

# **Main Board**

***MS-5120 User's Manual***

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## Overview

Congratulations on your decision to purchase MS5 120 Mainboard of the MATSONIC series. This mainboard features the advanced capabilities of the VXpro 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 32 1-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 5 12k 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 MS5 120 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:

- VXpro PCIset™ chipset;
- Flexible Processor Support;
  - Onboard 32 1-pin ZIF socket supports Intel Pentium (P54C/P55C/MMX) CPU 75 ~ 233 MHz processors
  - Cyrix/IBM 6x86-P120<sup>+</sup>(100MHz)~6x86-P200<sup>+</sup> (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 5 12K
  - 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 NCR8 10 SCSI BIOS firmware and Green feature function, Plug & Play Flash ROM ready.

## Static Electricity Precautions

Static electricity can easily damage your MS-5 120 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-5 120 Mainboard comes in a sturdy cardboard shipping carton. The carton contains the following items:

- MS-5 120 Mainboard
- IDE, FDD, Serial port and Printer cables
- This User's Manual

The MS-5 120 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.**

Chapter 2

# 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

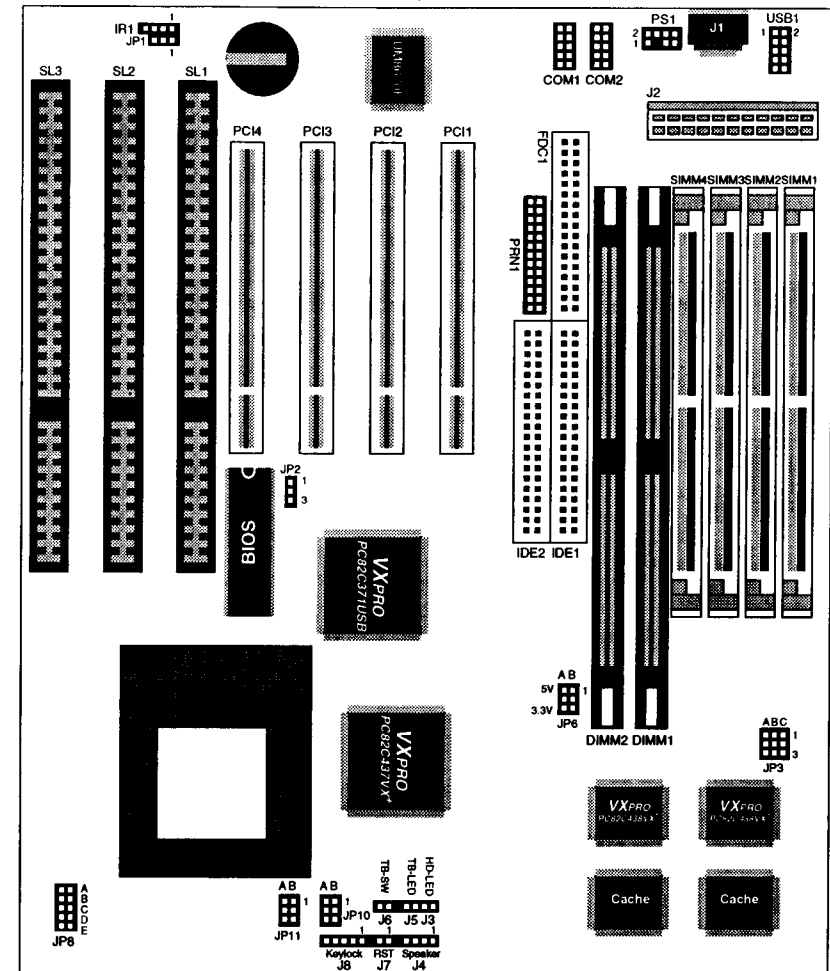


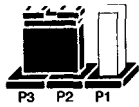
Figure 2-1 Mainboard Component Layout

## 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
		DIMM 1

\* 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.

## 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 1Min..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), 1Min..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 tile 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 Activated 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.

## 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
	K6-233	66MHz	1.5
Cyrrix	P120 <sup>+</sup>	50MHZ	2.0
	P133 <sup>+</sup>	55MHz	2.0
	P150 <sup>+</sup>	60MHz	2.0
	P166 <sup>+</sup>	66MHz	2.0
	MX-166	60MHz	2.5
	MX-200	66 MHz	2.5