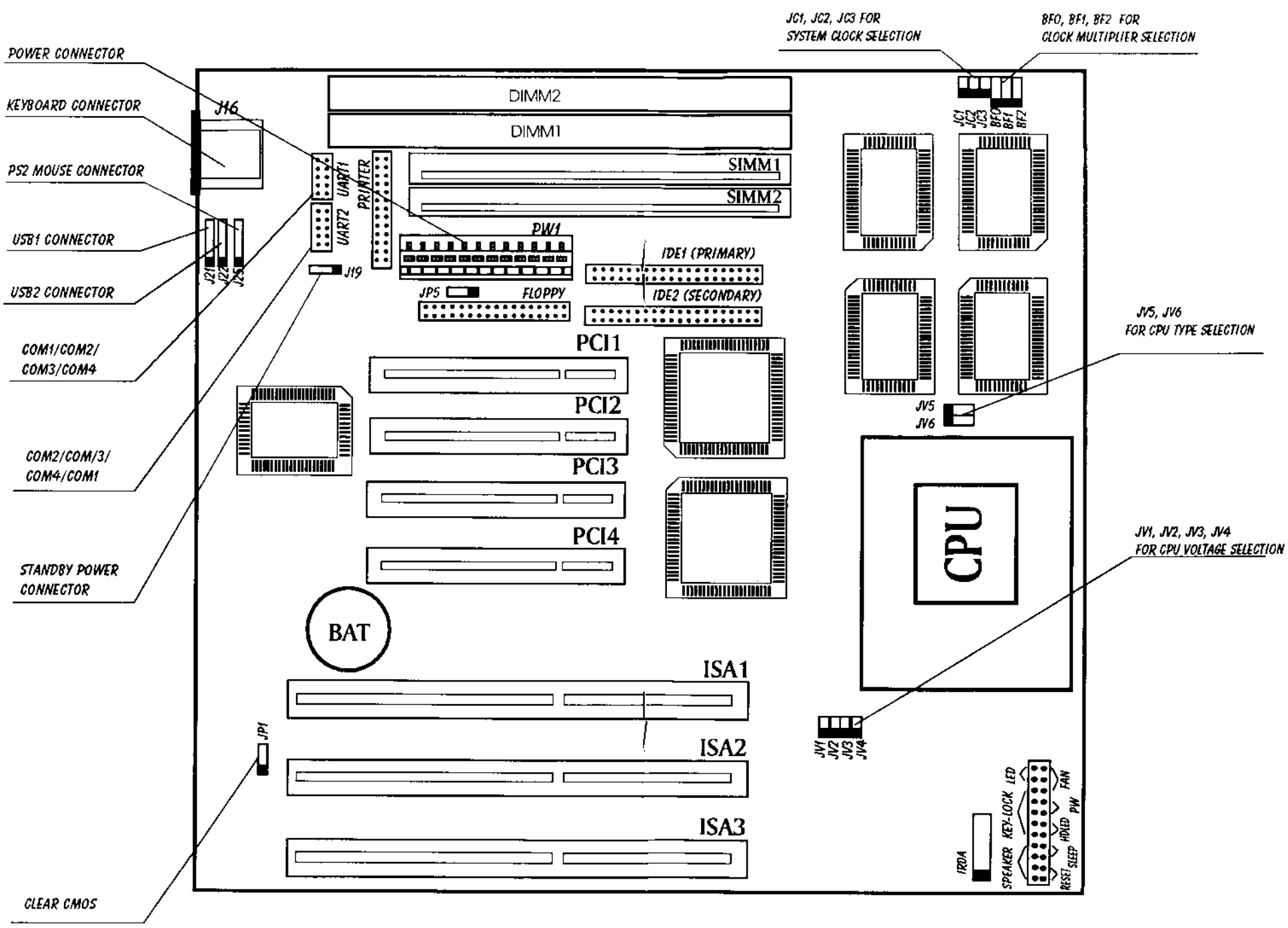
PENTIUM
Explorer IV

User Manual

PC Main Board


POWER CONNECTOR
KEYBOARD CONNECTOR
PS2 MOUSE CONNECTOR
USB1 CONNECTOR
USB2 CONNECTOR
COM1/COM2/
COM3/COM4
COM2/COM/3/
COM4/COM1
STANDBY POWER
CONNECTOR
CLEAR CMOS
JC1, JC2, JC3 FOR
SYSTEM CLOCK SELECTION
BF0, BF1, BF2 FOR
CLOCK MULTIPLIER SELECTION
JV5, JV6
FOR CPU TYPE SELECTION
JV1, JV2, JV3, JV4
FOR CPU VOLTAGE SELECTION
J16
DIMM2
DIMM1
SIMM1
SIMM2
UART2
UART1
PRINTER
PW1
IDE1 (PRIMARY)
IDE2 (SECONDARY)
JP5
FLOPPY
J19
J21
J22
J23
PCI1
PCI2
PCI3
PCI4
BAT
ISA1
ISA2
ISA3
JP1
CPU
JC1
JC2
JC3
BF0
BF1
BF2
JV5
JV6
JV1
JV2
JV3
JV4
IRDA
SPEAKER
KEY-LOCK
LED
HDED
FAN
PW
RESET
SLEEP

CONTENTS

5. Appendix

Jumper Quick Setting

Install CPU

JC1, JC2 and JC3 are used for System Clock setting.
BF0, BF1 and BF2 are used for CPU multiple clock setting.
(Please refer to page 2-1 ~ page 2-7 in detail informations.)

	CPU FREQUENCY	JC1	JC2	JC3	BF0	BF1	BF2
Intel Pentium	75MHz	Close	Close	Close	2-3	2-3	2-3
	90MHz	Open	Close	Close	2-3	2-3	2-3
	100MHz	Close	Close	Open	2-3	2-3	2-3
	120MHz	Open	Close	Close	1-2	2-3	2-3
	133MHz	Close	Close	Open	1-2	2-3	2-3
	150MHz	Open	Close	Close	1-2	1-2	2-3
	166MHz	Close	Close	Open	1-2	1-2	2-3
	180MHz	Open	Close	Close	2-3	1-2	2-3
	200MHz	Close	Close	Open	2-3	1-2	2-3
	233MHz	Close	Close	Open	2-3	2-3	2-3
Cyrix 6x86	P120+ (100MHz)	Close	Close	Close	1-2	2-3	2-3
	P133+ (110MHz)	Close	Open	Close	1-2	2-3	2-3
	P150+ (120MHz)	Open	Close	Close	1-2	2-3	2-3
	P166+ (133MHz)	Close	Close	Open	1-2	2-3	2-3
Cyrix M2	M2-150 (150MHz)	Open	Close	Close	1-2	1-2	2-3
	M2-166 (166MHz)	Close	Close	Open	1-2	1-2	2-3
	M2-180 (180MHz)	Open	Close	Close	2-3	1-2	2-3
	M2-187 (187MHz)	Open	Open	Close	1-2	1-2	2-3
	M2-200 (200MHz)	Close	Close	Open	2-3	1-2	2-3
	M2-225 (225MHz)	Open	Open	Close	2-3	1-2	2-3
	M2-250 (250MHz)	Close	Open	Open	2-3	1-2	2-3
AMD K5	PR75 (75MHz)	Close	Close	Close	2-3	2-3	2-3
	PR90, PR120 (90MHz)	Open	Close	Close	2-3	2-3	2-3
	PR100, PR133 (100MHz)	Close	Close	Open	2-3	2-3	2-3
	PR166	Close	Close	Open	1-2	1-2	2-3
	PR200	Close	Close	Open	2-3	1-2	2-3
AMD K6	166 (166MHz)	Close	Close	Open	1-2	1-2	2-3
	200 (200MHz)	Close	Close	Open	2-3	1-2	2-3
	233 (233MHz)	Close	Close	Open	2-3	2-3	2-3

Select CPU Type & Voltage

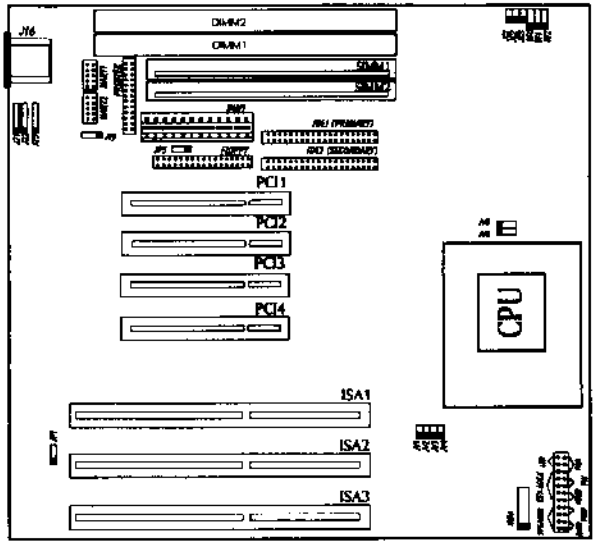
JV1, JV2, JV3, JV4, JV5 and JV6 are used to select your CPU voltage.
(Please refer to page 2-8 in detail informations of 0.1V Stepping for 2.0V~3.3V .)

	Single Voltage CPU		Dual Voltage CPU		
	3.3V	3.5V	2.0V ~ 3.3V (0.1V Stepping)		
			2.8V	2.9V	3.2V
JV1	Open	Open	Close	Open	Close
JV2	close	Open	Close	Close	Close
JV3	Open	Open	Close	Close	Open
JV4	Open	Open	Open	Open	Open
JV5	1-2		2-3		
JV6					

Clear CMOS

	CLEAR CMOS	NORMAL
JP1	2-3 (Close once)	1-2

On Board Jumpers and Connectors illustration



Chapter 1
Introduction

Overview

Explorer IV green mainboard provides a highly integrated solution for fully compatible, high performance PC/AT platforms, and supports Intel Pentium, Cyrix 6x86, M2, AMD K5 and K6 microprocessors. It features Write-Back Secondary Cache memory for 256KB/512KB in size. Flexible main memory size can be installed from 8MB up to 128MB DRAMs, so as to give full play to the advantages of the Pentium, Cyrix and AMD CPUs. The main board offers a wide range of interface to support integrated on-board IDE and on-board I/O function.

The current Green function is divided into three phases : Doze, Standby and Suspend.

Key Features

CPU
- Supports Intel Pentium 75, 90, 100, 120, 133, 150, 166, 180, 200 MHz, Intel Pentium Processor with MMX technology
- Supports Cyrix 6x86 100MHz (120 Plus), 110MHz (133 Plus), 120MHz (150 Plus), 133MHz (166 Plus), 150MHz (200 Plus), 6x86L and M2 CPUs
- Supports AMD K5 and K6 CPU
- Supports 2.0 to 3.5V circuit VID (Voltage ID, 0.1V stepping) on board, ready for future AMD K6 and M2 CPUs support

Chipset
- Intel's 82430 VX chipset

Main memory
- Supports 2x72pin SIMM modules and 2x168 pin DIMM module
- 64-bit data path for flexible memory size expanded from 8MB up to 64MB DRAMs for SIMM socket
- Supports Fast Page mode DRAM (High speed) and EDO DRAM for SIMM socket
- Supports from 8MB to 128MB 3.3V/unbuffered SDRAM DIMM or 3.3V/unbuffered EDO DIMM for 2 DIMM slots

Cache memory	–	Provides 256K/512K L2 Pipelined Burst Cache on board
On-board IDE	–	Supports PIO and 2 PCI Bus Master (Bus Master works as DMA Mode 2 type) IDE ports
	–	Supports up to Mode 4 Timing
	–	Supports transfer rate up to 22 MByte/s
	–	Supports 2 Fast IDE interfaces for up to 4 IDE devices e.g. IDE hard disks and CD ROMs drives
Green function	–	Supports 3 Green modes: Doze, Standby and Suspend
	–	Built-in Cooling-Fan controller. When the CPU Cooling-Fan is connected to the on board Fan Header, the fan will stop at Suspend mode of Green to reduce the noise of fan and reduce power
On-board I/O	–	3 x ISA Slots and 4 x PCI Slots
	–	Use Winbond Plug & Play IO chip W83977F
	–	When use PW1 and J19 connector for Mixed Type Power supply (with standby 5V Power supply), this mainboard will support modem ring on, Power Switch
	–	Supports up to two 3.5" or 5.25" floppy drives 360K/720K/1.2M/1.44M/2.88M format
	–	Supports LS-120 Floppy disk drive and CD-ROM booting
	–	All I/O ports can be enabled or disabled in BIOS
	–	Two high speed 16550 compatible UARTs (COM1/COM2/COM3/COM4 selectable) with 16-byte send/receive FIFOs and support MIDI mode
	–	One parallel port at I/O address 378H/278H/ 3BCH with additional bi-direction I/O capability and multi-mode selection (SPP/EPP/ECP) (IEEE1284 compliant)
	–	Provides protection circuit to prevent damage to the parallel port when a connected printer is powered up or operated at a higher voltage
	–	Real-time clock and keyboard controller built-in I/O chip
	–	Supports PS/2 mouse and PS/2 keyboard (optional)
	–	Supports IrDA TX/RX Header
	–	Supports USB (Universal Serial Bus)
BIOS	–	Licensed advanced AWARD BIOS. Supports Flash ROM BIOS, Plug and Play ready, DMI ready. Built-in NCR810 and Adaptec 7850 SCSI BIOS
Board size	–	220mm x 230mm

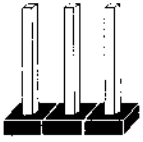
Hardware Settings

There are some hardware settings on the board. They specify configuration options for various features. The settings are made using something called a 'jumper'. Jumpers on the system board provide information to your operation about installed options and system settings. A jumper is a set of two or more metal pins in a plastic base attached to the mainboard. A plastic jumper 'cap' with a metal plate inside fits over two pins to create an electrical contact between them. The contact establishes a hardware settings such as installing the CPU.

Note: When you open a jumper, leave the plastic jumper cap attached to one of the pins so you don't lose it.

Jumpers and Caps

Jumper cap



3-pin jumper

2-pin jumper

Graphic symbol

To rapidly give user a effective and direct way to set jumpers for your system, there are some diagrams used in the following chapters. All kind of jumper setting modes are simplified as the following relevant graphic symbols:

Open all pins of a jumper symbolizes as:

closed pin-1 and pin-2 of a jumper symbolizes as:

closed pin-2 and pin-3 of a jumper symbolizes as:

Jumper closed symbolizes as:

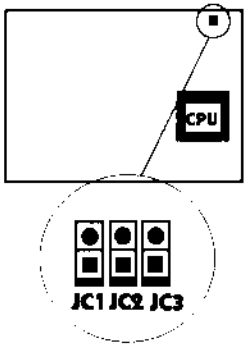
Jumper opened symbolizes as:

Chapter 2
Jumper Configuration

The main board offers a set of jumper settings to facilitate clock frequency adjustment and some important selections.

System Clock Selection

In this Explorer IV main board, there are six selections of SC (System Clock). User has to set a group of jumpers as the following illustration to determine which system clock used.



System Clock 50MHz:

System Clock 55MHz:

System Clock 75MHz:

System Clock 60MHz:

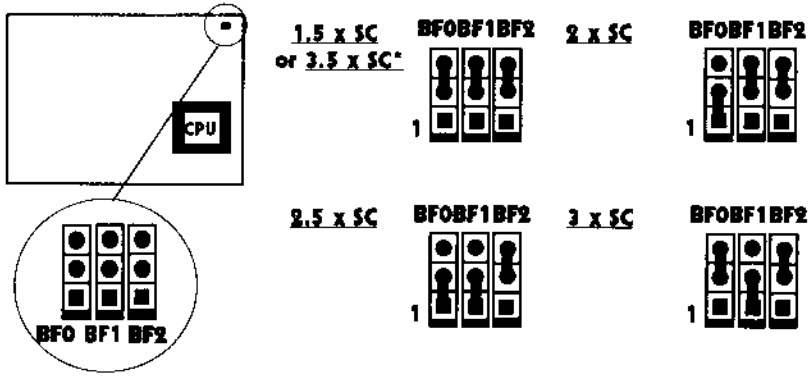
System Clock 83.3MHz:

System Clock 66MHz:

Clock Multiplier Selection

The Intel Pentium and Pentium MMX CPU multiple clock settings are shown as belows:

Note: SC -- System Clock.



"*": 3.5 x SC is only for 233MHz Pentium MMX CPU, AMD K6 233MHz and Cyrix M2 CPU.

Remark:

BF2 is reserved for future AMD K6 CPU.

CPU Frequency Selection

According to CPU's specification, set system clock and clock multiplier carefully. The following illustrations list almost all set of jumper settings for the major type CPUs.

For Intel Pentium & Pentium MMX CPU

75= 1.5 x 50MHz :

90= 1.5 x 60MHz :

100= 1.5 x 66MHz or 233MHz = 3.5 x 66MHz :

120= 2 x 60MHz :

133= 2 x 66MHz :

150= 2.5 x 60MHz :

166= 2.5 x 66MHz :

180= 3 x 60MHz :

200= 3 x 66MHz :

For Cyrix 6x86 CPU

P120+(100MHz)= 2 x 50MHz :

P133+(110MHz)= 2 x 55MHz :

P150+(120MHz)= 2 x 60MHz :

P166+(133MHz)= 2 x 66MHz :

P200(150MHz)= 2 x 75MHz :

For Cyrix M2 CPU

M2-150= 2.5 x 60MHz :

M2-166= 2.5 x 66MHz :

M2-180= 3 x 60MHz :

M2-187= 2.5 x 75MHz :

M2-200= 3 x 66MHz :

M2-225= 3 x 75MHz :

M2-250= 3 x 83.3MHz :

For AMD K5 CPU

PR75 (75MHz)= 1.5 x 50MHz :

PR90, PR120 (90MHz)= 1.5 x 60MHz :

PR100, PR133 (100MHz)= 1.5x 66MHz :

PR166 = 2.5 x 66MHz :

PR200 = 3 x 66MHz :

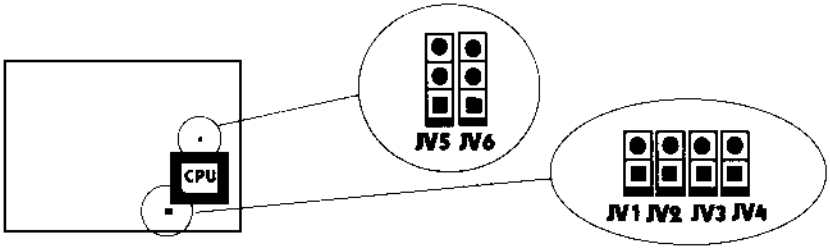
For AMD K6 CPU

K6-166 (166MHz)= 2.5 x 66MHz :

K6-200 (200MHz)= 3 x 66MHz :

K6-233 (233MHz)= 3.5 x 66MHz :

CPU Type & Voltage Selection



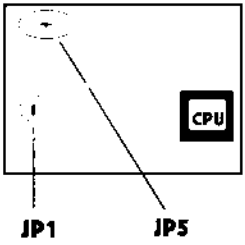
	Voltage	JV1	JV2	JV3	JV4	JV5	JV6	For CPU
Single Voltage	3.5V	Open	Open	Open	Open	1-2	1-2	Pentium, K5, 6x86
	3.3V	Open	Close	Open	Open	1-2	1-2	Pentium, 6x86
Dual Voltage	2.0V	Close	Close	Close	Close	2-3	2-3	Future AMD K6 and Cyrix M2 CPU
	2.1V	Open	Close	Close	Close	2-3	2-3	
	2.2V	Close	Open	Close	Close	2-3	2-3	
	2.3V	Open	Open	Close	Close	2-3	2-3	
	2.4V	Close	Close	Open	Close	2-3	2-3	
	2.5V	Open	Close	Open	Close	2-3	2-3	
	2.6V	Close	Open	Open	Close	2-3	2-3	
	2.7V	Open	Open	Open	Close	2-3	2-3	
	2.8V	Close	Close	Close	Open	2-3	2-3	Pentium MMX, Cyrix 6x86L, M2 CPU
	2.9V	Open	Close	Close	Open	2-3	2-3	AMD K6-166, 200
	3.0V	Close	Open	Close	Open	2-3	2-3	
	3.1V	Open	Open	Close	Open	2-3	2-3	
	3.2V	Close	Close	Open	Open	2-3	2-3	AMD K6-233
	3.3V	Open	Close	Open	Open	2-3	2-3	
	3.4V	Close	Open	Open	Open	2-3	2-3	
	3.5V	Open	Open	Open	Open	2-3	2-3	

Note

For dual voltage CPU, CPU I/O Voltage is always 3.3V, the voltage in this table is the CPU Core Voltage.

For single voltage CPU, CPU I/O Voltage and Core Voltage are same.

Clear COMS



Clear CMOS
just close once

*Normal

"*": Represent for default jumper setting.

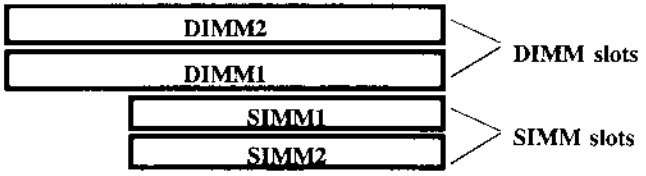
Power Selection (JP5, Optional)

1-2: Normal AT Power supply.

2-3: Special Mixed Mode Power supply (with standby 5V).

Memory Configuration

The Explorer IV mainboard provides 2 SIMM slots and 2 DIMM slots for providing a flexible memory size from 8MB up to 128MB mainboard. Please do not plug in two different brands of SIMMs on a bank simultaneously.



If using DIMM together with SIMM, you must install DIMM as the following table:

SIMM 1&2	DIMM1	DIMM2
Single-bank or Double-bank SIMM	None	Single-bank or Double-bank DIMM
Single-bank SIMM	Single-bank DIMM	Single-bank or Double-bank DIMM
None	Single-bank or Double-bank DIMM	Single-bank or Double-bank DIMM

Note:

1. When using DIMM together with SIMM, it is strongly recommended that you use DIMM2 to avoid conflict between DIMM1 and SIMM.

2. Please consult your vendors whether your DIMM/SIMM is single-bank or double-bank.

3. Do not plug into two different brands of SIMMs on a bank simultaneously.

Chapter 3
Connector Configuration

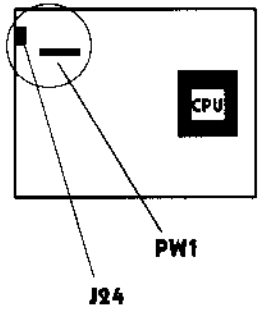
This section lists all connector pin assignments and port descriptions on the main board. The situations of the connectors and ports are illustrated in the following figures. Before inserting these connectors, please pay attention to their directions.

Power Connector (PW1)

PIN NUMBER	FUNCTION
1	POWER GOOD
2	+5V
3	+12V
4	-12V
5	GND
6	GND
7	GND
8	GND
9	-5V
10	+5V
11	+5V
12	+5V

Keyboard Connector (J24)

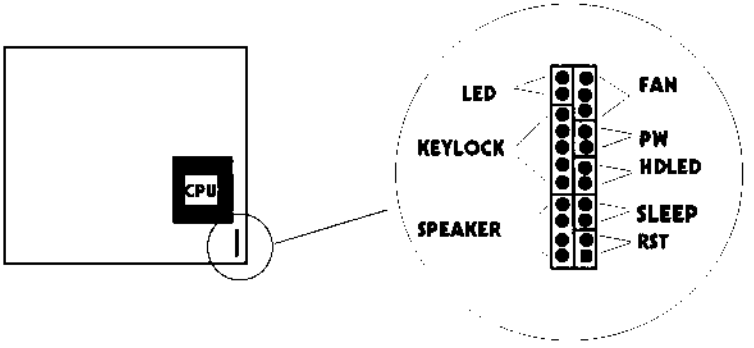
PIN NUMBER	FUNCTION
1	CLOCK
2	DATA
3	NC
4	GND
5	+5V



Function Connector (F-CN)

FUNCTION	PIN NUMBER	DESCRIPTION
Reset Switch (RST)	1	Close once : Reset the system
	2	Open : Normal
Hardware Green (SLEEP)	3	Close Once : Hardware Green
	4	Open : Normal
Hard Disk LED Connector (HDLED)	5	LED ANODE
	6	LED CATHODE
Power ON/OFF* (PW)	7	Close Once | Open or Close Power
	8	
FAN Connector (FAN)	9	GND
	10	+12V
	11	GND
Speaker Connector (SPEAKER)	12	SPKDATA
	13	GND
	14	GND
	15	VCC
Keylock Connector (KEYLOCK)	16	+5V
	17	NC
	18	GND
	19	Keylock
	20	GND
LED	21	LED ANODE
	22	LED CATHODE

"*": This function can only be used with ATX/AT mixed type power supply which providing standby power.



USB1/USB2 Connector (J21/J22)

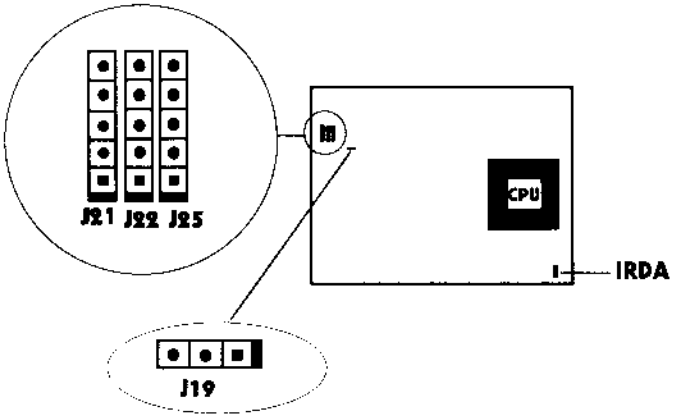
PIN NUMBER	FUNCTION
1	VCC
2	Key
3	DATA -
4	DATA+
5	GND

Standby Power Connector (J19 Optional)

PIN NUMBER	FUNCTION
1	5V StandBy
2	PS - ON/OFF
3	GND

PS2 Mouse (J25, Optional)

PIN NUMBER	FUNCTION
1	DATA
2	CLOCK
3	GND
4	NC
5	+5V

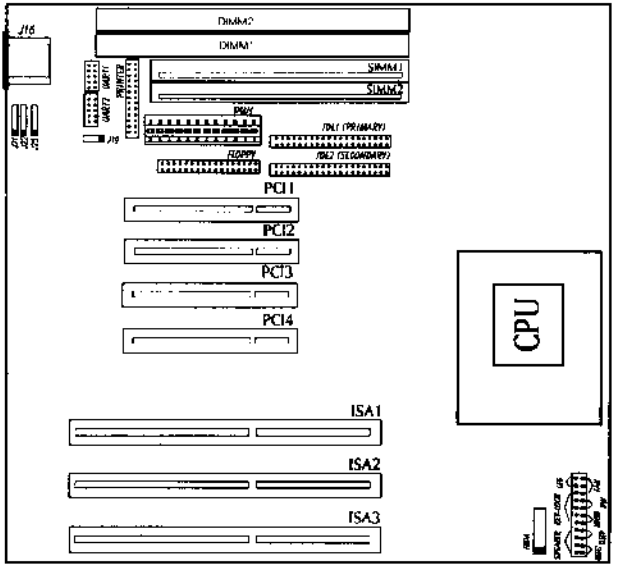


IrDA Connector (IR HEADER)

PIN NUMBER	FUNCTION
1	VCC
2	NC
3	IRRX
4	GND
5	IRTX
6	VCC

I/O Port Description

CONNECTOR	FUNCTION
PRIMARY	Primary IDE Port
SECONDARY	Secondary IDE Port
FLOPPY	Floppy Drive Port
PRINTER	Parallel Port
UART 1	COM1/COM2/COM3/COM4
UART 2	COM2/COM3/COM4/COM1



Chapter 4
AWARD BIOS Description

Entering Setup

Power on the computer and press <Del> immediately will allow you to enter Setup. The other way to enter Setup is to power on the computer, when the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl> + <Alt> + <Esc> keys.

Press <DEL> to enter SETUP

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will be appeared on the screen. The Main Menu allows you to select from twelve setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

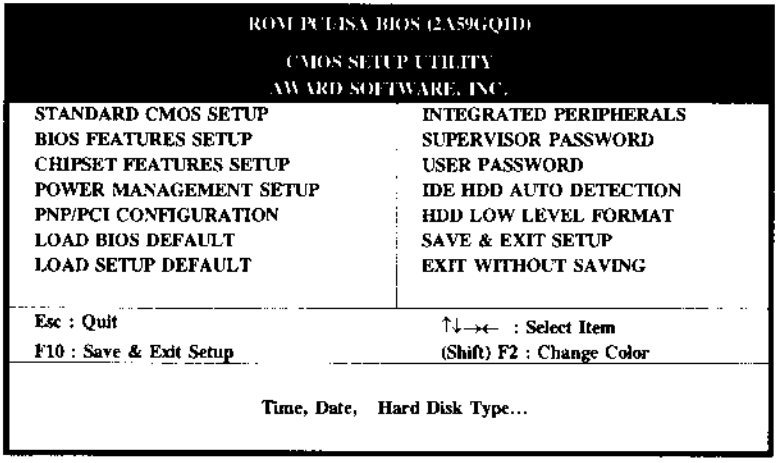


Figure 1 Main Menu

Standard CMOS Setup

Use the arrow keys to highlight the item, then use the <PgUp> or <PgDn> keys to select the value you want in each item.

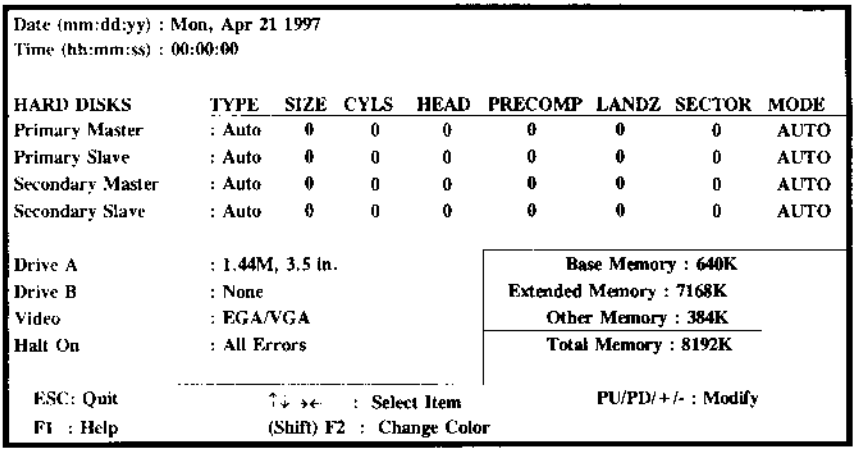


Figure 2 Standard CMOS Setup Menu

Hard Disk

Primary Master/Primary Slave/Secondary Master/Secondary Slave

The categories identify the types of 2 channels that have been installed in the computer. There are 45 predefined types and 4 user definable types are used for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type "User" is user-definable. If your hard disk drive type is not matched with drive table or listed in it, you can use Type "User" to define your own drive type manually.

If you select Type "Auto", BIOS will Auto-Detect the HDD & CD-ROM drive at the POST stage and show the IDE for HDD & CD-ROM drive. If you select Type "User", related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>:

If the controller of HDD interface is ESDI, On-Board IDE Primary and/or Secondary port has to be disabled. If the controller of HDD interface is SCSI, the type shall be set to "None"; or directly set to "Auto" whatever the HDD interface is SCSI or IDE.

CYLS	number of cylinders	HEAD	number of heads
PRECOMP	write precom	LANDZ	landing zone
SECTOR	number of sectors	MODE	HDD access mode

Video

The category selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

EGA/VGA	Enhanced Graphics Adapter/Video Graphic Array. For EGA, VGA, SEGA, or PGA monitor adapters.
CGA 40	Color Graphic Adapter, power up in 40 column mode.
CGA 80	Color Graphic Adapter, power up in 80 column mode.
MONO	Monochrome adapter, includes high resolution monochrome adapters.

Error Halt

The category determines whether the computer will stop if an error is detected during power up.

No errors	The system boot will not be stopped for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error, the system will be stopped and you will be prompted.
All, but Keyboard	The system boot will not stop for a keyboard error, but it will stop for all other errors.
All, but Diskette	The system boot will not stop for a disk error; but it will stop for all other errors.
All, but Disk/Key	The system boot will not stop for a keyboard or disk error; but it will stop for all other errors.

Memory

The category is display-only which is determined by POST (Power On Self Test) of the BIOS.

Base Memory	The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system.
Extended Memory	The BIOS determines how much extended memory is presented during the POST.
Other Memory	This is memory that can be used for different applications. Most use for this area is Shadow RAM.
Total Memory	The system total memory is the sum of above memory.

BIOS Features Setup

ROM PCI/ISA BIOS (2A59GQ1D)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

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

Figure 3 BIOS Features Setup

The following pages tell you the options of each item and describe the meaning of each option.

Item	Option	Description
Virus Warning	*Enabled*	Activate automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
	Disabled	No warning message to appear when anything attempts to access the boot sector or hard disk partition table.
		Note: This function is available only for DOS and other OSes that do not trap INT13.
CPU Internal Cache	*Enabled, Disabled*	This item speeds up memory access. However, it depends on CPU/chipset design. The default value is enabled.
External Cache	*Enabled*	Enable external cache.
	Disabled	Disable external cache.

Quick Power On Self Test	*Enabled*	Enable quick POST. BIOS will shorten or skip some check items during POST to speed up POST after you power on the computer.
	Disabled	Normal POST.
Boot Sequence	*C,CDROM,A ..... C, A, SCSI*	
		You can choose any search sequence for bootup.
Swap Floppy Drive	*Enabled*	It will exchange the assignment of A&B floppy drives.
	Disabled	The assignment of A&B floppy drives are normal.
Boot Up Floppy Seek	*Enabled*	BIOS searches for floppy disk drive to determine if drive is ready for diskette read/write during booting.
	Disabled	Skip drive seeking to speed up system booting.
Boot Up Numlock Status	*On*	Keypad is used as number keys.
	Off	Keypad is used as arrow keys.
Gate A20 Option	*Normal*	The A20 signal is controlled by keyboard controller or chipset hardware.
	Fast	It is default. The A20 signal is controlled by Port 92 or chipset specific method.
Typematic Rate Setting	*Enabled*	Enable typematic rate and typematic delay programming.
	Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these two items.
Typematic Rate (Chars/Sec)	*6 ~ 30*	Set the speed of the typematice rate (characters per second).
Typematic Delay (Msec)	*250~1000*	Set the time of the typematic delay
Security Option	*System*	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
	Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.
		Note: To disable security, select PASSWORD SETTING in Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

PCI/VGA Palette Snoop	*Enabled*	Enable PCI/VGA palette snoop.
	Disabled	Disable PCI/VGA palette snoop.
OS Select For DRAM > 64MB	*Non-OS/2*	If your operating system is not OS/2, please select this item.
	OS/2	If system DRAM is more than 64MB and operating system is OS/2, please select this item.
Video BIOS Shadow	*Enabled*	Video BIOS will be copied to RAM. Video Shadow will increase the video speed.
	Disabled	Video shadow is disabled.
C8000~CBFFF Shadow / DC000~DFFFF Shadow	*Enabled*	Option shadow is enabled. Optional ROM will be copied to RAM by 16K byte per unit.
	Disabled	The shadow function is disabled.

Chipset Features Setup

ROM PCI/ISA BIOS (2A59GQHD)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	Delayed Transaction	: Disabled
DRAM Timing	: 60ns		
DRAM RAS# Precharge Time	: 3		
DRAM R/W Leadoff Timing	: 6		
Fast RAS To CAS Delay	: 3		
DRAM Read Burst (EDO/FP)	: x222x333		
DRAM Write Burst Timing	: x222		
Fast MA to RAS# Delay CLK	: 1		
Fast EDO Path Select	: Disabled		
Refresh RAS# Assertion	: 4 Clks		
ISA Bus Clock	: PCICLK/4		
System BIOS Cacheable	: Disabled		
Video BIOS Cacheable	: Disabled		
8 Bit I/O Recovery Time	: 1	ESC: Quit	↑↓→← : Select Item
16 Bit I/O Recovery Time	: 1	F1 : Help	PU/PD/+/- : Modify
Memory Hole At 15M-16M	: Disabled	F5 : Old Values	(Shift)F2 : Color
Peer Concurrency	: Enabled	F6 : Load BIOS Default	
		F7 : Load Setup Default	

Figure 4 Chipset Features Setup

The following pages tell you the option of each item and describe the meanings of each option.

Item	Option	Description
Auto Configuration	*Enabled*	Enable auto configuration of DRAM timing
	Disabled	Manually set DRAM timing.
		Warning: You'd better not set DRAM timing too fast which may affect your system stability
DRAM Timing	*60ns* *70ns*	This item is of selected DRAM read/write timing. You must ensure that your SIMMs is as fast as 60ns, otherwise you have to select 70ns.
DRAM RAS# Precharge Time ~ ISA Bus Clock :		
		All these items are about DRAM Timing and show-only for user reference.
System BIOS Cacheable	*Enabled*	Beside conventional memory, the system BIOS area is also cacheable.
	Disabled	The system BIOS area is not cacheable.
Video BIOS Cacheable	*Enabled*	Beside conventional memory, video BIOS area is also cacheable.
	Disabled	Video BIOS area is not cacheable.
8 Bit I/O Recovery Time	*1~4*	It is the ISA Bus 8 bit I/O operating recovery time.
	NA	8 bit I/O recovery time is not exist.
16 Bit I/O Recovery Time	*1~8*	It is the ISA Bus 16 bit I/O operating recovery time.
	NA	16 bit I/O recovery time is not exist.
Memory Hole at 15M~16M	*Enabled*	Memory Hole at 15M~16M is reserved for expanded PCI card.
	Disabled	Do not set this memory hole.
Peer Concurrency/ Passive Release	*Enabled* *Disabled*	These items enabled will accelerate operation speed of PCI bus, thus benefit to the system performance. But perhaps don't support some expanded cards.
Delayed Transaction	*Enabled* *Disabled*	

Power Management Setup

ROM PCI/ISA BIOS (2A59GQHD)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	: Disabled	** Power Down & Resume Events **	
PM Control by APM	: Yes	IRQ3 (COM2)	: ON
Video Off Method	: V/H SYNC +Blank	IRQ4 (COM1)	: ON
Modem Use IRQ	: NA	IRQ5 (LPT 2)	: ON
		IRQ6 (Floppy Disk)	: ON
Doze Mode	: Disabled	IRQ7 (LPT1)	: ON
Standby Mode	: Disabled	IRQ8 (RTC Alarm)	: OFF
Suspend Mode	: Disabled	IRQ9 (IRQ2 Redir)	: OFF
HDD Power Down	: Disabled	IRQ10 (Reserved)	: OFF
		IRQ11 (Reserved)	: OFF
** Wake up Events In Doze & Standby **		IRQ12 (PS/2 Mouse)	: ON
IRQ3 (Wake-Up Event)	: ON	IRQ13 (Coprocessor)	: OFF
IRQ4 (Wake-Up Event)	: ON	IRQ14 (Hard Disk)	: ON
IRQ8 (Wake-Up Event)	: ON	IRQ15 (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 Default	
		F7 : Load Setup Default	

Figure 5 Power Management Setup

The following pages tell you the option of each item and describe the meanings of each option.

Item	Option	Description
Power Management	*Disabled*	Global Power Management will be disabled.
	User Define	Users can configure their own Power Management Timer.
	Min Saving	Pre-defined timer values are used such that all timers are in their MAX values.
	Max Saving	Pre-defined timer values are used such that all timers are in their MIN values.
PM Control by APM	*No*	System BIOS will ignore APM when power managing the system.
	Yes	System BIOS will wait for APM's prompt before it enter any PM mode, such as Standby or Suspend.

		Note: If APM is installed (choose "Yes"), and if there is a task running, even the timer is time out, the APM will not prompt the BIOS to put the system into any power saving mode. But if APM is not installed (choose "No"), this option has no effect.
Video Off Method	*Blank Screen*	The system BIOS will only blank off the screen when disabling video.
	V/H SYNC+ Blank	In addition to Blank Screen, BIOS will also turn off the V-SYNC & H-SYNC signals from VGA cards to monitor.
	DPMS	This function is enabled for only the VGA card supporting DPMS.
		Note: Green monitors detect the V/H-SYNC signals to turn off its electron gun.
Doze Mode	*Disabled*	The system will never enter Doze mode.
	1 Min ~ 1 Hr	Define the continuous idle time before the system entering Doze mode. If any item defined in *"Wake Up Events In Doze & Suspend"* is On and activated, the system will be waken up.
Standby Mode	*Disabled*	The system will never enter Standby mode.
	1 Min ~ 1 Hr	Define the continuous idle time before the system entering Standby mode. If any item defined in *"Wake Up Events In Doze & Standby"* is On and activated, the system will be waken up.
Suspend Mode	*Disabled*	The system will never enter Suspend mode.
	1 Min ~1 Hr	Define the continuous idle time before the system entering Suspend mode. If any item defined in *"Wake Up Events In Suspend"* is On and activated, the system will be waken up.
HDD Power Down	*Disabled*	HDD's motor will not be off.
	1Min~15Min	Define the continuous HDD idle time before the HDD entering power saving mode (motor off).
IRQ3~12 (Doze & Standby)	*OFF*	The specified event's activity will not make the system wake up from Doze & Standby mode.

	ON	The specified event's activity will make the system wake up from Doze & Standby mode.
IRQ3 ~ IRQ15 (Suspend)	*OFF*	The specified event's activity will not make the system wake up from Suspend mode.
	ON	The specified event's activity will make the system wake up from Suspend mode.

PNP/PCI Configuration

ROM PCI/ISA BIOS (2A59GQID)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

Resources Controlled By	: Manual	PCI IRQ Active By	: Level
Force Update ESCD	: 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	Used MEM base addr	: N/A
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		
DMA-1 assigned to	: PCI/ISA PnP		
DMA-3 assigned to	: PCI/ISA PnP	ESC: Quit ↑↓→← : Select Item	
DMA-5 assigned to	: PCI/ISA PnP	F1 : Help PU/PD/+/- : Modify	
DMA-6 assigned to	: PCI/ISA PnP	F5 : Old Values (Shift)F2 : Color	
DMA-7 assigned to	: PCI/ISA PnP	F6 : Load BIOS Default	
		F7 : Load Setup Default	

Figure 6 PNP/PCI Configuration Setup

The following pages tell you the options of each item and describe the meaning of each option.

Item	Option	Description
Resources Controlled By	*Manual*	Assign system resources (IRQ and DMA) manually by user.

	Auto	Assign system resources (IRQ and DMA) automatically by BIOS.
Force Updating ESCD	*Enabled*	The system BIOS will force updating ESCD once, then automatically set this item Disable.
	Disabled	Disable force update ESCD function.
IRQ-3 ~ IRQ-15 assigned to	*Legacy ISA*	The specified IRQ-x will be assigned to ISA only.
	PCI/ISA PnP	The specified IRQ-x will be assigned to ISA or PCI.
DMA-0 ~ DMA-7 assigned to	*Legacy ISA*	The specified DMA-x will be assigned to ISA only.
	PCI/ISA PnP	The specified DMA-x will be assigned to ISA or PCI.
PCI IRQ Active By	*Level, Edge*	To tell the chipset that the IRQ signals input is level or edge trigger.
PCI IDE IRQ Map To	*PCI-AUTO*	The BIOS will scan for PCI IDE devices and determine the location of the PCI IDE device.
	PCI-SLOT 1~4	The BIOS will assign IRQ 14 for primary IDE INT# and IRQ15 for secondary IDE INT# for the specified slot.
	ISA	The BIOS will not assign any IRQs even if PCI IDE card is found. Because some IDE cards connect the IRQ 14&15 directly from ISA slot through a card.
Primary IDE INT#	*A~D*	To tell which INT# the PCI IDE card is used for its interrupt of 1st IDE channel.
Secondary IDE INT#	*A~D*	To tell which INT# the PCI IDE card is used for its interrupt of 2nd IDE channel.

Load BIOS Defaults

The BIOS Defaults is conventional and safe setting.

Load Setup Defaults

The Setup Defaults is common and efficient setting.

Integrated Peripherals

ROM PCI/ISA BIOS (2A59GQ1D)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Enabled	Onboard Parallel Port	: 378/IRQ7
IDE Primary Master PIO	: Auto	Parallel Port Mode	: SPP
IDE Primary Slave PIO	: Auto		
IDE Secondary Master PIO	: Auto		
IDE Secondary Slave PIO	: Auto		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Secondary PCI IDE	: Enabled		
PCI Slot IDE 2nd Channel	: Disabled		
USB Controller	: Disabled		
KBC input clock	: 8MHz		
Onboard FDC Controller	: Enabled		
Onboard Serial Port 1	: 3F8/IRQ4		
Onboard Serial Port 2	: 2F8/IRQ3		
Onboard IR Controller	: Disabled		

ESC: Quit ↑↓→← : Select Item
F1 : Help PU/PD/+/- : Modify
F5 : Old Values (Shift)F2 : Color
F6 : Load BIOS Default
F7 : Load Setup Default

Figure 7 Integrated Peripherals

The following pages tell you the options of each item and describe the meaning of each option.

Item	Option	Description
IDE HDD Block Mode	*Enabled*	Allow IDE HDD read/write several sectors one time.
	Disabled	IDE HDD only reads/writes a sector one time.
IDE Primary /Secondary Master /Slave PIO	*Mode 0~4*	Define the IDE primary/secondary master/slave PIO mode.
	Auto	The IDE PIO mode is defined according to auto-detect.
On-chip Primary/ Secondary PCI IDE	*Enabled*	On-chip primary/secondary PCI IDE port is enabled.
	Disabled	On-chip primary/secondary PCI IDE port is disabled.
PCI Slot IDE 2nd Channel	*Enabled*	The second IDE channel on PCI slot is enabled.

	Disable	The second IDE channel on PCI slot is disabled.
Onboard FDC Controller	*Enabled*	Onboard floppy disk is enabled.
	Disabled	Onboard floppy disk is disabled.
Onboard Serial Port 1/2	*COM1/3F8, COM2/2F8, COM3/3E8, COM4/2E8*	Define onboard serial port address.
	Disabled	Onboard serial port is disabled.
Onboard Parallel Port	*378/IRQ7, 3BC/IRQ7, 278/IRQ5, 378/IRQ5*	Define onboard parallel port address and IRQ channel.
	Disabled	Onboard parallel port is disabled.
Parallel Port Mode	*Compatible, Extended, EPP, ECP, SPP*	Define the parallel port mode is Standard Parallel Port (SPP), Enhanced Parallel Port.(EPP), or Extended Capabilities Port (ECP). Both Compatible mode and Extended mode are SPP mode, except that the later has a latchable buffer between I/O data pins and CPU.

Supervisor/User Password

When you select *Supervisor/User Password* function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. 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, just press <Enter> when you are prompted to enter password. The following message will confirm the password being disabled. If both Supervisor and User Password are disabled, the system will boot and you can enter CMOS Setup freely.

PASSWORD DISABLED

If you select "System" at "Security Option" of "BIOS Features Setup" Menu, you will be prompted for the password every time the system is rebooted or any time you try to enter "CMOS Setup".

If you select "Setup" at "Security Option" of "BIOS Features Setup" Menu, you will be prompted only when you try to enter "CMOS Setup".

Supervisor Password has higher priority than *User Password*. You can use *Supervisor Password* when booting system or entering "CMOS Setup" to modify all settings. Also you can use *User Password* when booting system or entering "CMOS Setup" but can not modify any setting if *Supervisor Password* is enabled.

IDE HDD Auto Detection

The Enhance IDE features was included in all Award BIOS. Below is a brief description of this features.

ROM PCI/ISA BIOS (2A59GQTD)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

HARD DISKS TYPE SIZE CYLS HEAD PRECOMP LANDZ SECTOR MODE

Primary Master:

Select Primary Master Option (N = Skip) : N

OPTIONS	SIZE	CYLS	HEADS	PRECOMP	LANDZONE	SECTOR	MODE
1(Y)	516	1120	16	65535	1119	59	NORMAL
2	516	524	32	0	1119	63	LBA
3	516	560	32	65536	1119	59	LARGE

Note: Some OSes (like SCO-UNIX) must use "NORMAL" for installation

Figure 8 IDE HDD Auto Detection

1. Setup Changes

With auto-detection

- BIOS setup will display all possible modes that is supported by the HDD including NORMAL, LBA & LARGE.
- If HDD does not support LBA modes, no "LBA" option will be shown.
- If number of cylinders is less than or equal to 1024, no "LARGE" option will be shown.
- Users can select a mode which is appropriate for them.

With Standard CMOS Setup

	CYLS	HEADS	PRECOMP	LAND ZONE	SECTOR	MODE
Drive C : User(516MB)	1120	16	65535	1119	59	NORMAL
Drive D : None(203MB)	684	16	65535	685	38	-------

When HDD type is in "user" type, the "MODE" option will be opened for user to select their own HDD mode.

2. HDD Modes

The Award BIOS supports 3 HDD modes: NORMAL, LBA and LARGE, and Auto detect.

NORMAL

Generic access mode in which neither the BIOS nor the IDE controller will make any transformation during accessing. The maximum number of cylinder, head and sectors for NORMAL mode are 1024, 16 and 63.

If user set his HDD to NORMAL mode, the maximum accessible HDD size will be 528 Megabytes even though its physical size may be greater than that.

LBA (Logical Block Addressing) mode

A new HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders, head and sectors shown in setup may not be the number physically contained in the HDD.

During HDD accessing, the IDE controller will transform the logical address described by sector, head and cylinder number into its own physical address inside the HDD. The maximum HDD size supported by LBA mode is 8.4 Gegabytes.

LARGE mode

Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user do not wait LBA). The Award BIOS provides another alternative to support these kinds of HDD.

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside INT13h in order to access the right HDD address.

Auto detect

If using Auto detect, the BIOS will auto detect IDE hard disk mode and set it to one kind of HDD modes.

3. Remark

To support LBA or LARGE mode of HDDs, there must be some software involved. All these software are located in the Award HDD Service Routine (INT 13h). It may be failed to access a HDD with LBA (LARGE) mode selected if you are running under a Operating System which replaces the whole INT 13h.

Hard Disk Low Level Format Utility

This Award Low-Level-Format Utility is designed as a tool to save your time formatting your disk. The Utility automatically looks for the necessary information of the drive you selected. Utility also searches for bad tracks and list them for your reference.

Shown below is the Main Menu after you enter into the Award Low-Level-Format Utility.

Hard Disk Low-Level-Format Utility

SELECT DRIVE
BAD TRACK LIST
PREFORMAT

Current select drive is : C

DRIVE : C CYLINDER : 0 HEAD : 0

NO. CYLS HEAD

	SIZE	CYL	HEAD	PRECOMP	LANDZ	SECTORS	MODE
Primary Master	: 40MB	977	5	300	977	17	NORMAL
Primary Slave	: None	0	0	0	0	0	AUTO
Secondary Master	: None	0	0	0	0	0	AUTO
Secondary Slave	: None	0	0	0	0	0	AUTO

Up/Down - Select item Enter - Accept ESC - Exit/Abort

Figure 9 Hard Disk Low Level Format Utility

SELECT DRIVE

Select from installed hard disk drive C or D. List at the bottom of the screen is the drive automatically detected by the utility.

BAD TRACK LIST

Auto scan bad track

The utility will automatically scan bad tracks and list the bad tracks in the window at the right side of the screen.

Add bad track
Directly type in the information of the known bad tracks in the window at the right side of the screen.

Modify bad track
Modify the information of the added bad tracks in the window at the right side of the screen.

Delete bad track
Delete the added bad tracks in the window at the right side of the screen.

Clear bad track table
Clear the whole bad track list in the window at the right side of the screen.

PREFORMAT

Interleave
Select the interleave number of the hard disk drive you wish to perform low level format. You must select from 1 to 8. Check the documentation that came with the drive for the correct interleave number, or select 0 for utility automatic detection.

Auto scan bad track
This allows the utility to scan bad track or not.

Start
Press <Y> to start low level format.

Power-On Boot

If you have made all the changes to CMOS values and the system cannot boot with the CMOS values selected in Setup, restart the system by turning it OFF then ON or pressing the "RESET" button on the system case.

You may also restart by simultaneously press <Ctrl>, <Alt>, and <Del> keys.

Appendix A.
BIOS Upgrade Diskette

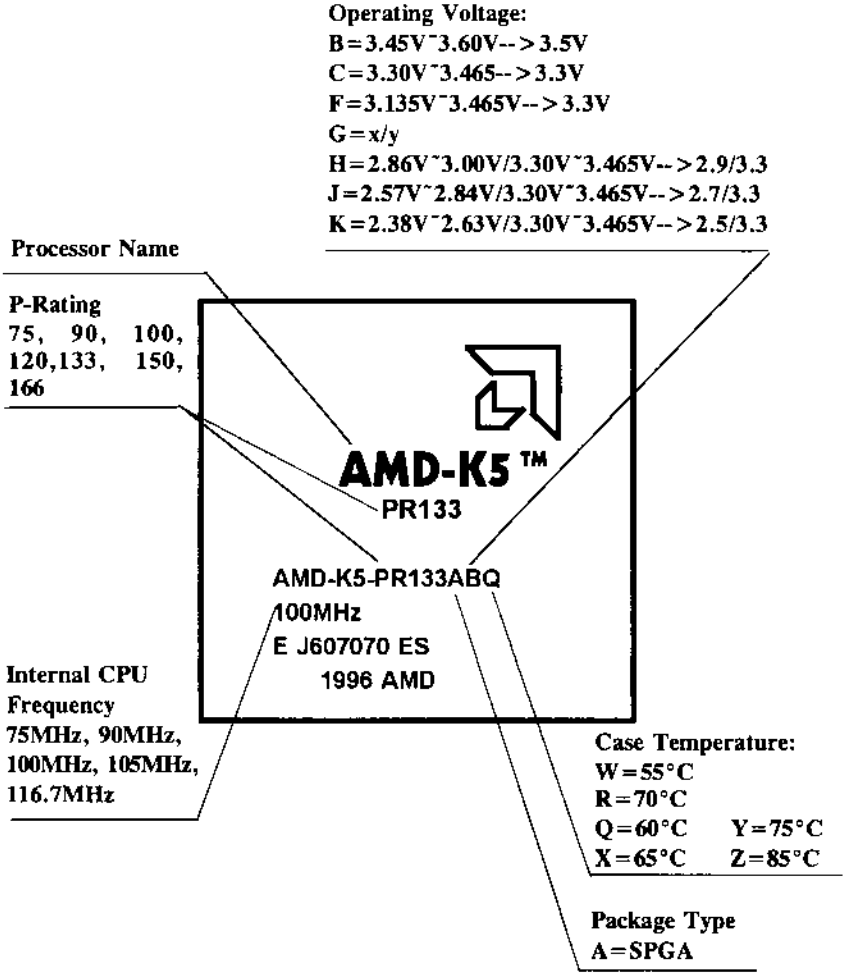
You may use this diskette to update your BIOS when necessary.

For the most update and additional information about BIOS upgrade, please refer to "README" in the "BIOS Upgrade Diskette".

Warning: Before you update your BIOS, you should look over the "README" file to avoid making mistake.

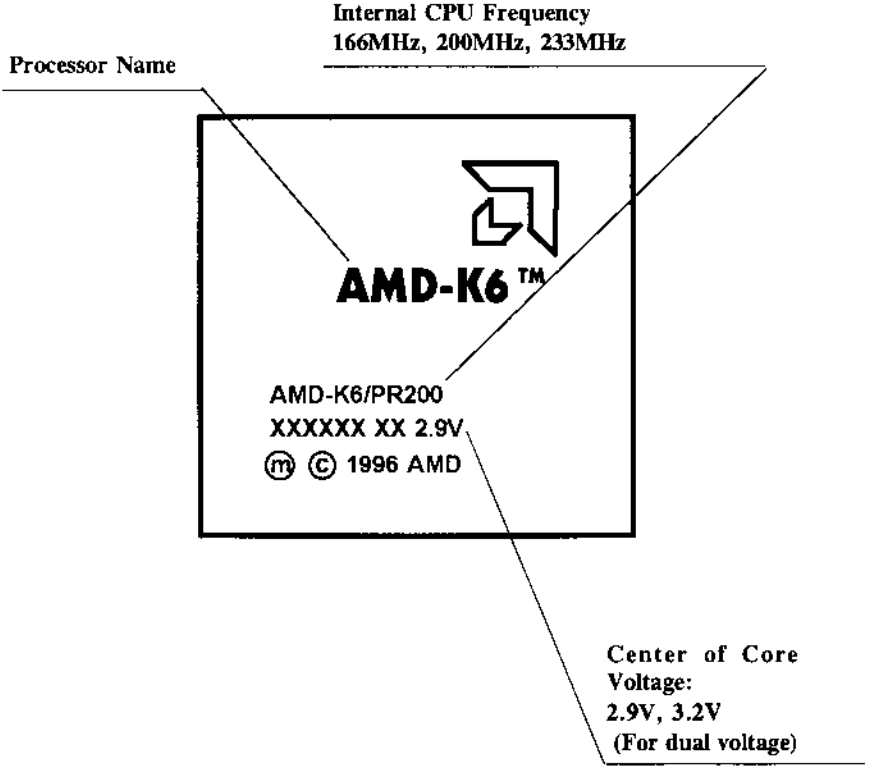
Appdix B.

Introduce AMD-K5 CPU mark :



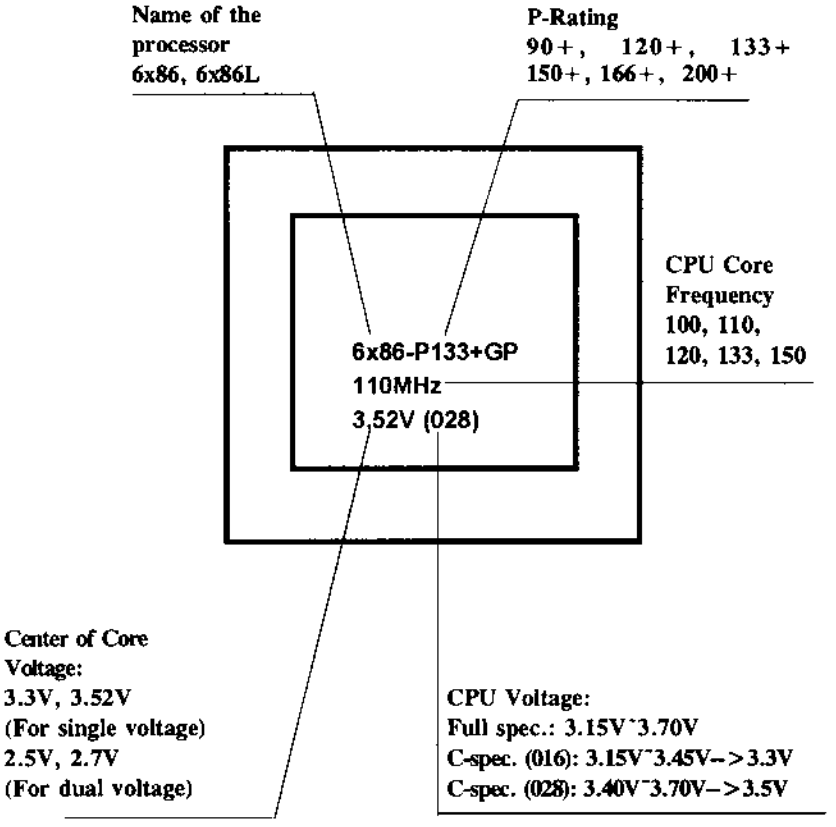
Appdix C.

Introduc AMD-K6 CPU mark :



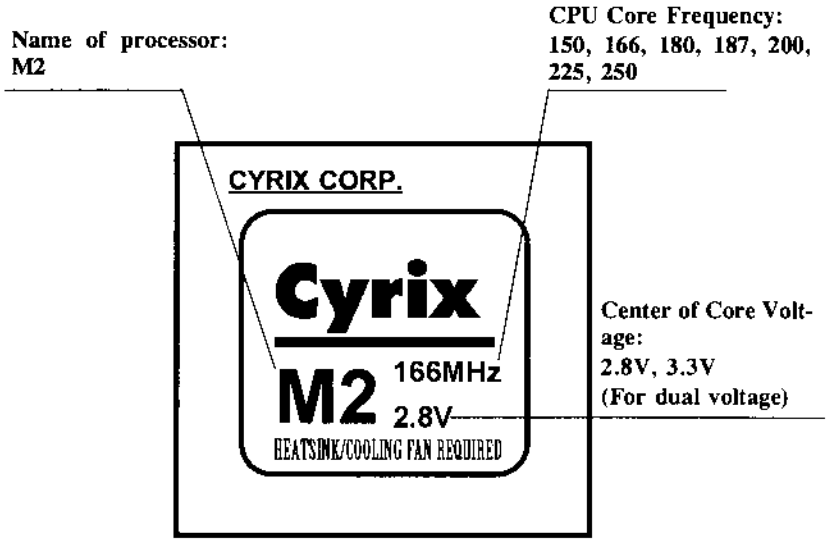
Appedix D.

Introduc Cyrix 6x86 CPU mark :



Appdix E.

Intorduce Cyrix M2 mark :



P/N: 430-01010-301
Manual Explorer IV Ver 1.0