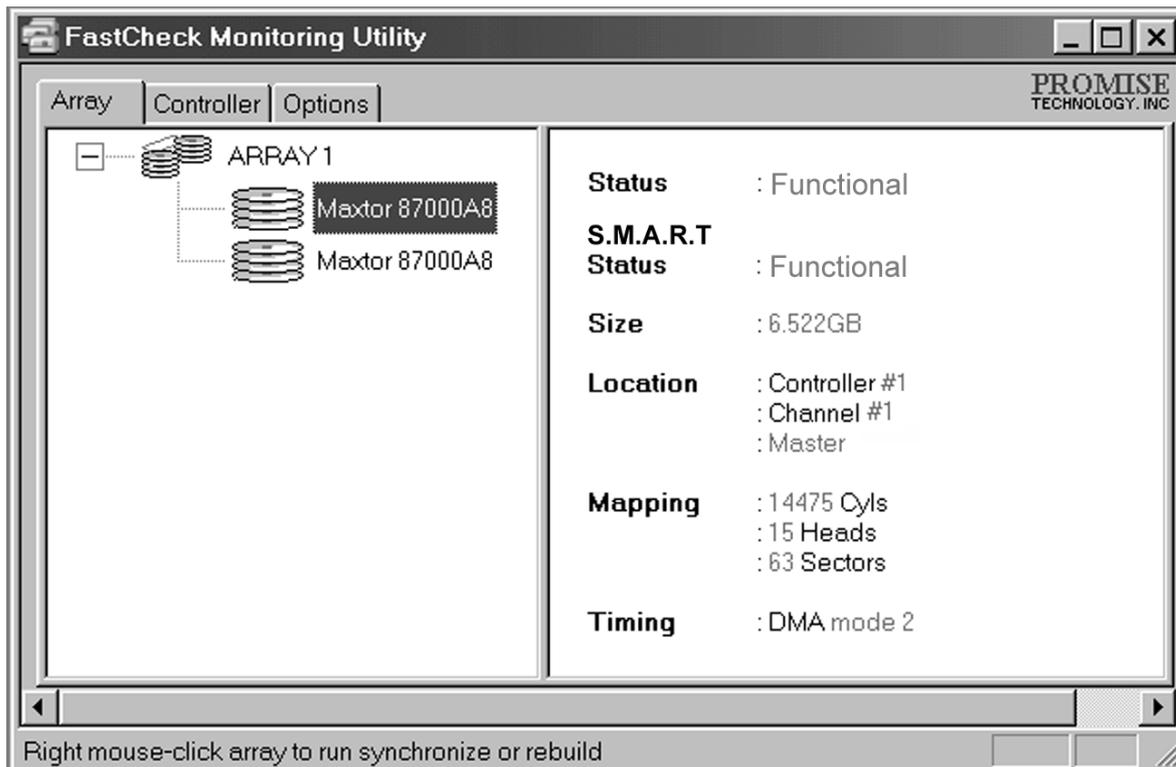
Functional: *Means the array is providing full functionality*

Critical: *Used only in reference to a Mirroring array (RAID 1). A problem has been detected in one of the drives of the array and the drive has been taken "offline." However, a "critical" array will continue to save and retrieve data from the remaining working drive(s). SOYO recommends replacing the failed drive as soon as possible since a "Critical" array offers no data redundancy.*

Offline: *This would appear most commonly within a RAID 0 or Spanning array. The "Offline" results from a drive having failed which has taken the entire array "offline." In this case, you have likely lost data. Fix/replace the drive that has failed, then restore data from a backup source.*

Viewing Arrayed Drive Information

By left-clicking on a drive member of an array in the left pane, the right pane shows the following information categories for that drive:



Status (also shown under the Array Window) can be Functional, Critical, or Offline. The meanings are shown below.

Functional: Means the drive is working normally

Critical: A problem has been detected in the drive and the drive taken offline as part of a mirroring array. Mirrored arrays will continue to function without the drive. Fix/replace the drive that has failed, then restore data from a backup source.

Offline: Drives that are NOT identified as “bad” may be taken offline if part of a Striping or Spanning array containing a “bad” drive. These drives do NOT need to be replaced, however.

S.M.A.R.T. Status: *Indicates whether attached hard drive implements Self-Monitoring Analysis & Reporting Technology to predict drive failure*

Size: *Indicates capacity of individual drive*

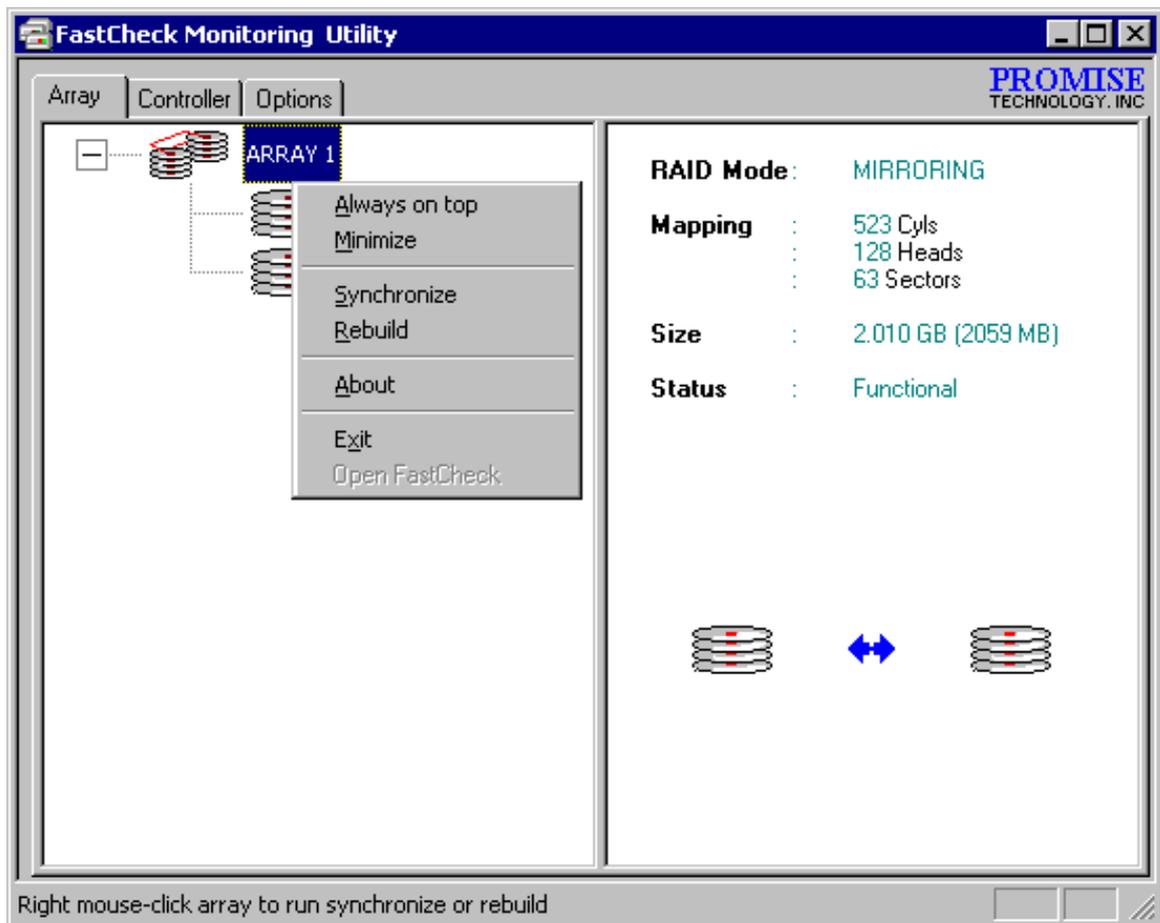
Location: *Shows physical location of drive. Indicates on which IDE channel (1 or 2), and whether drive is Master or Slave on cable. This allows user to identify drives for removal/replacement.*

Mapping: Indicates physical parameters of drive (cylinders, heads, sectors)

Timing: Shows selection of drive timing (directly related to burst speed) based on type of drive and cable used.

Using Array Pull-down Menu

At the bottom of the Array window, it indicates to right-click on an Array to perform synchronization or rebuild operations. Right-clicking displays the following pull-down menu:



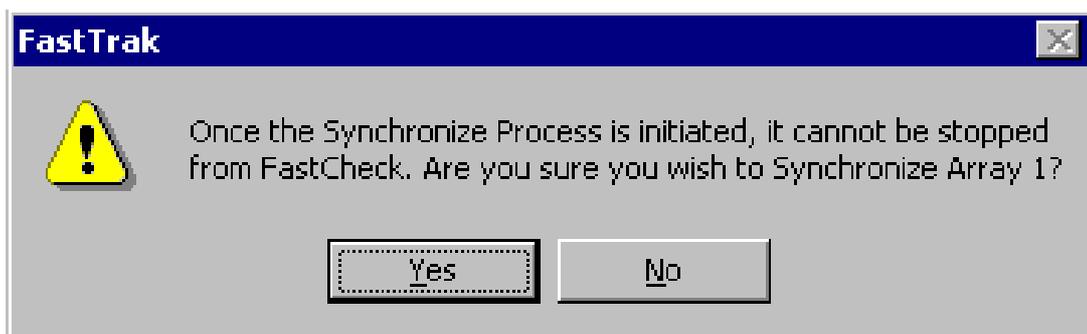
From this menu, users may choose to have the Window Always **Appear** on Top of applications, **Minimize**, **Synchronize** mirrored drives, **Rebuild** a mirrored array, use **About** to check FastCheck version #, or **Exit** the onscreen window.

SYNCHRONIZING AN ARRAY

Synchronization is a periodic maintenance procedure for Mirroring (RAID 1) arrays to maintain data consistency on all mirrored drives. In operation, array synchronization compares data on the mirrored drives for any differences. If there are differences detected, data from the primary drive(s) is automatically copied to the secondary drive(s). This assures that all mirrored drives will contain the exact information.

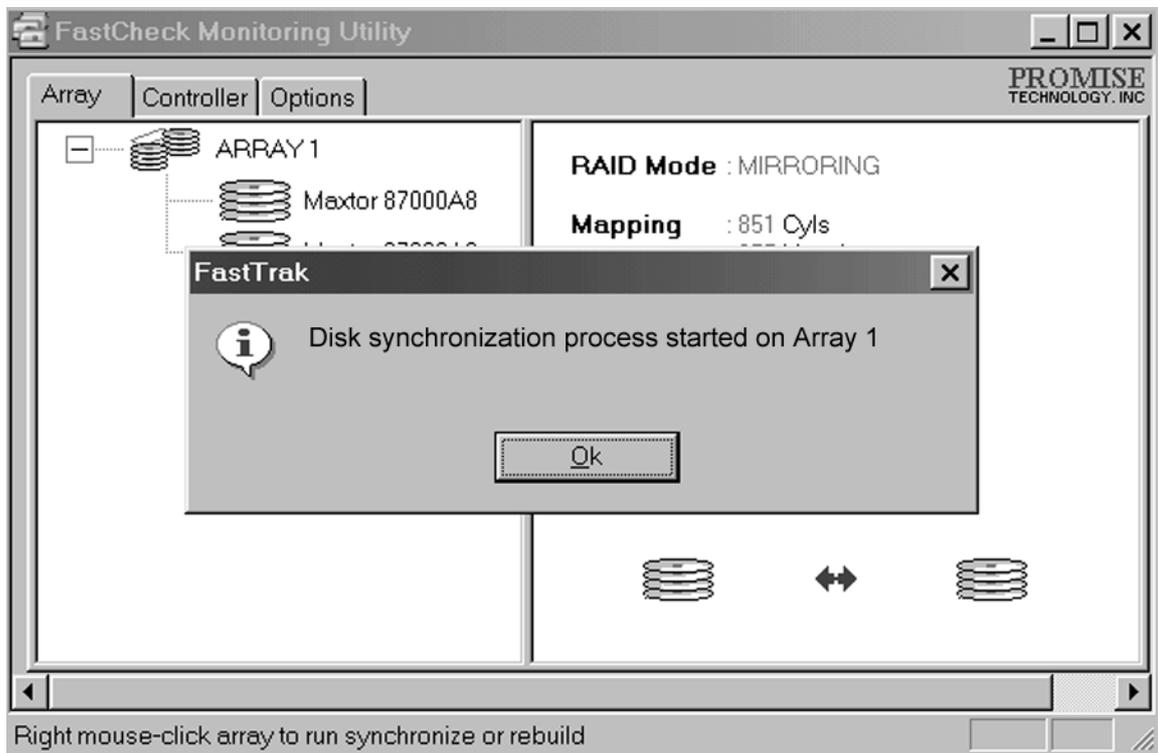
NOTE: You may instead choose to schedule array synchronization automatically under the Options Tab view versus manually initiating synchronization.

1. To synchronize, choose the Array Tab View (see figure on previous page).
2. Right-click on the array you wish to synchronize and choose “Synchronize” from the context menu.
3. Click “Yes” to initiate Synchronization (see below) when the Confirmation window appears. To cancel this option, click the No button.



WARNING: Once initiated, synchronization can NOT be halted in order to prevent data errors.

4. *Once Synchronization is confirmed, the following information screen appears. Click OK button or close the window to proceed.*



NOTE: During Array Synchronization, users may continue to access the working array and perform normal PC functions. However, system performance will be slightly degraded and the process will take longer.

5. *A progress bar will appear at the bottom of the FastCheck Monitoring window showing synchronization in progress and the percentage that has been completed.*



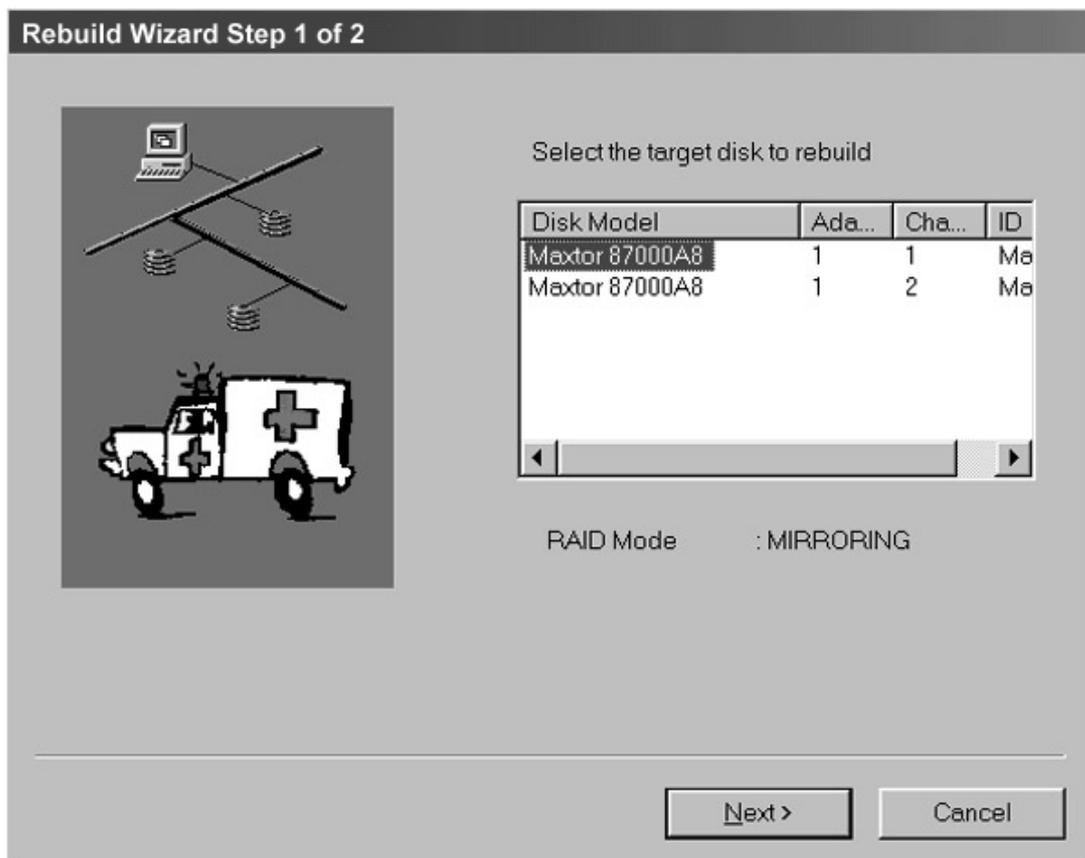
REBUILDING AN ARRAY

This command effectively copies or overwrites data from an existing data drive in the array on to a blank drive. The operation will be typically used when a failed drive has been replaced with a new drive as part of a mirrored array.

1. To perform a Rebuild, choose the Array Tab View.
2. Right click the array number and choose Rebuild from the context menu.
3. Once Rebuild is selected, you will be asked to “Initialize Rebuild process on Array #” by clicking OK.

Using Rebuild Wizard

1. *Initiating rebuild array will open the Rebuild Wizard Step 1 screen shown below.*
2. *Select the Target drive which will receive data. Make sure you select the blank new or replacement drive. The unselected drive will contain “good” data. It will be the remaining working drive of an array, or a system drive containing existing data that you wish to mirror.*



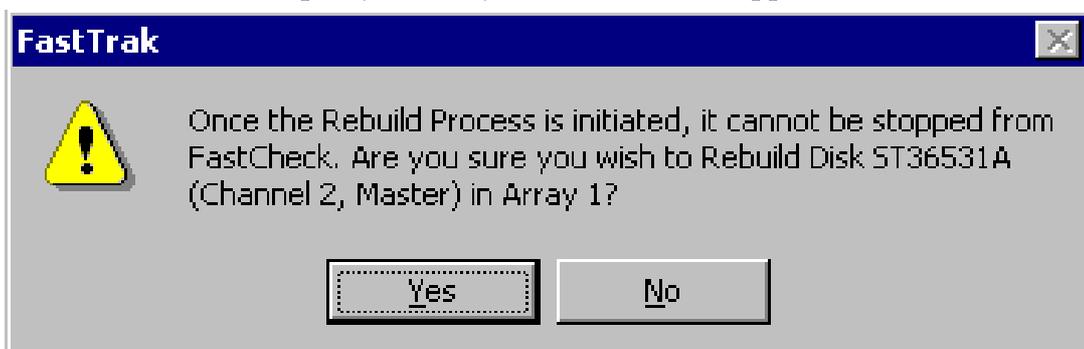


WARNING: Make absolutely sure and double-check which drive is which. If data exists on the target drive, it will be over-written.

3. Click the *Next* button to proceed to *Rebuild Wizard Step 2* (see next page) or *Cancel* button to stop.



4. *Rebuild Wizard Step 2* confirms the *Target* or “*Rebuild*” disk by *Array #* and *drive ID*.
5. Click *Finish* button to initiate physical *Rebuild*, *Back* button to review *Step 2*, or *Cancel* button to *Stop*. A final confirmation window appears as below:



6. Click “Yes” to initiate Rebuild. To cancel this option, click the No button.



WARNING: Once initiated, Array Rebuild can NOT be halted in order to prevent data errors.

NOTE: During Array Rebuild, users may continue to access the array and perform normal PC functions however the array will NOT provide data redundancy until Rebuild is completed. If you choose to continue using the PC during rebuild, system performance will be slightly degraded and the process will take longer.

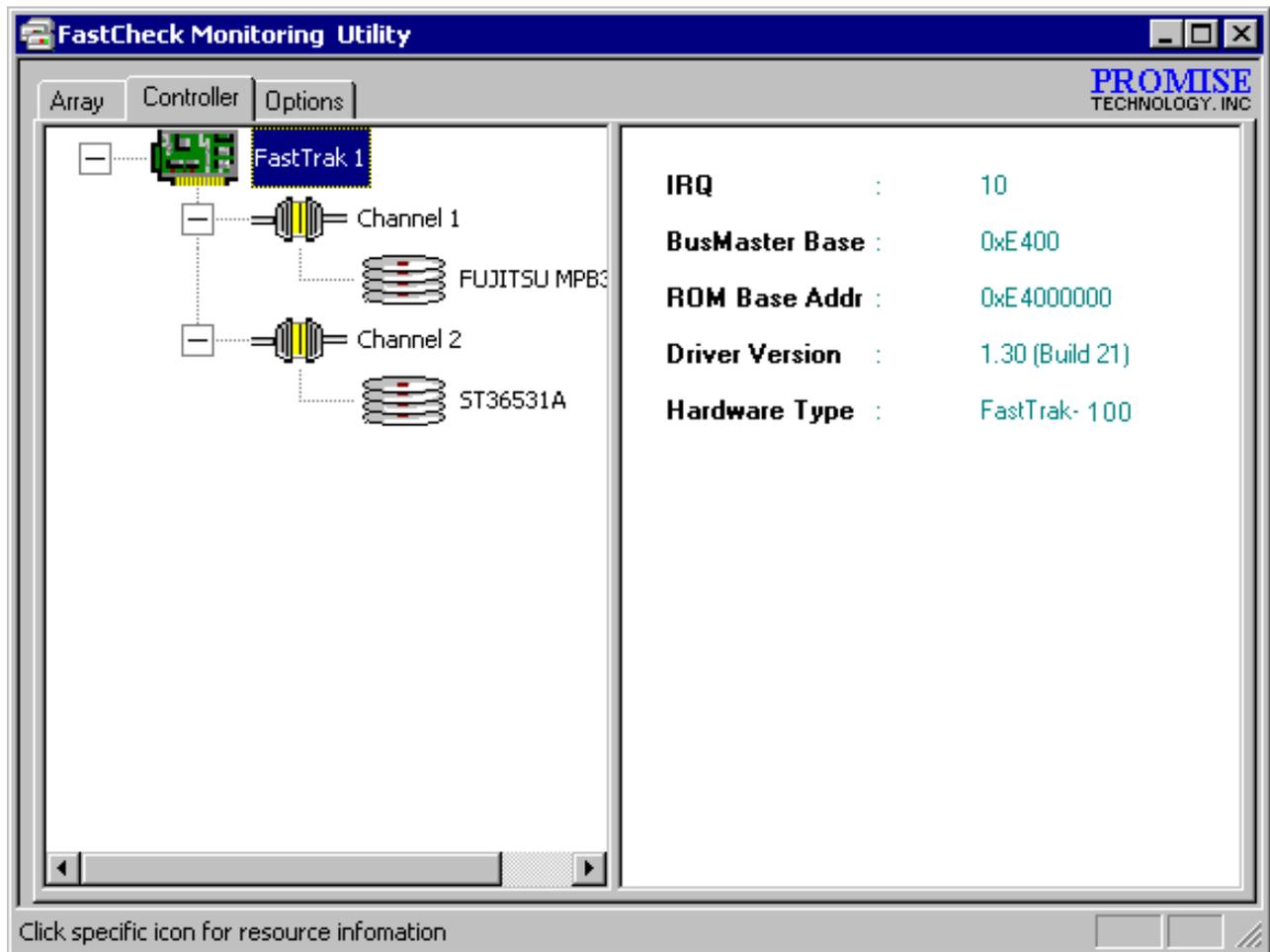
7. Once Array Rebuild has begun, users are returned to the FastCheck Monitoring window. A progress bar showing the rebuild progress in percentage will appear at the bottom of the FastCheck Monitoring window.



NOTE: When a “spare” unassigned drive is present on the FastTrak100-Lite, a rebuild will automatically be performed from the remaining working drive.

USING CONTROLLER WINDOW

Clicking on the Controller tab, will reveal the Controller Window. This displays physical information about the location of FastTrak100-Lite, data channels on the card, and the attached drives.



Viewing Controller Card Information

By left-clicking on the FastTrak controller icon, the right pane shows the following information categories for that array:

IRQ: Identifies interrupt request assigned to PCI slot

Bus Master Base: Shows base address in hex numbering for board's bus master Input/Output function

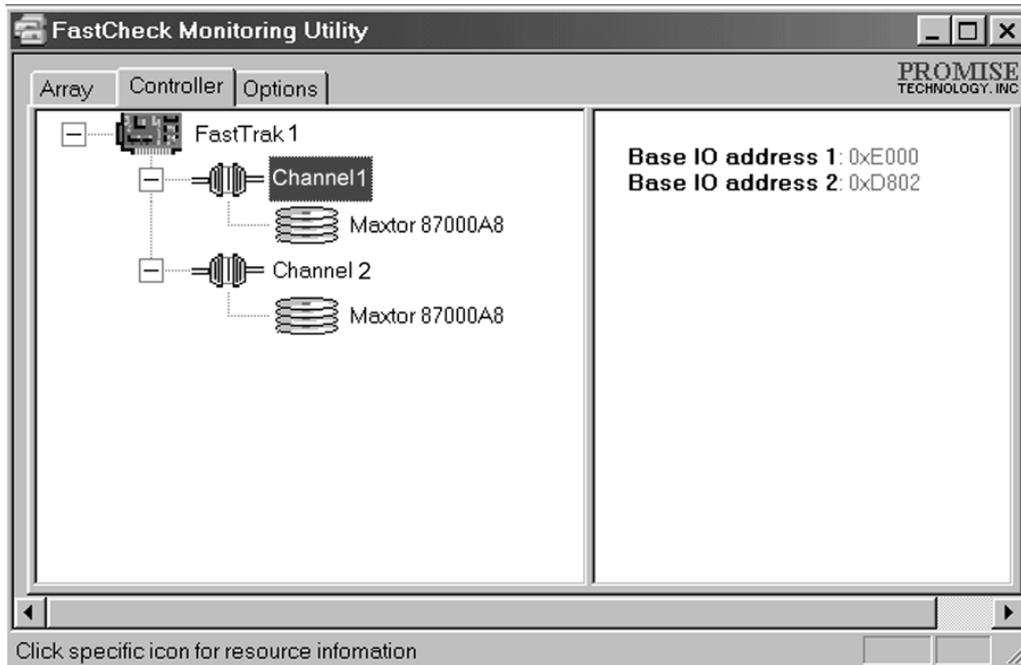
ROM Base Address: Shows base address in hex numbering for FastTrak's Flash ROM chip

Driver Version: Identifies which version of the Promise FastTrak100-Lite driver you have installed.

Hardware Type: Identifies which FastTrak model is installed.

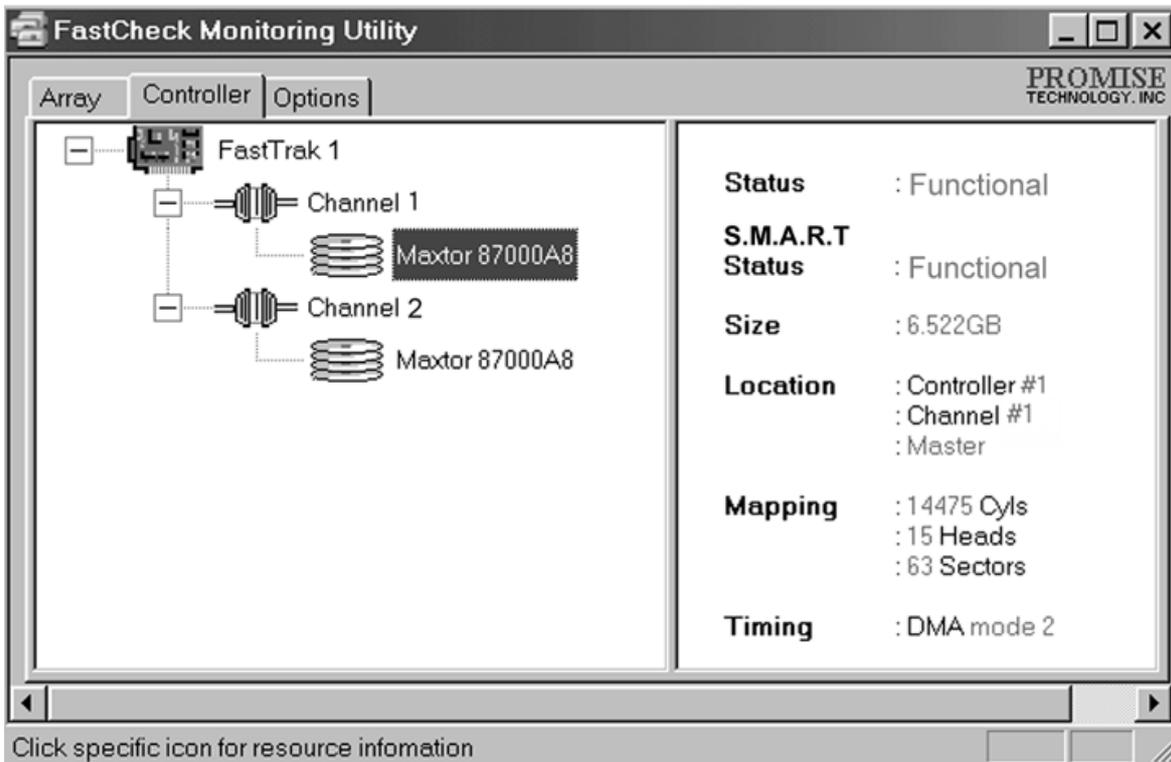
Viewing IDE Channel Information

Left-clicking on a given Channel icon or # in the left pane, will show the Base IO addresses of the channel in the right pane (used for troubleshooting).



Viewing Drive Information

Left-clicking on a given Drive icon or ID in the left pane, will show similar information categories as the Array Window Drive Information in the right pane.



Status (also shown under the Array Window) can be *Functional*, *Critical*, or *Offline*. The meanings are shown below.

Functional: Means the drive is working normally

Critical: A problem has been detected in the drive and the drive taken offline as part of a mirroring array. Mirrored arrays will continue to function without the drive. Fix/replace the drive that has failed, then restore data from a backup source.

Offline: Drives that are NOT identified as “bad” may be taken offline if part of a Striping or Spanning array containing a “bad” drive. These drives do NOT need to be replaced, however.

S.M.A.R.T. Status: Indicates whether attached hard drive implements Self-Monitoring Analysis & Reporting Technology to predict drive failure

Size: Indicates capacity of individual drive

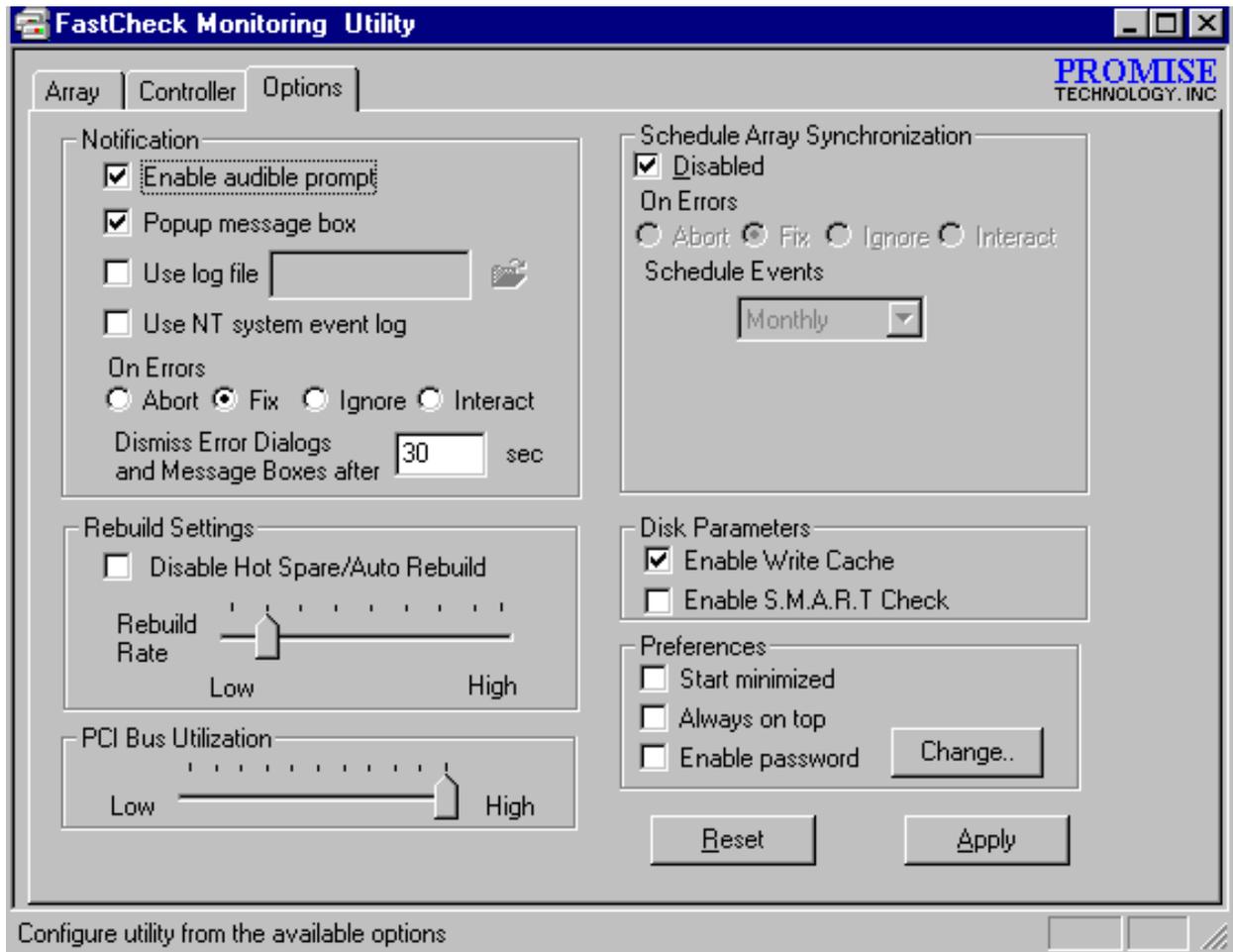
Location: Shows physical location of drive. Indicates on which IDE channel (1 or 2), and whether drive is Master or Slave on cable. This allows user to identify drives for removal/replacement.

Mapping: Indicates physical parameters of drive (cylinders, heads, sectors)

Timing: Shows selection of drive timing (directly related to burst speed) based on type of drive and cable used.

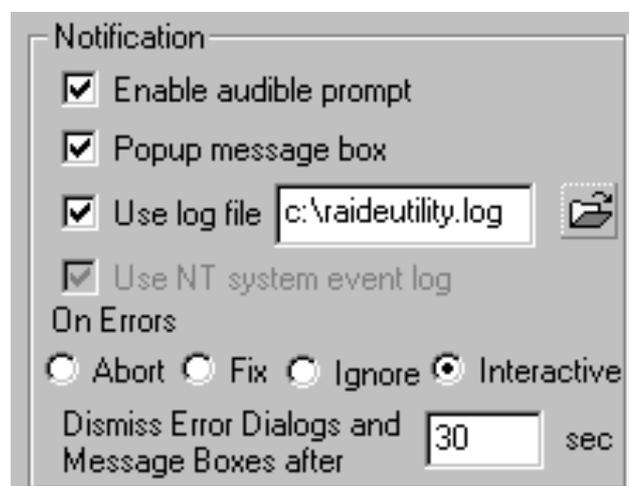
USING OPTIONS WINDOW

Clicking on the Options tab reveals the Options Window. Array administrators can customize the FastCheck Monitoring Utility in four major areas: Notification, Array Synchronization Scheduling, setting Password, Desktop Appearance. Most options relate to Mirroring arrays (RAID 1).



Selecting Notification Options

This section of the Options windows allows users to select how they are notified of a system event. A System Event includes driver-initiated Rebuilds (automatic rebuild using a “hot” spare standby drive), user-initiated manual Rebuilds or manual Synchronization, and Error-Handling reporting for these processes.



Enable audible prompt checkbox turns on/off an audible alarm of an event (typically a drive failure, or completion of rebuild or synchronization).

Popup message box checkbox turns on/off the appearance of an event message box that would typically indicates a drive failure, or completion of rebuild or synchronization.

Use log file checkbox allows writing operating event logs of the array activity (alerts and status reports) to a given file name and directory. If a file name is used but the path left blank, the default directory is the same as the FastCheck Utility (typically C:\Program Files\Promise\FastTrak100-Lite).

Use NT system event log checkbox is greyed out under Windows 95/98/2000/Millennium automatically. Under Windows NT4, it permits user to write array logging to NT's own event log.

1. To view FastCheck events under Windows NT, go to Start/Programs/Administrative Tools/Event Viewer.
2. In the Event Viewer, choose "Log" from the menu bar, then check "Application." Any events generated by FastCheck will appear under the Source column as "FastCheck."

On Errors section offers four radio button choices for the user to select what procedure they would like to perform if an Error is detected during automatic/manual Rebuilds or manual Synchronization. There are three types of errors that FastTrak100-Lite detects -- a data mismatch between the primary and secondary drive, a physical media error on source or target drive, or a total disk failure. The options for handling Errors are as follows:

Abort: stops any Synchronization or Rebuild process if an error is encountered.

Fix: in most cases, FastTrak100-Lite automatically can correct errors. The method of correction varies depending on the type of error.

Ignore: FastTrak100-Lite will log the event error and continue the rebuild or synchronization process. Use this setting if you want to detect the presence of errors, but do not want to fix these errors at the time. The user may then decide what to do about the error(s) detected.



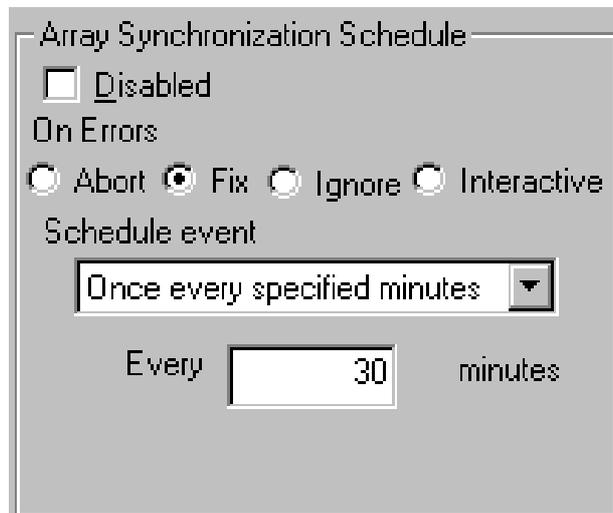
WARNING: This may result in mismatched drives under RAID 1.

Interactive: By checking this option, a selection window will appear each time an error is detected asking the user whether they want to Abort, Fix, or Ignore the error (see Troubleshooting section).

Dismiss Error Dialogs designates the length of time (in seconds) that a Message box or Error Dialog box appears on screen.

Scheduling Array Synchronization

This section of the Options Window allows a user to schedule when and how often FastTrak100-Lite will perform synchronization maintenance of a mirrored array.



Array Synchronization Schedule

Disabled

On Errors

Abort Fix Ignore Interactive

Schedule event

Once every specified minutes ▼

Every minutes

Disable checkbox is checked (the default) to turn off automated scheduling of synchronization. When unchecked, the Scheduling section will be highlighted (see above).

On Errors section offers four radio button choices for the user to select what procedure they would like to perform if an Error is detected during a scheduled Synchronization. There are three types of errors that FastTrak100-Lite detects -- a data mismatch between the primary and secondary drive, a physical media error on source or target drive, or a total disk failure. The options for handling Errors are as follows:

Abort: stops the Synchronization process if an error is encountered.

Fix: in most cases, FastTrak100-Lite automatically can correct errors. The method of correction varies depending on the type of error (see Appendix under Error Correction Methodology).

Ignore: FastTrak100-Lite will log the event error and continue the synchronization process. (Warning: this may result in mismatched drives under RAID 1). Use this setting if you want to detect the presence of errors, but do not want to fix these errors at the time. The user may then decide what to do about the error(s) detected.

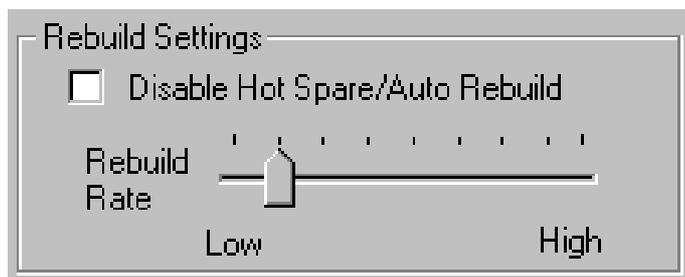
Interactive: By checking this option, a selection window will appear each time an error is detected asking the user whether they want to Abort, Fix, or Ignore the error (see Troubleshooting for more details).

Schedule event drop down box allows scheduling synchronization by minute, by hour, by day, by week, or by month. If enabled, the default is By Month. This allows synchronization to take place during an off-hour when the system is either not in use or not at peak demand.

Start time designates hr/min/ am/pm

On the designates day of week or by ordinal (1st, 2nd, 3rd...) selection.

Setting Rebuild Options



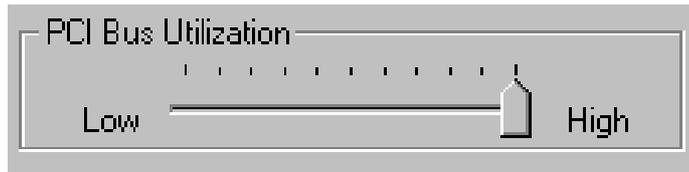
Disable Hot Spare/Auto Rebuild checkbox turns off the use of a “hot” spare drive and automatic rebuilding of a mirrored array. The default is unchecked (or enable Hot Spare/Auto Rebuild).

Rebuild Rate assigns the amount of importance that FastTrak100-Lite gives to mirroring data from one drive to another in the background. A “high” setting assigns most of FastTrak100-Lite’s resources to the rebuild process at the expense of responding to ongoing read/write data requests by the operating system. A “low” setting gives priority to ongoing read/write data requests by the operating system at the expense of the rebuild process and will typically result in longer rebuild times. The setting shown above is the default.

Setting PCI Bus Utilization Option

NOTE: *In most cases, a user does not need to change this setting since FastTrak100-Lite’s data handling rarely conflicts with another PCI device. However, certain brands of video capture cards can produce a “glitch” on play back of A/V files that may require adjusting the default setting devices (see Tips for Audio/Video Editing for more information).*

This section of the Options Window allows a user to change how much time the FastTrak100-Lite holds on to the PCI bus to transfer data.



The default setting of “High” on the slider bar means FastTrak100-Lite holds on to the PCI bus longer for data transfers to occur. A setting of “Less” reduces the time which FastTrak100-Lite occupies on the PCI bus and frees that time for use by other PCI devices.

Once a bus setting has been selected, click the Apply button on the Options window to implement changes immediately.

Setting Disk Param(eters) Option



Enable Write Cache checkbox allows user to enable/disable write cache for hard drives that include this performance feature. FastCheck automatically recognizes such drives and enables the feature as the default setting. For drives that do not use write caching, this option is automatically greyed out.

Enable S.M.A.R.T. Check checkbox tells FastCheck to regularly monitor each drive to assure that drive failure prediction is functioning. The default is unchecked, meaning FastCheck will not monitor this function.

Setting Screen Preferences

This section controls how the FastCheck utility screen is displayed and sets the security password to protect the administrative settings.



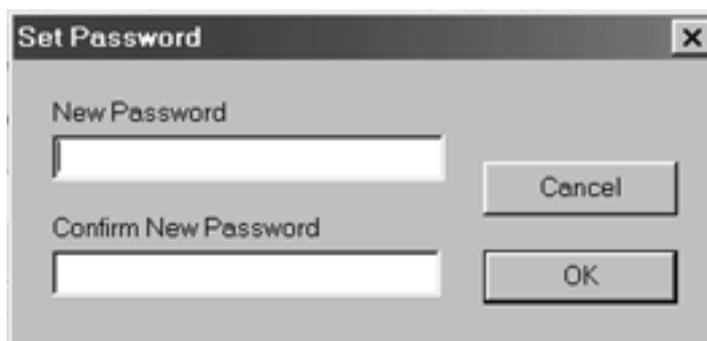
Start Minimized checkbox allows user to have FastCheck appear on the toolbar only on startup. Click on the icon to see the FastCheck utility screen.

Always on Top checkbox tells the Utility to appear above all programs until closed or minimized manually.

Enable Password checkbox in the Preferences section turns on/off use of a Password every time the FastCheck Monitoring Utility icon is selected or the program is run from the Start menu. Disabling use of a current password requires password entry (see Creating Password on next page).

Creating Password

1. To create a password, check the **Enable Password** checkbox in the Preferences section. The “Set Password” window will appear.



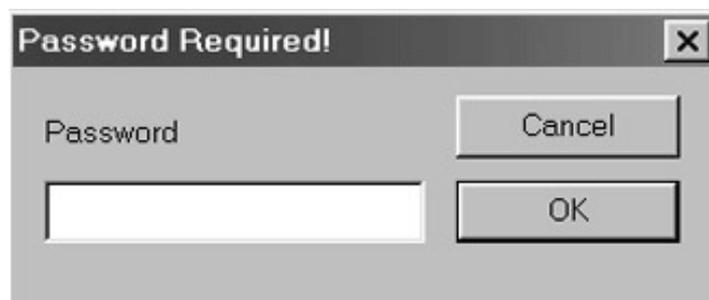
2. Type the password you want to use. Press the Tab key or click to retype the same password in the “Confirm New Password” section. Click the OK button.

NOTE: Remember to record the password you use in a secure place in case you forget it.

3. A confirmation screen will appear saying that “Password Checking is Enabled”.

Click the OK button.

4. Once the password feature is enabled, the following menu will appear before the FastCheck window can be opened. is enabled, the following menu will appear on each use of FastCheck.



Changing Password

1. *Input the original password you first created to gain access to FastCheck.*
2. *Click on Options tab, then click on the Change button in the Password section. The Set Password screen will appear (see figure in step 3 above).*
3. *Type the password you want to use. Press the Tab key or click to retype the same password in the “Confirm New Password” section.*
4. *Click OK button.*

Disabling Password

1. *Input the original password you first created to gain access to FastCheck.*
2. *Click on Options tab*
3. *Uncheck the “Enable Password” checkbox. Click Apply button on Options window.*

Frequently Asked Questions

This section lists frequently asked questions involving pre-installation, drive issues, installation, and post-installation.

PRE-INSTALLATION

(Speed, Device Types, Capacity, Cabling)

Q: What kind of hard drives can I use for a FastTrak100-Lite array?

A: You can use any IDE/EIDE hard drive(s) to create arrays on the FastTrak100-Lite. You should use matching drives for multiple-drive arrays to maximize capacity usage as well as performance. Ultra ATA/100 drives are recommended for highest performance.

Q: Will APM (Advanced Power Management) work with HDDs on the FastTrak100-Lite?

A: APM will not work with HDDs on the FastTrak100-Lite. This is because the system sees the card as a SCSI card.

Q: Can I use ATAPI devices on the FastTrak100-Lite controller?

A: No. There is no driver layer on the FastTrak100-Lite controller which will support ATAPI packet messages.

Q: Will the FastTrak100 Lite work with a 37Mhz or 41Mhz PCI bus speed?

A: The current PCI 2.1 specification is for a 33Mhz PCI bus speed. The FastTrak100-Lite is designed around the specification. In most cases, a higher PCI bus speed will result in a variety of different errors. While some people have been able to get these higher speeds to work, since it is out of specification we cannot support it.

Q: How can I change the resources that the FastTrak uses?

A: The FastTrak100-Lite is fully PnP. This means all the resources that it uses are given to it by the PnP BIOS on the motherboard. The FastTrak100-Lite does support IRQ sharing, but this will not work unless ALL the concerned devices support the feature. If your motherboard allows you to control the assignment of these resources, you may be able to remedy the problem by “playing around” with them. You can also try resetting the configuration data in your CMOS. This is usually an option in the PnP section of your CMOS. Otherwise, the only way you might be able to affect these assignments is to switch the PCI slot that the card is in.

Q: How does the FastTrak100-Lite RAID controller provide storage and/or data protection with their arrays?

A: FastTrak100-Lite implements three different types of RAID levels as follows:

RAID 0 (stripe)

For capacity -- The FastTrak100-Lite array will be as big as the smallest HDD in the array times however many HDDs are in the array. Any larger HDDs will simply be truncated. The truncated space on the bigger HDDs will then be unusable.

For sustained data transfers -- Using FastTrak100-Lite, a RAID 0 array consisting of two HDDs will transfer at about twice the speed of the slowest HDD in the array. A RAID 0 array consisting of four HDDs will transfer at about three times the speed of the slowest HDD in the array.

RAID 1 (mirror)

For capacity -- The FastTrak100-Lite array will be as big as the smallest HDD in the array. The larger HDD will simply be truncated. The truncated space on the bigger HDD will then be unusable.

For sustained data transfers -- The FastTrak100-Lite array will write data at the rate of the slowest HDD in the array. The FastTrak100-Lite array will read data at twice the rate of the slowest HDD in the array.

DRIVE ISSUES

Q: Can I add a drive to a FastTrak100-Lite RAID array via hot-swap and dynamically adjust the array size/configuration?

A: No. The FastTrak100-Lite system does not support dynamically adjustable RAID size/configurations.

Q: Do the HDDs on the FastTrak100-Lite have to be the same size?

A: The HDDs that you use with the FastTrak100-Lite do not have to be the same size. If the sizes differ, the FastTrak100-Lite will “adjust” the HDDs so that they are compatible. Basically, it will truncate the bigger HDD so the sizes match. Any unused space that results from this is unusable, so don’t use HDDs that differ too much. It’ll work, but it’s a waste.

Q: Can I take a set of drives which make up an array created on one FastTrak100-Lite server and move it to another FastTrak100-Lite server?

A: Yes. All FastTrak100-Lite controllers read the arrays the same way. Once the drives are all connected, you must restart the system for it to recognize the newly-inserted array configuration.

Q: Can I take a drive used in a FastTrak100-Lite array and access it directly with a different controller, such as the one integrated on the motherboard?

A: Yes, but only under certain configurations. The following array configurations will allow the drive(s) to be accessed individually on another controller: mirror (RAID 0), single drive striped (RAID 1), or single

drive spanned (JBOD). Multiple drives striped or spanned will not work. Also, the controller must address the drives as LBA, not CHS.

Q: If I have a problem with one of the drives on the FastTrak100-Lite, how can I low level format it to correct the problem?

A: Do NOT do this. Low-level formatting IDE drives is unnecessary and generally does not correct problems which might be experienced during use. Errors such as bad sectors or ECC/CRC failure are best remedied by completely replacing the drive. For this reason, drives attached to the FastTrak100-Lite controller should NOT be low level formatted.

Q: Do I have to install disk management software on my array in order to access the full storage capacity of drives?

A: No! Disk management software would only complicate things. The array should be fully addressable by your O/S as it is. Remember that some operating systems have varying limits on the sizes of partitions and logical drives that can be defined. Consult your O/S documentation about partitioning larger drives.

Q: What system BIOS CMOS settings do I use for the drives on the FastTrak100-Lite controller?

A: None. The drives on the FastTrak100-Lite controller are supported by the FastTrak100-Lite BIOS and/or an O/S drivers, not by your system BIOS.

Q: How do I partition/format my FastTrak100-Lite RAID array?

A: The FastTrak100-Lite “fools” the system into thinking that it’s dealing with a single HDD. Therefore, anything that you can do to a single HDD can also be done to a FastTrak100-Lite array. You can, and should, use the FDISK and FORMAT utilities to partition/format the array. You can partition the array however you see fit. You can format the array with whatever file system you wish.

INSTALLATION ISSUES

(Capacity, Booting)

Q: Why are some drives recognized by the FastTrak100-Lite Array Setup utilities with only partial capacity?

A: Some hard drive models are shipped with a jumper that reduces the addressable capacity of the drive to prevent problems with older systems which won't support larger drives. Consult the documentation accompanying the hard drive to set the jumper appropriately in order to utilize the full capacity of the drive.

Q: How can I change the system boot sequence in order to boot from the FastTrak100-Lite array?

A: The boot sequence is controlled by the system BIOS. As far as the system BIOS is concerned, the FastTrak100-Lite controller and defined arrays are categorized as a "SCSI" device (even though the BIOS will not attempt to access the FastTrak100-Lite as any type of SCSI device). This allows you to set the boot sequence in your BIOS CMOS setup utility to boot from "SCSI" (an add-in controller like the FastTrak100-Lite) first, rather than "IDE" (an IDE controller built onto the motherboard or one which effectively replaces it). If there are multiple SCSI add-in controllers in the system, then the boot sequence among them will be determined exclusively by their PCI slot priority. PCI slot #1 will be first, slot #2 second, etc. Put the FastTrak100-Lite controller in the PCI slot where it will be accessed ahead of other SCSI controllers if you want to boot from the array.

Q: How can I change the boot sequence between a PCI SCSI card and the FastTrak100-Lite RAID array?

A: Since all PCI devices are all PnP, it is difficult to determine which device is addressed first. Some newer motherboard BIOSes may use advanced options that identify devices and allow you to select which device will be

assigned resources first. Otherwise you may have to physically switch the device cards on the PCI slots so that the boot device is in the highest priority slot number (see previous question). If you do not require the FastTrak100-Lite BIOS to boot from an array and it is only to be used through a driver under the O/S, one simpler solution would be to disable the FastTrak100-Lite BIOS so that it does not affect the boot sequence at all.

POST-INSTALLATION

(Memory Managers, FDISK)

Q: Why does my system reboot after the QEMM driver loads from CONFIG.SYS?

A: The problem lies in the QEMM “Stealth” feature. This feature places the drive information from the DOS System area into the upper reaches of RAM where Windows resides. This causes the FastTrak100-Lite to lose track of its drives when asked to execute the next line in the CONFIG.SYS file. This forces the reboot that you see. Disable QEMM’s stealth feature to correct this problem.

Q: Why can’t I see the drives on the FastTrak100-Lite under FDISK?

A: The FastTrak100-Lite controller is dedicated to RAID array management and does not provide any means of addressing individual hard drives through the Int 13h interface used by FDISK. In order to access drives on the FastTrak100-Lite from MSDOS at all, you must first create a RAID array.