IB780

Full-Size Socket 370
VIA Apollo PLE133T CPU Card

USER'S MANUAL

Version 1.0A

Acknowledgments

Table of Contents

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Introduction

Product Description

The CPU card is a high-performance flexible CPU card based on the VIA Apollo PLE 133T chipset. The VIA Apollo PLE 133T chipset is based on an innovative and scaleable architecture with proven reliability. It is a two-chip set consisting of the VT8601T North Bridge Controller and VT82C686B South Bridge Controller.

The CPU card supports 66/100/133MHz system bus, up 1.2GHz CPU speed, the VT8601T integrated graphics accelerator. Additional key features include support for four USB ports, AC-97 link for audio, hardware monitoring, and power management.

System memory is provided by three 168-pin DIMM sockets that accommodate SDRAM with a maximum capacity of 1.5GB. The Award BIOS facilitates easy system configuration and peripheral setup. Expansion functionality is provided with MicroPCI socket that supports MicroPCI daughter cards for Ethernet (LAN), SCSI, and IEEE 1394 functions.

Other advanced features include *DiskOnChip flash disk support*, 16-level watchdog timer, and IrDA interface.

DiskOnChip flash disks are storage devices that have no moving parts and emulates FDD/HDD with Flash/RAM/ROM offering reliable data/program storage and long life span. They are reliable and suitable for industrial or other harsh environments characterized by motion, shock, vibration, adverse temperature, dust and humidity. Other features include faster data access, longer MTBF, lower power consumption, cost effective for small capacity and small form factor.

Checklist

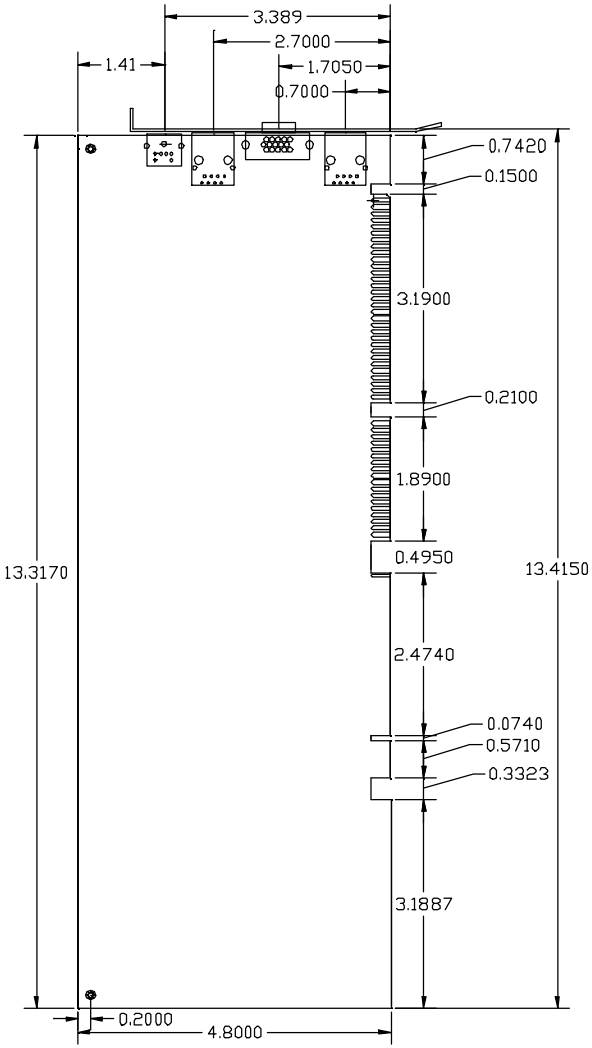
Your the CPU card package should include the items listed below.

- The CPU Card
- This User' s Manual
- 1 IDE Ribbon Cable
- 1 Floppy Ribbon Connector
- 2 Serial Port Ribbon Cable and 1 Parallel Port Attached to a Mounting Bracket
- 1 Y-Cable supporting a PS/2 Keyboard and a PS/2 Mouse
- 1 CD containing the following:
- Chipset Drivers
- Flash Memory Utility

Specifications

Processor Supported	Socket 370 supports Intel Pentium III / Celeron 533MHz~1.2GHz, 66/100/133MHz Front Side Bus
Chipset	VIA Apollo PLE133T Chipset North bridge: VT8601T (552-pin BGA package) South bridge: VT82C686B (352-pin BGA package)
BIOS	Award BIOS Supports ACPI, DMI, PnP
System Memory	3x DIMM sockets support up to 1.5GB capacity PC100/PC133 supported
I/O Chipset	VT82C686B chipset Keyboard controller built-in
I/O Features	1x FDD (up to 2.88MB, 3 Mode, LS120) 1x Parallel Port (EPP, ECP Port) 2x Serial Ports (1x RS232 and 1x RS232/422/485) 1x IrDA TX/RX Headers
Bus Master IDE	2x IDE interfaces for up to 4 devices; supports PIO Mode 3/4 or UDMA/33/66/100 HDD, and ATAPI CD-ROM
VGA	VT8601T integrated graphics controller Shared main memory; max. 8MB
Audio	VT82C686B chipset built-in sound controller With AC97 Codec VT1611A (Line-out, Line-in, Mic)
LAN	Realtek RTL8139C Ethernet controller 10Base-T / 100Base-TX protocol Optional Dual Ethernet solution via MicroPCI socket
USB	4 ports (pin header)
Watchdog Timer	16 levels (0, 2, 4, 6, … 30 sec.)
Hardware Monitoring	Built-in VT82C686B chipset Monitors CPU/system temperature and voltages
DiskOnChip	Support M-Systems 2MB~288MB DiskOnChip flash disk
MicroPCI Socket	One MicroPCI socket supports MicroPCI daughter cards with VGA, Ethernet, SCSI and IEEE 1394 functions
Other Features	ISA high drive PICMG compliance Wake on LAN
Form Factor	Full Size CPU card
Dimensions	338mm x 122mm (13.3” x 4.8”)

Board Dimensions



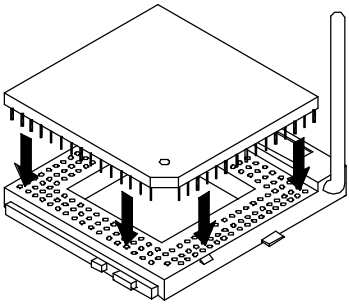
Installations

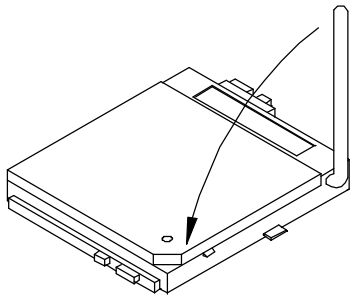
This section provides information on how to use the jumpers and connectors on the CPU card in order to set up a workable system. The topics covered are:

Installing the CPU

The CPU card supports a Socket 370 processor socket for Intel Pentium III and Celeron processors.

The Socket 370 processor socket comes with a lever to secure the processor. Raise this lever to about a 90° angle to allow the insertion of the processor. Place the processor into the socket by making sure the notch on the corner of the CPU corresponds with the notch on the inside of the socket. Once the processor has slide into the socket, return the lever to the lock position. Refer to the figures below.





After you have installed the processor into the socket, check if the jumpers for the CPU type and speed are correct.

***NOTE**: Ensure that the CPU heat sink and the CPU top surface are in total contact to avoid CPU overheating problem that would cause your system to hang or be unstable.*

MicroPCI Daughter Card Installation

The CPU card is integrated with a **MicroPCI socket** that use SO-DIMM 144-pin connectors. These sockets can accommodate the optional MicroPCI daughter cards.

To insert the MicroPCI daughter cards, position it at 30° to the PCB and gently push it into the MicroPCI connector (See Figure 1 below). The card will not fit when inserted at an angle of 45° or 15°. Once inserted, slowly press the card towards the PCB until it locks on both sides to the clips of the connector. Screw the card to the PCB to secure the installation. To remove the MicroPCI card, pull the ‘ clips’ sideways as shown in Figure 2 below.

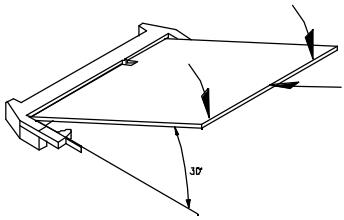


Figure 1.

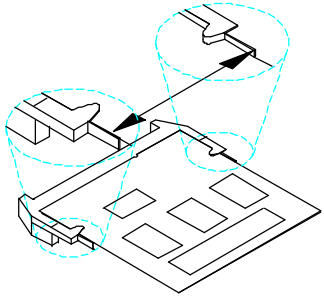


Figure 2.

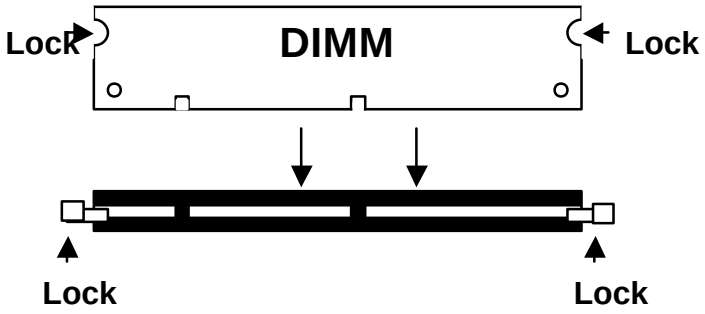
Installing the Memory (DIMM)

The CPU Card supports three 168-pin DIMM socket for a maximum total memory of 1.5GB in SDRAM type. The memory module capacities supported are 64MB, 128MB, 256MB, and 512MB.

Installing and Removing DIMMs

To install the DIMM, locate the memory slot on the CPU card and perform the following steps:

1. Hold the DIMM so that the two keys of the DIMM align with those on the memory slot.
2. Gently push the DIMM in an upright position until the clips of the slot close to hold the DIMM in place when the DIMM touches the bottom of the slot.
3. To remove the DIMM, press the clips with both hands.

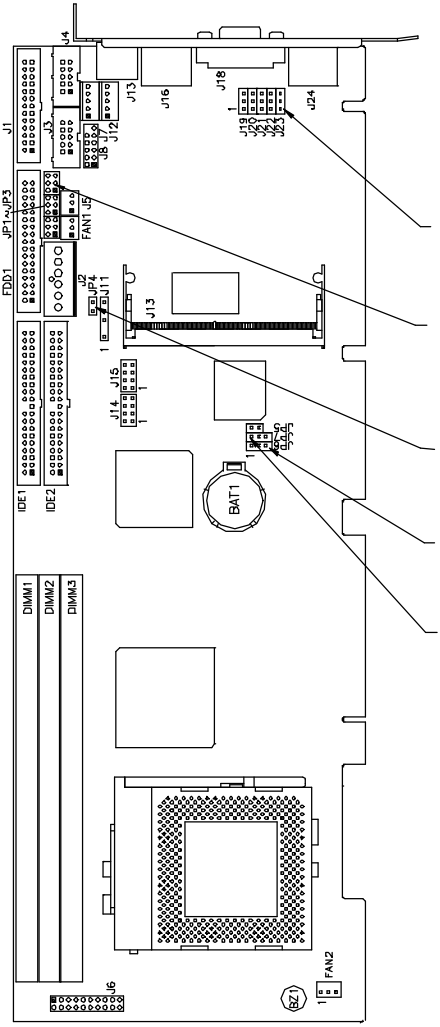


Top View of DIMM Socket

Setting the Jumpers

Jumpers are used to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors and their respective functions.

Jumper Locations

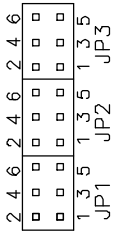


Configuring the CPU Frequency

The CPU card does not provide DIP switches to configure the processor speed (CPU frequency). However, processors in the market today are available with the CPU frequency fixed at a certain speed and cannot be changed.

JP1, JP2, JP3: RS232/422/485 (COM2) Selection

COM1 is fixed for RS-232 use only.
COM2 is selectable for RS232, RS-422 and RS-485.
The following table describes the jumper settings for COM2 selection.



COM2 Function	RS-232	RS-422	RS-485
Jumper Setting (pin closed)	JP1: 1-2 JP2: 3-5 & 4-6 JP3: 3-5 & 4-6	JP1: 3-4 JP2: 1-3 & 2-4 JP3: 1-3 & 2-4	JP1: 5-6 JP2: 1-3 & 2-4 JP3: 1-3 & 2-4

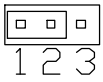
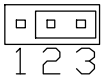
JP4: Realtek RTL8139C LAN Enable/Disable

Use JP4, a 3-pin header, to enable or disable the on board Realtek RTL8139C Ethernet controller.

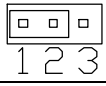
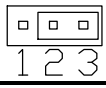
JP4	Setting	Function
	Short/Closed	Enabled
	Open	Disabled

JP6: Clear CMOS Contents

Use JP6, a 3-pin header, to clear the CMOS contents. *Note that the ATX-power connector should be disconnected from the CPU card before clearing CMOS.*

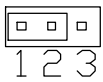
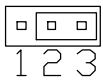
JP6	Setting	Function
	Pin 1-2 Short/Closed	Normal
	Pin 2-3 Short/Closed	Clear CMOS

JP7: DiskOnChip Address Select

JP7	Address
	D0000-D7FFF
	D8000-DFFFF (default

J19, J20, J21, J22, J23: CRT VGA Signal Select

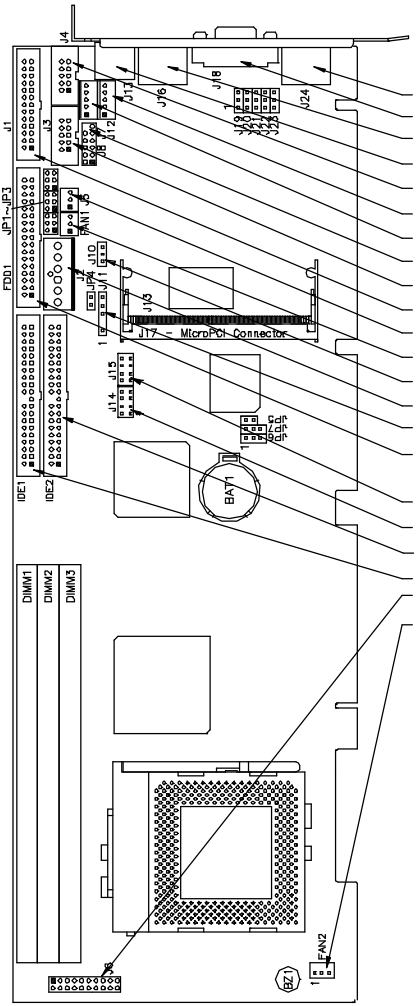
Use J19, J20, J21, J22, and J23 to select the CRT VGA signal, either from the on board VGA or from an optional MicroPCI VGA.

J19/20/21/22/23	Function
	On Board VGA
	MicroPCI VGA

Connectors on the CPU card

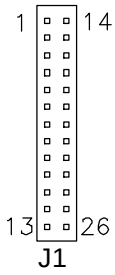
The connectors on the CPU card allow you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors and their respective functions.

Connector Locations



J1: Parallel Port Connector

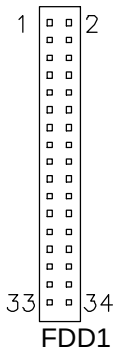
The following table describes the pin out assignments of this connector.



Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

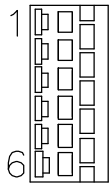
FDD1: Floppy Drive Connector

FDD1 is a 34-pin header and will support up to 2.88MB floppy drives.



Signal Name	Pin #	Pin #	Signal Name
Ground	1	2	RM/LC
Ground	3	4	No connect
Ground	5	6	No connect
Ground	7	8	Index
Ground	9	10	Motor enable 0
Ground	11	12	Drive select 1
Ground	13	14	Drive select 0
Ground	15	16	Motor enable 1
Ground	17	18	Direction
Ground	19	20	Step
Ground	21	22	Write data
Ground	23	24	Write gate
Ground	25	26	Track 00
Ground	27	28	Write protect
Ground	29	30	Read data
Ground	31	32	Side 1 select
Ground	33	34	Diskette change

J2: P8 AT Power Connector



Pin #	Signal Name
1	N.C.
2	+5V
3	+2V
4	-12V
5	Ground
6	Ground

J3, J4: COM1, COM2 Serial Port

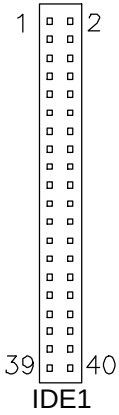
J3 and J4 both 10-pin headers, are the onboard serial port connectors of the CPU card. The following table shows the pin assignments of these connectors.

J3 fixed as RS-232

J4 Configurable as RS-232/ RS-422/485 with jumpers JP1/JP2/JP3

Pin #	Signal Name		
	RS-232	**RS-422**	**RS-485**
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	RTS-	NC
7	RTS	RTS+	NC
8	CTS	CTS+	NC
9	RI	CTS-	NC
10	NC	NC	NC

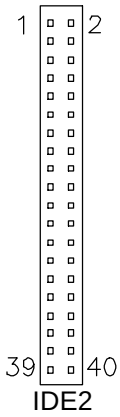
IDE1, IDE2: EIDE Connectors



IDE1: Primary IDE Connector

Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Protect pin
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

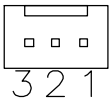
IDE2: Secondary IDE Connector



Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Protect pin
DRQ1	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK1	29	30	Ground
IRQ15	31	32	No connect
Address 1	33	34	No connect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground

FAN1: System Fan Power Connector

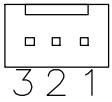
FAN1 is a 3-pin header for the system fan. The fan must be a 12V fan.



Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection

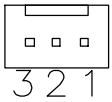
FAN2: CPU Fan Power Connector

FAN2 is a 3-pin header for the CPU fan. The fan must be a 12V fan.



Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection

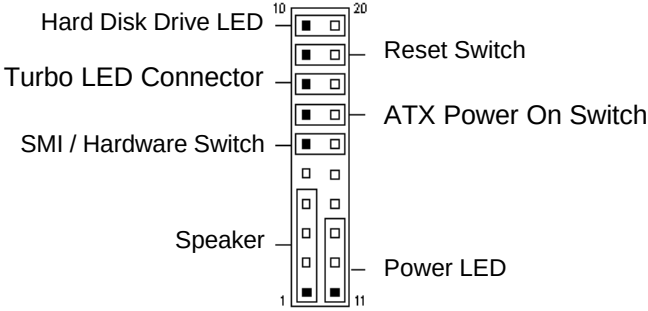
J5: External ATX Power Connector



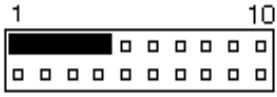
Pin #	Signal Name
1	Ground
2	PS-ON (soft on/off)
3	5VSB (Standby +5V)

J6: System Function Connector

J6 provides connectors for system indicators that provide light indication of the computer activities and switches to change the computer status. J6 is a 20-pin header that provides interfaces for the following functions.

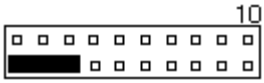


Speaker: Pins 1 - 4
This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.



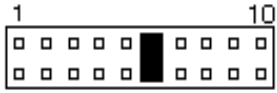
Pin #	Signal Name
1	Speaker out
2	No connect
3	Ground
4	+5V

Power LED: Pins 11 - 13
The power LED indicates the status of the main power switch.



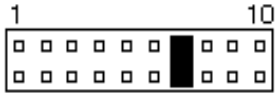
Pin #	Signal Name
11	Power LED
12	No connect
13	Ground

SMI/Hardware Switch: Pins 6 and 16
This connector supports the "Green Switch" on the control panel, which, when pressed, will force the system into the power-saving mode immediately.

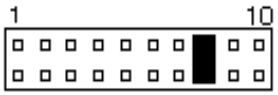


Pin #	Signal Name
6	Sleep
16	Ground

ATX Power ON Switch: Pins 7 and 17
This 2-pin connector is an “ATX Power Supply On/Off Switch” on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.

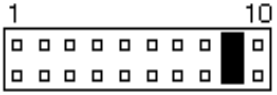


Turbo LED Connector: Pins 8 and 18
There is no turbo/deturbo function on the CPU card. The Turbo LED on the control panel will always be On when attached to this connector.

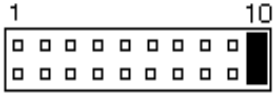


Pin #	Signal Name
8	5V
18	Ground

Reset Switch: Pins 9 and 19
The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.

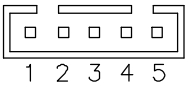


Hard Disk Drive LED Connector: Pins 10 and 20
This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.



Pin #	Signal Name
10	Ground
20	5V

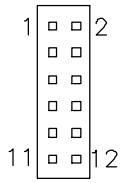
J7: External Keyboard Connector



Pin #	Signal Name
1	KB Clock
2	KB data
3	NC
4	Ground
5	Vcc

J8: External Audio Connector

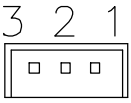
J8 is a 12-pin header that is used to connect to the IB741 daughter card that integrates jacks for Line In, Line Out and Speaker.



Signal Name	Pin #	Pin #	Signal Name
LINEOUT_L	1	2	LINEOUT_R
LINEIN_L	3	4	LINEIN_R
GROUND	5	6	GROUND
CDIN_L	7	8	CDIN_R
VREFOUT	9	10	CDGND
MIC	11	12	PROTECT PIN

J10: Wake On LAN Connector

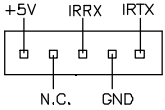
J10 is a 3-pin header for the Wake On LAN function on the CPU card. The following table shows the pin out assignments of this connector. Wake On LAN will function properly only with an ATX power supply with 5VSB that has 1A.



Pin #	Signal Name
1	+5VSB
2	Ground
3	-PME

J11: IrDA Connector

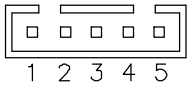
J11 is used for an optional IrDA connector for wireless communication.



Pin #	Signal Name
1	+5V
2	No connect
3	Ir RX
4	Ground
5	Ir TX

J12: External PS/2 Mouse Connector

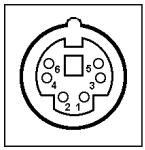
Take note of the pin orientation of this connector to avoid possible damage to the mouse due to wrong insertion. See figure below.



Pin #	Signal Name
1	Mouse data
2	NC
3	Ground
4	Vcc
5	Mouse Clock

J13: PS/2 Keyboard and Mouse Connector

J13 uses a Y-cable with dual D-connectors for a PS/2 keyboard and a PS/2 mouse.

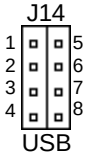


J13

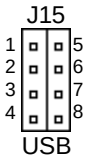
Pin #	Signal Name
1	Mouse data
2	Keyboard data
3	Ground
4	Vcc
5	Mouse Clock
6	Keyboard Clock

J14, J15: USB Connectors

The following table shows the pin outs of the USB pin headers connectors. Overall, the two pin headers support four USB ports.



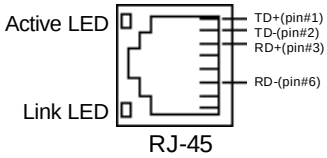
Signal Name	Pin	Pin	Signal Name
Vcc	1	5	Ground
USB1-	2	6	USB2+
USB1+	3	7	USB2-
Ground	4	8	Vcc



Signal Name	Pin	Pin	Signal Name
Vcc	1	5	Ground
USB3-	2	6	USB4+
USB3+	3	7	USB4-
Ground	4	8	Vcc

J16: Primary RJ45 Connector for onboard LAN

J16 is the primary RJ-45 connectors respectively. The figure below shows the pin out assignments of the connector and its corresponding input jack.



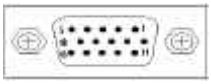
RJ-45

J17: MicroPCI Connector

The MicroPCI connector provides interface to optional MicroPCI cards with various functions such as VGA, LAN, VGA/LAN, dual LAN, SCSI and IEEE 1394.

J18: VGA CRT Connector

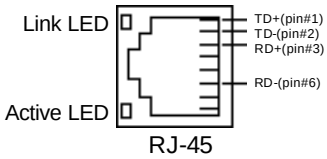
The pin assignments of the J18 VGA CRT connector are as follows:


18

Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	N.C.
GND	5	6	GND
GND	7	8	GND
N.C.	9	10	GND
N.C.	11	12	N.C.
HSYNC	13	14	VSYNC
NC	15		

J24: Secondary RJ-45 Connector for MicroPCI LAN

J24 is secondary RJ-45 connectors respectively. The J24 secondary RJ-45 connector is used in conjunction with a secondary Ethernet provided through a MicroPCI Ethernet card. The figure below shows the pin out assignments of the connector and its corresponding input jack.



RJ-45

BIOS Setup

This chapter describes the different settings available in the Award BIOS that comes with the CPU card. The topics covered in this chapter are as follows:

BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel Pentium II/III processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also adds virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

```
Press <DEL> to Enter Setup
```

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

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Standard CMOS Features	Frequency/Voltage Control
Advanced BIOS Features	Load Fail-Safe Defaults
Advanced Chipset Features	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configurations	Save & Exit Setup
PC Health Status	Exit Without Saving
ESC : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item
Time, Date, Hard Disk Type…	

The section below the setup items of the Main Menu displays the control keys for this menu. At the bottom of the Main Menu just below the control keys section, there is another section which displays information on the currently highlighted item in the list.

***Note**: If the system cannot boot after making and saving system changes with Setup, the Award BIOS supports an override to the CMOS settings that resets your system to its default.*

***Warning:** It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.*

Standard CMOS Setup

"Standard CMOS Setup" choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the CPU card is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

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Standard CMOS Features

Date (mm:dd:yy)	Tue, Mar 26 2000	Item Help
Time (hh:mm:ss)	00 : 00 : 00	Menu Level
IDE Primary Master	Press Enter 13020 MB	Change the day, month,
IDE Primary Slave	Press Enter None	Year and century
IDE Secondary Master	Press Enter None	
IDE Secondary Slave	Press Enter None	
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt On	All Errors	
Base Memory	640K	
Extended Memory	129024K	
Total Memory	130048K	

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu.

Date

The date format is:

Day : **Sun to Sat**
Month : **1 to 12**
Date : **1 to 31**
Year : **1994 to 2079**

To set the date, highlight the "Date" field and use the PageUp/ PageDown or +/- keys to set the current time.

Time

The time format is:

Hour	**:**	**00 to 23**
Minute	**:**	**00 to 59**
Second	**:**	**00 to 59**

To set the time, highlight the "Time" field and use the <PgUp>/ <PgDn> or +/- keys to set the current time.

IDE Primary HDDs / IDE Secondary HDDs

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the "Master" and the second is the "Slave".

Press <Enter> to configure the hard disk. The selections include Auto, Manual, and None. Select 'Manual' to define the drive information manually. You will be asked to enter the following items.

CYLS :	Number of cylinders
HEAD :	Number of read/write heads
PRECOMP :	Write precompensation
LANDZ :	Landing zone
SECTOR :	Number of sectors

The Access Mode selections are as follows:

Auto	
Normal	(HD < 528MB)
Large	(for MS-DOS only)
LBA	(HD > 528MB and supports Logical Block Addressing)

Drive A / Drive B

These fields identify the types of floppy disk drive A or drive B that has been installed in the computer. The available specifications are:

360KB	1.2MB	720KB	1.44MB	2.88MB
5.25 in.	5.25 in.	3.5 in.	3.5 in.	3.5 in.

Video

This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA	For EGA, VGA, SEGA, SVGA or PGA monitor adapters. (default)
CGA 40	Power up in 40 column mode.
CGA 80	Power up in 80 column mode.
MONO	For Hercules or MDA adapters.

Halt On

This field determines whether or not the system will halt if an error is detected during power up.

No errors	The system boot will not be halted for any error 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 be halted for a keyboard error; it will stop for all other errors
All, But Diskette	The system boot will not be halted for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not be halted for a keyboard or disk error; it will stop for all others.

Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

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Advanced BIOS Features

Virus Warning	**Disabled**	ITEM HELP
CPU Internal Cache	Enabled	Menu Level
External Cache	Enabled	
CPU L2 Cache ECC Checking	Enabled	Allows you choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep
Processor Number Feature	Enabled	
Quick Power On Self Test	Enabled	
First Boot Device	Floppy	
Second Boot Device	HDD-0	
Third Boot Device	CDROM	
Boot Other Device	Enabled	
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	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	
OS Select For DRAM>64MB	Non-OS2	
Report No FDD For WIN 95	No	
Video BIOS Shadow	Enabled	
C8000-CBFFF Shadow	Disabled	
CC000-CFFFF Shadow	Disabled	
D0000-D3FFF Shadow	Disabled	
D4000-D7FFF Shadow	Disabled	
D8000-DBFFF Shadow	Disabled	
DC000-DFFF Shadow	Disabled	
Small Logo (EPA) Show	Enabled	

Virus Warning

This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

CPU Internal Cache / External Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. These items allow you to enable (speed up memory access) or disable the cache function. By default, these items are ***Enabled***.

CPU L2 Cache ECC Checking
This field enables or disables the ECC (Error Correction Checking) checking of the CPU level-2 cache. The default setting is ***Enabled***.

Processor Number Feature
When enabled, this feature allows external systems to detect the processor number/type of the CPU.

Quick Power On Self Test
When enabled, this field speeds up the Power On Self Test (POST) after the system is turned on. If it is set to *Enabled*, BIOS will skip some items.

First/Second/Third Boot Device
These fields determine the drive that the system searches first for an operating system. The options available include *Floppy*, *LS/ZIP*, *HDD-0*, *SCSI*, *CDROM*, *HDD-1*, *HDD-2*, *HDD-3*, *LAN* and *Disable*.

Boot Other Device
These fields allow the system to search for an operating system from other devices other than the ones selected in the First/Second/Third Boot Device.

Swap Floppy Drive
This item allows you to determine whether or not to enable Swap Floppy Drive. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to ***Disabled.***

Boot Up Floppy Seek
When enabled, the BIOS will seek whether or not the floppy drive installed has 40 or 80 tracks. 360K type has 40 tracks while 760K, 1.2M and 1.44M all have 80 tracks.

Boot Up NumLock Status
This allows you to activate the NumLock function after you power up the system.

Gate A20 Option
This field allows you to select how Gate A20 is worked. Gate A20 is a device used to address memory above 1 MB.

Typematic Rate Setting

When disabled, continually holding down a key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to ***Disabled.***

Typematic Rate (Chars/Sec)

When the typematic rate is enabled, the system registers repeated keystrokes speeds. Settings are from 6 to 30 characters per second.

Typematic Delay (Msec)

When the typematic rate is enabled, this item allows you to set the time interval for displaying the first and second characters. By default, this item is set to ***250msec.***

Security Option

This field allows you to limit access to the System and Setup. The default value is ***Setup***. When you select *System*, the system prompts for the User Password every time you boot up. When you select *Setup*, the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

OS Select for DRAM > 64MB

This option allows the system to access greater than 64MB of DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The default setting is ***Non-OS/2***.

Video BIOS Shadow

This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.

C8000 - CBFFF Shadow/DC000 - DFFFF Shadow

Shadowing a ROM reduces the memory available between 640KB to 1024KB. These fields determine whether or not optional ROM will be copied to RAM.

Small Logo (EPA) Show

This field enables the showing of the EPA logo located at the upper right of the screen during boot up.

Advanced Chipset Features

This Setup menu controls the configuration of the chipset.

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Advanced Chipset Features

DRAM Clock	Host CLK	ITEM HELP
DRAM Timing By SPD	Disabled	Menu Level
SDRAM Cycle Length	3	
Bank Interleave	Disabled	
Memory Hole	Disabled	
P2C/C2P Concurrency	Enabled	
Fast R-W Turn Around	Enabled	
System BIOS Cacheable	Disabled	
Video BIOS Cacheable	Disabled	
Frame Buffer Size	8M	
AGP Aperture Size	64M	
OnChip USB	Enabled	
USB Keyboard Support	Disabled	
OnChip Sound	Enabled	
CPU to PCI Write Buffer	Enabled	
PCI Dynamic Bursting	Enabled	
PCI Master 0 WS Write	Enabled	
PCI#2 Access #1 Retry	Disabled	
AGP Master 1 WS Write	Disabled	
AGP Master 1 WS Read	Disabled	

DRAM Clock

This setting sets the DRAM clock frequency. The default sets it based on the Host CPU clock (front side bus).

DRAM Timing by SPD

This field sets the DRAM Timing based on SPD. The default setting is ***Disabled***.

SDRAM Cycle Length

This feature is similar to SDRAM CAS Latency Time. It controls the time delay (in clock cycles - CLKs) that passes before the SDRAM starts to carry out a read command after receiving it. This also determines the number of CLKs for the completion of the first part of a burst transfer. Thus, the lower the cycle length, the faster the transaction. However, some SDRAM cannot handle the lower cycle length and may become unstable. So, set the SDRAM Cycle Length to 2 for optimal performance if possible but increase it to 3 if your system becomes unstable.

Bank Interleave

This decides how multiple memory modules communicate. Enable or Disable this. It will only make a difference if you have more than one memory module.

Memory Hole
It is recommended to leave as disabled, although enabling 15M-16M can help with sound issues.

P2C / C2P Concurrency
Set to Disabled for best performance. You may set this to Enabled if you want any sort of system stability.

Fast R-W Turn Around
Leave it as Enabled for ' faster' performance.

System BIOS Cacheable
The setting of *Enabled* allows caching of the system BIOS ROM at F000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Video BIOS Cacheable
The Setting *Enabled* allows caching of the video BIOS ROM at C0000h-F7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

Frame Buffer Size
The default setting of the frame buffer size is 8M.

CPU Latency Timer
The default setting for the CPU Latency Timer is ***Enabled***.

AGP Aperture Size
The field sets aperture size of the graphics. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The default setting is ***64M***.

OnChip USB
The default setting of this filed is Enabled to enable the USB function on board.

OnChip Keyboard Support
Enable this if you are using a USB keyboard.

OnChip Sound
This field enables or disables the on board audio function.

CPU to PCI Write Buffer
This controls the CPU write buffer to the PCI bus. If this buffer is disabled, the CPU writes directly to the PCI bus. The default setting is ***Enabled***.

PCI Dynamic Bursting
This option controls the PCI write buffer. If this is enabled, then every write transaction on the PCI bus goes straight to the write buffer. Burst transactions are then sent on their way as soon as there are enough to send in a single burst.

PCI Master 0 WS Write
This function determines whether there's a delay before any writes to the PCI bus. If this is enabled, then writes to the PCI bus are executed immediately (with zero wait states), as soon as the PCI bus is ready to receive data. But if it is disabled, then every write transaction to the PCI bus is delayed by one wait state. It's recommended to enable this for faster PCI performance.

PCI#2 Access #1 Retry
This BIOS feature is linked to the CPU to PCI Write Buffer. Normally, the CPU to PCI Write Buffer is enabled. All writes to the PCI bus are, as such, immediately written into the buffer, instead of the PCI bus. This frees up the CPU from waiting till the PCI bus is free. The data are then written to the PCI bus when the next PCI bus cycle starts.

There's a possibility that the buffer write to the PCI bus may fail. When that happens, this BIOS option determines if the buffer write should be reattempted or sent back for arbitration. If this BIOS option is enabled, then the buffer will attempt to write to the PCI bus until successful. If disabled, the buffer will flush its contents and register the transaction as failed. The CPU will have to write again to the write buffer.

AGP Master 1 WS Write/Read
When enabled a single wait state is used when writing/reading to the AGP bus. When disabled a 2 wait state is used. For optimal performance set this to enabled. For improved stability set it to disabled.

Integrated Peripherals

This section sets configurations for your hard disk and other integrated peripherals.

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Integrated Peripherals

On-Chip IDE Channel 0	Enabled	ITEM HELP
On-Chip IDE Channel 1	Enabled	Menu Level
IDE Prefetch Mode	Disabled	
IDE Primary Master PIO	Auto	
IDE Primary Slave PIO	Auto	
IDE Secondary Master PIO	Auto	
IDE Secondary Slave PIO	Auto	
IDE Primary Master UDMA	Auto	
IDE Primary Slave UDMA	Auto	
IDE Secondary Master UDMA	Auto	
IDE Secondary Slave UDMA	Auto	
Init Display First	PCI Slot	
IDE HDD Block Mode	Disabled	
Onboard FDD Controller	Enabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
UART 2 Mode	Standard	
UR2 Duplex Mode	Half	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
Onboard Legacy Audio	3	
SB I/O Base Address	330	
SB IRQ Select	10	
SB DMA Select		
MPU-401		
MPU-401 I/O Address		

OnChip IDE Channel 0 / 1

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.

IDE Prefetch Mode

These field enables/disables the prefetch buffers in the PCI IDE controller. The prefetch buffers are used as a temporary storage place as data is transferred from one location to another.

IDE Primary/Secondary Master/Slave PIO

These fields allow your system hard disk controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with the controller and CPU directly.

The system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

IDE Primary/Secondary Master/Slave UDMA

These fields allow your system to improve disk I/O throughput to 33Mb/sec with the Ultra DMA/33 feature. The options are *Auto* and *Disabled*.

Init Display First

This field allows the system to initialize first the VGA card on chip or the display on the PCI Slot. By default, the *PCI Slot* VGA is initialized first.

IDE HDD Block Mode

This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

Onboard FDD Controller

Select *Enabled* if your system has a floppy disk controller installed on the CPU card and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field. This option allows you to select the onboard FDD port.

Onboard Serial/Parallel Port

These fields allow you to select the onboard serial and parallel ports and their addresses. The default values for these ports are:

Serial Port 1	3F8/IRQ4
Serial Port 2	2F8/IRQ3
Parallel Port	378/IRQ7

UART 2 Mode

This item allows you to determine which Infra Red (IR) function of onboard I/O chip. The options are *Standard*, *IrDA*, and *ASKIR*.

Parallel Port Mode

This field allows you to determine parallel port mode function.

SPP	Standard Printer Port
EPP	Enhanced Parallel Port
ECP	Extended Capabilities Port

Onboard Legacy Audio

Enable or disable the on board legacy audio with this option.

Sound Blaster

Enable or disable the sound blaster feature with this option.

Power Management Setup

The Power Management Setup allows you to save energy of your system effectively.

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Power Management Setup

ACPI Function	Enabled	ITEM HELP
Power Management	Press Enter	Menu Level
PM Control by APM	Yes	
Video Off Option	Suspend ->Off	
Video Off Method	VH Sync + Blank	
Modem Use IRQ	NA	
Soft-Off by PWRBTN	Instant Off	
Wake Up Events	Press Enter	

ACPI Function

Use this option to enable or disable the ACPI function

Power Management

This field allows you to select the type of power saving management modes. There are four selections for Power Management.

Min. Power Saving	Minimum power management
Max. Power Saving	Maximum power management.
User Define	Each of the ranges is from 1 min. to 1hr. Except for HDD Power Down which ranges from 1 min. to 15 min. (Default)

Under this option, you can also configure other features such HDD Power Down, Doze Mode and Suspend Mode.

PM Control by APM

If Advanced Power Management (APM) is installed on your system, selecting Yes gives better power savings.

Video Off Option

This option decides when to shutdown video for power saving. You can select it as always on or turn off video when system enters suspend mode.

Video Off Method

This field defines the Video Off features. There are three options.

V/H SYNC + Blank	Default setting, blank the screen and turn off vertical and horizontal scanning.
DPMS	Allows the BIOS to control the video display card if it supports the DPMS feature.
Blank Screen	This option only writes blanks to the video buffer.

Modem Use IRQ

This field sets the IRQ used by the Modem. By default, the setting is ***3***.

Soft-Off by PWRBTN

This field defines the power-off mode when using an ATX power supply. The *Instant Off* mode allows powering off immediately upon pressing the power button. In the *Delay 4 Sec* mode, the system powers off when the power button is pressed for more than four seconds or enters the suspend mode when pressed for less than 4 seconds. The default value is ***Instant Off***.

Wake Up Events

The HDD, FDD, COM, LPT Ports, and PCI PIRQ are I/O events which can prevent the system from entering a power saving mode or can awaken the system from such a mode. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

PNP/PCI Configurations

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

CMOS Setup Utility – Copyright ©1984-2000 Award Software
PnP/PCI Configurations

		ITEM HELP
Reset Configuration Data	Disabled	Menu Level
Resources Controlled By	Auto (ESCD)	
IRQ Resources	Press Enter	Default is Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
PCI/VGA Palette Snoop	Disabled	

PNP OS Installed

Select ***Yes*** if the system operating environment is Plug-and-Play aware (e.g., Windows 95). The options: Yes and No.

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot. The options: Enabled and Disabled.

Resources Controlled by

The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play-compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assign them. The options: Auto and Manual.

PCI/VGA Palette Snoop

Some non-standard VGA display cards may not show colors properly. This field allows you to set whether or not MPEG ISA/VESA VGA cards can work with PCI/VGA. When this field is enabled, a PCI/VGA can work with an MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with an MPEG ISA/VESA card.

Assign IRQ for VGA

When this option is enabled system will assign an IRQ for VGA. The default is Enabled. This can also be Disabled so that VGA will not occupy an IRQ, thus releasing it free for other usage (typically LAN card etc).

Assign IRQ for USB

When this option is enabled system will assign an IRQ for USB. The default is ***Enabled***. This can also be Disabled so that USB will not occupy an IRQ, thus releasing it free for other usage (typically LAN card etc).

PC Health Status

This section shows the parameters in determining the PC Health Status. These parameters include temperatures, fan speeds and voltages.

CMOS Setup Utility – Copyright ©1984-2000 Award Software
PC Health Status

		ITEM HELP
Current CPU Temp.	41°C / 87°F	
Current System Temp.	29°C / 84°F	
CPU Fan Speed	4166 RPM	
System Fan Speed	0 RPM	
Vcore	0 RPM	
2.5V	1.70V	
3.3V	2.52V	
5V	3.42V	
12V	5.02V	
	11.94V	

Shutdown Temperature

This field allows the user to set the temperature by which the system automatically shuts down once the threshold temperature is reached. This function can help prevent damage to the system that is caused by overheating.

Temperatures/Fan Speeds/Voltages

These fields are the parameters of the hardware monitoring function feature of the CPU card. The values are read-only values as monitored by the system and show the PC health status.

Load Fail-Safe Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

Load Setup Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

Set Supervisor/User Password

These two options set the system password. Supervisor Password sets a password that will be used to protect the system and Setup utility. User Password sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The Enter Password: message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

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

Save & Exit Setup

This option allows you to determine whether or not to accept the modifications. If you type "Y", you will quit the setup utility and save all changes into the CMOS memory. If you type "N", you will return to Setup utility.

Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing "Y" will quit the Setup utility without saving the modifications. Typing "N" will return you to Setup utility.

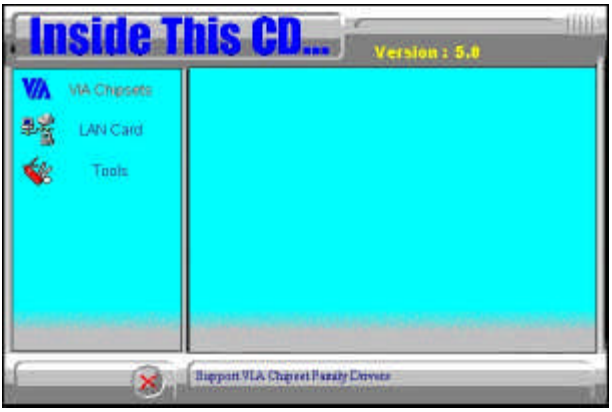
Drivers Installation

This section describes the installation procedures for software and drivers under the Windows 98, Windows NT 4.0 and Windows 2000. The software and drivers are included with the CPU card. If you find the items missing, please contact the vendor where you made the purchase. The contents of this section include the following:

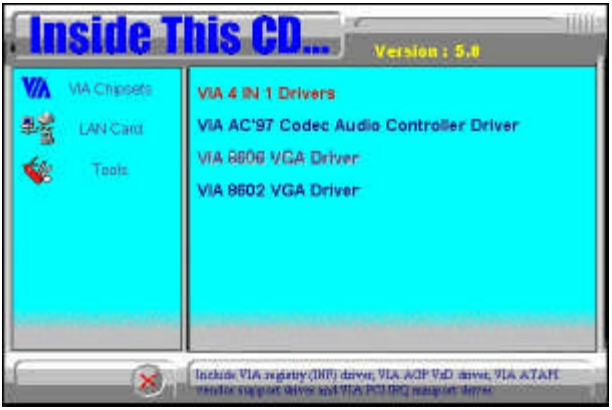
VIA 4 in 1 Drivers Installation

Before installing the drivers for VGA, LAN and Audio, install the VIA 4 in 1 drivers first. Follow the instructions below to complete the installation.

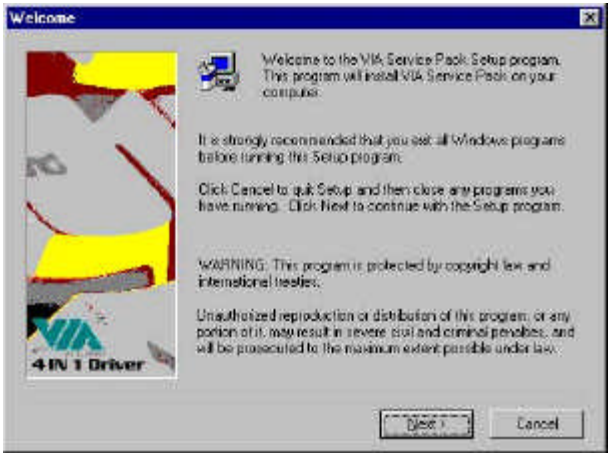
1. Insert the CD that comes with the CPU card and the screen below would appear. Click VIA Chipsets on the left side.



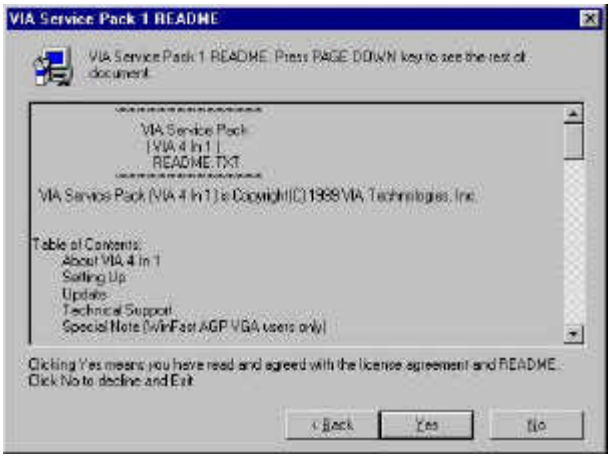
2. Click VIA 4 IN 1 Drivers.



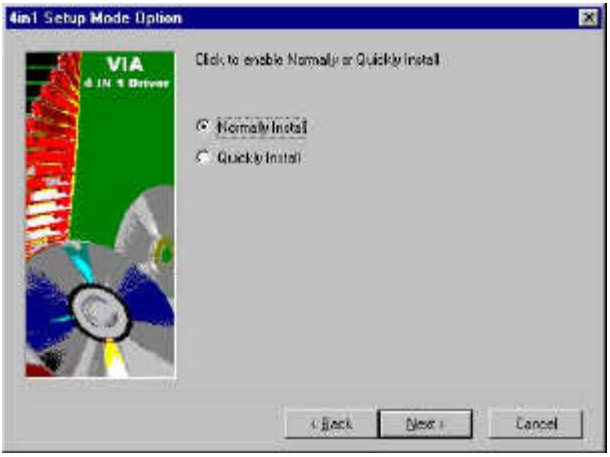
3. When the Welcome screen appears, click Next.



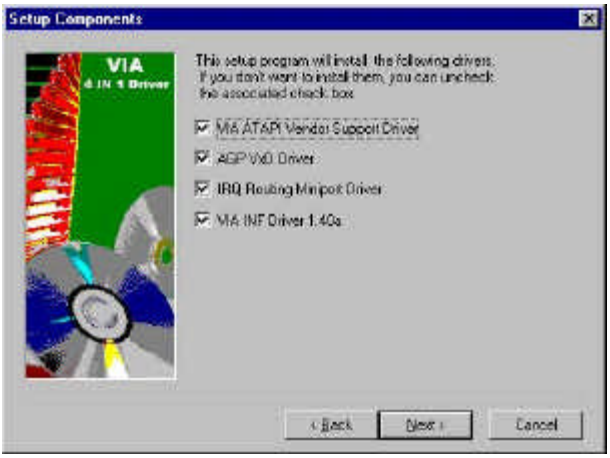
4. Click Next to agree with the license agreement statement and to continue.



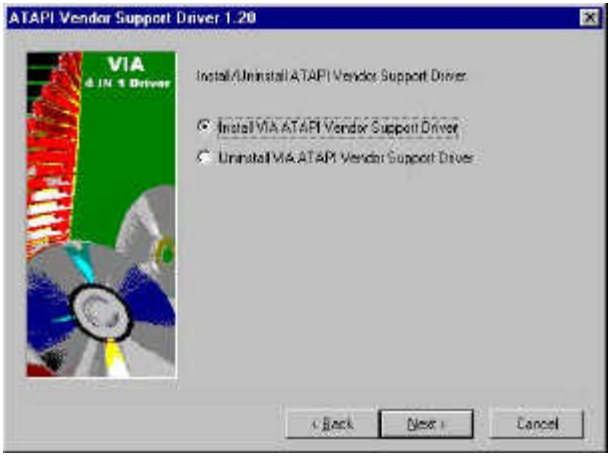
5. Select the Setup Mode and click Next to continue.



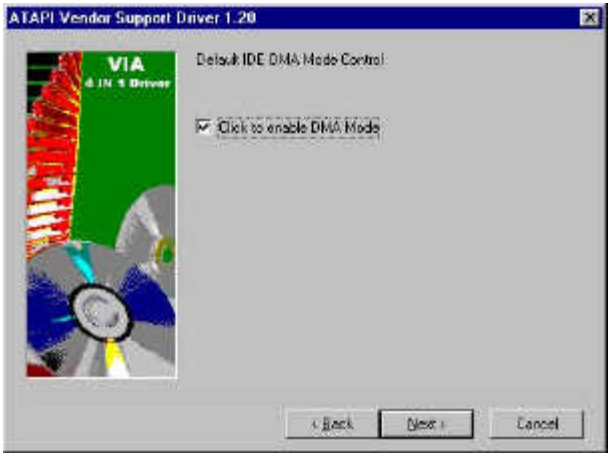
6. Click Next to install the drivers listed.



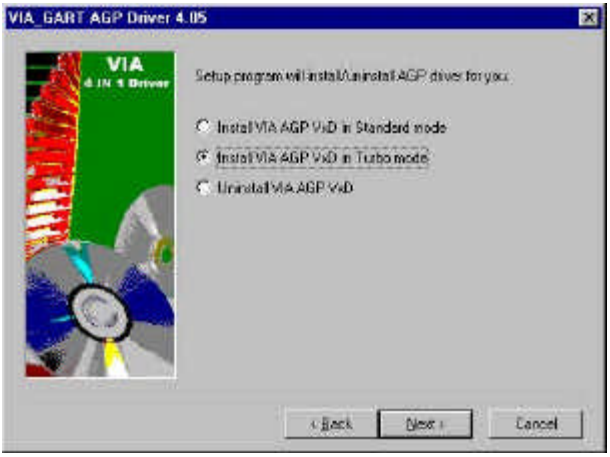
7. Click Next to install the VIA ATAPI Vendor Support Driver.



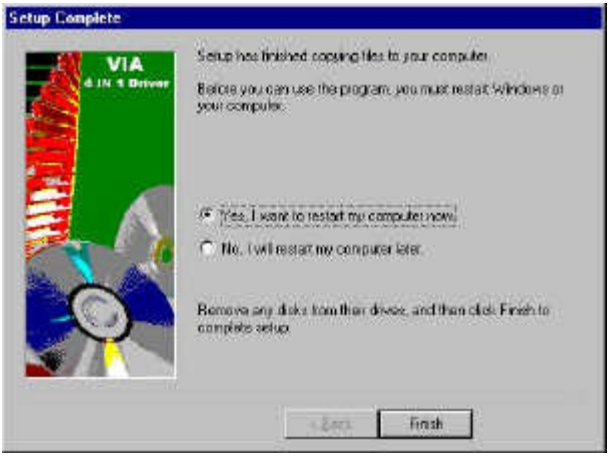
8. Click Next to enable DMA Mode.



9. Click Next to install the VIA AGP VxD in Turbo mode.



10. Click Finish to restart the computer and for changes to take effect.

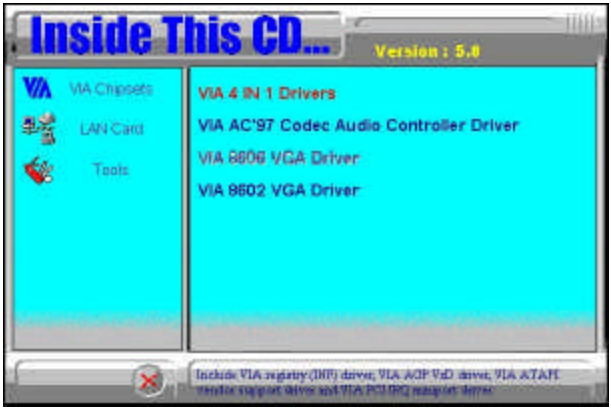


VGA Drivers Installation

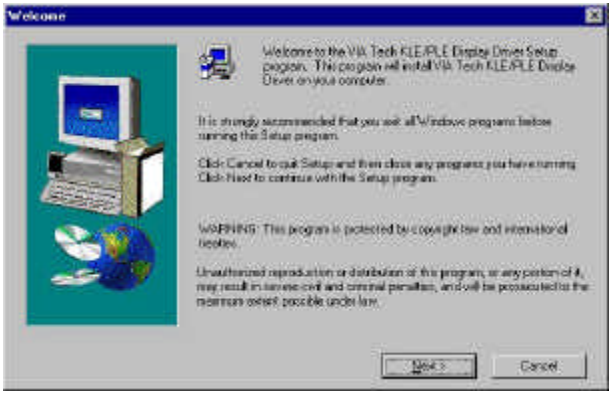
After installing the VIA 4 in 1 drivers, you may now install the VIA 8602 VGA Driver. Follow the steps below to proceed with the installation.

NOTE: Before installing the VGA drivers on Windows NT 4.0, you need to install Service Pack 3 or above.

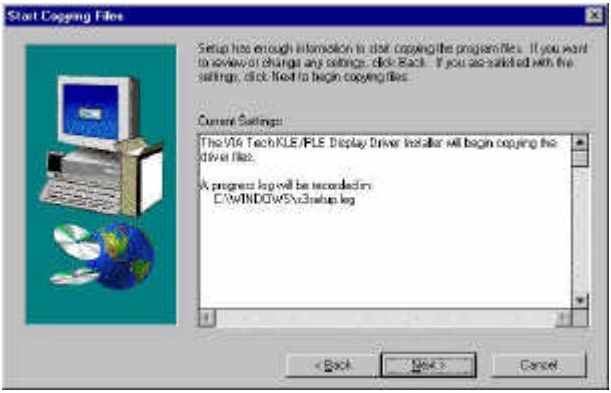
1. Insert the CD that comes with the CPU card. Click on VIA Chipsets on the left and then click VIA 8602 VGA Driver.



2. Click Next to agree with the license agreement statement and to continue.



3. Click Next to start copying the driver files.

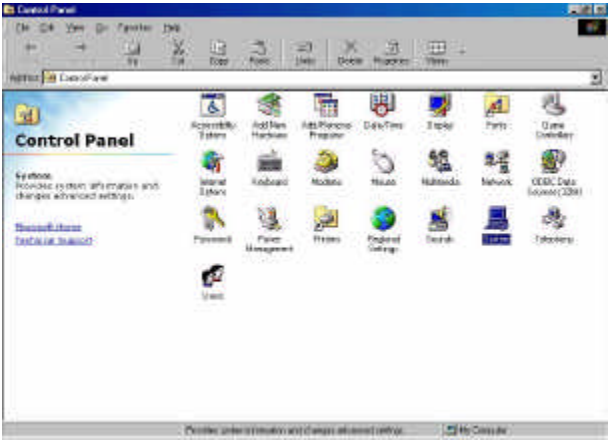


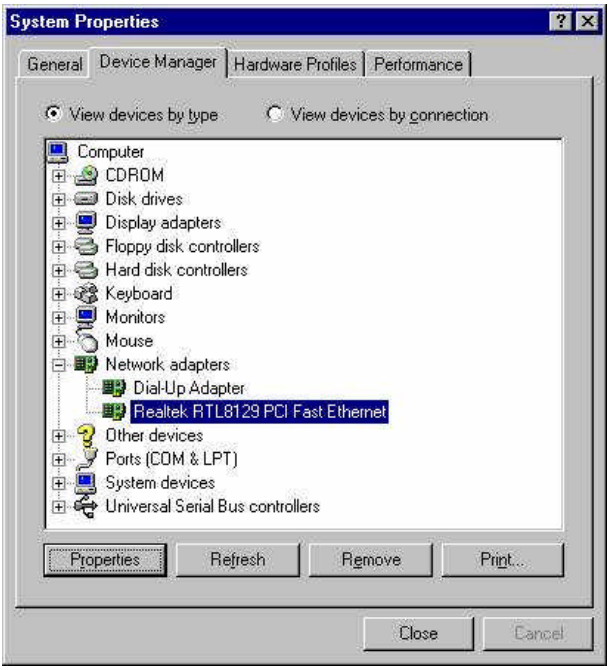
4. Click Finish to restart the computer and for changes to take effect.

LAN Drivers Installation

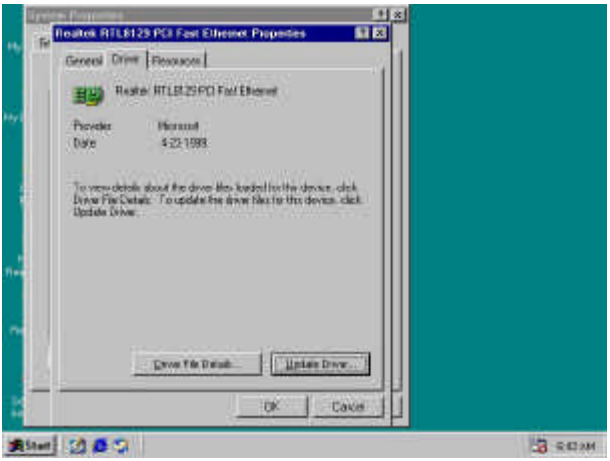
Follow the steps below to proceed with the LAN drivers installation.

1. In your Windows operating system, click Start → Settings → Control Panel → System Properties.

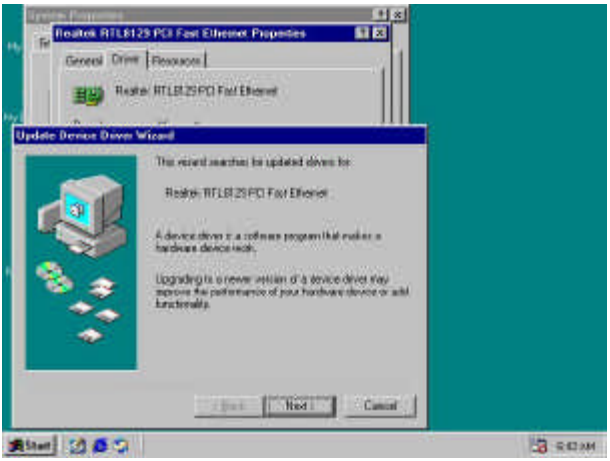




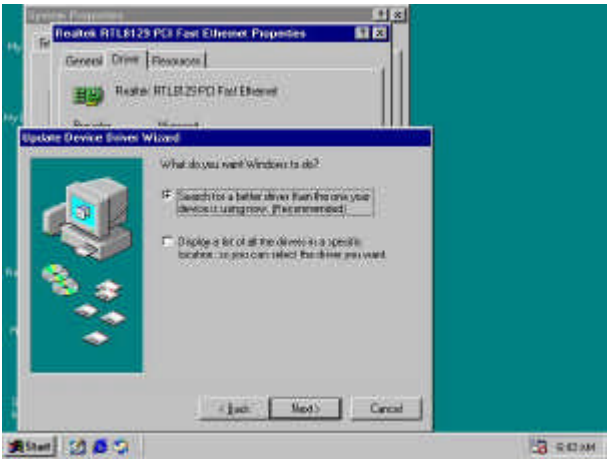
2. Under System Properties, click on the Device Manager tab. Double click on Realtek 8129 PCI Fast Ethernet. Click the Driver tab as shown. Now click the Update Driver button.



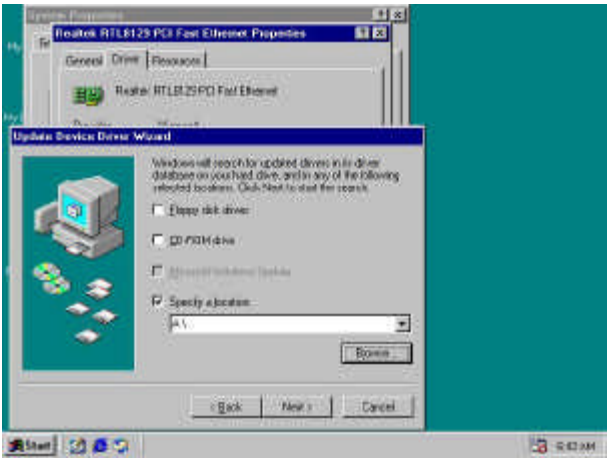
3. When the Update Device Drivers Wizard appears, click Next to continue.



4. Click Next to "Search for a better driver than the one your device is using now. (Recommended".



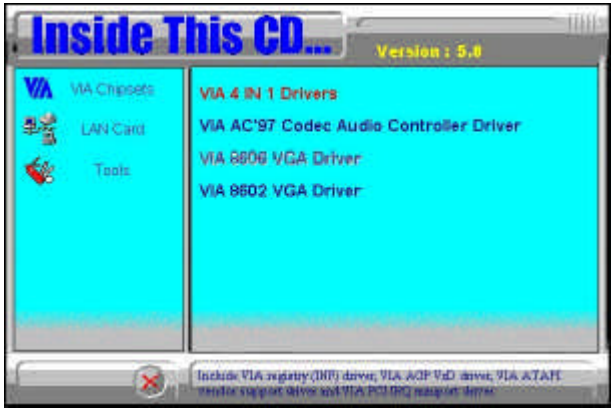
5. Click "Specify a location" and click Next to continue.



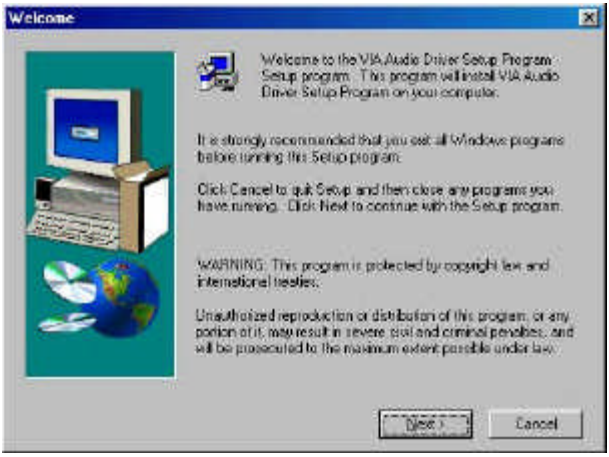
Audio Drivers Installation

Follow the steps below to proceed with the LAN drivers installation.

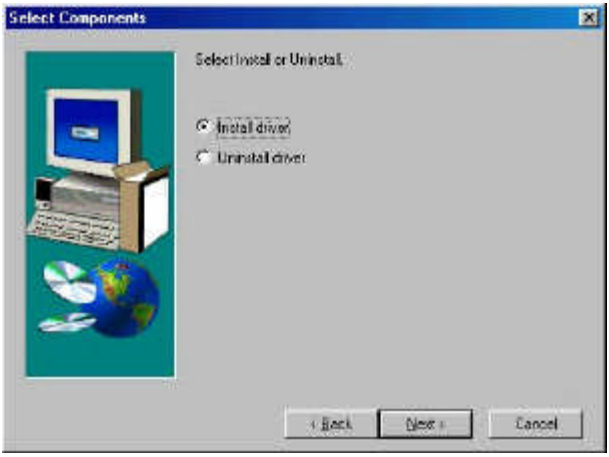
1. Insert the CD that comes with the CPU card. Click on VIA Chipsets on the left and then click VIA AC' 97 Codec Audio Controller Driver.



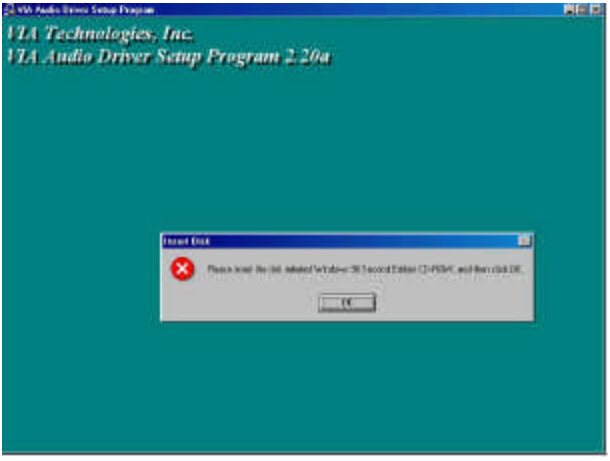
2. Under the Welcome screen, click Next to agree with the license agreement statement and to continue.



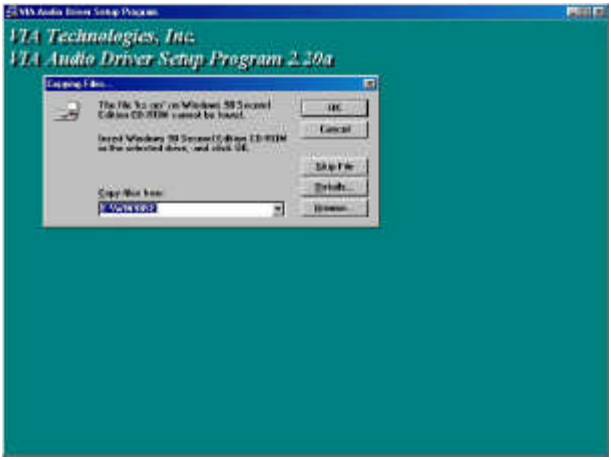
3. Click Install driver and click Next to start the installation process.



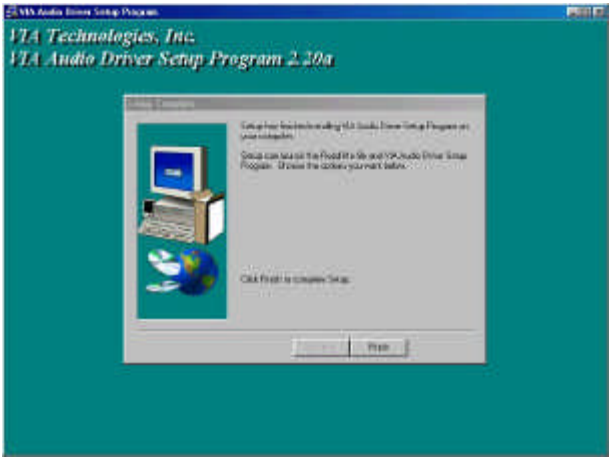
4. Under the VIA Audio Driver Setup Program Window, you will be prompted to insert the Windows 98 CD-ROM if you are using this operating system. Do so accordingly and click OK to proceed.



5. You have to insert the Windows 98 CD as prompted or enter the location of operating system files by using the Browse button. Click OK when done.



6. When file copying is done, click the Finish button to complete Setup.



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Appendix

A. I/O Port Address Map
B. Interrupt Request Lines (IRQ)

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses, which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
278 - 27F	Parallel Port #2(LPT2)
2F8h - 2FFh	Serial Port #2(COM2)
2B0 - 2DF	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome & Printer adapter
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

B. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Reserved
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Reserved
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

C. Watchdog Timer Configuration

The function of the watchdog timer is to reset the system automatically and is defined at I/O port 0443H. To enable the watchdog timer and allow the system to reset, write I/O port 0443H. To disable the timer, write I/O port 0441H for the system to stop the watchdog function. The timer has a tolerance of 20% for its intervals.

The following describes how the timer should be programmed.

Enabling Watchdog:
MOV AX, 000FH (Choose the values from 0)
MOV DX, 0443H
OUT DX, AX

Disabling Watchdog
MOV AX, 00FH (Any value is fine.)
MOV DX, 0441H
OUT DX, AX

WATCHDOG TIMER CONTROL TABLE

Level	Value	Time/sec	Level	Value	Time/sec
1	F	0	9	7	16
2	E	2	10	6	18
3	D	4	11	5	20
4	C	6	12	4	22
5	B	8	13	3	24
6	A	10	14	2	26
7	9	12	15	1	28
8	8	14	16	0	30