Declaration of conformity

CE

QUANTUM DESIGNS(HK) LTD.
5/F Somerset House, TaiKoo Place 979 Kings Road,
Quarry Bay, Hong Kong

declares that the product

Pentium®II Motherboard
Advance 4

is in conformity with
(reference to the specification under which conformity is declared in accordance with 89/336 EEC-EMC Directive)

☑	EN 55022	Limits and methods of measurements of radio disturbance characteristics of information technology equipment
☑	EN 50081-1	Generic emission standard Part 1: Residential, commercial and light industry
☑	EN 50082-1	Generic immunity standard Part 1: Residential, commercial and light industry

European Representative:

QDI COMPUTER (UK) LTD	QDI COMPUTER (SCANDINAVIA) A/S
QDI SYSTEM HANDEL GMBH	QDI COMPUTER (NETHERLANDS) B. V.
QDI COMPUTER (FRANCE) SARL	QDI COMPUTER HANDELS GMBH
QDI COMPUTER (ESPANA) S.A.	QDI COMPUTER (SWEDEN) AB

Signature : _____ Place / Date : HONG KONG/1998

Printed Name : Anders Cheung Position/ Title : President

Declaration of conformity

Trade Name:	QDI Computer (U. S. A.) Inc.
Model Name:	Advance 4
Responsible Party:	QDI Computer (U. S. A.) Inc.
Address:	41456 Christy Street Fremont, CA 94538
Telephone:	(510) 668-4933
Facsimile:	(852) 668-4966
Equipment Classification:	FCC Class B Subassembly
Type of Product:	AGP Pentium®II Motherboard
Manufacturer:	**Quantum Designs (HK) Inc.**
Address:	5/F, Somerset House, TaiKoo Place 979 Kings Road, Quarry Bay, HONG KONG

Supplementary Information:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Signature : _____ Date : 1998

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Chapter 1
Introduction

Overview

The Advance 4 green motherboard utilizes the Via Apollo Pro chipset and provides a highly integrated solution for fully compatible, high performance PC/AT platform. It provides 66/75/100/103/112MHz system bus support for all Intel Pentium®II and Celeron™ processors. Both 66MHz/100MHz SDRAM with SPD and 66MHz EDO DIMMs are supported. It also provides advanced features such as AGP, wake-up on LAN and wake-up on internal/external modem.The green function is in compliance with the ACPI specification.

Key Features

Form factor

- BabyAT form factor of 220mm x 220mm.

Microprocessor

- Supports all Intel Pentium®II processors at 233/266/300/333MHz with 66MHz bus speed and 350/400/450MHz with 100MHz bus speed.
- Supports all Intel®Celeron™ processors at 266/300/333 MHz with 66MHz bus speed.
- Supports 66/75/100/103/112MHz host bus speed.
- CPU core frequency = Bus speed x2.5, x3, x3.5, x4, x4.5, x5, x5.5
- CPU core supply voltage adjustable from 1.3V to 3.5V through on- board switching voltage regulator with VID(Voltage ID).

Chipset

- Apollo Pro chipset: VT82C691 system controller
  VT82C596 PCI to ISA bridge

System memory

- Provides two 168 pin 3.3V unbuffered DIMM sockets.
- Supports both 66MHz/100MHz SDRAMs with SPD and 66MHz EDO DIMMs.
- Minimum memory size is 8MB, maximum memory size is 512MB.
- SDRAM 64 bit data interface with ECC support.

On-board IDE

- Supports two PCI PIO and Bus Master IDE ports.
- Two fast IDE interfaces supporting four IDE devices including IDE hard disks and CD - ROM drives.
- Supports up to PCI mode 4 timing.
- Supports "Ultra DMA/33" Synchronous DMA mode transferring up to 33 Mbytes/sec.
- Integrated 16x32bit buffer for IDE PCI Burst Transfers.

On-board I/O

- Use NS 87351 super I/O chip.
- One floppy port supporting up to two 3.5' ' or 5.25" floppy drives with 360K/720K/1.2M/1.44M/2.88M format.
- Two high speed 16550 fast compatible UARTs(COM1/COM2/COM3/COM4 selective) with 16-byte send/receive FIFOs.
- One enabled parallel port at the I/O address 378H/278H/3BCH with additional bi-direction I/O capability and multi-mode as SPP/EPP/ECP (IEEE 1284 compliant).
- Circuit protection provided, preventing damage to the parallel port when a connected printer is powered up or operates at a higher voltage.
- Supports LS-120 floppy disk drive.
- All I/O ports can be enabled/disabled in the BIOS setup.

Advanced features

- Provides Anti-Virus function.
- Provides on-board PS/2 mouse connector and its adapter.
- Two USB ports supported.
- Provides infrared interface.
- Supports Windows 95/98 software power-down when using an ATX power supply.
- Supports external modem ring power-on when using an ATX power supply.
- Supports wake-up on LAN and wake-up on internal modem when using an ATX power supply.
- On-board W83782D supports system monitoring (monitors the CPU and system temperature,voltages and fan speed) (manufacturing option).

BIOS

- Licensed advanced AWARD BIOS, supports DIP flash ROM, plug and play ready.
- Supports IDE CD-ROM or SCSI boot up.

Green function

- Supports ACPI (Advanced Configuration and Power Interface) and ODPM (OS Directed Power Management).
- Supports three green modes: Doze, Standby and Suspend.

Expansion slots

- 2 ISA slots and 3 PCI slots.
- 1 AGP Slot.

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Chapter 2

Installation Instructions

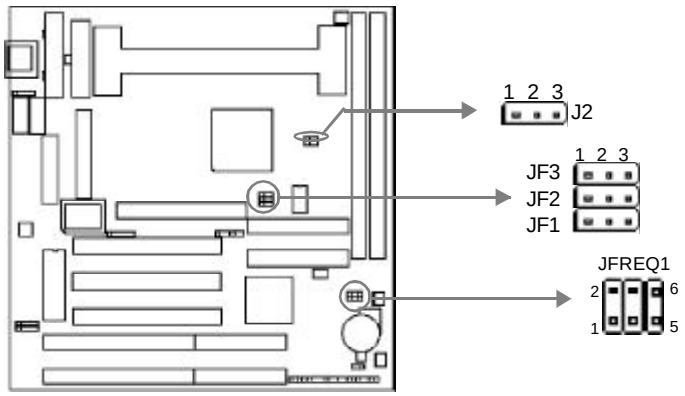
This section covers Jumper Settings,External Connectors and Memory Configuration. Refer to the motherboard layout chart for locations of all jumpers, external connectors, slots and I/O ports. Furthermore, this section lists all necessary connector pin assignments for your reference. The particular state of the jumpers, connectors and ports are illustrated in the following figures. Before setting the jumpers or inserting these connectors, please pay attention to the directions.

Be sure to unplug the AC power supply before adding or removing expansion cards or other system peripherals, otherwise your motherboard and expansion cards might be seriously damaged.

Jumper Settings

Hardware jumper settings are integrated on the motherboard. Pin1 of all jumpers are located on side with a thick white line (Pin1fi), referring to the motherboard silkscreen. Jumpers with three pins will be shown as which depicts pin1 &pin2 connected and depicting pin2&pin3 connected. Numerically, "1-2" means connecting pin1& pin2. "3-4" means connecting pin3&pin4. "5-6"means connecting pin5&pin6. "---" means open.

Please refer to the chart below for the location of all jumpers related to CPU frequency setting.



System Clock Selection (JF1, JF2, JF3)

These jumpers set the external frequency of the CPU, namely the Bus Clock. The AGP bus clock and PCI bus clock are also listed for your reference.

JF1	JF2	JF3	CPU (MHz)	AGP (MHz)	PCI (MHz)
2-3	1-2	1-2	66.6	66.6	33.3
2-3	2-3	1-2	75	75	37.5
1-2	1-2	1-2	100	66.6	33.3
1-2	1-2	2-3	103	66.67	34.33
1-2	2-3	1-2	112	74.6	37.3
1-2	2-3	2-3	133.3	88.87	44.43

Clock Multiple Selection (JFREQ1)

The motherboard provides eight selections of Clock Multiple. See the following jumper settings for details.

Multiple	JFREQ1		
	pin1 & pin2	pin3 & pin4	pin5 & pin6
2.0	1-2	3-4	5-6
2.5	1-2	3-4	---
3.0	1-2	---	5-6
3.5	1-2	---	---
4.0	---	3-4	5-6
4.5	---	3-4	---
5.0	---	---	5-6
5.5	---	---	---

The Bus Clock multiplied by the Clock Multiple equals the CPU internal frequency. Carefully set the Bus Clock and Clock Multiple by referring to the CPU list below.

CPU Model	Freq. (MHz)	SC (MHz)	Ratio	JF1	JF2	JF3	JFREQ1
Intel Pentium II (or Celeron)	233	66	3.5	2-3	1-2	1-2	1-2
	266	66	4.0	2-3	1-2	1-2	3-4, 5-6
	300	66	4.5	2-3	1-2	1-2	3-4
	333	66	5.0	2-3	1-2	1-2	5-6
	350	100	3.5	1-2	1-2	1-2	1-2
	400	100	4.0	1-2	1-2	1-2	3-4, 5-6
	450	100	4.5	1-2	1-2	1-2	3-4
	500	100	5.0	1-2	1-2	1-2	5-6

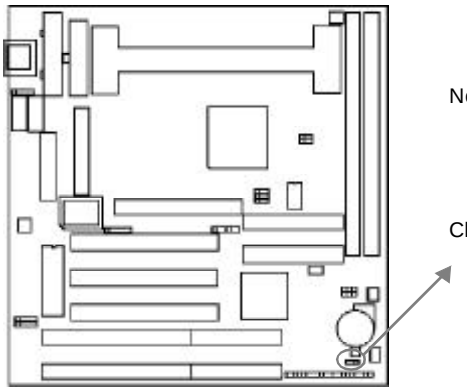
Memory Frequency Setting (J2)

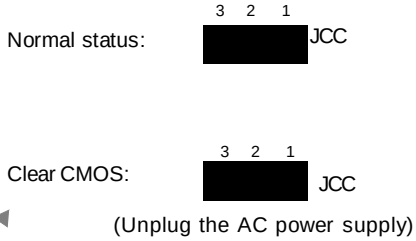
Memory clocks can be programmed synchronous with either CPU external clocks or AGP clocks. Choose your appropriate setting by setting J2 differently, referring to the list below. Syn. with CPU clock is more stable than Asyn., therefore if PC-100 spec. SDRAMs are used on your system, sychronous with CPU clock. If PC-66 spec. SDRAMs or EDO DIMMs are used on your system, and the System Bus Clock is lower than or equals to 75MHz, synchronous with CPU clock. However, if the System Bus Clock is higher than 75MHz, synchronous with AGP clock.

J2	Memory Frequency
2-3	Same as CPU external frequency
1-2	Same as AGP frequency

Clear CMOS (JCC)

If you want to clear CMOS, unplug the AC power supply first, close JCC(pin2&pin3) once, set JCC back to the normal status with pin1&pin2 connected, then power on the system.

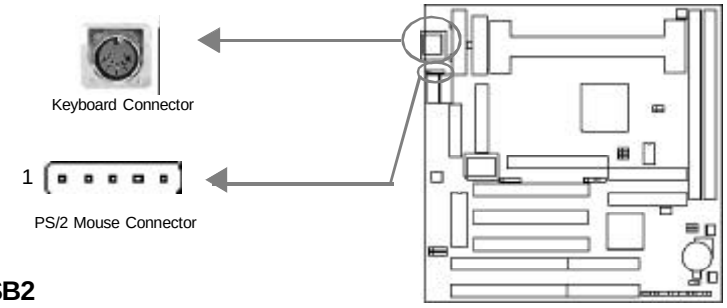




External Connectors

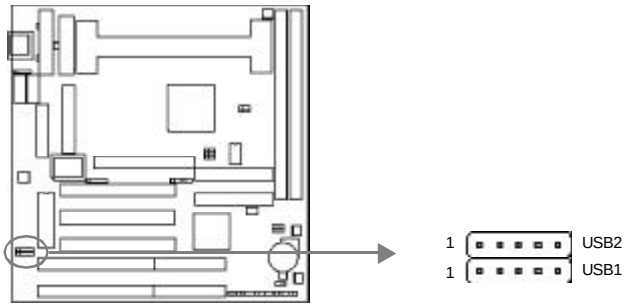
Keyboard Connector, PS/2 Mouse Connector

A standard AT size keyboard utilizes the keyboard connector. If using a PS/2 keyboard, an adapter should be used to fit this connector. A PS/2 mouse adapter with bracket is provided for utilizing a PS/2 mouse.



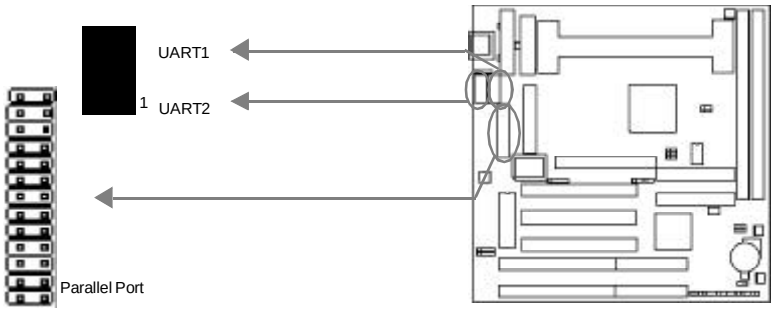
USB1, USB2

Two USB ports are available for connecting USB devices.



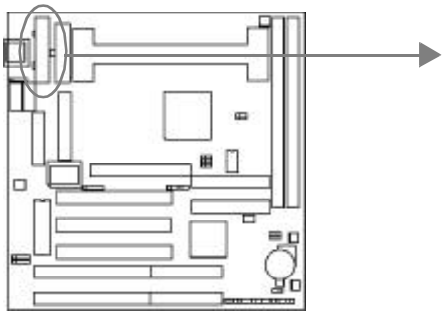
Parallel Port Connector and Serial Port Connector (UART1, UART2)

The parallel port connector can be connected to a parallel device such as a printer, while the serial port connectors can be connected to serial port devices such as a serial port mouse. You can enable/disable them and choose the IRQ or I/O address in "Integrated Peripherals" from AWARD BIOS SETUP. 1Parallel ribbon cable and 2 serial ribbon cables (9-pin connector, 25-pin connector) with brackets are provided for your convenience.

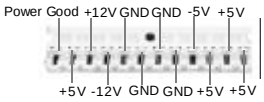


AT Power Supply Connector(ATPS)

Insert the AT power supply plugs (P8 and P9) to this connector. Make sure the direction is right by referring to the picture below.



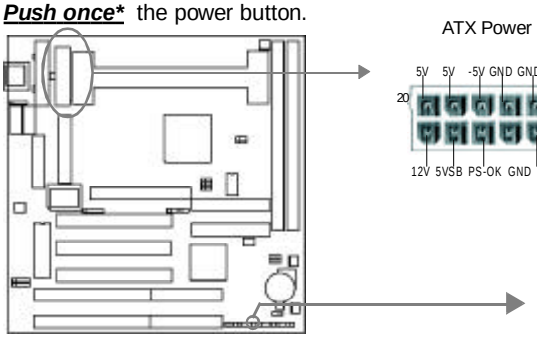
AT Power Supply Connector



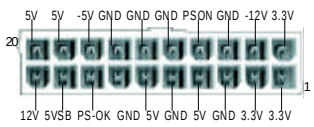
Direction of Power Plugs (P8&P9)

ATX Power Supply Connector(ATXPS)

When using an ATX power supply, be sure to connect the ATX power supply plug to the power connector in its proper orientation, and the power switch(power) should be connected to a momentary switch. when powering up your system, first turn on the mechanical switch of the power supply (if one is provided), then push once the power button. When powering off the system, you needn' t turn off the mechanical switch, just ***Push once**** the power button.



ATX Power Supply Connector



POWER

Note: * If you change "soft-off by PWR-BTTN" from default "Instant-off" to "Delay 4 Secs" in the "POWER MANAGEMENT SETUP" section of the BIOS, the power button should be pressed for more than 4 seconds before the system powers down.

Hard Disk LED Connector (HD_LED)

The connector connects to the case' s IDE indicator LED indicating the activity status of IDE hard disk.

Reset Switch (RESET)

The connector connects to the case' s reset switch. Press the switch once, the system resets.

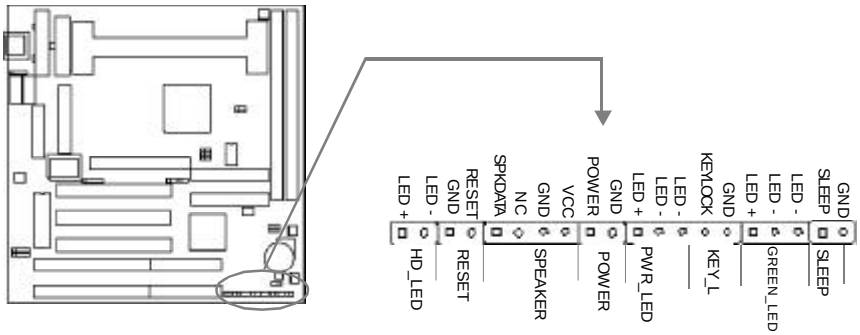
Speaker Connector (SPEAKER)
The connector can be connected to the speaker on the case.

Power LED Connector (PWR_LED)
The power LED has three status. When no AC power supply is present, the LED is off. When the system is in soft power-down status, the LED glows dimly. When the system is powered up, the LED is on.

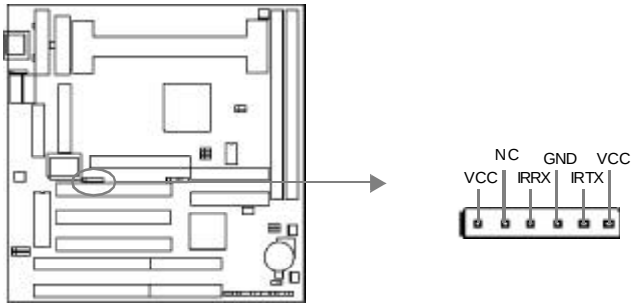
Key-Lock Connector (KEY_L)
The connector can be connected to the keyboard lock switch on the case for locking the keyboard.

Green LED Connector (GREEN_LED)
The green LED has four status. When no AC power supply is present, the LED is off. When the system is in soft power-down status, the LED glows dimly. When the system is powered up, the LED is on. When the system enters suspend mode, the LED will flash. If an AT power supply is used, the soft power-down status would not be available.

Hardware Green Connector (SLEEP)
Push once the switch connected to this header and the system enters suspend mode.

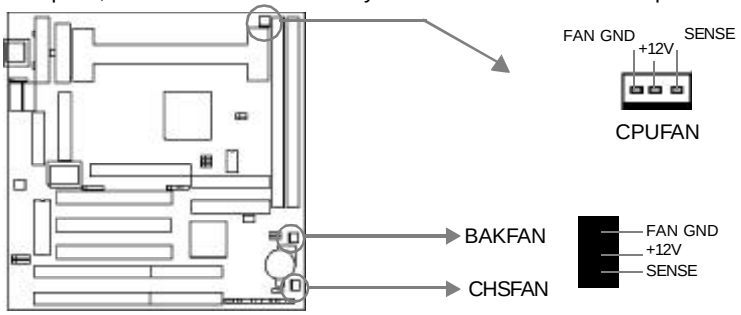


Infrared Header (IrDA)
This connector supports wireless transmitting and receiving. If using this function, configure the settings of ' Serial Port 2 Mode' from the INTEGRATED PERIPHERALS section of the BIOS.



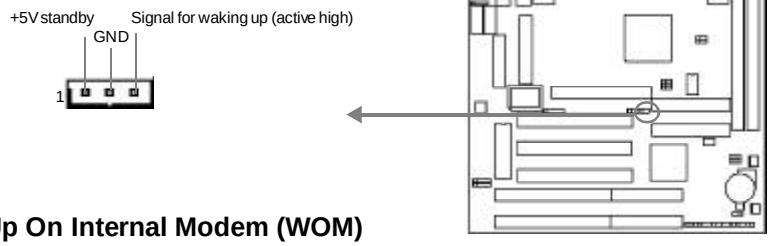
Fan Connector (CPUFAN, CHSFAN, BAKFAN)

If the system monitor hardware is integrated on the motherboard, the system detects the fan speed, which can be viewed in "System Monitor" of CMOS setup.



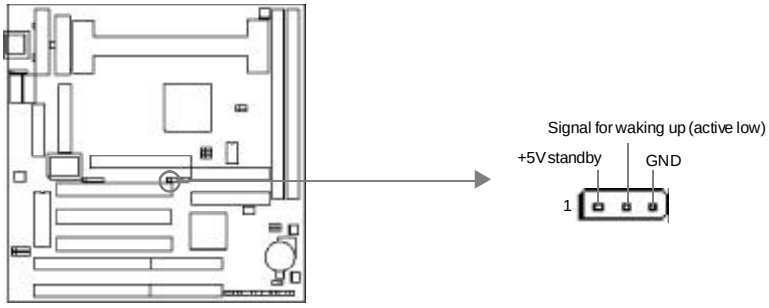
Wake-Up On LAN (WOL)

Through the Wake-Up On LAN function, a wake event occurring from the network can wake up the system. If this function is to be used, please be sure an ATX 2.01 power supply of which 5VSB line is capable of delivering 720mA, and a LAN adapter which supports this function, are used. Then connect this header to the relevant connector on the LAN adapter, set "Wake Up On LAN/Ring" as Enabled in the "POWER MANAGEMENT SETUP" section of the BIOS. Save & exit, then boot the operating system once to make sure this function takes effect.



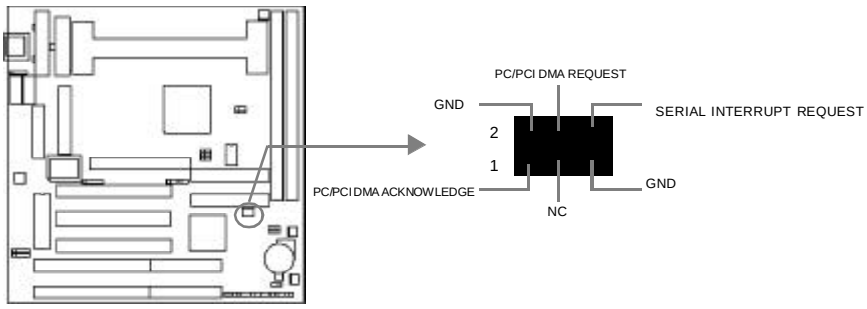
Wake-Up On Internal Modem (WOM)

Through the Wake-Up On Internal Modem function, the system which is in the power-off status can be powered on by a ring signal received from the internal modem. If this function is to be used, be sure an internal modem card which supports the function is used. Then connect this header to the relevant connector on the modem card, set "Wake Up On LAN/Ring" as Enabled in the "POWER MANAGEMENT SETUP" section of the BIOS. Save & exit, then boot the operating system once to make sure this function takes effect.



Sound Connector (PC-PCI)

The PCI sound card utilizes this connector.



Expansion Slots & I/O Ports description

Slot / Port	Description
ISA 1	First ISA slot.
ISA 2	Second ISA slot.
PCI1	First PCI slot.
PCI2	Second PCI slot.
PCI3	Third PCI slot.
IDE1	Primary IDE port.
IDE2	Secondary IDE port.
FLOPPY	Floppy Drive Port.
AGP	Accelerated Graphics Port.

Memory Configuration

This motherboard provides two 168 pin 3.3V un-buffered DIMM sockets which supports a flexible memory size ranging from 8MB/256MB for SDRAM or from 8MB/512MB for EDO memory. Both 66MHz/100MHz SDRAM with SPD and 66MHz EDO DIMMs are supported. The following set of rules allow optimum configurations.

General DIMM notes:

- EDO/SDRAM DIMMs can not be used on the same system, it is advised you use only one kind of DIMM.
- Using the serial presence detect (SPD) data structure, programmed into an E^2PROM on the DIMM, the BIOS can determine the SDRAM' s size and speed.
- The DRAM Timing register, which provides the DRAM speed grade control for the entire memory array, must be programmed to use the timing of the slowest DRAMs installed.
- Possible SDRAM DIMM memory sizes are 8MB, 16MB, 32MB, 64MB, 128MB in each DIMM socket.
- Possible EDO DIMM memory sizes are 8MB, 16MB, 32MB, 64MB, 128MB, 256MB in each DIMM socket.
- Memory clocks can be programmed synchronous with either CPU clocks or AGP clocks. Choose your appropriate settings by setting J2 differently. Syn. is more stable than Asyn., so if PC-100 spec. SDRAMs are used on your system, synchronous with CPU clock. If PC-66 spec. SDRAMs or EDO DIMMs are used on your system, and the System Bus Clock is lower than or equals to 75MHz, synchronous with CPU clock. However, if the System Bus Clock is higher than 75MHz, synchronous with AGP clock. Refer to ' Jumper Settings' for information on how to set jumper J2.

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Chapter 3
BIOS Description

Utility Support:

FLASH.EXE

This is a flash memory write/read utility used for the purpose of updating your BIOS when necessary. Before doing so, please note:

- **We strongly recommend you only upgrade BIOS when encountering problems.**
- **Before upgrading your BIOS, review the description below to avoid making mistakes, resulting in a destroyed BIOS and a non-working system.**

When you are encountering problems, for example, you find your system doesn't support the new CPU which is released after our current motherboard, you may therefore update the BIOS.

Follow the steps exactly for a successful upgrade.

1. Create a bootable system floppy diskette, by typing FORMAT A:/s from the DOS prompt under DOS6.xx or Windows 9x environment.

2. Copy FLASH.EXE from the directory \Utility located on the QDI Motherboard Utility CD onto your new bootable diskette.

3. Obtain the updated BIOS file from your retailer. Please be sure to get the suitable BIOS file for the motherboard.

4. Uncompress the file received, copy the BIOS file (xx.bin) onto the bootable diskette, and note the checksum of this BIOS which is included in readme file.

5. Reboot the system from the bootable diskette created.

6. Then run the FLASH utility at the **A:** prompt. During this process, the system will prompt : ' Do you want to save the BIOS(Y/N)' . If you type ' Y' , the system will prompt for the BIOS name. The system will also display the checksum which should be exactly the same as the checksum you copied from the readme file. Don't turn off power or reset the system until the BIOS upgrade has been completed.

Concerning how to run the FLASH utility, please refer to the following descriptions:

Usage: FLASH [BIOSfile] [/c[<command...>]][/n]

FLASH [BIOSfile] [/g]

/c: Flashing memory will clear previous settings. Default allows settings to remain.

<command> function definition:

c: clear CMOS;

p: clear PnP;

d: clear DMI.

/n: programs BIOS without prompting. If this option is chosen:

Be sure your new BIOS is compatible with your MB. If not, the system will be damaged.

/g: Retrieves BIOS file from BIOS ROM.

Examples:

A:\FLASH.EXE BIOSfile.bin

A:\FLASH.EXE BIOSfile.bin /cdpc/n

A:\FLASH.EXE BIOSfile.bin /g

Note: FLASH utility runs incorrectly at Windows DOS prompt.

AWARD BIOS Description

Entering Setup

Power on the computer, when the following message briefly appears at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press the <Ctrl> + <Alt> + <Esc> keys, to enter the AWARD BIOS CMOS Setup Utility.

Press <Del> to enter SETUP

Once you have entered, the Main Menu (Figure 1) appears on the screen. The main menu allows you to select from eleven setup functions and two exit choices. Use the arrow keys to select among the items and press the <Enter> key to accept or enter the sub-menu.

Figure-1 Main Menu

Note:The 'System Monitor' item will not be displayed if there is no system monitor hardware on the motherboard.

Load Setup Defaults

The Setup Defaults are common and efficient. It is recommended that users load the setup defaults first, then modify the needed configuration settings.

Standard CMOS Setup

The basic CMOS settings included in 'Standard CMOS Setup' are Date, Time, Hard Disk Drive Types, Floppy Disk Drive Types, and VGA etc. Use the arrow keys to highlight the item, then use the <PgUp> or <PgDn> keys to select the value you want in each item.

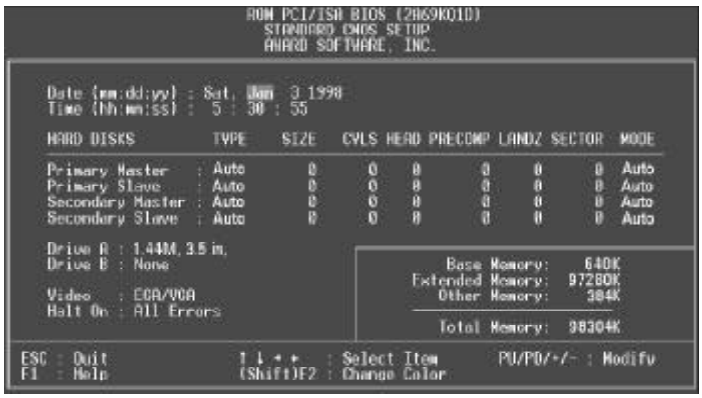

Figure-2 Standard CMOS Setup Menu

Hard Disk

Primary Master/Primary Slave/Secondary Master/Secondary Slave

These categories identify the HDD types of 2 IDE channels installed in the computer system. There are three choices provided for the Enhanced IDE BIOS: None, Auto, and User. ' None' means no HDD is installed or set; ' Auto' means the system can auto-detect the hard disk when booting up; by choosing ' user' , the related information should be entered regarding the following items. Enter the information directly from the keyboard and press < Enter>:

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

Video

Set this field to the type of video display card installed in your system.

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

Halt On

This category determines whether or not the computer will stop if an error is detected during powering up.

No errors	The system boot will not stop for any errors that may be detected.
All errors	Whenever the BIOS detects a non-fatal error, the system will stop 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

This is a Display-Only Category, 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 the memory that can be used for different applications. Shadow RAM is most used in this area.
Total Memory	Total memory of the system equals the sum of the above memory.

BIOS Features Setup

Figure-4 BIOS Features Setup Menu

The following indicates the options for each item and describes their meaning.

Item	Option	Description
● Virus Warning	*Enabled*	Activated 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 appears when anything attempts to access the boot sector or hard disk partition table.
● CPU L1/L2 Cache	*Enabled*	Enables CPU internal Level1/Level2 cache.
	Disabled	Disables CPU internal Level1/Level2 cache.
● CPU L2 Cache ECC	*Enabled*	Enables CPU L2 Cache ECC (Error Checking and Correction) function.
	Disabled	Disables CPU L2 Cache ECC function.
● Quick Power On Self Test	*Enabled*	Enables 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 from LAN first	*Enabled*	Boot from LAN is ahead of any boot sequence selection (LAN adapter must support this function)
	Disabled	Does not boot from LAN first.
● Boot Sequence	*C,A,SCSI,... C,CDROM,A LS/ZIP, C*	Any search sequency can be chosen for booting.
● Swap Floppy Drive	*Enabled*	Exchanges the assignment of A&B floppy drives.
	Disabled	The assignment of A&B floppy drives are normal.

● 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 the keyboard controller or chipset hardware.
	Fast	Default setting. The A20 signal is controlled by Port 92 or the chipset specific method.
● Password Setting	*System*	The system will not boot and access to BIOS Setup will be denied if the correct password is not entered when prompted.
	Setup	The system will boot up, but access to BIOS Setup will be denied if the correct password is not entered when prompted.
● IDE Second Channel Control	*Enabled*	Enables the second IDE channel.
	Disabled	Disables the second IDE channel and releases the IRQ.
● OS Select For DRAM>64MB	*Non-OS2*	If your operating system is not OS/2, please select this item.
	OS2	If system DRAM is more than 64MB and the operating system is OS/2, please select this item.
● Report No FDD For Win95	*Yes*	Reports no FDD for Win95.
	No	Does not report FDD for Win95.
● 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:	*Enabled*	Optional ROM will be copied to RAM by 16K bytes per unit.
DC000-DFFFF Shadow:	*Disabled*	The shadow function is disabled.

Chipset Features Setup

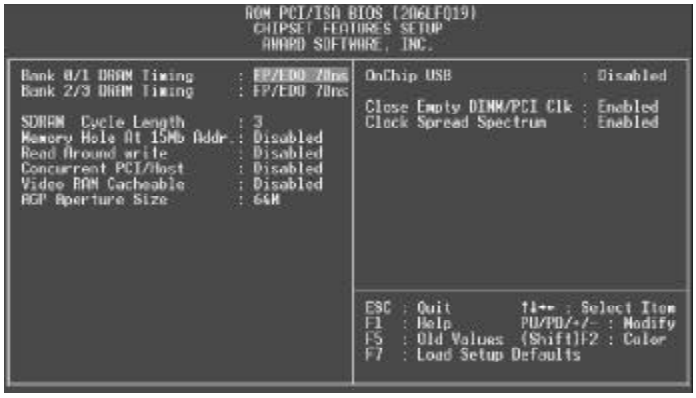

Figure-5 Chipset Features Setup Menu

The following indicates the options for each item and describes their meaning.

Item	Option	Description
● Bank 0/1, 2/3, DRAM Timing	*60ns* *70ns* *Normal* *Medium* *Fast*	These items are of selected EDO DRAM read/write timing. Ensure your DIMMs are as fast as 60ns, otherwise select 70ns. The faster you choose, the higher performance you receive.
● SDRAM Cycle Length	*2/3*	Define the CLT timing parameter of SDRAM expressed in 66MHz clocks. Latency Time = 2 clocks Latency Time = 3 clocks
● Memory Hole at 15MB Addr	*Enabled*	Memory Hole at 15~16M is reserved for expanded ISA card.
	Disabled	Do not set this memory hole.
● Read Around Write	*Enabled*	Enables read around Write.
	Disabled	Disables read around write.
● Concurrent PCI/ HOST	*Enabled*	Enables concurrent PCI/Host.
	Disabled	Disables concurrent PCI/Host.
● Video RAM Cacheable	*Enabled*	Besides conventional memory, video RAM is also cacheable.
	Disabled	Video RAM area is not cacheable.
● AGP Aperture Size (MB)	*4~256*	Sets the effective size of the Graphics Aperture to be used in the particular PAC Configuration.
● Onchip USB	*Enabled*	Enables the onchip USB controller.
	Disabled	Disables the onchip USB controller.

• USB Keyboard Support	*Enabled*	USB keyboard support is enabled.
	Disabled	USB keyboard support is disabled.
• Close Empty DIMM/PCI Clk	*Enabled*	Closes empty DIMM or PCI clock to reduce EMI.
	Disabled	Does not close empty DIMM or PCI clock.
• Clock Spread Spectrum	*Enabled*	Enables Clock Spread Spectrum to reduce EMI.
	Disabled	Disables Clock Spread Spectrum.

Power Management Setup

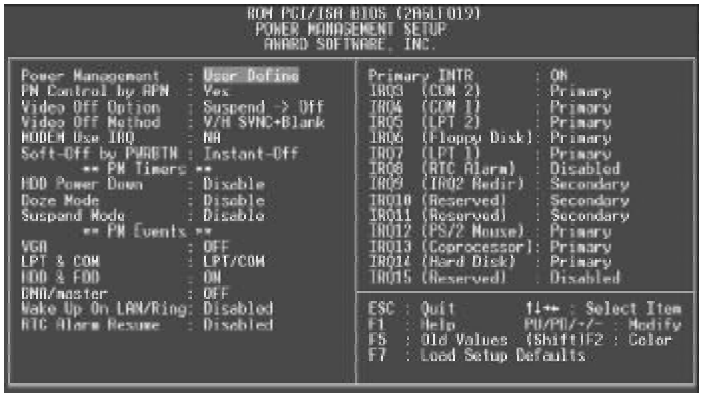

Figure-6 Power Management Setup Menu

The following indicates the options for each item and describes their meaning.

Item	Option	Description
• Power Management	User Define	Users can configure their own Power Management Timer.
	Min Saving	Pre - defined timer values are used. All timers are in their MAX values.
	Max Saving	Pre - defined timer values are used. All timers are in their MIN values.
• PM Control by APM	No	System BIOS will ignore APM when Power Management is enabled.
	Yes	System BIOS will wait for APM' s prompt before entering any PM mode e.g. Standby or Suspend.
• Video off Option	*Suspend-off*	The system BIOS will disable the video when entering suspend mode.
	All Modes-off	The system BIOS will disable the video when entering all power-saving mode.
	Always On	The video remains on.
• 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 Support	This function is enabled only for the VGA card supporting DPMS.

● Soft-off by PWRBTN	*Instant-off*	The system will power off immediately once the power button is pressed.
	Delay 4 Sec	The system will not power off until the power button has been pressed continuously for more than 4 seconds.
● HDD Power Down	*Disabled*	Disables HDD Power Down Timer.
	1 ~15 Min	Defines the continuous HDD idle time before the HDD enters power saving mode (motor off).
● Doze mode	*Disabled*	The system never enters Doze mode.
	10Sec ~ 1 Hr	Defines the continuous idle time before the system enters Doze mode. If any items defined in "PM Events" are on and activated, the system will be woken up.
● Suspend Mode	*Disabled*	The system never enters Suspend mode.
	10Sec~ 1Hr	Defines the continuous idle time before the system enters Suspend mode. If any items defined in "PM Events" are on and activated, the system will be woken up.
● VGA	*On*	VGA active reloads global timer.
	Off	VGA active has no influence to global timer.
● LPT&COM	*LPT/COM*	Set the options of these items to reload global timer.
HDD&FDD	*OFF/ON*	
DMA/master	*ON/OFF*	
● Wake Up On LAN/ Ring	*Enabled*	Allows the system to be powered on when a remote wake up signal comes up to the WOL header from LAN adapter, or when a ring indicator signal comes up to UART1/UART2 from an external modem or comes up to WOM header from an internal modem card.
	Disabled	Does not allow wake up on LAN.
● RTC Alarm Resume	*Enabled*	RTC alarm can be used to generate a wake event to power up the system which is in soft power-down status. You can set any date or any time to power up the system.
	Disabled	RTC has no alarm function.
● Primary INTR IRQ (3-15)	*Primary*	Reload global timer.
	Secondary	No influence to global timer, except finishing an operation that IRQ "X" requests.
	Disabled	No influence to global timer.

PNP/PCI Configuration Setup

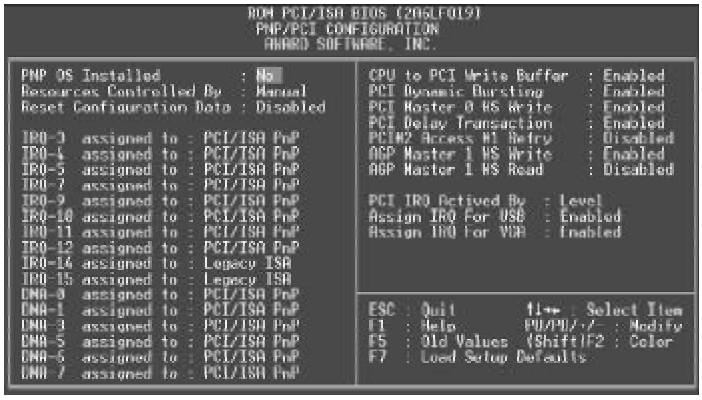

Figure-7 PNP/PCI Configuration Setup Menu

The following indicates the options for each item and describes their meaning.

Item	Option	Description
• PNP OS Installed	*Yes*	Device resources assigned by PnP OS.
	No	Device resources assigned by BIOS.
• Resources Controlled By	*Manual*	Assigns the system resources (IRQ and DMA) manually .
	Auto	Assigns system resources (IRQ and DMA) automatically by BIOS.
• Reset Configuration Data	*Disabled*	The Configuration data will not be reset.
	Enabled	The configuration data will be reset to the default setting.
• 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.
• CPU to PCI Write Buffer	*Enabled*	Enables CPU to PCI Write Buffer.
	Disabled	Disables CPU to PCI Write Buffer.
• PCI Dynamic Bursting	*Enabled*	Enables PCI Dynamic Bursting.
	Disabled	Disables PCI Dynamic Bursting.
• PCI Master 0 ws Write	*Enabled*	Enables PCI Master ws Write.
	Disabled	Disables PCI Master ws Write.

● PCI Delay Transacition	*Enabled*	Enables PCI Delay Transaction.
	Disabled	Disables PCI Delay Transaction.
● PCI #2 Access #1 Retry	*Enabled*	Enables PCI #2 Access #1 Retry.
	Disabled	Disables PCI #2 Access #1 Retry.
● AGP Master 1 ws Write	*Enabled*	Enables AGP Master 1 ws Write.
	Disabled	Disables AGP Master 1 ws Write.
● AGP Master 1 ws Read	*Enabled*	Enables AGP Master 1 ws Read.
	Disabled	Disables AGP Master 1 ws Read.
● PCI IRQ Actived By	*Level*	Select PCI IRQ Active mode.
	Edge	
● Assign IRQ for USB	*Enabled*	Assigns an IRQ for USB. If an USB device is used, enables this item.
	Disabled	Does not assign an IRQ for USB. If no USB device is used, disabling this item can release the IRQ.
● Assign IRQ for VGA	*Enabled*	Assigns the needed IRQ for the VGA Card.
	Disabled	Does not assign an IRQ for the VGA card, in order to release the IRQ.

Integrated Peripherals

Figure-8 Integrated Peripherals Menu

The following indicates the options for each item and describes their meaning.

Item	Option	Description
● OnChip IDE channel 0/1	*Enabled*	Enables OnChip IDE First/Second Channel.
	Disabled	Disables OnChip IDE First/Second Channel.
● IDE Prefetch/Mode	*Enabled*	Enables IDE Prefetch Mode.
	Disabled	Disables IDE Prefetch Mode.
● IDE HDD Block Mode	*Enabled*	Allows IDE HDD to read/write several sectors at once.
	Disabled	IDE HDD only read/write a sector once.
● IDE Primary/ Secondary Master/Slave PIO	*Mode 0 - 4*	Defines the IDE primary/secondary master/ slave PIO mode.
	Auto	The IDE PIO mode is defined by auto -detection.
● IDE Primary/ Secondary Master/Slave UDMA	*Auto*	Ultra DMA mode will be enabled if an ultra DMA device is detected.
	Disabled	Disables this function.
● Init Display First	*PCI SLOT*	Initializes the PCI VGA first. If a PCI VGA card and an AGP card are installed together in the system, the one initialized first functions.
	AGP	Initializes the AGP first.
● Onboard FDC Controller	*Enabled*	Onboard floppy disk controller is enabled.
	Disabled	Onboard floppy disk controller is disabled.

● Onboard Serial Port 1/2	*3F8/IRQ4,*	Defines the onboard serial port address and required interrupt number.
	2F8/IRQ3,	
	3E8/IRQ4,	
	2E8/IRQ3,	
	Auto	Onboard serial port address and IRQ are automatically assigned
	Disabled	Onboard serial port is disabled.
● Serial Port 2 Mode	*Standard*	Defines Serial Port 2 as standard serial port.
	Sharp IR	Supports SHARP ASK-IR protocol with maximum baud rate up to 57600bps.
	IrDA SIR	Supports IrDA version1.0 SIR protocol with maxiumum baud rate up to 115.2Kbps.
● Onboard Parallel Port	*378/IRQ7,*	Defines onboard parallel port address and IRQ channel.
	278/IRQ5,	
	3BC/IRQ7	
	Disabled	Onboard parallel port is disabled.
● Parallel Port Mode	*SPP*	Defines the parallel port mode as Standard Parallel Port (SPP), Enhanced Parallel Port (EPP), or Extended Capabilities Port (ECP).
	EPP	
	ECP,	
	ECP+EPP	

System Monitor

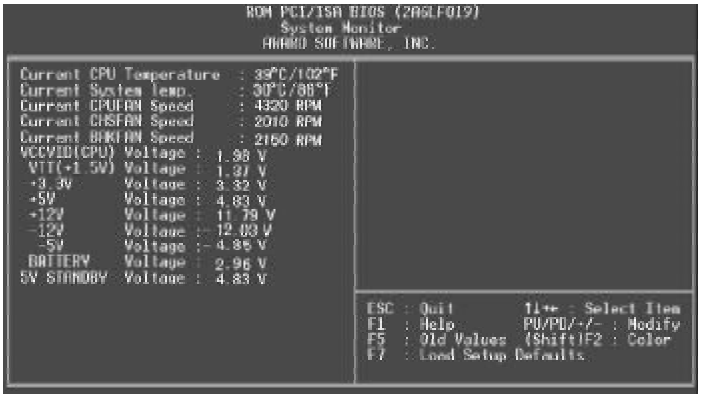

Figure-9 System Monitor Menu

The following describes the meaning of each item.

Item	Current Data Shown	Description
● Current CPU Temperature	*39°C/ 102°F*	The temperature of CPU core.
● Current System Temp.	*30°C/ 86°F*	The temperature inside the chassis.
● Current CPUFAN Speed	*4320RPM*	RPM(Revolution Per Minute) speed of fan
Current CHSFAN Speed	*2010RPM*	connected to the fan header CPUFAN/ CHSFAN/BAKFAN.
Current BAKFAN Speed	*2150RPM*	Fan speed value is based on an assumption that tachometer signal is two pulses per revolution; In other cases, you should regard it relatively.
● VCCVID(CPU) Voltage	*1.98V*	Displays current Voltage values including all
VTT(+1.5V) Voltage,	*1.37V*	significant voltages of the motherboard.
+3.3V Voltage	*3.32V*	+3.3V, +5V, +12V, -12V, -5V are voltages
+ 5V	*4.84V*	from the ATX power supply, VTT (+1.5)
+12V	*11.79V*	Voltage is GTL Termination Voltage from
-12V	*-12.03V*	the on-board regulator, and VCCVID (CPU)
- 5V	*-4.85V*	Voltage is CPU Core Voltage from the on board switching Power Supply.
● BATTERY Voltage	*2.96V*	The voltage of the Lithium battery.
● 5V STANDBY Voltage	*4.83V*	The voltage of 5V standby from the power supply.

IDE HDD Auto Detection

The Enhanced IDE features are included in all Award BIOS. Below is a brief description of these features.

ROM PCI/ISA BIOS (2A69KQ10)
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

OPTION	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
2(Y)	541	525	32	0	1049	67	LBA
1	541	1050	16	65535	1049	63	NORMAL
3	541	525	32	65535	1049	63	LARG

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

ESC: Skip

Figure-11 IDE HDD Auto Detection Menu

1. Setup Changes

With auto-detection

- BIOS setup will display all possible modes supported by the HDD including NORMAL, LBA and LARGE.
- If HDD does not support LBA modes, no 'LBA' option will be shown.
- If number of physical cylinder is less than or equal to 1024,' LARGE' option may not be shown.
- Users can select their appropriate mode .

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 set as 'user' , the 'MODE' option will be available for users to select their own HDD mode.

2. **HDD Modes**

The Award BIOS supports 3 HDD modes: NORMAL, LBA and LARGE, also 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 cylinders, heads and sectors for NORMAL mode are 1024,16 and 63.

If the user sets 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, heads 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 Gigabytes.

LARGE mode

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

BIOS tricks DOS (or other OS) into recognizing 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 automatically detect the IDE hard disk mode and set it as one of the three modes.

3. **Remark**

To support LBA or LARGE mode of HDDs, there must be some softwares involved which are located in Award HDD Service Routine(INT13h).It may fail to access a HDD with LBA (LARGE) mode selected if you are running under an Operating System which replaces the whole INT 13h.

Boot with BIOS defaults

If you have made all the changes to CMOS values and the system can not boot with the CMOS values selected in setup, clear CMOS after power-down, then power on again. System will boot with BIOS default settings.

Supervisor/ User Password

When this function is selected, the following message appears 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.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter BIOS Setup freely.

PASSWORD DISABLED

If you have selected '**System**' in 'Password Setting' of 'BIOS Features Setup' menu, you will be prompted for the password every time the system reboots or any time you try to enter BIOS Setup.

If you have selected '**Setup**' at 'Password Setting' from 'BIOS Features Setup' menu, you will be prompted for the password only when you enter BIOS Setup.

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

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Appendix A

QDI Motherboard Utility CD-ROM

A QDI Motherboard Utility CD-ROM is supplied with each motherboard. The contents used for this motherboard are:

1. Chipset Dispatches:
Via Chipset Drivers included in the directory \ChipDrv\Via\ApolloPro&VIABX can be used for this mainboard. Run \ChipDrv\Via\ApolloPro&VIABX\Autorun.exe, installing the drivers below one by one.

(1) IDE Driver
This is Via Bus Master PCI IDE Driver which can be installed on either Windows 95 or Windows NT system, for supporting Ultra DMA/33MB. It also can remove the yellow question mark in the Device Manager of Windows 95 after installation.
(2) IRQ Routing Program
Installed on Windows 95 or Windows 98.
(3) VxD Driver
Installed on Windows 95/98 for supporting AGP. For all AGP feature benefits, you need to upgrade your Windows 95 OSR2.0 to OSR2.1 by installing USB supplement provided by Microsoft, also DirectX 5.0 from Microsoft.
(4) ACPI Patch Program
Installed on Windows 95 or Windows 98.

2. PC-cillin Anti-Virus software:
For Windows 95/98 English version, it is located in the directory \Pccillin\Win9x. Run Setup.exe for installation.
For Windows NT English version, it is located in the directory \Pccillin\WinNT4.0. Run Setup.exe for installation. S/N is PNEF-9991-6558-5857-5535.

3. QDI ManageEasy:
Run Setup.exe from the directory \QME to install the ManageEasy. For detailed information about QDI ManageEasy, refer to the ManageEasy Manual included in the directory \Doc. Please note, hardware is a manufacturing option.

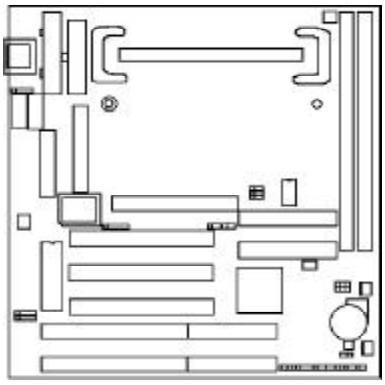
4. QDI Motherboard Utility:
The utilities located in the directory \Utility are:
FLASH.EXE
CBLOGO.EXE
LF.EXE
Refer to the online help for information on how to use these utilities.

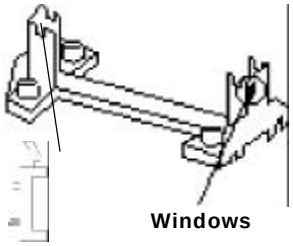
5. Documents for QDI Motherboard:
The files included in the directory \Doc are:
Adobe Acrobat Reader V3.0 —ar32e301.exe
ManageEasy Manuals —QMEV12.PDF.

Appendix B.

Retention Mechanism & Pentium® II/ Celeron™ Processor Installation Procedures

1. Place Plastic Guide with plastic caps on the motherboard, and secure all four caps.



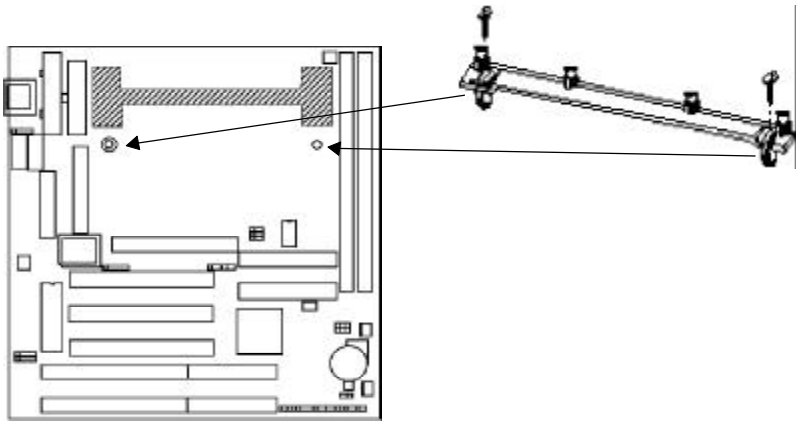


Note: 1. Please choose four caps which match the motherboard.

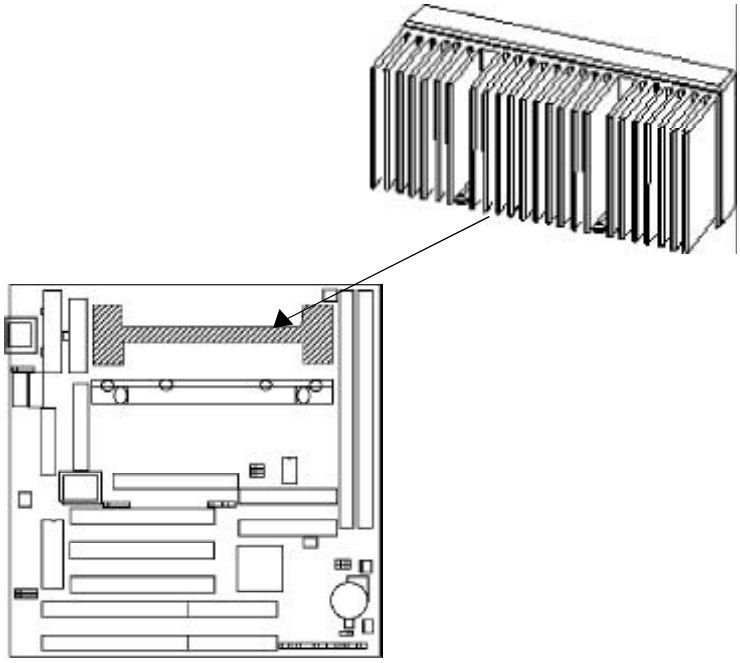
2. If choosing to use Celeron™ Processor, snap-on Celeron fittings onto the Plastic Guide.

3. Please note the Plastic Guide has one orientation. If one way doesn' t fit, change the direction to the other way. Do not forcefully press the Plastic Guide onto the motherboard.

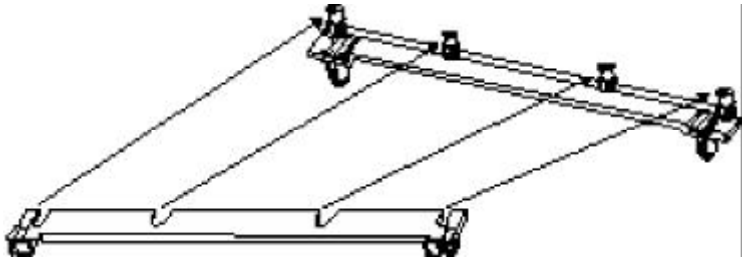
2. Install HSSBASE (Heatsink Support Base) on motherboard then insert the two plastic pins through the HSSBASE securing it to the motherboard.



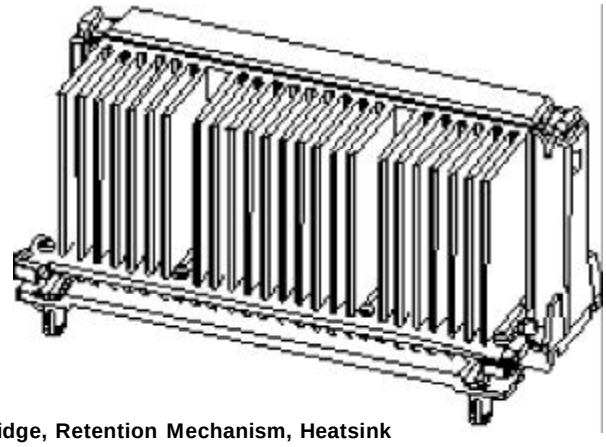
3. Insert Pentium® II or Celeron™ Processor in Slot1.



4. Clip Plastic Bar onto the HSSBASE through the fins on the processors' heatsink.



5. The Retention Mechanism installation procedure is completed as shown below.



S.E.C Cartridge, Retention Mechanism, Heatsink support, and ATX Form Factor Headsink Isometric View Not To Scale

Remark:

Please skip step2 and step4 for Boxed Pentium® II Processor and refer to relevant details concerning this type of processor for your installation.

P/N : 430-01015-301-00
Manual P6VPRO/A4 Ver 1.0

Item Checklist

Completely check your package. If you discover damaged or missing items, contact your retailer.

- ☑ P6VPRO/A4 motherboard
- ☑ Motherboard Utility CD-ROM
- ☑ Retention Module
- ☑ 1 IDE ribbon cable
- ☑ 1 floppy ribbon cable
- ☑ 1 parallel ribbon cable and 1 UART ribbon cable (9-pin) with mounting bracket.
- ☑ 1 UART ribbon cable (25-pin connector) and PS/2 adapter with mounting bracket.
- ☑ User's manual

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Board Layout of
Advance 4 V1.0