Pentium

82430 HX / P54C PCI Mainboard
User's Guide &
Technical Reference
5TS0/S2/S5

SOYO™

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Table of Contents

1   Introduction

The 82430 HX/P54C PCI mainboard is a high-performance system board that supports Intel P54CX family CPUs. You can install 256K to 512K of external cache memory on the mainboard. The mainboard is fully compatible with industry standards, and adds many technical enhancements.

Key Features

- Supports P54CX family CPUs running at 75 ~ 200 MHz speeds, Cyrix 6X86 CPUs running at P120$^+$/P133$^+$/P150$^+$/P166$^+$, and AMD 5$_k$86/K5 CPUs.
- **Supports Dual voltage processor (optional)**
- **Supports SOCKET 7 &VRM for upgrade (optional)**
- Integrated Second Level (L2) Cache Controller
    — Write Back Cache Modes and Direct Mapped Organization
    — **On-board 256K/512K Pipeline Burst SRAMs Cache and upgrade slot supports**
- Integrated DRAM Controller
    — Supports 50/60/70ns Fast Page Mode (both symmetrical and asymmetrical addressing) and **EDO DRAM** (72-pin SIMM)
    — On-board memory configurations from **4 to 256 Mbytes**
    — Supports Error Checking and Correction (ECC) and Parity Check (Optional)
- **On-board supports 11 Tag bit** (cacheable range up to 512MB)
- Supports Pentium / P54C SMM Mode and CPU Stop Clock
- Supports "**Table-Free**" DRAM configuration
- **Supports Universal Serial Bus — USB (Optional)**
- **Compliant to PCI specifications v2.1**
- Three 32-bit PCI slots (Masters) and Four ISA slots, 4-layer PCB
- System BIOS built-in NCR306 SCSI Card BIOS and **"Plug and Play"** function
- On-board built-in PCI Master IDE controller and floppy controller
- On-board supports for two high speed UARTS (w/i 16550 FIFO), Multimode parallel port for SPP/EPP/ECP modes, PS/2 mouse function, and **IR function**
- **On-board supports FLASH Memory for easy upgrade BIOS**
- **Easy installation of Triones EIDE/ATAPI CD-ROM Bus Master Drivers**
- **Onboard supports VGA, MPEG, and TV Tuner Function (Optional).**

VGA Chips Features

High-Performance Integrated Graphics/Video Accelerator (S3 Trio 64V+)

- High-performance DRAM-based 64-bit graphics engine
- Integrated 24-bit RAMDAC with 135MHz output pixel rate and programmable dual-clock synthesizer
- Unique S3 Streams Processor for hardware-assisted video playback

Advanced Playback Capabilities

- High-quality hardware-assisted video playback (up to 1024x768x16 bits/pixel)
- Support for India, Cinepak, and software accelerated MPEG-1 video playback

S3 Scenic Highway Interface (H/W MPEG)

- Philips SAA7110/SAA7111 video digitizers
- S3 Scenic/MX2 MPEG-1 audio/video decoder, C-Cube CL-480 MPEG-1 decoder

High non-Interlaced Screen Resolution Support

- 1280x1024x256 clods at 75Hz refresh
- 1024x768x64K colors at 75Hz refresh
- 800x600x16.7M colors at 75Hz refresh

High-Performance Memory Interface

- 64-bit DRAM memory interface
- Supports standard fast page mode and EDO DRAMs (60MHz) and 1-cycle EDO DRAMs (50MHz)

Table 1–1. Trio 64V+ Video Resolutions

Resolution	1MB DRAM	2MBs DRAM
640x480x16	✓	✓
640x480x256	✓	✓
640x480x64K	✓	✓
800x600x16	✓	✓
800x600x256	✓	✓
800x600x64K	✓	✓
1024x768x16	✓	✓
1024x768x256	✓	✓
1024x768x64K		✓
1152x864x256	✓	✓
1280x1024x16	✓	✓
1280x1024x256		✓
1600x1200x16 (IL)	✓	✓
1600x1200x256 (IL)		✓

Note: (IL) meansthat only the interlaced mode monitor can reach that kind of resolutions.

Unpacking the Mainboard

The mainboard package contains:

• The 82430FX / P54C Mainboard

• This User's Guide

• One Triones IDE/ATAPI CD-ROM Bus Master Drivers Diskette

Note: Do not unpack the mainboard until you are ready to install it.

Follow the precautions below while unpacking the mainboard.

1. Before handling the mainboard, ground yourself by grasping an unpainted portion of the system's metal chassis.

2. Remove the mainboard from its anti-static packaging and place it on a grounded surface, component side up.

3. Check the mainboard for damage. If any chip appears loose, press carefully to seat it firmly in its socket.

Do not apply power if the mainboard appears damaged. If there is damage to the board contact your dealer immediately.

Electrostatic Discharge Precautions

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

Take these precautions to protect your equipment from electrostatic discharge:

• Do not remove the anti-static packaging until you are ready to install the mainboard and other system components.

• Ground yourself before removing any system component from its protective anti-static packaging. To ground yourself grasp the expansion slot covers or other unpainted portions of the computer chassis.

• Frequently ground yourself while working, or use a grounding strap.

• Handle the mainboard by the edges and avoid touching its components.

Mainboard Layout w/ Default Settings
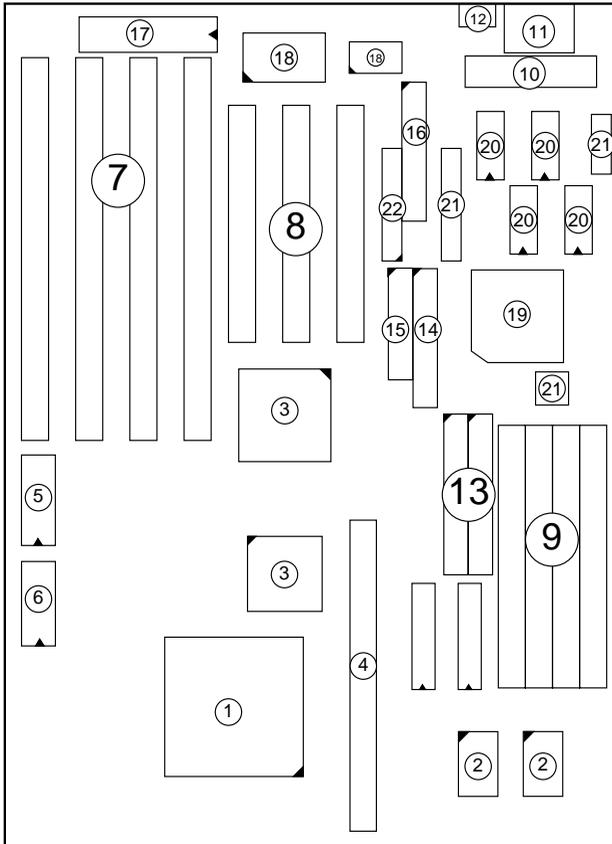
Figure 1–1. Mainboard Layout

1.	P54C/6x86 in ZIF socket 7	12.	PS/2 Mouse Connector
2.	Pipelined Burst SRAM	13.	IDE1/IDE2 Connector
3.	82430 HX Chipset	14.	Floppy Connector
4.	Pipelined Burst SRAM Module Slot	15.	Parallel Port Connector
5.	PnP FLASH BIOS	16.	COM1/COM2/VGA/LINE Connector
6.	Real Time Clock (RTC)	17.	Keyboard BIOS
7.	ISA Slots	18.	Super I/O Chipset
8.	PCI Slots	19.	S3 VGA Chips
9.	SIMM Memory Bank	20.	EDO DRAM (for Video)
10.	5V DC Power Connector	21.	MPEG Connector (Optional)
11.	Keyboard Connector	22.	TV Tuner/Feature Connector (Optional)

Default settings are as follows: Pentium 100MHz CPU, 256K W/B Pipelined Burst cache, Address Pipeline Enabled, On-board Local Bus IDE Enabled, FDC Enabled, 2 high speed UARTS Enabled (w/ 16550 FIFO), 1 EPP/ECP port (ECP + EPP mode).
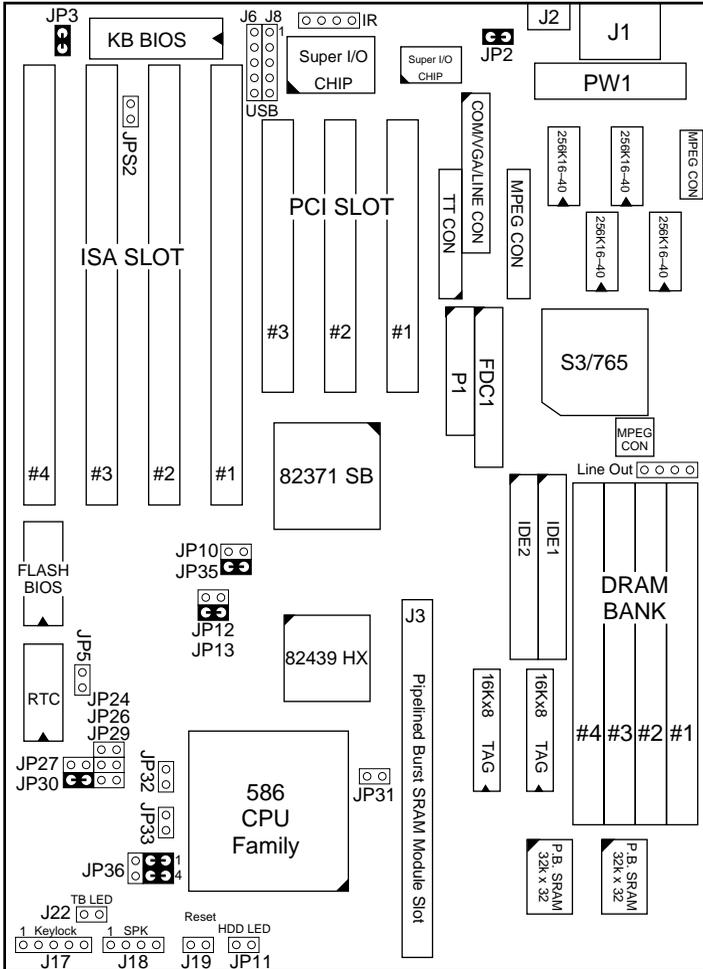
Figure 1–2. Mainboard Default Setting

Important: Make sure the system is well ventilated to prevent overheating and ensure system stability.

2   Hardware Setup

This chapter explains how to configure the mainboard's hardware. After you install the mainboard, you can set jumpers, install memory on the mainboard, and make case connections. Refer to this chapter whenever you upgrade or reconfigure your system.

CAUTION: *Turn off power to the mainboard, system chassis, and peripheral devices before performing any work on the mainboard or system.*

Jumpers

Factory Set Jumpers

The following jumpers are set at the factory as below.

Jumpers	Factory settings
JP1, JP14, JP15, JP34	**Factory fixed at 2–3**
JP2, JP35	**Factory setting at short**

JP3: Display Type

Set JP3 to configure the mainboard for use with either a color or monochrome monitor.

Monitor Type	JP3
Monochrome	 ● ● 1 2
EGA/VGA (default)	 ● ● 1 2

JP10: Sleep Switch Connector Enable/Disable

Toggle this jumper to force the system into power saving (Green) mode. Any hardware IRQ signal makes the system wakeups.

JP32, JP33: Bus Fraction Core/Bus Ratio Select

Set this jumper according to your CPU clock.

Note: For Pentium **X** / **Y** MHz, **X** stands for CPU core clock, **Y** stands for bus clock.

Ratio	P54CX Family	JP32, JP33
3/2 (Default)	Pentium – 75, 90, 100MHz AMD 5k86 (SSA5) – P75, P90, P100MHz AMD 5k86 (K5) – P120, P133MHz	JP32 JP33
2/1	Pentium – 120, 133MHz Cyrix – P120$^+$, P133$^+$, P150$^+$, P166$^+$ MHz AMD 5k86 (K5) – P150, P166MHz	JP32 JP33
5/2	Pentium – 150, 166MHz	JP32 JP33
3/1	Pentium – 180, 200MHz	JP32 JP33

JP5: CMOS Clear Jumper

Clear the CMOS memory by momentarily shorting this jumper; then open the jumper to retain new settings.

CMOS Setting	JP5
Retain CMOS data (default)	1 2
Clear CMOS data	1 2

J4: VRM (Voltage Regulator Module) Socket (Reserved)

VRM socket is dedicated for 2.5V CPU to use. It converts 3.3V to 2.5V for the advance high speed P54CX.

JPS2: PS/2 Mouse Function Jumper

Set PS/2 mouse function enabled or disabled.

PS/2 Mouse Function	JPS2
Disabled (default)	● ● 1 2
Enabled	● ● 1 2

Note: The IRQ12 is dedicated to PS/2 mouse when choose enabled of PS/2 Mouse Function.

COM/VGA/LINE Adapter

Attach COM/VGA/LINE adapter to the mainboard as the figure showing below to enable COM1/COM2/VGA/LINE OUT function.
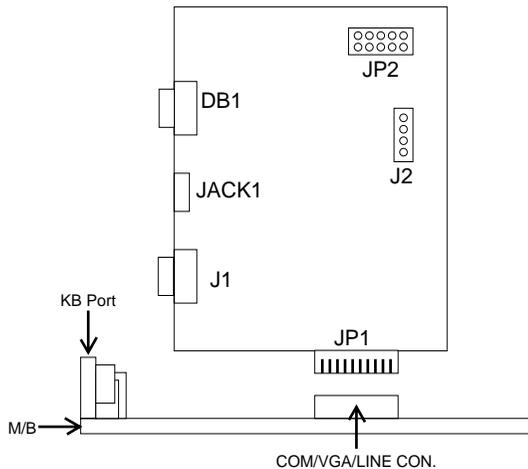
Function of every connector on the COM/VGA/LINE adapter is described below:

DB1 – VGA Cable Connector

Attach the cable of VGA monitor to this connector.

JACK1 – Line Out Connector

Attach Line-In cable of the external speaker system device to this jack.

J1 – COM1 Connector

Attach COM1 cable to this connector.

JP2 – COM2 Connector

Attach COM2 cable to this connector (this cable is provided by the mainboard manufacture.)

J2* – Line Out Mainboard End Connector

Attach 4-pins linking cable to this connector. The other end of this cable is connected to JP9 of the mainboard (this cable is provided by the mainboard manufacture.)

Note: Use this cable only when your hardware MPEG is installed. Check with your mainboard supplier for more MPEG information.

CPU Type Configuration

Set the mainboard's CPU jumpers JP12, JP13, JP32, and JP33 according to CPU type as described below, and then set JP27, JP30 for the proper voltage of the CPU.

❑ **Step 1: Frequency Setting**

Pentium – 75*/90*/100* CPU Settings (1.5 x clock)
AMD K5 – PR75/PR90/PR100/PR120/PR133 Settings (1.5 x clock)

Pentium (P54CX) – 75*/50 MHz
AMD K5 (SSA5) – PR75/50 MHz
(Red Caps)

JP12
JP13

AMD 5k86 (SSA5) – P90/55 MHz
AMD 5k86 (K5) – P100/55 MHz
(Red Caps)

JP12
JP13

Pentium (P54CX) – 90*/60 MHz
AMD K5 (SSA5) – PR90/60 MHz
AMD K5 – PR120/60 MHz
(Red Caps)

JP12
JP13

Pentium (P54CX) – 100*/66 MHz
AMD K5 (SSA5) – PR100/66 MHz
AMD K5 – PR133/66 MHz
(Red Caps)

JP12
JP13
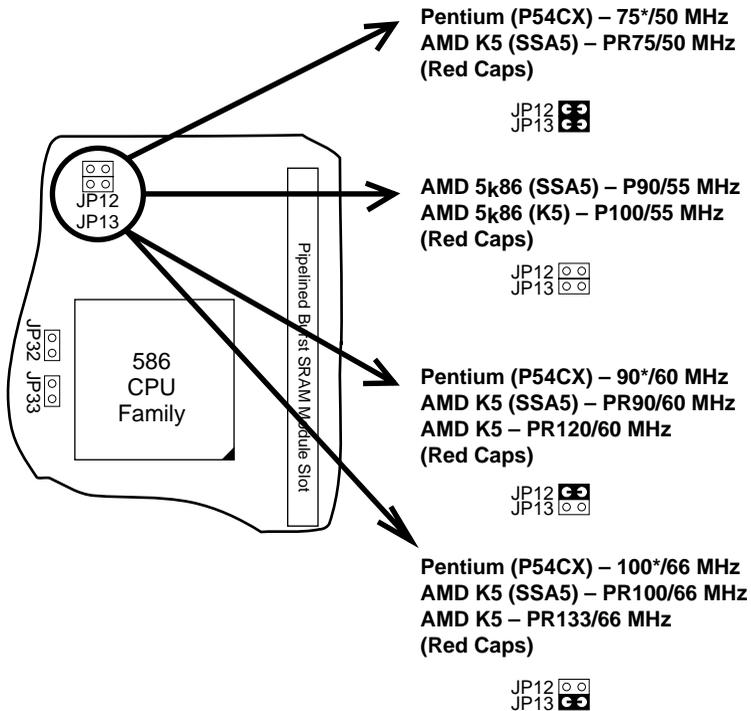
Figure 2–1–1. CPU Jumper Settings

Note: You must equip the CPU with a fan and heat sink for system stability.

Pentium – 100*/120*/133* CPU Settings (2.0 x clock)
Cyrix 6x86 – P120+/P133+/P150+/P166+ CPU Settings (2.0 x clock)
AMD K5 – PR150/PR166 CPU Settings (2.0 x clock)
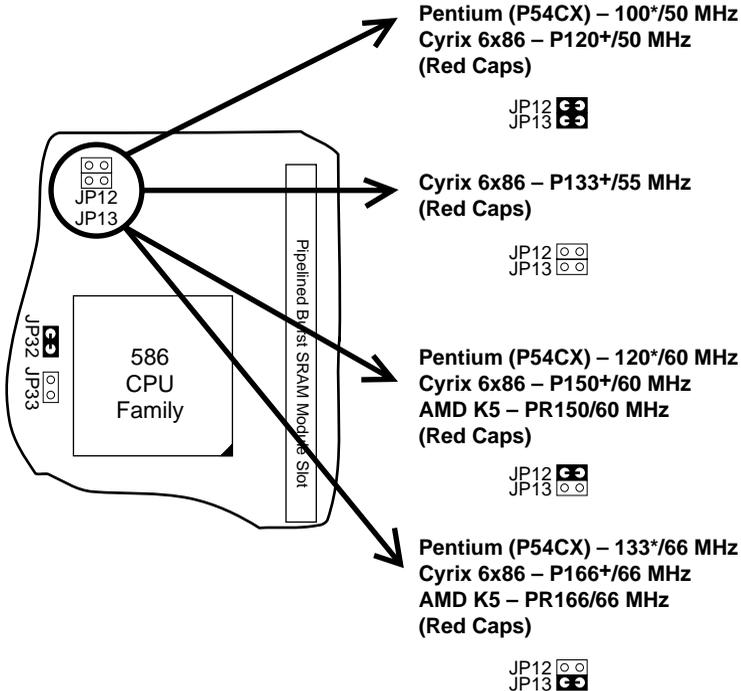
Figure 2–1–2. CPU Jumper Settings

Note: 1. You must equip the CPU with a fan and heat sink for system stability.
2. Cyrix 6x86 – P166+ has to be matched with 60ns DRAMs.

Pentium – 150* CPU Settings (2.5 x clock)
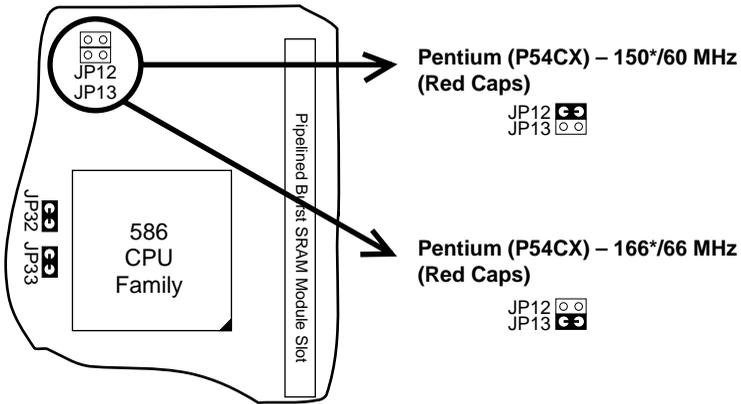
Figure 2–1–3. CPU Jumper Settings

Note: You must equip the CPU with a fan and heat sink for system stability.

Pentium – 180*/200* CPU Settings (3.0 x clock)
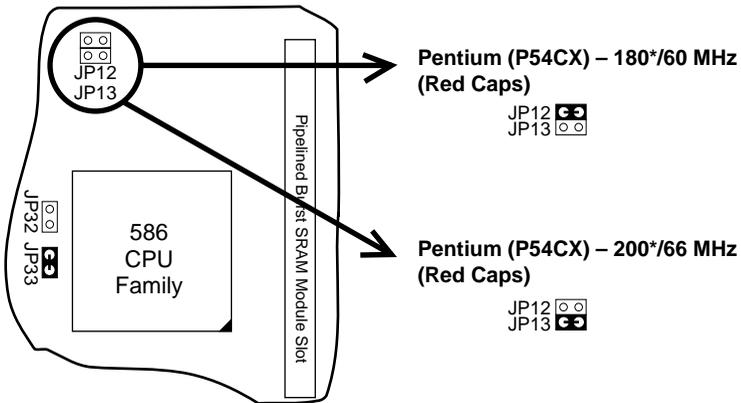
Figure 2–1–4. CPU Jumper Settings

Note: You must equip the CPU with a fan and heat sink for system stability.

❑ Step 2: CPU Single/Dual Voltage Setting

Single Voltage CPU Setting

Signal voltage CPUs use the same voltage for VIO and VCore and has been used traditionally. The CPUs which fall into this category are Intel P54CX, AMD-K5-PRxxxBx, AMD-K5-PRxxxCx, AMD-K5-PRxxxFx, and Cyrix 6x86. Refer to the following figure to set these CPUs' voltage:
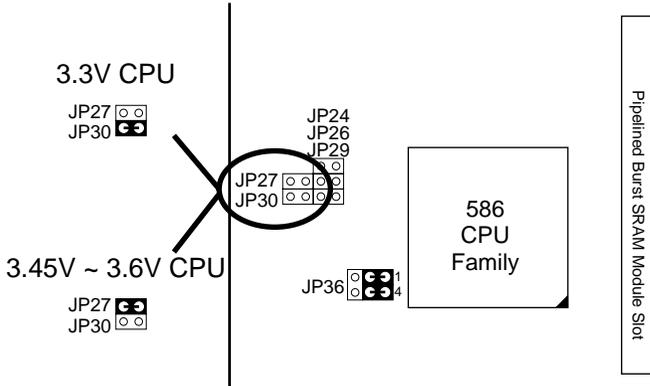
Figure 2–2–1. Single Voltage CPU

Dual Voltage CPU Setting (Optional)

Dual voltage CPUs are designed to use different voltage for VIO and VCore and they include Intel P55CX, AMD-K5-PRxxxHx, AMD-K5-PRxxxJx, AMD-K5-PRxxxKx, AMD K6, Cyrix 6x86L, and Cyrix M2. Refer to the following figure to set these CPUs' voltage:
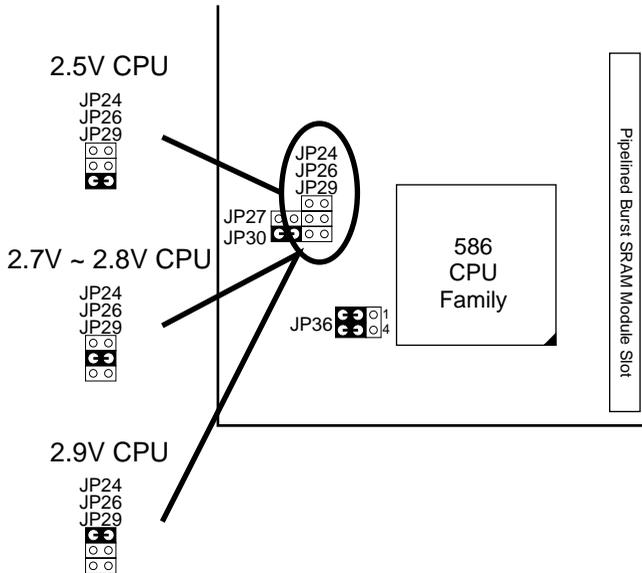
Figure 2–2–2. Dual Voltage CPU

Memory Configuration

The mainboard supports eight banks of **72-pin SIMM or EDO DRAM (with or without parity)**. The mainboard requires SIMM of at least 70ns access time.

Single-side SIMM	Double-side SIMM
4MB = 1MB x 36(32)	2MB = 512K x 36(32)
16MB = 4MB x 36(32)	8MB = 2MB x 36(32)
64MB = 16MB x 36(32)	32MB = 8MB x 36(32)

The mainboard supports **from 4 to 256 Mbytes** with no other restrictions on memory configurations. You can install DRAM in any combination without having to rely on a memory configuration table. Memory configuration is thus "**Table-Free**" in any bank.

Note: You must install two strips of SIMM modules to complete a bank.

Cache Configuration

The mainboard has a write-back caching scheme. You can configure the mainboard's cache by installing cache chips in the sockets noted below and then set jumpers JP31 to set the mainboard for the type of SRAM installed. See Figures 2–3–1~2–3–2 for cache configurations.

Cache Size and RAM Locations

Cache Size	Cache RAM	TAG RAM	Cacheable Range
256KB	32K x32, 2 pcs (or 256K module) on U31, U32 (or J3)	16K x 8 on U27, U28	512 MB
Upgrade to 512KB	32K x 32, 2pcs + 256K module on U31, U32, and J3	16K x 8 on U27, U28	512 MB
Onboard 512KB	64K x 32, 2pcs on U31, U32	16K x 8 on U27, U28	512 KB

256K Pipelined Burst Cache Configuration

1. Leave JP31 opened when you have 256K Pipelined Burst SRAM CHIPs onboard.
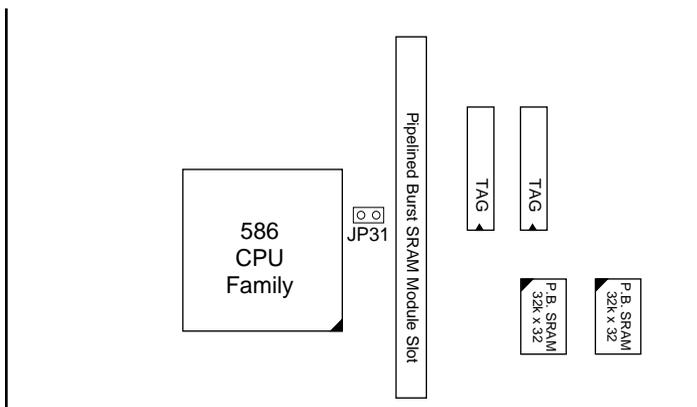
Figure 2–3–1. 256K Pipelined Burst Cache Configuration

Upgrade to 512KB/Onboard 512KB Pipelined Burst Cache Configuration

1. Insert Jumper into JP31 when you have 512K Pipelined Burst SRAM CHIPs onboard or 256K SRAM CHIPs and 256K Pipelined Burst SRAM module.
2. Due to the various design, contact the supplier for 256KB Pipelined Burst SRAM module when you want to upgrade to 512K cache on your motherboard.
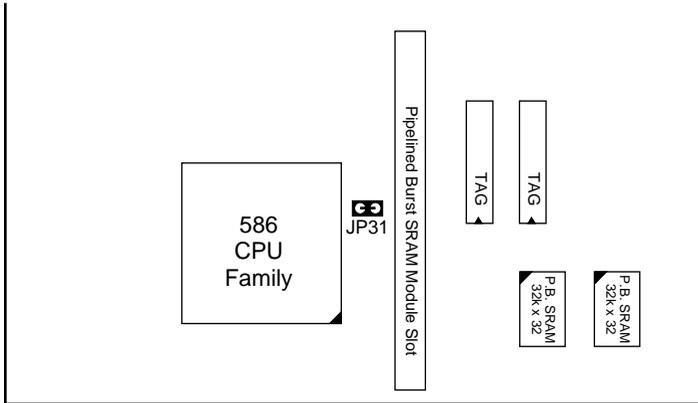
Figure 2–3–2. 512K Pipelined Burst Cache Configuration

Multi I/O Port Addresses

Default settings for multi-I/O port addresses are shown in the table below.

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

* If default I/O port addresses conflict with other I/O cards (e.g. sound cards or I/O cards), you must adjust one of the I/O addresses to avoid address conflict. (You can adjust these I/O addresses from the BIOS.

Note: Some sound cards have a default IRQ setting for IRQ7, which may conflict with printing functions. If this occurs do not use sound card functions at the same time you print.

Connectors

Attach the mainboard to case devices, or an external battery, via connectors on the mainboard. Refer to Figure 1-1 for connector locations and connector pin positions.

J1 – Keyboard Connector

A five-pin female DIN keyboard connector is located at the rear of the board. Plug the keyboard jack into this connector.

PW1 – Power Supply Connectors

The mainboard requires a power supply with at least 200 watts and a "power good" signal. PW1 has two six-pin male header connectors. Plug the dual connectors from the power directly onto the board connector while making sure the black leads are in the center.
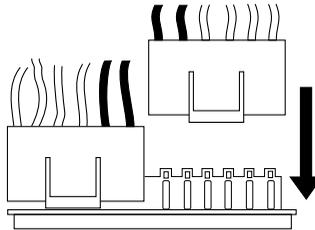
J17 – Keylock & Power LED Connector

J17 is a connector for a lock that may be installed on the system case for enabling or disabling the keyboard. J17 also attaches to the case's Power LED. (Pin 1–2 for power LED, pin3–5 for keylock.)

J18 – Speaker Connector

Attach the system speaker to connector J18.

J19 – Hardware Reset Control

Attach the Reset switch to J19. Closing the Reset switch restarts the system.

J2 – PS/2 Mouse Connector

Attach PS/2 mouse cable to this connector.

J22 – Turbo LED Connector

Attach the turbo LED to J22. The LED lights when the system is in Turbo mode.

IDE1/IDE2 – On-board Primary/Secondary IDE HDD Connectors

Attach on-board hard disk drives to these connectors.

J11 – HDD LED Connectors

Attach on-board hard disk drive LEDs to this connector. The LED lights when an HDD is active.

COM/VGA/LINE Connectors

Attach COM1/COM2/VGA/LINE OUT adapter to these connectors.

FDC1 Connector

Attach floppy cable to this connector.

P1 – Parallel Port Connector

Attach parallel port cable to this connector.

J3 – Pipelined Burst SRAM Module Slot

Contact your supplier for Pipelined Burst SRAM upgrade module to upgrade your on-board cache SRAM up to 512KB. Make sure JP31 is set for the right size when you upgrade your cache SRAM.

J6, U22 – Universal Serial Bus Connector (Optional)

Attach USB cable to these connectors for external USB device.

MPEG Connector – MPEG Daughter Board Connector (Optional)

You could attach H/W MPEG Daughter Board to perform the H/W MPEG function. Due to the various design, contact your dealer for the H/W MPEG function.

TT Connector – TV Tuner/Feature Connector (Optional)

Attach TV Tuner/Feature Connector cable to this connector to enable the TV Tuner/Feature Connector function.

Line Out – Line Out Connector

Linking one end of the line out cable to this connector and the other end to COM/VGA/LINE adapter to enable line out function.

Line Out Cable

If you have S3 MPEG Daughter Board attached, you will need a Line Out Cable to enable the Line Out function. Please contact the M/B manufacture for the Line Out cable.)

IR – Infra Red Connector (Optional)

Attach Infra Red device cable to this connector to enable the infrared transfer function.

3 BIOS Setup

The mainboard's BIOS setup program is the ROM PCI/ISA BIOS from Award Software Inc. Enter the Award BIOS program's Main Menu as follows:

1. Turn on or reboot the system. After a series of diagnostic checks, you are asked to press DEL to enter Setup.

2. Press the <DEL> key to enter the Award BIOS program and the main screen appears:

```
                        ROM PCI/ISA BIOS
                       CMOS SETUP UTILITY
                      AWARD SOFTWARE, INC.
┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│    STANDARD CMOS SETUP            INTEGRATED PERIPHERALS           │
│                                                                   │
│    BIOS FEATURES SETUP            SUPERVISOR PASSWORD              │
│                                                                   │
│    CHIPSET FEATURES SETUP         USER PASSWORD                    │
│                                                                   │
│    POWER MANAGEMENT SETUP         IDE HDD AUTO DETECTION           │
│                                                                   │
│    PCI & ONBOARD I/O SETUP        SAVE & EXIT SETUP                │
│                                                                   │
│    LOAD SETUP DEFAULTS            EXIT WITHOUT SAVING              │
│                                                                   │
│    LOAD BIOS DEFAULTS                                             │
├─────────────────────────────────────────────────────────────────┤
│ Esc : Quit                        ↑ ↓ → ←  : Select Item          │
│ F10 : Save & Exit Setup           (Shift) F2 : Change Color       │
├─────────────────────────────────────────────────────────────────┤
│                   Time, Date, Hard Disk Type...                   │
└─────────────────────────────────────────────────────────────────┘
```

3. Choose an option and press <Enter>. Modify the system parameters to reflect the options installed in the system. (See the following sections.)

4. Press <ESC> at anytime to return to the Main Menu.

5. In the Main Menu, choose "SAVE AND EXIT SETUP" to save your changes and reboot the system. Choosing "EXIT WITHOUT SAVING" ignores your changes and exits the program.

The Main Menu options of the Award BIOS are described in the sections that follow.

Standard CMOS Setup

Run the Standard CMOS Setup as follows.

1. Choose "STANDARD CMOS SETUP" from the Main Menu. A screen appears.

```
                    ROM PCI/ISA BIOS
                   STANDARD CMOS SETUP
                   AWARD SOFTWARE, INC.

    Date (mm:dd:yy) : Fri, Feb 1 1995
    Time (hh:mm:ss) :  7 : 30 : 33

    HARD DISKS        TYPE   SIZE    CYLS HEAD  PRECOMP  LANDZ  SECTOR  MODE

    Primary Master  : None    0       0    0       0       0       0   ----
    Primary Slave   : None    0       0    0       0       0       0   ----
    Secondary Master: None    0       0    0       0       0       0   ----
    Secondary Slave : None    0       0    0       0       0       0   ----

    Drive A : 1.44M, 3.5 in.
    Drive B : None                          Base Memory:      640K
                                        Extended Memory:     3328K
    Video  : EGA/VGA                       Other Memory:      128K
    Halt On : All Errors
                                          Total Memory:     4096K

    Esc : Quit           ↑ ↓ → ←   : Select Item   PU/PD/+/- : Modify
    F11 : Help           (Shift) F2 : Change Color    F3 : Toggle Calendar
```

2. Use arrow keys to move between items and select values. Modify selected fields using PgUp/PgDn/+/– keys. Some fields let you enter values directly.

Date (mm/dd/yy) Type the current date.

Time (hh:mm:ss) Type the current time.

Primary (Secondary) Master & Slave Choose from the standard hard disk types 1 to 46. Type 47 is user definable. If a hard disk is not installed choose "Not installed." (default)

Drive A & B Choose 360KB , 5 1/4 **in**.,
1.2MB , 5 1/4 **in**.,
720KB , 3 1/2 **in**.,
1.4M , 3 1/2 **in**.(default),
2.88 MB, 3 1/2 **in**. or
Not installed

Video Choose Monochrome,
Color 40x25,
VGA/EGA (default),
Color 80x25

3. When you finish, press the <ESC> key to return to the Main Menu.

BIOS Features Setup

Run the BIOS Features Setup as follows.

1. Choose "BIOS FEATURES SETUP" from the Main Menu and a screen with a list of items appears. (**The screen below shows the BIOS default settings.**)

```
                    ROM PCI/ISA BIOS
                    BIOS FEATURES SETUP
                    AWARD SOFTWARE, INC.

CPU Internal Cache      : Enabled  Video  BIOS Shadow  : Enabled
External Cache          : Enabled  C8000-CBFFF Shadow  : Disabled
Quick Power on Self Test : Enabled  CC000-CFFFF Shadow  : Disabled
Boot Sequence           : A,C      D0000-D3FFF Shadow  : Disabled
Swap Floppy Drive       : Disabled D4000-D7FFF Shadow  : Disabled
Boot Up NumLock Status  : On       D8000-DBFFF Shadow  : Disabled
Gate A20 Option         : Fast     DC000-DFFFF Shadow  : Disabled
Typematic Rate Setting  : Disabled
Typematic Rate (Chars/Sec): 6      ESC : Quit      ↑↓→←: Select Item
Typematic Delay (Msec)  : 250      F1  : Help     PU/PD/+/- : Modify
Security Option         : Setup    F5  : Old Values (Shift)F2 : Color
PCI/VGA Palette Snoop   : Disabled F6  : Load BIOS Defaults
OS Select for DRAM >64MB : Non-OS2 F7  : Load Setup Defaults
```

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/+/– keys. <F> keys are explained below:

    <F1>: "Help" gives options available for each item.

Shift <F2>: Change color.

    <F5>: Get the old values. These values are the values with
    which the user started the current session.

    <F6>: Load all options with the BIOS Setup default values.

    <F7>: Load all options with the Power-On default values.

A short description of screen items follows:

CPU Internal Cache	This option enables/disables the CPU's internal cache. (The Default setting is Enabled.)
External Cache	This option enables/disables the external cache memory. (The Default setting is Enabled.)
Quick Power On Self Test	Enabled provides a fast POST at boot-up .

Boot Sequence	The default setting attempts to first boot from drive A: and then from hard disk C:. You can reverse this sequence with "C: A:", but then drive A: cannot boot directly.
Swap Floppy Drive	Enabled changes the sequence of the A: and B: drives. (The Default setting is Disabled.)
Boot Up Num Lock Status	Choose On or Off. On puts numeric keypad in Num Lock mode at boot-up. Off puts this keypad in arrow key mode at boot-up.
Gate A20 Option	Choose Fast (default) o Normal. Fast allows RAM accesses above 1MB using the fast gate A20 line.
Typematic Rate Setting	Enable this option to adjust the keystroke repeat rate.
Typematic Rate (Chars/Sec)	Choose the rate a character keeps repeating.
Typematic Delay (Msec)	Choose how long after you press a key that a character begins repeating.
Security Option	Choose Setup or System. Use this feature to prevent unauthorized system boot-up or use of BIOS Setup.
	"System" – Each time the system is booted the password prompt appears.
	"Setup"– If a password is set, the password prompt only appears if you attempt to enter the Setup program.
PCI/VGA Palette Snoop	Enabled: The color of the monitor may be incorrect if uses with MPEG card. Enable this option to make the monitor normal.
	Disabled: Default setting.

OS Select for DRAM >64MB	OS2:	Choosing this when you are using OS/2 operation system.
	Non-OS/2:	Choosing this when you are using no-OS/2 operation system.
Video or Adapter BIOS Shadow		BIOS shadow copies BIOS code from slower ROM to faster RAM. BIOS can then execute from RAM. These 16K segments can be shadowed from ROM to RAM. BIOS is shadowed in a 16K segment if it is enabled and it has BIOS present.

3. After you have finished with the BIOS Features Setup program, press the <ESC> key and follow the screen instructions to save or disregard your settings.

Chipset Features Setup

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

Note: Change these settings only if you are familiar with the Chipset. Run the Chipset Features Setup as follows.

1. Choose "CHIPSET FEATURES SETUP" from the Main Menu and the following screen appears. (The screen below shows default settings.)

```
                    ROM PCI/ISA BIOS
                 CHIPSET FEATURES SETUP
                  AWARD SOFTWARE, INC.
```

```
┌─────────────────────────────────────────────────────────────────────────┐
│ Auto Configuration      : Enabled    Memory Parity/ECC Check  : Auto      │
│ DRAM Timing             : 70 ns      Single Bit Error Report   : Enabled  │
│ DRAM RAS# Precharge Time : 4          L2 Cache cacheable Size  : 512MB     │
│ DRAM R/W Leadoff Timing : 7/6                                             │
│ Fast RAS# To CAS# Delay : 3                                              │
│ DRAM Read Burst Timing  : x333/x444                                      │
│ DRAM Write Burts Timing : x333                                           │
│ Turbo Read Leadoff      : Disabled                                       │
│ DRAM Speculative Leadoff : Disabled                                      │
│ Turn-Around Insertion   : Disabled                                       │
│ ISA Clock               : PCICLK/4                                       │
│                                                                          │
│ System BIOS Cacheable   : Disabled                                       │
│ Video BIOS Cacheable    : DIsabled                                       │
│ 8 Bit I/O Recovery Time : 3                                              │
│ 16 Bit I/O Recovery Time : 2         ESC : Quit      ↑↓ → ←: Select Item  │
│ Memory Hole At 15M-16M  : Disabled   F1  : Help   PU/PD/+/- : Modify      │
│ Peer Concurrency        : Enabled    F5  : Old Values (Shift)F2 : Color   │
│ Chipset Special Features : Enabled   F6  : Load BIOS Defaults             │
│ DRAM ECC/PARITY Select  : Parity     F7  : Load Setup Defaults            │
└─────────────────────────────────────────────────────────────────────────┘
```

2. Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/– keys.

A short description of screen items follows:

Auto Configuration   Enable this option (strongly recommended) and the system automatically sets all options on the left side of the screen (except cache update mode & BIOS cacheable).

If this option is Enabled you must boot from Turbo mode.

DRAM Timing	Choose the right speed to fit your DRAM's spec. 82430HX chipset supports 50, 60, and 70ns DRAM timing.
DRAM RAS Precharge Time	Use the default setting.
DRAM R/W Leadoff Timing	Use the default setting.
DRAM RAS to CAS Delay	Use the default setting.
DRAM Read Burst Timing	Use the default setting.
DRAM Write Burst Timing	Use the default setting.
Turbo Read Leadoff	Use the default setting.
DRAM Speculative Leadoff	Use the default setting.
Turn-Around Insertion	Use the default setting.
ISA Clock	Use BIOS default setting or choose:
	/4: for 60, 66MHz CPU Bus Frequency
	/3: for 50, 55MHz CPU Bus Frequency.
System BIOS Cacheable	Disabled: The ROM area F0000H-FFFFFH is not cached.
	Enabled: The ROM area F0000H-FFFFFH is cacheable if cache controller is enabled.

Video BIOS Cacheable	Disabled:	The video BIOS C0000H-C7FFFH is not cached.
	Enabled:	The video BIOS C0000H-C7FFFH is cacheable if cache controller is enabled.
8Bit I/O Recovery Time	Use the default setting.	
16Bit I/O Recovery Time	Use the default setting.	
Memory Hole At 15M-16M	Choose Enabled or Disabled (default). Some interface cards will map their ROM address to this area. If this occurs, you should select Enabled, otherwise use Disabled.	
Peer Concurrency	Use the default setting.	
Chipset Special Features	Use the default setting.	
DRAM ECC/PARITY Select	Choose ECC or Parity (default) according the type of DRAM you have.	
Memory Parity/ECC Check	Auto:	Active memory checking automatically.
	Enabled:	Enable memory checking.
	Disabled:	Disable memory checking.
Single Bit Error Report	Enabled:	System will report DRAM error to CPU.
	Disabled:	System will not report DRAM error to CPU.
L2 Cache Cacheable Size	Use the default setting.	

3. After you have finished with the Chipset Features Setup, press the <ESC> key and follow the screen instructions to save or disregard your settings.

Power Management Setup

The Power Management Setup option sets the system's power saving functions.

Run the Power Management Setup as follows.

1. Choose "POWER MANAGEMENT SETUP" from the Main Menu and a screen with a list of items appears.

```
                         ROM PCI/ISA BIOS
                        CMOS SETUP UTILITY
                      POWER MANAGEMENT SETUP

 ┌──────────────────────────────────┬──────────────────────────────────┐
 │ Power Management    : Disabled    │ ** Power Down & Resume Events **  │
 │ PM Control by APM   : No          │ IRQ 3  (COM 2)         : ON       │
 │ Video Off Method    : V/H SYNC+Blank│ IRQ 4  (COM 1)       : ON       │
 │                                    │ IRQ 5  (LPT 2)         : ON       │
 │ Doze Mode           : Disabled    │ IRQ 6  (Floppy Disk)   : OFF      │
 │ Standby Mode        : Disabled    │ IRQ 7  (LPT 1)         : ON       │
 │ Suspend Mode        : Disabled    │ IRQ 8  (RTC Alarm)     : OFF      │
 │ HDD Power Down      : Disabled    │ IRQ 9  (IRQ2 Redir)    : ON       │
 │                                    │ IRQ 10 (Reserved)      : ON       │
 │                                    │ IRQ 11 (Reserved)      : ON       │
 │ ** Wake Up Events In Doze & Standby **│ IRQ 12 (PS/2 mouse) : ON       │
 │ IRQ3  (Wake-Up Event) : ON        │ IRQ 13 (Coprocessor)   : ON       │
 │ IRQ4  (Wake-Up Event) : ON        │ IRQ 14 (Hard Disk)     : ON       │
 │ IRQ8  (Wake-Up Event) : ON        │ IRQ 15 (Reserved)      : ON       │
 │ IRQ12 (Wake-Up Event) : ON        │                                   │
 │                                    │ ESC : Quit    ↑↓→←: Select Item   │
 │                                    │ F1  : Help    PU/PD/+/- : Modify  │
 │                                    │ F5  : Old Values (Shift)F2 : Color│
 │                                    │ F6  : Load BIOS Defaults          │
 │                                    │ F7  : Load Setup Defaults         │
 └──────────────────────────────────┴──────────────────────────────────┘
```

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/+/- keys.

A short description of selected screen items follows:

Power Management	Options are as follows:	
	User Define system	Let's you define the HDD and power down times.
	Disabled	Disables the Green PC Features.
	Min Saving	Doze timer = 1 Hour Standby timer = 1 Hour Suspend timer = 1 Hour HDD Power Down = 15 Min
	Max Saving	Doze timer = 1 Min Standby timer = 1 Min Suspend timer = 1 Min HDD Power Down = 1 Min

PM Control by APM	Choose Yes or No (default). APM stands for Advanced Power Management. To use APM, you must run "power.exe" under DOS v6.0 or later version.
Video Off Method	Choose V/H Sync+Blank (default), Blank screen, or DPMS for the selected PM mode.
Doze Mode	When the set time has elapsed, the BIOS sends a command to the system to enter doze mode (system clock drops to 33MHz). Time is adjustable from 1 Min to 1 Hour.
Standby Mode	The default is Disabled. Time is adjustable from 1 Min to 1 Hour.
Suspend Mode	The default is Disabled. Only an SL-Enhanced (or SMI) CPU can enter this mode. Time is adjustable from 1 Min to 1 Hour. Under Suspend mode, the CPU stops completely (no instructions are executed.)
HDD Power Down	When the set time has elapsed, the BIOS sends a command to the HDD to power down, which turns off the motor. Time is adjustable from 1 to 15 minutes. The default setting is Disabled. Some older model HDDs may not support this advanced function.
IRQx (Wake-Up Events)	The BIOS monitors these items for activity. If activity occurs from the Enabled item the system wakes up.
Power Down Activities	The BIOS monitors these items for no activity. If no activity occurs from the Enabled item the system will enter power saving mode (Doze/Standby/Suspend/ HDD Power Down mode) .

3. After you have finished with the Power Management Setup, press the
   <ESC> key to return to the Main Menu.

PNP/PCI Configuration Setup

This option sets the mainboard's PCI Slots. Run this option as follows:

1. Choose "PNP/PCI CONFIGURATION SETUP" from the Main Menu and the following screen appears. (The screen below shows default settings.)

```
                      ROM PCI/ISA BIOS
                    PNP/PCI CONFIGURATION
                    AWARD SOFTWARE, INC.

Resources Controlled By : Manual     PCI IRQ Actived By  : Level
Reset Configuration Data : Disabled  PCI IDE IRQ Map To  : PCI-AUTO
                                      Primary  IDE INT# : A
IRQ-3  assigned to : Legacy ISA*      Secondary IDE INT# : B
IRQ-4  assigned to : Legacy ISA*
IRQ-5  assigned to : PCI/ISA PnP*
IRQ-7  assigned to : Legacy ISA*
IRQ-9  assigned to : PCI/ISA PnP*
IRQ-10 assigned to : PCI/ISA PnP*
IRQ-11 assigned to : PCI/ISA PnP*
IRQ-12 assigned to : PCI/ISA PnP*
IRQ-14 assigned to : Legacy ISA*
IRQ-15 assigned to : Legacy ISA*
DMA-0  assigned to : PCI/ISA PnP*     ESC : Quit        ↑↓→←: Select Item
DMA-1  assigned to : PCI/ISA PnP*     F1  : Help      PU/PD/+/- : Modify
DMA-3  assigned to : PCI/ISA PnP*     F5  : Old Values (Shift)F2 : Color
DMA-5  assigned to : PCI/ISA PnP*     F6  : Load BIOS Defaults
DMA-6  assigned to : PCI/ISA PnP*     F7  : Load Setup Defaults
DMA-7  assigned to : PCI/ISA PnP*
```

* : These items will disappear when Resource Controlled. is Auto.

2. Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/– keys.

A short description of screen items follows:

Resources Controlled By	Manual:	BIOS doesn't manage PCI/ISA PnP card (i.e., IRQ) automatically.
	Auto:	BIOS auto manage PCI and ISA PnP card (recommended).
Reset Configuration Data	Disabled:	Retain PnP configuration data in BIOS.
	Enabled:	Reset PnP configuration data in BIOS.

IRQX and DMAX assigned to	Choose PCI/ISA PnP or Legacy ISA. If the first item is set to Manual, you could choose IRQX and DMAX assigned to PCI/ISA PnP card or ISA card.
	PCI/ISA PnP: BIOS auto assigns IRQ/DMA to the device.
	Legacy ISA: User assigns IRQ/DMA to the device.
PCI IRQ Activated By	Choose Edge or Level. Most PCI trigger signals are Level. This setting must match the PCI card.
PCI IDE IRQ Map To	Select PCI-AUTO, ISA, or assign a PCI SLOT number (depending on which slot the PCI IDE is inserted). The default setting is PCI-AUTO. If PCI-AUTO does not work, then assign an individual PCI SLOT number.
Primary IDE INT#	Choose INTA#, INTB#, INTC#, or INTD#. The default setting is INTA#.
Secondary IDE INT#	Choose INTA#, INTB#, INTC#, or INTD#. The default setting is INTB#.

3. After you have finished with the PCI Slot Configuration, press the <ESC> key and follow the screen instructions to save or disregard your settings.

Load Setup Defaults

This item loads the system values you have previously saved. Choose this item and the following message appears:

<div align="center">"Load SETUP Defaults (Y/N)? N"</div>

To use the SETUP defaults, change the prompt to "Y" and press <Enter>.

Note: The SETUP Defaults are optimized for the most stabilized performance.

Load BIOS Defaults

Choose this item and the following message appears:

"Load BIOS Defaults (Y/N)?N"

To use the BIOS defaults, change the prompt to "Y" and press <Enter>.

Note: BIOS DEFAULTS values are adjusted for high performance. If you run into any problems after loading BIOS DEFAULTS, please load the SETUP DEFAULTS for the stable performance.

Integrated Peripherals

The Integrated Peripherals option changes the values of the chipset registers. These registers control system options in the computer.

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

Run the Integrated Peripherals as follows.

1. Choose "Integrated Peripherals" from the Main Menu and the following screen appears. (The screen below shows default settings.,

```
                    ROM PCI/ISA BIOS
                 INTEGRATED PERIPHERALS
                  AWARD SOFTWARE, INC.

 IDE HDD Block Mode      : Enabled
 PCI Slot IDE 2nd Channel : Enabled
 On-Chip Primary   PCI IDE: Enabled
 On-Chip Secondary PCI IDE: Enabled
 IDE Primary Master PIO  : Auto
 IDE Primary Slave PIO   : Auto
 IDE Secondary Master PIO : Auto
 IDE Secondary Slave PIO  : Auto

 Onboard FDD Controller  : Enabled
 Onboard Serial Port 1   : 3F8/IRQ4
 Onboard Serial Port 2   : 2F8/IRQ3
 UART 2 Mode             : Standard    ESC : Quit        ↑↓→←: Select Item
 Onboard Parallel Port   : 378H/IRQ7   F1  : Help      PU/PD/+/− : Modify
 Onboard Parallel MODE   : ECP/EPP     F5  : Old Values (Shift)F2 : Color
 ECP Mode Use DMA        : 3           F6  : Load BIOS Defaults
 Paralel Port EPP Type   : EPP1.7      F7  : Load Setup Defaults
```

2. Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/− keys.

A short description of screen items follows:

IDE HDD Block Mode	Choose Enabled (default) or Disabled. Enabled invokes multi-sector transfer instead of one sector per transfer. Not all HDDs support this function.
PCI Slot IDE 2nd Channel	Choose Enabled (default) or Disabled. When Enabled is set, IRQ15 is dedicated for secondary IDE use. When Disabled is set, IRQ15 is released for other devices.
On-chip Primary/ Secondary PCI IDE	Enabled: Use the on-board IDE (default) Disabled: Turn off the on-board IDE
IDE Primary Master PIO **IDE Primary Slave PIO** **IDE Secondary Master PIO** **IDE Secondary Slave PIO**	Choose Auto (default) or mode 0~4. Mode 0 is the slowest speed, and HDD mode 4 is the fastest speed. For better performance and stability, we suggest you use the Auto setting to set the HDD control timing.
Onboard FDC Controller	Enabled: Use the on-board floppy controller (default). Disabled: Turn off the on-board floppy controller.
Onboard Serial Port 1 **Onboard Serial Port 2**	Choose serial port 1 & 2's I/O address. Do no set port 1 & 2 to the same value except for Disabled. COM 1/3F8H | COM3/3E8H COM 2/2F8H | COM4/2E8H (default) |
UART 2 Mode	Standard: Use standard UART mode (default). ASK IR:Use UART with ASKIR function.

Onboard Parallel Port	Choose the printer I/O address: 378H/IRQ7 (default), 3BCH/IRQ7, 278H/IRQ5
Onboard Printer Mode	Choose ECP + EPP (default), SPP or EPP, ECP mode. The mode depends on your external device that connects to this port.
ECP Mode DMA Select	Choose DMA3 (default) or DMA1. This setting only works when the Onboard Printer Mode is set at the ECP mode.
Parallel Port EPP Type	Choose EPP specification Ver. 1.7 (default) or 1.9.

Supervisor Password

Based on the setting you made in the "Security Option" of the "BIOS FEATURES SETUP", this Main Menu item lets you configure the system so that a password is required every time the system boots or an attempt is made to enter the Setup program. Change the password as follows:

1. Choose "SUPERVISOR PASSWORD" in the Main Menu and press <Enter>. The following message appears:

   "Enter Password:"

2. Enter a password and press <Enter>.

   (If you do not wish to use the password function, you can just press <Enter> and a "Password disabled" message appears.)

3. After you enter your password, the following message appears prompting you to confirm the new password:

   "Confirm Password:"

4. Re-enter your password and then Press <ESC> to exit to the Main Menu.

5. You have the right to change any changeable settings in the "CMOS SETUP UTILITY."

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

User Password

Based on the setting you made in the "Security Option" of the "BIOS FEATURES SETUP", this Main Menu item lets you configure the system so that a password is required every time the system boots or an attempt is made to enter the Setup program. Change the password as follows:

1. Choose "USER PASSWORD" in the Main Menu and press <Enter>. The following message appears:

<div align="center">**"Enter Password:"**</div>

2. Enter a password and press <Enter>.

   (If you do not wish to use the password function, you can just press <Enter> and a "Password disabled" message appears.)

3. After you enter your password, the following message appears prompting you to confirm the new password:

<div align="center">**"Confirm Password:"**</div>

4. Re-enter your password and then Press <ESC> to exit to the Main Menu.

5. You are not allowed to change any setting in "CMOS SETUP UTILITY" except change user's password.

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

IDE HDD Auto Detection

This Main Menu item automatically detects the hard disk type and configures the STANDARD CMOS SETUP accordingly.

*Note: This function is only valid for **IDE** hard disks.*

```
                    ROM PCI/ISA BIOS
                   CMOS SETUP UTILITY
                  AWARD SOFTWARE, INC.

 HARD DISKS         TYPE   SIZE    CYLS HEAD  PRECOMP  LANDZ  SECTOR  MODE

 Primary Master   : None    0        0    0        0      0       0  ----
 Primary Slave    : None    0        0    0        0      0       0  ----
 Secondary Master : None    0        0    0        0      0       0  ----
 Secondary Slave  : None    0        0    0        0      0       0  ----


                  Do you accept this drive C (Y/N)? N


                         ESC : Skip
```

4   Drivers Installation Guide

IDE BUS Master Installation Guide

MS-DOS/WINDOW/WFW

1) You should install CD-ROM in secondary channel in Windows (WFW).

2) Change the current directory to a: or b:.

3) Under DOS command line prompt, run the SETUP directly.

After entering the setup utility, just follow the instructions of the setup.

WINDOWS NT3.5

1) From the Program Manager, double click on "Windows NT Setup" in the Main group.

2) Select "Options/Add/Remove SCSI Adapters...".

3) Click on Add.

4) The "Select SCSI Adapter Option" dialog will appear; select "Other (Requires a disk from a hardware manufacturer)" from the "Adapter:" list box.

5) Next, the "Insert Diskette" dialog box will appear; insert the Triones PIIX/PIIX3 Bus Master EIDE/ATAPI Driver disk into Drive A: and type in "a:\winnt35" and <Return>.

6) Next, the "Select OEM Option" dialog box will appear; select "PIIX/PIIX3 Bus Master EIDE/ATAPI" and click "OK".

7) Next, the "Select SCSI Adapter Option" dialog box will appear; click on the "Install" button in the dialog box. If installation is successful, the "SCSI Adapter Setup" dialog box will reappear, and "PIIX/PIIX3 Bus Master EIDE/ATAPI" will be listed. That means the driver is installed.

8) Reboot your system to load the driver.

WINDOWS 95

1) Close any running applications.

2) Insert the floppy disk into drive A:.

3) Open "My Computer", double click "Drive A:".

4) Double click "Win95".

5) Double click the Setup program.

6) Then just follow the instruction.

NOVELL 3.X&4.X

1) Copy the driver TRIN4X.DSK or TRIN312.DSK to the subdirectory which holds the file SERVER.EXE.

2) Boot up the file server.

3) On the system console and on the command prompt state, type in: **load TRIN4X.DSK** <Enter> or **load TRIN312.DSK** <Enter>

You can also include the above command line into the start up file STARTUP.NCF to load the driver automatically.

SCO UNIX

1) Install SCO UNIX 3.2.x or SCO Open Desktop 3.x using the default SCO IDE driver.

2) Reboot your SCO UNIX system

3) Insert Triones supplied diskette into the 3.5 inch floppy drive of your system. Use doscp command to copy the file TRISCO.TAR to your /tmp directory. for example, if you are using floppy drive A, type: doscp a:/scounix/trisco.tar/tmp/trisco.tar

4) From root directory, type the following commands:
   mkdir/inst
   cd /inst
   tar xvf /tmp/trisco.tar.
   (Note: there is a period at the end of the last command.)

5) Now, insert a blank diskette into the floppy drive A and type:
   tar cvf /dev/<your floppy drive A device name>.
   (Note: there is a period at the end of the last command.)

   Your floppy drive A device name could be:

   • rfd096ds15,5.25 DSHD
   • rfd0135ds18 3.5 DSHD
   • rfd048ds9 5.25 DSDD
   • rfd0135ds9 3.5 DSDD

   Now you have already made an installation diskette for the device driver.

   Start the installation by typing: **custom**.

6) Select the "Install" operation and then follow the guided steps. When prompted "Do you want to set the device configuration (y/n)", answer "n".

7) Reboot your SCO UNIX system.

SCO UNIX 5.0

1) Install SCO UNIX 5.0 using the default SCO IDE driver.

2) Reboot your SCO UNIX system

3) Insert Triones supplied diskette into the 3.5 inch floppy drive of your system. Use doscp command to copy the file TRISCO.TAR to your /tmp directory. for example, if you are using floppy drive A, type: doscp **a:/scounix/trisco5.tar/tmp/trisco5.tar**

4) From root directory, type the following commands:
    mkdir/inst
    cd /inst
    tar xvf /tmp/trisco.tar.
    (Note: there is a period at the end of the last command.)

5) Install the driver by typing:
    ./install

6) Reboot your SCO UNIX system..

OS/2 2.0 and WARP 3.X

1) Copy TRIOS2.ADD from the floppy diskette to your hard disk under the OS2 directory (i.e., C:\OS2).

2) Edit C:\CONFIG.SYS to replace **BASEDEV=IBM1S506.ADD** with **BASEDEV=TRIOS2.ADD**

3) Reboot the system.

Note: For more information (like parameter settings, driver de-installation, etc.), please refer to the README.TXT file on the diskette.