Chapter 1

Overview

The PA-2002 mainboard combines the advanced capabilities of the VIA Apollo Master chipset with a high-performance PCI local bus architecture to provide the ideal platform for unleashing the unsurpassed speed and power of the Intel Pentium processor.

This highly-flexible mainboard is designed to run a full range of Intel Pentium, AMD-K5, and Cyrix/IBM 6x86 processors. Any of these processors can be easily upgraded using its 321-pin ZIF (Zero Insertion Force) socket. The processor's advanced performance is complemented by a second level write back cache of up to 1MB and a main memory of up to 128MB RAM. The main memory is installed using the board's four 72-pin SIMM sockets that accept either standard Fast Page Mode, the new high-performance EDO (Extended Data-Out) DRAM, or more advanced BEDO (Burst EDO) DRAM.

The PA-2002 integrates a full set of I/O features onboard, including two 16550 UART compatible serial ports, one EPP/ECP capable parallel port, and one Floppy Disk Drive controller. It also comes with a built in Enhanced IDE controller that provides convenient, high-speed connections with up to four IDE devices, including Hard Disk and CD-ROM drives. Three 16-bit ISA slots and four 32-bit PCI slots provide ample room for further expansion.

This chapter gives a you a brief overview of the PA-2002 mainboard. In addition to basic information on the board's main components and features, it also provides advice on how to upgrade and expand it.

Main Features

The PA-2002 mainboard comes with the following features:

- The onboard 321-pin ZIF socket supports Intel Pentium (P54C) CPU speed 75/90/100/120/133/150/166/200 MHz processors / P54CT / P55C (optional by splitting the voltage regulator).Cyrix/IBM 6x86-P120+ (100 MHz) / 6x86-P133+ (110 MHz) / 6x86-P150+ (120 MHz) / 6x86-P166+ (133 MHz) processors AMD K5-PR75 (75 MHz) / K5-PR90 (90 MHz) / K5-PR100 (100 MHz) / K5-PR120 (90 MHz) / K5-PR133 (100 MHz) / K5-PR150 (120 MHz) / K5-PR166 (133 MHz) processors.

- VIA Apollo Master chipset, including a CPU interface controller, advanced cache controller, integrated DRAM controller, synchronous ISA bus controller, PCI local bus interface, integrated power management unit.

- Supports 256KB/512KB/1MB standard 3.3V or mixed voltage asynchronous SRAM, or 256KB/512KB standard 3.3V synchronous SRAM direct-mapped write-back cache memory with cache module.

- Takes up to 128MB RAM in two banks using 72-pin SIMM modules of 4, 8, 16, or 32MB, with support for Fast Page Mode, EDO, and BEDO memory.

- Three 16-bit ISA expansion slots and four 32-bit PCI non-sharing expansion slots.

- 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.

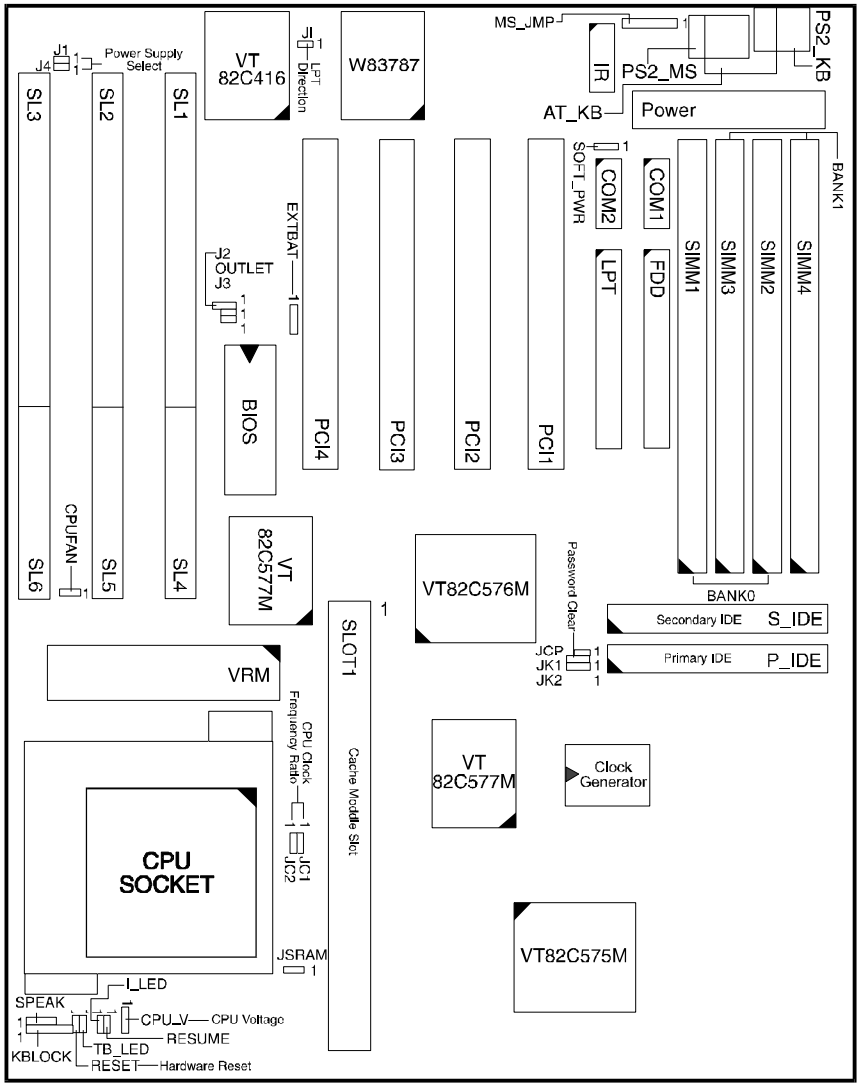
- Integrated Winbond W83787/787IF/877 Multi I/O chipset featuring two 16550 UART compatible serial ports one EPP/ECP capable parallel port, and one Floppy Disk Drive connector. Also, the WB83787IF and 83877 chipsets support infrared communication.

- Supports remote software power supply.

- Award BIOS with support for power management, Plug and Play and Enhanced IDE features.

- Supports 128KB Flash ROM.

Mainboard Layout



† **NOTE : When plugging your processor into the CPU (ZIF) socket, make sure that pin 1 matches that of the CPU socket.**

About Your Mainboard

This section provides useful information that you will need to know should you decide to modify or upgrade the configuration of the mainboard and the system it is installed in. If you do not have the confidence to upgrade the mainboard yourself, we advise that you consult a qualified service technician for assistance.

The BIOS Setup Utility

The BIOS (Basic Input Output System) is the basic firmware that instructs the computer how to operate. For the BIOS to work properly, there must be a record of the computer's hardware and configuration settings for it to refer to. This record is created using the Setup Utility, a program that is stored permanently in the BIOS ROM chip on the mainboard.

The system configuration record created by the Setup Utility is also stored on the mainboard, but not permanently. This section of the memory it is stored in the NVRAM.

When you buy your computer, the system configuration record will already be set and may in some cases differ from the basic defaults. The first time you use your computer or when you need to re-configure your system, you should run the Setup Utility and write down the settings. Please see Chapter 4 for an explanation on how to run the Setup Utility.

IRQ Functionality

As you read through this manual, you will see the term "**IRQ**"on a number of occasions. It is important for you to know what this term means, particularly if you intend to upgrade your system.

IRQ stands for "**Interrupt Request**", the process in which an input or output device tells the processor to temporarily interrupt its current task and immediately process something from the source of the interrupt. When it has completed this, the processor returns to the task it was already processing. Devices that need an IRQ line to operate sometimes need to have exclusive use of that line.

A large number of add-on cards, such as sound cards and LAN cards, require the use of an IRQ line to function. There is a total of 16 IRQs (IRQ0 to IRQ15) available in a system, although some of them may already be in use by components in the system such as the keyboard and mouse. Add-on cards that need to use an IRQ draw from the unused group of IRQs. When installing a card that uses an IRQ, it will have a default IRQ setting which you might have to change if that IRQ is already in use and cannot be shared.

Both ISA and PCI add-on cards may need to use IRQs. System IRQs are available to add-on cards installed on the ISA bus first; the remaining ones can be used by cards installed on the PCI bus. There are two categories of ISA add-on cards: so-called "**Legacy**" ISA cards, which need to be configured manually and then installed in any available ISA slot; and "**Plug and Play**" (PnP) ISA cards, which are configured automatically by the system. As a result, when you install Legacy ISA cards, you have to carefully configure the system to ensure that the installed cards do not conflict with each other by having the same IRQ. With PnP cards, on the other hand, IRQs are assigned automatically from the ones available in the system. In the case of PCI add-on cards, the BIOS automatically assigns an IRQ card to the PCI slot the card is installed in. For further details on this topic, please see Chapter 4 of this manual.

DMA Channels of ISA Cards

Some Legacy and PnP ISA add-on cards may also need to use a Direct Memory Access (DMA) channel. DMA assignments for this mainboard are handled in the same way as the IRQ assignment process outlined above. For more information, please refer to Chapter 4 of this manual.

Enhanced IDE

This mainboard features an integrated Enhanced IDE controller that provides convenient, high-speed connections with up to four IDE devices, such as Hard Disk, CD-ROM and Tape Backup Drives. Enhanced IDE is an upgrade of the original IDE specification and provides increased capabilities and performance in a number of areas, including support for Hard Disk Drives of over 528MB and faster data transfer rates utilizing the PIO Mode 4 timing scheme.

With the integrated IDE controller you can connect up to four IDE peripheral devices to your system. All devices are categorized in the same way that IDE Hard Disks were configured in the past, with one device set as the Master device and the other as the Slave device. We recommend that Hard Disk Drives use the primary IDE connector and that CD-ROM drives utilize the secondary IDE connector for improved system performance.