MS-5120

Mainboard Manual
Ver 1.0

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Table of Contents

Overview

Congratulations on your decision to purchase MS5120 Mainboard of the MATSONIC series. This mainboard features the advanced capabilities of the VIA PCI chipset with high speed PCI local BUS and super I/O and it also provides the ultimate solution for optimizing the performance of your system.

This highly flexible mainboard is designed to run a full line of Intel Pentium, Cyrix/IBM 6x86, and AMD-K5 processors, and can be easily upgraded due to its 321-pin ZIF socket and auto switch Split Voltage Regulator. The processor performance is enhanced by a second level write-back pipeline Burst SRAM cache of up to 512k and main memory of up to **384MB** DRAM. Main memory can be installed by using the board's four 72-pin SIMM sockets and two 168-pin DIMM sockets, which accept high performing SDRAM.

The MS5120 supports three 16-bit ISA slots and four 32-bit PCI slots. Also, it features built-in high-speed super I/O onboard, including one USB connector, two 16550A UART compatible Serial ports, one EPP/ECP capable parallel port and IR which are integrated into a single dual-height rear I/O panel for optimum ease of configuration. Moreover, a high-speed PCI Bus Master Enhanced IDE controller is included to provide high-speed connections for up to four IDE devices, including Hard Disk and CD-ROM drives, and an upgradable Plug and Play Flash BIOS, and 16.6M PIO4 transfer rate.

Main Features

The MS5120 Mainboard comes with the following high-performance features:

❑ VIA PCIset™ chipset;

❑ Flexible Processor Support;
  — Onboard 321-pin ZIF socket supports Intel Pentium (P54C/P55C/MMX) CPU 75 ~ 233 MHz processors
  — Cyrix/IBM 6x86-P120$^+$(100MHz) ~ 6x86-P200$^+$ (150 MHz) processors/M2 series processors
  — AMD K5/K6 series processors;

❑ Support switch Split Voltage Regulator;

❑ Ultra-fast Level II Cache
  Supports onboard Pipeline Burst SRAM expandable to 512K
  — Accepts up to 256MB RAM in two banks using four SIMMs of 8, 16, 32, 64 MB with support for FPM and EDO DRAM and two DIMMs of 8, 16, 32, 64MB with support for SDRAM and EDO DRAM;

❑ Three 16-bit ISA and four 32-bit PCI expansion slots provide Master Mode;

❑ System BIOS supports 4 IDE hard disk drives, the capacity of each hard disk can surpass 528MB up to 8GB;

❑ Universal Serial BUS (USB) Support
  Two Universal Serial Bus plug-in connectors integrated on the rear I/O panel;

❑ Supports Ultra DMA/33
❑ Enhanced PCI Bus Master IDE Controller

Integrated Enhanced PCI local bus IDE controller with two connectors supports up to four IDE devices such as Hard Disk, CD-ROM or tape backup drives via two channels for high-speed data throughput. This controller supports PIO Modes 3 and 4, DMA Mode 2, and Ultra DMA/33 for optimized system performance;

❑ Super Multi I/O

Includes two integrated 16550A UART compatible serial ports, one EPP/ECP capable parallel port, one IR port, and one Floppy Drive connector;

❑ Award BIOS

System BIOS supports NCR810 SCSI BIOS firmware and Green feature function, Plug & Play Flash ROM ready.

Static Electricity Precautions

Static electricity can easily damage your MS-5120 Mainboard. The following procedures can help you to protect your mainboard from electrostatic discharge.

1. Keep the mainboard and other system components in anti-static packaging until you are ready to install them.

2. Ground yourself before removing any system component from its protective anti-static packaging. Examples of grounded surfaces within easy reach are expansion slots at the rear of the system case and any other unpainted metallic surface on the system chassis.

3. Frequently ground yourself to discharge static electricity that may build up in your body while installing and /or configuring your system. Avoid touching sensitive components. Only handle the mainboard by its edges or by the mounting bracket.

Unpacking the Mainboard

The MS-5120 Mainboard comes in a sturdy cardboard shipping carton. The carton contains the following items:

- MS-5120 Mainboard
- IDE, FDD, Serial port and Printer cables
- This User's Manual

The MS-5120 Mainboard is easily damaged by static electricity. Observe the following precautions while unpacking and installing the mainboard.

Caution:	**Touch an unpainted area of the system chassis before handling the mainboard or any component. Doing so will discharge the static charge your body may have built.**
	Do not apply power if the mainboard appears damaged. If there is damage to the board, or missing items, contact your dealer immediately.

Installation Procedures

This chapter explains how to configure the MS5120 Mainboard's hardware. Before doing any installation, make sure that you are working with an unplugged mainboard. Many components powered by low voltage current, but there still may be a dangerous electric current coming from the leads and power supply.

To set up your computer, you should follow these installation steps:

❑ Step 1 — Set system jumpers

❑ Step 2 — Install System RAM modules

❑ Step 3 — Install the CPU

❑ Step 4 — Install expansion cards

❑ Step 5 — Connect cables and power supply

❑ Step 6 — Set up BIOS feature (Please read Chapter Three.)

Mainboard Layout
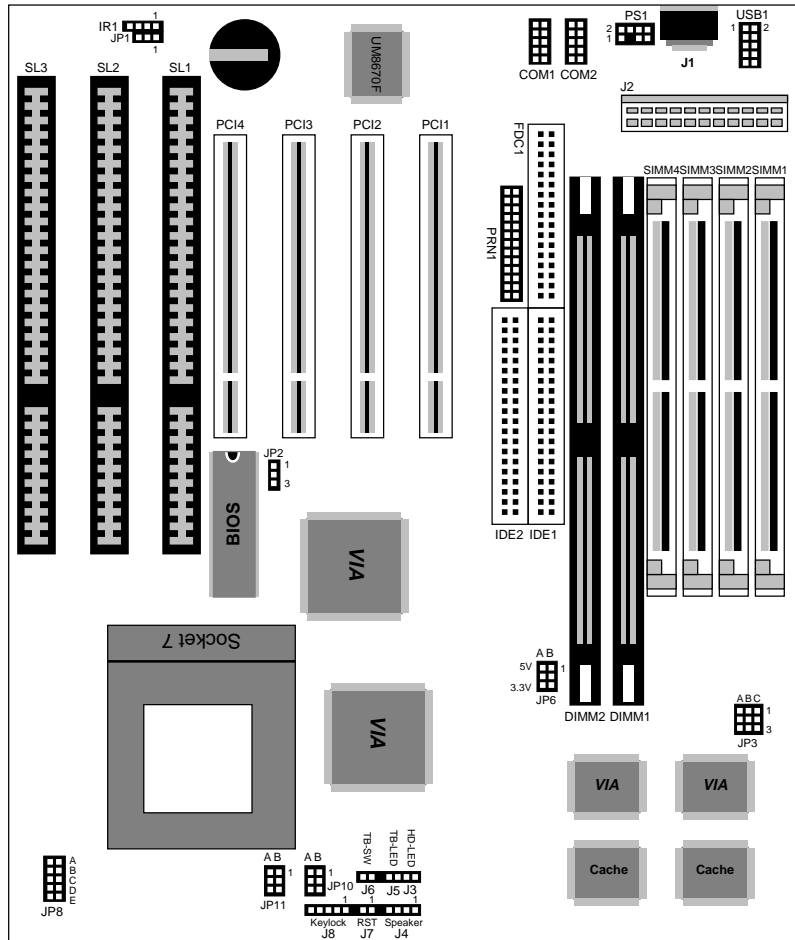
Figure 2-1 Mainboard Component Layout

Jumper Settings

Jumpers

You can configure hardware options by setting jumpers on the motherboard. See figure 2-1 for jumper location. Some jumpers on the board have three metal pins with each pin representing a different function. To set a jumper, a black, white, or red cap containing metal contacts is placed over the jumper pin(s) according to the required configuration. A jumper is "shorted" when a cap has been placed on one or two of its pins.

NOTE :	Users are not encouraged to change the jumper settings that are not listed in this manual. Changing the jumper settings improperly may adversely affect system performance.
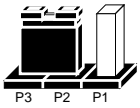
Pins 2 and 3 are shorted with a jumper cap
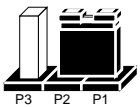
Pins 1 and 2 are shorted with a jumper cap

The jumper is open

The jumper is shorted (closed)

J2 – Power Supply Connector

Pin	Description	Pin	Description
1	Power Good	7	Ground
2	+5V DC	8	Ground
3	+12V DC	9	–5V DC
4	–12V DC	10	+5V DC
5	Ground	11	+5V DC
6	Ground	12	+5V DC

Connectors:

COM1	Serial Port #1
COM2	Serial Port #2
PRN1	Parallel Port
IDE1	Primary IDE Port
IDE2	Secondary IDE Port

USB1 – Universal Serial BUS Connector

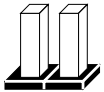| Pin	Description	Pin	Description
1	+5V DC	2	+5V DC
3	Data –	4	Data –
5	Data +	6	Data +
7	Ground	8	Ground
9	N.C.	10	N.C.

J1 – Keyboard Connector

Pin	Description
1	Keyboard Clock
2	Keyboard Data
3	N.C.
4	Ground
5	+5V DC

J3 – HDD LED Connector

Pin	Description
+	+5V DC
–	Active Low

J7 – System Reset

Setting	Description
1	Ground
2	Reset System

JP2 – Flash ROM

Setting	Description
P1, P2	12V Flash ROM (default)
P2, P3	5V Flash ROM

JP6 – DIMM Module Voltage

Setting	5V	3.3V
A	P1, P2	P2, P3
B	P1, P2	P2, P3

J8 – Keylock & Power LED Connector

Pin	Description
1	LED Output
2	N.C.
3	Ground
4	Keylock
5	Ground

J4 – Speaker Connector

Pin	Description
1	Data Out
2	N.C.
3	Ground
4	+5V

JP1 – Clear CMOS

Setting	Description
Open	Normal (default)
Close	Clear CMOS

JP3A, B, C – CPU Speed Selectors

Settings	50MHz	55MHz	60MHz	66MHz	75MHz
A	P2, P3	P1, P2	P2, P3	P2, P3	P1, P2
B	P2, P3	P2, P3	P2, P3	P1, P2	P2, P3
C	P2, P3	P2, P3	P1, P2	P2, P3	P1, P2

JP11A, B – CPU Internal Clock Speed Selectors

Settings	1.5X	2.0X	2.5X	3.0X
A	P1, P2	P2, P3	P2, P3	P1, P2
B	P1, P2	P1, P2	P2, P3	P2, P3

JP8 – CPU Voltage Selectors

Settings	3.5V	3.3V	3.2V	2.9V	2.8V
Position	A	B	C	D	E

* All open is for 2.5V.

JP10 – CPU Type Selectors

Settings	P54C	P55C
A	P1, P2	P2, P3
B	P1, P2	P2, P3

PS/2 Mouse Connector

Pin	Description
1	Mouse CLK
2	Ground
3	N.C.
4	Mouse Data
5	N.C.
6	N.C.
7	N.C.
8	+5VDC

IR1 – Infra Red

Pin	Description
1	IR In
2	Ground
3	IR Out
4	+5V DC

Memory Bank

Bank 0/1	Bank 2/3	Bank 4/5
DIMM2	SIMM 1, 2	SIMM 3,4
		DIMM1

* SIMM 3,4 and DIMM1 can not be use at the same time. When using
   SDRAM, JP6 must be set to 3.3V position and make sure the SDRAM
   is with **buffer**.

How to Identify Your BIOS

Boot-up your computer. Look at the top left corner for "RELEASE DATE FOR THE BIOS". You will find L or S at the end of the release date. (Example: 04/28/1997L or 04/28/1997S)

How to Update and Flash Your BIOS

Download the correct BIOS files from our website or BBS
- Uncompress files into a temporary directory (you should end up with two files)
- Boot the system without using any memory manages either from bootable floppy disk or internal hard disk
- Run the flash utility (awflash.exe) and enter the full name of XXXX.bin file
- Follow the screen instructions to update the BIOS (Do not turn off the power during flash)
- After a successful flash, power down the system and clear the CMOS with the appropriate jumper (Please refer to motherboard manual to find the proper jumper). Short the jumper for 5-10 seconds then remove the jumper and power the system on. This will clear any extraneous data that may have been kept from the previous version of the BIOS.

Award BIOS Setup

The mainboard comes with the Award BIOS chip that contains the ROM Setup information of your system. This chip serves as an interface between the processor and the rest of the mainboard's components. This chapter explains the information contained in the Setup program and tells you how to modify the settings according to your system configuration.

CMOS Setup Utility

A Setup program, built into the system BIOS, is stored in the CMOS RAM that allows the configuration settings to be changed. This program is executed when the user changes system configuration, the user changes system backup battery, or the system detects a configuration error and asks the user to run the Setup program.

Standard CMOS Setup

System BIOS automatically detects memory size, thus no changes are necessary. However several items may require setting such as the system Date and Time, IDE hard disk, floppy disk drive types for drive A: and B:, boot up video display mode, or POST error handkling selection. Use the arrow keys to highlight the item and then use the PgUp, or PgDn keys to select the value you want in each item.

Hard Disk Configurations

TYPE

Select from 1 to 45 to fill remaining fields with predefined values of disk drives. Select User to fill the remaining fields. Select Auto to detect the HDD type automatically.

SIZE

The hard disk size in Mega bytes.

CYLS

The cylinder number of the hard disk.

HEAD

The read/write head number of hard disk. The range is from 1 to 16.

PRECOMP

The cylinder number at which the disk drive changes the write timing.

LANDZ

The cylinder number that the disk drive heads (read/write) are seated when the disk drive is parked.

SECTOR

The sector number of each track defined on the hard disk. The range is from 1 to 64.

MODE

Select Auto to detect the mode type automatically. If your hard disk supports the LBA mode, select LBA or Large. However, if your hard disk cylinder is more than 1024 and does not support the LBA function, then use the large setting. Select Normal if your hard disk supports 1024 cylinders or below 1024.

BIOS Features Setup

Moving around the BIOS and Chipset Features Setup programs (refer to the next section) works the same way as moving around the Standard CMOS Setup program. Users are not encouraged to run the BIOS and Chipset Features Setup programs. Your system should have been fine-tuned before shipping. Improper Setup may cause the system to fail, so consult your dealer before making any changes.

Virus Warning

When enabled, assigns the BIOS to monitor the master boot sector and the DOS boot sector of the first hard disk drive for viruses.

The options are: Enabled, Disabled (Default).

CPU Internal Cache

When enabled, improves the system performance. Disable this item when testing or trouble-shooting.

The options are: Enabled (Default), Disabled.

External Cache

When enabled, supports an optional cache SRAM.

The options are: Enabled (Default), Disabled.

Quick Power On Self Test

When enabled, allows the BIOS to bypass an extensive memory test.

The options are: Enabled, Disabled (Default).

Boot Sequence

Allows the system BIOS to first try to boot the operating system from the selected disk drive.

The options are: A, C (Default); C, A; C, CDROM, A; CDROM, C, A.

Swap Floppy Drive

When enabled, allows you to switch the order in which the operating system accesses the floppy drives during boot up.

The options are: Enabled, Disabled (Default).

Boot Up Floppy Seek

When enabled, assigns the BIOS to perform floppy diskette drive tests by issuing the time-consuming seek commands.

The options are: Enabled (Default), Disabled.

Boot Up Numlock Status

When set to On, allows the BIOS to automatically enable the Num Lock Function when the system boots up.

The options are: On (Default), Off.

Boot Up System Speed

Allows to selection the boot up at high or low system speed.

Gate A20 Option

When Fast, allows the A20G bus line signal generated from the chipset to directly pass to port 92H, instead of the keyboard controller. It will speed up the system performance.

The options are: Fast (Default), Normal.

Typematic Rate Setting

The term typematic means that when a keyboard key is held down, the character is repeatedly entered until the key is released. When this item is enabled, you may change the typematic repeat rate.

The options are: Disabled (Default), Enabled.

Typematic Rate (Chars/Sec)

Sets the rate of a character repeat when the key is held down.

The options are: 6 (Default), 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (Msec)

Sets the delay time before a character is repeated.

The options are: 250 (Default), 500, 750, and 1000 millisecond.

Security Option

Allows you to set the security level of the system.

The options are: Setup (Default), System.

IDE Second Channel control

Allows you to enable or disable the IDE secondary channel

PS/2 mouse function control

Allows you to enable or disable PS/2 mouse function

Assign IRQ VGA

Choose enable or disable, to assign IRQ for VGA Card.

Video BIOS Shadow

> When enabled, allows the BIOS to copy the video ROM code of the
> add-on video card to the system memory for faster access.
>
> The options are: Enabled (Default), Disabled.

C8000-CBFFF to DC000-DFFFF Shadow

> When enabled, allows the BIOS to copy the BIOS ROM code of the
> add-on card to system memory for faster access. It may improve the
> performance of the add-on card. Some add-on cards will not function
> properly if its BIOS ROM code is shadowed. To use these options
> correctly, you need to know the memory address range used by the
> BIOS ROM of each add-on card.
>
> The options are Enabled and Disabled (Default).

Chipset Features Setup

The Chipset Features Setup is used to control the values of the chipset
register. These registers control most of system options in the computer.

```
Auto configuration        : Disable
Video BIOS Cacheable       : Disable
System BIOS Cacheable      : Disable
Cache Timing               : Fast
DRAM Timing Control        : Normal
Reduce DRAM Leadoff Cycle  : Disable
```

The first six items are optimal setting for this motherboard, you should not
change them unless you are familiar with the Intel chipset.

Power Management Setup

Power Management

When enabled, allows you to use Power Management features.

The options are: Enabled and Disabled (Default).

PM Control by APM

Option No allows the BIOS to ignore the APM (Advanced Power Management) specification. Selecting Yes will allow the BIOS to wait for APM's prompt before it enters Doze mode, Standby mode, or Suspend mode. If the APM is installed, it will prompt the BIOS to set the system into the power saving mode after all tasks are done.

The options are: Yes (Default) and No.

Video Off Option

This feature provides the selections of the video display power saving mode. The option Suspend - Off allows the video display to go blank if the system enters Suspend mode. The option All Modes - Off allows the video display to go blank if the system enters Doze mode or Suspend mode. The option Always On allows the video display to stay in Standby mode even when the system enters Doze or Suspend mode.

The options are: Suspend - Off (Default), and all Modes - Off, Always On.

Video Off Method

The option V/H SYNC+Blank allows the BIOS to blank off screen display by turning off the V-Sync and H-Sync signals sent from the add-on VGA card. DPMS Support allows the BIOS to blank off screen display by your add-on VGA card, which supports DPMS (Display Power Management Signaling function.) Blank Screen allows the BIOS to blank screen display by turning off the red-green-blue signals.

The options are: DPMS Support (Default), V/H SYNC+Blank, and Blank Screen.

MODEM Use IRQ

This feature allows you to select the IRQ# to meet your modem's IRQ#.

The options are: NA, 3 (Default), 4, 5,7, 9, 10 and 11.

HDD Power Management

Selecting Disabled will turn off the hard disk drive (HDD) motor. Selecting 1 Min..15 Min allows you to define the HDD idle time before the HDD enters Power Saving Mode. The option When Suspend lets the BIOS turn the HDD motor off when the system is in Suspend mode.

The options 1 Min..15 Min and When Suspend will not work concurrently. When HDD is in Power Saving Mode, any access to the HDD will wake the HDD up.

The options are: Disabled (Default), 1 Min..15 Min, and When Suspend.

Doze Mode

When disabled, the system will not enter Doze mode. The specified time option defines the idle time the system takes before it enters Doze mode.

The options are: Disabled (Default), 10, 20, 30, 40 sec, 1, 2, 4, 6, 8, 10, 20, 30, 40 min, and 1 hour.

Suspend Mode

> When disabled, the system will not enter Suspend mode. The specified time option defines the idle time the system takes before it enters Suspend mode.
>
> The options are: Disabled (Default), 10, 20, 30, 40 sec, 1, 2, 4, 6, 8, 10, 20, 30, 40 min, and 1 hour.

VGA

> Selecting ON will enable the power management timers when a "no activity event" is detected in the VGA. Selecting OFF will disable the PM timer even if a no activity event is detected.
>
> The options are: OFF (Default) and ON.

LPT & COM

> Selecting LPT & COM will enable the power management timers when a no activity event is detected in the LPT and COM ports. Selecting LPT (COM) will enable the power management timers when a no activity event is detected in the LPT (COM) ports. Selecting NONE will disable the PM timer even if a no activity event is detected.
>
> The options are: LPT & COM (Default), LPT, COM, and NONE.

HDD & FDD

> Selecting ON will enable the power management timers when a no activity event is detected in the hard disk drive and floppy disk drive. Selecting OFF will disable the PM timer even if a no activity event is detected.
>
> The options are: OFF and ON (Default).

IRQ# Activity

After the time period that you set in the Suspend Mode Feature, the system advances from Doze Mode to Suspend Mode, in which the CPU clock stops and the screen display is off. At this moment, if the IRQ activity that is defined as Primary occurs, then the system goes back to Full-on Mode directly.

If the IRQ activity that is defined as Secondary takes place, the system enters another low power state, Dream Mode. The system will act as Full-on Mode, except the screen display will remain off until the corresponding IRQ handler finishes, then will revert back to Suspend Mode.

For instance, if the system connects to a LAN and receives an interruption from its file server, the system will enter the Dreaming Mode to execute the corresponding calling routine.

The options are: Primary and Secondary.
The default values of IRQ3, 4, 5, 7, 9, 10, 11, 12, 14, 15 are: Primary.
The default value of IRQ8 is: Secondary.

PNP/PCI Configurations

Resources Controlled By

If you set at Auto, the BIOS automatically arranges all system resources for you. If there are conflicts or you are not satisfied with the configuration, simply set all the resources listed in the above figure by selecting Manual.

The options are: Auto (default), Manual.

The manual options of IRQ/DMA assigned to are: Legacy ISA, PCI/ISA PnP.

Reset Configuration Data

When enabled, this feature allows the system to clear the last BIOS configuration data and reset them with the default BIOS configuration data.

The options are: Enabled and Disabled (default).

PCI IRQ Actived By

If your IDE card is triggered by Edge, set it at Edge.

The options are: Level (Default), Edge.

PCI IDE IRQ Map To

Set to Auto to allow the system BIOS to automatically detect which interrupt is being used by the PCI master drive.

The options are: PCI-AUTO (Default), PCI-SLOT1, PCI-SLOT2, PCI-SLOT3, PCI-SLOT4, and ISA.

Load Setup Defaults

Selecting this field loads the factory defaults for BIOS and Chipset values. These settings are recommended for optimum performance. If the CMOS is corrupted when entering the BIOS setup utility, you must reload setup default.

Integrated Peripherals

IDE HDD Block Mode

When enabled, allows the system to execute read/write requests to hard disk in block mode.

The options are: Enabled (Default), Disabled.

IDE Primary Master PIO

Allows you to select first PCI IDE channel of the primary master hard disk mode or to detect it by the BIOS.

The options are: Auto (Default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary Slave PIO

Allows you to select the first PCI IDE channel of the primary slave hard disk mode or to detect it by the BIOS.

The options are: Auto (Default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Secondary Master PIO

Allows you to select first PCI IDE channel of the primary master hard disk mode or to detect it by the BIOS.

The options are: Auto (Default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Secondary Slave PIO

Allows you to select the first PCI IDE channel of the primary slave hard disk mode or to detect it by the BIOS.

The options are: Auto (Default), Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

On-chip Primary PCI IDE

When enabled, allows the IDE drive to use the first channel of the primary IDE.

The options: Enabled (Default), Disabled.

On-chip Secondary PCI IDE

When enabled, allows the IDE drive to use the second channel of the primary IDE.

The options are: Enabled (Default), Disabled.

Onboard FDD Control

When enabled, the floppy diskette drive (FDD) controller is activated.

The options are: Enabled (Default), Disabled.

Onboard Serial Port 1

If the serial port 1 uses the onboard I/O controller, you can modify your serial port parameters. If an I/O card needs to be installed, COM3 and COM4 may be needed.

The options are: Auto, 3F8/IRQ4 (Default), 3E8/IRQ4, 2E8/IRQ3, 2F8/IRQ3, Disabled.

Onboard Serial Port 2

If the serial port 2 uses the onboard I/O controller, you can modify your serial port parameters. If an I/O card needs to be installed, COM3 and COM4 may be needed.

The options are :Auto, 2F8/IRQ3 (Default), 3E8/IRQ4, 2E8/IRQ3, 3F8/IRQ4, Disabled.

Onboard Parallel Port

Allows you to select from a given set of parameters if the parallel port uses the onboard I/O controller.

The options are: 378H/IRQ7 (Default), 278H/IRQ5, 3BCH/IRQ7, Disabled.

Onboard Parallel Mode

   Allows you to connect with an advanced printer I/O mode.

   The options are: SPP (Default), EPP, ECP, ECP/EPP.

ECP Mode Use DMA 3

   Allows you to select DMA channel 3 or 1 for the ECP printer mode.

Parallel Port EPP Type

   Allows you to select the EPP parallel port.

Supervisor/User Password

To enable the Supervisor/User passwords, select the item from the Standard CMOS Setup. You will be prompted to create your own password. Type your password (up to eight characters) and press <Enter>. You will be asked to confirm the password. Type the password again and press<Enter>. You may also press <Esc> to abort the selection and not enter a password. To disable password, press <Enter> when you are prompted to enter password. A message appears, confirming the password is disabled.

Under the BIOS Feature Setup, if System is selected under the Security Option field and the Supervisor Password is enabled, you will be prompted for the Supervisor Password every time you try to enter the CMOS Setup Utility. If System is selected and the User Password is enabled, you will be asked to enter the User Password every time you reboot the system. If Setup is selected under the Security Option field and the User Password is enabled, you will be prompted only when you reboot the system.

IDE HDD Auto Detection

The IDE Hard Disk Drive Auto Detection feature automatically configures your new hard disk. Use it for a quick configuration of new hard disk drives. This feature allows you to set the parameters for up to four IDE HDDs. The option with (Y) is recommended by the system BIOS. You may also key in your own parameters instead of using the preset setting by the system BIOS. After configuring all of the settings, press <Esc> key to return the main menu. For confirmation, enter the Standard CMOS Setup feature.

Save and Exit Setup

After you have made changes under Setup, press <Esc> to return to the main menu. Move cursor to "Save and Exit Setup" or press <F10> and then press <Y> to change the CMOS Setup. If you did not change anything, press <Esc> again or move cursor to "Exit Without Saving" and press <Y> to retain the Setup settings. The following message will appear at the center of the screen to allow you to save data to CMOS and exit the setup utility: **SAVE to CMOS and EXIT (Y/N)?**

Exit without Saving

If you select this feature, the following message will appear at the center of the screen to allow you to exit the setup utility without saving CMOS modifications: **Quit Without Saving (Y/N)?**

Note: Default values of the various Setup items in this chapter may not be the same ones shown on your screen.

CPU Table

CPU		CPU BUS Clock	Multiplier
Intel	75MHz	50MHz	1.5
	90MHz	60MHz	1.5
	100MHz	66MHz	1.5
	120MHz	60MHz	2.0
	133MHz	66MHz	2.0
	150MHz	60MHz	2.5
	166MHz	66MHz	2.5
	200MHz(MMX)	66MHz	3.0
	233MHz(MMX)	66MHz	1.5
AMD	PR75	50MHz	1.5
	PR90	60MHz	1.5
	PR100	66MHz	1.5
	PR133	66MHz	1.5
	K5-166	66MHz	2.5
	K6-166	66MHz	2.5
	K6-200	66MHz	3.0
	K6233	66MHz	1.5
Cyrix	P120$^+$	50MHz	2.0
	P133$^+$	55MHz	2.0
	P150$^+$	60MHz	2.0
	P166$^+$	66MHz	2.0
	MX-166	60MHz	2.5
	MX-200	66MHz	2.5