MAT-A693

VIA C3 Low Power Processors Embedded SBC

User's Manual

Version 2.0

Manual edition 1.0, 20 November, 2002

Trademarks

Limitation of Liability

Table of Contents

Chapter 1. General Information

1.1 Introduction

The MAT-A693 is a full function of 5.25" Embedded format SBC board use VIA VT8606 and VT82C686B chipset supports processors VIA Ezra/Eden (EBGA packaging) processors. The MAT-A693 supports CRT, Intel 82559ER or Realtek RTL8139C Ethernet chipset with RJ45 jack for 10/100Mbps.

The onboard features include two RS-232 serial ports, and onboard SSD interface supports DiskOnChip 2000 series up to 288MB. The MAT-A693 supports up to 2 USB ports. For the expansion ability, the MAT-A693 reserved a PCI slot for flexible expansion capabilities.

1.2 Specification

General Functions

CPU	VIA Eden (EBGA packaging) 400/667MHz and Ezra 800MHz CPU
BIOS	Award® 256KB Flash BIOS supports console redirection function
Chipset	VIA VT8606 + VT82C686B
I/O Chipset	Built-in VT82C686B
Memory	One 168-pin DIMM socket supports up to 512Mbytes SDRAM
Enhanced IDE	One IDE connectors and support up to two IDE devices. Support Ultra DMA 33/66/100 mode with data transfer rate up to 100MB/sec.
PCI slot	One 32-bit PCI expansion slot
Serial port	Two RS-232 ports, one DSUB-9P and one pin header
USB connectors	5 x 2 header onboard supports dual USB ports
System Monitoring	Supports temperatures, Fan speed, and voltages monitoring

CRT Interface

Chipset	VIA Twister chip with integrated
Display type	Supports pin header for CRT Monitor
Display memory	Share system memory 8/16/32MB

Ethernet Interface

Chipset	Quadruple Intel® 82559ER or Realtek® RTL8139C 100Base-Tx Fast

	Ethernet controller
Ethernet interface	PCI 100/10 Mbps Ethernet controller. IEEE 802.3U protocol compatible
SSD Interface	DiskOnChipR 2000 series up to 288MB

Mechanical and Environmental

Power supply voltage	+12V (11.4V to 12.6V)
Max. power requirements	5A@ +12V
Operating temperature	32 to 140°F (0 to 60°C)
Board size	8"(L) x 5.75"(W) (203mm x 146mm)

1.3 MAT-A693 Package

Please make sure that the following items have been included in the package before installation.

1. MAT-A693 VIA C3 Embedded SBC
2. Quick Setup
3. Cable: Please refer to Appendix B Optional Cables
4. CD-ROM which contains the following folders:

(1) Manual
(2) System Driver
(3) VGA Driver
(4) Ethernet Driver
(5) Tools

If any of these items are missing or damaged, please contact your dealer from whom you purchased the board at once. Save the shipping materials and carton in the event that you want to ship or store the board in the future. After you unpack the board, inspect it to assure an intact shipment. Do not apply power to the board if it appears to have been damaged.

Leave the board in its original packing until you are ready to install

Precautions

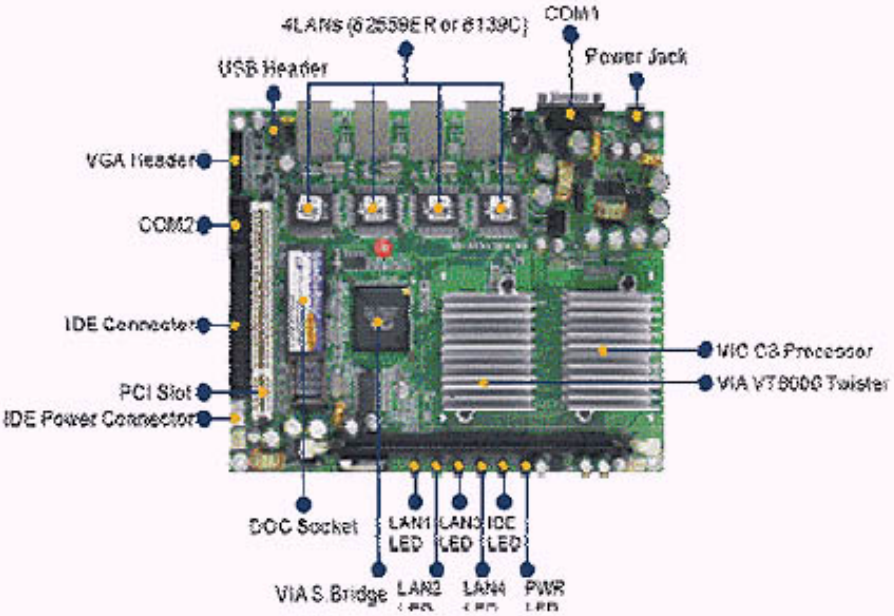
Please make sure you properly ground yourself before handling the MAT-A693 board or other system components. Electrostatic discharge can be easily damage the MAT-A693 board.

Do not remove the anti-static packing until you are ready to install the MAT-A693 board.

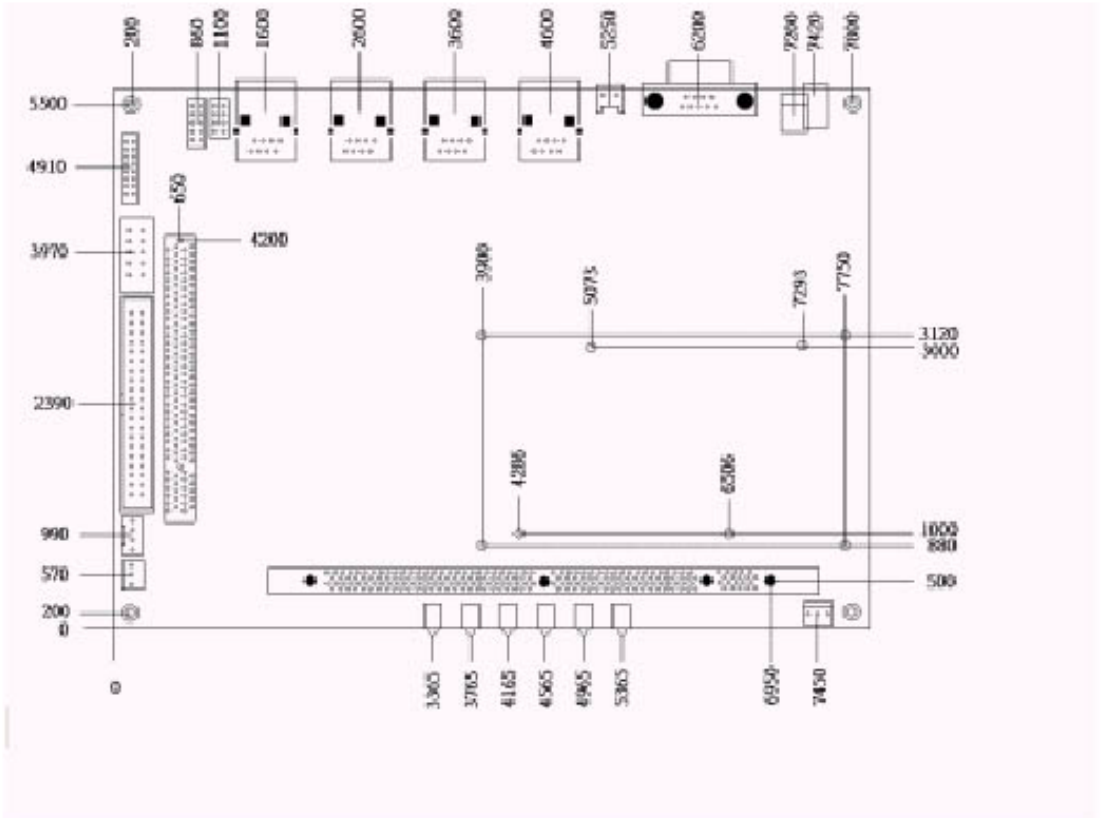
Ground yourself before removing any system component from it protective anti-static packaging. To ground yourself, grasp the expansion slot covers or other unpainted parts of the computer chassis.

Handle the MAT-A693 board by its edges and avoid touching its component.

1.4 Board Layout

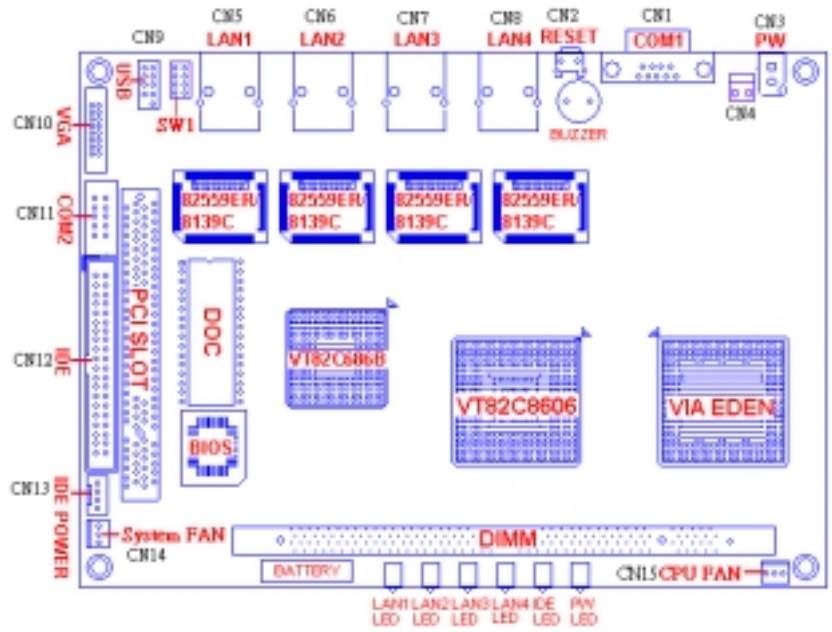


1.5 Board Dimension



Chapter 2. Connectors/Switch Location and Configuration

2.1 Connectors/Jumpers Location and Define



Connector	Description	Connector	Description
CN1	COM Port (D-Sub)	CN9	USB Pin-header (2.54mm)
CN2	Reset Button	CN10	VGA Pin-header (2mm)
CN3	External Power Jack	CN11	COM Port Pin-header
CN4	Internal Power Jack	CN12	IDE Connector (40 pin; 2.54 mm)
CN5	LAN1 RJ-45 Connector	CN13	IDE Power Connector
CN6	LAN2 RJ-45 Connector	CN14	System Fan Connector
CN7	LAN3 RJ-45 Connector	CN15	CPU Fan Connector
CN8	LAN4 RJ-45 Connector	SW1	DiskOnChip address select
JP1	Clear CMOS	JP2	Watchdog Output Select

2.2. Onboard Processors

The MAT-A693 onboard built-in VIA Ezra or EDEN EBGA Package processor. The CPU cooler fan will be mounted when board with 800MHz CPU and the high profile Heatsink will be mounted when 667MHz CPU.

2.3 Installing Memory

To insert a DIMM Memory:

The MAT-A693 supports one 168-pin DIMM sockets, memory up to 512Mbyte.

To Insert a DIMM Memory*:* Please align the module with the socket key and press down until the levers at each end of the socket snap close up.

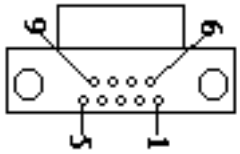
There is only one direction for installing a module in the socket. Do not attempt to force the module into the socket incorrectly.

To Remove a DIMM Memory: To remove a DIMM, press down on the levers at both end of the module until the module pops out

There is only one direction for installing a module in the socket. Do not attempt to force the module into the socket incorrectly.

2.4 Connector and Jumper Settings

CN1: COM Port (D-Sub)



Pin	Define
1	DCD
2	RXD
3	TXD
4	DTR
5	Ground
6	DSR
7	RTS
8	CTS
9	RI

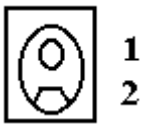
CN2: Reset Bottom

Pin	Define
1	Ground
2	RSTSW#

CN3: External Power Jack

The MAT-A693 reserved an external power jack (CN3) and internal power pin header (CN4) for different using of power supply.

The external power jack with inner diameter 2.5 ϕ & outer diameter 6.0 ϕ power jack



Pin	Define
1	+12V
2	Ground

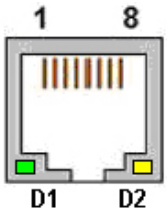
CN4: Internal Power Jack

The MAT-A693 with one internal power jack

2 1

Pin	Define
1	+12V
2	Ground

CN5, CN6, CN7, CN8: LAN1-LAN4 RJ-45 Connector



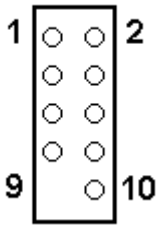
Pin	Define
1	TX+
2	TX-
3	N/C
4	Ground
5	Ground
6	N/C
7	RX+
8	RX-

LED:

D2: Speed indicated LED	
10 Mbps	DIM
100 Mbps	GREEN
D1 :Link/Activity LED	
Link	YELLOW
Activity	BLINKING

CN9: USB Pin-header (2.54mm)

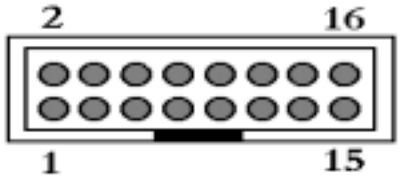
The MAT-A693 supports dual USB ports



Pin	Define	Pin	Define
1	+5V	2	+5V
3	DATA 0-	4	DATA 1-
5	DATA 0+	6	DATA 1+
7	GND	8	GND
9	KEY PIN	10	GND

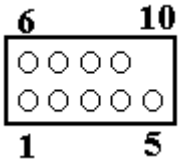
CN10: VGA Pin-header (2mm)

The MAT-A693 reserved one VGA pin header



Pin	Define	Pin	Define
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	NC	10	GND
11	NC	12	DCC DATA
13	HSYNC	14	VSYNC
15	DCC CLOCK	16	NC

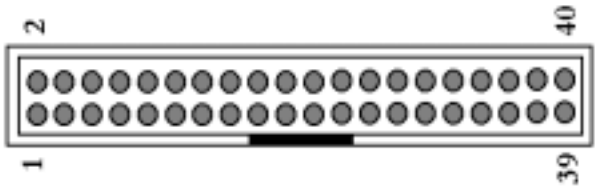
CN11: COM Port Pin-header



Pin	Define	Pin	Define
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND	10	Key Pin

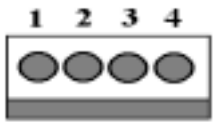
CN12: IDE Connector (40 pin; 2.54 mm)

The MAT-A693 supports one 2.54mm pitch 40-pin pin header for up to two IDE devices.



Pin	Define	Pin	Define
1	RESET*	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	KEY PIN
21	DREQ	22	GND
23	DIOW*	24	GND
25	DIOR*	26	GND
27	IOCHRDY	28	CSEL
29	DACK*	30	GND
31	IRQ14	32	N/C
33	A1	34	DETECT
35	A0	36	A2
37	HD SELECT 0*	38	HD SELECT 1*
39	ACTIVE*	40	GND

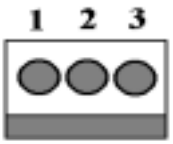
CN13: IDE Power Connector



Pin	Define	Pin	Define
1	+12V	2	GND
3	GND	4	+5V

CN14, CN15: System and CPU Fan Connector

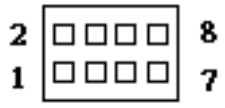
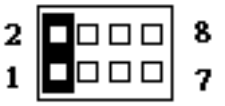
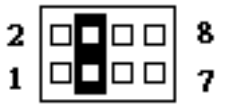
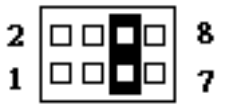
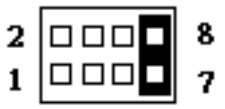
The onboard supports eight digital input and eight output which using a 2.0mm pitch connector



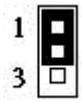
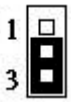
Pin	Define
1	Ground
2	+12V
3	Speed Detect

SW1: DiskOnChip Address Select

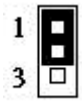
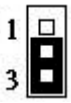
You can select the DiskOnChip address by setting SW1. The DOC occupies an 8Kbyte window in the upper memory address range of D0000 to EFFFF. These addresses might be already occupied by the ROM BIOS of other peripheral. Please select the appropriate memory address to avoid memory conflicts.

Setting		DOC Address
	All open	Disable
	1-2 close	D0000-D3FFF
	3-4 close	D4000-D7FFF
	5-6 close	D8000-DBFFF
	7-8 close	DC000-DFFFF

JP1: Clear CMOS

Setting		Define
	1-2	Hold Data (Default)
	2-3	Clear CMOS

JP2: Watchdog Output Select

Setting		Define
	1-2	IRQ11
	2-3	Reset (Default)

Chapter 3. BIOS Setup

The ROM chip of your MAT-A693 board is configured with a customized Basic Input/Output System (BIOS) from Phoenix-Award BIOS. The BIOS is a set of permanently recorded program routines that give the system its fundamental operational characteristics. It also tests the computer and determines how the computer reacts to instructions that are part of programs.

The BIOS is made up of code and programs that provide the device-level control for the major I/O devices in the system. It contains a set of routines (called POST, for Power-On Self Test) that check out the system when you turn it on. The BIOS also includes CMOS Setup program, so no disk-based setup program is required CMOS RAM stores information for:

- Date and time
- Memory capacity of the main board
- Type of display adapter installed
- Number and type of disk drives

The CMOS memory is maintained by battery installed on the MAT-A693 board. By using the battery, all memory in CMOS can be retained when the system power switch is turned off. The system BIOS also supports easy way to reload the CMOS data when you replace the battery of the battery power lose.

3.1 Quick Setup

In most cases, you can quickly configure the system by choosing the following main menu options:

1. Choose "Load Optimized Defaults" from the main menu. This loads the setup default values from the BIOS Features Setup and Chipset Features Setup screens.
2. Choose "Standard COS Features" from the main menu. This option lets you configure the date and time, hard disk type, floppy disk drive type, primary display and more.
3. In the main menu, press F10 ("Save & Exit Setup") to save your changes and reboot the system.

3.2 Entering the CMOS Setup Program

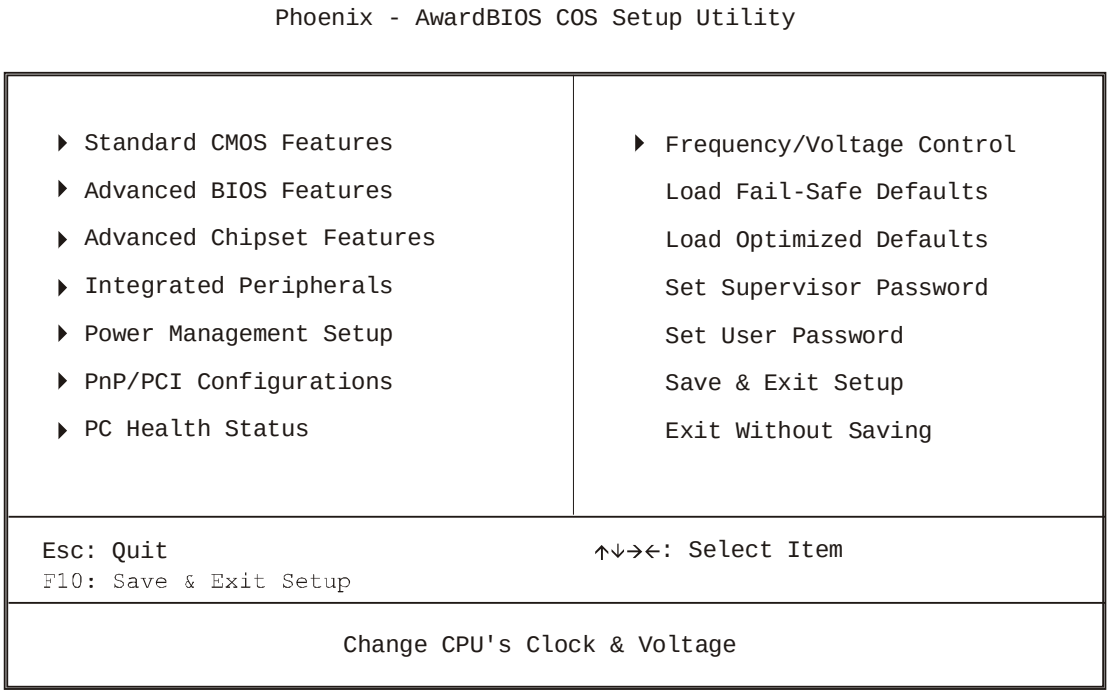
Use the CMOS Setup program to modify the system parameters to reflect the options installed in your system and to customized your system. For example, you should run the Setup program after you:

- Received an error code at startup
- Install another disk drive
- Use your system after not having used it for a long time
- Find the original setup missing
- Replace the battery
- Change to a different type of CPU
- Run the Phoenix-Award Flash program to update the system BIOS

Run the CMOS Setup program after you turn on the system. On-screen instructions explain how to use the program.

⇩Enter the CMOS Setup program's main menu as follows:

1. Turn on or reboot the system. After the BIOS performs a series of diagnostic checks, the following message appears:
   "Press DEL to enter SETUP"
2. Press the <DEL> key to enter CMOS Setup program. The main menu appears:



3. Choose a setup option with the arrow keys and press <Enter>. See the following sections for a brief description of each setup option.

In the main menu, press F10 ("Save & Exit Setup) to save your changes and reboot the system. Choosing "EXIT WITHOUT SAVING" ignores your changes and exits the program. Pressing <ESC> anywhere in the program returns you to the main menu.

3.3 Menu Options

The main menu options of the CMOS Setup program are described in the following and the following sections of this chapter.

STANDARD CMOS FEATURES:
Configure the date & time, hard disk drive type, floppy disk drive type, primary display type and more

ADVANCED BIOS FEATURES:
Configure advanced system options such as enabling/disabling cache memory and shadow RAM

ADVANCED CHIPSET FEATURES:
Configure advanced chipset register options such DRAM timing

INTEGRATED PERIPHERALS:
Configure onboard I/O functions

POWER MANAGEMENT SETUP:
Configure power management features such as timer selects

PNP/PCI CONFIGURATION:
Configure Plug & Play IRQ assignments and PCI slots

PC HEALTH STATUS:
Configure the CPU speed and, if the optional Winbond W83627HF system monitor IC is installed, view system information

FREQUENCY/VOLTAGE CONTROL
Use this menu to specify your settings for frequency/voltage control

LOAD FAIL-SAFE DEFAULT:
Loads BIOS default values. Use this option as diagnostic aid if your system behaves erratically

LOAD OPTIMIZED DEFAULTS:

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations.

SET SUPERVISORS & USER PASSWORD:

Configure the system so that a password is required when the system boots or you attempt to enter the CMOS setup program. When you log in with this password, you will be able to enter the COS Setup main menu, but you can not enter other menus in the CMOS Setup program.

SAVE & EXIT SETUP:

Save changes of values to CMOS and exit the CMOS setup program

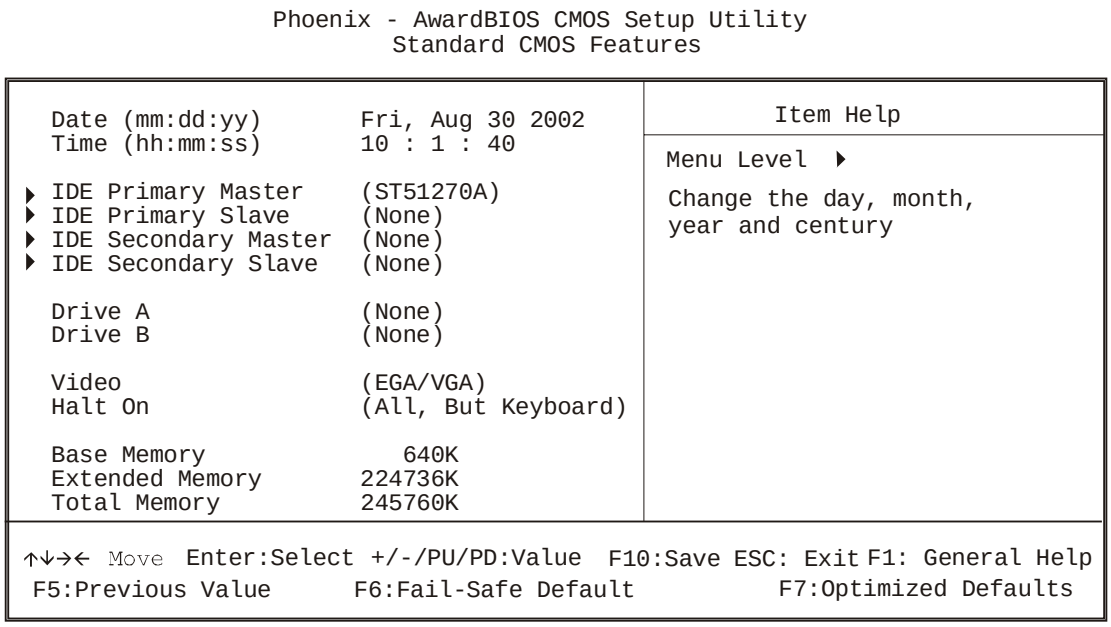
EXIT WITHOUT SAVING:

Abandon all CMOS changes and exit the CMOS setup program

Standard CMOS Features Setup

⇩ **Use the Standard CMOS Setup option as follows:**

1. Choose "Standard CMOS Features" from the main menu. The following screen appears:



2. Use the arrow keys to move between fields. Modify the selected field using the PgUP/PgDN/+/- keys. Some fields let you enter numeric values directly.

Date and Time Configuration:

Type the current date

Hard Disks:

Choose from "Auto", "User" or "None"

If your drive is not one of the predefined types, choose "User" and enter the following drive specifications: Cylinders, heads, Wpcom, L-Zone, sectors and mode.

Consult the documentation received with the drive for the values that will give you optimum performance.

Drive A & B:

Select the correct specifications for the floppy disk drive installed in the computer.

None: No floppy disk drive installed

360K/1.2M 5.25" standard drive

720K/1.44M/2.88M 3.5" standard drive

Video:

Choose: EGA/VGA

CGA 40 Color Graphics adapter, power up in 40 columns mode

CGA 80 Color Graphics adapter, power up in 80 columns mode

Mono Monochrome adapter, includes high resolution monochrome adapters

Halt On:

Controls whether the system stops in case of an error detected during power up.

Choose: All Errors (Default)

No Errors

All, But Keyboard

All, But Diskette

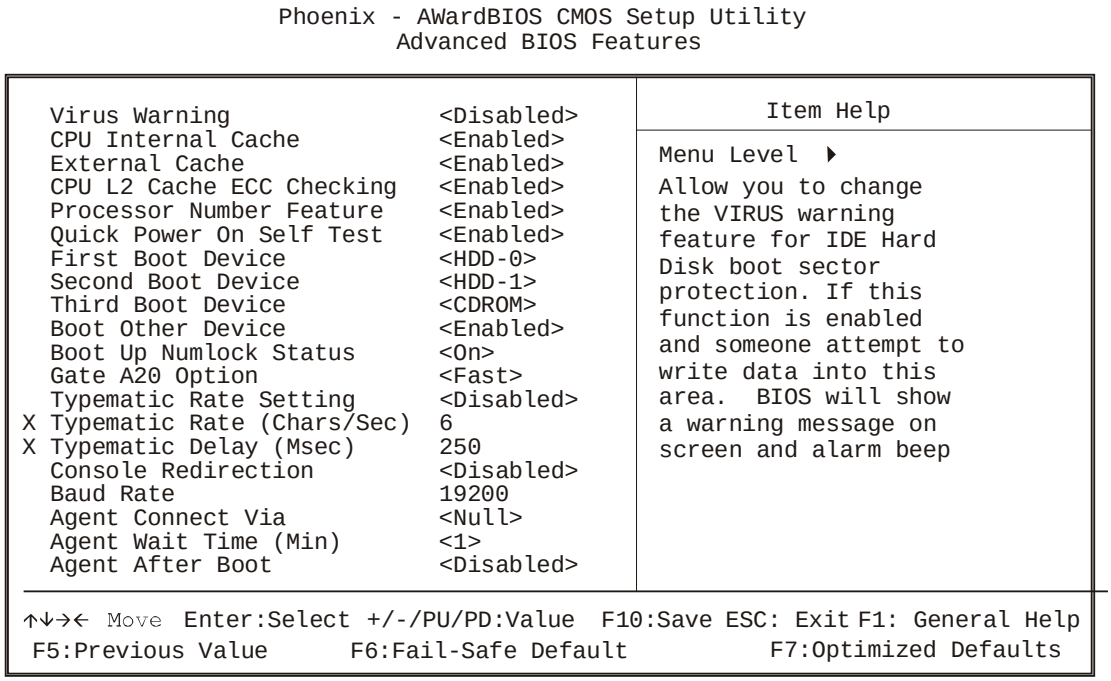
All, But Disk/Key

3. After you have finished with the Standard CMOS Features program, press the <ESC> key to return to the main menu.

Advanced BIOS Features Setup

⇩ **Use the Advanced BIOS Features Setup option as follows:**

1. Choose "Advanced BIOS Features Setup" from the main menu. The following screen appears:



2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUP/PgDN keys. Press the <F1> "Help" key for information on the available options:

Virus Warning:

When enabled, any attempt to write to the boot sector and partition table will halt the system and cause a warning message to appear. If this happens, you can use an anti-virus utility on a virus-free, bootable floppy disk to reboot and clean your system. The default setting is **Disabled**.

CPU Internal/External Cache:

The Cache memory is additional memory that is much faster than conventional system memory. Most of 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. The external cache field may not appear if your system doesn't have external cache memory.

Choose: Enabled, Disabled

CPU L2 Cache ECC Checking:
When you select Enabled, memory checking is enable when the external cache contains ECC SRAM.

Process Number Feature:
Select Enabled, this will check the CPU Serial number and disabled this option if you don't want the system knowing the serial number.

Quick Power On Self Test:
Select Enabled to reduce the amount of time required to run the power-on-self-test (POST). A quick POST skips certain steps. The manufacturer recommend that you normally disable quick POST.
Choose: Enabled, Disabled

First/Second/Third Boot Device:
The BIOS attempts to load the operating system from the devices in the sequence selected in these items.
Choose: Floppy, LS-120, HDH-0, 1, 2, 3, SCSI, CDROM, ZIP100, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN, Disabled

Boot Up NumLock Status:
Choose On or Off. On puts the numeric keypad in Num Lock mode at boot-up. Off puts the numeric keypad in arrow key mode at boo-up

Gate A20 Option:
Choose Enabled or Disabled. Enable this option to allow RAM accesses faster than normal, and is useful in networking operating systems.

Typematic Rate Setting:
Choose Enabled or Disabled. Enable his option to adjust the keystroke repeat rate. Adjust the rate via Typematic Rate Delay and Typematic Rate

Typematic Rate (Chars/Sec):
Choose the rate at which character keeps repeating.

Typematic Delay (Msec):
Choose the delay between holding down a key and when the character begins repeating.

Console Redirection:

Set the Console Redirection <Disabled>

This function is let you to connect the Server by hyper terminal to monitor Client, it has to be worked under DOS mode. The Client terminal doesn't need the graphic function.

Advanced Chipset Features Setup

⇩ **Use the Advanced Chipset Features Setup option as follows:**

1. Choose "Advanced Chipset Features Setup" from the main menu. The following screen appears:

```
                Phoenix - AwardBIOS CMOS Setup Utility
                      Advanced Chipset Features

  DRAM Timing By SPD           <Enabled>
X DRAM Clock                    Host CLK      |        Item Help
X SDRAM Cycle Length            3             |
X Bank Interleave               Disabled      | Menu Level▸
  Memory Hole                  <Disabled>     |
  P2C/C2P Concurrency          <Enabled>      |
  System BIOS Cacheable        <Enabled>      |
  Video RAM Cacheable          <Enabled>      |
  Frame Buffer Size            <16M>          |
  AGP Aperture Size            <64M>          |
  OnChip USB                   <Enabled>      |
  USB Keyboard Support         <Enabled>      |
  CPU to PCI Write Buffer      <Enabled>      |

↑↓→← Move  Enter:Select  +/-/PU/PD:Value F10:Save ESC: Exit F1: General Help
  F5:Previous Value    F6:Fail-Safe Default    F7:Optimized Defaults
```

2. Move between items and select values by using the arrow keys. Modify the selected fields using the PnUP/PgDN keys. For information on the various options, press <F1> key.

DRAM Timing By SPD:

It lets you select the value in this field, depending on the board paged DRAMs or EDO (Extended Data Output) DRAMS.

Choose: Enabled / Disabled

DRAM Clock:

It lets you control the DRAM speed.

Choose: Host Clock, HCLK-33M, HCLK+33M

SDRAM Cycle Length:
It sets the CAS latency timing.
Choose: 3 / 2

Bank Interleave:
Choose: 2 Bank / 4 Bank / Disabled

Memory Hole AT 15M-16M:
Choose Enabled or Disabled. You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirement.

P2C/C2P Concurrency:
It lets you enable or disable the PIC to CPU or CPU to PCI.
Choose: Enabled / Disabled

System BIOS Cacheable:
Choose Enabled or Disabled. When enabled, caching of the system BIOS at F0000h-FFFFFh, enhancing system performance. However, if any program writes to this memory area, a system error may result.

Video RAM Cacheable:
Choose: Enabled / Disabled

Frame Buffer Size:
Choose: 2M / 4M / 8M / 16M / 32M

AGP Aperture Size:
Enter a value from 4MB to 128MB to determine the effective size of the graphics aperture sued in the particular PAC configuration. The larger the value, the better the AGP performance.

OnChip USB:
You could enable this function if the system contains USB (Universal Serial Bus) controller and USB keyboard. When disabled, the system will not be able to access USB keyboard.
Choose: Enabled / Disabled

USB Keyboard Support:

You could enable this function if the system contains USB controller and USB keyboard.

Choose: Enabled / Disabled

CPU to PCI Write Buffer:

When enabled, writes from CPU to PCI bus are buffered. It also compensate the speed differences between the CPU and PCI bus. Otherwise, when disabled, the writes are not buffered. The CPU must wait until the write is completed starting another write cycle.

Choose: Enabled / Disabled

Integrated Peripherals

⇩**Use the Integrated Peripherals Setup option as follows:**

1. Choose "Integrated Peripherals Setup" from the main menu. The following screen appears:

```
                Phoenix - AwardBIOS CMOS Setup Utility
                       Integrated Peripherals
```

On-Chip IDE Channel0	<Enabled>	Item Help
On-Chip IDE Channel1	<Enabled>	Menu Level ▸
IDE Prefetch Mode	<Enabled>	
Primary Master PIO	<Auto>	
Primary Slave PIO	<Auto>	
Secondary Master PIO	<Auto>	
Secondary Slave PIO	<Auto>	
Primary Master UDMA	<Auto>	
Primary Slave UDMA	<Auto>	
Secondary Master UDMA	<Auto>	
Secondary Slave UDMA	<Auto>	
Init Display First	<PCI>	
IDE HDD Block Mode	<Enabled>	
Onboard Serial Port 1	<Auto>	
Onboard Serial Port 2	<Auto>	

```
↑↓→← Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC: Exit  F1: General Help
 F5:Previous Value      F6:Fail-Safe Default          F7:Optimized Defaults
```

2. Move between items and select values by using the arrow keys. Modify the selected fields using the PgUP/PgDN keys. Please press the <F1> key for information on the various options.

On-Chip IDE Channel 0 and Channel 1:

The system supports for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface

IDE Prefetch Mode:

The onboard IDE interface supports IDE Prefetch Mode, for faster drive accesses. If you install a primary and/or secondary add in IDE interface, set the field to Disabled if the interface doesn't support prefetch.

Choose: Enable/Disable

IDE Primary/Secondary Master/Slave PIO:

Auto/Mode0/Mode1/Mode2/Mode3/Mode4

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

IDE Primary/Secondary Master/Slave UDMA:

Auto, Mode0, Mode1, Mode2, Mode3, Mode4

UltraDMA33/66/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If your hard drive and your system software both support UltraDMA33/66/100, select Auto to enable BIOS support.

Init Display First:

This item allows you to active PCI slot or onboard first

IDE HDD Block Mode:

Select Enabled only if your hard drives support block mode.

Onboard Serial Port 1 and Serial Port 2:

Choose: Auto

Power Management Setup

The Power Management Setup controls the board’s “green” features. To save energy these features shut down the video display and hard disk drive.

⇩ **Use the Power Management Setup option as follows:**

1. Choose “Power Management Setup” from the main menu. The following screen appears.

```
                Phoenix - AwardBIOS CMOS Setup Utility
                        Power Management Setup

                                                   Item Help
 ▶ Power Management        <Press Enter>
   PM Control by APM       <Yes>            Menu Level  ▶
   Video Off Option        <Suspend -> Off>
   Video Off Method        <V/H SYNC+Blank>
   MODEM Use IRQ           <3>
   Soft-Off by PWRTBN      <Instant-Off>
   Wake Up Events          <Press Enter>

 ↑↓→← Move  Enter:Select +/-/PU/PD:Value  F10:Save ESC: Exit F1: General Help
 F5:Previous Value      F6:Fail-Safe Default          F7:Optimized Defaults
```

2. Move between items and select values by using the arrow keys. Modify the selected field the PgUP/PgDN keys. For information on the various options, press <F1> key.

Power Management:

Choose Disable, User Define, Min Saving or Max. Saving.
“User Define” – Lets you specify when the HDD and system will shut down
“Min Saving” - Predefine timer value of 4-12 min.
“Max Saving” – Predefine timer value of 1 minute

PM Control by APM:

When the advanced power management is installed on the system, users would select “Yes” to save more power.
Choose: Yes / No

Video Off Option:

Select the power saving modes when the monitor is blank.

Always on: Monitor remains "on" during power Saving modes.

Suspend-off: Monitor is blank when system is in suspension mode

Suspend: Off monitor is blank when the

Standby-off: System is in either suspension or standby mode.

All modes-off: Monitor is blank when the system is in any power saving mode.

Video Off Method:

Choose V/H SYNC+Blank, DPMS, Blank Screen

When power management blanks the screen and turns off vertical and horizontal scanning. The DPMS (Display Power Management System) setting allows the BIOS to control the video card if it has the DPMS features. If you don't have a Green monitor, use the Blank Screen option

Modem Use IRQ:

Choose the IRQ used by the modem.

Default: Disabled

Soft-Off by PWRTBN:

Press the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung:

Default: Instant-Off

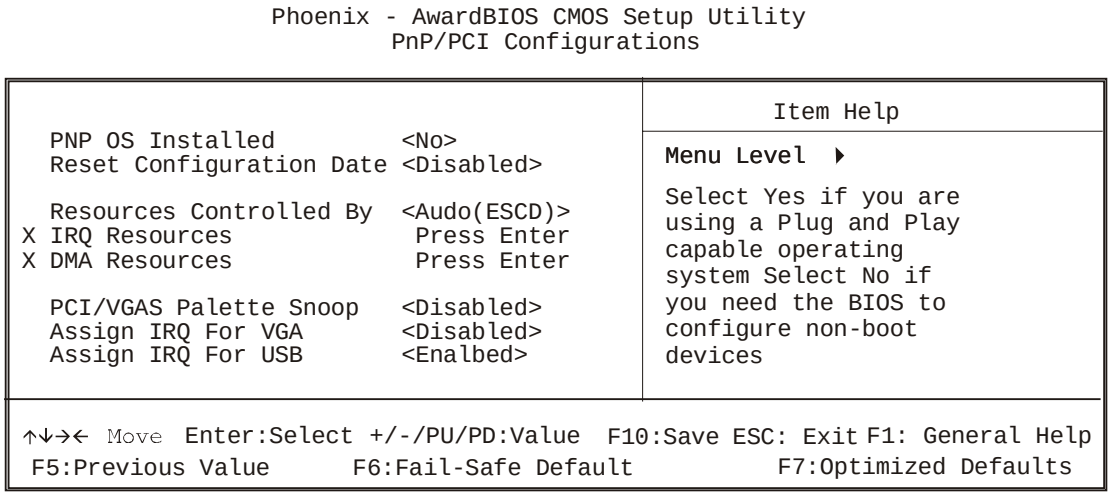
3. After you have finished with the Power Management Setup, press the <ESC> key to return to the main menu.

PNP/PCI Configuration

This option is used to configure Plug and Play assignments and route PCI interrupts to designated ISA interrupts.

⇩ **Use the PNP/PCI Configuration Setup option as follows:**

1. Choose "PNP/PCI Configuration Setup" from the main menu, the following screen appears.



2. Move between items and select values by using the arrow keys. Modify the selected fields using the PgUP/PgDN keys. For information on the various options, please press <F1> key.

PNP OS Installed:
Select Yes if the system operating environment is Plug and Play aware.
Select No if you need the BIOS to configure non-boot devices
Choose: No, Yes

Reset Configuration Data:
Choose Enable or Disable
"Enable" – PNP configuration data is reset in BIOS
"Disable" – PNP configuration date is retained in BIOS

Resources Controlled By:
Choose Auto or Manual. This option specifies whether resources are controlled by automatic or manual configuration

IRQ Resources:

IRQ-3 Assigned to <PCI Device>
IRQ-4 Assigned to <PCI Device>
IRQ-5 Assigned to <PCI Device>
IRQ-7 Assigned to <PCI Device>
IRQ-9 Assigned to <PCI Device>
IRQ-10 Assigned to <PCI Device>
IRQ-11 Assigned to <PCI Device>
IRQ-12 Assigned to <PCI Device>
IRQ-14 Assigned to <PCI Device>
IRQ-15 Assigned to <PCI Device>

PCI/VGA Palette Snoop:

Enabling this item informs the PCI/VGA card to keep silent when palette register is updated

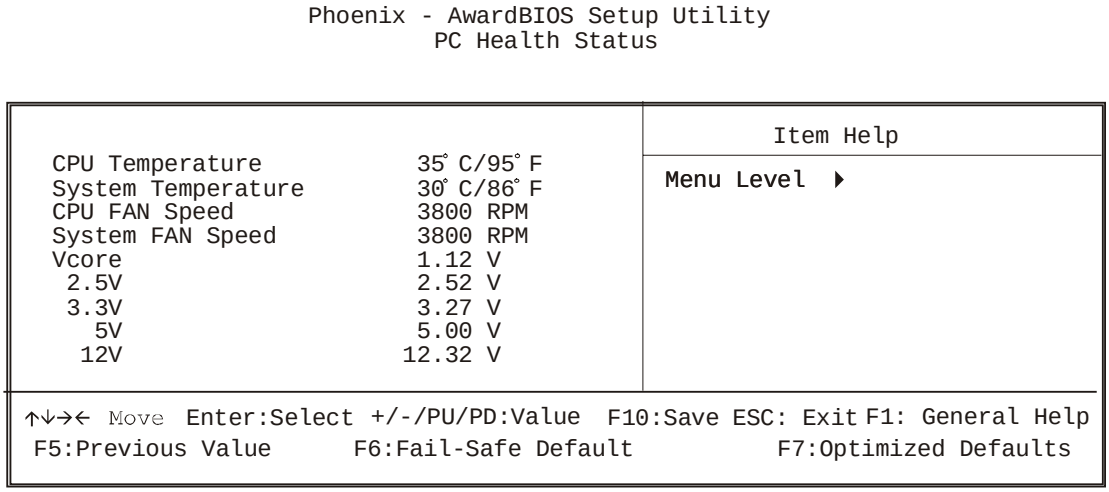
Assign IRQ for VGA/USB:

Choose Enabled/Disabled to specify whether the VGA/USB uses on IRQ or not.
an IRQ or not.

3. Please press the <ESC> key to return the main menu after finishing with the PNP/PCI Configuration Setup.

PC Health Status Configuration Setup

Choose "PC Health Status Configuration Setup" from the main menu, the following screen appears:



Frequency/Voltage Control Option

Choose the "Frequency/Voltage Control" from main menu, the following screen appears:

```
Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control
```

VIA C3 Clock Ration <Default> CPU Host Clock (CPU/PCI) <Defualt>	Item Help Menu Level ▸ This item is for VIA C3 CPU Ratio adjustment

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC: Exit F1: General Help
F5:Previous Value F6:Fail-Safe Default F7:Optimized Defaults

Load Fail-Safe Defaults

This option loads the troubleshooting default values permanently stored in the BIOS ROM. This is useful if you are having problems with the main board and need to debug or troubleshoot the system. The loaded default settings do not affect the Standard CMOS Setup screen.

To use this feature, highlight it on the main screen and press <Enter>. A line will appear on the screen asking if you want to load the BIOS default values. Pres the <Y> key and then press <Enter> if you want to load the BIOS default.

Poenix - AwardBIOS CMOS Setup Utility

Standard CMOS Features	Frequency/Volage Control
Advanced BIOS Features	Load Fail-Safe Defaults
Advanced Chipset Features	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management	word
PnP/PCI Configura	etup
PC Health Status	Exit Without Saving

Load Fail-Safe Defaults (Y/N)? N

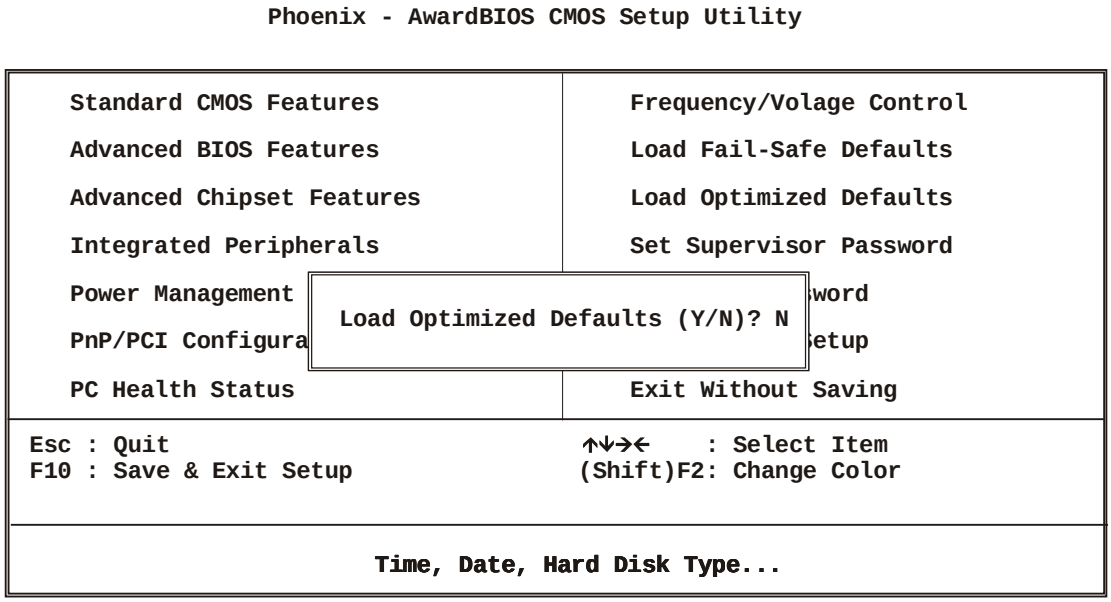
Esc : Quit ↑↓→← : Select Item
F10 : Save & Exit Setup (Shift)F2: Change Color

Time, Date, Hard Disk Type...

Load Optimized Defaults

This option loads optimized settings stored in the BIOS ROM. The auto-configured settings do not affect the Standard CMOS Setup screen.

To use this feature, highlight it on the main screen and press <Enter>. A line will appear on the screen asking if you want to load the Optimized Default Values. Press the <Y> key and then press <Enter> if you want to load the SETUP default.

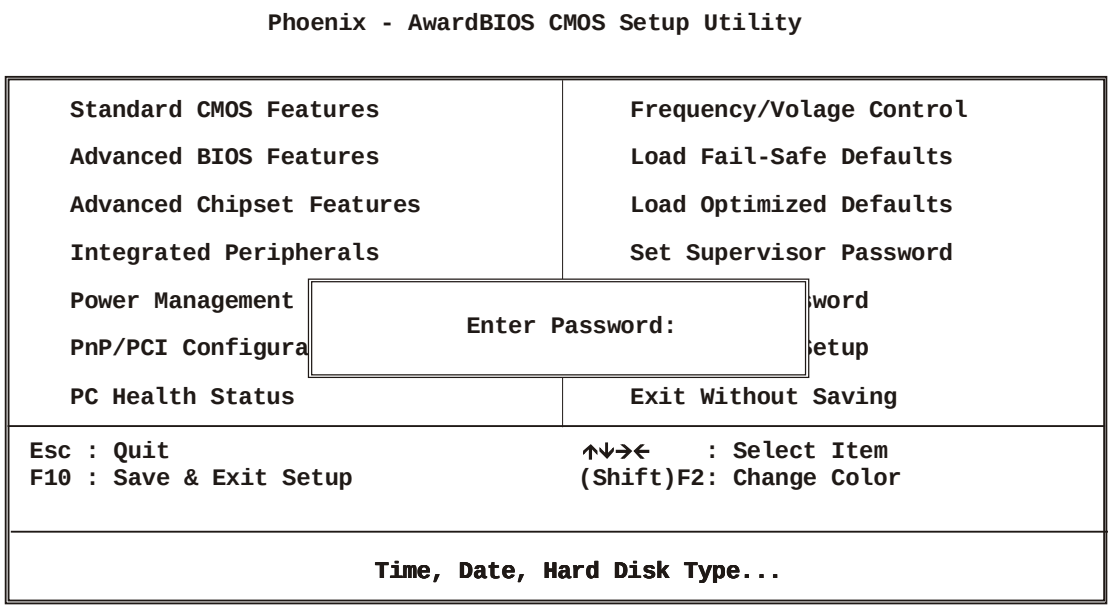


Supervisor/User Password

The password options let you prevent unauthorized system boot-up or unauthorized use of CMOS setup. The Supervisor Password allows both system and CMOS Setup program access; the User Password allows access to the system and the CMOS Setup Utility main menu.

The password functions are disabled by default. You can use these options to enable a password function or, if a password function is already enabled, change the password.

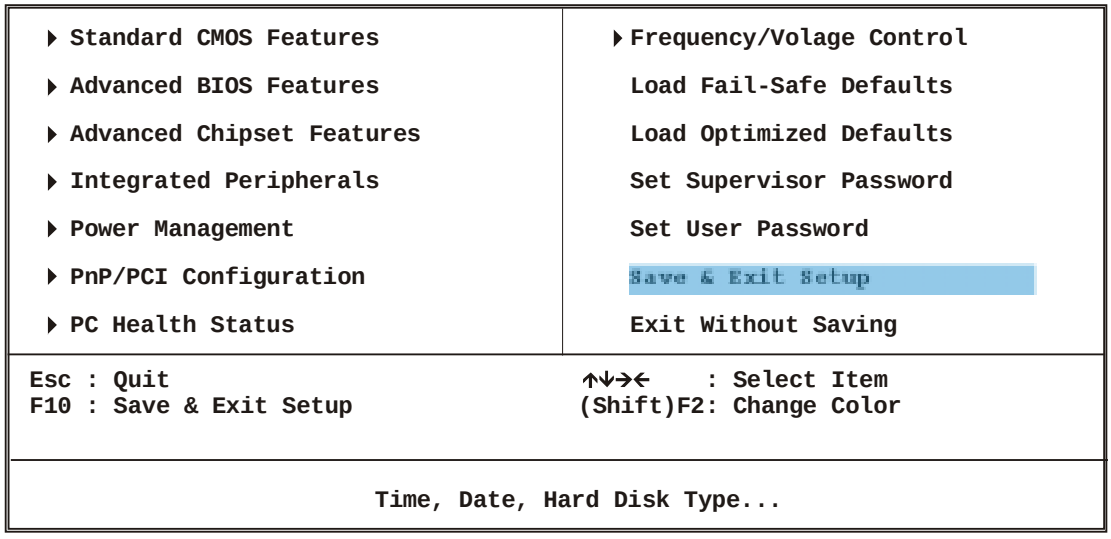
To change a password, first choose a password option from the main menu and enter the current password. Then type your new password at the prompt. The password is case sensitive and you can use up to 8 alphanumeric characters. Press <Enter> after entering the password. At the Next Prompt, confirm the new password by typing it and pressing <Enter> again.



After you use this option to enable a password function, use the "Security Option" in "BIOS Feature Setup" to specify whether a password is required every time the system boots or only when an attempt is made to enter the CMOS Setup program.

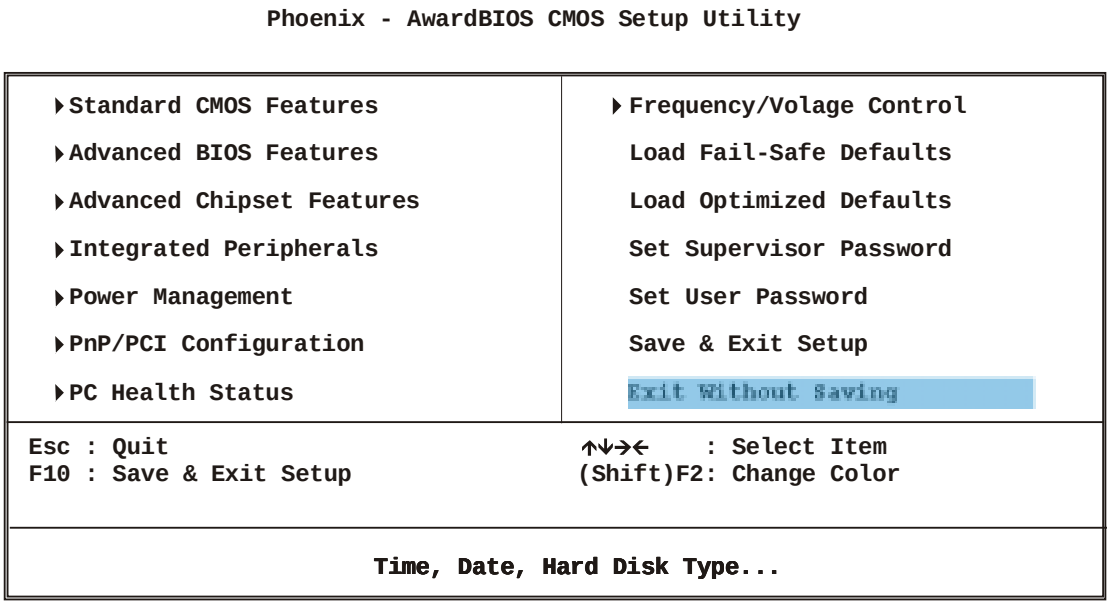
Save and Exit Setup

This function automatically saves all CMOS values before exiting Setup.



Exit Without Saving

Use this function to exit Setup without saving the CMOS value.

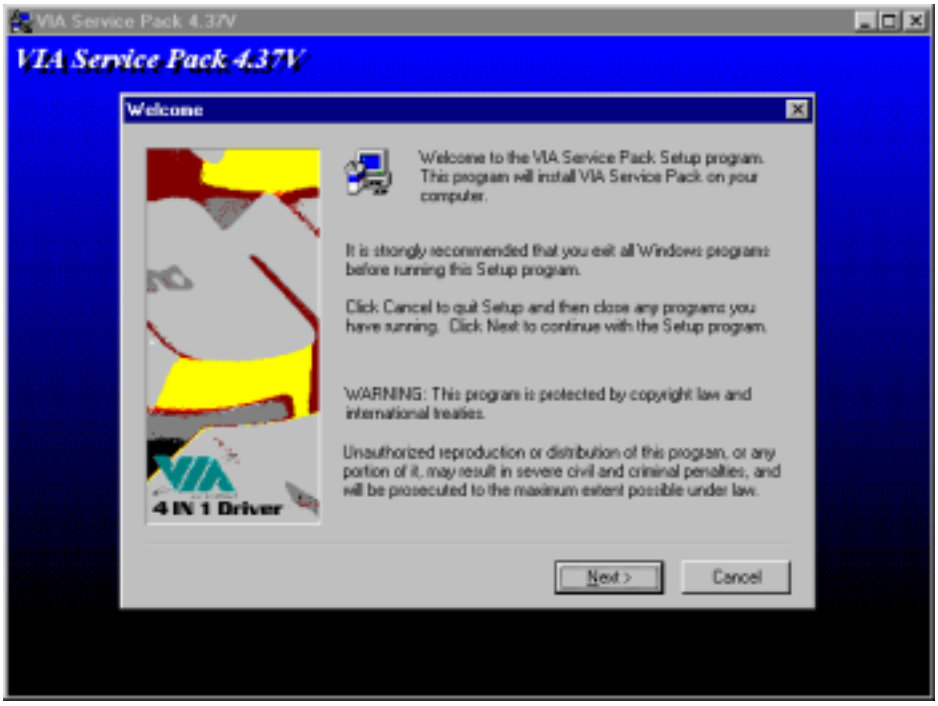


Chapter 4. Driver Utility

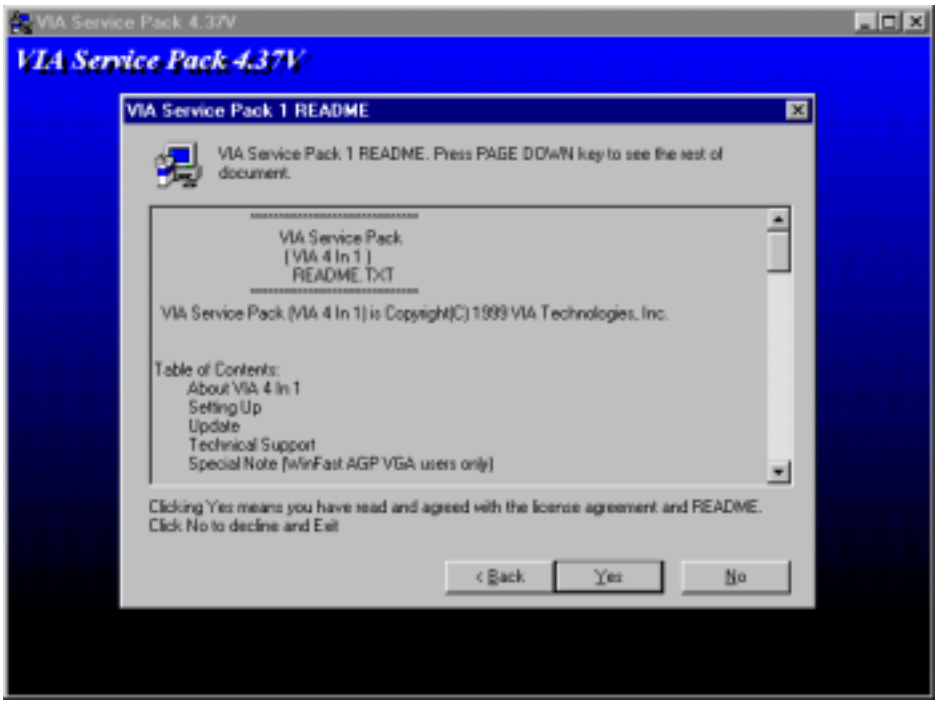
The system driver installation procedure must be performed first.

4.1 System Driver Installation

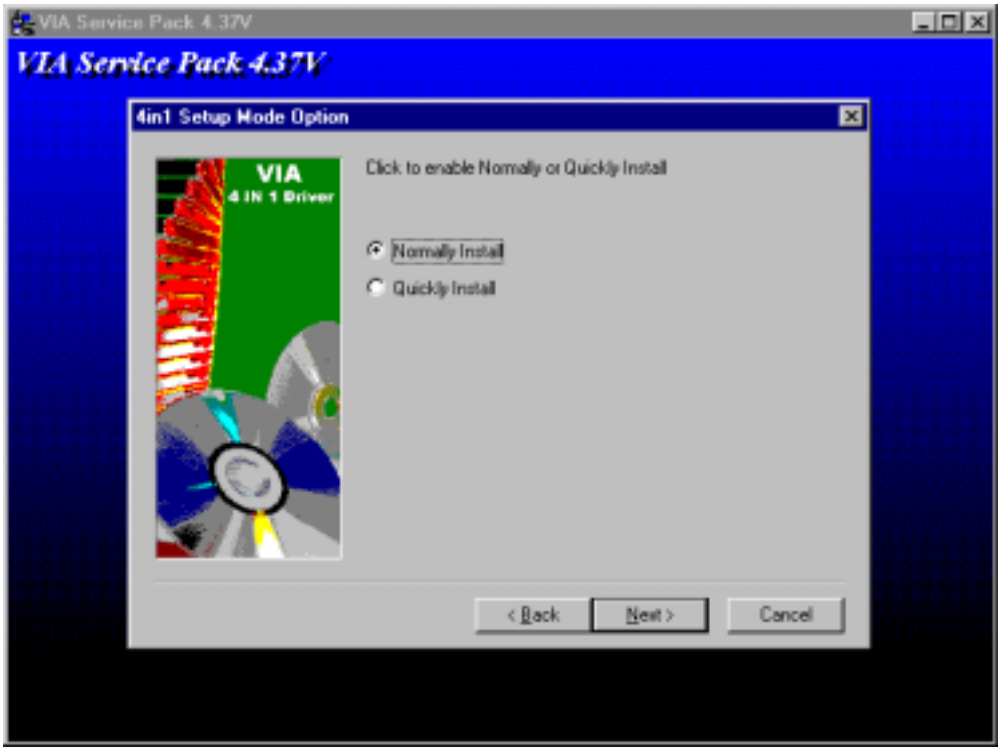
1. Insert the MAT-A693 CD-ROM driver into the CD-ROM Drive
2. Select the Drivers/system file to click the Setup icon.
3. Click **Next**



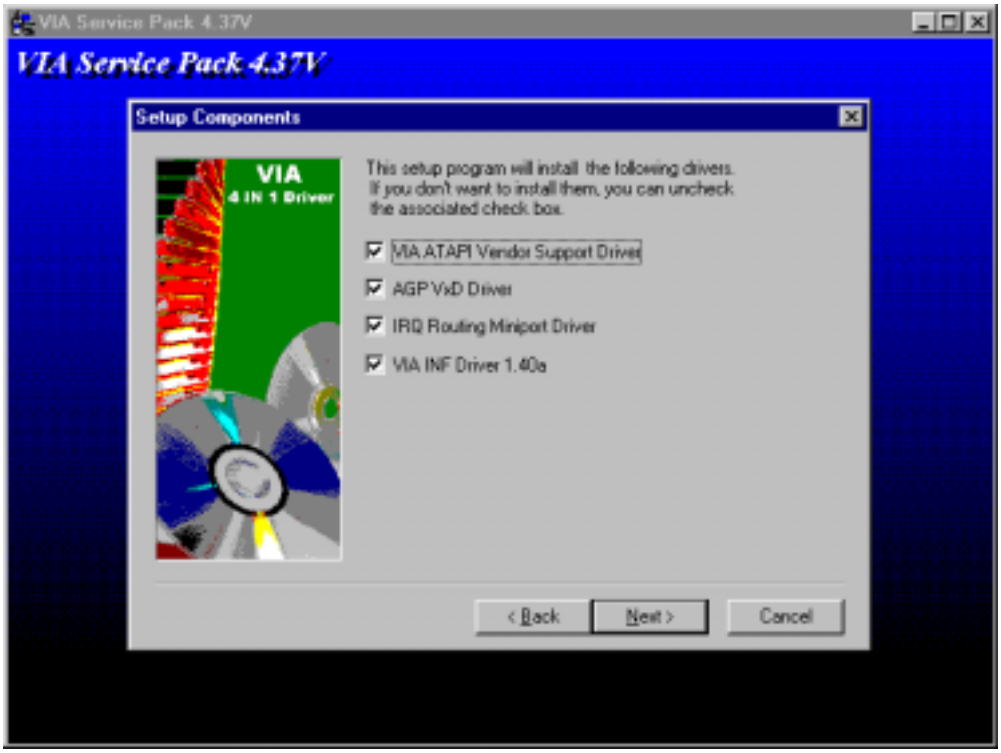
4. Click **Yes**



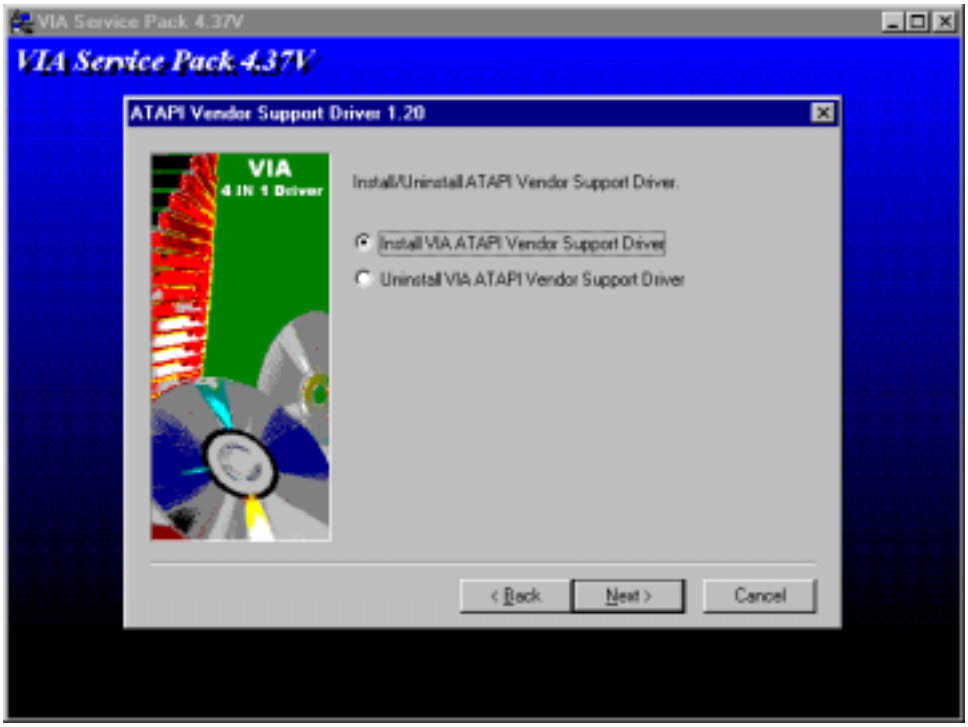
5. Select **Normally Install,** and then click **Next**



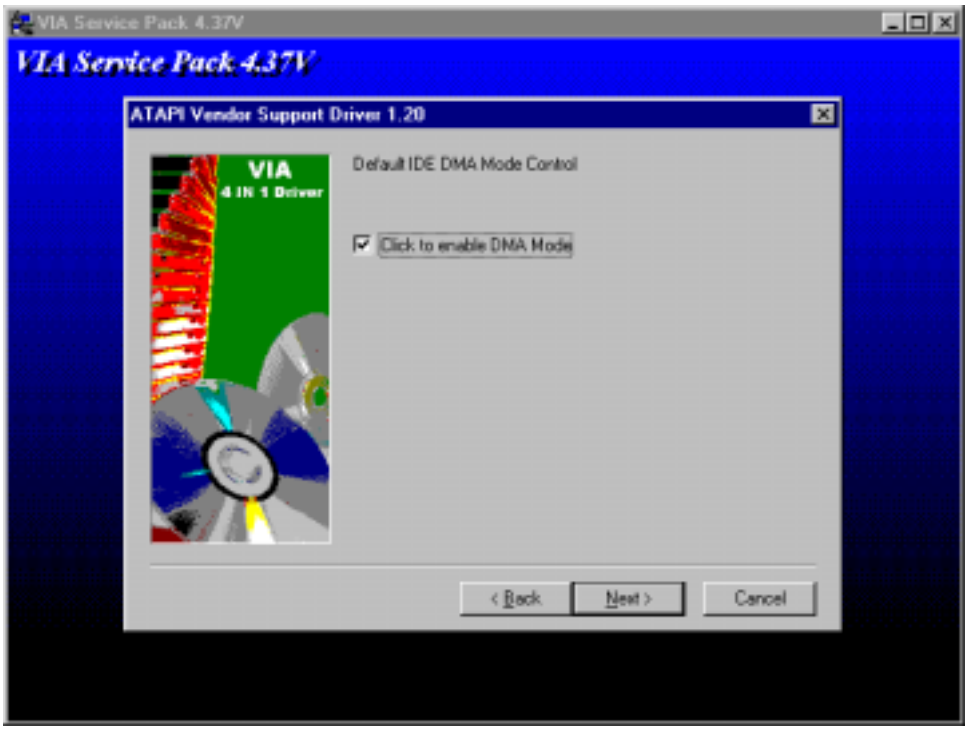
6. Remain the default setting, and then click **Next**



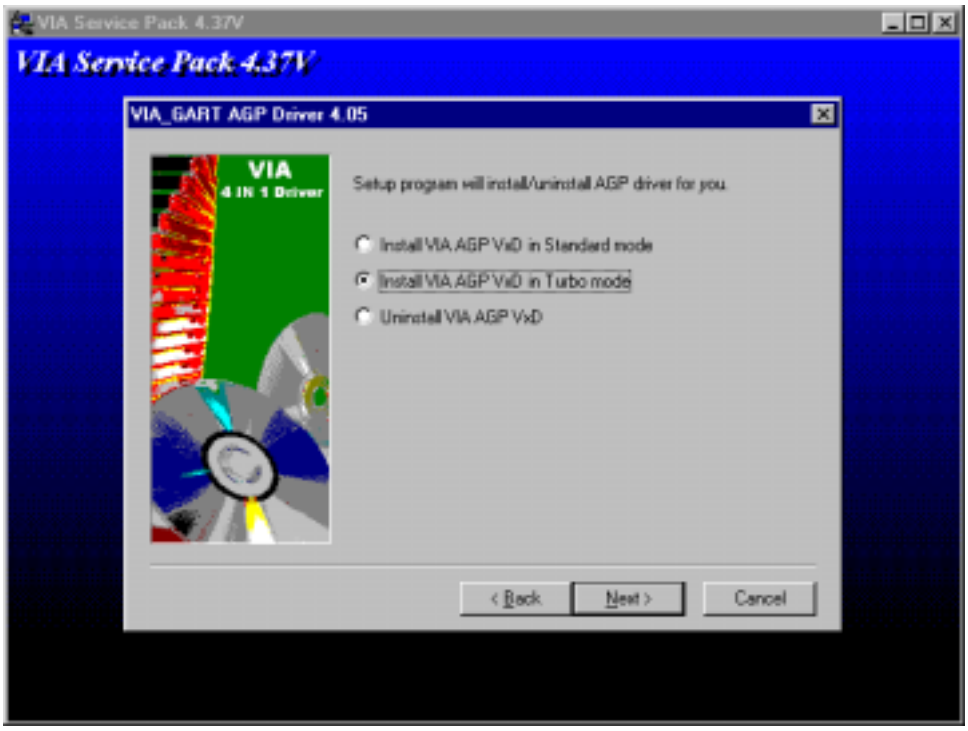
7. Click **Next**



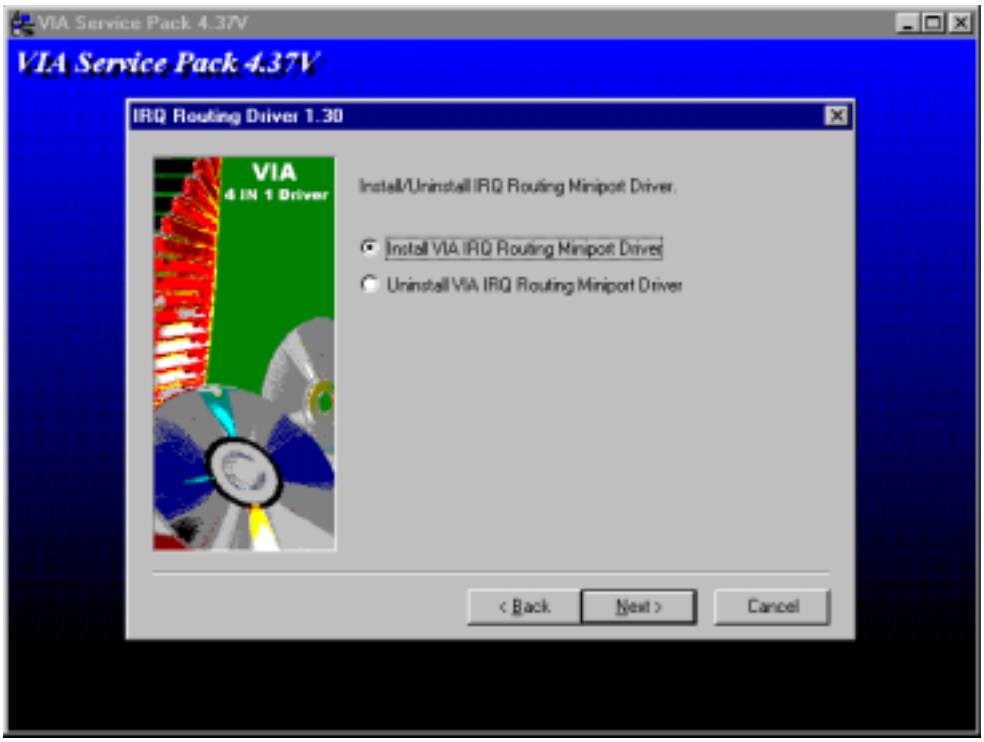
8. As the following picture, click **Next**



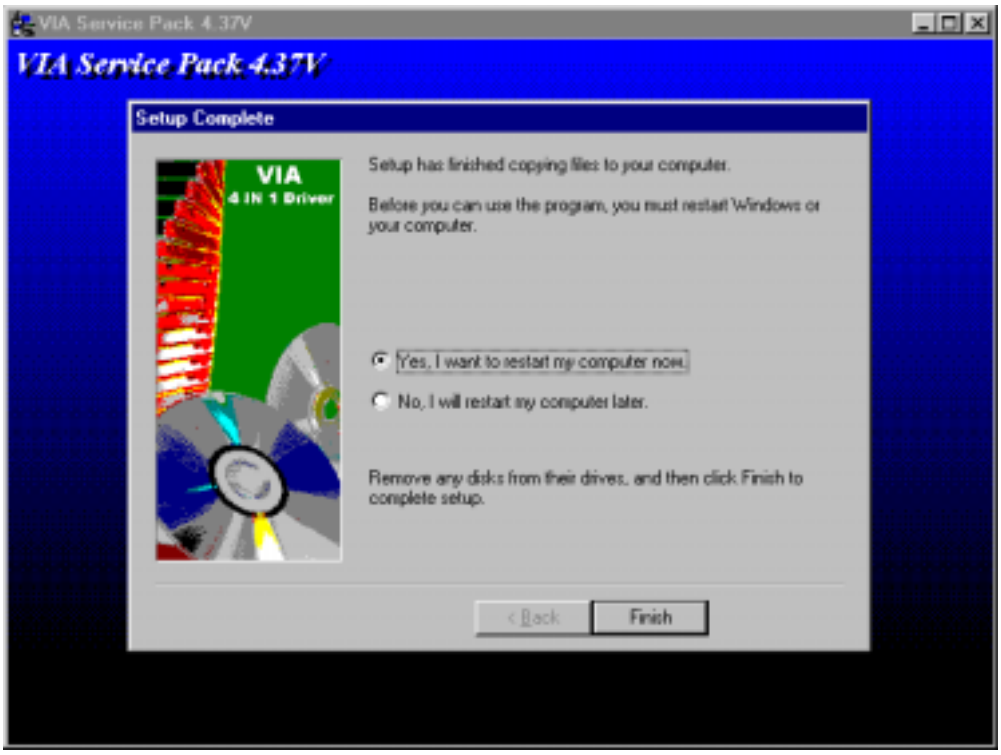
9. Select **Install VIA AGP VxD in Turbo Mode,** and click **Click**



10. Click **Next**



11. Click **Finish**



Installation process is completed and allowed the system to reboot.

4.2 VGA Driver Installation

1. Install the MAT-A693 CD ROM into the CD-ROM Drive
2. Select the Drivers/vga/9x file to click the Setup icon

A driver installation screen will appear, please follow the onscreen instruction to install the driver in sequence

3. At last, click **Next**

4. Click **Next**

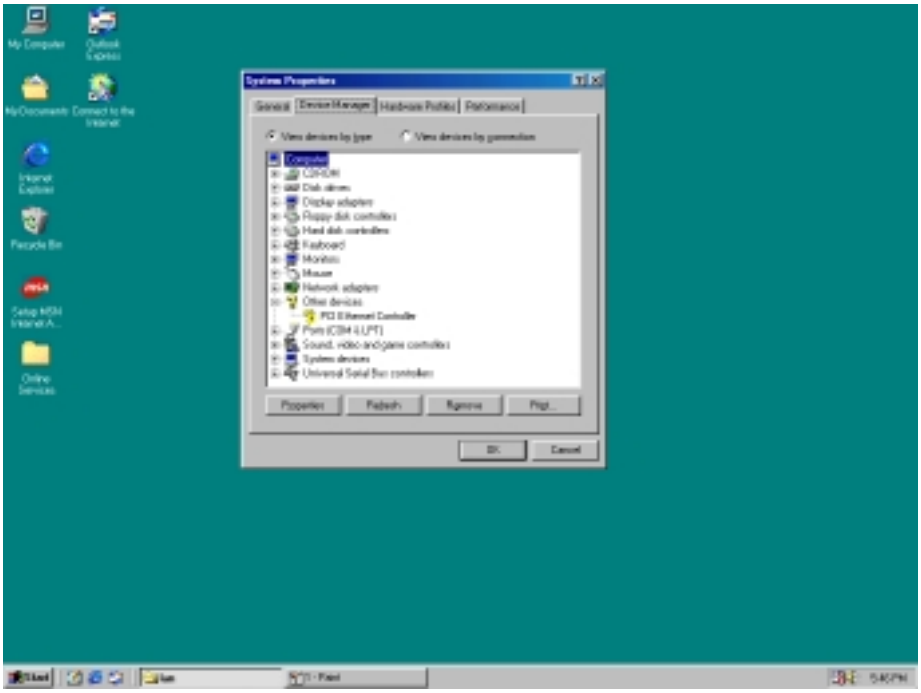
Installation process is completed and allowed the system to reboot

4.3 Ethernet Driver Installation

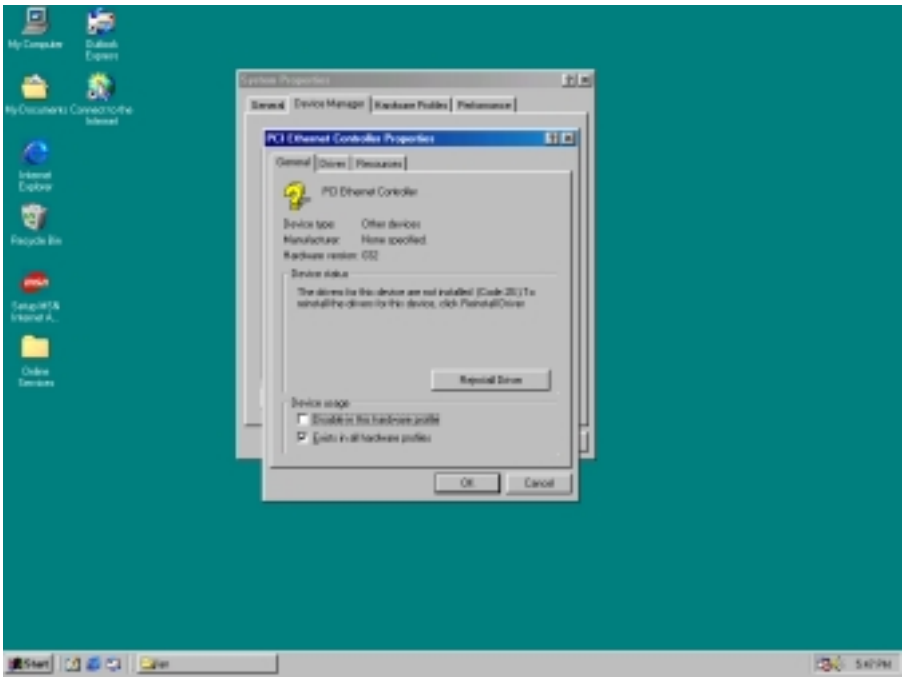
The MAT-A693 supports four Ethernet Controller by using Intel® 82559ER or Realtek® 8139C Chipset.

4.3.1 Realtek 8139C Ethernet Installation

1. Insert the MAT-A693 CD ROM into the CD-ROM Drive
2. Click the **Start** button
3. Select the **Setting** item
4. Click the **Control Panel** item
5. Select the **Systems** icon to open the **System Properties** box
6. Click the **Device Manager** tab



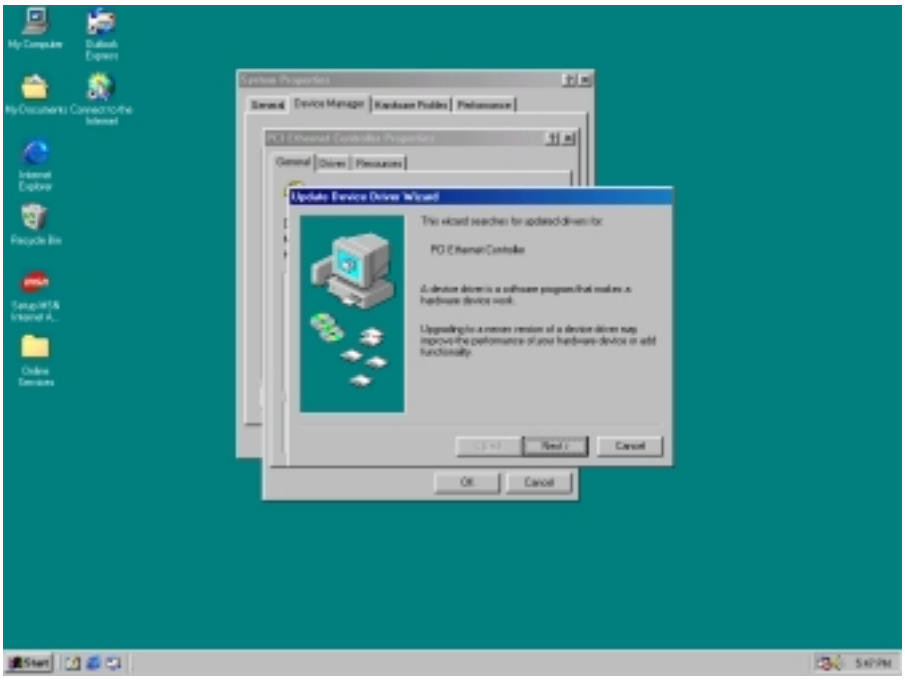
7. Select the **Network Adapters** item



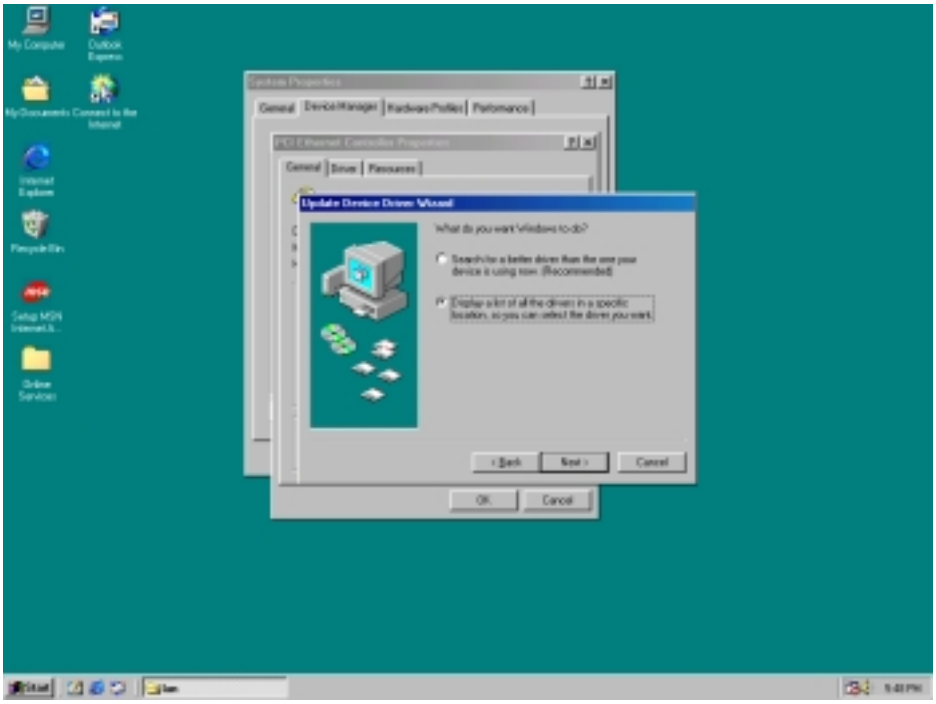
Another file will appear below this file, and then click on the file

8. Click the **Driver** Tab
9. Click the **Update Driver** Button

The **Update Device Driver Wizard** will appear

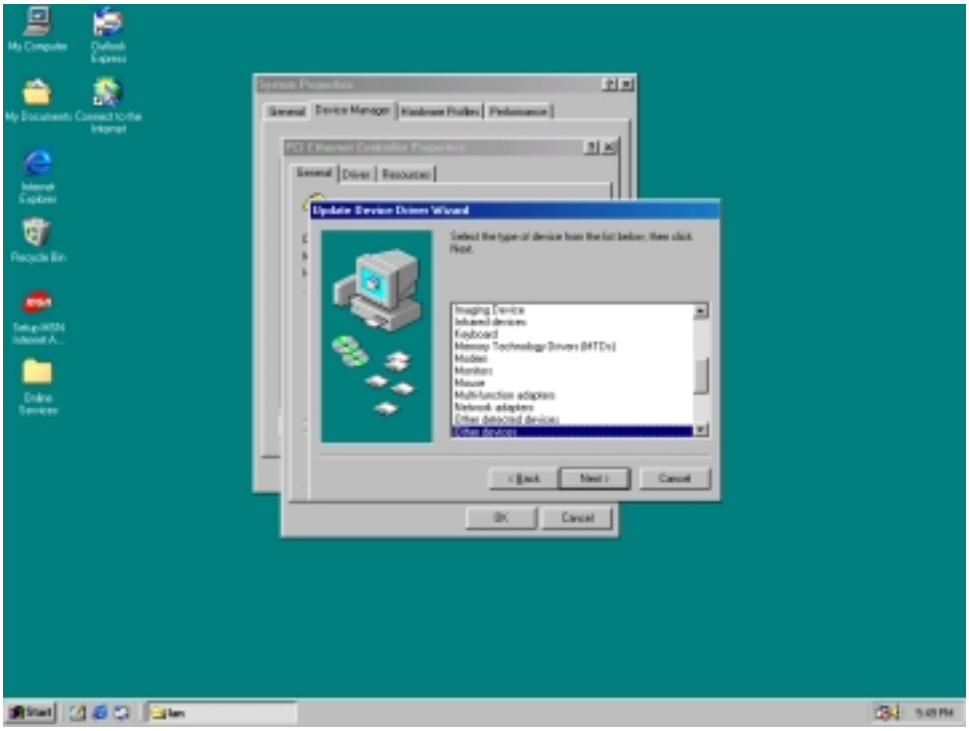


10. Click **Next**

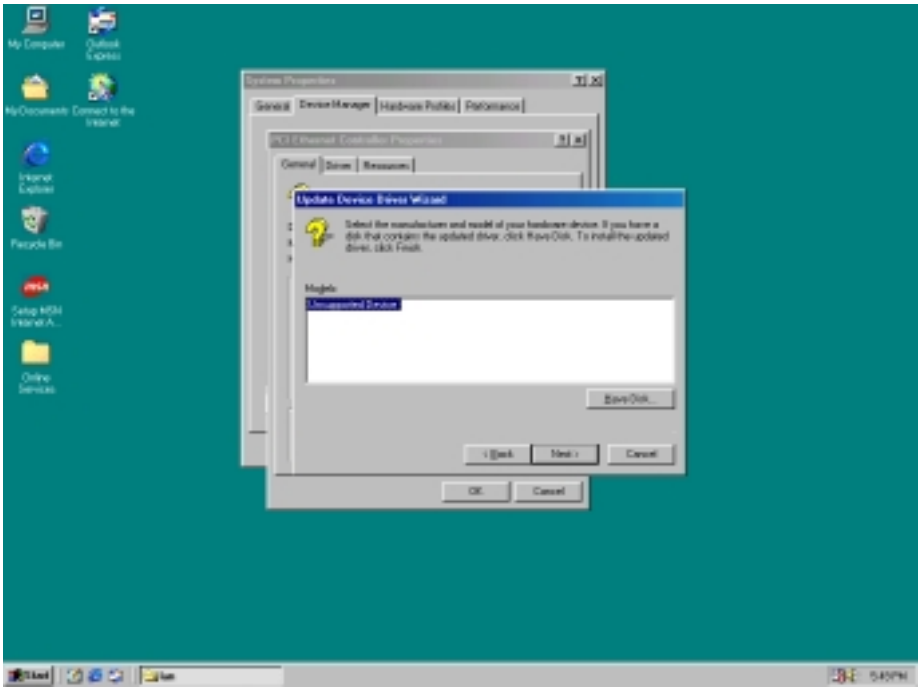


11. Select CD ROM Drive, **D/Drivers/lan/Win98,** and click **Next**

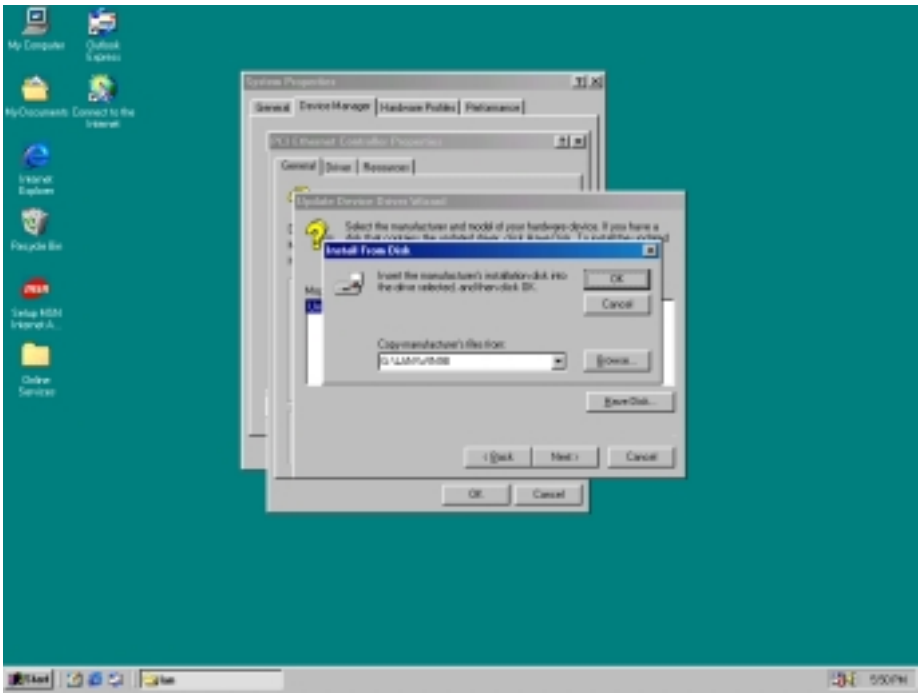
Notice: We take the LAN installation under Win98 for example only; please choose the file depending on your Windows OS.



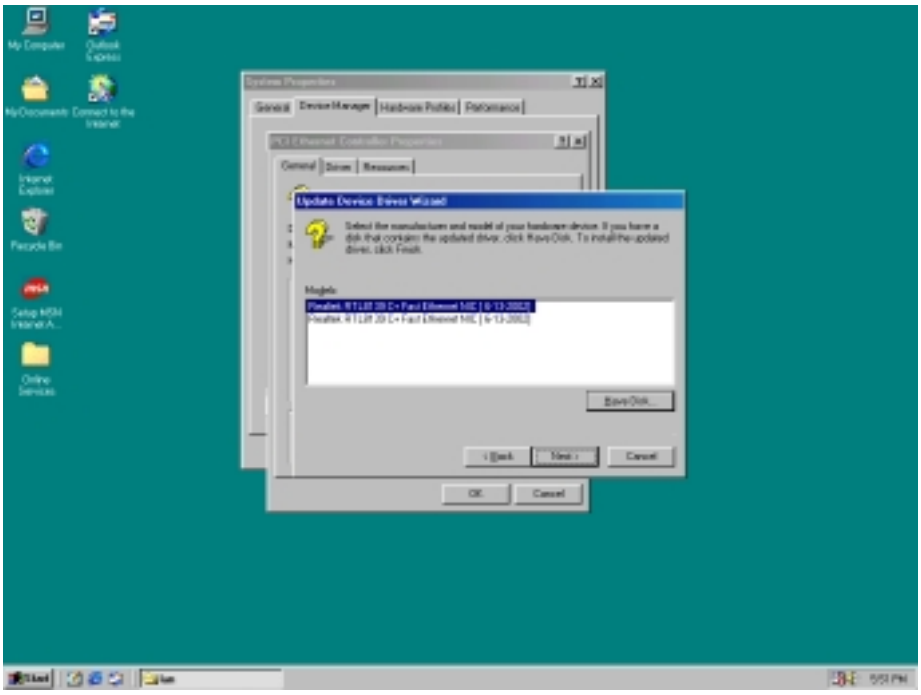
12. Select **"Next"**



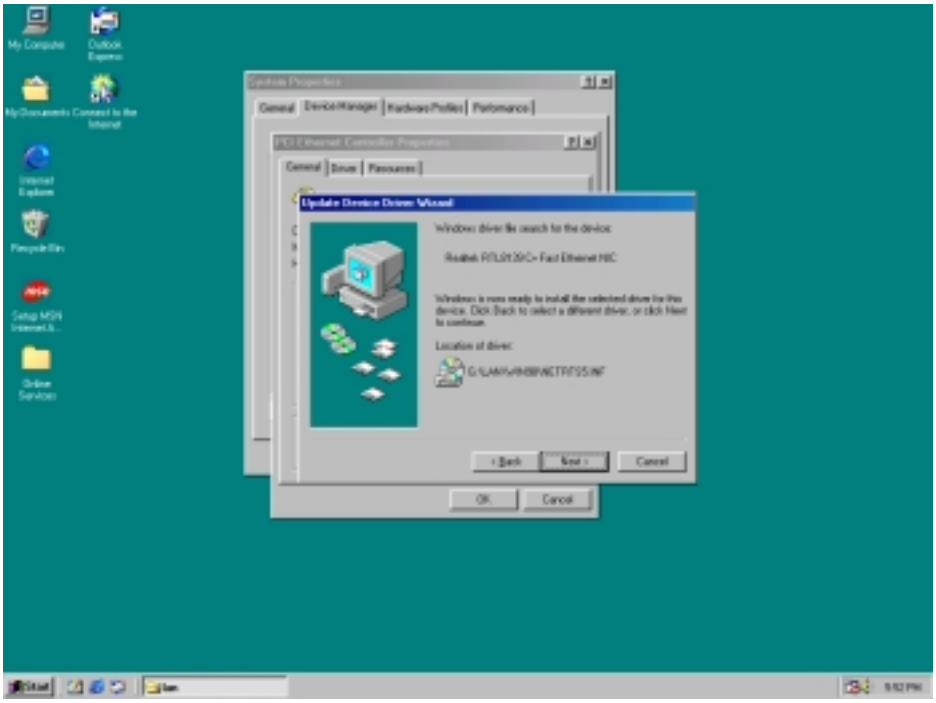
13. Select **"Next"**



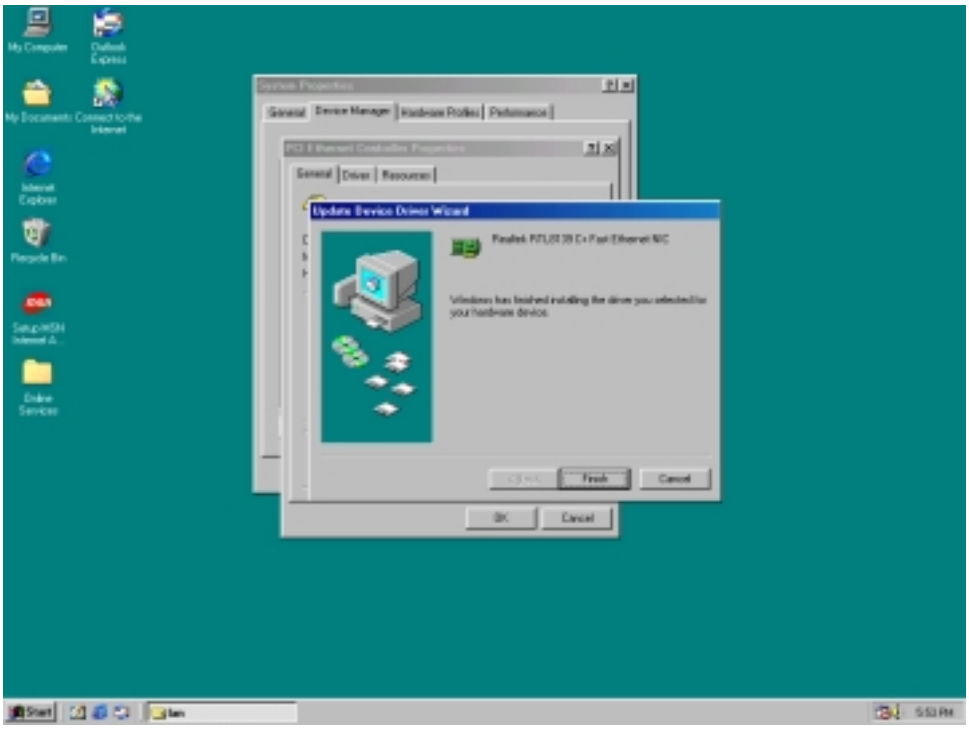
14. Select "**Next"**



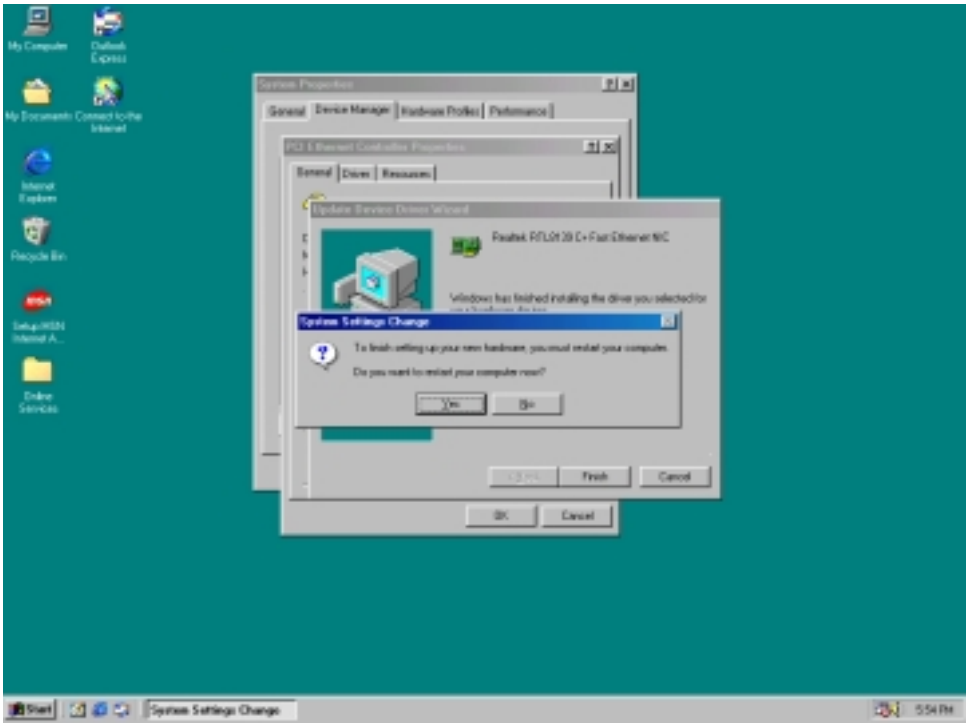
15. Click "**Next"**



16. Click **Finish**



Installation process is completed shutdown the computer and will allow the system to reboot



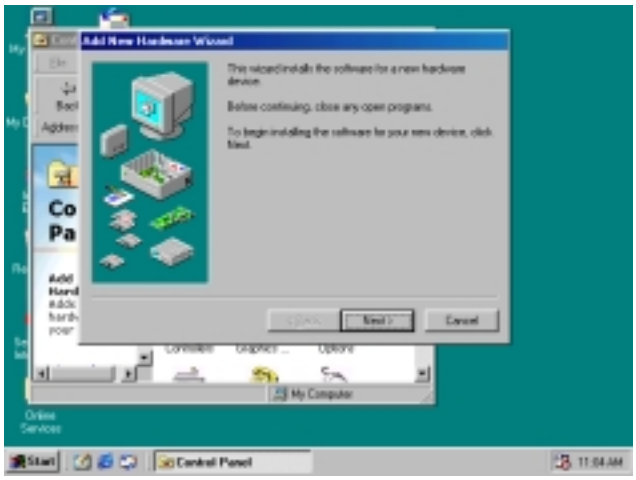
4.3.2 Intel® 82559ER Ethernet Installation

Installation for Windows95/98

Please install Ethernet drivers as follows:

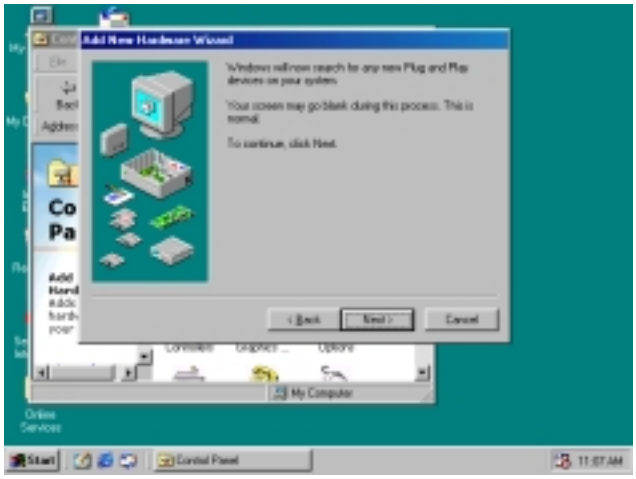
1. Click **"Start"**, go to **"Setting"** and click **"Control Panel"**. Choose the **"Add New Hardware"** icon and double-click the icon, the next configuration screen will appear.

2. **"Add New Hardware Wizard"** shown this wizard installs the software for a new hardware device. Before continuing, close any open programs. To begin installing the software for your new device, click "Next>", go to the next step of installation.

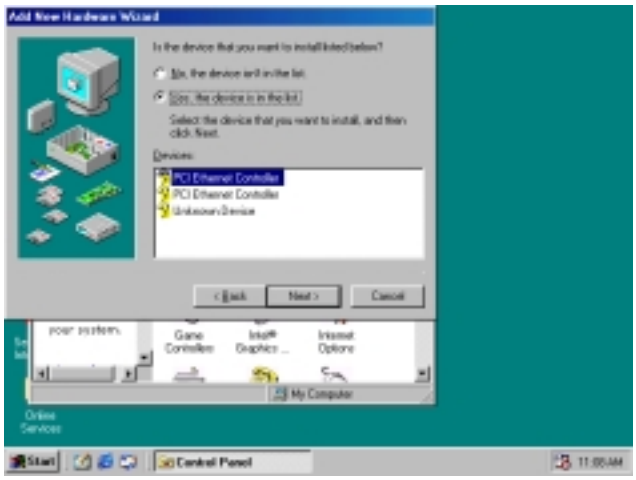


3. **"Add New Hardware Wizard"** shown Windows will no search for any new Plug and Play devices on your system. Your screen may go black during this process. This is normal.

   To continue, click "Next>" to the next step of installation.

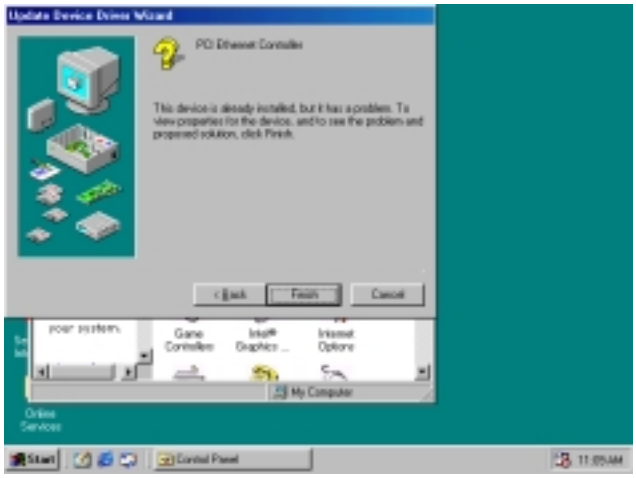


4. Please select the device that you want to install, and then click "Next>" to the next step of installation.



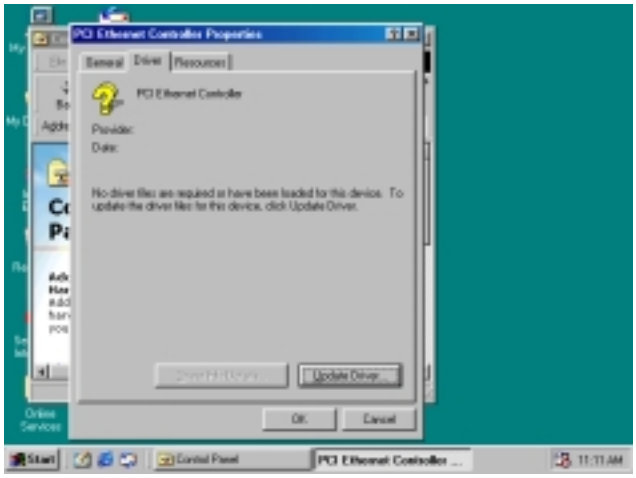
5. This is Update Device Driver Wizard.

   This device is already installed, but it has a problem. To view properties for the device, and to see the problem and proposed solution, please click "Finish" to the next step of installation



6. This is PCI Ethernet Controller Properties screen.

   No driver files are required or have been loaded for this device. To update the driver files for this device, please click "Update Driver" to the next step of installation

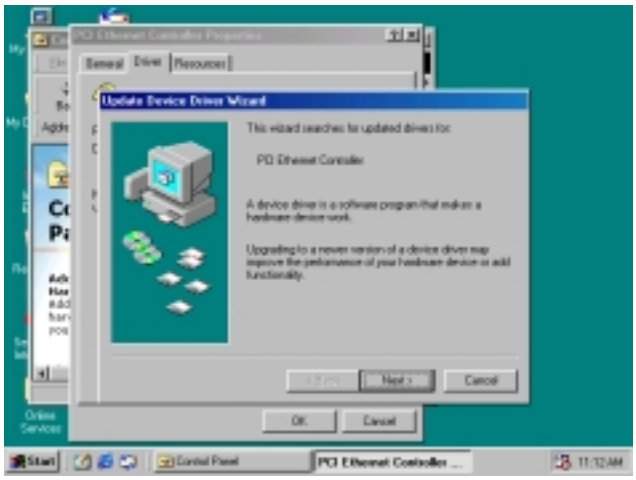


7. This Wizard searches for update drivers for:

   PCI Ethernet Controller

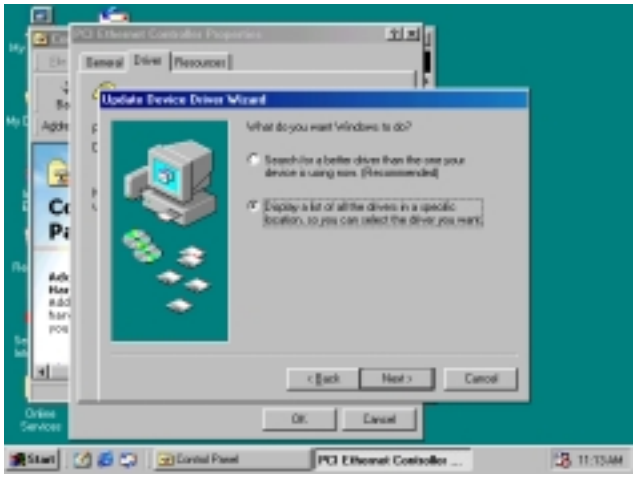
   A device driver is a software program that makes a hardware device work.

   Updating to a newer version of a device driver may improve the performance of your hardware device or add functionality, please click "Next>" to the next step of installation

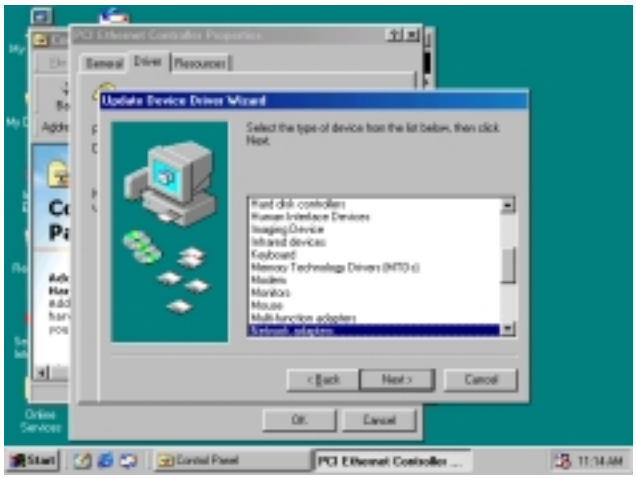


8. This is Update Device Driver Wizard. What do you want Windows to do? Please choose "Display a list of all the drivers in a specific location, so you can select the driver you want.

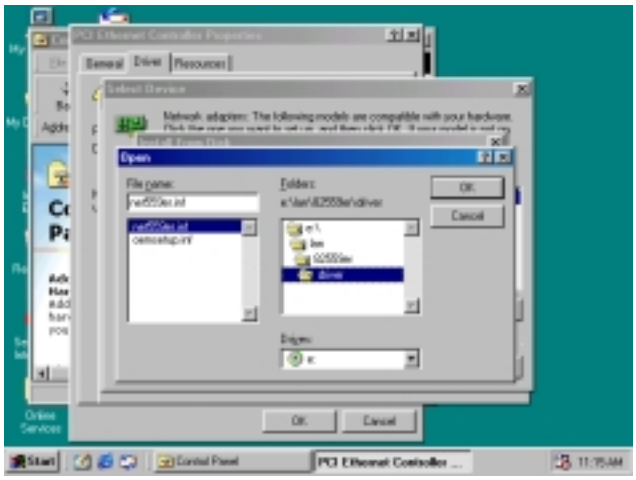
   Please click "Next>" to the next step of installation



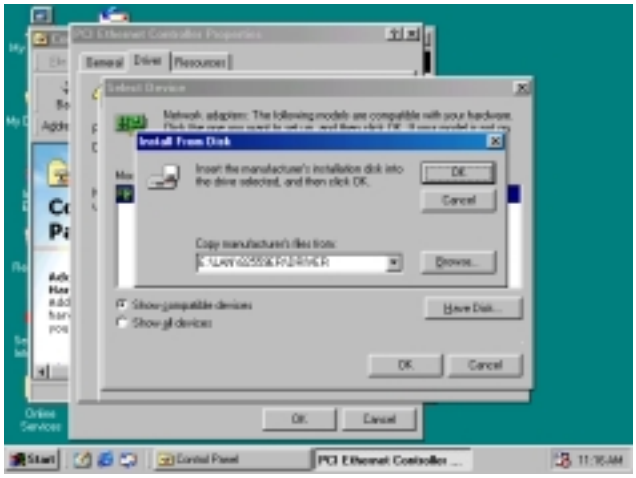
9. This s screen for selecting the type of device from the list, then click "Next>" to next step of installation



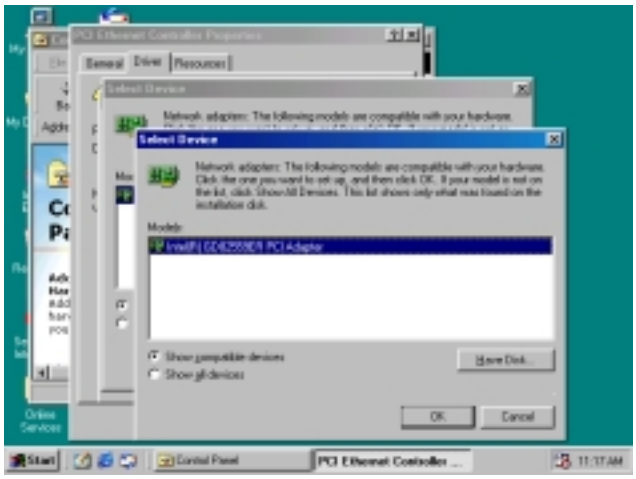
10. This is to show the "Folders", please click "OK" to the next step of installation.



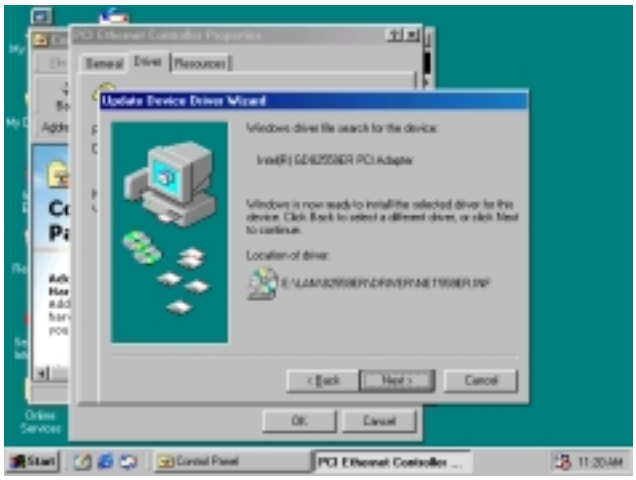
11. This is Install from Disk. Please insert the manufacturer's installation disk into the drive selected, and then please click "OK" to next step of installation.



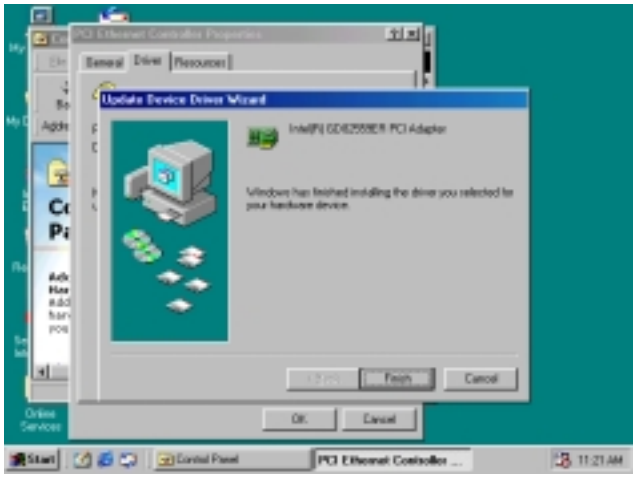
12. This is Select Device screen. Network adapters: The following models are compatible with your hardware. Click the one you want to set up, and then click "OK". If your model is not on the list, please click Show All Devices. This list shows only what was found on the installation disk



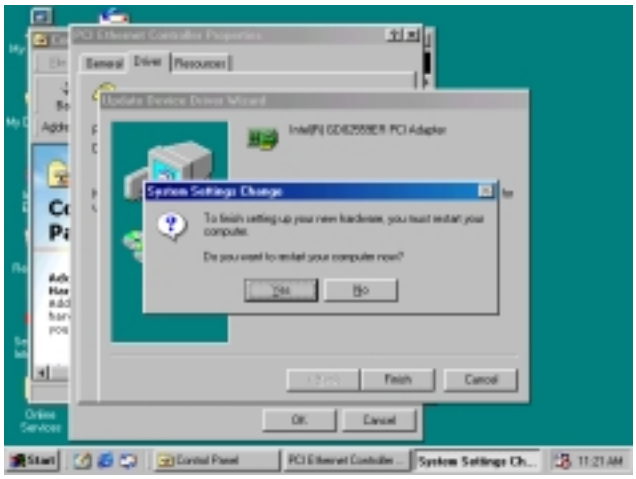
13. This is Update Driver Wizard. Windows is now ready to install the selected driver for this device. Please click Back to select a different driver, or click Next to continue.



14. This screen shown Windows has finished installing the driver you selected for your hardware device. Please click "Finish" to the next step of installation



15. This screens the System Settings Change. To finish setting up your new hardware, you must restart your computer. Please click "YES" to restart your computer.



Appendix A: Programming the Watchdog Timer

The MAT-A693 provides a watchdog timer that resets the CPU or generates an interrupt if processing comes to a stop. This function ensures greater system reliability in industrial stand-alone and unmanned environments.

In order to enable the watchdog timer, you have to output the value of the watchdog timer interval to the controller. The value range is from 01H to FFH, and the related time watchdog timer interval is 1 sec to 255 sec.

Data	**Timer Interval**
00	Disabled
01	1 sec
02	2 sec
*	*
*	*
FF	255 sec

If you want to program the watchdog timer, you must write timer value to I/O Port 444(hex).

For example:

ASSEMBLY LANGUAGE

START Watchdog Timer	DOS DEBUG

MOV DX, 444H
MOV AL, XXH
OUT DX, AL
	OUT 444, XX

STOP Watchdog Timer	
MOV DX, 441H IN AL, DX	IN 441

Note: "XX" timer value

Appendix B :System Resource

Interrupt Controller

The MAT-A693 is a fully PC compatible control board, it consists of 16 ISA interrupt request lines and most of them already in used by other part of the board. Both of ISA and PCI expansion cards may need to use IRQs, please make sure that the IRQs do not conflict if you would like to use extra add-on cards.

System IRQs are available to cards installed in the ISA expansion Bus first. Any remaining IRQs then may be assigned to this PCI Bus. You are able to use the AMI Diagnostic utility to see their map.

IRQ	Assignment
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt rerouting from IRQ8 through IRQ15
IRQ3	Serial Port 2
IRQ4	Serial Port 1
IRQ5	Ethernet Controller
IRQ6	Floppy Disk Controller
IRQ7	Ethernet Controller
IRQ8	Real Time Clock
IRQ9	Reserved
IRQ10	Ethernet Controller
IRQ11	USB Controller
IRQ12	Motherboard Resource
IRQ13	Math Coprocessor
IRQ14	Primary IDE Controller
IRQ15	Secondary IDE Controller

DMA Channel Assignment

Channel 4 is by default used to cascade the two controllers

Channel	Assignment
DMA0	Reserved
DMA1	Reserved
DMA2	Floppy Disk Controller
DMA3	Reserved
DMA4	Cascade
DMA5	Reserved
DMA6	Reserved
DMA7	Reserved

Memory Map

The following table indicates memory of MAT-A693. The address ranges specify the runtime code length.

Memory below 1MB (1Mb ~ 640KB)

Address Range	Type	Owner
A0000~AFFFF	ISA	VGA Adapter
B0000~BFFFF	ISA	VGA Adapter
C0000~C7FFF	ISA	Adapter ROM
C8000~CBFFF	ISA	Adapter ROM
F0000~FFFFF	ISA	System BIOS

Memory above 1MB (1MB ~ 244736KB)

Address Range	Type	Owner
E0000000~E7FFFFFF	PCI	PCI – PCI Bridge
E8000000~EBFFFFF7	PCI	Host Bridge
EC000000~EDFFFFFF	PCI	PCI – PCI Bridge
EF000000~EF0000FF	PCI	Ethernet Controller
EF001000~EF0010FF	PCI	Ethernet Controller

System Memory Map

Start High	Start Low	Size High	Size Low	Type
00000000	00000000	00000000	000A0000	Available
00000000	000F0000	00000000	00010000	Reserved
00000000	FFFF0000	00000000	00010000	Reserved
00000000	00100000	00000000	0EF00000	Available

I/O Map

The addresses shown in the table are typical locations.

I/O Port	Assignment
0 ~ F	AT DMA Controller
20 ~ 21	AT Interrupt Controller
40 ~ 43	82C54 Compatible Programmable Timer
60	8042 Compatible keyboard Controller
61	AT Style Speaker
64	8042 Compatible keyboard Controller
70 ~ 71	Real Time Clock
81 ~ 83	AT DMA Controller
87	AT DMA Controller
89 ~ 8B	AT DMA Controller
8F ~ 91	AT DMA Controller
A0 ~ A1	AT Interrupt Controller
C0 ~ DF	AT DMA Controller
F0 ~ FF	Math Coprocessor
170 ~ 177	IDE Controller
1F0 ~ 1F7	IDE Controller
220 ~ 22E	Sound Card
2F8 ~ 2FF	Communication Port (COM2)
376	IDE Controller
3B0 ~ 3BB	VGA Adapter
3C0 ~ 3DF	VGA Adapter
3F0 ~ 3F5	FDD Controller
3F6	IDE Controller
3F7	FDD Controller
3F8 ~ 3FF	Communication Port (COM1)
4D0 ~ 4D1	PCI Bus

4000~407F	PCI Bus
4080~40FF	PCI Bus
5000~501F	PCI Bus
6000~607F	PCI Bus
D000~D00E	IDE Controller
D400~D41E	USB Controller
D800~D81E	USB Controller
DC00~DCFE	Ethernet Controller
E000~E0FE	Ethernet Controller
E400~E4FE	Ethernet Controller
E800~E8FE	Ethernet Controller

Appendix C: Optional Cable List

Part No.	Cable Description	MAT-A693 Connector	Terminating Connector
46-IVGA01-00	VGA Cable	CN10	CRT D-Sub VGA Cable
46-ICOM04-00	COM Port Cable	CN11	2.54mm,22cm, COM2 D-Sub Cable (pin10 block)
46-ATA660-00	IDE Cable	CN12	2.54mm, 46cm, ATA-66/100 IDE Cable
46-IUSB03-00	Two-channel USB Cable	CN9	2.00mm, 2-channel USB Cable
46-I001X4-00	IDE Power Cable	CN13	IDE Power Cable