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• Multi-lingual Quick Installation Guide
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  2 x Serial ATA Cable
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Chapter 1 Specification

Introduction

This series of mainboards features an integration of the powerful processor Intel Pentium 4 and the single-chip North Bridge Intel 865PE. The Intel P4 processor is a rapid execution engine providing 800/533/400MHz system bus, while North Bridge Intel 865PE is a high performance integrated chipset providing Dual Channel DDR 400/333/266 SDRAM memory interface, Hub interface as well as AGP interface.

Integrated with Intel 865PE, South Bridge Intel ICH5 supports the LPC I/O, upstream Hub interface, PCI interface, IDE interface, Serial ATA interface, USB 2.0 interface, AC'97 2.2 (6-channel) Audio interface and the interrupt control. This chapter is to introduce to users every advanced function of this high performance integration.

Topics included in this chapter are:
1-1 Mainboard Layout
1-2 Mainboard Specifications**
1-3 Mainboard Specification Table
1-4 Chipset Diagram

** If any difference is found between the mainboard description and the Mainboard you are using, please look up the <u>Errata/Update Slip</u> enclosed inside for the correction or updated information, or else contact the mainboard Dealer or visit our Web Site for the latest manual update.

1-1 Mainboard Layout

LJP1
RTL8110S **} for 865-GR only**
RJ45
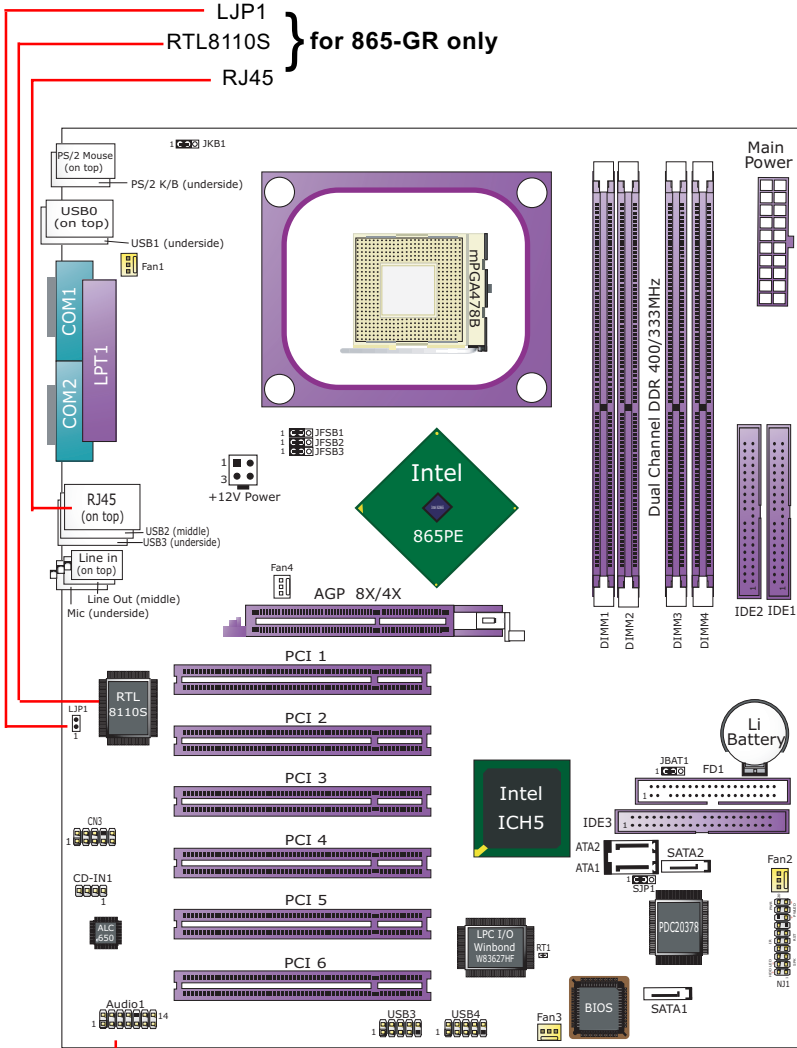
**Optional 6-channel
Audio-Out Connector**

1-2 Mainboard Specification Table

865-R/865-GR Specifications and Features	
CPU	Socket 478B for P4 CPU(HT CPU included)
North Bridge	Intel 865PE, 800/533/400MHz FSB
South Bridge	Intel ICH5
BIOS	AMI BIOS
Memory	Dual-channel DDR 400/333/266 SDRAM, up to 4GB in 4 DIMM slots
I/O Chip	W83627HF, with Hardware Monitor
AGP interface	AGP8X/4X Mode only; 1 AGP Slot on board
Audio	AC'97 Audio 2.2 compliant, 6 channel audio
IDE Interface	2 UATA 66/100 IDE ports; 1 PATA / PATA RAID 133 IDE port supported by PDC20378
SATA Interface	2 Serial ATA connectors, another 2 supported as SATA RAID connectors by PDC20378
RAID Interface	PDC20378 supporting 2 SATA RAID connectors and 1 PATA IDE connector
PCI Slots	6 PCI Master slots on board
I/O Connectors	8 USB V2.0, 1 FDD port, 2 COM ports, 1 LPT, 1 IrDA, 1 PS/2 K/B, 1 PS/2 Mouse
Networking	LAN Controller RTL8110S and Connector RJ45 (for 865-GR only)
Other common features	Keyboard/Mouse Wake Up

Models / Optional Features	865-R	865-GR
LAN Controller on board	No	Yes

1-3 Chipset System Block Diagram

```
                    ┌─────────────────────────────┐
                    │    Intel Pentium 4 CPU      │
                    │ (Hyper-Threading Included)  │
                    └─────────────────────────────┘
                              ↕  System Bus 800/533/400MHz

                    ┌──────────────┐   DDR memory      ┌────────┐
                    │ North Bridge │   Interface       │ System │
        AGP 8X/4X   │    Intel     │   DDR 400/        │ Memory │
  ┌──────────┐      │              │   333/266         └────────┘
  │ AGP Slot │──────│   865PE      │   SDRAM
  └──────────┘      └──────────────┘
                              ↕  266MB/s
                                 Hub Interface

  ┌──────────┐  ATA 100/66/33  ┌──────────┐  PCI Bus   ┌────────────┐
  │ 2 IDE    │─────────────────│  South   │────────────│ 6 PCI Slots│
  │Connectors│                 │  Bridge  │            └────────────┘
  └──────────┘                 │          │
  ┌──────────┐  Serial ATA     │  Intel   │  AC'97 2.2 ┌────────────┐
  │2 SATA    │─────────────────│   ICH5   │────────────│ Audio Codec│
  │ports     │                 │          │            │ (6-channel)│
  └──────────┘                 │          │            └────────────┘
  ┌──────────┐                 │          │  ┌─────────┐   ┌──────┐
  │  USB     │  USB Bus V2.0    │          │──│ RTL8110S│───│ RJ45 │
  │  Ports   │─────────────────│          │  └─────────┘   └──────┘
  └──────────┘                 └──────────┘    (Optional)
                                           ┌───────────┐ ┌────────────┐
                                           │ PDC 20378 │─│2 SATA RAID │
                                           └───────────┘ │ports + 1 PATA│
                                                         │RAID port   │
  ┌──────────────┐                                       └────────────┘
  │    IR        │
  │    FDD       │  ┌──────────┐              ┌──────┐
  │Mouse/Keyboard│──│ LPC I/O  │──────────────│ BIOS │
  │ Serial Ports │  │ W83627HF │              └──────┘
  │ Printer Port │  └──────────┘
  │  H/Monitor   │
  └──────────────┘
```

Pentium 4 + Intel 865PE + Intel ICH5 Diagram

1-4 Mainboard Specifications

1-4.1 CPU Socket

CPU Socket 478B on board, supporting Intel® Pentium 4 processors (including Intel Hyper-Threading CPUs) in 478-pin package for :

> -- 800/533/400MHz System Bus; 512KB L2 Advanced Transfer Cache
> -- Hyper-pipelined technology; Advanced dynamic execution;
> -- Rapid Execution Engine; Streaming SIMD Extensions 2
> -- 128 Bit Enhanced Floating Point Unit; Execution Trace Cache

1-4.2 System Chipsets

North Bridge Intel 865PE:
- A high performance integrated chipset providing processor interface (including Hyper-threading Technology), Dual channel DDR 400/333/266 SDRAM memory interface, Hub interface, AGP interface.
- Showing Hyper-Threading Logo when booting with a Hyper-threading CPU.

South Bridge Intel ICH5:
- Supporting the LPC I/O, upstream Hub interface, PCI interface, IDE interface, Serial ATA interface, USB 2.0 interface, AC'97 2.2 (6-channel) Audio interface and the interrupt control.

1-4.3 Memory

4 DDR DIMM 184-pin slots on board :
- Supporting unregistered, non-ECC Dual-channel DDR 400/333/266 SDRAM up to 4 GBs
- DIMMs to be populated in identical pairs for Dual-channel operation
- SPD (Serial Presence Detect) Scheme for DIMM Detection supported

1-4.4 AMI BIOS

Flash Memory for easy upgrade, supporting BIOS Writing Protection, Year 2000 compliant, and supporting various hardware configuration during booting system (See Chapter 4 BIOS Setup):
- Standard BIOS Features(Times, Date, System Information etc.)
- Advanced BIOS Features (CPU,IDE, Floppy, SuperIO, Hardware Health, ACPI, USB, and Frequency/Voltage Control)
- Advanced Chipset Features (NorthBridge, SouthBridge Configuration)
- PCI/PNP Resource Management (IRQ Settings, Latency Timers etc.)
- Boot Configuration Setup (Boot Settings, Boot Device Priority etc.)
- BIOS Security Features (Supervisor Password, User Password)

1-4.5 Accelerated Graphics Port (AGP) Interface

AGP Controller embedded on board, supporting:
- 1.5V(8X/4X) power mode only, 1 AGP Slot supported
- 8X 66MHz AD and SBA signaling; AGP pipelined split-transaction long burst transfers up to 2GB/sec.
- AGP 8X/4X supported, AGP V3.0 compliant

1-4.6 Multi-I/O Functions

- Serial ATA Controller integrated in ICH5, supporting:
    -- 2x Serial ATA connectors supporting up to 150MByte/s transfer rate
- PCI EIDE Controller, supporting:
    -- 2x UATA100/66/33 IDE connectors supporting up to 4 IDE devices
- Dedicated IR Functions:
    -- Third serial port dedicated to IR function either through the two complete serial ports or the third dedicated port Infrared-IrDA (HPSIR) and ASK (Amplitude Shift Keyed) IR
- Multi-mode Parallel Data Transfer:
    -- Standard mode, high speed mode ECP and enhanced mode EPP
- Floppy Disk Connector:
    -- One FDD connector supporting 2 floppy drives with drive swap support
- Universal Serial Bus Transfer Mode:
    -- USB V2.0 compliant; 480Mb/s USB Bus, supporting Windows 2000 or later operating systems (no support for Windows 9X/ME)
    -- 4 built-in USB connectors and 2 USB Headers which require 2 additional USB cables to provide 4 more optional USB ports
- PS/2 Keyboard and PS/2 Mouse
- UARTs (Universal Asynchronous Receiver / Transmitter):
    -- Two serial ports (COM1 & COM2) on board

1-4.7 Expansion Slots

- 6 PCI Bus Master slots
- 1 AGP slot
- 4 DDR SDRAM DIMM slots

1-4.8 Gigabit Ethernet on board (865-GR only)

Gigabit Ethernet Controller RTL8110S on board:
- Supporting 10/100/1000Mb data transfer
- Supporting Wake On LAN function through the on-board RJ45 LAN Connector
- LAN Driver enclosed in Support CD for user's installation.

1-4.9 Advanced System Power Management

- ACPI 1.0B compliant (Advanced Configuration and Power Interface), including ACPI suspend mode support (See ACPI Configuration of Advanced BIOS Features in BIOS Setup)
- APM V1.2 compliant (Legacy Power Management)
- Supporting Real Time Clock (RTC) for date alarm, month alarm, and century field configuration

1-4.10 Hardware Monitor on board

- Hardware Monitor supported by W83627HF, providing monitoring and alarm for flexible desktop management of hardware voltage, temperatures and fan speeds.
- Utility Software Soltek Hardware Monitor for displaying system status is enclosed in Support CD for user's installation.

1-4.11 AC'97 Audio Codec on board

AC'97 Audio Codec 2.2 compliant on board

- Supporting 6-channel display of PCM audio output
- 6 channel audio consists of Front Left, Front Right, Back Left, Back Right, Center and Subwoofer for complete surround sound effect
- AC'97 Audio Codec Driver enclosed in Support CD for user's installation.

1-4.12 6-channel Audio-out Support (Optional)

- This series is designed with an optional 6-channel Audio-out connector "Audio1". If this option is chosen, a 6-channel Audio-out card will be enclosed in the Mainboard package to provide 3 additional audio-out ports for the 6-channel sound.

1-4.13 Form Factor

- ATX Form Factor, ATX Power Supply, version 2.03 compliant, supported by one Main Power Connector, one +12V Power Connector.
- Mainboard size: 305mm x 244mm

1-4.14 Serial ATA RAID Controller PDC20378

- Promise PDC20378 integrated on board
- Supporting 2 Serial ATA RAID connectors for 2 serial ATA RAID hard disks with up to 150MB/s transfer rate and an additional Parallel ATA RAID IDE connector for two PATA RAID IDE hard disks with up to 133MB/s transfer rate
- Supporting RAID 0, 1, 0+1 configuration
- SATA RAID Controller Driver enclosed in Support CD / Floppy Disk for user's installation.

Chapter 2 Hardware Setup

To Get Things Ready for Hardware Setup !

1. We recommend to install your CPU before any other components. For detailed installation instructions of processor, you can also refer to the pamphlet enclosed in your CPU package.
2. Installing a cooling fan with a good heat sink is a must for proper heat dissipation for your CPU. Get ready an appropriate fan with heat sink for proper installation. Improper fan and installation will damage your CPU.
3. In case CPU Vcore, CPU clock or Frequency Ratio is adjustable on board, please follow the instructions described in the User's manual for proper setup. Incorrect setting will cause damage to your CPU.

The following topics are included in this chapter:

2-1 CPU Installation with Socket 478B
2-2 Pentium 4 CPU Fan Installation
2-3 Memory Installation
2-4 AGP 8X/4X Slot Installation
2-5 VGA / AGP 8X/4X Slot Installation
2-6 IDE Connectors Installation
2-7 Serial ATA Connectors Installation
2-8 Floppy Drive Connector Installation
2-9 ATX V2.03 Power Supply Installation
2-10 Jumper Settings
2-11 Other Connectors Configuration

2-1 CPU Installation with Socket 478

2-1.1 To Identify a Pentium 4 CPU

```
Intel
pentium 4
2.4 GHz / 512 / 533 / 1.5V
```


(Hyper-Threading CPU included)

4) CPU Voltage Vcore

3) System Clock

2) CPU L2 Cache

1) CPU Working Frequency
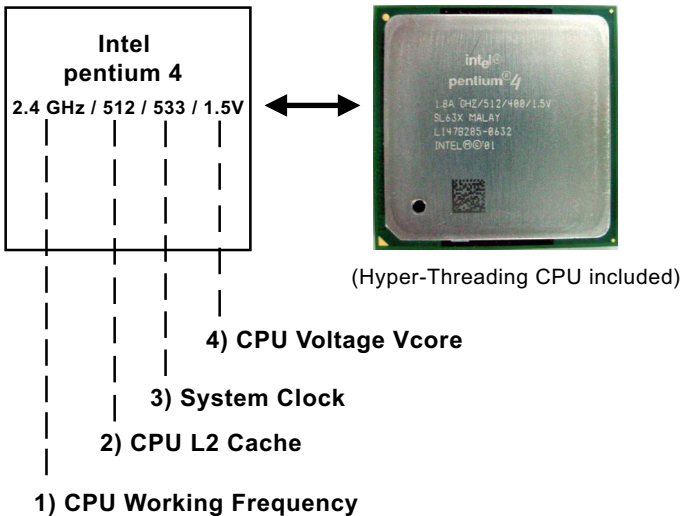
On the heatsink side of a Pentium 4 CPU, there printed a line of figures to identify its specifications. The line consists of 4 parts:

1. CPU Working Frequency: this part depicts the working frequency of the CPU. For example,
   2.4 GHz depicts that this CPU is locked to 2.4 GHz working frequency (18 x 133MHz CPU clock);
   2A GHz depicts that this CPU is an A version, locked to 2.0 GHz working frequency (20 x 100MHz CPU clock)
   3.06GHz depicts that this is a 3.06GHz hyper-threading CPU
2. CPU L2 Cache: this part depicts the L2 Cache size. For example,
   512 stands for 512 KB L2 Cache; 256 stands for 256 KB L2 Cache
3. System Clock: this part depicts the System Clock (Front Side Bus) provided by the CPU. For example,
   533 stands for a 533MHz system clock provided by a 133MHz CPU times 4;
   400 stands for a 400 system clock provided by a 100 MHz CPU x 4.
4. CPU Voltage Vcore: this part depicts the CPU Voltage. For example,
   1.5V stands for a CPU of 1.5V Vcore.

Note: System Clock vs CPU Clock
P4 CPU is a quadpumped CPU. The system bus is provided by the CPU clock x 4. Therefore, users can figure out the P4 CPU clock by the System Clock divided by 4.

2-1.2 CPU Installation with Socket 478

This mainboard is built with CPU Socket 478B (478-pin) supporting the Intel Pentium 4 CPU:

• Follow the steps described in this section to install the 478-pin Pentium 4 CPU into the on board Socket 478.

• After installation of Pentium 4 CPU, you must also install the specific Pentium 4 CPU fan designed in tandem with this CPU. This CPU Fan installation is described in next section.

• This mainboard supports Hyper-threading dual-in-one CPU, the function of which can be enabled by Windows XP. (See illustration on the right.)
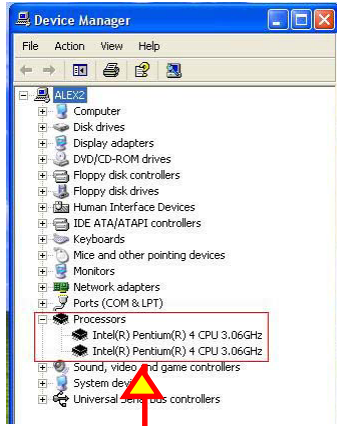
(If Hyper-threading CPU is installed successfully with O/S Win XP, the O/S will enable the dual-in-one CPU function.)

1. First pull sideways the lever of Socket 478, and then turn it up 90^0 so as to raise the upper layer of the socket from the lower platform.
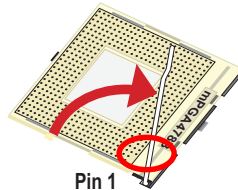
Pin 1

2. Configure Pin 1 of CPU to Pin 1 of the Socket, just as the way shown in the diagram on the right. Adjust the position of CPU until you can feel all CPU pins get into the socket with ease.

Pin 1
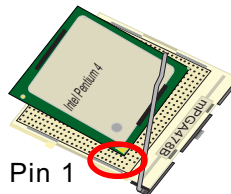
3. Make sure that all CPU pins have completely entered the socket and then lower down the lever to lock up CPU to socket.

20
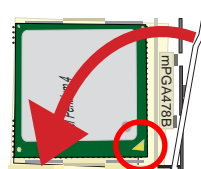
2-2 Pentium 4 CPU Fan Installation:

CPU Fan Connector   Pentium 4 Fanbase
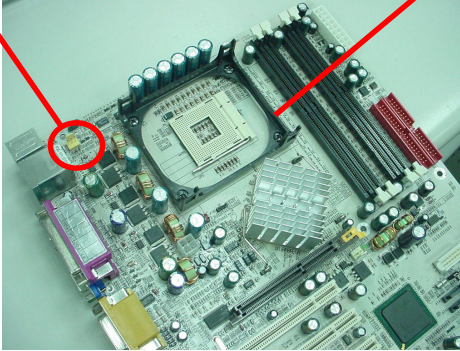
1.Press down 4 latches.
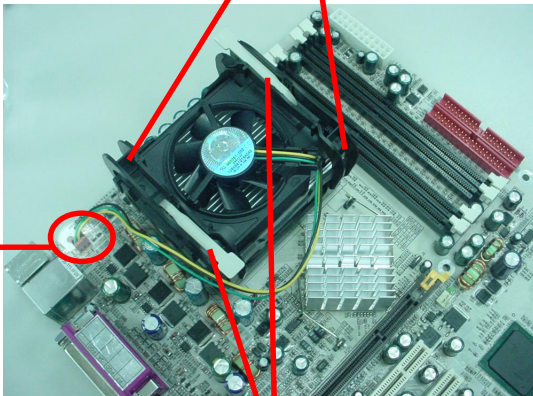
2.Press down the 2 levers to lock fan to fanbase

3.Connect Fan Connector to CPU FAN connector

The above pictures are taken from sample mainboards as installation illustration. The layout in the pictures may be different from your mainboard.

2-3 Memory Installation

How to tackle the memory Modules:
• Make sure to unplug your power supply before adding or removing memory module.
• Pay attention to the orientation of the DIMM slots.

Dual Channel Memory Features

• Dual Channel memory configuration provides higher performance than Single Channel configurations
• Matched DIMMs need to have identical density, DRAM technology, DRAM bus width, and equal number of memory banks.
• This series supports up to 4GB unbuffered Dual-channel DDR 400/ 333/266 SDRAM, with 4 DDR DIMM slots on board. Do not insert other type of modules into these slots.
• The dual memory controller can double the DDR memory bandwidth up to 6.4GB/s with DDR400, 5.4GB/s with DDR333 and 4.2GB/s with DDR266.

DDR DIMM Slots
(184-pin)
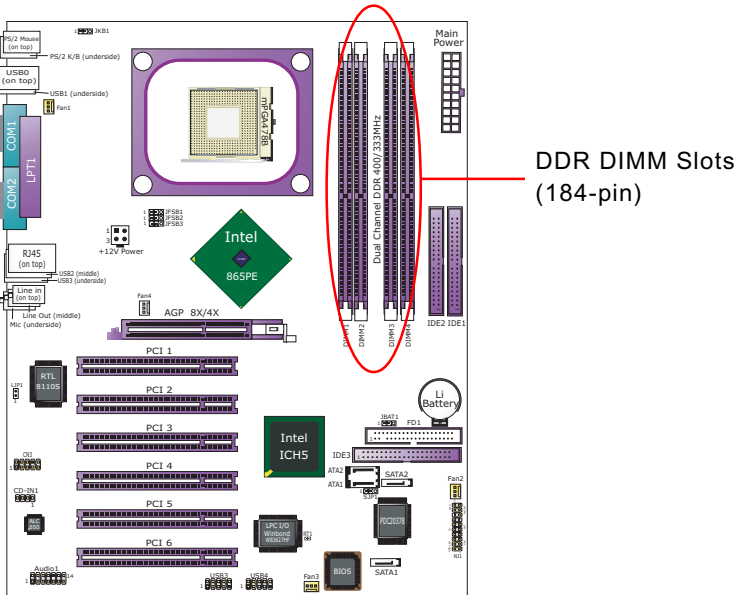
2-3.1 To Install DDR SDRAM Module

• To enable Dual-channel memory function, <u>users should insert totally identical (size and frequency) DDR module pair into the bank-pair.</u> In this series, DIMM1 and DIMM3 is a pair, and DIMM2 and DIMM4 is another.

• DDR DIMM slot has 184 pins and one notch. Insert a DDR SDRAM vertically into the 184-pin slot with the notch-to-rib matching.

184-Pin DIMM Notch Key Definition
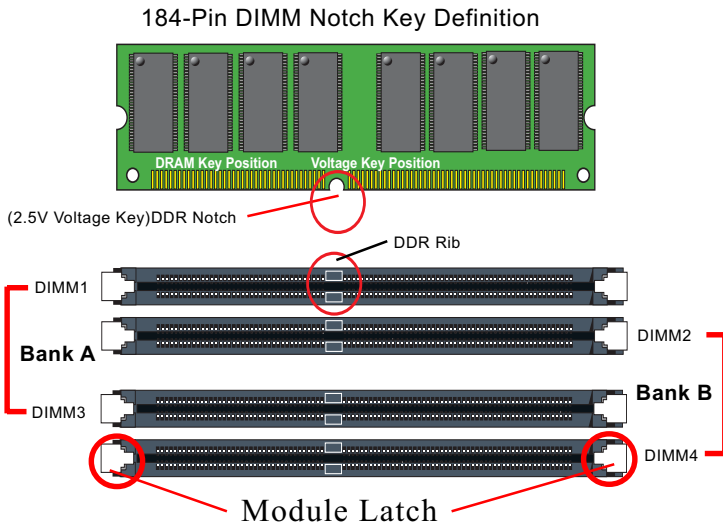
DIMM1+DIMM3 = (with identical pair) Dual Channel Memory
DIMM2+DIMM4 = (with identical pair) Dual Channel Memory

2-3.2 To Remove a DIMM

Power off the system first, and then press down the holding latches on both sides of slot to release the module from the DIMM slot.

2-4 AGP 8X/4X Slot Installation

The AGP slot on board supports 1.5V AGP 8X/4X card only. A Rib is specifically added to the 8X/4X slot so as to match the AGP 8X/4X card. To insert a 3.3V AGP 2X card into the AGP 4X slot will damage the system chip and burn the 1.5V circuitry.

An AGP 8X card will support a data transfer rate up to 2GB/sec, while an AGP 4X card will provide 1GB/sec transfer rate.
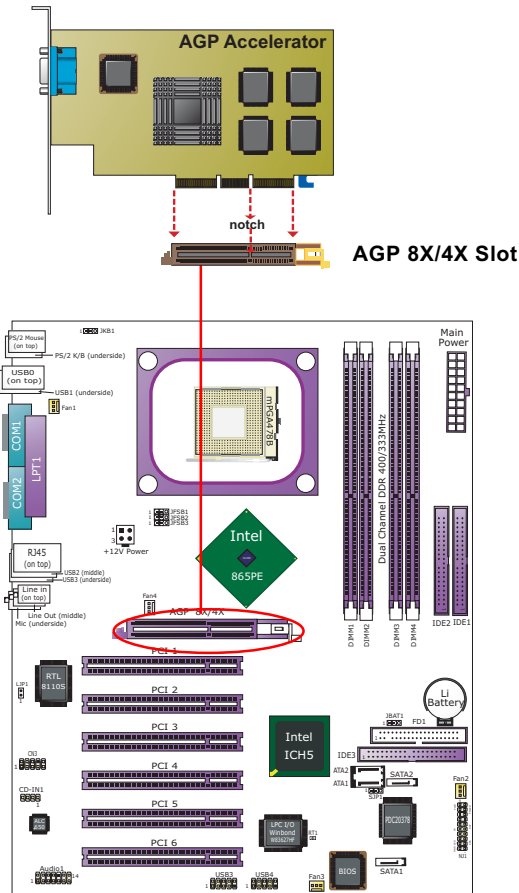
2-5 IDE Connectors Installation

To install IDE Connector, you may connect the blue connector of IDE cable to the primary (IDE1) or secondary (IDE2) connector on board, and then connect the gray connector to your slave device and the black connector to your master device. If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers correctly. Please refer to your hard disk documentation for the jumper settings.

IDE2

IDE1

Hard Disk Drive Connector

Orient the red line on the IDE Flat Cable to Pin1.

Pin 1 (to Red Line)

Gray connector
(To Slave device)

Black connector
(To Master Device)

80-conductor
cable

Red line

Blue connector
(To Mainboard)
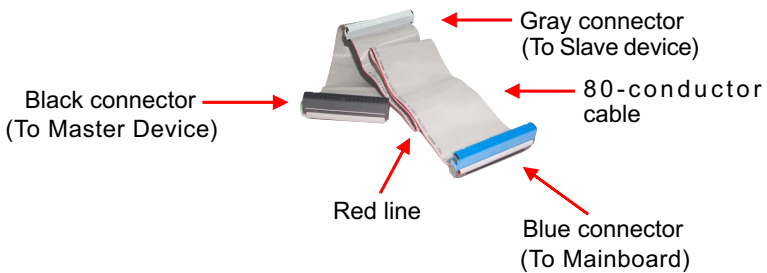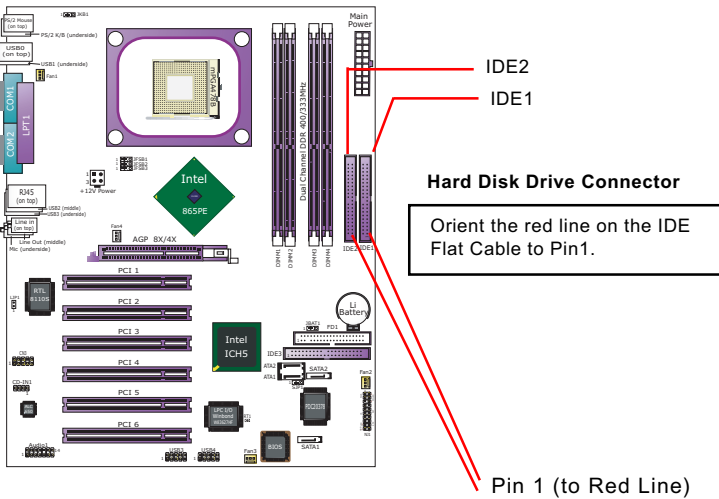
IDE Flat Cable

2-6 Serial ATA Connectors Installation

The Serial ATA is designed to improve the Parallel ATA with the capability of Hot Plug and offer a data bandwidth of 150Mbytes/second. It also reduce voltage and pin count and can be implemented with thin cables which improve the inner ventilaton of PC cases.

2 Serial ATA connectors are built on board, supported by ICH5 SATA Controller for SATA Hard Disk Drives setup (not for RAID setup).
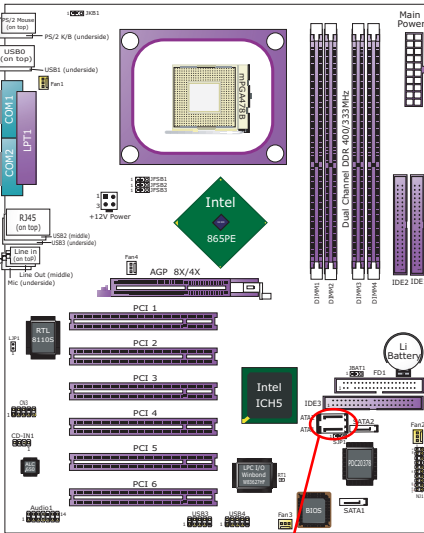
**Serial ATA Connector ATA1 and ATA2
(Not for RAID Setup)**

To Power Supply
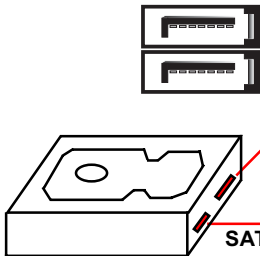
SATA Power Connector

Serial ATA Hard Disk

Serial ATA Power Cable

2-7 SATA RAID / Parallel ATA RAID Connectors

2 Serial ATA RAID and 1 Parallel ATA RAID connectors are built on board, supported by the RAID Controller PDC20378. Before we install RAID disk drives to these connectors, we must first enable the controller PDC20378 by Jumper SJP1 1-2 closed and then install the RAID Controller Driver (see Chapter 5 Disk Array Installation).

SJP1:

RAID Controller Select

1

1-2 closed (default)
RAID Controller enabled

1

2-3 closed
RAID Controller disabled

PATA RAID Connector IDE3
IDE3 is supported by PD20378 for PATA RAID Setup.
Orient the red line on the IDE Flat Cable to Pin1.

SATA RAID Connector SATA2
SATA RAID Connector SATA1

RAID Controller PDC20378

To Power Supply

SATA Power Connector

Serial ATA Hard Disk

Serial ATA Power Cable

2-8 Floppy Drive Connector Installation

To install FDC, you should connect the end of FDC cable with single connector to the board, and connect the other end with two connectors to the floppy drives.

Floppy Drive Connector:

Orient the red line of the Floppy Flat Cable to Pin1.

Pin 1 (to Red Line)

Signal Swap End

To 2nd Floppy Drive

To 1st Floppy Drive

Red line

To Mainboard

FDD Cable

2-9 ATX V2.03 Power Supply Installation

+12V Power Connector

GND GND

| 1 | ◯ ◯ | 2 |
| 3 | ◯ ◯ | 4 |

+12V   +12V

+12V	☐☐	+5V
5SB	☐☐	+5V
PWR OK	☐☐	-5V
GND	☐☐	GND
+5V	☐☐	GND
GND	☐☐	GND
+5V	☐☐	PS ON#
GND	☐☐	GND
+3.3V	☐☐	-12V
+3.3V	☐☐	+3.3V

Pin1   Pin11
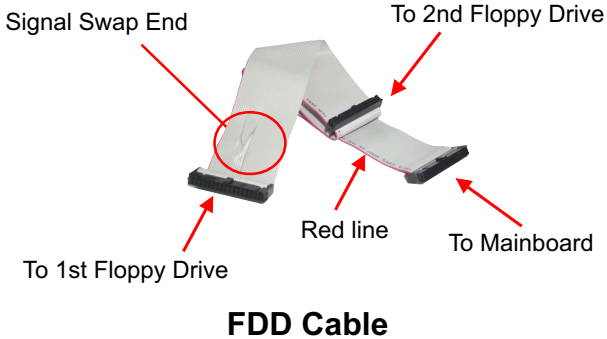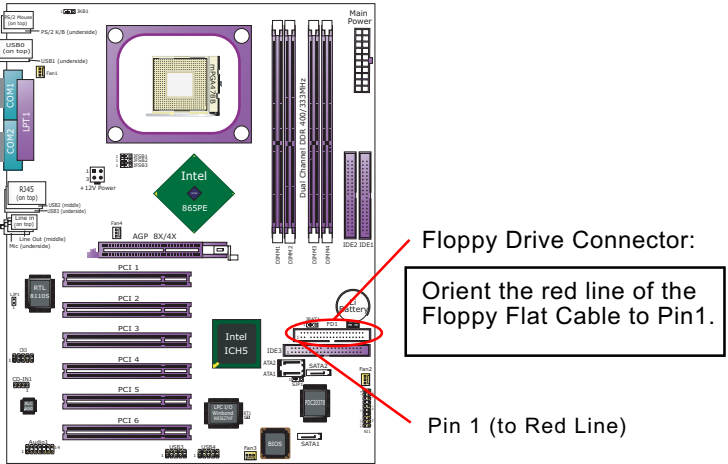
Main Power Connector
(20-pin)
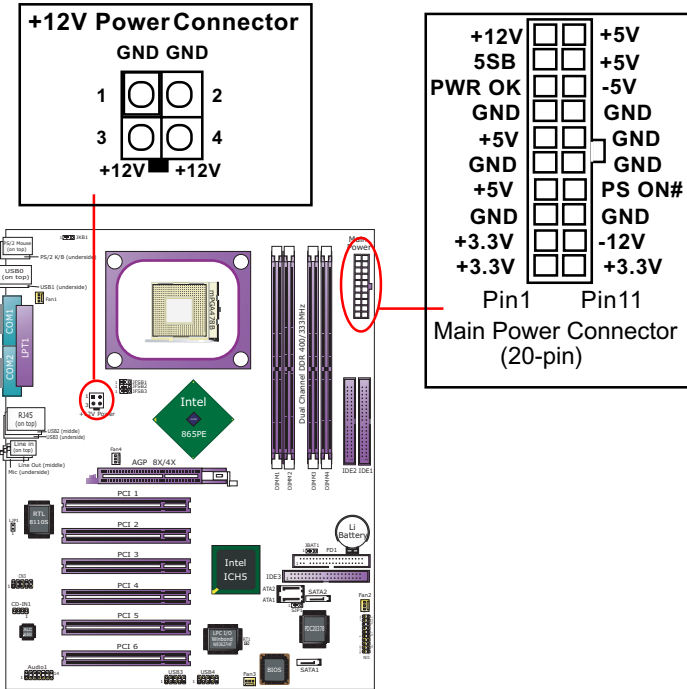
ATX V2.03 Power Supply is strongly recommended for mainboard running with 2GHz or higher CPU.

To set up Power Supply on this mainboard:
1. Connect the on-board Main Power Connector (20-pin) to the Main Power Connector (20-pin) of an ATX Power Supply which can be of the latest version 2.03 model, and then connect the square-shaped +12V Power Connector on board to the square-shaped +12V Power Connector of the Power Supply.
   Warning: Both the Main Power Connector and the +12V Power Connector should be connected to Power Supply; otherwise, the system may either not start or be damaged.
2. This ATX Power Supply should be able to provide at least 720mA/ +5V standby power for Wake On Lan function.

2-10 Jumper Settings

The following diagrams show the locations and settings of jumper blocks on the mainboard.

JKB1: Keyboard / Mouse Wake Up		JFSB1&JFSB2: CPU Frequency Select			
		(default) CPU Auto-Detection	100MHz (FSB400)	133MHz (FSB533)	200MHz (FSB800)
1-2 closed (default) Disabled		JFSB1	JFSB1	JFSB1	JFSB1
2-3 closed Enabled		JFSB2	JFSB2	JFSB2	JFSB2
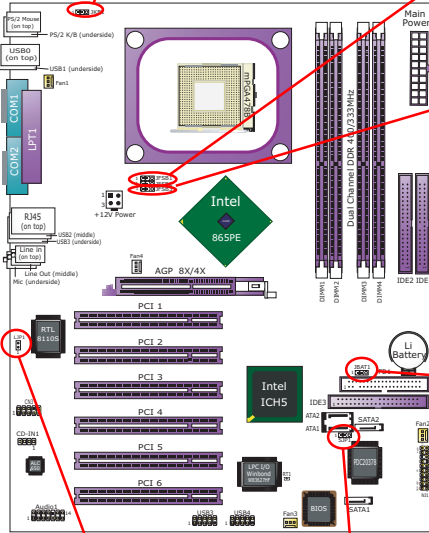
JFSB3
Memory Turbo Mode

1-2 closed (default)
Turbo Mode Disabled

2-3 closed
Turbo Mode Enabled

JBAT1
Clear CMOS

1-2 closed (default)
To hold data

2-3 closed
To clear CMOS

LJP1
LAN Controller Select
(865-GR only)

1-2 closed
Disabled

(default)
1-2 opened
Enabled

RAID Controller Select
SJP1:

1-2 closed (default)
RAID Controller enabled

2-3 closed
RAID Controller disabled

30

How to tackle the Jumpers:

1 2 3
A 3-pin Jumper

If a pin-header (of 2 or more pins) is designed in such a way that its pins can be closed or linked together to set up a specific function, this header is called a jumper in this manual.

A 2-pin Jumper Cap

The conductor inside the cap links two header-pins together.
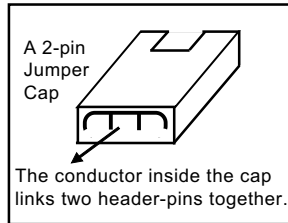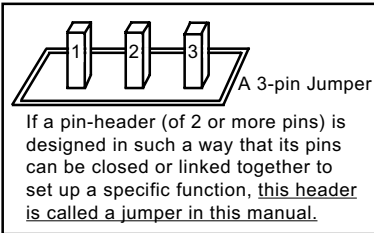
• A Jumper is usually but not necessarily given a "JpX" legend.
• In the Jumper setting diagram, the jumper pins covered with black marks stand for closed pins with jumper cap.

Jp X   1 ⬤⬤⬤ 3   1 ⬤⬤⬤ 3   1 ⬤⬤⬤ 3

Jumper with   **Jumper with**   **Jumper with**
Pin 2-3 closed   **all pins opened**   **Pin 1-2 closed**
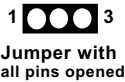
• Do not remove any jumper cap when power is on. Always make sure the power is off before changing any jumper settings. Otherwise, the mainboard will be damaged.

2-10.1 JFSB1 & JFSB2: CPU Frequency Select

JFSB1 and JFSB2 are designed on board for CPU frequency select.

1. Setting JFSB1 1-2 closed and JFSB2 to 1-2 closed will allow CPU on board to Auto Detect its own frequency and apply it to the System Bus.
2. Setting JFSB1 2-3 closed and JFSB2 2-3 closed is for 100 MHz CPU.
3. Setting JFSB1 opened and JFSB2 2-3 closed is for 133 MHz CPU.
4. Setting JFSB1 2-3 closed and JFSB2 opened is to select a CPU clock at 200 MHz for your CPU. If 200MHz is an overclock for your CPU, it may or may not boot your system. If an overclok fails to boot system, you should restore the default setting and then clear CMOS to reboot your system. (See Clear CMOS in next paragraph.)

JFSB1&JFSB2: CPU Frequency Select			
(default) CPU Auto-Detection	**100MHz**	**133MHz** (FSB533)	**200MHz**
JFSB1 1 ⬤⬤⬤	JFSB1 1 ⬤⬤⬤	JFSB1 1 ⬤⬤⬤	JFSB1 1 ⬤⬤⬤
1 ⬤⬤⬤ JFSB2	1 ⬤⬤⬤ JFSB2	1 ⬤⬤⬤ JFSB2	1 ⬤⬤⬤ JFSB2

Further Notes on CPU Overclocking:

1. If you have successfully booted system, with or without CPU overclock, you still can try another CPU overclock in BIOS Setup. Please enter BIOS Setup, choose "Frequency/Voltage Control" of Advanced BIOS Features, and configure the "CPU Clock" item to raise your CPU clock.

2. CPU overclocking should take all components on board into account. If you fail in BIOS overclocking, you will not be able to restart system. In such case, Power off system and clear CMOS by JBAT1 and then restart your system. And remember to reconfigure whatever should be reconfigured.

3. If your system is already fixed in a cabinet or case, you may not like to take the trouble to clear CMOS. Then power on your system with the power button on the PC case and simultaneously press down the "Insert" key on the keyboard until you see the initial bootup screen appear. And remember you should also enter CMOS BIOS Setup instantly and choose "Load Optimized Defaults" to restore default BIOS .

2-10.2 JBAT1: Clear CMOS

When you have problem with rebooting your system, you can clear CMOS data and restore it to default value. To clear CMOS with Jumper JBAT1, please follow the steps below:

1. Power off system.
2.   Set JBAT1 to Pin 2-3 closed.
3. After 2 or 3 seconds, restore the JBAT1 setting to Pin1-2 closed.
4. CMOS data are restored to default now. Remember never clear CMOS when system power is on.

JBAT1 Clear CMOS	
1	**1-2 close (default)** To hold data
1	**2-3 closed** To clear CMOS
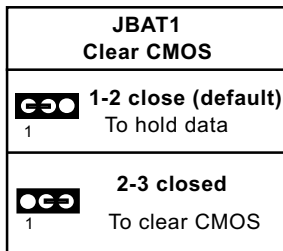
2-10.3 JFSB3: Memory Turbo Mode

JFSB3 is designed on board for improving Memory performance. If you want to obtain better system performance, you can set JFSB3 2-3 closed to enable the Memory Turbo Mode. Otherwise, you can set JFSB3 1-2 closed to disable the Memory Turbo Mode.

JFSB3 Memory Turbo Mode
1-2 closed **(default)** ¹ Turbo Mode Disabled
2-3 closed ¹ Turbo Mode Enabled

2-10.4 LJP1: LAN Controller Select (865-GR only)

LJP1 is a 2-pin jumper for enabling or disabling the on-board LAN Controller. Users can set LJP1 1-2 opened to enable the on-board LAN Controller so as to set up the LAN driver, or to set LJP1 1-2 closed to disable the on-board LAN Controller. No matter LJP1 is enabled or disabled, users are free to use an add-on PCI LAN card for networking.

LJP1: LAN Controller Select (865-GR only)
1-2 closed Disabled
(default) **1-2 opened** Enabled

2-10.5 JKB1: Keyboard / Mouse Wake Up

JKB1 is designed on board as a jumper to enable/disable the PS/2 keyboard/mouse Wake Up from suspend mode.
USB keyboard/mouse Wake Up function is also supported on this mainboard.

JKB1: Keyboard / Mouse Wake Up	
1	**1-2 closed (default)** Disabled
1	**2-3 closed** Enabled

2-10.6 SJP1: Raid Controller Select

SJP1 is a 3-pin jumper for enabling or disabling the on-board RAID Controller PDC20378. Setting SJP1 1-2 CLOSED will allow user to enable on-board RAID Controller so as to allow user to set up the Disk Array.

RAID Controller Select SJP1:
1 **1-2 closed (default)** Enabled
1 **2-3 closed** Disabled

2-11 Other Connectors Configuration

This section lists out all connectors configurations for users' reference.

2-11.1 On Board Fan Connectors
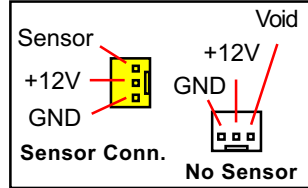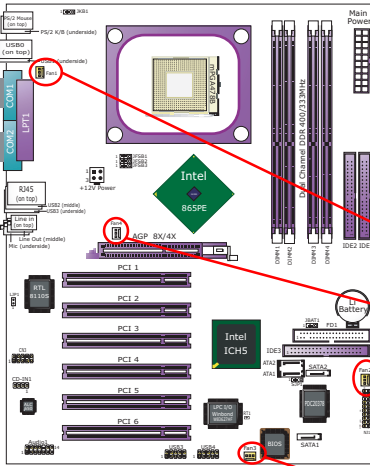
Both Sensor and No-sensor Fan Connectors support CPU/AGP/System/Case cooling fan with +12V mode. When connecting the wire to any Fan Connector, users should make sure that the red wire is for the positive current and should be connected to pin +12V, and the black wire is Ground and should be connected to pin GND.

A Hardware Monitor chipset is on board, with which users can install a Hardware Monitor Utility and read the fan speed transmitted from the sensor fan. Otherwise, users can read the fan speed from the "Hardware Monitor Status" in BIOS.

A running Fan will send out 2 electric pulses per rotation of its fan blade. A Sensor Fan Connector will count the electric pulses and send the information to the System Hardware Monitor which in turn will work out the fan rotation speed and display it on screen.

2-11.2 USB Ports and USB Pin-headers

This series provides four USB ports USB0 to USB3 on board supporting various USB devices. In addition, two USB pin-headers are added on board to provide expansion of four more optional USB ports by using two additional USB cables. Users can order the optional USB cables from your mainboard dealer or vendor.

When plugging the USB cable to USB Header, users must make sure the red wire is connected to Pin 1.

All 8 USB ports are compliant with 1.1 / 2.0 USB Bus. USB 2.0 supports Windows 2000 and up (no support for Windows 9X/ME). Please see Chapter 3 for USB2.0 Installation.

USB connectors USB0 and USB1
USB connectors USB2 and USB3

USB Cable (Optional)

USB Port

Red wire

USB Pin-headers USB3 and USB4

First USB Port Wiring for Front USB

Red   White Green black
+5V   D1-   D1+   GND

USB Header
Pin Assignment

10

1

+5V   D2-   D2+   GND
Red   White Green black

Second USB Port Wiring for Front USB
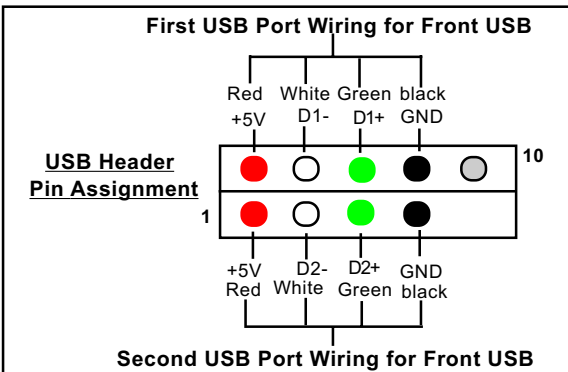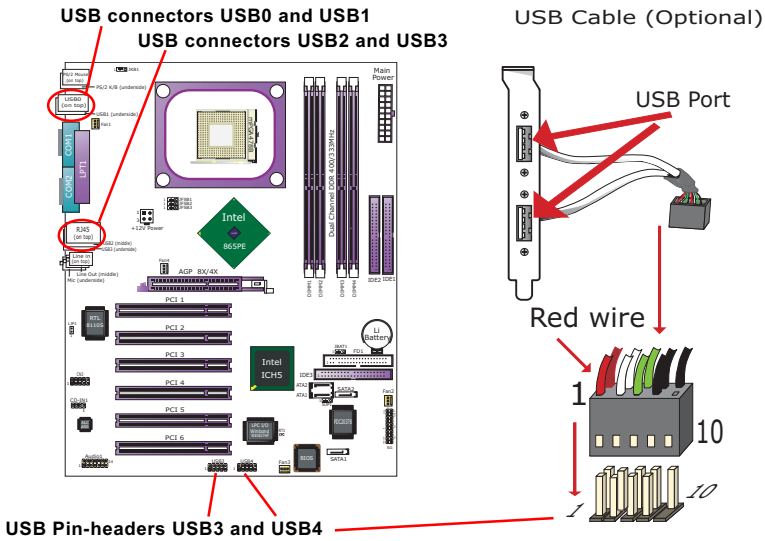
2-11.3 Chassis Panel Connectors
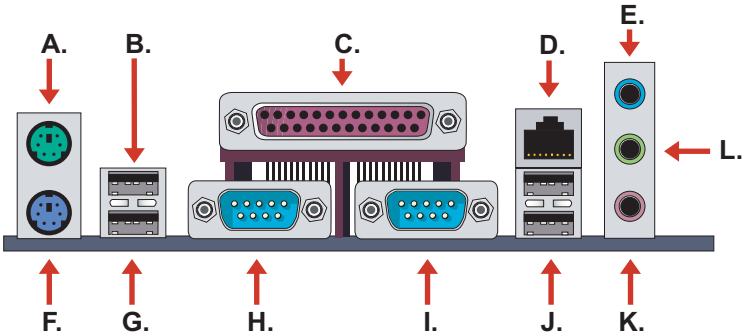
A : PS/2 Mouse
B : USB 0 (top)
C : LPT1 Port
D : RJ45 (865-GR only)
E : Line in/
**   Rear Speaker Out**
F : PS/2 Keyboard
G : USB 1 (underside)

H : COM1 Connector
I : COM2 Connector
J : USB 2 (middle)
**   USB 3 (underside)**
K : Microphone Input /
**   Center Subwoofer Out**
L : Line Out /
**   Front Speaker Out**

2-11.4 6-channel Sound Output Connector (Optional)

This series is designed with an optional 6-channel Audio-out connector "Audio1". If this option is chosen, it will provide 3 additional audio-out ports for the 6-channel sound.

6-channel Audio-out Pin Assignment

2 • • • • • • 14
1 • • • • • • • 13

Pin 1 LFE-out
Pin 3 Center-out
Pin 5 Surround-out-R
Pin 7 Surround-out-L
Pin 9 Jack-detect
Pin11 SPDIFI
Pin13 SPDIFO

Pin 2 Gnd
Pin 4 Gnd
Pin 6 Gnd
Pin 8 Gnd
Pin10 (Void)
Pin12 Gnd
Pin14 Gnd
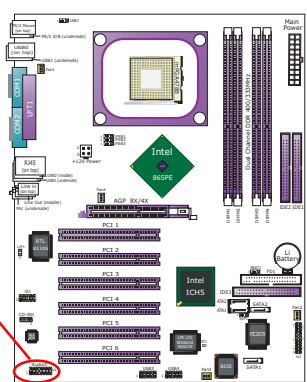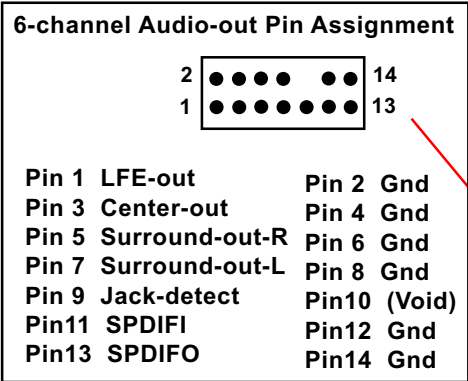
2-11.5 CD-ROM Audio Connectors

CD-IN1 is an audio connector connecting CD-ROM audio to mainboard.
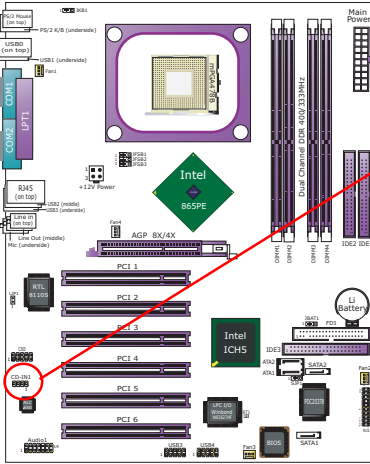
CD-ROM Audio Pin Assignment

CD-IN1	Pin 1	Pin 2	Pin 3	Pin 4
	Left Channel	GND	GND	Right Channel

2-11.6 PS/2 Mouse And PS/2 Keyboard

(PS/2 Mouse: On top of keyboard connector, green)

6 Void
4 VCC
2 Void
5 Mouse Clock
3 GND
1 Mouse Data

6 Void
4 VCC
2 Void
5 Keyboard Clock
3 GND
1 Keyboard Data
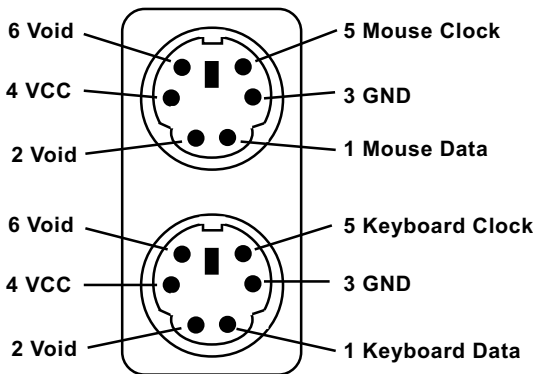
(PS/2 Keyboard Connector: Underside, purple)

2-11.7 Front Panel Audio Connector

This Mainboard is designed with a Front Panel Audio connector "CN3" which provides connection to your chassis.

1. When CN3 is set to 5-6 closed and 9-10 closed, this default setting disables this connector and leaves the Back Panel Audio enabled.

2. To use this Front Panel Audio Connector, please open all pins of CN3 and connect it to your chassis.

CN3: Front Audio Panel Connector

Pin 1 Mic In	Pin 2 Aud GND
Pin 3 Mic VREF	Pin 4 Aud Vcc
Pin 5 FPOUT R	Pin 6 RET R
Pin 7 (Key)	
Pin 9 FPOUT L	Pin 10 RET L

2   10
1
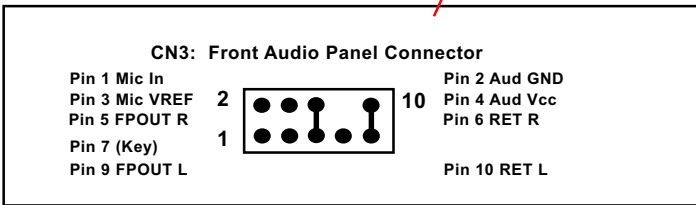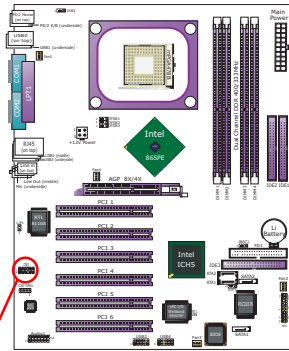
2-11.8 LAN Connector (865-GR Only)

One RJ45 connector is on board for network connection, supporting GiGabit Ethernet 10/100/1000Mb data transfer.

Yellow LED "On" to indicate Network hub is in connection with the system.

Green LED blinks to indicate that data transmission is undergoing in 10/100/1000 Base T mode.
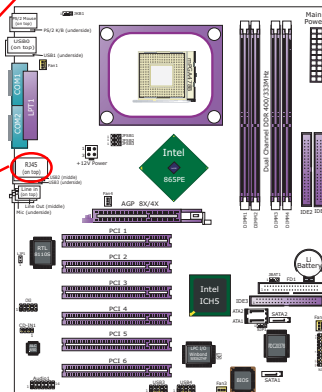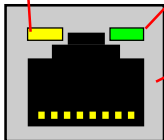
2-11.9 Complex Pin-header

This complex Pin-header consists of the following connectors for various supports. When you have fixed the mainboard to the case, join the connectors of this Complex Pin-header to the case Front Panel.

Case
Front Panel

(1)Power Switch	PWRBT#	PLED-
	PWRBT	NC
		PLED+
	IR_VCC	
(2)Infrared(IR)	NC	RSTGND
	IRRX	RST1
	IRGND	SP1
	IRTX	NC
(3)HDD LED	HDLED-	SP3
	HDLED+	SPVCC

Power LED (4)

Reset Switch(5)

Speaker (6)
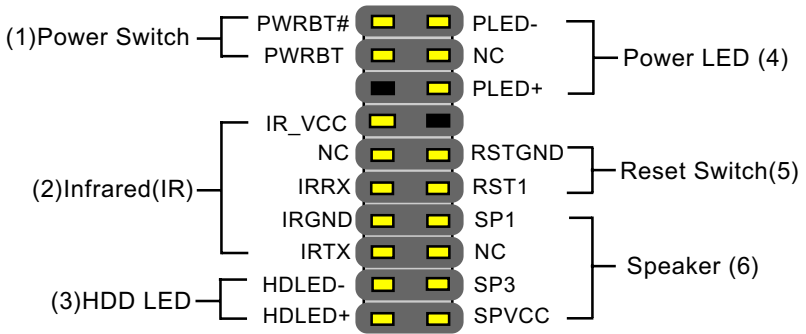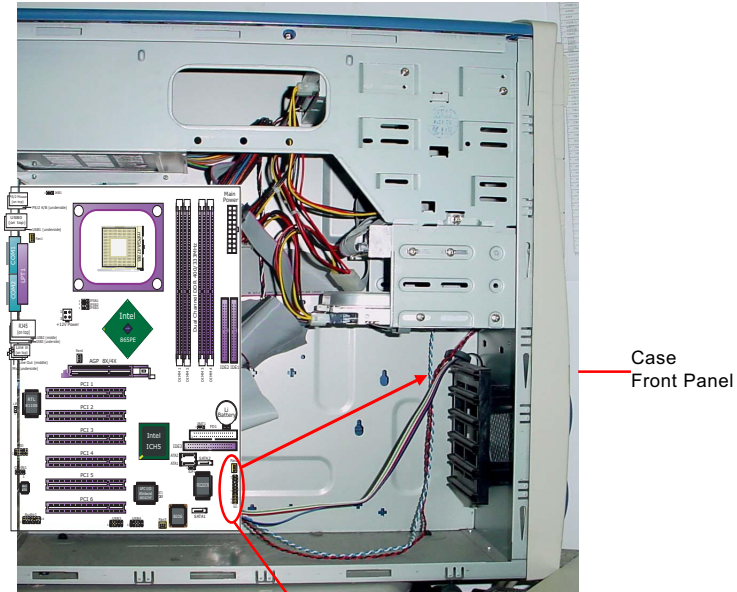
(1) Power Switch Connector:

Connection**:** Connected to a momentary button or switch.
Function: Manually switching the system between "On" and "Soft Off". Pressing the momentary button for more than 4 seconds will also turn the system off.

(2) IR Connector (Infrared Connector):

Connection: Connected to Connector IR on board.
Function: Supporting wireless transmitting and receiving module on board.

(3) HDD LED Connector:

Connection: Connected to HDD LED.
Function: To supply power to HDD LED.

(4) Power LED Connector:

Connection: Connected to System Power LED.
Function: To supply power to "System Power LED".

(5) Reset Switch Connector:

Connection: Connected to case-mounted "Reset Switch".
Function: To supply power to "Reset Switch" and support system reboot function.

(6) Speaker Connector:

Connection: Connected to the case-mounted Speaker.
Function: To supply power to the case-mounted Speaker.

2-11.10 Thermal Resistor
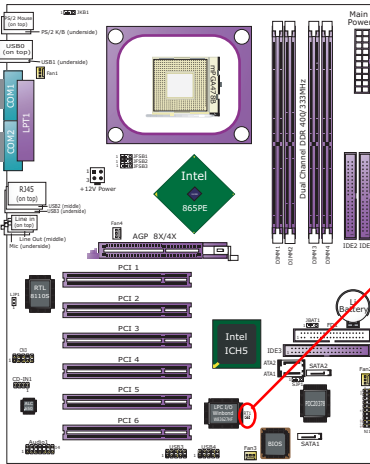
Thermal Resistor RT1

RT1

RT1 is mounted
with Thermal Resistor
by default for detecting
system temperature.

Chapter 3 Software Setup

Drivers, Utilities and Software Installation

• Support CD:
This series of mainboards will be shipped with a Support CD which contains those necessary driver files, Application Softwares and some helpful utilities. It is a user-friendly, auto-run CD which will open itself up in a CD-ROM automatically.

This chapter is devoted to describing the installations of all these essential drivers and utilities on Windows 9X, Windows ME, Windows 2000 and Windows XP. And installation on Windows XP as the general illustration hereby.
The priority of drivers to be installed should also be noted. Users are recommended to take the following installation orders :

3-1 To Open up the Support CD
3-2 To Install Intel Chipset Software Installation Utility
3-3 To Install AC'97 Audio Drivers
3-4 To Install Hardware Monitor Utility
3-5 To Install LAN Drivers (for 865-GR only)
3-6 To Install Intel USB V2.0 Drivers

3-1 To Open up the Support CD

1. Please put the Support CD enclosed in your mainboard package into the CD-ROM drive. In a few seconds, the Main Menu will automatic- ally appear, displaying the contents to be installed for this series:

Intel Chipset Software installation utility

AC97 Audio Driver (Optional)

Hardware Monitor Utility

Install Acrobat Reader

Browse CD-ROM

EXIT

2. In case your system does not open the Support CD automatically, please click to the following path to enter the Main Installation Menu:

   D:\ Autorun.exe (assuming that your CD-ROM Drive is Drive D)

3. We should take "Intel Chipset Software installation Utility" as first installation priority to optimize the Intel system.
   From next section, we provide detailed descriptions of all these installations with graphical illustrations.

3-2 Intel Chipset Software Installation Utility

1. Following the procedures of opening the Support CD, click to " Install Intel Chipset software installation Utility" to proceed.

2. The Intel Service Pack InstallShield Wizard will pop up to guide you to the Intel Service pack installation. Press **"Next"** button to continue.
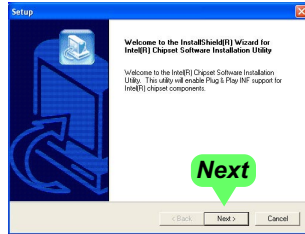
3. **"Intel Software License Agreement"** screen will appear, please click the **"Yes"** button to agree with the Licence Agreement and continue.
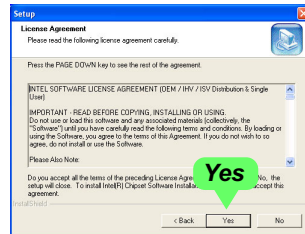
4. After all the setup process is finished, please restart your computer by clicking on "Finish" so as to take the Utility into effect.
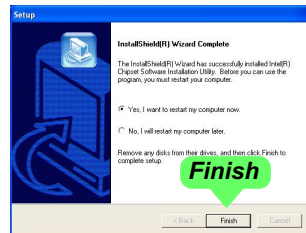
3-3 AC'97 Audio Driver Installation

Realtek AC97 Audio Codec on board, AC'97 2.2 compatible stereo audio code for PC multimedia systems. Realtek AC'97 Audio Codec Driver is provided in Support CD for user's installation.

3-3.1 Install AC'97 6-channel Audio Driver

1. Following the procedures of opening the Support CD, click to " AC'97 Audio Driver" to proceed.

2. Instantly, the "installShield Wizard" screen appears to guide you through the "Realtek AC'97 Audio Setup"".
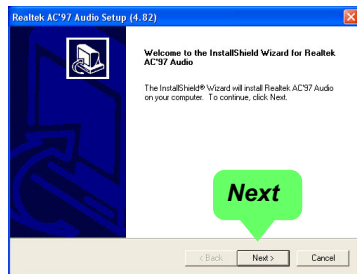
3. Instantly, the Setup program proceeds to install the softwares which include AC'97 driver and AVRack. (If you want to stop setup, click the "Cancel" button.)
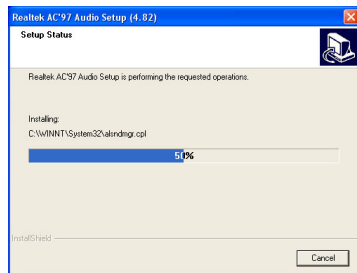
4. After the setup process is finished, please check the radial button "Yes, I want to restart my computer now." And click "Finish" to restart your system.
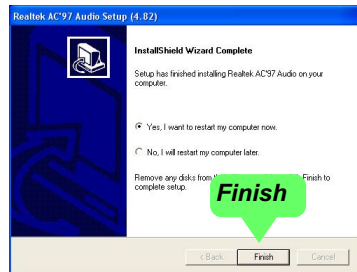
3-3.2 Verify 6-channel Audio

After installation of AC'97 6-channel Codec, you must configure the 5.1 Speaker connection to enable the 6-channel audio.

1. Connect your on-board Audio Connector to your 6-channel speakers as depicted in the figure below:

Pale Blue Connector to Rear Speaker

Pale Green Connector to Front Speaker

Pale Pink Connector to Center/Subwoofer Speaker
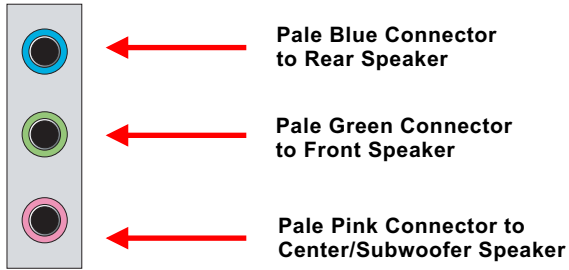
2. After Connection is done, start your Windows system and double click the Avance Sound Effect manager icon to enter 6-channel configuration:

Sound Effect Manager icon on Windows XP

3. The AC'97 Audio Configuration" screen will pop out. Clikc the "Speaker Configuration" bar with your mouse.
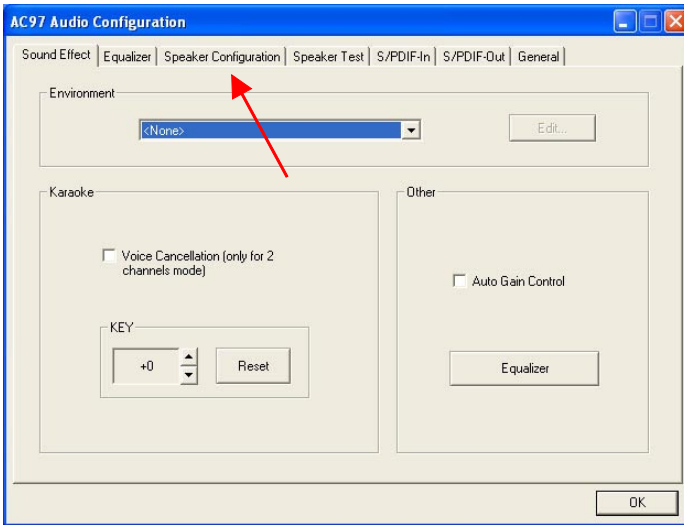
4. Instantly, the "Speaker Configuration" screen will pop out. Pick the items "6-channel mode for 5.1 speakers output" and " Synchronize the phonejack switch with the speakers settings" and then click "OK" to finish configuration.
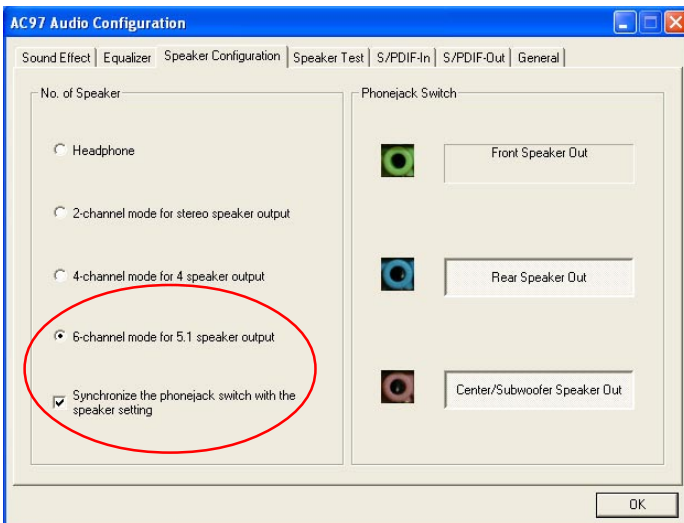
5. At finishing the Speakers Configuration, you can also click the "Speaker Test" bar on the screen to test the 6-channel performance. The figure below is the "Speaker Test" screen with testing instructions enclosed on it. Follow the instructions to perform the Speakers Test.

3-4 To Install Hardware Monitor Utility

3-4.1 Installation

Hardware Monitor is built on this mainboard. Its installation is pro-grammed to a fully automated mode on Windows 9X/Me/NT4/2000/XP. Users can follow the model installation below for its installation on various Windows System.

1. Following the procedures of opening the Support CD, click to " Hardware Monitor Utility" to proceed.

2. The Soltek Hardware Monitor InstallShield Wizard will pop up to guide you to the Intel Service pack installation. Press **"Next"** button to continue.
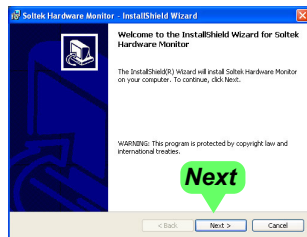
3. The **InstallShield Wizard** screen will show the current setting, please click the **"Install"** button to continue.
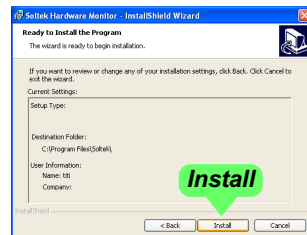
4. After all the setup process is finished, click "Finish" to exit the wizard.
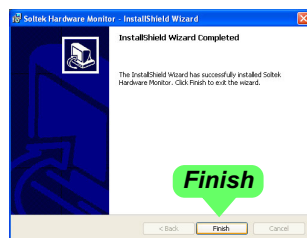
3-4.2 Verification

1. After installing Soltek Hardware Monitor, double click "SoltekHM" icon on the desktop to open the main window of the Soltek Hardware Doctor.

2. Then the pop-up screen will show all information about CPU Temperature, Fan Speed and various Voltages.

Showing the Fan Speed(s) that is supported by the mainboard.

Showing the temperature(s), the function of which is supported by the mainboard.

Click on "Soltek" button to display the function menu.

Showing the Voltage(s) that is supported by the mainboard.

Status Warning LED

*Note: Not all items or functions showing in the above picture will show up. Only those items or functions that are supported by the mainboard will reveal themselves in the above screen.

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3-5 To Install LAN Drivers (for 865-GR only)

3-5.1 RTL8110S Ethernet driver on Windows ME / 2000 / XP

The Ethernet driver contained in the Support CD is not included in the Autorun Menu. To install RTL8110S LAN driver on Windows 2000 / XP, please follow the steps shown below:

1. On the "Start" screen of your system, please click to the following path:

   \My Computer\Properties\Hardware\Device manager (on 2000/XP)

   \My Computer\Properties\Device manager (on ME)

2. In the "Device manager" screen, you can see the item " PCI Ethernet Controller" with a yellow question mark on its left side, which indicates that the LAN controller is already detected by system but the driver for this on-board RTL8110S Ethernet Controller is not installed yet. Please point to this item with your mouse and double click on it (or click the "Properties" button).

3. Instantly, the "PCI Ethernet Controller Properties" screen shows up. Please click the "General" bar to continue.

4. In the "General" screen, click "Reinstall Driver" button to continue.

This picture is taken from Windows XP
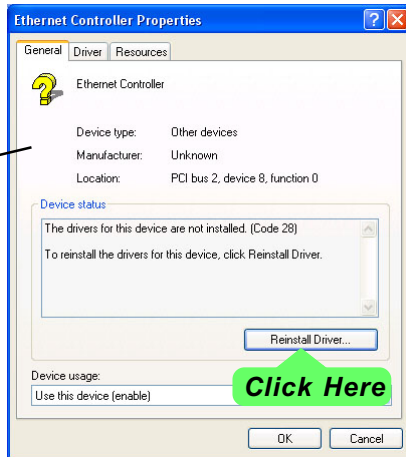
5. The "Hardware Update Wizard" will guide you through all setup and install the driver of the Ethernet controller completely.

6. When the "Finish" screen shows up, click "Finish" to end the LAN driver installation. Final Dialog box will appear to remind you that you must restart your computer to finish updating the new hardware. Please click "Yes" to restart system and finish the LAN driver installation.

3-5.2 RTL8110S Ethernet driver on Windows 9X

The Ethernet driver contained in the Support CD is not included in the Autorun Menu. To install RTL8110S Ethernet driver on Windows 9X, please follow the steps shown below:

1. On the "Start" screen of your system, please click to the following path:

    \My Computer\properties\Device manager

2. In the "Device manager" screen, you can see the item " PCI Ethernet Controller" with a yellow question mark on its left side, which indicates that the LAN controller is already detected by system but the driver for this on-board RTL8110S Ethernet Controller is not installed yet. Please point to this item with your mouse and double click on it (or click the "Properties" button).

3. Instantly, the "PCI Ethernet Controller Properties" screen shows up. Please click the "General" bar to continue.

4. In the "General" screen, click "Reinstall Driver" button to continue. Please note that the status of "Device Usage" should stay at "Exists in all hardware profiles".
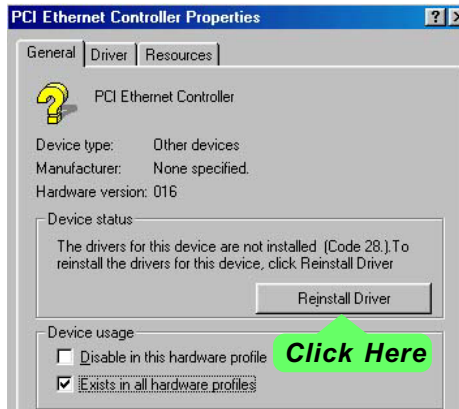
5. In the "Update device Driver Wizard" screen, click "Next" to continue until you see a dialog box asking you to "Specify a location" for the driver. You should **now** insert the Support CD into your CD-ROM.

6. As illustrated in the picture below, check the item "Specify a location" and click the "Browse" button to find out the correct path for the driver. Supposing your CD-ROM drive is Drive E, please type:
   E:\Driver\Network\RTL8110S\Windows\Win98 into the blank bar.

   Then click the "Next" button to continue.

Enter the correct path for the location of LAN driver
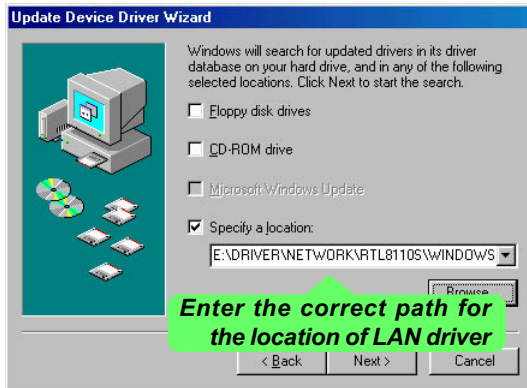
7. The Update Device Driver Wizard will then go on installing the driver, until the "Insert Disk" dialog box shows up. Please withdraw your Support CD and insert the Windows 98 CD-ROM into the CD-ROM drive for updating system and click "OK" to continue.

8. The Update Device Driver Wizard will then proceed to update the system with the LAN driver. When the "Finish" screen shows up, click "Finish" to continue.

Finish

9. Final Dialog box will appear to remind you that you must restart your computer to finish updating the new hardware. Please click "Yes" to restart system and finish the LAN driver installation.

3-6 To Install USB 2.0 Driver for Windows 2000/XP

USB V2.0 with its 480Mb/s transfer rate supports operating system Windows 2000 and Windows XP via the Windows 2000 and Windows XP Service Pack. For archieving Intel USB 2.0 support, users should install the latest Service Pack for Windows 2000 or Windows XP. (intel USB 2.0 does not support Windows 9X/ME.)

1. After installation of Intel Chipset software installation Utility in Windows 2000 or Windows XP, start to install the latest Service Pack version into the operating system. The installation of the latest Service Pack will support USB2.0 in Windows 2000 or Windows XP now.(The latest Service Pack can be found in Microsoft Web Site.)

2. To verify USB2.0 installation, please enter "Device Manager" of "My Computer". On the "Device Manager" screen, you should be able to see the item "Standard Enhanced PCI to USB Host Controller", verifying USB2.0 Driver is installed successfully.
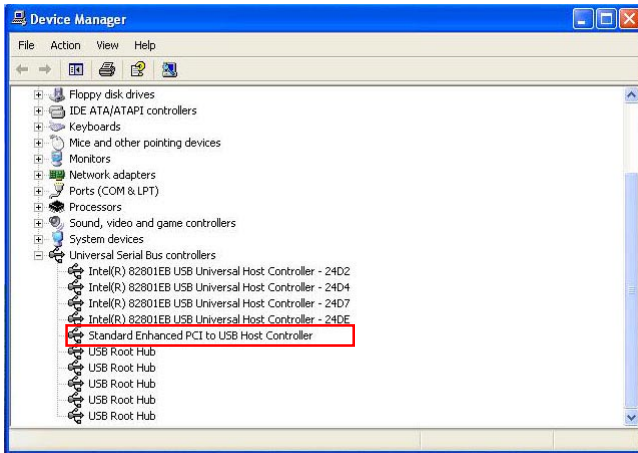
Chapter 4 AMI BIOS Setup

THE BIOS

BIOS stands for Basic Input and Output System. It was once called ROM BIOS when it was stored in a Read-Only Memory (ROM) chip Now manufacturers would like to store BIOS in EEPROM which means Electrically Erasable Programmable Memory. BIOS used in this series of mainboard is stored in EEPROM, and is the first program to run when you turn on your computer.

BIOS performs the following functions:
1. Initializing and testing hardware in your computer (a process called "POST", for Power On Self Test).
2. Loading and running your operating system.
3. Helping your operating system and application programs manage your PC hardware by means of a set of routines called BIOS Run-Time Service.

This Chapter includes the following topics :
4-1 About BIOS Setup
4-2 To Run BIOS Setup
4-3 About CMOS
4-4 The POST (Power On Self Test)
4-5 To Update BIOS
4-6 BIOS Setup

4-1 About BIOS Setup

BIOS setup is an interactive BIOS program that you need to run when:
1. Changing the hardware of your system. (For example: installing a new Hard Disk etc.)
2. Modifying the behavior of your computer. (For example: changing the system time or date, or turning special features on or off etc.)
3. Enhancing your computer's behavior. (For example: speeding up performance by turning on shadowing or cache)

4-2 To Run BIOS Setup

First access BIOS setup menu by pressing < DEL > key after "POST" is complete (before OS is loaded). BIOS will then display the following message:

```
DEL:SETUP
```

4-3 About CMOS

CMOS is the memory maintained by a battery. CMOS is used to store the BIOS settings you have selected in BIOS Setup. CMOS also maintains the internal clock. Every time you turn on your computer, the BIOS Looks into CMOS for the settings you have selected and configures your computer accordingly. If the battery runs out of power, the CMOS data will be lost and POST will issue a "CMOS invalid" or "CMOS checksum invalid" message. If this happens, you have to replace the battery and check and configure the BIOS Setup for the new start.

4-4 The POST (Power On Self Test)

POST is an acronym for Power On Self Test. This program will test all things the BIOS does before the operating system is started. Each of POST routines is assigned a POST code, a unique number which is sent to I/O port 080h before the routine is executed.

4-5 To Update BIOS

- System BIOS is incorporated into a Flash memory component. Flash BIOS allows user to upgrade BIOS without the need to replace an EPROM component.
- The Upgrade Utility can be loaded on a floppy diskette for upgrading saving, and verifying the system BIOS. The Update Utility can also be run from a hard disk drive or a network drive.

- It is highly recommended that you save a copy of the original mainboard BIOS along with a Flash EPROM Programming utility (amiflash.exe) to a bootable floppy disk so that you can reinstall the BIOS when in need.

- Normally, to update BIOS is unnecessary if the system is working fine. Users should only update BIOS when incompatible problems are encountered or new features have to be added to system.

- "Amiflash.EXE" is a Flash EPROM Programming utility that updates the BIOS by uploading a new BIOS file to the programmable flash ROM on the mainboard. This program only works in ***DOS environment, the utility can not be executed in Windows 95/98, ME, NT, WINDOWS 2000 or Windows XP environment.***

• Please follow the steps below for updating the system BIOS:

Step 1. Please visit the board maker's website, download the zip files of the latest BIOS and AMI flash utility "**amiflash.exe**" for your mainboard. After unzipping, the BIOS file format will be *.ROM, of which " * " stands for the specific BIOS file name.

Step 2. Create a bootable diskette. Then copy the BIOS file and AMI flash utility "**amiflash.exe**" into the diskette.

Step 3. Insert the diskette into drive A, boot your system from the diskette.

Step 4. Under " A " prompt, type **" amiflash *.ROM "** and then press <Enter> to run BIOS update program. (*.ROM depends on your mainboard model and version code. Instead of typing "*", you should type the specific file name for your specific mainboard). For example, you may type "amiflash MP005.rom ".

Step 5. When the message "Flash ROM Update Completed - Pass." appears, please restart your system.

Step 6. You will see a message "CMOS Memory Size Wrong" during booting the system. Press <Del> or <F1> to run CMOS setup utility, then reload "Load Failsafe Defaults" or **"Load Optimal Defaults"** and save this change.

4-6 BIOS SETUP by CMOS Setup Utility

4-6.1 Main Menu in CMOS Setup Utility

This mainboard comes with the AMI BIOS from American Megatrends Inc. Enter the CMOS Setup Utility Main Menu by:

1. Turn on or reboot your system. After a series of diagnostic checks, the following message will appear:

PRESS <Del> TO RUN SETUP

2. Press the <Del> key and the main program screen will appear as follows.

CMOS Setup Utility - Copyright (C) 1985-2002, American Megatrends, Inc.

```
▶ Standard BIOS Features            Discard Changes and Exit

▶ Advanced BIOS Features            Load Optimal Defaults

▶ Advanced Chipset Features         Discard Changes

▶ PCI/PNP Resource Management

▶ Boot Configuration Setup

▶ BIOS Sevurity Features

   Save Changes and Exit


↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
    F7 : Previous Values      F8 : Fail-Safe Defaults      F9: Optimize Defaults

        Configure Time and Date.   Display System Information ...
```

3. Use the arrow keys on your keyboard to select an option, and press <Enter>. Modify the system parameters to reflect the options installed in your system.
4. You may return to the Main Menu anytime by pressing <Esc>.
5. In the Main Menu, "Save Changes and Exit" saves your changes and reboots the system, and "Discard Changes and Exit" ignores your changes and exits the program.

6. In entering the Main option of the Main Menu, please use the functions in the Function List to configure the setting:

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
      F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

Use [Enter], [Tab] or [Shift-Tab] to select a field.
Use [+] or [-] to choose the options.

<F1>: "General Help" provides explanations of the hot-key functions available.
<F7>: "Previous values" allows user to discard previous values or not.
<F8>: "Fail-safe defaults" allows user to load Fail-safe Defaults or not. Save and Exit Setup.
<F9>: "Optimized Defaults" alows user to load Optimal Defaults or not.

4-6.2 Standard BIOS Features

"Standard BIOS Features" allows users to configure Time and Date. This menu also displays system information.

Run the Standard BIOS Features as follows:
Choose "Standard BIOS Features" from the Main Menu and press <Enter>. The following screen will appear:

CMOS Setup Utility - Copyright (C) 1985-2002, American Megatrends, Inc.
Standard BIOS Features

System Overview	Help Item
AMIBIOS	Use [Enter], [Tab] or [Shift-Tab] to select a field.
Version : 08.00.09	
Build Date : 08/27/03	Use [+] or [-] to configure
ID : 1ABRQ003	system Time.
Processor	
Type : Intel(R) Pentium(R) 4 CPU 1500MHz	
Speed : 1500MHz	
Count : 1	
System Memory	
Size : 256MB	
System Time 00 : 19 : 29	
System Date Fri 08/29/2003	

↑↓←→ : Move Enter : Select +/- : Values F10: Save Esc: Exit F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

AMIBIOS/Processor/ These three items only show the respective current
System memory statuses. They cannot be changed in the BIOS Setup.

System Time The BIOS shows the time of the day in the format: hh:mm:ss. Choose the field with the Arrow keys and change the time with the Page Up/Page Down +/- keys.

System Date The BIOS shows the date of the day in the format: mm:dd:yy :day of the Week. Choose the field with the Arrow keys and change the value with the Page Up/Page Down +/- keys.

4-6.3 Advanced BIOS Features

Advanced BIOS Features allows user to configure HDD, Floppy, Serial Port, Parallel Port etc....
Run the Advanced BIOS Features as follows:

Choose "Advanced BIOS Features" from the Main Menu and a screen with a list of options will appear:

CMOS Setup Utility - Copyright (C) 1985-2002, American Megatrends, Inc.
Advanced BIOS Features

Advanced Settings	Help Item
Warning: Setting wrong values in below sections may cause system to malfunction.	Configure CPU.
▶ CPU Configuration Press Enter ▶ IDE Configuration Press Enter ▶ Floppy Configuration Press Enter ▶ SuperIO Configuration Press Enter ▶ Hardware Health Configuration Press Enter ▶ ACPI Configuration Press Enter ▶ USB Configuration Press Enter ▶ Frequency/Voltage Control Press Enter ▶ Power Management Press Enter	

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

4-6.3.1 CPU Configuration

Choose "CPU Configuration" in "Advanced BIOS Features" and press <Enter>. The following sub-screen will appear for configuration:

CPU Configuration

Configure advanced CPU settings	Help Item
Manufacturer : Intel Brand String : Intel(R) Pentium (R) 4 CPU 1500MHz Frequency : 1500MHz PSB Speed : 100MHz Ratio Status : Locked Ratio Actual Value : 15 Ratio CMOS Setting : 8 Hyper Threading Technology Enabled	Sets the ratio between CPU core clock and the FSB Frequency. Note: If an invalid ratio is set in CMOS, then actual and setpoint values may differ.

Manufacturer BIOS shows the current manufacturer of on-board CPU.

Brand String BIOS shows the current brand of on-board CPU.

Frequency BIOS shows the current on-board CPU frequency.

Ratio Status BIOS shows the current ratio (multiplier) status of on-board CPU. For P4 CPUs, the ratio is usually locked.

PSB Speed BIOS shows the actual CPU external frequency.

Ratio Actual Value BIOS shows the actual CPU ratio.

Ratio CMOS Setting BIOS shows the CPU Ratio in CMOS. If an invalid ratio is set in CMOS, then actual and setpoint values may differ.

Hyper Threading Technology Allows you to enable/disable Hyper Threading on your CPU.

4-6.3.2 IDE Configuration

Choose "IDE Configuration" in "Advanced BIOS Features" and press
<Enter>. The following sub-screen will appear for IDE Devices
configuration:

IDE Configuration

IDE Configuration		**Help Item**
IDE Configuration	P/S-ATA (Auto)	
S-ATA Running Enhanced Mode	Yes	
P-ATA Channel Selection	Both	
S-ATA Ports Definition	P0-3rd./P1-4th	
▶ Primary IDE Master	Hard Disk	
▶ Primary IDE Slave	ATAPI CDROM	
▶ Secondary IDE Master	Not Detected	
▶ Secondary IDE Slave	Not Detected	
▶ Third IDE Master	Not Detected	
▶ Fourth IDE Master	Not Detected	
Hard Disk Write Protect	Disabled	
IDE Detect Time Out (Sec)	35	
ATA(PI) 80Pin Cable Detection	Host & Device	

4-6.3.2-1 IDE Configuration

IDE Configuration	Allows you to configurare IDE device mode. Choices: P/S-ATA(Auto): Parallel/Serial ATA combined mode; S-ATA Only: For S-ATA running on board only; P/S-ATA(Win98/Me): P/S-ATA on Win98/Me only Disabled: IDE Configuration disabled

IDE Configuration ——	Choosing "P/S-ATA(Auto)" to configure the following:
S-ATA Running En-hanced Mode (Combined Mode Option)	If P/S-ATA (Auto) is chosen, use this item to choose S-ATA Running Enhanced Mode. Choices: Yes : Choose from the following option: P-ATA (parallel ATA) Channel Selection: Choices: Primary; Secondary; Both S-ATA Ports Definition: Choices: P0-3rd./P1-4th; P0-4th./P1-3rd. No : Choose from the following options: P-ATA (parallel ATA) Channel Selection: Choices: Primary; Secondary; Both

IDE Configuration ——	Choosing "S-ATA Only" to configure the following:
S-ATA Ports Defini-tion	Allows you to assign the S-ATA port locations. Choices: P0-3rd./P1-4th.; P0-4th./P1-3rd.;

IDE Configuration ——	Choosing "P/S-ATA(Win98/Me)" to configure the following:
Combined Mode Option	Choices: P-ATA 1st Channel; S-ATA 1st Channel;
S-ATA Ports Defini-tion	Choices: P0-Master/P1-Slave; P0-Slave/P1-Master;

4-6.3.2-2 Primary/Secondary IDE Master/Slave and Third/Fourth IDE Master

▶ Primary IDE Master	Hard Disk
▶ Primary IDE Slave	ATAPI CDROM
▶ Secondary IDE Master	Not Detected
▶ Secondary IDE Slave	Not Detected
▶ Third IDE Master	Not Detected
▶ Fourth IDE Master	Not Detected

Primary/Secondary IDE Master/Slave Press <Enter> To show the detected information of Primary / Secondary IDE Master/Slave device(s).

Third/Fourth IDE Master Press <Enter> to show the detected information of third/fourth IDE Master device(s).

If any IDE device is detected in any one of the above items press <Enter> to reveal the IDE information:

Primary/(Secondary/Third/Fourth) IDE Master/(Slave)

Primary/(Secondary/Third/Fourth) IDE Master/(Slave)	Help Item
Device : Hard Disk Vendor : WDC WD400BB-00DEA0 Size : 40.0GB LBA Mode : Supported Block Mode : 16Sectors PIO Mode : 4 Async DMA : MultiWord DMA-2 Ultra DMA : Ultra DMA-5 S.M.A.R.T. : Supported	Select the type of device connected to the system.
Type Auto LBA/Large mode Auto Block (Multi-Sector Transfer) Auto PIO Mode Auto S.M.A.R.T. Auto 32Bit Data Transfer Disabled	

Type To select the types of the IDE devices:
Not Installed; Auto: Setting type automatically
CD-ROM: ATAPI (Packet Interface) CD-ROM drive
ARMD: ATAPI Removable Media Device

LBA/Large mode To auto-select (default) or disable LBA/Large mode.

Block (Multi-Sector Transfer) To auto-select (default) or disable Block Mode.

PIO Mode To auto-select (default) or disable PIO Mode.
Choices: Disabled; 1, 2, 3, 4

S.M.A.R.T Allows you to enable / disable the Self Monitoring Analysis and Reporting Technology for the hard disk.

32Bit Data Transfer To auto-select (default) or disable 32Bit Data Transfer.

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4-6.3.2-3 Hard Disk Write Protect

Hard Disk Write Allows you to Enabled / Disable(default) Hard Disk
Protect Write Protection

4-6.3.2-4 IDE Detect Time Out

IDE Detect Time Out Allows you to set time out for IDE Detection.
(Sec) Choices: 0 - 35 seconds in 5 seconds stepping

4-6.3.2-5 ATA(P) 80Pin Cable Detection

ATA(PI) 80Pin Cable Allows you to select ATA(PI) devices for 80Pin Cable
Detection Detection. To set Host & Device allows onboard IDE
controller and IDE disk drive to detect the type of
IDE cable used.
Choices: Host & Device, Host, Device

4-6.3.3 Floppy Configuration

1. Choose "Floppy Configuration" in "Advanced BIOS Features" and press <Enter>. The following sub-screen will appear for configuration:

Floppy Configuration

Floppy Configuration		Help Item
Floppy A	1.44 MB 3.5 in	Select the type of floppy drive connected to the system.
Floppy B	Disabled	

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

Floppy A/B Press Enter on "Floppy A/B" will let you select this field to the type(s) of floppy disk drive(s) installed in your system. The choices are:
360KB 5.25 in.
1.2MB, 5.25 in.
720KB, 3.5 in.
1.44MB, 3.5 in.
2.88MB, 3.5 in.
Disabled

4-6.3.4 Super IO Configuration

Choose "SuperIO Configuration" in "Advanced BIOS Features" and press <Enter>. The following sub-screen will appear for configuration:

SuperIO Configuration

Configure Win627THF Super IO Chipset		Help Item
OnBoard Floppy Controller	Enabled	Allows BIOS to Enable or Disable Floppy Controller.
Serial Port1 Address	3F8/IRQ4	
Serial port2 Address	2F8/IRQ3	
Serial port2 Mode	Normal	
OnBoard CIR Port	Disabled	
Parallel Port Address	378	
Parallel Port Mode	Normal	
Parallel Port IRQ	IRQ7	

OnBoard Floppy Controller Allows you to enable / disable the Onboard Floppy Controller.
Choices: Enabled; Disabled

Serial Port1 Address Allows you to set the Onboard Serial Port1 Address.
Choices: Disabled; 3F8/IRQ4; 3E8/IRQ4; 2E8/IRQ3;

Serial Port2 Address Allows you to set the Onboard Serial Port2 Address.
Choices: Disabled; 2F8/IRQ3; 3E8/IRQ4; 2E8/IRQ3;

Serial Port 2 Mode If Serial Port2 Address is not disabled, it allows you to set the Serial Port 2 Mode. Choices:
-- Normal;
-- IrDA: Providing 2 items for configuration:
   IR I/O Pin Select: SINB/SOUTB; IRRX/IRTX
   IR Duplex Mode: Half Duplex; Full Duplex
-- ASK IR: Providing 2 items for configuration:
   IR I/O Pin Select: SINB/SOUTB; IRRX/IRTX
   IR Duplex Mode: Half Duplex; Full Duplex

OnBoard CIR Port Allows you to set the onboard CIR Port.
Choices: Disabled; 2E0; 3E0

Parallel Port Address Allows you to configure Parallel Port Address.
Choices: Disabled; 378; 278; 3BC;

OnBoard CIR Port Allows you to set the onboard CIR Port.
Choices: Disabled; 2E0; 3E0

CIR Port IRQ Allows you to set the onboard CIR Port IRQ for 2E0 or 3E0.
Choices: IRQ3; IRQ4; IRQ9; IRQ10; IRQ11

Parallel Port Address Allows you to configure Parallel Port Address.
Choices: Disabled; 378; 278; 3BC;

-- Disabled: To disable this function;
-- 378: 2 items to configure for address 378:
  --- Parallel Port Mode:
    Normal;
    Bi-Directional;
    EPP:
      EPP Version: 1.9; 1.7
    ECP:
      ECP Mode DMA Channel: DMA0; DMA1; DMA3
  --- Parallel Port IRQ: IRQ5; IRQ7

4-6.3.5 Hardware Health Configuration

Choose "Hardware Health Configuration" in "Advanced BIOS Features" and press <Enter>. The following sub-screen will appear for configuration:

Hardware Health Configuration

Hardware Health Configuration		Help Item
System Temperature	: 34˚C/93˚F	Enables Hardware Health Monitoring Device.
CPU Temperature	: 45˚C/113˚F	
Fan1 Speed	: 3125 RPM	
Fan2 Speed	: 3169 RPM	
Fan3 Speed	: N/A	
CPU Core	: 1.500 V	
+1.50V	: 1.516 V	
+3.30V	: 3.258 V	
+5.00V	: 5.094V	
+12.0V	: 12.074 V	
-12.0V	: -12.048 V	
5VSB	: 5.467 V	
Battery	: 3.444 V	

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimize Defaults

System Temperature Shows current system temperature.

CPU Temperature Shows current CPU internal temperature.

Fan1/2/3 Speed Displaying the current speed of CPU/Chassis/Power Fan.

CPU Core Showing CPU core actual voltage value.

1.5V/3.3V/+12V/-12V/ +5.00V/5VSB/Battery Showing current voltage against the 1.5V/3.3V/ +12V/-12V/+5V/5VSB/Battery power supply.

4-6.3.6 ACPI Configuration

Choose "ACPI Configuration" in "Advanced BIOS Features" and press <Enter>. The following sub-screen will appear for ACPI configuration:

ACPI Configuration

ACPI Settings		Help Item
ACPI Aware O/S	Yes	Enables Hardware ACPI support for Operating System.
▶ General ACPI Configuration	Press Enter	Enable: If OS supports ACPI.
▶ Advanced ACPI Configuration	Press Enter	Disable: If OS Does not support ACPI.

ACPI Aware O/S Allows you to enable ACPI Aware O/S function if your O/S supports ACPI. Windows XP, 2000, 98SE all support ACPI. Choices:
Yes: If "Yes" it allows you to configure "General / Advanced ACPI".
No: If "No", no "General/Advanced ACPI" to be configured.

▸ General ACPI Configuration:

To press< Enter > on General ACPI Configuration will reveal the following item(s).

Suspend mode This item allows you to select the Suspend mode. You can select S3(STR) for suspending to DRAM if your system supports this mode. Or you can select S1 (POS) for Power on Suspend under ACPI mode. Choices: S1(POS)(default); S3(STR); Auto

(Optional) USB Device Wakeup From S3/S4 This item allows you to enable / disable the USB device Wakeup function from S3/S4 mode.

▶**Advanced ACPI Configuration:**
To press< Enter > on Advanced ACPI Configuration will reveal the following item(s).

ACPI 2.0 Support Allows you to enable / disable ACPI (Advanced Configuration and Power Interface) 2.0 Support function. Choices: Yes; No

ACPI APIC Support Allows you to enable / disable ACPI APIC (Advanced Programmable Interrupt Controller) Support function.

APIC ACPI SCI IRQ If APIC ACPI Support is enabled (Yes), it allows you to enable / disable APIC ACPI SCI IRQ function.

BIOS-->AML ACPI table Allows you to enable / disable BIOS-->AML ACPI table function.

Headless mode Allows you to enable / disable Headless operation mode through ACPI.

4-6.3.7 USB Configuration

Choose "USB Configuration" in "Advanced BIOS Features" and press
<Enter>. The following sub-screen will appear for configuration:

USB Configuration

USB Configuration		Help Item
Module Version - 2.22.5-7.4		Enable USB host controllers.
USB Devices Enabled : None		
USB Function	8 USB Ports	
Legacy USB Support	Enabled	
Port 64/60 Emulation	Disabled	
USB 2.0 Controller	Enabled	
USB 2.0 Controller Mode	FullSpeed	
▶ USB Mass Storage Device Config Press Enter		

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

USB Function Allows you to set the USB Function on the USB port
(s).
Choices: 8 USB Ports (default); 6 USB Ports ; 4 USB
Ports; 2 USB Ports; Disabled

Legacy USB Support Allows you to enable(default) / disable the Legacy
USB support.
Choices: Enabled(default); Disabled; Auto

Port 64/60 Emulation Allows you to enable(default) / disable Port 64/60
Emulation
Choices: Enabled; Disabled(default)

USB 2.0 Controller Allows you to enable(default)/ disable the USB 2.0
Controller.

USB 2.0 Controller
Mode Allows you to configure the USB 2.0 Controller Mode.
Choices: FullSpeed; HiSpeed.

▶ **USB Mass Storage Device Config**	Press "Enter" to view its submenu shown below.
USB Mass Storage Reset Delay	To select number of seconds POST waits for the USB mass storage device after start unit command. Choices: 10 Sec; 20 Sec; 30 Sec; 40 Sec
No USB Mass Storage Device detected	If no USB Mass Storage device is detected, this line will appear on screen.

4-6.3.8 Frequency/Voltage Control

Choose "Frequency/Voltage Control" in "Advanced BIOS Features" and press <Enter>. The following sub-screen will appear for configuration:

Frequency/Voltage Control

Frequency/Voltage Configuration		Help Item
CPU Linear Frequency	Enabled	Press "+"/"-" to select.
CPU Clock	100MHz	
Fix AGP/PCI Frequency	Enabled	
AGP Voltage Control	1.5V	
DIMM Voltage Control	2.5V	
CPU Voltage Control	Auto	

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

CPU Linear Frequency This item allows you to enable / disable this setting function.

CPU Clock If CPU Linear Frequency is set at Enabled, this item allows you to set CPU Clock.
Choices: 100MHz ~350MHz in 1MHz stepping.
(100MHz~250MHz is for 100MHz CPU; 133MHz~283MHz is for 133MHz CPU; 200MHz~350MHz is for 200MHz CPU.)

Fix AGP/PCI Frequency Allows you to fix AGP/PCI Frequency.
Choices: Enabled; Disabled

AGP Voltage Control Allows you to configure the AGP Voltage.
Choices: 1.5V; 1.6V; 1.7V; 1.8V

DIMM Voltage Control Allows you to configure the DIMM Voltage.
Choices: 2.5V; 2.6V; 2.7V; 2.8V

CPU Voltage Control Allows you to configure the CPU Voltage. Usually, to raise CPU voltage will raise the chance of CPU overclocking and yet risk damage of CPU.
Choices: Auto; 0.8500V ~1.6000V in 0.0125V stepping

4-6.3.9 Power Management

Choose "Power Management" in "Advanced BIOS Features" and press <Enter>. The following sub-screen will appear for configuration:

Power Management

APM Configuration		Help Item
Power Management/APM	Enabled	Enable or disable APM.
Video Power Down Mode	Suspend	
Hard Disk Power Down Mode	Suspend	
Standby Time Out	Disabled	
Suspend Time Out	Disabled	
Power Button mode	On/Off	
Restore on AC Power Loss	Power Off	
Resume On Ring	Disabled	
Resume On LAN/PME#	Disabled	
Resume On RTC Alarm	Disabled	

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

Power Management/ APM Allows you to enable (default)/ disable the Power management / Advanced Power Management function.

Video Power Down Mode Allows you to select the Video Power Down Mode. Choices: Disabled; Standby; Suspend

Hard Disk Power Down Mode Allows you to select the Hard Disk Power Down Mode.
Choices: Disabled; Standby; Suspend

Standby Time Out (Minute) To set the duration of Standby Time Out. Choices: Disabled; 1; 2; 4; 8; 10; 20; 30; 40; 50; 60

Suspend Time Out (Minute) To set the duration of Suspend Time Out. Choices: Disabled; 1; 2; 4; 8; 10; 20; 30; 40; 50; 60

Power Button Function Allows you to set power Button function.
Choices: On/Off (default); Suspend

Restore on AC/Power Loss Allows you to set the restore state from AC/Power Loss.
Choices: Last State; Power Off (default); Power On

Resume on Ring Allows you to enable / disable (default)the Resume on Ring Signal function.
An input signal on the serial Ring Indicator (RI) Line (in other words, an incoming call on the modem) awakens the system from a soft off state.

Resume on LAN/PME# Allows you to enable / disable (default)the Resume on LAN/PME# function.

Resume On RTC Alarm Allows you to enable / disable (default)the Resume On RTC Alarm function.

RTC Alarm Date / Hour / Minute / Second	If resume On RTC Alarm is enabled, this field allows you to set the Alarm date Hour, Minute and second. Date Choices: Every Day; 01 ~ 31 Hour Choices: 00 ~ 23 Minute Choices: 00 ~ 59 Second Choices: 00 ~ 59

4-6.4 Advanced Chipset Features

Advanced Chipset Features is used to modify the values of chipset buffers. These buffers control the system options.

Run the Advanced Chipset Features as follows:
Choose "Advanced Chipset Features" from the Main Menu and a list of option will appear:

CMOS Setup Utility - Copyright (C) 1985-2002, American Megatrends, Inc.
Advanced Chipset Features

Advanced Chipset Settings	Help Item
Warning: Setting wrong values in below sections may cause system to malfunction.	Options for NBEnable USB host controllers.
▶ NorthBridge Configuration Press Enter ▶ SouthBridge Configuration Press Enter	

↑↓← → : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

4-6.4.1 NorthBridge Configuration

Choose "NorthBridge Configuration" in "Advanced Chipset Features" and press <Enter>. The following sub-screen will appear for configuration:

NorthBridge Configuration

DRAM Frequency	Auto	**Help Item**
Configure DRAM Timing by SPD	Enabled	
Memory Hole	Disabled	
Init. Graphic Adapter Priority	AGP/PCI	
Graphics Aperture Size	64MB	
C.S.A Gigabit Ethernet	Auto	

DRAM Frequency   Allows you to set the current SDRAM frequency.
Choices: Auto; 266MHz; 333MHz; 400MHz

Configure SDRAM Timing by SPD   SPD (Serial presence detect) is a device in memory module for storing the module information such as DRAM timing and chip parameters. If this option is enabled, BIOS will access SPD automatically to configure module timing. If disabled, DRAM timing can be configured manually.
Default: Enabled

DRAM CAS# Latency	With SDRAM Timing by SPD disabled, you can select the SDRAM CAS# (Column Address Strode)latency manually. Choices: 2 Clocks; 2.5 Clocks; 3 Clocks
DRAM RAS# Precharge	With SDRAM Timing by SPD disabled, you can select the SDRAM RAS# (Row Address Strode) Precharge cycle manually. Choices: 2 Clocks; 3 Clocks; 4 Clocks
DRAM RAS# to CAS# Delay	With SDRAM Timing by SPD disabled, you can select the SDRAM RAS# to CAS# delay cycle manually. Choices: 2 Clocks; 3 Clocks; 4 Clocks
DRAM Precharge Delay	Allows you to set the SDRAM Precharge Delay cycle. Choices: 5 Clocks; 6 Clocks; 7 Clocks; 8 Clocks
DRAM Burst Length	With SDRAM Timing by SPD disabled, you can select the SDRAM Burst length manually. Choices: 8; 4

Memory Hole	Allows you to enable / disable (default) the support of Memory Hole which is reserved for ISA card. Choices: Disabled; 15MB-16MB
Init. Graphics Adapter Priority	Allows you to select the initial Graphics Adapter. Choices: AGP/PCI(default); PCI/AGP;
AGP Aperture Size	Series of options are available: 4, 8, 16, 32, 64, 128, 256MB. Memory mapped and graphics data structures can reside in a Graphics Aperture. This area is like a linear buffer. BIOS will automatically report the starting address of this buffer to the O.S. The default setting is 64MB.
C.S.A Gigabit Ethernet	Allows you to enable/disable C.S.A Gigabit Ethernet. Choices: Auto(default); Disabled;

4-6.4.2 SouthBridge Configuration

1. Choose "SouthBridge Configuration" in "Advanced Chipset Features" and press <Enter>. The following sub-screen will appear for configuration:

SouthBridge Configuration

OnBoard AC'97 Audio	Auto	**Help Item**

↑↓← → : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

Onboard AC'97 Audio Allows you to disable AC' 97 Audio.
Choices: Auto (default); Disabled

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4-6.5 PCI/PNP Resource Management

PCI/PNP Resource Management allows you to modify the system's power saving functions.

Choose "PCI/PNP Resource Management" from the Main Menu and a screen with a list of options will appear:

CMOS Setup Utility - Copyright (C) 1985-2002, American Megatrends, Inc.
PCI/PNP Resource Management

Advanced PCI/PNP Settings		Help Item
Warning: Setting wrong values in below sections may cause system to malfunction.		No: lets the BIOS configure all the devices in the system.
Plug & Play O/S	No	Yes: lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.
PCI Latency Timer	32	
Allocate IRQ to PCI VGA	Yes	
Palette Snooping	Disabled	
PCI IDE BusMaster	Disabled	
OffBoard PCI/ISA IDE Card	Auto	
IRQ3	Available	
IRQ4	Available	
IRQ5	Available	
IRQ7	Available	
IRQ9	Available	
IRQ10	Available	
IRQ11	Available	
IRQ14	Available	
IRQ15	Available	
DMA Channel 0	Available	
DMA Channel 1	Available	
DMA Channel 3	Available	
DMA Channel 5	Available	
DMA Channel 6	Available	
DMA Channel 7	Available	
Reserved Memory Size	Disabled	

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

Plug & Play O/S Allows you to configure the PNP devices by BIOS or O/S.
Choices: No(by BIOS) (default); Yes(by O/S)

PCI Latency Timer (PCI Clocks) Allows you to set the PCI Latency Time.
Choices: 32(default); 64; 96; 192; 128; 160; 192; 224; 248;

Allocate IRQ to PCI VGA Allows you to assign IRQ to PCI VGA card if card requests IRQ.
Choices: Yes(default); No

Palette Snooping This option allows the BIOS to preview VGA status, and to modify the information delivered from the feature Connector of the VGA card to MPEG card. This option can solve the display inversion to black after you have used a MPEG card.

PCI IDE BusMaster Allows you to enable / disable(default) the PCI IDE Bus Master function.

OffBoard PCI/ISA IDE Card Some PCI IDE cards may require this to be set to the PCI slot number that is holding the card.
Choices: Auto; PCI Slot1; PCI Slot2; PCI Slot3; PCI Slot4; PCI Slot5; PCI Slot6

IRQ 3/4/5/7/9/10/11/14/15 Allows you to specify available IRQs to be used by PCI/PNP devices.
Choices: Available(default); Reserved

DMA 0/1/3/5/6/7 Allows you to specify available DMAs to be used by PCI/PNP devices.
Choices: Available(default); Reserved

Reserved Memory Size Allows you to specify memory size to reserve for legacy ISA devices.
Choices: Disabled(default); 16K; 32K; 64K

4-6.6 Boot Configuration Setup

Boot Configuration Setup allows you to modify the system's boot settings.

Choose "Boot Configuration Setup" from the Main Menu and a screen with a list of options will appear:

CMOS Setup Utility - Copyright (C) 1985-2002, American Megatrends, Inc.
Boot Configuration Setup

Boot Settings		Help Item
▶Boot Setting Configuration	Press Enter	Configure Settings during System Boot.
▶Boot Device Priority	Press Enter	

↑↓←→ : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

4-6.6.1 Boot Settings Configuration

Choose "Boot Settings Configuration" in "Boot Configuration Setup" and press <Enter>. The following items will appear for onfiguration:

Boot Configuration Setup

Boot Settings		Help Item
Quick Boot	Enabled	Configure Settings during System Boot.
Quiet Boot	Disabled	
AddOn ROM Display Mode	Force BIOS	
Bootup Num-Lock	On	
PS/2 Mouse Support	Auto	
Wait For 'F1' If Error	Enabled	
Hit 'DEL' Message Display	Enabled	
Interrupt 19 Capture	Disabled	

Quick Boot Allows you to enable (default)/ disable quick boot of your system. If enabled, BIOS will skip certain tests whle booting. This will decrease the time needed to boot the system.

Quiet Boot The bootup screen displays normal POST messages with Disabled selected; the bootup screen displays OEM Logo instead of POST messages with Enabled selected.
Choices: Enabled; Disabled

AddOn ROM Display Mode If "Force BIOS" (default) is chosen, the vendor's logo screen will be followed by the "AddOn ROM" initial screen (the screen showing the add-on card BIOS message). If "Keep Current" is chosen, no "Add-On ROM" screen is followed.

Bootup Num-lock Allows you to toggle between On (default) or Off to control the state of the NumLock keys when the system boots. If On, the numeric keypad is in nu-meric mode. If off, the numeric keypad is in cursor control mode.

PS/2 Mouse Support If "Auto" is set, the system will auto detect the PS/2 Mouse.
If disabled, PS/2 Mouse is not supported.

Wait For 'F1' If Error Allows you to hit F1 key when errors occur.
Choices: Enabled(default); Disabled

Hit 'DEL' Message The system will show "Press DEL key to run Setup
Display when enabled.
Choices: Enabled(default); Disabled

Interrupt 19 Capture Allows option ROMs to trap interrupt 19.
Choices: Enabled; Disabled(default)

4-6.6.2 Boot Device Priority

Choose "Boot Device Priority" in "Boot Configuration Setup" and press
<Enter>. The bootable devices installed on board will appear and are
allowed to assign the Boot Priority.

Boot Device Priority

Boot Device Priority		Help Item
1st Boot Device 2nd Boot Device	1st FLOPPY DRIVE PM-WDC WD400BB-00	Configure Settings during System Boot.

1st/2nd/3rd Boot Allows you to set (by pressing <Enter>) floppy or
Device IDE devices already installed to be the 1st/2nd/3rd
boot device.
Choices: Disabled; Device(s) installed

4-6.7 Boot Security Features

Boot Security Features allows you to modify the system's boot security settings.

Choose "Boot Security Features" from the Main Menu and a screen with a list of options will appear:

CMOS Setup Utility - Copyright (C) 1985-2002, American Megatrends, Inc.
Boot Security Features

Security Settings		Help Item
		Install or Change the password.
Supervisor Password : Not Installed		
User Password : Not Installed		
Change Supervisor Password	Press Enter	
User Access Level	Full Access	
Change User Password	Press Enter	
Clear User Password	Press Enter	
Password Check	Setup	
Boot Sector Virus Protection	Disabled	

↑↓← → : Move   Enter : Select   +/- : Values   F10: Save   Esc: Exit   F1: General Help
F7 : Previous Values   F8 : Fail-Safe Defaults   F9: Optimized Defaults

4-6.7.1 Supervisor Password

To show the status of Supervisor Password. "Installed" is displayed when supervisor password is set up. Otherwise, "Not Installed" is displayed.

4-6.7.2 User Password

To show the status of User Password. "Installed" is displayed when supervisor password is set up. Otherwise, "Not Installed" is displayed.

4-6.7.3 Change Supervisor Password

This option allows you to set a new Supervisor password for the system:

1. Choose "Change Supervisor Password" in the "BIOS Security Features" and press <Enter>. Then the following message appears:

[Enter new supervisor password]

2. The first time you run this option, enter your password up to 6 characters and press <Enter>. (The screen does not display the entered characters.)
3. After you enter the password, the following message appears, prompting you to confirm the password:

[Confirm New Password]

4. Enter the same password "exactly" the same as you have just typed to confirm the password and press <Enter>.
5. The following message appears to confirm the new password setup.

[Password installed]
[OK]

6. Then press any key to continue your CMOS Setup. To save the password setup, you should press "Save Changes and Exit" and choose "OK" to exit and save setup.
7. If you enter a new password into the box, you will be using this new password after you have finished and saved this new setup. Instead, if you press <Enter> before you enter any new password into the instruction box, another message box appears, telling you that you have disabled the Supervisor Password. That means, no password is set for either entering BIOS Setup or system:

[Password uninstalled]
[OK]

User Access Level Allows you to set four different Access Levels when Supervisor Password has been set.
Choices: Full Access; Limited; View Only; No Access

Note: "User Access Level" and "Password Check" will appear when "Supervisor Password" has been set.

4-6.7.4 Change User Password

This option allows you to set a new User password for the system:

1. Choose "Change User Password" in the "BIOS Security Features" and press <Enter>. Then the following message appears:

<div align="center">

[Enter New Password]

</div>

2. The first time you run this option, enter your password up to 6 char-acters and press <Enter>. (The screen does not display the entered characters.)
3. After you enter the password, the following message appears, prompt-ing you to confirm the password:

<div align="center">

[Confirm New Password]

</div>

4. Enter the same password "exactly" the same as you have just typed to confirm the password and press <Enter>.

5. The following message appears to confirm the new password setup.

[Password installed]
[OK]

6. Then press any key to continue your CMOS Setup. To save the pass-word setup, you should press "Save Changes and Exit" and choose "OK" to exit and save setup.

4-6.7.5 Clear User Password

1. To remove the current user password, choose "Clear User Password" and press <Enter>. An instruction box appears on the screen, assur-ing to clear User Password:

Clear User Password?
[OK]   [Cancel]

2. Then choose [OK] and press <Enter>. The User Password is suc-cessfully removed.

Password Check Allows you to set BIOS to check up password with a password prompt at BIOS Setup or whenever re-starting system. This option will appear when you have set Supervisor Password or User Password. Choices: Setup (default); Always

4-6.7.6 Boot Sector Virus Protection

Boot Sector Virus Protection When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive.
You should then run an antivirus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

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

4-6.8 Save Changes and Exit

Save Changes and Exit allows you to save all modifications you have specified into the CMOS memory. Highlight this option on the Main Menu and press <Enter>. The following message appears:

[Saving configuration changes and exit setup?]
[OK]   **[Cancel]**

Press <Enter> key to save the configuration changes and exit CMOS Setup to restart your system.

4-6.9 Discard Changes (and Exit)

Discard Changes option allows you to exit (or not exit) the Setup Utility without saving the modifications that you have specified. Highlight this option on the Main Menu and press <Enter> and the following message appears:

[Discard Changes (and exit setup?)]
[OK]   **[Cancel]**

Follow the message and press <Enter> key to exit CMOS Setup and restart system.

4-6.10 Load Optimal Defaults

When you press <Enter> on this item, you will get a confirmation dialog box with a message similar to:

[Load Optimal Defaults ?]
[OK]   **[Cancel]**

Press <Enter> now to load Optimal values for all the Setup options.

4-6.11 Discard Changes

Discard Changes option allows you to cancel the modifications that you have specified in the Setup Utility. Highlight this option on the Main Menu and press <Enter> and the following message appears:

[Discard Changes?]
[OK]   **[Cancel]**

Follow the message and press <Enter> key to cancel the modifications that you have specified.

Chapter 5 RAID & RAID Driver

Promise RAID Controller PDC20378 & RAID Driver

Promise RAID (Redundant Array of Independent Disks) Controller PDC 20378 is built in this series of mainboards to provide RAID configuration of RAID 0, RAID 1, and RAID 0+1 modes. RAID Drivers are enclosed in a Driver CD as well as a Floppy diskette to support various RAID systems (Windows 98SE/Me/2000/XP) setup.

This Chapter is to introduce the SATA RAID / SATA + PATA RAID Configurations :

5-0 About Disk Array
5-1 SATA and PATA RAID Layout on 865-GR
5-2 First Step to Set up RAID - Populate Disk Drives
5-3 To Enter RAID BIOS
5-4 To Enter the Main Menu of FastBuild Utility
5-5 View Drive Assignment before RAID Setup
5-6 Enter "Auto Setup" for RAID Setup
5-7 Choose " Security" for RAID 0+1 (Stripe/Mirror)
5-8 Press <Ctrl-Y> to Save the Choice
5-9 Create RAID only / Create and Quick Initialize
5-10 Array Created and Reboot System
5-11 Mirror/Stripe Array Detected at Reboot System
5-12 To Install Promise RAID Driver

5-0 About Disk Array

5-0-1 Disk Array Interpretation

A "Disk Array" is formed from a group of 2 or more disk drives with the RAID (Redundent Array of Independent Disks) technology. The aim of a Disk Array is to provide better perfornance and/or data fault tolerance.

5-0-2 Disk Array Member

The individual disk drive in an array is called a "member". Each member of a specific disk array is coded in their "reserved sector" with configuration information that identifies the drive as a member. All disk members in a formed disk array are recognized as a single physical drive to the system.

5-0-3 Disk Array Types Supported by Promise PDC20378

PDC20378 on this mainboard supports three types of Disk Arrays: RAID 0, RAID 1, and RAID 0+1.

1. RAID 0 (or Striping mode):
   RAID 0 is a group of 2 to 4 Disk Drives configured together with RAID technology to provide better data transfer performance than a single drive since the workload is balanced between the array members. Reads and Writes of RAID 0 data are interleaved between multiple drives. When any disk member fails, it affects the entire array. The disk array size is equal to the number of drive members times the smallest member capacity. For example, one 1GB and three 1. 2GB drives will form a 4GB (4x1GB) disk array.

2. RAID 1 (or Mirroring mode):
   RAID 1 is a group of 2 Disk Drives configured together with RAID Technology to provide the fault tolerance function. Writes duplicate data on to RAID 1 while reads are performed in parallel. If one of the mirrored drives suffers a mechanical failure (e.g. spindle failure) or does not respond , the remaining drive will continue to function. This is called Fault Tolerance.
   The drive capacity of RAID 1 is half the total drive capacity of two equal-size drive.

3. RAID 0+1 (Mirror/Stripe):
   RAID 0+1 is formed by a RAID 0 member mirrored to another RAID member to establish a RAID 0+1 Array. RAID 0+1 requires at least 4 disk drive to set up the RAID 0+1 configuration.

5-1. SATA and PATA RAID Layout on 865-R/865-GR

865-R/865-GR

1 IDE RAID connector (IDE3) supporting 2 PATA RAID Hard Disks (supported by PDC20378)

2 SATA connectors SATA1/SATA2 supporting 2 SATA RAID Hard Disks

Chipset Promise PDC20378 supporting SATA/PATA RAID Interfaces
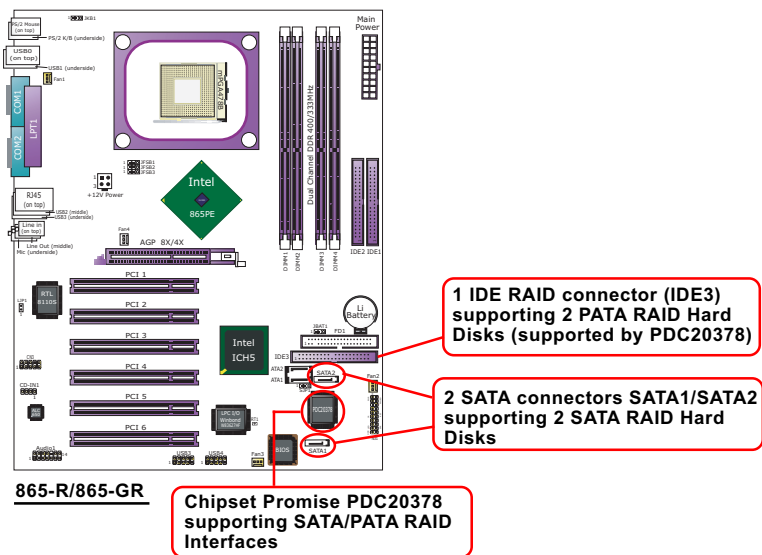
5-2. First Step to Set up RAID - Populate Disk Drives

1. Connect 1 SATA Disk Drive to ATA1 and 1 SATA Disk Drive to ATA2.
2. Connect 2 PATA Disk Drives to IDE3.
3. Four Disk drives can be set up into RAID 0 / 1 / 0+1 Array.

5-3. To Enter RAID BIOS

At booting system, the following screen will appear after "POST".

```
FastTrak 378 (tm) BIOS Version 1.00.1.34
(c) 2002-2005 Promise Technology. Inc. All rights reserved.


No Array is defined...................

Press <Ctrl-F> to enter FastBuild (tm) Utility or
Press <ESC> to continue booting...
```

Following the instruction on the screen, press <Ctrl-F> to enter the FastBuild (tm) Utility.

5-4. To Enter the Main Menu of FastBuild Utility

The Main Menu will pop out as below:

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

```
[ Main Menu ]

        Auto Setup..............................[1]
        View Drive Assignemnts..........[2]
        Define Array............................[3]
        Delete Array............................[4]
        Rebuild Array..........................[5]


        [ Keys Available ]

  Press 1~5 to Select Option                    [Esc] Exit
```
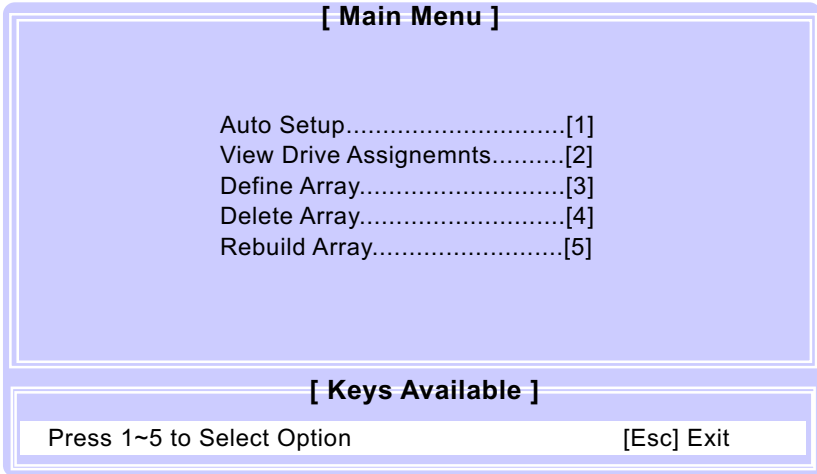
1. Auto Setup.........[1]
   Press figure "1" on keyboard to enter Auto Setup of RAID."Auto Setup" is available only if there are free disk drive detected in system.

2. View Drive Assignment.........[2]
   Press figure "2" on keyboard to view the drive assignment detected in system.

3. Define Array.........[3]
   Press figure "3" on keyboard to view the defined Array already set up in system.

4. Delete Array.........[4]
   Press figure "4" on keyboard to enter the "Delete Array" field for deleting Array already set up in system.

5. Rebuild Array.........[5]
   Press figure "5" on keyboard to enter the "Rebuild Array" field for rebuilding a defective array or RAID member. "Rebuild Array" is available for "RAID 1 (Mirror)" or "RAIA 0+1 (Mirror/Stripe)" mode.

5-5. View Drive Assignment before RAID Setup

Press "2" to enter "View Drive Assignment" so that you can see the status of all disk drives detected by RAID BIOS.

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

[View Drivers Assignments]

Channel:ID	Drive Model	Capacity (MB)	Assignment	Mode
1: Mas ST380023AS		80026	Free	U5
2: Mas ST380023AS		80026	Free	U5
3: Mas QUANTUM FIREBALLP AS3		30020	Free	U2
3: Mas ST330620A		30020	Free	U2

[Keys Available]

[Esc] Exit   MODE (D = DMA, U = UDMA)

Two drives are detected in one channel 3 as free drives (available for RAID setup)

Totally 4 drives are detected by RAID BIOS

Two drives are detected in channel 1 and 2 as free drives (available for RAID setup)

5-6. Enter "Auto Setup" for RAID Setup

Press "1" to enter "Auto Setup" so that you can see the RAID choices.

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

[Auto Setup Options Menu]

Optimize Array for: Performance   **Press " <--- " key to change RAID option.**

[Array Setup Configuration]

Mode ....Stripe

Spare Drive 0

Drive(s) Used in Array...........................4

Array Disk Capacity (size in MB)..........120080

[Keys Available]

[←,,Space] Change Option   [ESC] Exit   [Ctrl-Y] Save

5-7. Choose " Security" for RAID 0+1 (Stripe/Mirror)

Press "1" to enter "Auto Setup" so that you can see the RAID choices.

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

[Auto Setup Options Menu]

Optimize Array for: Security —— **Security (0+1) mode is selected.**

[Array Setup Configuration]

Mode ....Mirror/Stripe
Spare Drive 0
Drive(s) Used in Array.........................4
Array Disk Capacity (size in MB)..........60000

[Keys Available]

[←,,Space] Change Option   [ESC] Exit   [Ctrl-Y] Save
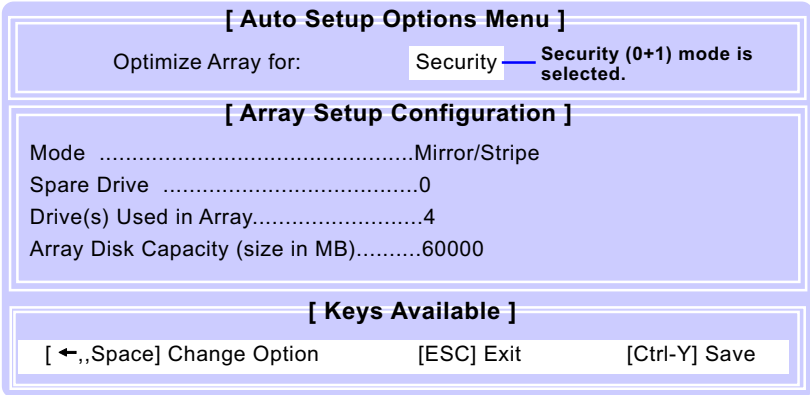
5-8. Press <Ctrl-Y> to Save the Choice

When a RAID mode is chosen, press < Ctrl-Y> to save the choice.
Then select Y for "Create and Quick Initialize; or select N for "Create only".

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

[Auto Setup Options Menu]

Optimize Array for: Security

[Array Setup Configuration]

Mode ....
Spare Drive ....
Drive(s) Used in Array...
Array Disk Capacity (siz

Do you want to do quick initialize or create only? (Yes/No)
Y - Create and Quick Initialize
N - Create Only

[Keys Available]

[←,,Space] Change Option   [ESC] Exit   [Ctrl-Y] Save
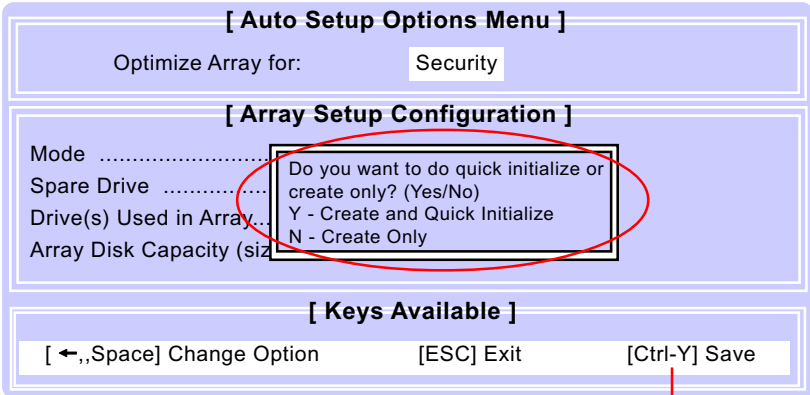
Press <Ctrl-Y> to save choice.

5-9. Create RAID only / Create and Quick Initialize

"Create Only" is for creating RAID without changing the disk data.
"Create and Quick Initialize" will create the RAID with clearing disk data.

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

[Auto Setup Options Menu]

Optimize Array for: Security

[Array Setup Configuration]

Mode ....
Spare Drive ....
Drive(s) Used in Array...
Array Disk Capacity (siz

Choose Quick Initialize will delete
any existing data on your hard
disks.
Y - Continue, Others - Cancel

[Keys Available]

[←,,Space] Change Option   [ESC] Exit   [Ctrl-Y] Save
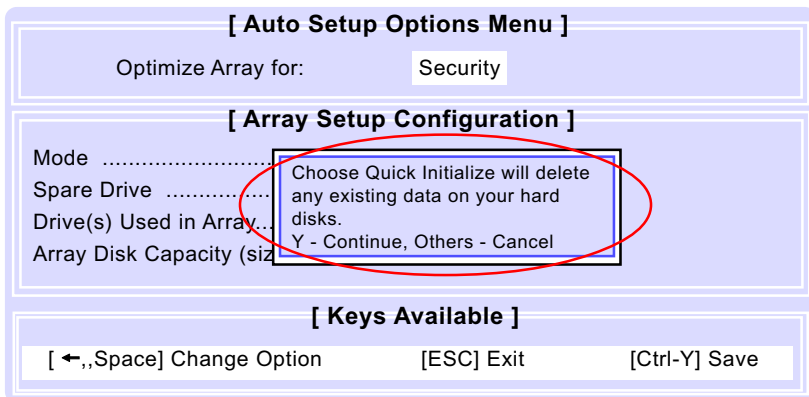
5-10. Array Created and Reboot System

After choosing "Create Only" or Create and Quick Initialize", next screen
will prompt you to reboot system.
Press any key to reboot.
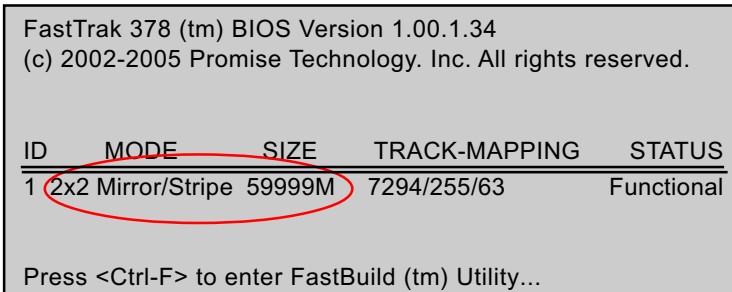
FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

[Auto Setup Options Menu]

Optimize Array for: Security

[Array Setup Configuration]

Mode ....Mirror/Stripe
Spare Drive ....
Drive(s) Used in Array...
Array Disk Capacity (size in MB)..........60000

Array Has been created....
<Press Any Key to REBOOT>

[Keys Available]

[←,,Space] Change Option   [ESC] Exit   [Ctrl-Y] Save
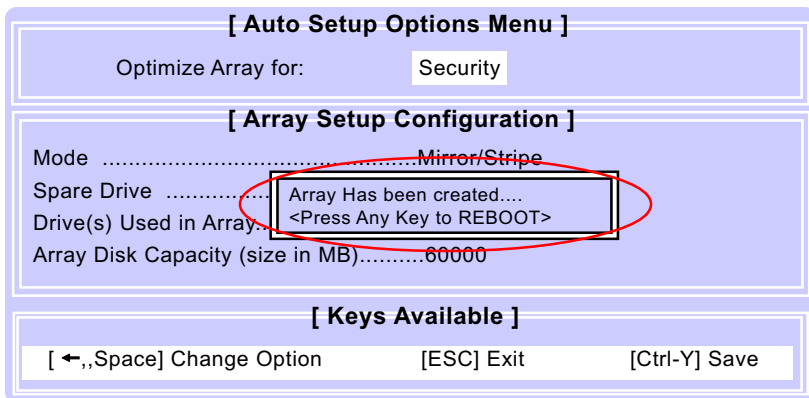
5-11. Mirror/Stripe Array Detected at Reboot System

At rebooting system, Mirror/Stripe Array (RAID 0+1) appears on screen after "POST".

```
FastTrak 378 (tm) BIOS Version 1.00.1.34
(c) 2002-2005 Promise Technology. Inc. All rights reserved.


ID     MODE          SIZE      TRACK-MAPPING     STATUS
1  2x2 Mirror/Stripe  59999M    7294/255/63       Functional


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

Congratulation!
Your system is now ready for operating system installation and RAID Driver Setup.

5-12 To Install Promise RAID Driver

Promise RAID Driver is incorporated in Support CD/Floppy Diskette for user's installation. This driver is intended for Windows 98/Me/NT4/2000/ XP/2003.

5-12-1 To Install RAID Driver on Windows 2000/XP

(1) Get ready the Floppy Diskette holding the RAID Driver.
   (This Driver Diskette should have been enclosed in the mainboard Package.)
(2) Check that Hard Disks are connected properly to the RAID conn-tors.
(3) Start your PC system and use RAID BIOS Setup Utility to configure RAID 0 / 1/ 0+1 to the hard disks.
(4) Restart System and apply the Windows 2000/XP CD to CD-ROM for operating system installation.
(5) On the Windows 2000/XP Setup screen, press "F6" key for RAID driver setup.

Windows Setup

Press F6 if you need to install a third party SCSI or RAID driver....

(6) On next screen press "S" to confirm the mass storage device setup.

Windows Setup

Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage devices(s):

> **<none>**

> *** To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Windows, including those for which you have a device support disk from a mass storage device manufacturer, press S.**

> *** If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER.**

S=Specify Additional Device   Enter=Continue   F3=Exit

(7) On next screen apearing, insert the RAID Driver Diskette to Drive "A" and then press <Enter>.

Windows Setup

Please insert the disk labeled

Manufacturer-supplied hardware support disk

into Drive A:

*   Press ENTER when ready.

Enter=Continue   ESC=Cancel   F3=Exit

(8) On next screen appearing, choose the driver suitable for your operating system and press <Enter> to continue.

Windows Setup

You have chosen to configure a SCSI Adapter for use with Windows, using a device support disk provided by an adapter manufacturer.

Select the SCSI Adapter you want from the following list, or press ESC to return to the previous screen.

Win SERVER 2003 Promise FastTrak 376/378 (tm) Controller
WinXP Promise FastTrak 376/378 9tm) Controller
Win2000 Promise FastTrak 376 (tm) Controller
Win2000 Promise FastTrak 378 (tm) Controller

S=Specify Additional Device   Enter=Continue   F3=Exit

The Installation Program will then guide you through the rest of system setup. The RAID driver will then be installed into your system.

5-12-2 To Install RAID Driver on Windows 98SE/Me

(1) Get ready the Floppy Diskette holding the RAID Driver.
(2) Check that Hard Disks are connected properly to the RAID conn-
    ectors.
(3) Start your system and use RAID BIOS Setup Utility to configure
    RAID 0 / 1/ 0+1 to the hard disks.
(4) Restart System and format the bootable hard disks.
(5) Now, apply the Windows 98SE/ME CD to CD-ROM for
    operating system installation.
(6) With the Windows 98SE/ME installation complete, restart system
    for RAID driver setup.

(7) On the "Start" screen of your system, please click to the following
    path:

    \My Computer\properties\Device manager

(8) In the "Device manager" screen, you can see the item " PCI RAID
    Controller" with a yellow question mark on its left side, which indicates
    that the RAID controller is already detected by system but the driver
    is not installed yet. Please point to this item with your mouse and
    double click on it (or click the "Properties" button).

**The question mark here
indicates that RAID
Controller Driver
is not installed yet.**
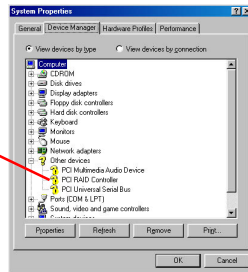
(9) Instantly, the "PCI RAID Controller Properties" screen shows up.
    Please click the "General" bar to continue.

(10) In the "General" screen, click "reinstall
    Driver" button to continue. Please note that
    the status of "Device Usage" should stay at
    "Exists in all hardware profiles".

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(11) In the "Update device Driver Wizard" screen, click "Next" to continue until you see a dialog box asking you to "Specify a location" for the driver. You should **now** insert the SATA/SATA RAID Driver CD/ Diskette into CD-ROM/Drive A.

(12) As illustrated in the picture below, check the item "Specify a location" and click the "Browse" button to find out the correct path for the driver. As the RAID Driver is in Drive A, please type into the blank bar the correct path and click "Next" to continue:

D:\Driver\Promise\PDC20376&378\Win98-me

   or

A:\Win98-me
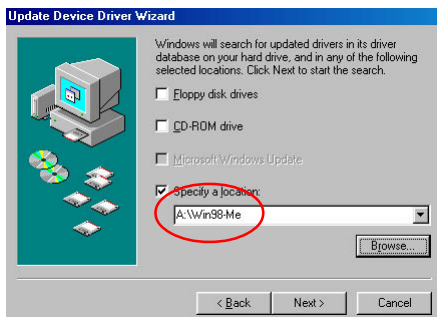
(13) The Update Device Driver Wizard will then go on installing the driver. In a few seconds, installation completes. Please click the "Finish" button on the screen to complete the installation.