Chapter 4
Hardware Configuration

Your computer system is a high-performance computer system board that supports a Pentium™ CPU running at 75, 90, 100, or 120 Mhz. You can install 256K or 512K of external cache memory on the motherboard. The motherboard offers floppy drive interface, IDE interface for HDD and CD-ROM Drive, two serial ports and an ECP/EPP capable parallel port. In addition to the hardware features, Windows 95™ ready Plug and Play and Advanced Power Management (APM) are supported.

Features :-

CPU
* Pentium™ Processor at bus speed of 50, 60, 66 Mhz, that means Processor speed of 75, 90, 100 or 120 Mhz are supported.

DRAM
* 2 banks of 64 bit wide memory with each bank consists of two 72 pin SIMMs. (total 4 SIMM sockets).
* Both SIMMs in same bank must be of the same memory size and type, however two banks may have different types and size and populated in any order.
* Memory configuration from 8M to 128M using combinations of 512K, 1M, 2M, 4M and 8M SIMM modules.
* 70ns Fast Page Mode Dram or 60ns Extended Data Out (EDO) DRAM Type supported.
* Your computer system requires 60ns DRAM to support 100MHz Pentium™ processor. Please contact your dealer if you need to support 100MHz processor with 70ns DRAM.

Cache
* Support 256/512K bytes direct mapped write back L2 cache.
* Support 3.3V and mixed mode standard SRAM.

On-board I/O
* On board PCI fast IDE with transfer rate up to 16M Bytes /s.
* Twin headers for 4 IDE devices including IDE Hard disk and CD-ROMs.
* Support bus-mastering IDE, enhancing for multitasking application.
* One ECP/EPP parallel port.
* Two 16550 compatible UART serial ports.
* Support 2 FDD of 360K, 720K, 1.2M, 1.44M and 2.88M capacity.
* 4 PCI slots supporting bus masters.
* 4 ISA slots.

Plug and Play
- Support PnP for DOS and Windows 3.1 as well as Windows 95™.

Power Management
- Support System Memory Management (SMM) and APM.
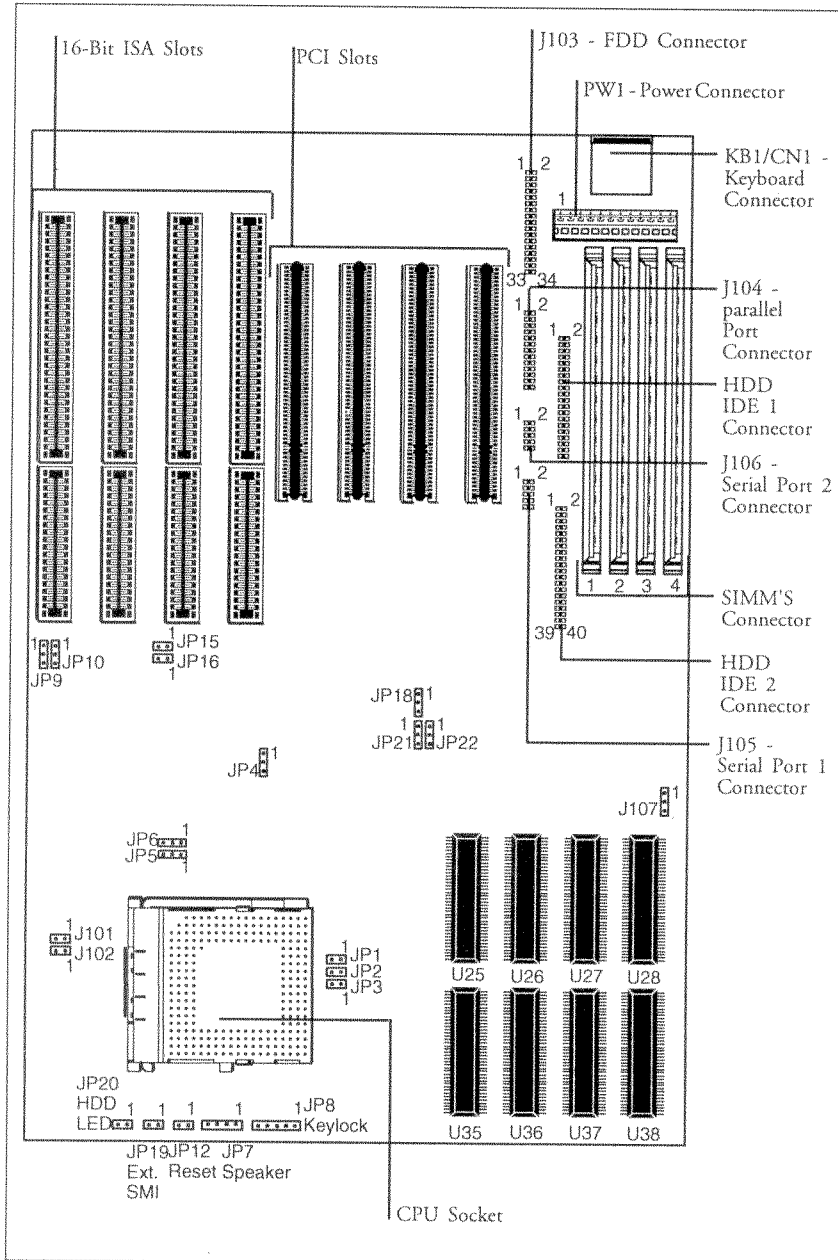- Comply to Energy Star "Green" PC program.

BIOS
- Flash EPROM supported and the BIOS can be updated by Flash memory programming utility.

Static Electricity Precaution

Static electricity can easily damage the components on the motherboard. Obseving a few basic precautions can help you safeguard against damage that could result in expensive repairs. Follow the measures below to protect your equipment from static discharge:

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

- Touch a grounded surface before you remove any system component from its protective anti-static packaging. A grounded surface within easy reach is the expansion slot covers at the rear of the computer case, or any other unpainted portion of the computer chassis.

- During configuration and installation, touch a grounded surface frequently to discharge any static electric charge that may build up in your body. Another option is to wear a grounding wrist strap.

- When handling a motherboard or an adapter card, avoid touching its components. Handle the motherboard and adapter cards either by the edges or by the mounting bracket that attaches to the slot opening in the case.

Motherboard Layout

16-Bit ISA Slots

PCI Slots

J103 - FDD Connector

PW1 - Power Connector

1 2

1

33 34
1 2

1 2

1 2

1 2

1 2

39 40

KB1/CN1 -
Keyboard
Connector

J104 -
parallel
Port
Connector

HDD
IDE 1
Connector

J106 -
Serial Port 2
Connector

1 2 3 4

SIMM'S
Connector

HDD
IDE 2
Connector

J105 -
Serial Port 1
Connector

1 JP10
JP9

JP15
JP16

JP18

JP21 JP22

JP4

J107

JP6
JP5

J101
J102

JP1
JP2
JP3

U25 U26 U27 U28

JP20
HDD
LED

JP8
Keylock

U35 U36 U37 U38

JP19 JP12 JP7
Ext. Reset Speaker
SMI

CPU Socket

Motherboard Layout
Hardware Setup

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

Jumper Settings

JP1 : CPU Pipeline Enable / Disable

pipeline enabled	closed (default)
pipeline disabled	open

JP3 : CPU to Host Bus Frequency Select

3 to 2	open (default)
2 to 1	closed

JP2 : L1 Cache Protocol

write back	open (default)
write through	closed

JP4,5,6 : L2 Cache Size

	JP4	JP5	JP6
0KB	open	1-2	1-2
256KB	2-3 (default)	2-3 (default)	1-2 (default)
512KB	1-2	1-2	2-3

J107 : SRAM Type Select

3.3V SRAM	1-2
5V Mix mode SRAM	2-3

JP9,10 : BIOS Option

	JP9	JP10
5V flash ROM	1-2 (default)	2-3 (default)
12V flash ROM	2-3	2-3

JP15,16,18 : CPU Speed /Clock (U20) Option
(if CH9007-E Clock Driver Chip used)(U20)

	JP15	JP16	JP18
50 Mhz	open	open	1-2
60 MHz	open (default)	closed (default)	2-3 (default)
66 MHz	closed	closed	2-3

(if AV9514A-42 Clock Driver Chip used)(U20)

	JP15	JP16	JP18
50 Mhz	open	open	1-2
60 MHz	closed (default)	closed (default)	2-3 (default)
66 MHz	closed	open	2-3

JP101, 102 : Intel CPU Voltage

	JP101	JP102
VR	closed (default)	open
VRE	open	closed

JP11 : CMOS Data Clear (Available if component RTC with this function pin)

Normal	open (default)
Clear	closed

JP21, 22 : Onboard IDE IRQ Routing Option

	JP21	JP22
IRQ14,15	1-2 (default)	1-2 (default)
MIRQ 0, 1	2-3	2-3

JP19 : Ext. SMI

Normal	open
SMI Mode	closed

JP12 : RESET Switch

Normal	open
RESET	closed

Connectors

Once you have fastened the motherboard into the system case, the next step is to connect the internal cables. The motherboard connectors have varying numbers of pins and are the points of contact between the motherboard and other parts of the computer.

KB1 - Keyboard Connector

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

Pin	Description	Pin	Description
1	Keyboard Clock	4	Ground
2	Keyboard Data	5	+5V DC
3	NC		

CN1 - PS/2 Keyboard Connector (optional)

Pin	Description	Pin	Description
1	Keyboard Data	4	+5V DC
2	NC	5	Keyboard Clock
3	Ground	6	NC

PW1 - Power Supply Connector

The motherboard 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 centre.

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

JP7 - Speaker Connector

Attach the system speaker to connector JP7.

Pin	Description	Pin	Description
1	Data out	3	Ground
2	NC	4	+5V

JP8 - Keylock & Power LED Connector

Pin	Description	Pin	Description
1	LED power	4	Keyboard Inhibiter
2	NC	5	Ground
3	Ground		

JP12 - Reset Switch Connector

Attach the Reset switch cable to this connector. The Reset switch restarts the system.

Pin	Description	Pin	Description
1	Reset	2	Ground

JP20 - IDE LED

The indicator lights during IDE data flow.

Pin	Description	Pin	Description
1	- Cathode	2	+ Anode

PJ105, J106 - Serial Ports Connectors

Pin	Description	Pin	Description
1	RLSD	6	DSR
2	RX	7	RTS
3	TX	8	CTS
4	DTR	9	RI
5	GND	10	N.C.

J104 - Parallel Port Connector

Pin	Description	Pin	Description
1	STROBE-	14	Ground
2	AUTO FEED-	15	Data Bit 6
3	Data Bit 0	16	Ground
4	ERROR-	17	Data Bit 7
5	Data Bit 1	18	Ground
6	INIT-	19	ACJ-
7	Data Bit 2	20	Ground
8	SLCT IN-	21	BUSY
9	Data Bit 3	22	Ground
10	Ground	23	PE(PaperEnd)
11	Data Bit 4	24	Ground
12	Ground	25	SLCT
13	Data Bit 5	26	N.C.

Cache Configuration

The motherboard supports standard Asynchronous SRAMs in DIP or SOJ package. It also support 3.3V and mixed mode standard SRAM (J107). You can configure the motherboard's cache by installing cache chips in the sockets noted below, and then set jumpers JP4,5,6.

Cache Size	Cache RAM	Tag RAM	Cacheable Range
256KB	32K x 8, U25-U28, U35-U38	8K x 8 or 32K x 8 U24	64MB
512KB	64K x 8, U25-U28, U35-U38	16K x 8 or 32K x 8 U24	64MB

The speed of the SRAM chips needed depends on the clock speed of the microprocessor:

CPU Clock	Processor Clock	Cache RAM	Tag RAM
75MHz	50 MHz	20 ns	20 ns
120, 90MHz	60 MHz	17 ns	15 ns
100 MHz	66 MHz	15 ns	15 ns

Memory Configuration

Table 1 shows the possible memory combination. The motherboard will support both Fast Page DRAM or EDO DRAM SIMMs, but they cannot be mixed within the same memory bank. If Fast Page DRAM and EDO DRAM SIMMs are installed in separate banks, each bank will be optimized for maximum performance. Parity generation and detection is NOT supported. SIMM requirements are 70ns Fast Page Mode or 60ns EDO DRAM with tin-lead connectors.

SIMM 1 (Bank 0) SIMM Type (Size)	SIMM 2 (Bank 0) SIMM Type (Size)	SIMM 3 (Bank 1) SIMM Type (Size)	SIMM 4 (Bank 1) SIMM Type (Size)	Total System Memory
Empty	Empty	4 MB	4 MB	8 MB
Empty	Empty	8 MB	8 MB	16 MB
Empty	Empty	16 MB	16 MB	32 MB
Empty	Empty	32 MB	32 MB	64 MB
4 MB	4 MB	Empty	Empty	8 MB
4 MB	4 MB	4 MB	4 MB	16 MB
4 MB	4 MB	8 MB	8 MB	24 MB
4 MB	4 MB	16 MB	16 MB	40 MB
4 MB	4 MB	32 MB	32 MB	72 MB
8 MB	8 MB	Empty	Empty	16 MB
8 MB	8 MB	4 MB	4 MB	24 MB
8 MB	8 MB	8 MB	8 MB	32 MB
8 MB	8 MB	16 MB	16 MB	48 MB
8 MB	8 MB	32 MB	32 MB	80 MB
16 MB	16 MB	Empty	Empty	32 MB
16 MB	16 MB	4 MB	4 MB	40 MB
16 MB	16 MB	8 MB	8 MB	48 MB
16 MB	16 MB	16 MB	16 MB	64 MB
16 MB	16 MB	32 MB	32 MB	96 MB
32 MB	32 MB	Empty	Empty	64 MB
32 MB	32 MB	4 MB	4 MB	72 MB
32 MB	32 MB	8 MB	8 MB	80 MB
32 MB	32 MB	16 MB	16 MB	96 MB
32 MB	32 MB	32 MB	32 MB	128 MB