MAT-A692

Socket 370 Embedded SBC
With Four LAN

User's Manual

Version 1.0

Manual edition 1.0, Jan. 2002

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Chapter 1. General Information

1.1 Introduction

The MAT-A692 is a full function of embedded SBC use Intel 810E chipset supports Intel® Pentium III/Celeron™ processors up to 1GHz and provides 133MHz FSB. The MAT-A692 supports quadruple Intel® 82559ER or Realtek RLT8139C Ethernet chipset with RJ45 jack for 10/100Mbps. The MAT-A692 reserved a 50-pin CompactFlash Socket for type I/II.

1.2 Specification

Specifications	
General Functions	
CPU	Intel®socket 370 Celeron™ /Pentium®III processors to 133MHz FSB
BIOS	Award 512KB Flash BIOS supports console redirection function
Chipset	Intel®810E
I/O Chipset	Winbond W83627HF
Memory	One 168-pin DIMM socket supports up to 256Mbytes PC-100 SDRAM
Enhanced IDE	Two type connectors, support up to two IDE devices, supports UDMA33/66
FDD interface	One notebook type connector support one floppy disk drives
Parallel port	One bi-directional parallel port. Supports SPP, ECP, and EPP modes
Serial port	Two RS-232 ports
KB/Mouse connector	5x2 header on board supports PC/AT keyboard and PS/2 mouse.
USB connectors	5 x 2 header onboard supports dual USB ports
Battery	Lithium battery for data retention of up to 10 years (in normal condition)
Watchdog Timer	Can generate a system reset. Support software selectable timeout interval.
System Monitoring	Winbond W83627HF supports temperatures, Fan speed, and voltages monitoring
PCI slot	One 32-bit PCI expansion slot

Digital I/O	Supports eight application definable LEDs
SMBus connector	6-pin header supports SMBus LCD interface
Ethernet Interface	
Chipset	Quadruple Intel 82559ER or Realtek 8139C 100Base-Tx Fast Ethernet controller
Ethernet interface	PCI 100/10 Mbps Ethernet controller. IEEE 802.3U protocol compatible
CRT Interface (option)	Via VGA Kit
SSD Interface	One 50-pin CompactFlash™ socket
Mechanical and Environmental	
Power supply voltage	VCC (4.75V to 5.25V), +12V (11.4V to 12.6V), -12V(-11.4 to -12.6)
Max. power requirements	7A @ 5 V, 200mA@ +12V, 120mA@-12V
Operating temperature	32 to 140°F (0 to 60°C)
Board size	8.26"(L) x 7.52"(W) (210mm x 191mm)

1.3 MAT-A692 Package

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

1. MAT-A692 Socket 370 Single Board
2. Quick Installation Guide
3. Cable: Please refer to Appendix Optional Cables
4. CD-ROM which contains the following folders:
   (1) Manual
   (2) LAN Driver
   (3) BIOS Utility
   (4) Chipset Driver

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. Press down all the integrated circuits to make sure they are properly seated in their sockets. Do not apply power to the board if it appears to have been damaged.

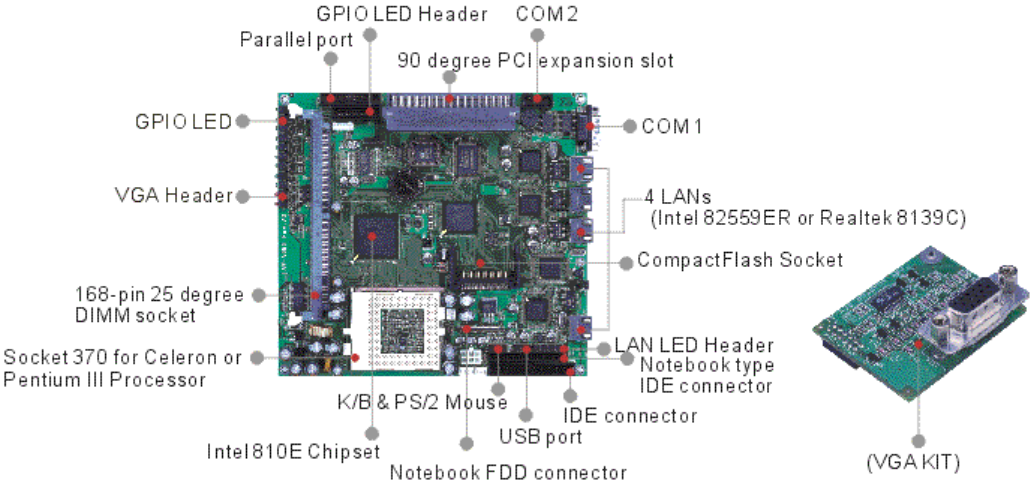
Leave the board in its original packing until you are ready to install

1.4 Precautions

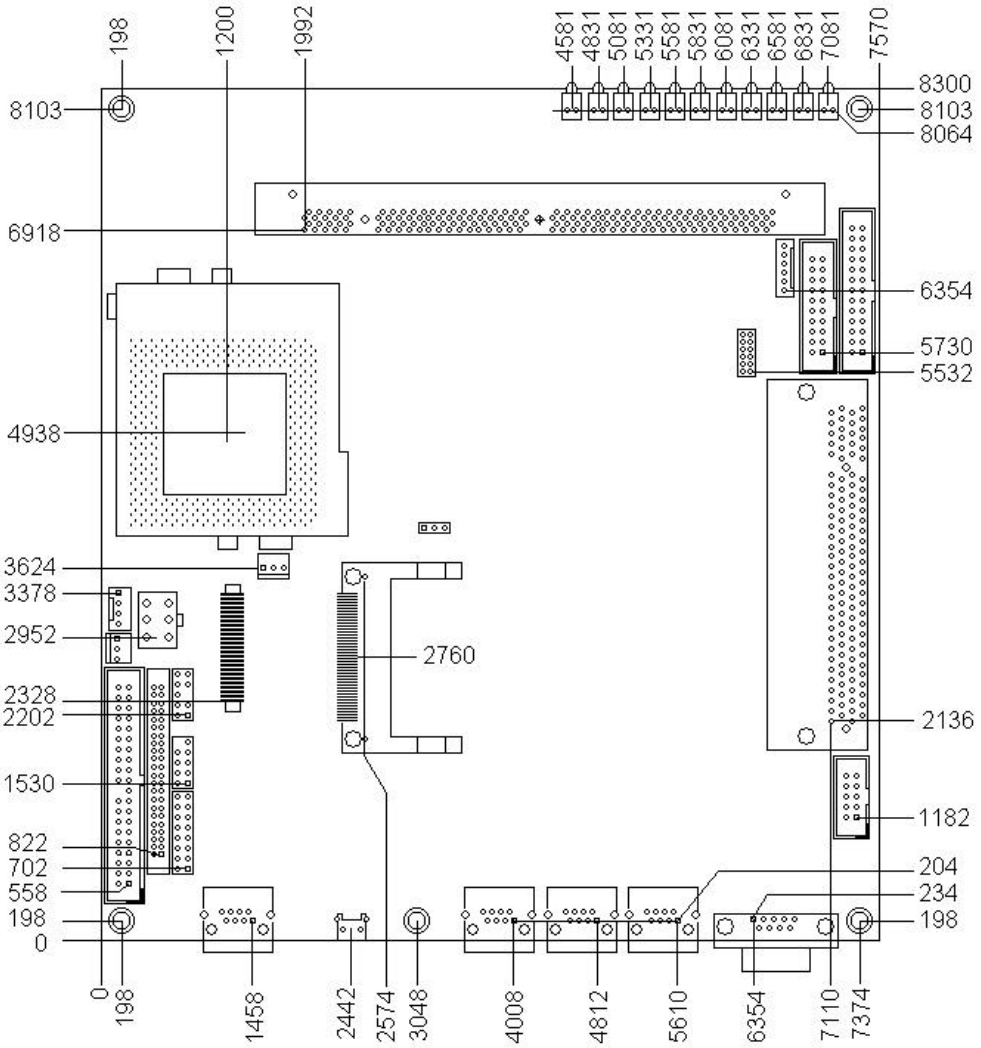
Please make sure you properly ground yourself before handling the MAT-A692 board or other system components. Electrostatic discharge can be easily damage the MAT-A692 board.

1. Do not remove the anti-static packing until you are ready to install the MAT-A692 board.
2. 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.
3. Handle the MAT-A692 board by its edges and avoid touching its component.

1.5 Board Layout

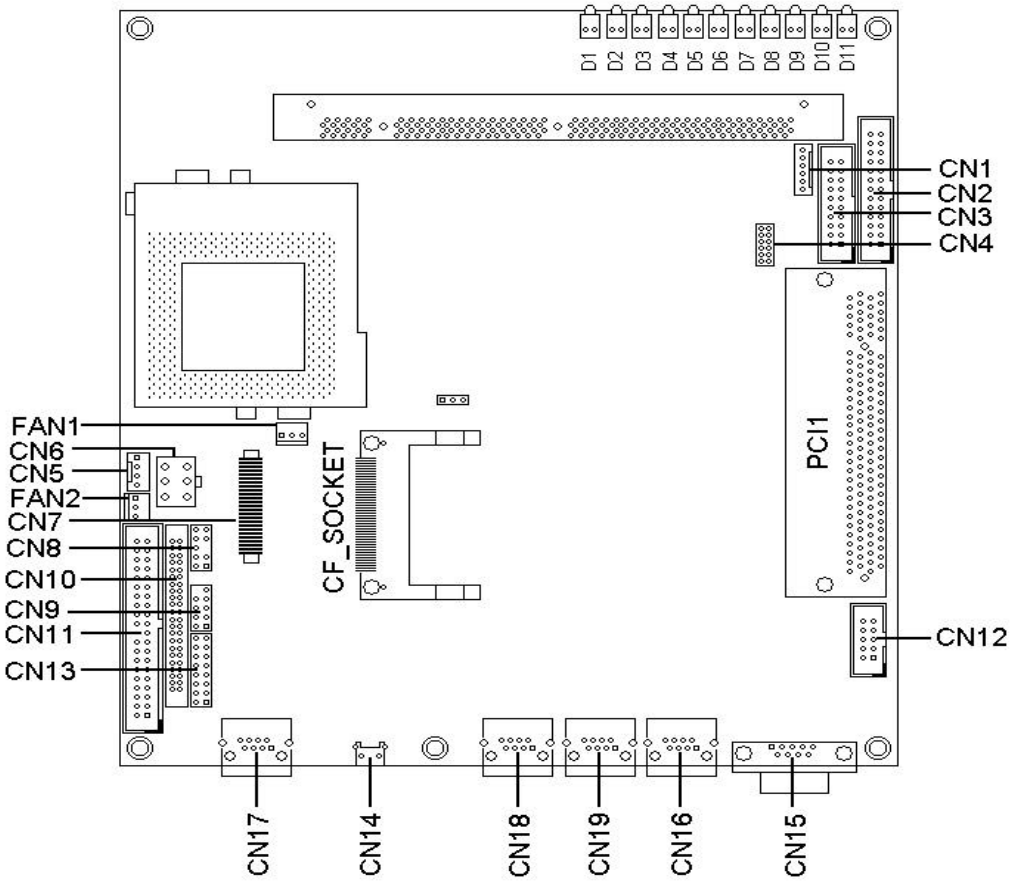


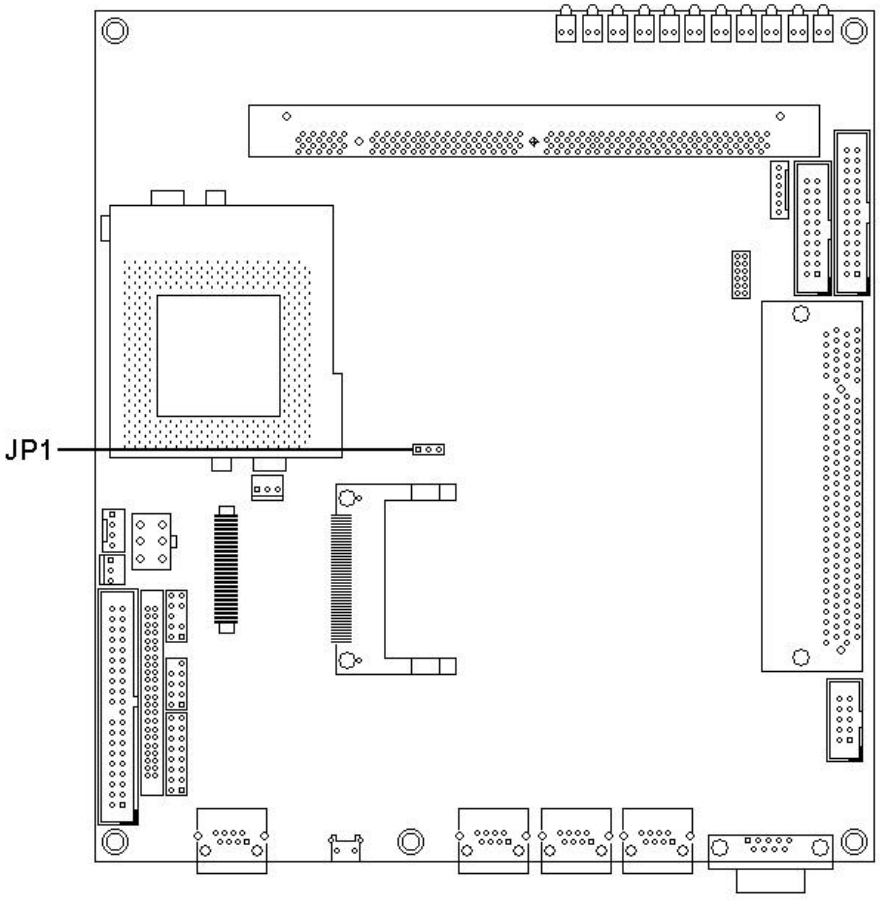
1.6 Board Dimension



Chapter 2. Connectors and Jumpers Settings

2.1 Location of Connectors and Jumpers





2.2 List of Connectors and Jumpers

Connectors	Description	Connectors	Description
CN1	SMBus Connector	CN18	LAN3
CN2	LPT Connector	CN19	LAN2
CN3	GPO LED Header	JP1	Clear CMOS
CN4	VGA Header	D1	HDD LED
CN5	HDD Power Connector	D2	Power LED
CN6	Power Connector	D3	Alert LED
CN7	Notebook FDD Connector	D4	GPO 7 LED
CN8	PS/2 KB/Mouse Connector	D5	GPO 6 LED
CN9	USB Header	D6	GPO 5 LED
CN10	44-pin IDE Connector	D7	GPO 4 LED
CN11	40-pin IDE Connector	D8	GPO 3 LED
CN12	COM2 Connector	D9	GPO 2 LED

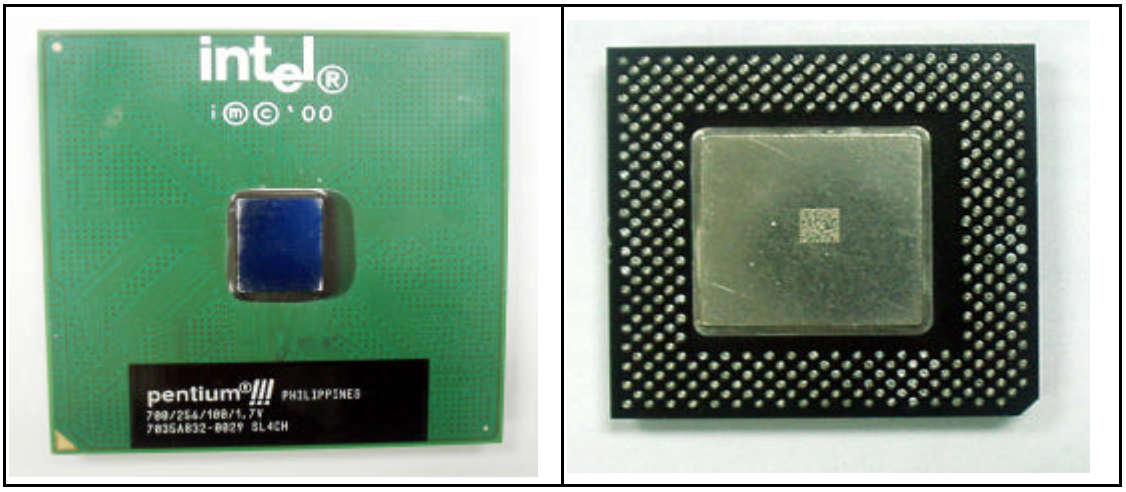
CN13	LAN LED Header	D10	GPO 1 LED
CN14	Reset Button	D11	GPO 0 LED
CN15	COM1 Connector	FAN 1	CPU Fan Connector
CN16	LAN1	FAN 2	System Fan Connector
CN17	LAN4	LS1	Alert Buzzer

2.3 Installing and Upgrading CPU

The MAT-A692 socket 370 embedded SBC supports socket 370 for Intel® Pentium III/Celeron (RM) processors up to 133MHz FSB.

About the FC-PGA and PPGA Form Factors

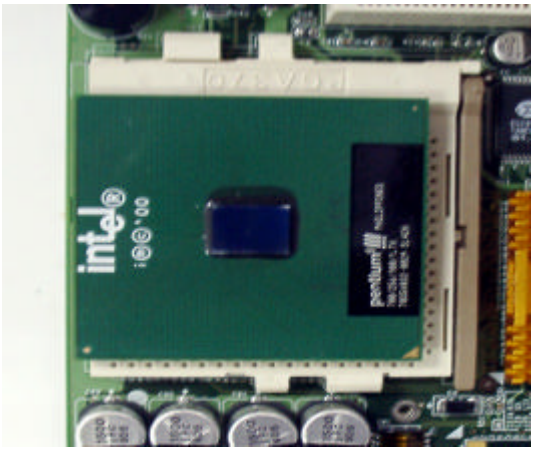
The FC-PGA ("Flip Chip" Pin Grid Array) form factor is a chip packaging designed for Intel® Pentium III/Celeron™ processors up to 133MHz FSB. On the FC-PGA package, the processor's silicon core faces up, and is exposed. This allows the core to have direct contact with a heatsink/fan.



Intel Celeron™ processors are available in the FC-PGA and PPGA (Plastic Pin Grid Array) form factors. Both are compatible with the 370-pin socket on the MAT-A692. With the PPGA package, the CPU' s silicon core faced don, toward the socket.

Locating Pin 1 on your CPU and ZIP Socket

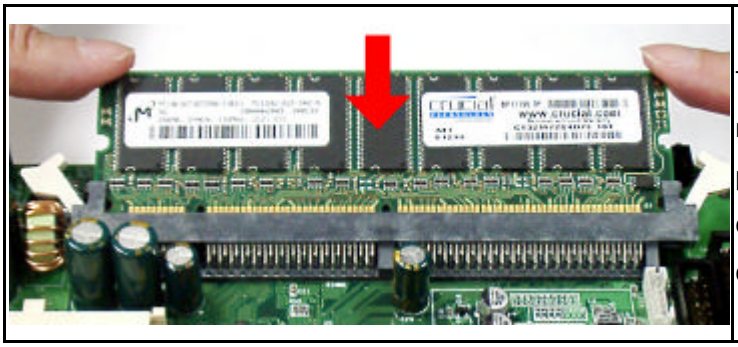
All Pentium III and Celeron FC-PGA CPUs use a small orange triangle to indicate the location of pin 1. On the corner to the right of pin 1 is an orange dot. On the PPGA Celeron, pin 1 is indicated by an indented corner. Pin 1 corners are used to properly align the joining of the CPU to the ZIP socket.



2.4 Installing System Memory

The MAT-A692 supports one 168-pin DIMM with 25 degree socket suitable for the 1U chassis, up to 256MB PC-100 SDRAM.

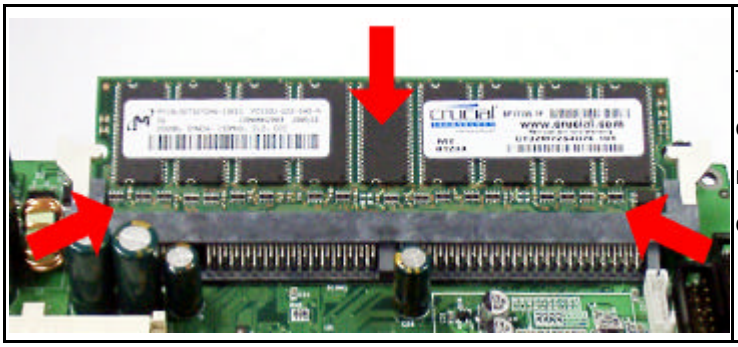
To insert a DIMM:



To insert a DIMM, align the module with the socket key and press down until the levers at each end of the socket snap close up

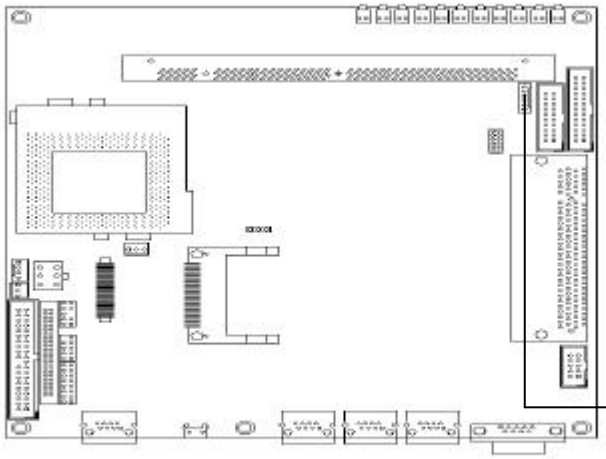
There is only one direction for installing a module in the socket. Do not attempt to force the module into the socket incorrectly.

To remove a DIMM:

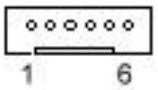
	To remove a DIMM, press down on the levers at both end of the module until the module pops out.

2.1 Connector and Jumper Settings

CN1: SMBus Connector

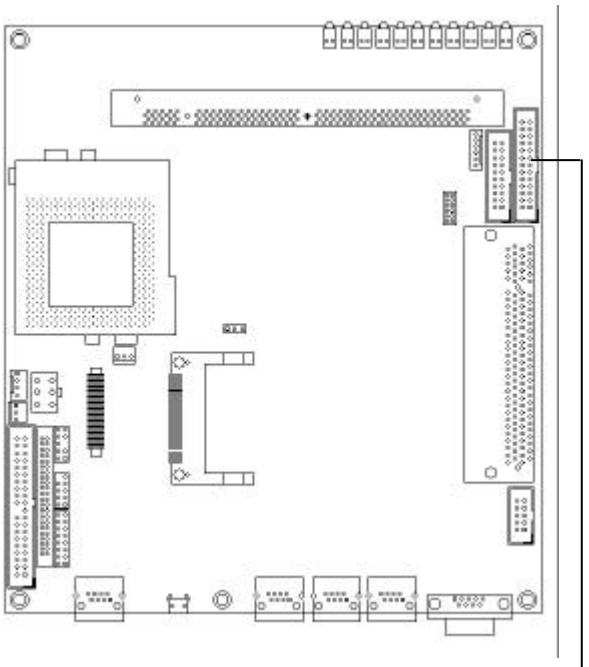


Pin	Assignment
1	Ground
2	+5V
3	SMBCLK
4	SMBData
5	+12V
6	Power Off

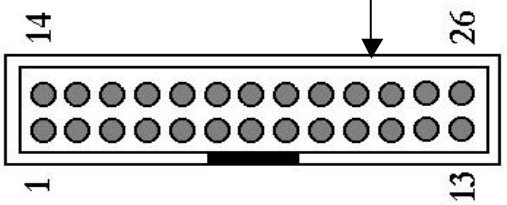


CN2: LPT Connector

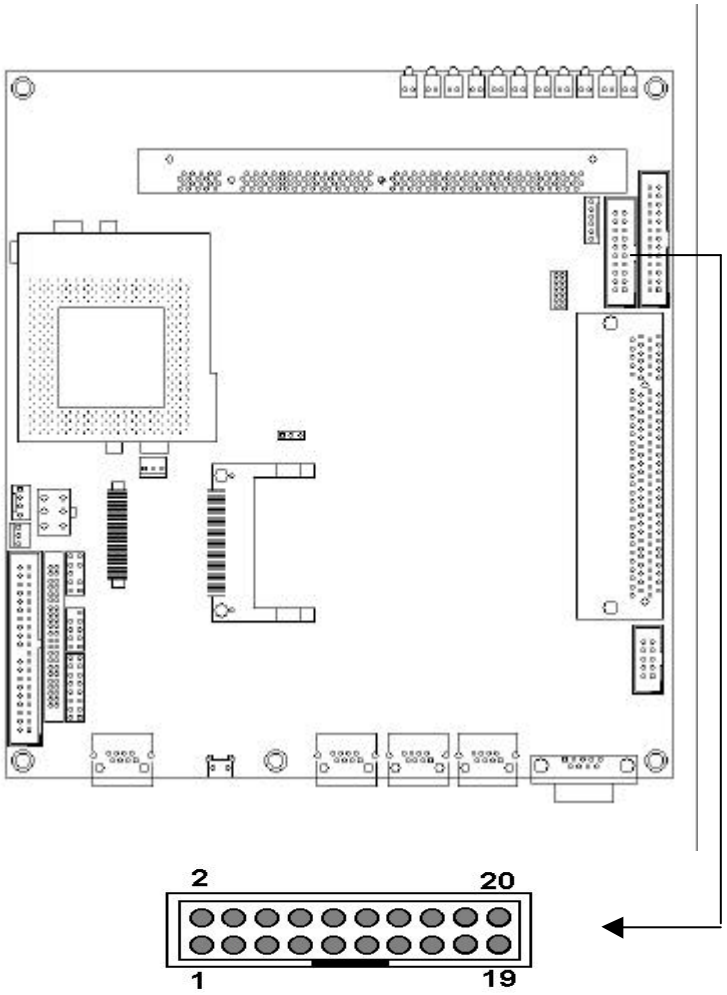
The MAT-A692 supports one parallel port, accessed through CN2. You need an adapter cable if you use a traditional DB-25 connector. The cable has a 26-pin connector on one end and a DB-25 connector on the other. The port is designed as LPT1 and can be disabled or changed to LPT2 or LPT3 in the BIOS Integrated Peripherals setup. You also can select the ECP/EPP mode in the BIOS Integrated Peripherals setup.



Pin	Assignment	Pin	Assignment
1	STROBE	14	AFD#
2	PD0	15	ERR#
3	PD1	16	INIT#
4	PD2	17	SLIN#
5	PD3	18	Ground
6	PD4	19	Ground
7	PD5	20	Ground
8	PD6	21	Ground
9	PD7	22	Ground
10	ACK#	23	Ground
11	BUSY	24	Ground
12	PE	25	Ground
13	SLCT	26	NC

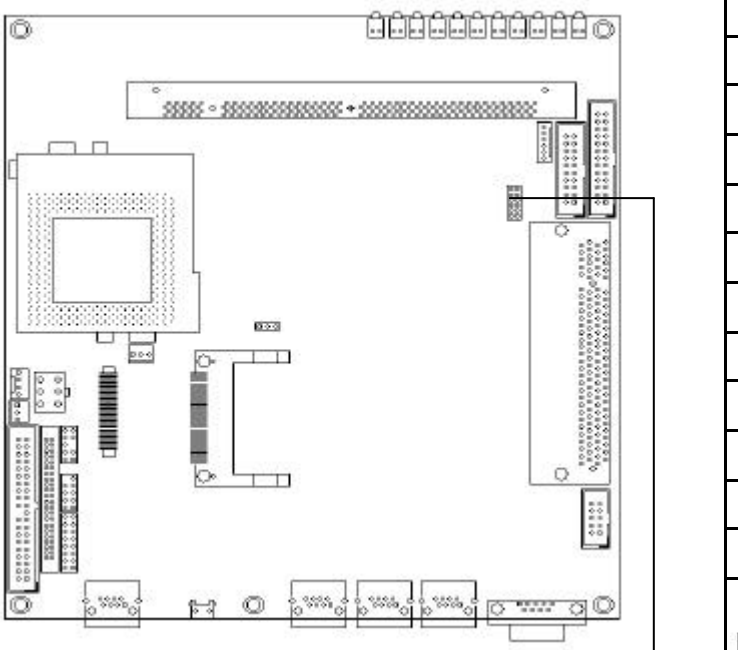


CN3: GPO LED Header

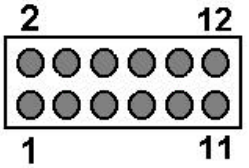


Pin	Assignment
1	+5V
2	+3.3V
3	GPIOLED7
4	+5V
5	GPIOLED6
6	+5V
7	GPIOLED5
8	+5V
9	GPIOLED4
10	+5V
11	GPIOLED3
12	+5V
13	GPIOLED2
14	+5V
15	GPIOLED1
16	+5V
17	GPIOLED0
18	+5V
19	Ground
20	Ground

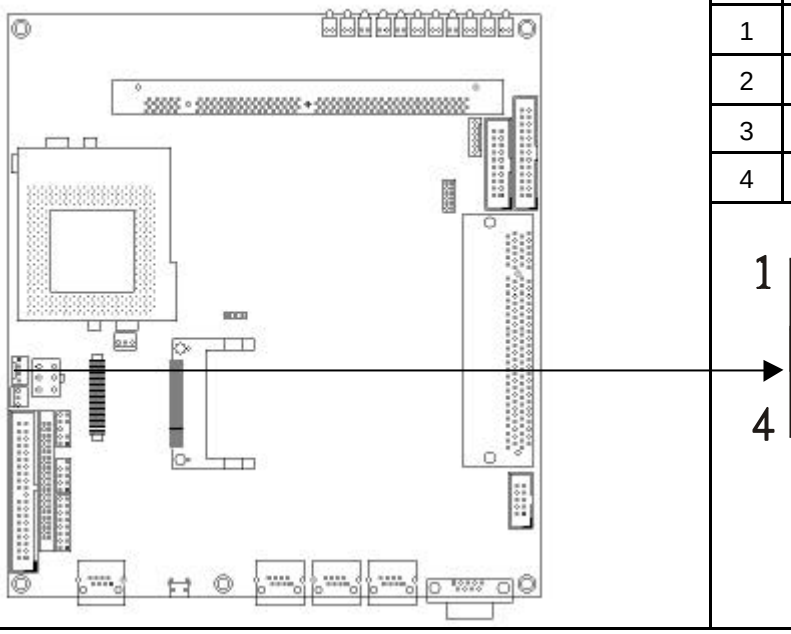
CN4: VGA Header



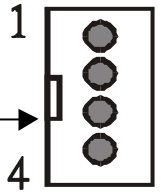
Pin	Assignment
1	RED
2	Ground
3	Green
4	+1.8V
5	Blue
6	Ground
7	Ground
8	DDCDA
9	DDCCL
10	HSYNC
11	VSYNC
12	+5V



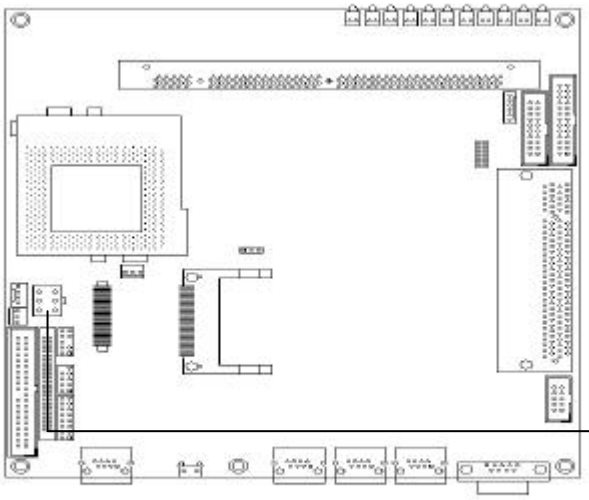
CN5: Hard Disk Drive Power Connector



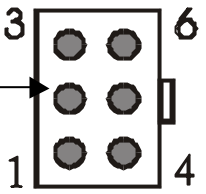
Pin	Assignment
1	+12V
2	Ground
3	Ground
4	+5V



CN6: Power Connector

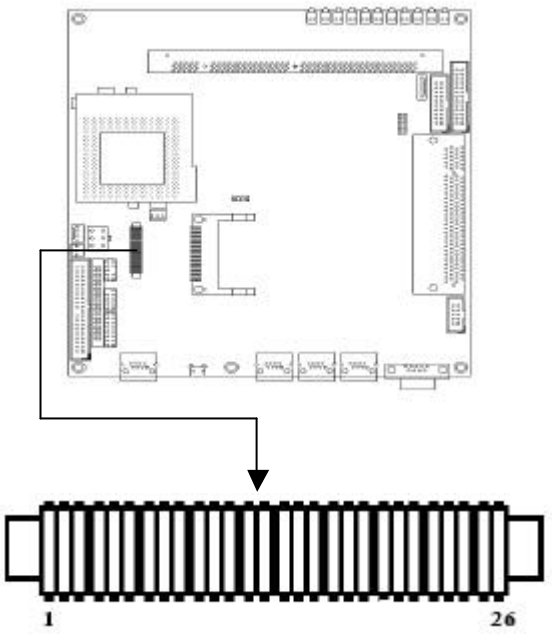


Pin	Assignment
1	+12V
2	Ground
3	+5V
4	-12V
5	Ground
6	+5V



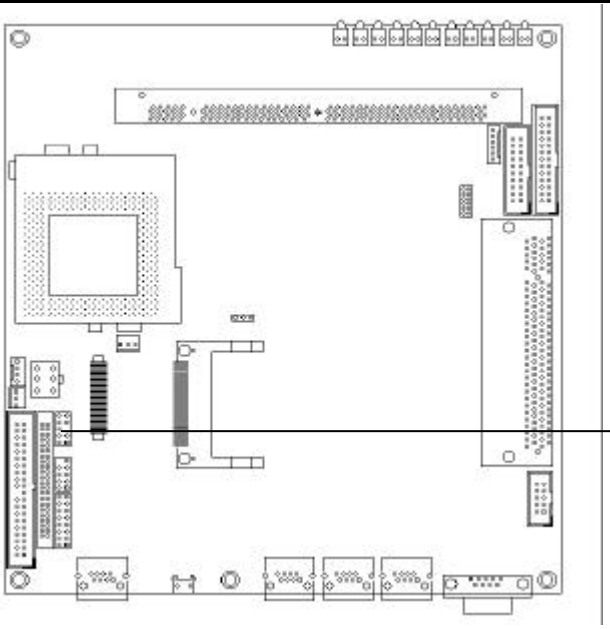
CN7: Notebook Type Floppy Connector

The MAT-A692 provides one notebook type floppy connector.

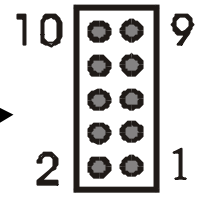


Pin	Signal	Pin	Signal
1	+5V	2	Index
3	+5V	4	Drive select 0
5	+5V	6	Diskette change
7	NC	8	NC
9	High density	10	Motor enable 0
11	Drvden1	12	Direction
13	Drvden0	14	Step
15	Ground	16	Write data
17	Ground	18	Write gate
19	Ground	20	Track 00
21	NC	22	Write protect
23	Ground	24	Read data
25	Ground	26	Side 1 select

CN8: PS/2 Keyboard/Mouse Connector

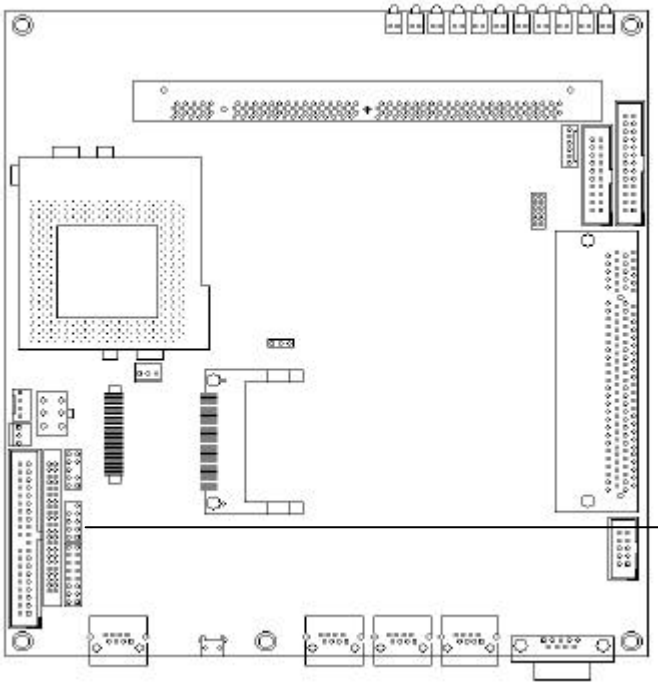


Pin	Assignment
1	KBCLK#
2	MSCLK#
3	KBDATA#
4	MSDATA#
5	NC
6	NC
7	Ground
8	Ground
9	+5V
10	+5V

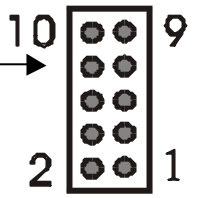


CN9: USB Header

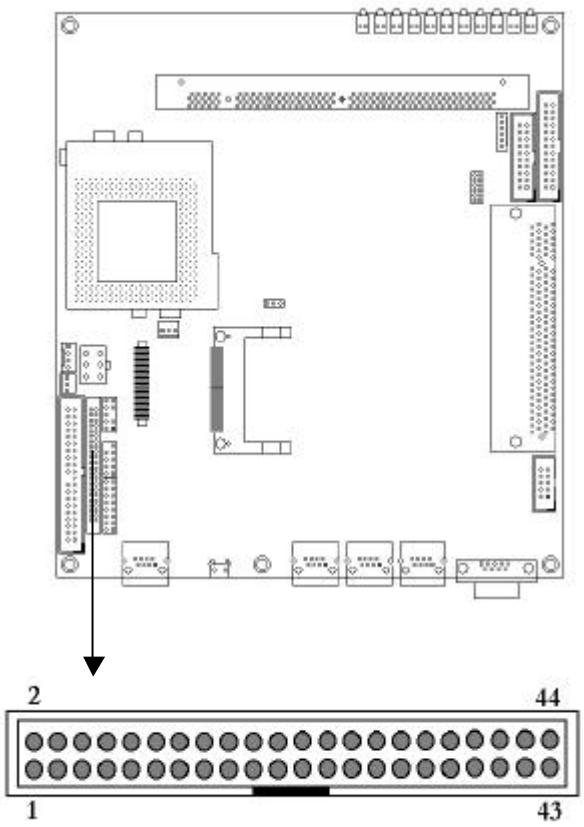
The MAT-A692 supports two USB (Universal Serial Bus) interfaces, which give complete plug and play, hot attach/detach for up to 127 external devices. You need an adapter cable to support two USB connectors. The cable has 10-pin connector on one end and two USB connectors on the other. The USB interfaces comply with USB specification Rev.1.0 and can be disabled in the system BIOS setup.



Pin	Assignment
1	+5V
2	+5V
3	Data0-
4	Data1-
5	Data0+
6	Data01+
7	Ground
8	Ground
9	NC
10	Ground



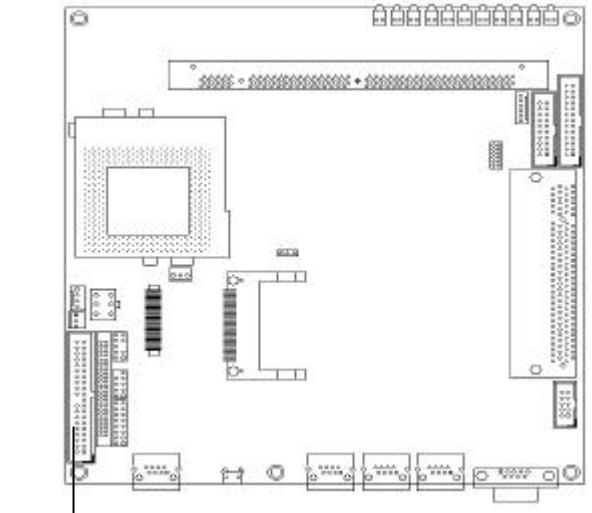
CN10: 44-pin IDE Connector

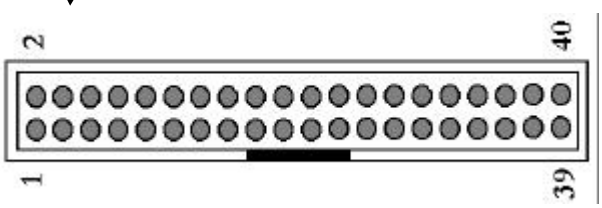


Pin	Signal	Pin	Signal
1	Reset	23	IOW#
2	Ground	24	Ground
3	Data7	25	IOR#
4	Data8	26	Ground
5	Data6	27	IRDY
6	Data9	28	Ground
7	Data5	29	DACK#
8	Data10	30	Ground
9	Data4	31	IRQ14
10	Data11	32	NC
11	Data3	33	Address 1
12	Data12	34	Detect
13	Data2	35	Address 0
14	Data13	36	Address 2
15	Data1	37	Select 0
16	Data14	38	Select 1
17	Data0	39	Active
18	Data15	40	Ground
19	Ground	41	+5V
20	NC	42	+5V
21	DREQ	43	Ground
22	Ground	44	NC

CN11: 40-pin IDE Connector

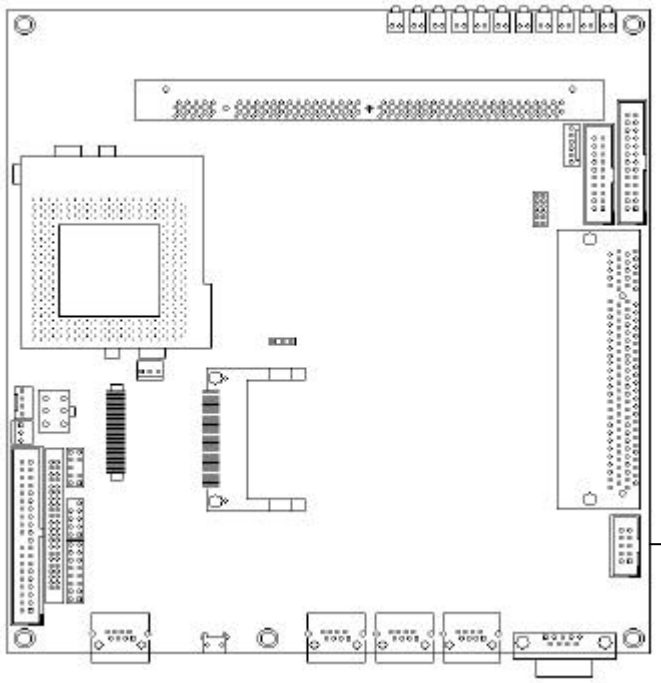
This is a 2.54mm pitch IDE connector supports IDE hard disks and CD-ROM drives. After connecting the single end of the provided IDE ribbon cable to the board, connect the two plugs at the other end to your hard disks or CD-ROM drives. If you install two hard disks from the same connector, you must set the second drive to Slave mode. You can configure two hard disks to Master mode by using one ribbon cable on the primary IDE connector and another on the secondary IDE connector.



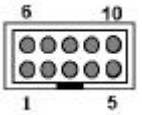


Pin	Signal	Pin	Signal
1	IDE Reset*	21	IDE DREQ
2	Ground	22	Ground
3	Data 7	23	IOW*
4	Data 8	24	Ground
5	Data 6	25	IOR*
6	Data 9	26	Ground
7	Data 5	27	CHRDY
8	Data 10	28	NC
9	Data 4	29	IDE DACK*
10	Data 11	30	Ground
11	Data 3	31	IDE IRQ
12	Data 12	32	NC
13	Data 2	33	A1
14	Data 13	34	NC
15	Data 1	35	A0
16	Data 14	36	A2
17	Data 0	37	CS0*
18	Data 15	38	CS1*
19	Ground	39	Active*
20	NC	40	Ground

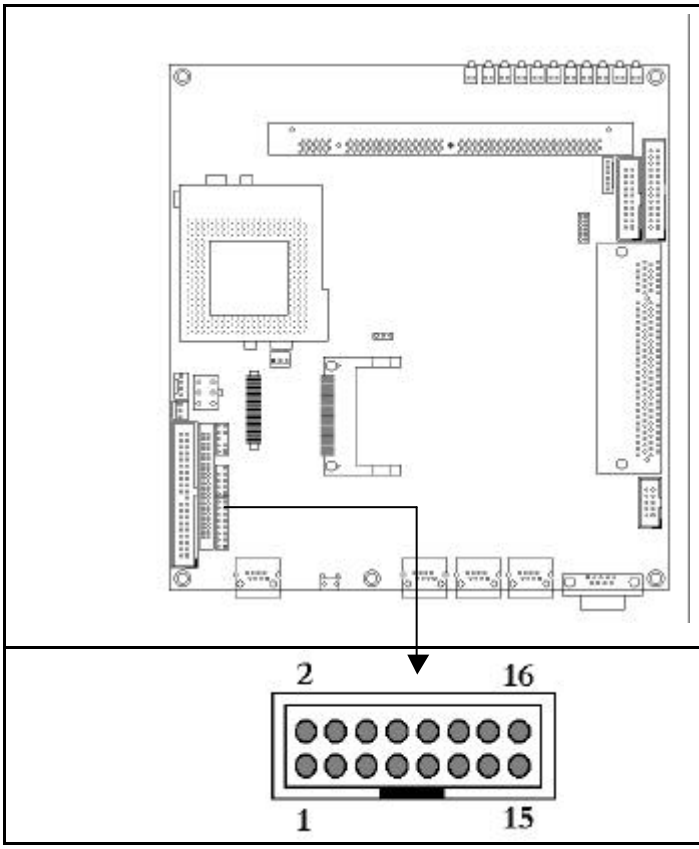
CN12: Serial Port COM2 (RS-232)



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

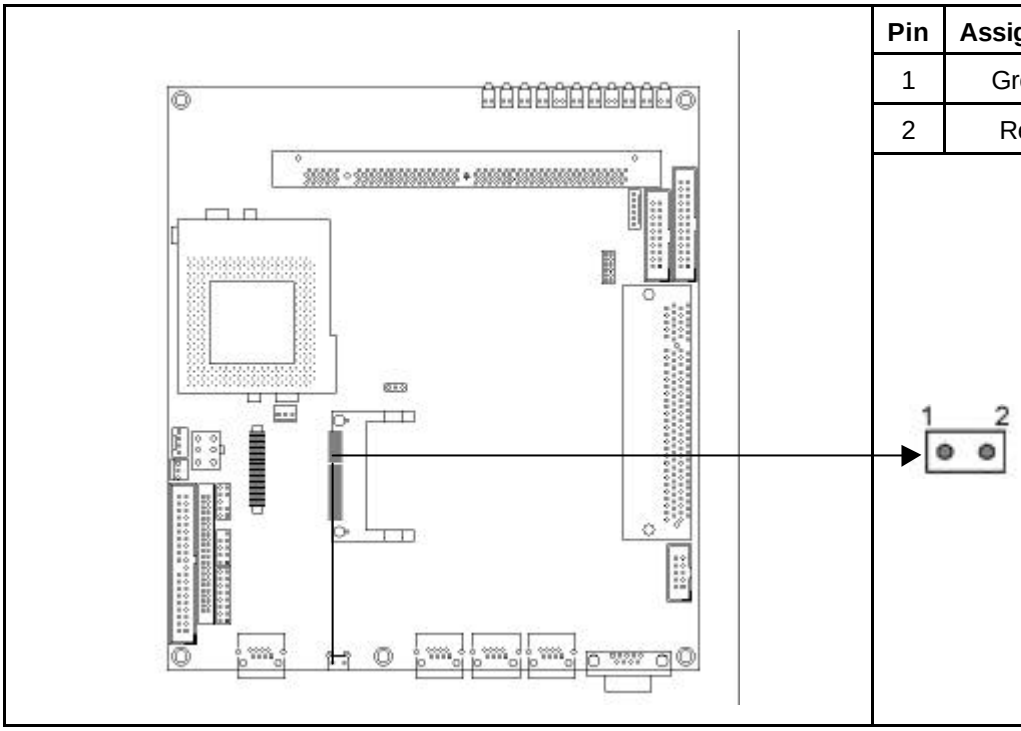


CN13: LAN LED Header



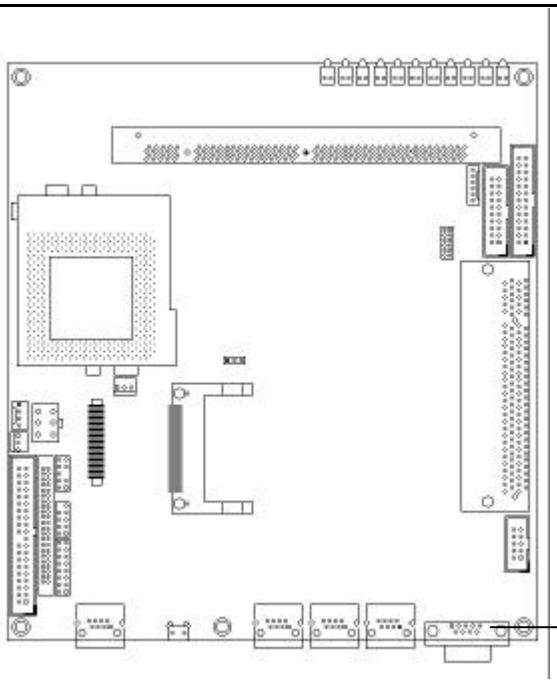
Pin	Assignment
1	LAN1 Active
2	LAN1 Link
3	+3.3V
4	LAN1 Speed
5	LAN2 Active
6	LAN2 Link
7	+3.3V
8	LAN2 Speed
9	+3.3V
10	LAN3 Link
11	LAN3 Active
12	LAN3 Speed
13	LAN4 Active
14	LAN4 Link
15	+3.3V
16	LAN4 Speed

CN14: Reset Button

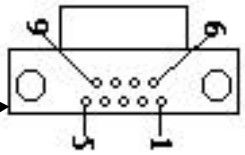


Pin	Assignment
1	Ground
2	Reset

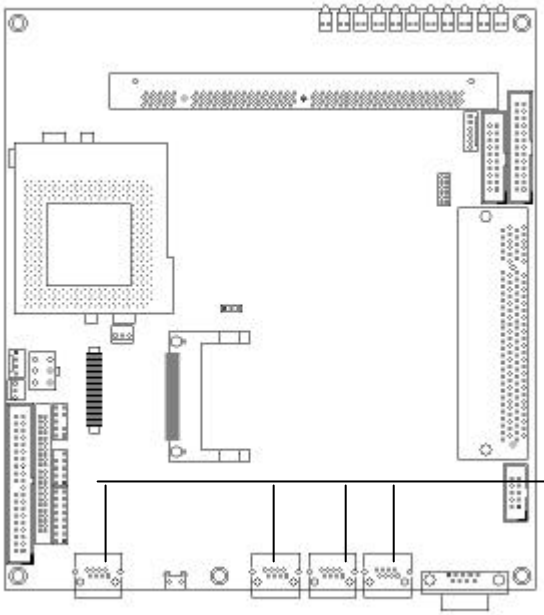
CN15: Serial Port COM1 (RS-232 D-Sub)



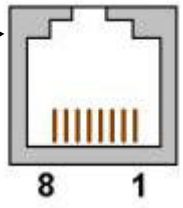
Pin	Assignment
1	DCD
2	RXD
3	TXD
4	DTR
5	Ground
6	DSR
7	RTS
8	CTS
9	RI



CN16, CN17, CN18, CN19: RJ-45 LAN Jack

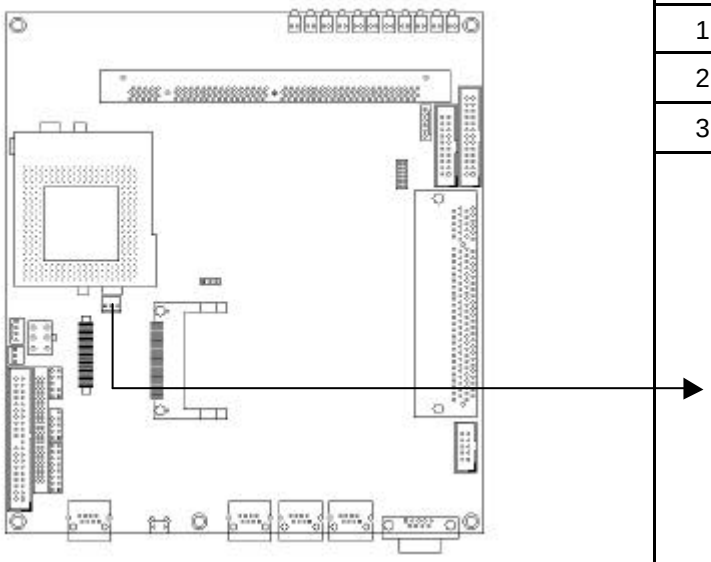


Pin	Assignment
1	TX+
2	TX-
3	RX+
4	Chassis Ground
5	Chassis Ground
6	RX-
7	Chassis Ground
8	Chassis Ground

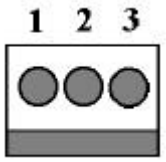


FAN1, FAN2: CPU Fan/System Fan Connector

This 3-pin connector supports fans of 12V DC/500mA (6V) or less with a minimum of 3,500RPM.



Pin	Assignment
1	Ground
2	+12V
3	Sensor



JP1: Clear CMOS

	1-2	Normal
	2-3	Clear CMOS

Chapter 3. BIOS Setup

The ROM chip of your MAT-A692 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 COS Setup programs, so no disk-based setup program is required COS RAM stores information for:

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

The CMOS memory is maintained by battery installed on the MAT-A692 board. By using the battery, all memory in COS can be retained when the system power switch is turned off. The system BIOS also supports easy way to reload the COS data when you replace the battery or 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 CMOS 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 customize your system. For example, you should run the Setup program after you:

- Receive 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

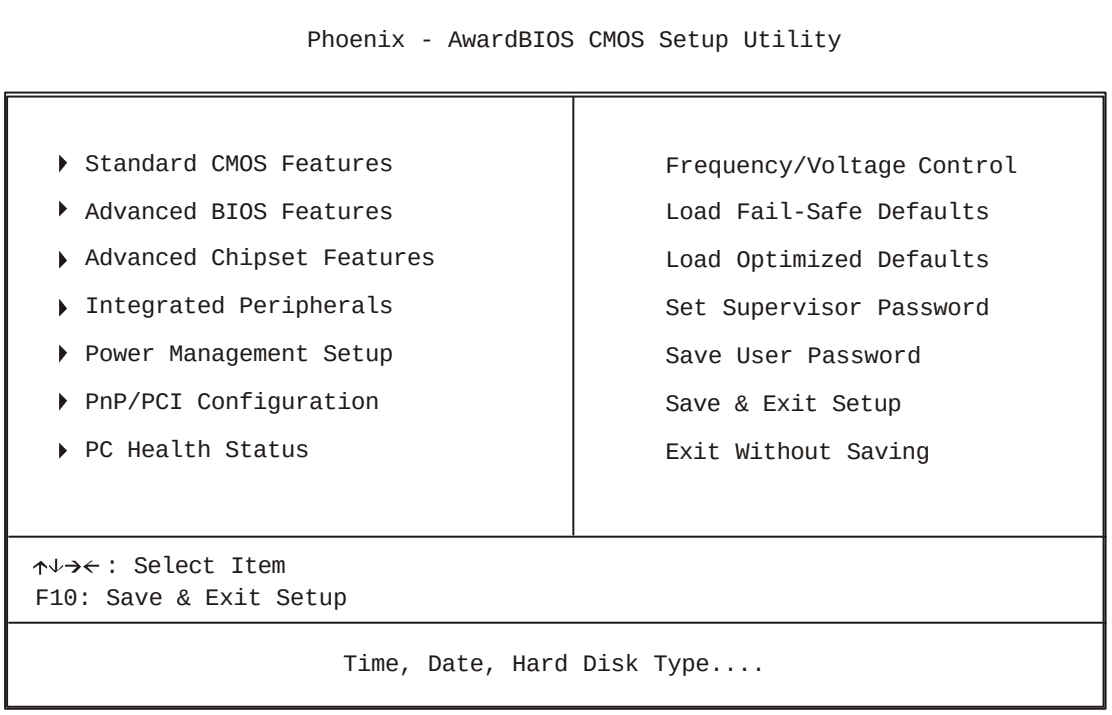
Run the CMOS Setup program after you turn on the system. On-screen instructions explain how to use the program.

⇩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 the 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

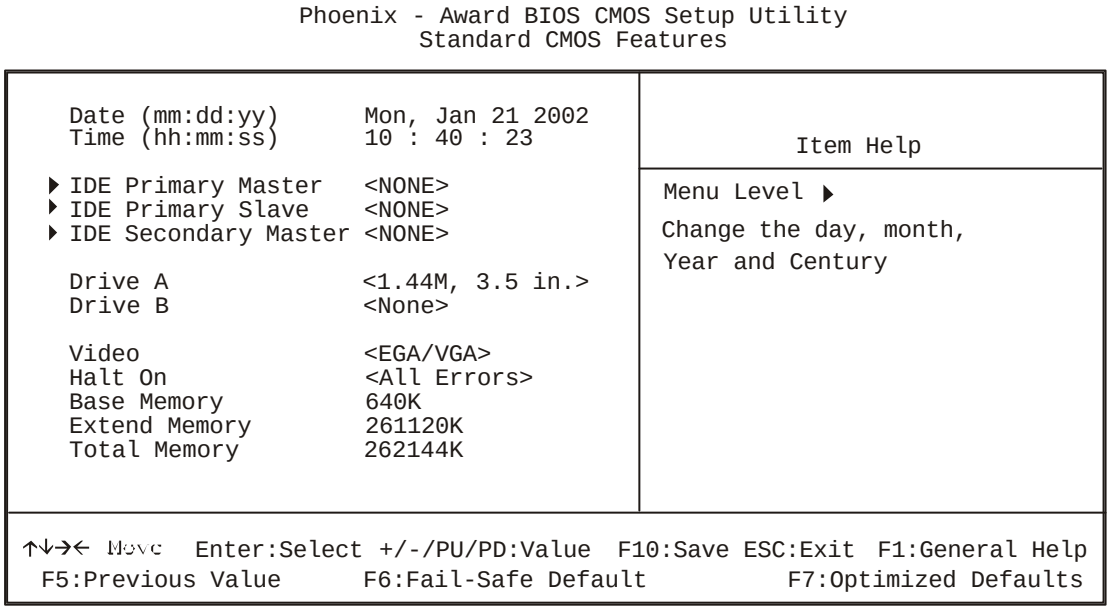
The main menu options of the CMOS Setup program are described in the table below and in the following sections of this chapter.

Option	Function
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 as 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	Change CPU Clock
LOAD FAIL-SAFE DEFAULT	Loads BIOS default values. Use this option as a diagnostic aid if your system behaves erratically.
LOAD OPTIMIZED DEFAULTS	Loads optimized BIOS settings
SET SUPERVIROS & 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 CMOS 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.

Option	Description
Date (mm:dd:yy)	Type the current date
Time (hour:min:sec)	Type the current time (24-hour clock)
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 Drive B	Choose: None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5"

	2.88M 3.5”
Video	Choose: EGA/VGA CGA 40 CGA 80 Mono
Halt On	Controls whether the system stops in case of an error detected during power up. Choose: All Errors No Errors All, But Keyboard (Default) 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:

```
Phoenix - Award BIOS CMOS Setup Utility
Advanced BIOS Features

Virus Warning                 <Disabled>          Item Help
Quick Power On Self Test      <Enabled>
Boot Up NumLock Status        <On>              Menu Level  ▶
Gate A20 Option               <Fast>            Allows you to choose
Typematic Rate Setting        <Disabled>        the VIRUS warning
Typematic Rate (Chars/Sec)    <6>               feature for IDE Hard
Typematic Delay (Msec)        <250>             Disk boot sector
Security Option               <Setup>           protection.  If this
OS Select For DRAM > 64MB     <Non-OS2>         function is enabled
Shadow Setup                  <Press Enter>     and someone attempt to
Cache Setup                   <Press Enter>     write data into this area,
Boot Seq & Floppy Setup       <Press Enter>     BIOS will show
Console Redirection           <Press Enter>     a waring message on
                                                screen and alarm beep

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

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:

Option	Description
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.
Quick Power On Self Test	Speeds up POST after turning on the computer. When enabled, this setting will shorten or skip some check items during POST.
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 boot-up
Gate A20 Option	Choose Enabled or Disabled. Enable this option to allow RAM accesses above 1MB using the fast gate A20 line. This option makes accesses faster than normal, and is useful in networking operating systems.
Typematic Rate Setting	Choose Enabled or Disabled. Enable this 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
Security Option	Choose Setup or System. This lets you specify whether a password is required every time the system boots or only when an attempt is made to enter the CMOS Setup program. "Setup" – The password prompt only appears if you attempt to enter the CMOS Setup program. "System" – The password prompt appears each time the system is booted. *Note: The password function is disabled by default. For a description of enabling the password function, refer to the section :Supervisor Password & User Password" later in this chapter.*

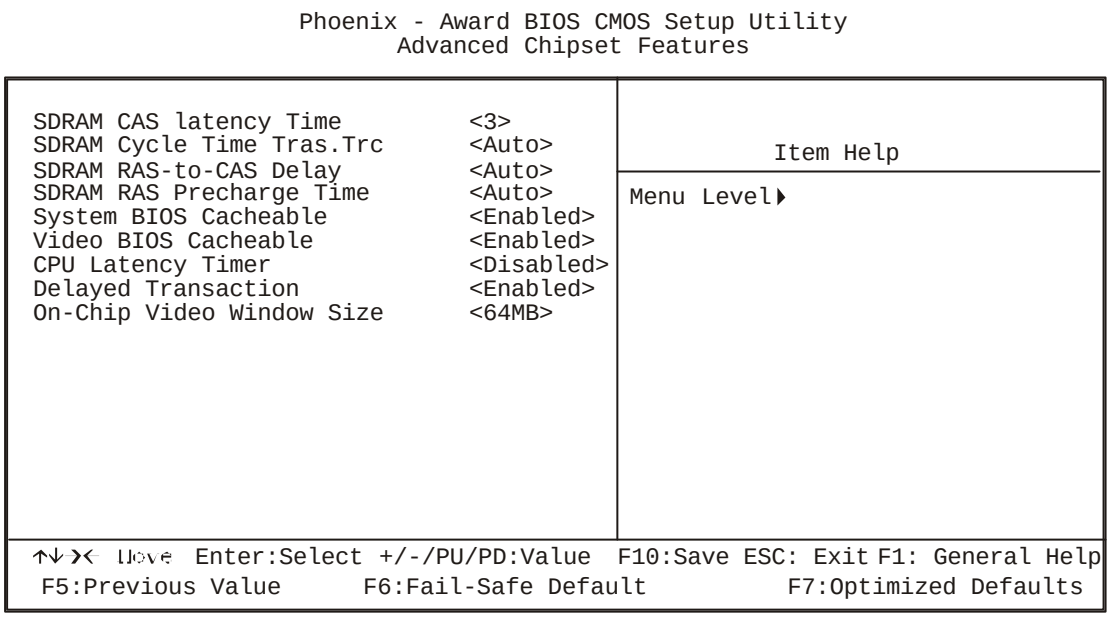
OS Select for DRAM>64MB	Set to OS/2 if your system is using OS/2 and has a memory size of more than 64MB
Shadow Setup	On-Chip Primary PCI IDE <Enabled>
Cache Setup	Set the CPU Internal Cache <Enabled> External Cache <Enabled> CPU L2 Cache ECC Checking <Enabled>
Boot Seq & Floppy Setup	First Boot Device <Floppy> Second Boot Device <HDD-0> Third Boot Device <LS120> Boot Other Device <Enabled> Swap Floppy Drive <Disabled> Boot Up Floppy Seek <Enabled> Report No FDD For WIN 95 <No>
Console Redirection	Set the Console Redirection <Disabled> Baud Rate 19200 Agent Connect via <NULL> Agent Wait Time (min) <1> Agent after boot <Enabled>

3. After you have finished with the Advanced BIOS Features Setup, press the <ESC> key to return to the main menu.

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:



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, press the <F1> key.

Option	Description
SDRAM CAS Latency Time	The values in this field were set according to the specification of the installed SDRAM type. If your SDRAM has the SPD IC installed, the BIOS will read the data and instruct you to set the latency to 2 for better performance when your SDRAM meets this timing specification
SDRAM Cycle Time	6/8: Set DRAM Tras/Trc Cycle time is 6/8 SCLKS 5/7: Set DRAM Tras/Trc Cycle time is 5/7 SCLKS
SDRAM RAS-to-CAS Delay	Determines the timing of the transition from RAS# to CAS$#
SDRAM RAS Precharge Time	Determines the number of the CPU clocks allocated for the RAS# to accumulate its charge before DRAM is refreshed
System BIOS Cacheable	Choose Enabled/Disabled. When enabled, caching of the system BIOS at F0000h-FFFFFh is allowed, enhancing system performance. However, if any program writes to this memory area, a system error may occur.
Video RAM Cacheable	Choose Enabled/Disabled. When enable, caching of the

	video RAM at C0000h-F7FFFh is allowed, enhancing system performance. However, if any program writes to this memory area, a system error may occur.
Delay Transaction	Choose Enabled/Disabled if you have an ISA card compatibility problem. When enabled, this option lets you control the Delayed Transaction function of the chipset. This function is used to meet the latency of the PCI cycles to or from the ISA bus

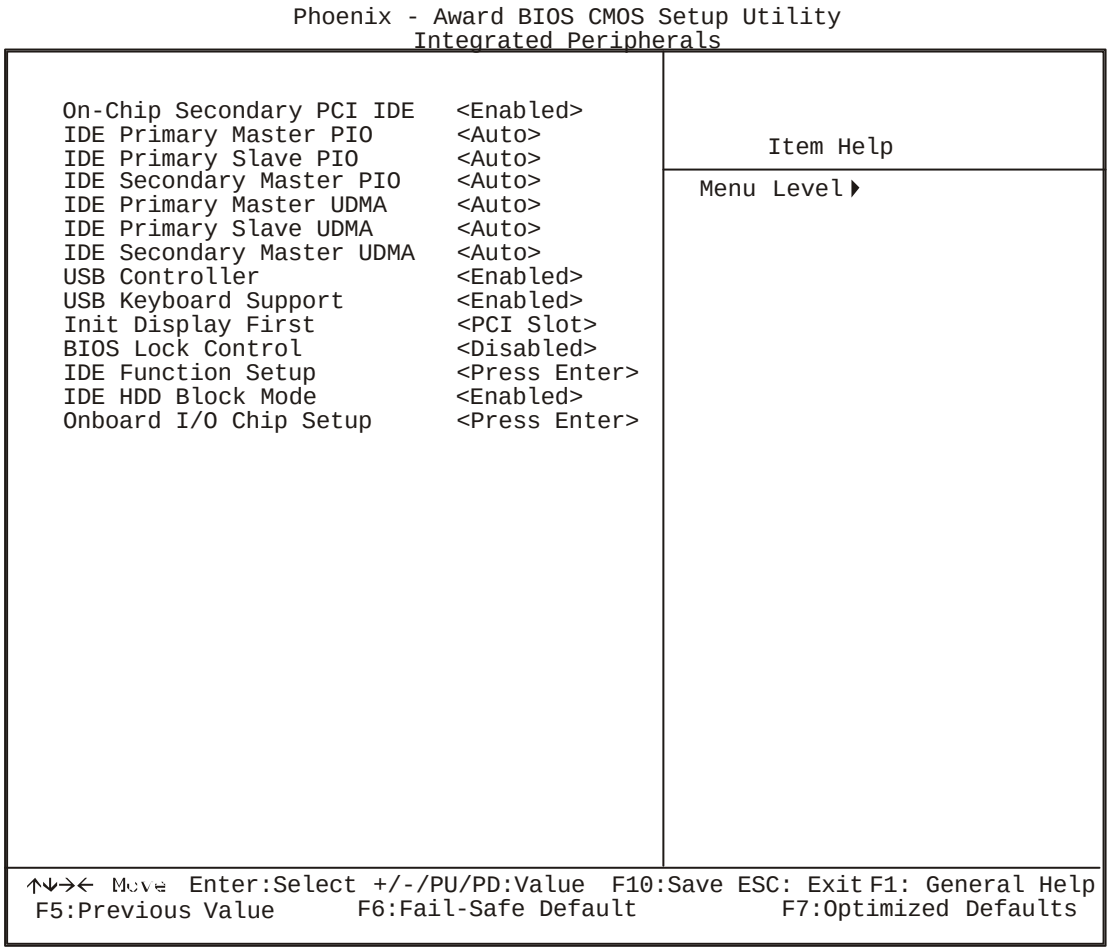
3. After you finished with the Advanced Chipset Features Setup, press the <ESC> key to return to the main menu.

Integrated Peripherals

Use this setup to configure onboard I/O functions.

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

1. Choose "Integrated Peripherals 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. Please press the <F1> key for information on the various options.

Option	Description
On-Chip Primary/Secondary PCI IDE	Enables/Disables the first/second onboard PCI IDE
USB Keyboard Support	Enables/Disables USB keyboard support

Init Display First	Lets you choose the priority of AGP and PCI VGA card
IDE Function Setup	On-Chip Primary PCI IDE <Enabled>
IDE HDD Block Mode	Enables/Disables the IDE HDD Block Mode function ***Note: Not all drives support this function***
Onboard I/O Chip Setup	Onboard FDC Controller <Enabled> Onboard Serial Port 1 <3F8/IRQ4> Onboard Serial Port 2 <2F8/IRQ3> UART Mode Select <Normal> RxD, TxD Active Hi, Lo IR Transmission Delay Enabled UR2 Duplex Mode Half Use IR Pins IR-Rx2Tx2 Onboard Parallel Port <378/IRQ7> Parallel Port Mode <Normal> EPP Mode Select EPP1.7 ECP Mode Use DMA 3 Watch Dog Timer Select <Disabled>

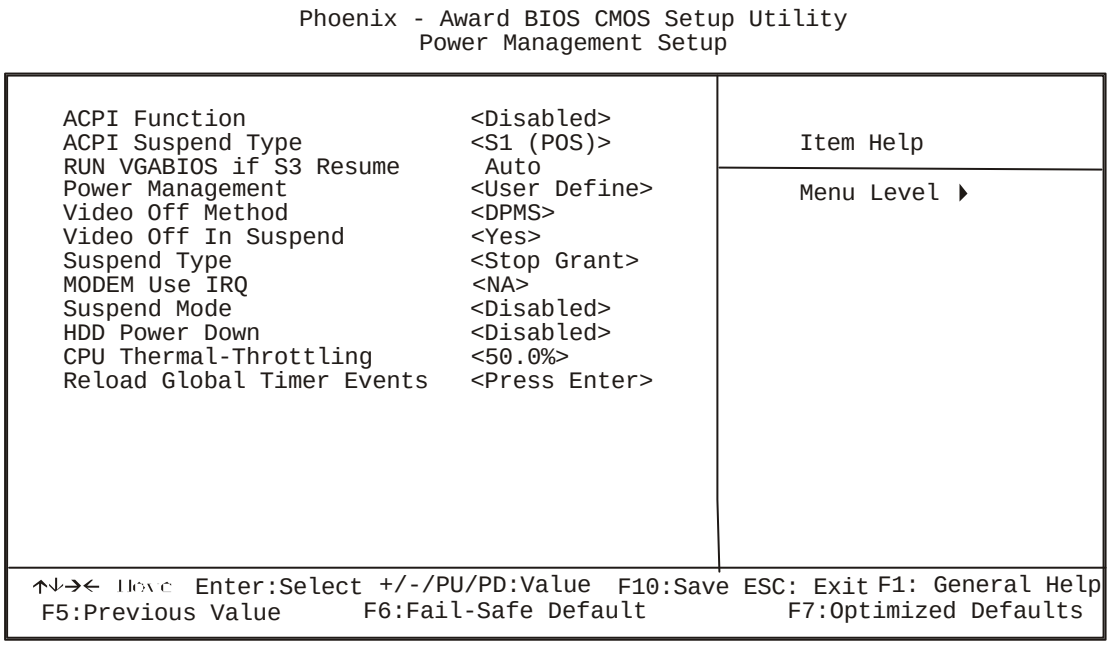
3. After you finished with the Integrated Peripherals Setup, press the <ESC> key to return to the main menu.

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:



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

Options	Description
ACPI Function	Enables/disables the ACPI function
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 minutes "Max Saving" – Predefined timer value of 1 minute
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 1 hour Max Saving: Predefined timer value of 1 minute
Video Off Method	Choose V/H SYNC+Blank, DPMS, Blank Screen. When Power manafement 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 Only Option.
Video Off After	Choose the video off condition: NA/Suspend/Doze
MODEM Use IRQ	Choose the IRQ used by the modem. Default is 3.
Suspend Mode	Sets the time for Suspend mode or disables it
HDD Power Down	Sets the time for the HDD power down mode or disables it
Reload Global Timer Events	Choose Enable or Disable. Primary IDE 0 <Disabled> Primary IDE 1 <Disabled> Secondary IDE 0 <Disabled> Secondary IDE 1 <Disabled> FDD, COM, LPT Port <Disabled> PCI PIRQ<A-D># <Disabled>

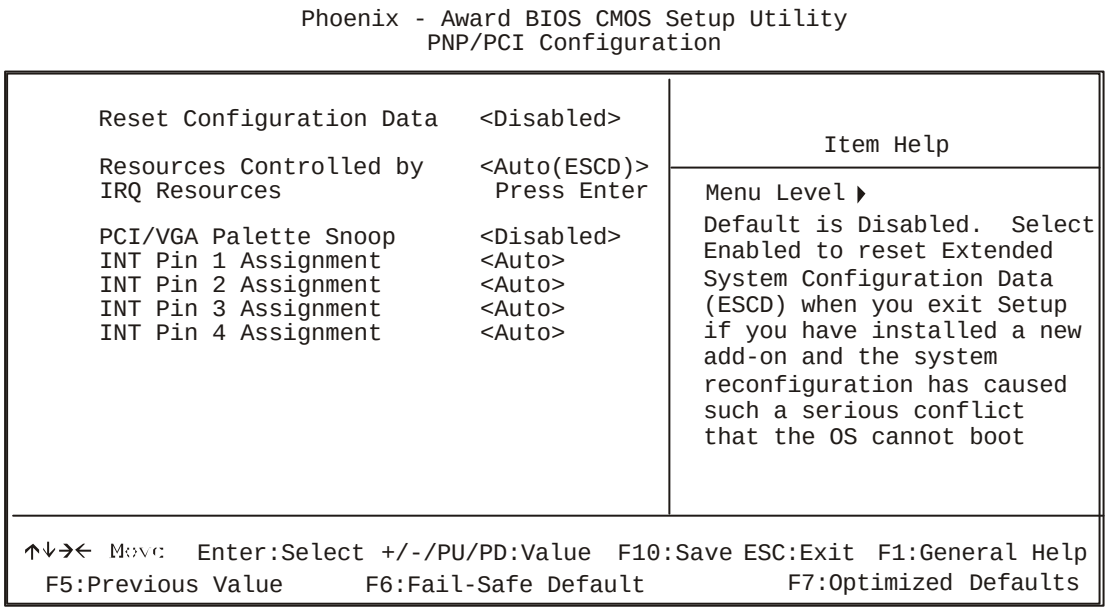
3. After you have finished with the Power Management Setup, press the <ESC> key to return to the main menu.

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.

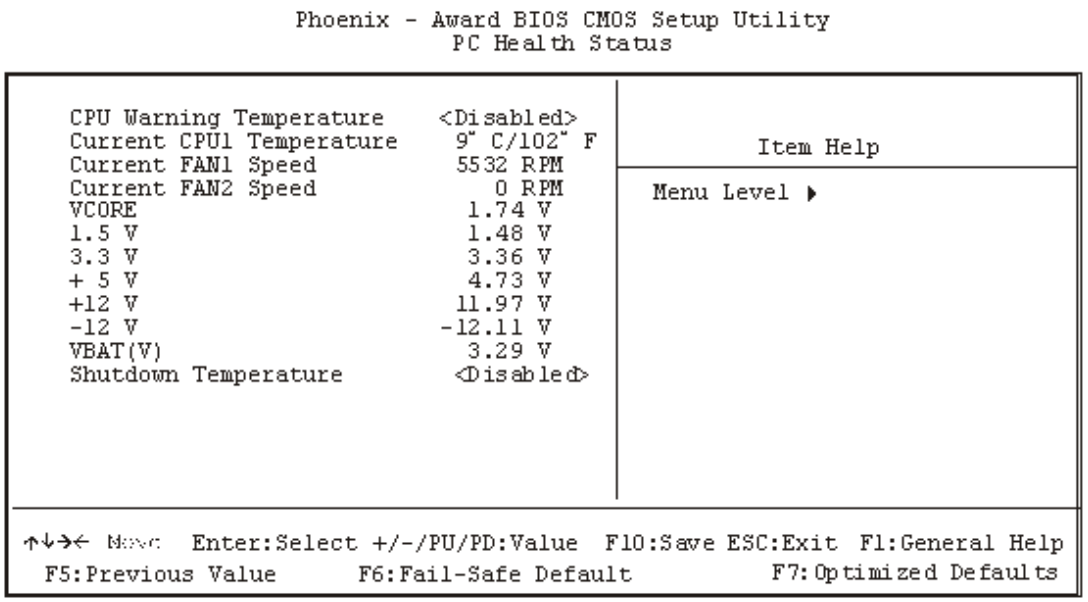
Option	Description
Reset Configuration Data	Choose Enable or Disable "Enable" – PNP configuration data is reset in BIOS "Disable" – PNP configuration data is retained in BIOS
Resources Controlled By	Choose Auto or Manual. This option specifies whether resources are controlled by automatic or manual configuration
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.

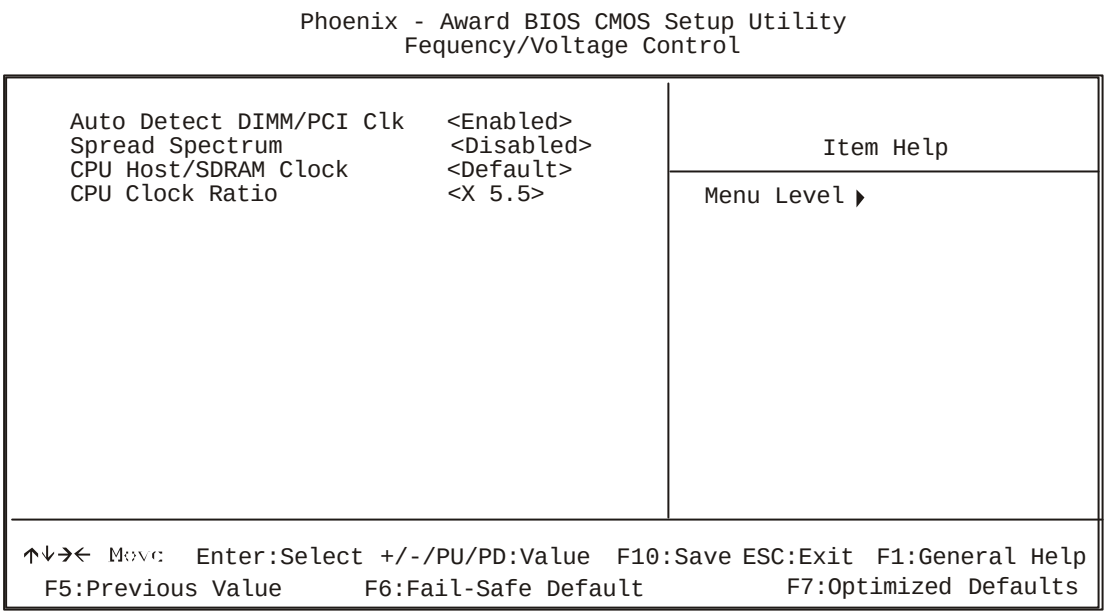
3. Please press the <ESC> key to return to the main menu after finishing with the PNP/PCI Configuration Setup.

⇩Use the PC Health Status Configuration Setup option as follows:

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

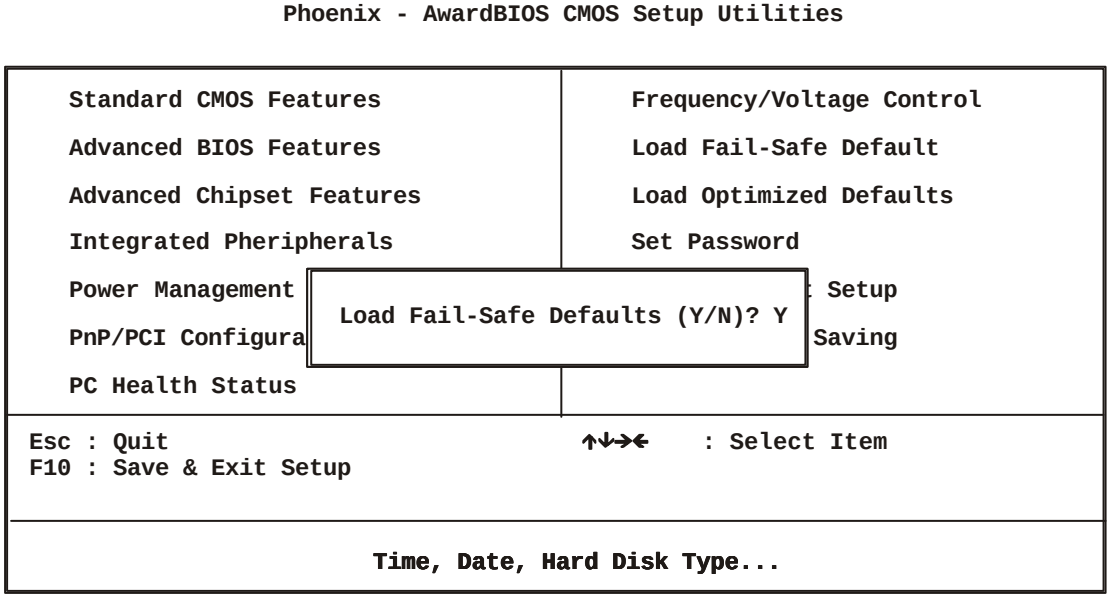


⇩ **Use the Frequency/Voltage Control option as follows:**



Load Fail-Safe Defaults

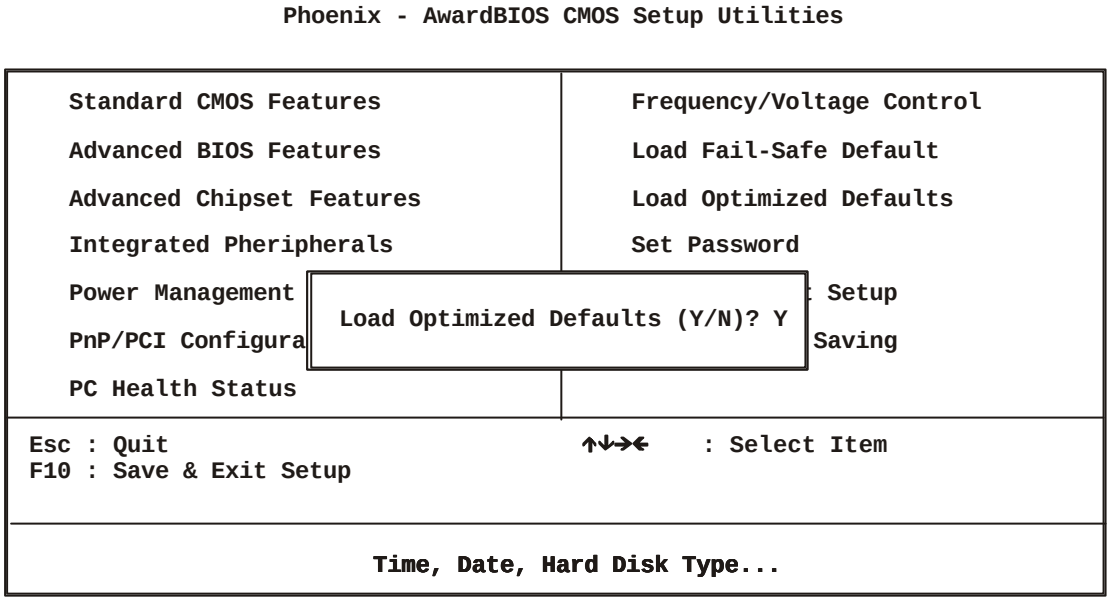
This option loads the troubleshooting default values permanently stored in the BIOS ROM. This is useful if you are having problems with the main board and need to debug or troubleshoot the system. The loaded default settings do not affect the Standard CMOS Setup screen.



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. Press the <Y> key and then press <Enter> if you want to load the BIOS default.

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.



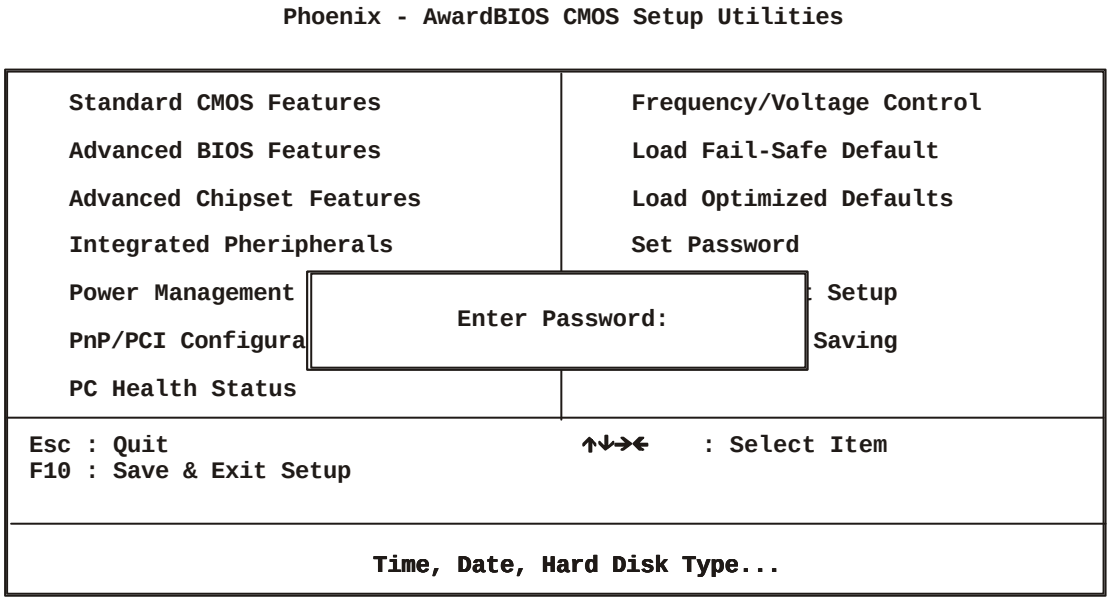
To Use this feature, highlight it on the main screen and press <Enter>. A line will appear on the screen asking if you want to load the Optimized default values. Press the <Y> key and then press <Enter> if you want to load the SETUP default

Supervise/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.

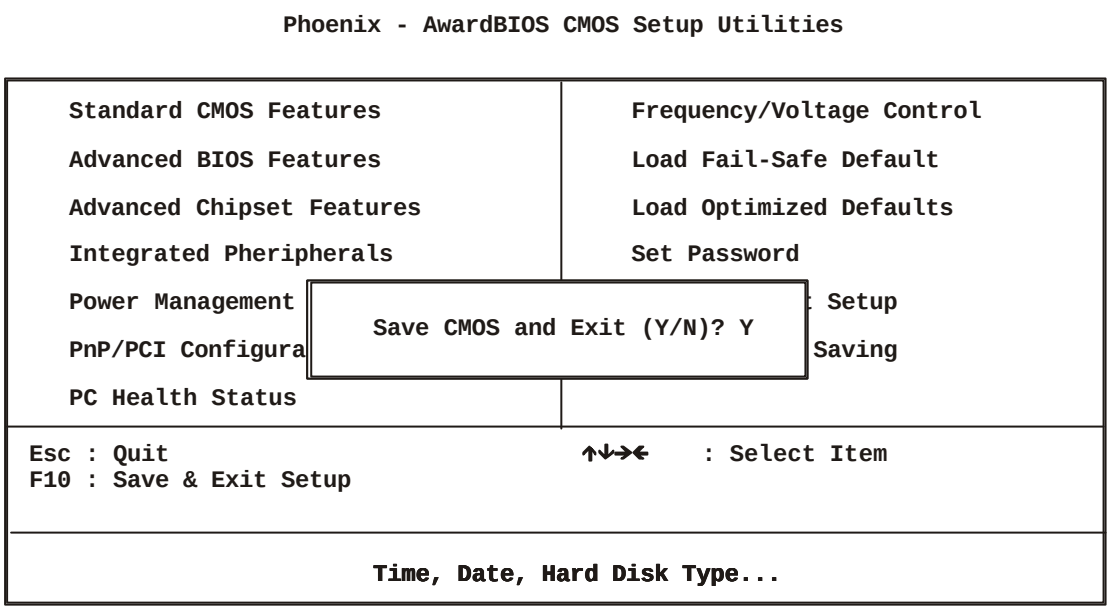
To change a password, first choose a password option from the main menu and enter the current password. Then type your new password at the prompt. The password is case sensitive and you can use up to 8 alphanumeric characters. Press <Enter> after entering the password. At the Next Prompt, confirm the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

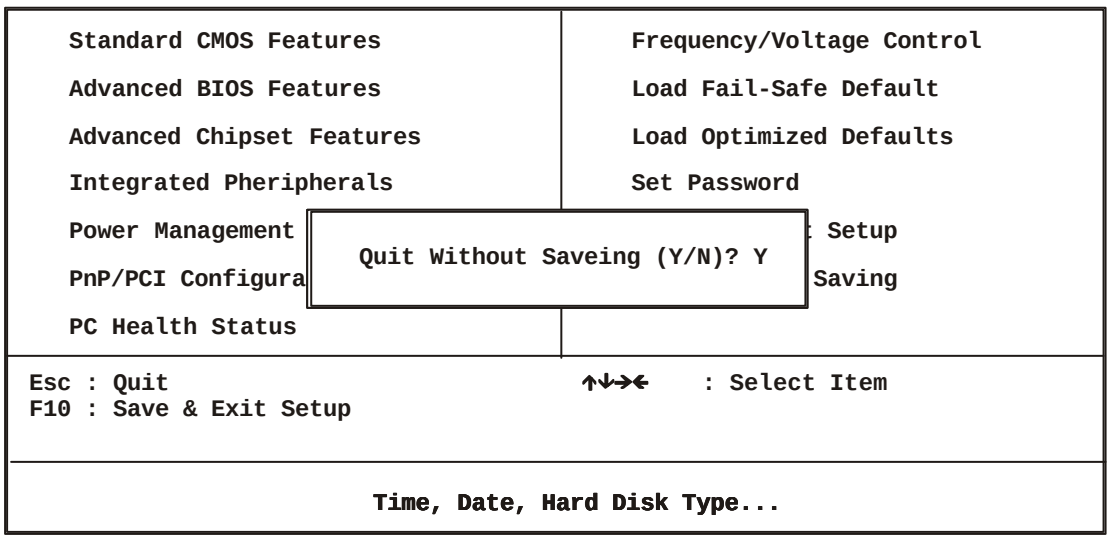
Save and Exit Setup

This function automatically saves all CMOS values before exiting Setup.



Exit Without Saving

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



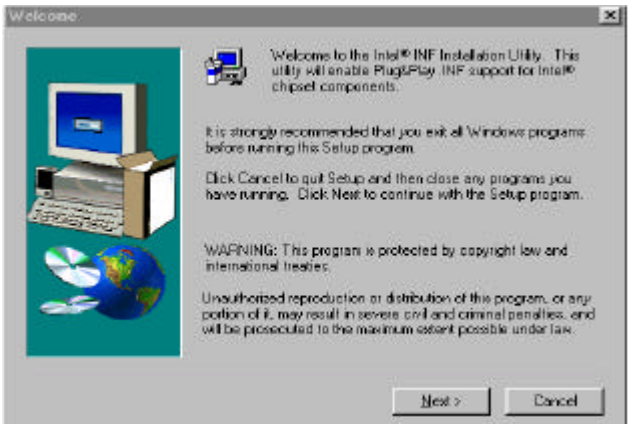
Chapter 4. Drivers and Utilities

4.1 Chipset Software Installation Utility

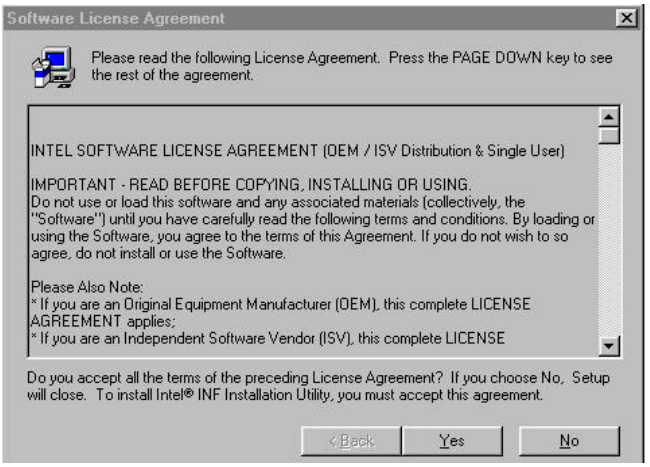
The Intel INF Driver designed in the Intel 810 series chipset is intended to reduce the workload of the CPU and make the CPU running more efficiently. The driver must be loaded in order to make the EIDE drive operating at mastering DMA or Ultra DMA/33/66 mode.

Installing the Intel INF Driver for Windows95/98

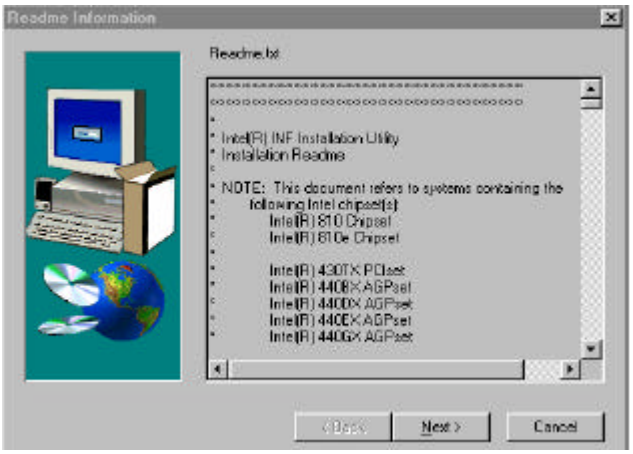
1. Insert the Drivers and Utilities CD into the CD ROM drive (example E:)
2. Double click the "Chipset Software Installation Utility" folder in drive E: to open it and run "Setup" program by double click it.



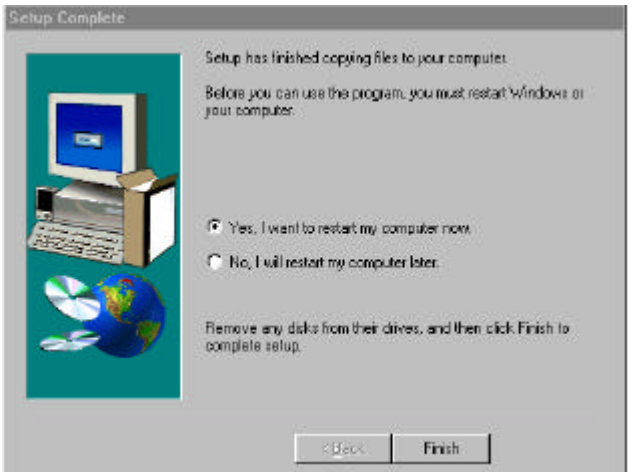
3. Click "Next"



4. Click "YES"



5. Click “ Next”



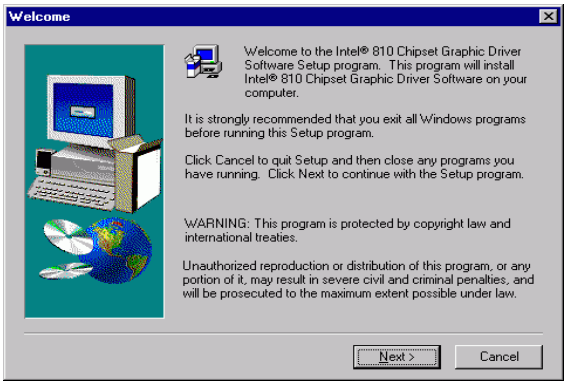
6. Click “ Finish” to restart your system.

After restarting, Windows 95 will build up the driver information database.

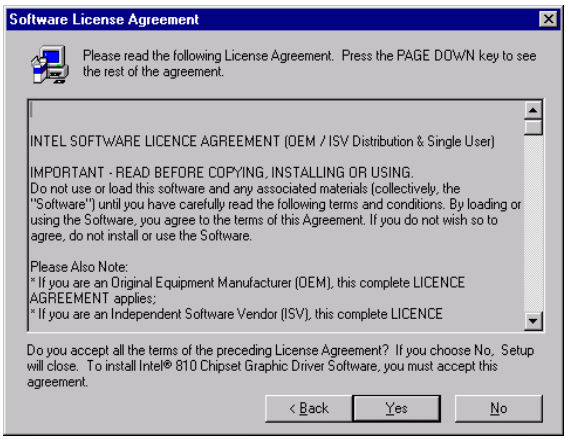
Installing the Intel VGA Driver for Windows 9X

1 Insert the Drivers and Utilities CD into the CD ROM drive (example E:).

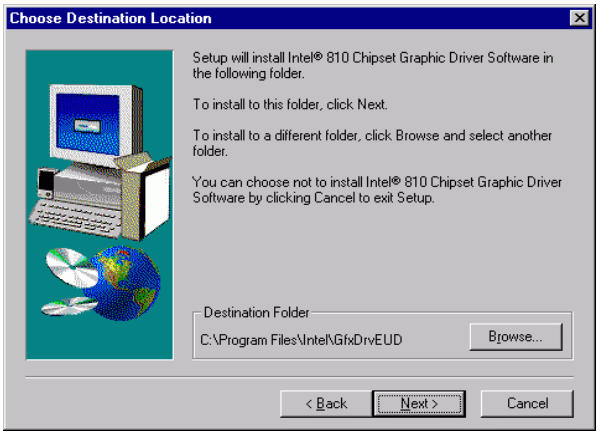
2 Double click the "Graphics\Win9x_Me" folder in drive E: to open it and run "Setup" program by double click it.



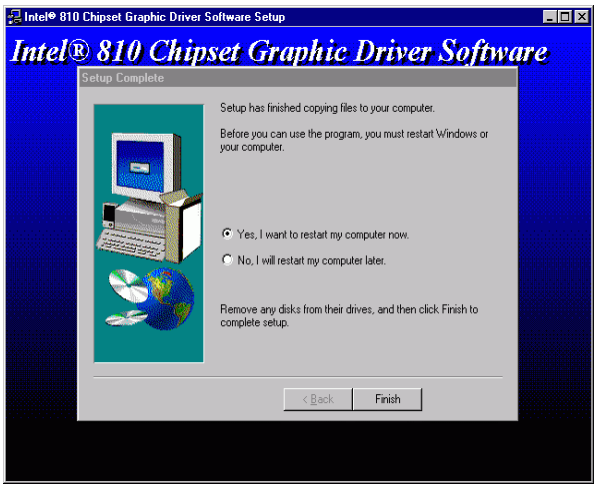
3 Click "Next"



4 Click "YES"



5 Click "Next"

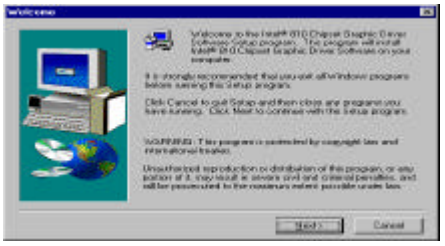


6 Click "Finish" to restart your system.

✍✍Installing the Intel VGA Driver for Windows NT

1 Insert the Drivers and Utilities CD into the CD ROM drive (example E:).

2 Double click the "Graphics\Winnt4" folder in drive E: to open it and run "Setup" program by double clicking it.



3 Click "Next"

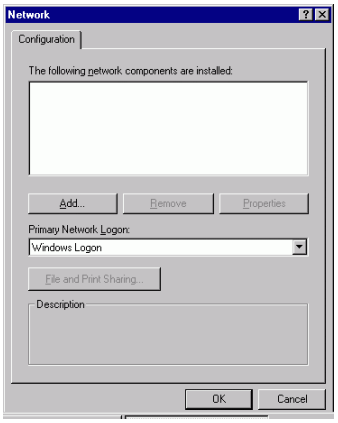
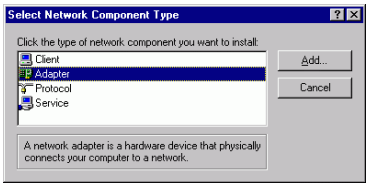
4 Click "YES"

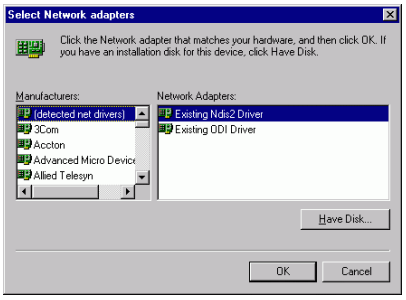
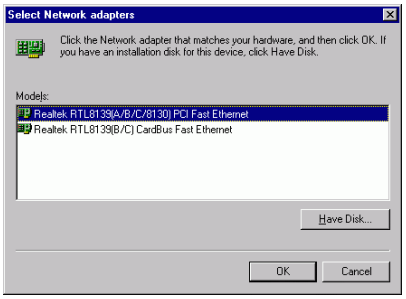
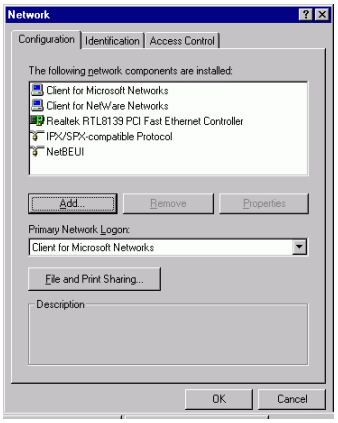
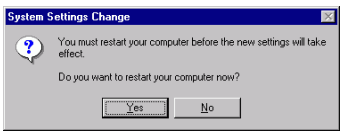
5. Click "Next" to restart your system.

4.2 Installing the Ethernet Drivers

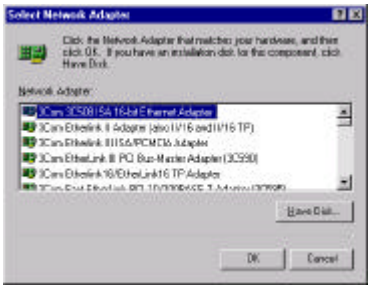
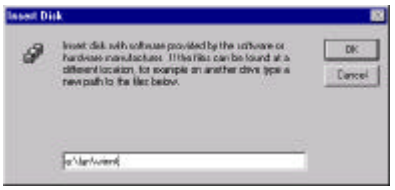
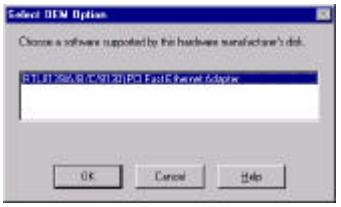
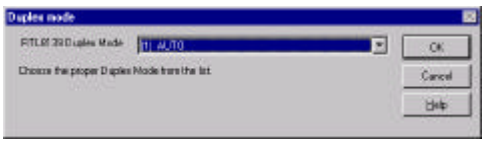
The MAT-A692 has a high-performance Ethernet chipset Intel® 82559/82559ER or Realtek RTL8139C that provide 32-bit performance, PCI Bus master capability, fully compliance with the IEEE 802.3u 100Base-T specification, and IEEE 802.3x Full Duplex Flow Control. It supports the Advanced Configuration Power Management Interface (ACPI), PCI power management for modern operating systems that is capable of Operating System Directed Power Management (OSPM) to achieve the most efficient power management. It also supports remote wake-up in both ACPI and APM environments.

1. Installation for Windows 95/98 (Realtek RTL8139C)

1. Click **"Start"**, go to **"Settings"** and click **"Control Panel"**. Choose the **"Network"** icon and double-click the icon. The Configuration screen will appear. Click **"OK"** to continue.	
2. Select "Adapter" and click "Add".	

3. Click **"Have Disk"** to continue.	
4. Insert the Drivers and Utilities CD into the CD-ROM drive (example E:). Click **Browse** to find the INF file. The file is located at **E:\lan\8139C\Driver\Win98**	
5. Select **"Realtek RTL8139C (A/B/C/8130) PCI Fast Ethernet"** and click **"OK"**.	
6. Set the configuration of the related items and click **"OK"**.	
7. Click **"Yes"** to restart the system for the new settings to take effect.	

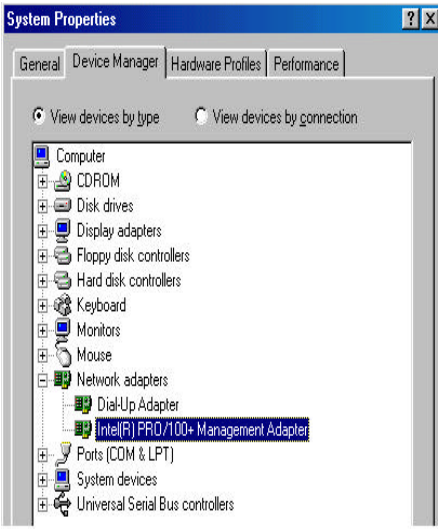
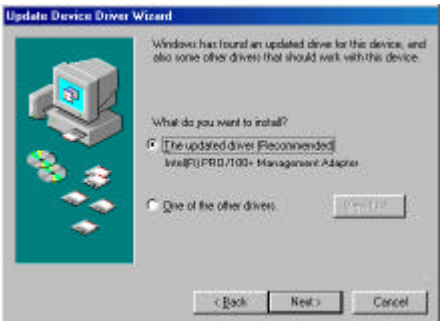
2. Installation for Windows NT

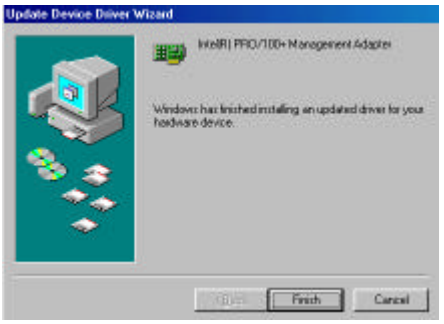
1. Click **"Start"**, go to **"Settings"** and click **"Control Panel"**. Choose the **"Network"** icon and double-click the icon. The Configuration screen will appear. Click **"Add"** to continue.	
2. Click **"Have Disk"** to continue.	
3. Insert the Drivers and Utilities CD into the CD-ROM drive (example E:). Click **Browse** to find the INF file. The file is located at **E:\LAN\8139C\Driver\Winnt4**	
4. Select **"Realtek RTL8139 (A/B/C/8130) PCI Fast Ethernet"** and click **"OK"**.	
5. Select **"(1) Auto"** for the Duplex Mode and click **"OK".**	

6. Setting the configuration of the related items and click **"OK"**.	
7. Click **"Yes"** to restart the system for the new settings to take effect.	

3. Installation for Windows95/98 (Intel 82559)

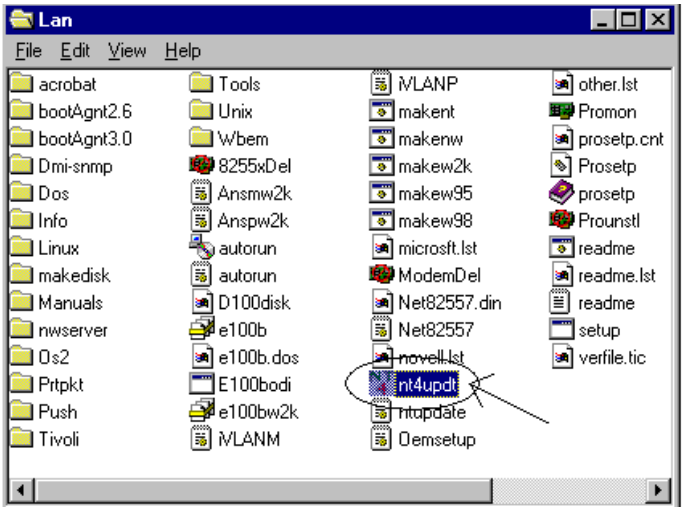
⇩ **Please install the drivers for Windows 95/98 as follows:**

1. Click "Start", go to "Settings" and click "Control Panel". Choose the "System" icon and double-click the icon. The System Properties screen will appear. Click "Network Adapters" to show the components found. Intel® Pro/100+Management Adapter is already found by your Windows System. Click to the Adapter bar to start driver setup	
2. Next screen turns up to prompt to update the adapter driver. Click the "Update driver" button to set up the Intel® Pro/100+Management Adapter driver. You must follow the instructions shown in the subsequence screen until the "Finish" screen appears to instruct you to re-start system.	

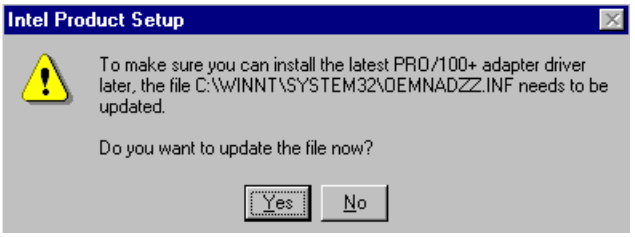
3. Insert the drivers and utilities CD into the CD-ROM drive (example E). Click "Browse" to find the INF file. The file is located at E:\lan\82559\Driver Click "OK" to start setup	

4. Installing LAN Driver for Windows NT

Before setting up Intel Pro LAN Adaptor in your Windows NT, you must update your system. Please insert your MAT-A692 CD-ROM into your CD-ROM drive and open the folder for LAN Setup. Look for the program:"nt4updt" and click to it to update your system:

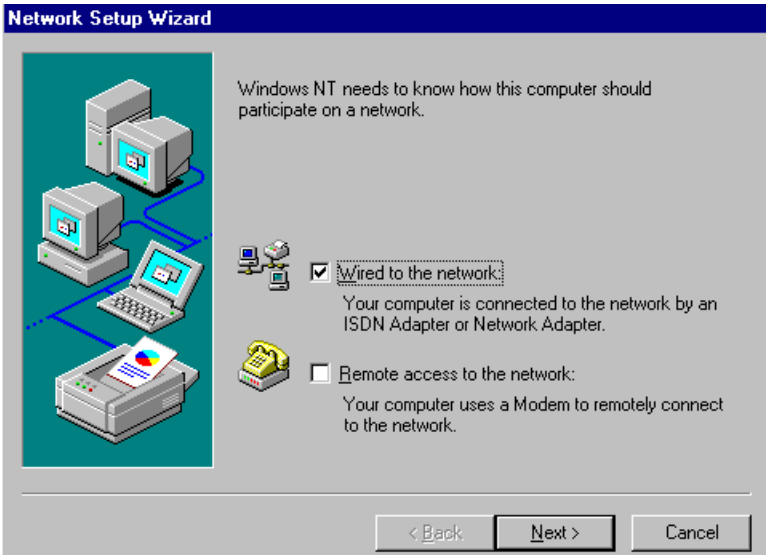


As soon as you click to the program "nt4updt", next screen will raise to ask you to update your System32. Click "Yes" to finish update and go on to set up Intel Pro LAN Adaptor and driver.



(1) To setup LAN Adaptor and Driver during WinNT Installation:

1. During WinNT installation, the setup program will ask you to install Windows NT Networking. Click "Next" to continue.
2. In the next screen, choose "Wired to the network" and click "Next" to continue

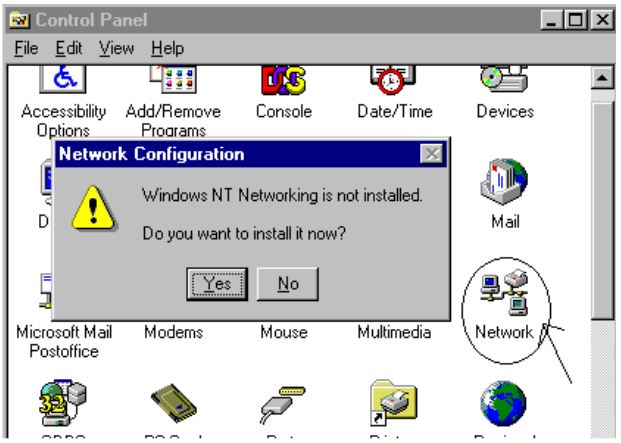


3. In the subsequent screen, select "Select from list" (do not select "Start Search") to setup Intel Pro LAN adapter and driver. Please remember to insert the MAT-O671 drivers CD-ROM into your CD-ROM drive now.

4. In next screen, click to "Have Disk", and the setup program will ask you to enter the correct path to locate the LAN driver. Please key in :\LAN under your CD-ROM drive and click "OK" to continue.
5. In a few seconds, the correct Adapter "Intel®PRO Adapter" is shown on next screen. Click "OK" to continue Adapter driver setup together with other network components till Setup program asks you to restart system.

(2) To setup LAN Adaptor and Driver on Existing WinNT system:

1. If you are running WinNT system without LAN driver completely installed, you should set up the LAN adaptor and driver from the "Network" of your system. Enter the "Control Panel" and click to "Network" to start setup.



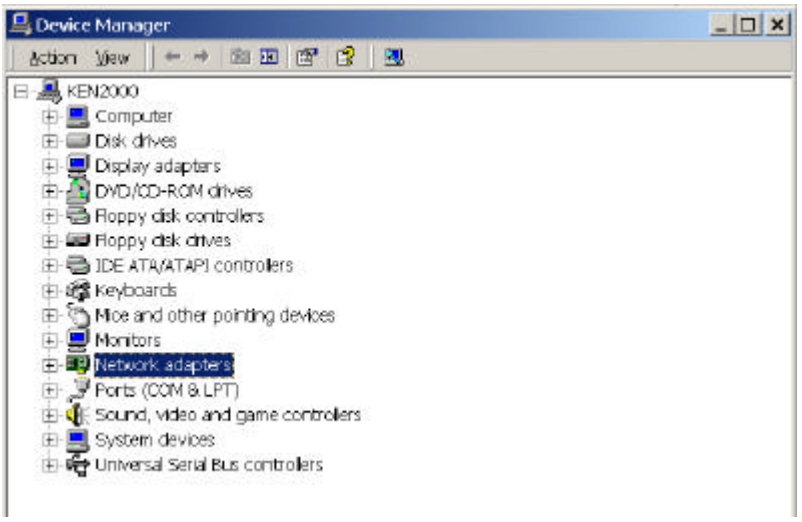
2. The subsequent screen will ask you to install the Windows NT Networking. Click "Yes" to setup.
3. The subsequent screens will guide you through the whole LAN Adaptor and Driver setup, which is similar to the LAN Driver Setup during WinNT installation.

4. Install LAN Driver for Windows 2000

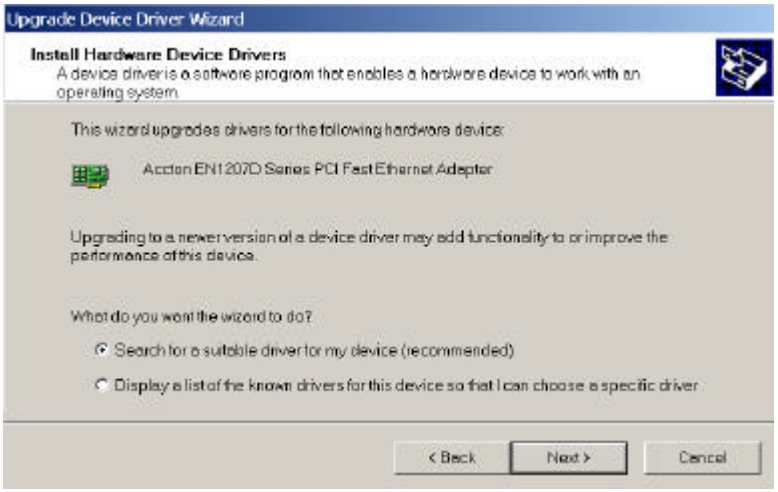
To install the Network Driver from Drivers CD:

Intel 82559 Chip for LAN is already mounted on board. To install the driver for this LAN controller, please take the following steps:

1. Insert the Intel adapter CD in the CD-ROM drive.
2. From the Control Panel, double-click the System icon, select the Hardware tab, and click the "Device Manager" button.
3. Select "Network Adapters" and right-click on the adapter listing to display its menu. Then click the Properties menu option.



4. From the Properties dialog box, click the "Driver" tab and click the "Update Driver" button. The Update Device Driver Wizard appears, click Next.
5. At the prompt "What do you want the wizard to do?", select the radio button "Search for a suitable driver for my device" and click Next.



6 Select the CD-ROM drives check box and click Next.

7 Select the "Install one of the other drivers" check box and click Next.

8 Restart your computer.

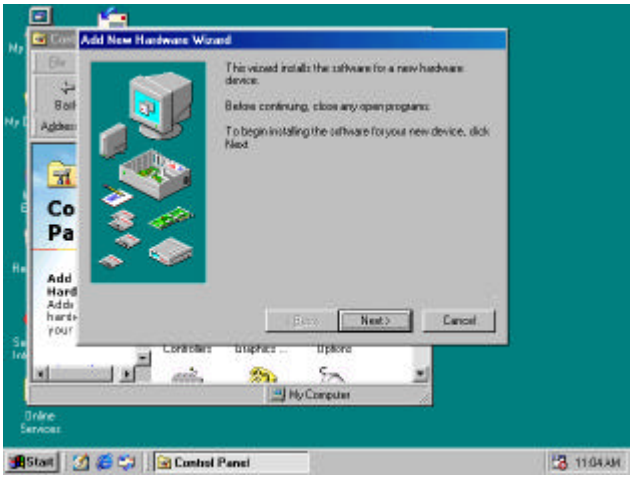
After restarting your computer, connect to your network by double-clicking the My Network Places icon on the desktop.

5. Installation for Windows95/98 (Intel 82559ER)

Please install Ethernet drivers as follows:

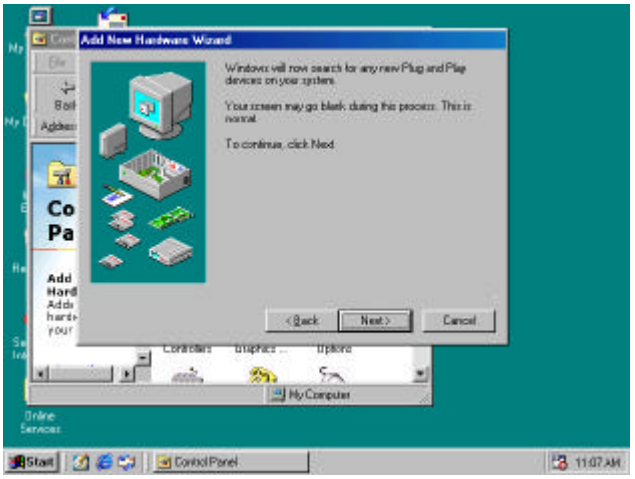
1. Click **"Start"**, go to **"Setting"** and click **"Control Panel"**. Choose the **"Add New Hardware"** icon and double-click the icon, the next configuration screen will appear.

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.

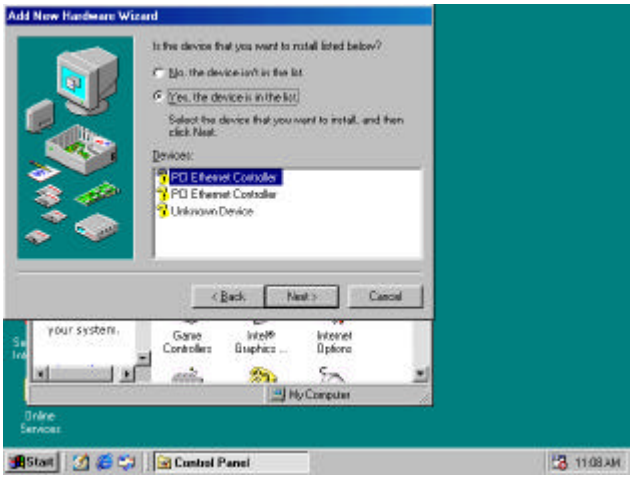


3. **"Add New Hardware Wizard"** shown Windows will no search for any new Plug and Play devices on your system. Your screen may go black during this process. This is normal.

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

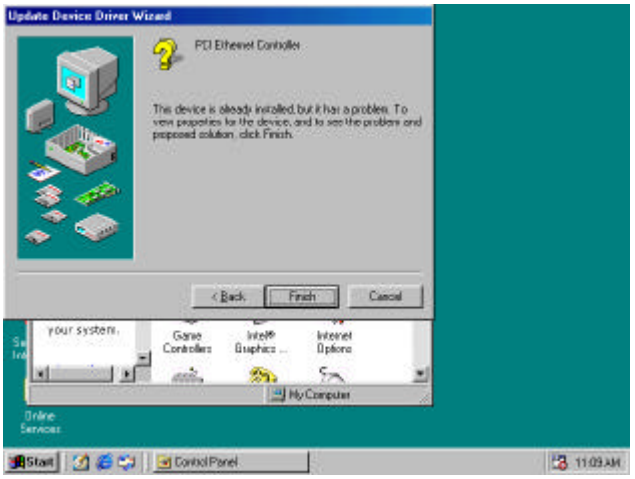


4. Please select the device that you want to install, and then click "Next>" to the next step of installation.



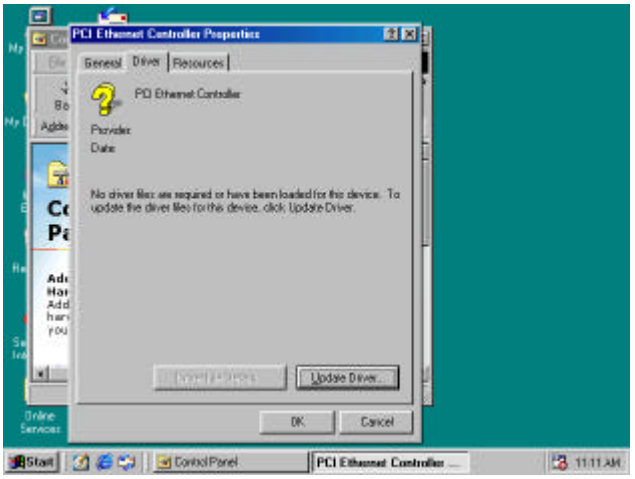
5. This is Update Device Driver Wizard.

   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

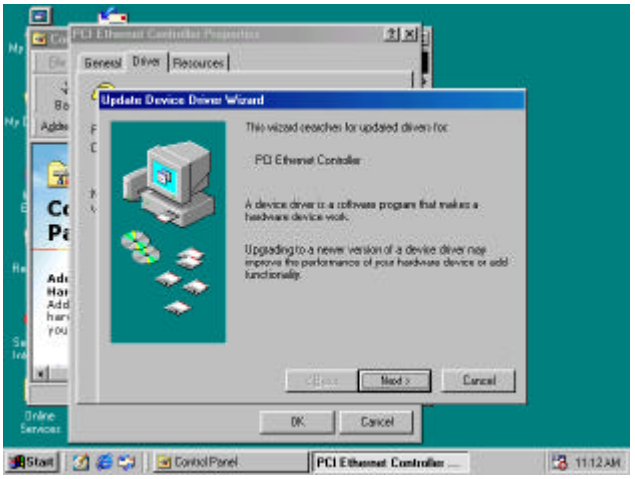


7. This Wizard searches for update drivers for:

   PCI Ethernet Controller

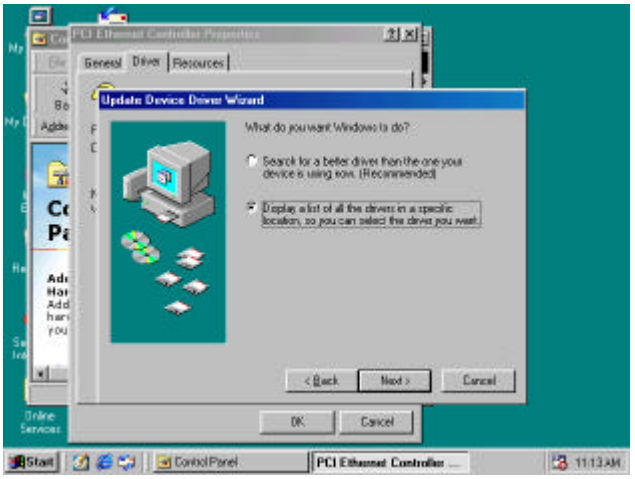
   A device driver is a software program that makes a hardware device work.

   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

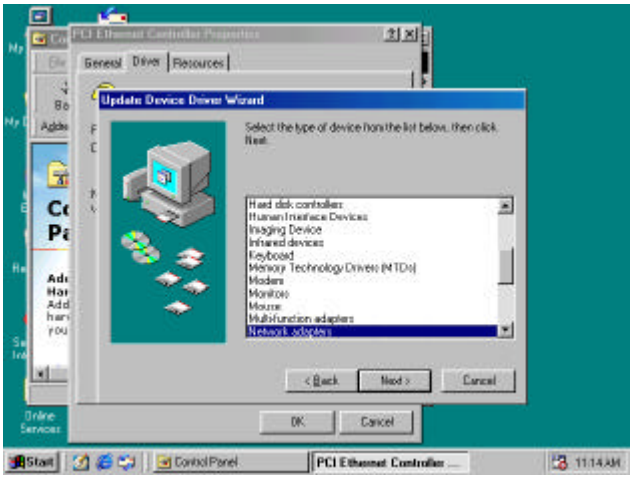


8. This is Update Device Driver Wizard. What do you want Windows to do? Please choose "Display a list of all the drivers in a specific location, so you can select the driver you want.

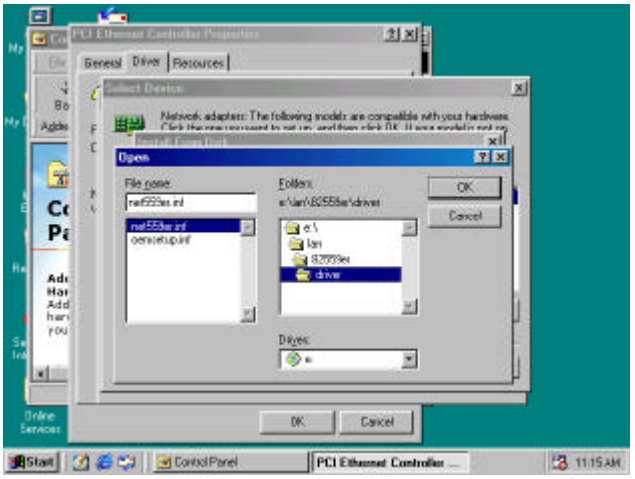
   Please click "Next>" to the next step of installation



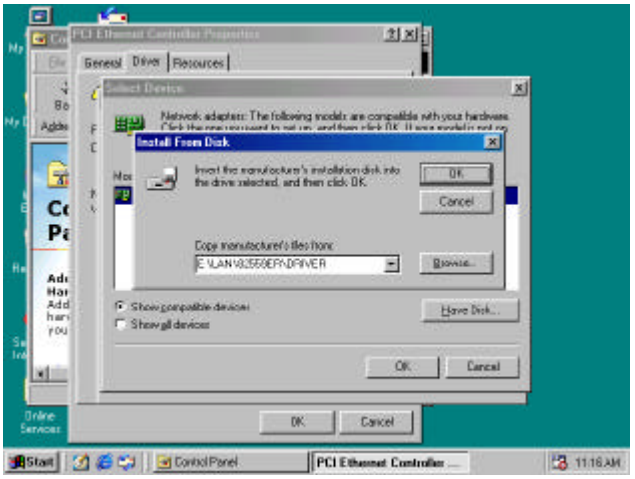
9. This s screen for selecting the type of device from the list, then click "Next>" to next step of installation



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

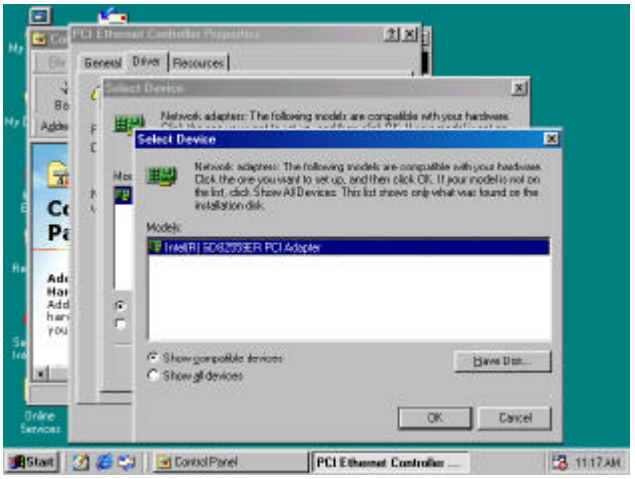


11. This is Install from Disk. Please insert the manufacturer' s installation disk into the drive selected, and then please click "OK" to next step of installation.



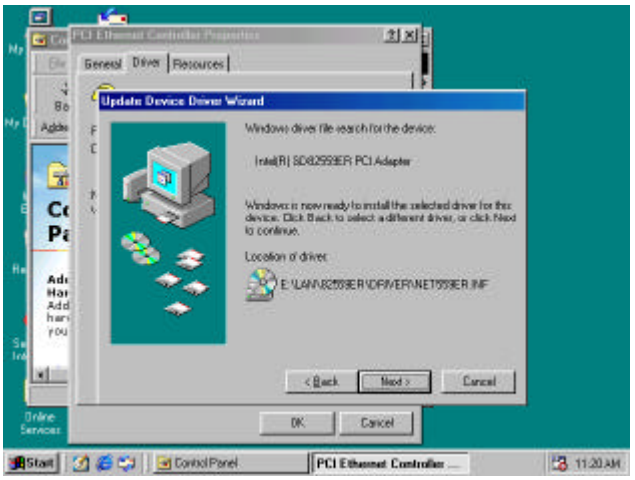
12. This is Select Device screen.

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

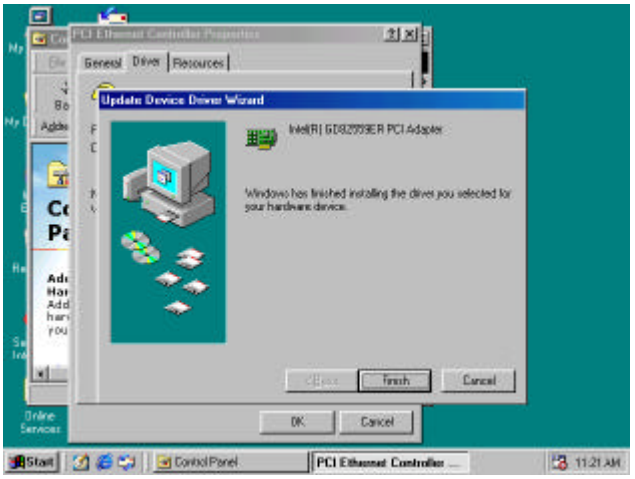


13. This is Update Driver Wizard.

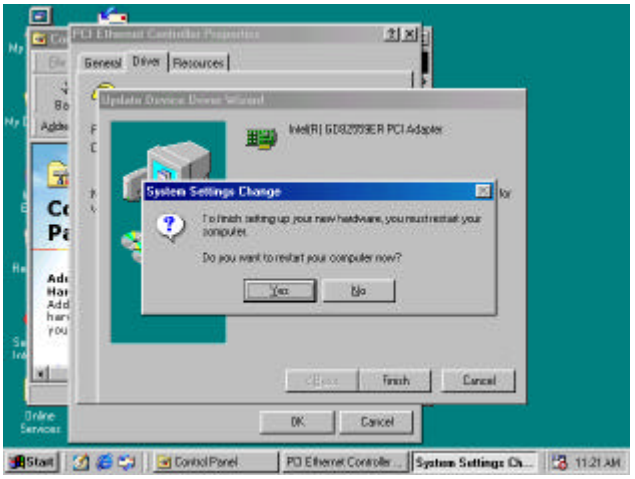
Windows is now ready to install the selected driver for this device. Please click Back to select a different driver, or click Next to continue.



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.



Hardware Monitoring Installation

The Winbond W83627HF is a Hardware Environment Monitoring chip, which has already been built on MAT-A692 to monitor (via the help of a hardware monitoring utility) the system voltage, temperature and fan speed:

(1) It monitors system voltage levels to ensure a stable current for components mounted on board.

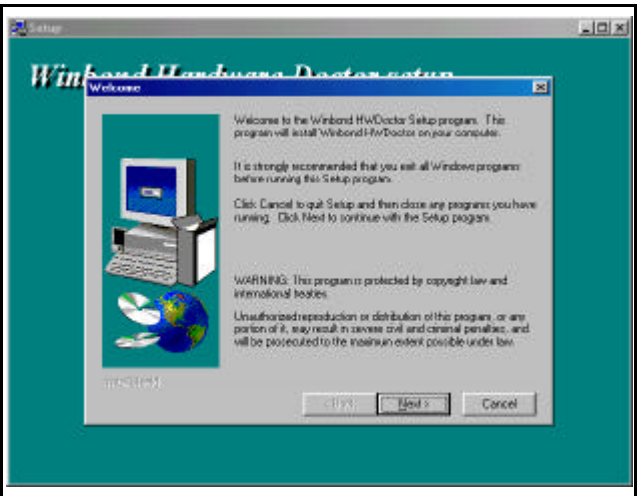
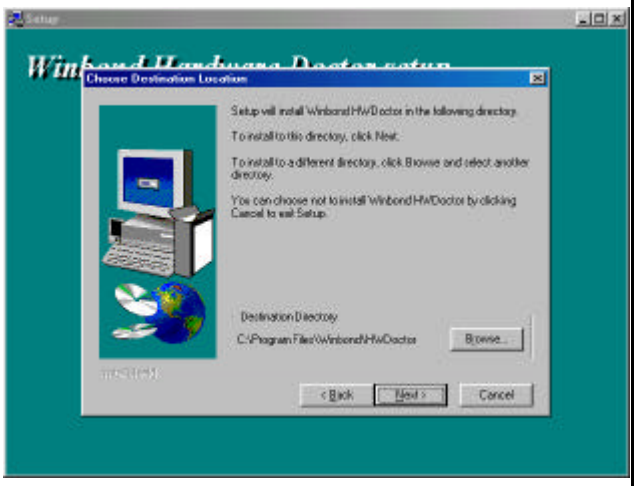
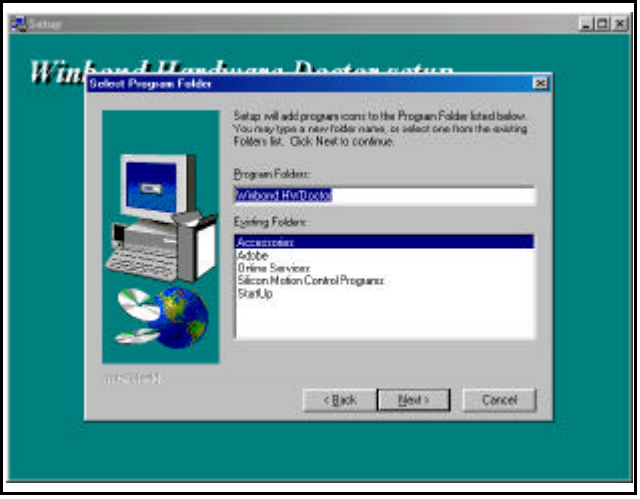
(2) It provides heat sensors to monitor the CPU and system temperature so as to prevent system overheating and damage.

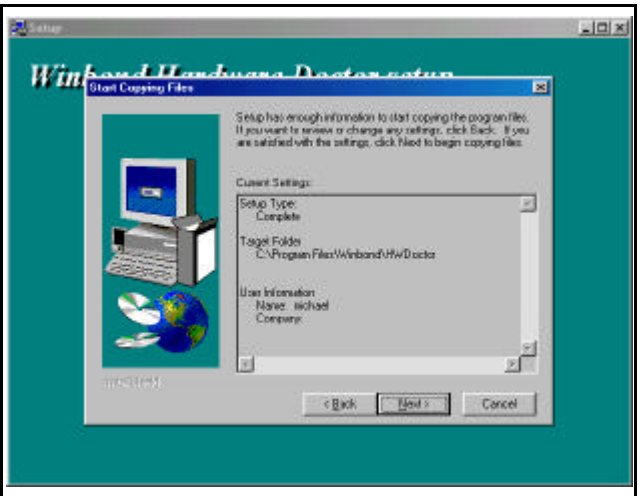
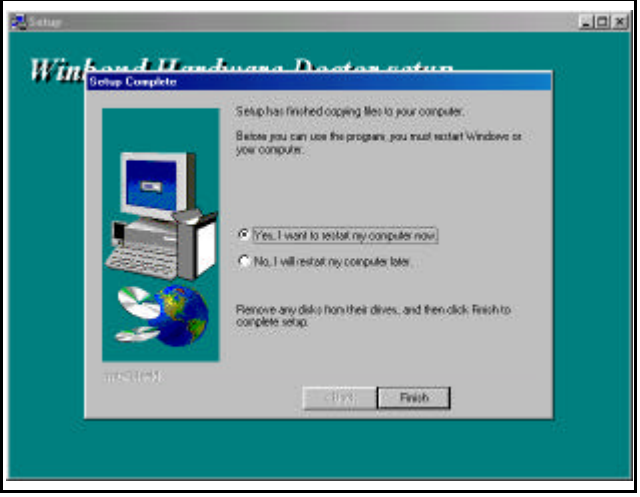
(3) It can monitor the CPU fan and system fan speeds, allowing user to set each fan to its normal RPM range and alarm threshold.

To set up the Hardware Monitoring Utility – the Hardware Doctor:

It is strongly recommended that you exit all Windows programs before running the Setup program.

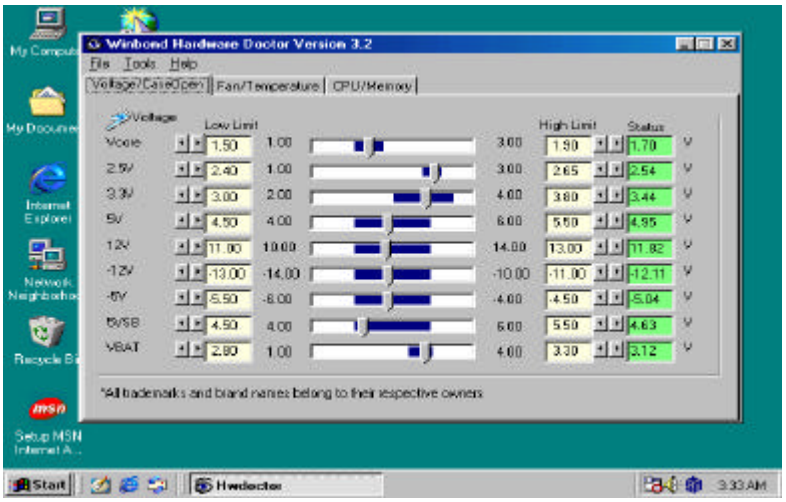
Warning: This program is protected by copyright law and international treaties. Unthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.

1. Please insert the drivers CD to your CD-ROM drive bay and open the folder "Winbond Hardware Doctor Setup". The screen will appear at once. Please click "Next>" to the start the setup Hardware Doctor Setup.	
2. This is Choose Destination Location screen. Setup will install Winbond HWDotctor in the following directory. You also can choose not to install Winbond HWDoctor by clicking Cancel to exit Setup	
3. This is **Setup Program Folder** screen. You may type a new folder name, or select one from the existing Folders list. Click Next to continue	

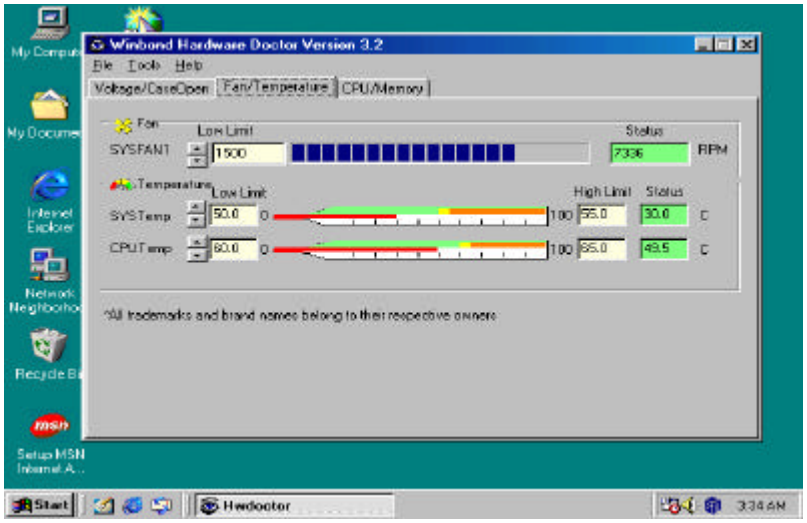
4. This is **Start Copying File"** screen shown Setup has enough information to start copying the program files. If you want to review or change any settings, click Back. If you are satisfied with the settings, click NEXT to being copying files.	
5. **"Setup Complete"** shown Setup has finished copying files to your computer. Before you can use the program, you must restart Windows or your computer.	

When you execute the hardware monitor function, the screen will be shown as following:

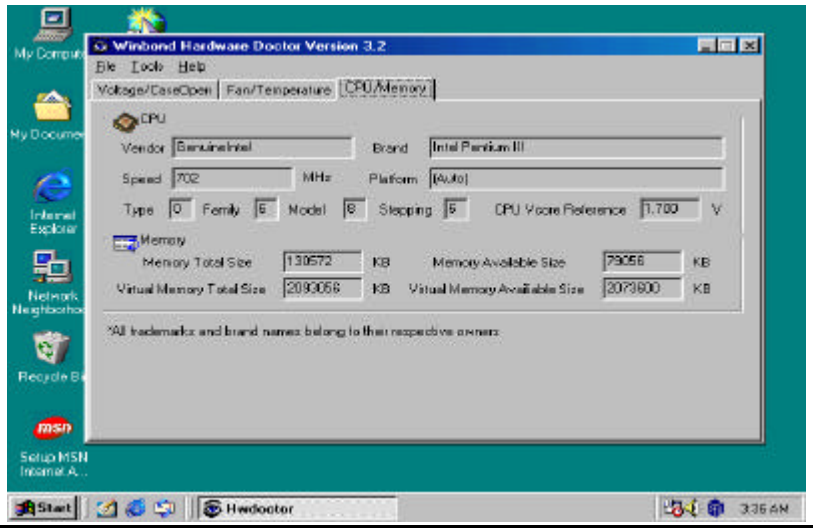
This screen is to show the Voltage/CaseOpen Status



This screen is to show the Fan/Temperature Status



This Screen is to show the CPU/Memory Status



Appendix A. : Programming the Watchdog Timer

The MAT-A692 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 disable the watchdog timer, just set the timer interval value to 00H.

After setting the timer interval value, the watchdog timer begins to count down. You have to refresh the watchdog timer, so that the watchdog timer will return to its initial value; otherwise, your system will reset after a time-out. The following program shows how to set the watchdog timer:

ASSEMBLY LANGUAGE	DOS DEBUG

Program 1: Initializing the watchdog controller

MOV DX,370H	O 370 87
MOV AL,87H	O 370 87
OUT DX,AL	
OUT DX,AL	
MOV AL,07H	O 370 07
OUT DX,AL	O 371 08
MOV DX,371H	
MOV AL,08H	
OUT DX,AL	

Program 2: Writing a watchdog timer interval value

MOV DX,370H	; Set timer interval value to 16	O 370 F2
seconds		O 371 XX
MOV AL,F2H		O 370 AA
OUT DX,AL		
MOV DX,371H		
MOV AL,XXH	; Timer interval *** see note ***	
OUT DX,AL		
MOV DX,370H		
MOV AL,AAH		
OUT DX,AL		

Note: This XX value range is from 01H to FFH, and the related watchdog timer interval is 1 sec. to 255 sec. (as in the previous description).

Using the Demo Program

Update the System BIOS as follows:

1. Run Program 1
2. Run Program 2 (load the timer interval of 1EH, 30 seconds)
3. Run your Application Program #1 (**Be sure your Application Program will finish within 30 seconds)**
4. Run Program 1
5. Run Program 2 (change the timer interval value to 3CH, 60 seconds)
6. Run your Application Program#2 (**Be sure your Application Program will be finished within 60 seconds)**
7. Run Program 1
8. Run Program 2 (reload the timer interval value of 3CH, 60 seconds)
9. Run Program 1
10. Run Program 3 (**Load the timer interval of 00H, and disable the watchdog timer function)**

Appendix B. : Programming the GPIO Port

The GPO LED0~7 (D4~D11) were controlled through LPC I/O chip' s GPO pins.

The following example is written in Intel 8086 assembly language and DOS DEBUG command:

```
;-----------------------------------------------------------------------------------------------
; Enter the extended function mode, interruptible double – Write
; -----------------------------------------------------------------------------------------------
MOV DX,2EH
MOV  AL,87H
OUT DX,AL                              ; O 2E 87
OUT DX, AL                             ; O 2E 87
;-----------------------------------------------------------------------------------------------
; Select Logical Device 7
; -----------------------------------------------------------------------------------------------
MOV DX,2EH
MOV AL,07H
OUT DX,AL          ; Point to Logical Device Number Register
MOV DX,2FH           ; O 2E 07
MOV AL,07H           ; O 2F 07
OUT DX,AL          ; Select Logical Device 7
;-----------------------------------------------------------------------------------------------
; Output Data to Control GPIO LEDs ON or OFF
; -----------------------------------------------------------------------------------------------
MOV DX,2EH
MOV AL,F1H
OUT DX,AL          ; Point to Data Register ---- O 2E F1
; -----------------------------------------------------------------------------------------------
; Data Bit 0 control LED0 (D11), Bit 1 control LED1 (D10).... Bit 7 control LED7 (D4)
; Data bit Value = 1 Set LED to OFF (DIM)
; Data bit Value = 0 Set LED to ON (Light)
; Default Data= 00 (All LEDs are ON)
; -----------------------------------------------------------------------------------------------
MOV DX,2FH
MOV  AL,FFH
OUT DX,AL          ; Set All LEDs to OFF (DIM) ----- O 2F FF
MOV DX,2FH
MOV AL,00H
OUT DX,AL          ; Set All LEDs to ON (light) ------- O 2F 00
;-----------------------------------------------------------------------------------------------
; Exit Extended Function Mode
; -----------------------------------------------------------------------------------------------
MOV DX,2EH
MOV AL,AAH
OUT DX,AL                          ; O 2E AA
```

GPIO LED8 (D3) & Alert Buzzer Software Programming Example:

The GPO LED8 (D3) was controlled through ICH chip' s GPIO22 pin and Alert Buzzer was controlled through ICH chip' s GPIO21 pin. These data can be programmed through I/O port address 408EH. The default value in this address is FFH

The following example is written in DOS DEBUG command:

```
; ---------------------------------------------------------------------------------------------
; Set LED8 (D3) ON or OFF
; ---------------------------------------------------------------------------------------------
O 408E BF          ; Set LED to OFF (DIM)
O 408E FF          ; Set LED to ON (Light)
; ---------------------------------------------------------------------------------------------
; Set Alert Buzzer ON or OFF
; ---------------------------------------------------------------------------------------------
O 408E DF          ; Set Alert Buzzer to BEEP
O 408E FF          ; Set Alert Buzzer to OFF
```

Programming Parallel Port Data pin to GPIO

The MAT-A692 Parallel Data pin can be used to read and write data through. The user can set this port address from the BIOS Setup. The default address is 378H; this can be changed to 278H, 3BCH and "Parallel port mode" must set EPP mode. All select in the BIOS "Integrated Peripherals" Setup.

Example:

Reading the Parallel Port Data

```
MOV DX,37AH   ; Select control register (37AH for 378H address, 27AH for 278H address,
                  3BEH for 3BCH address)
MOV AL,ECH    ; Set Parallel Data pin to input function
OUT DX,AL
MOV DX,378H   ; The Parallel address
IN AL,DX      ; Read the data into AL register
```

Writing the Parallel Port Data

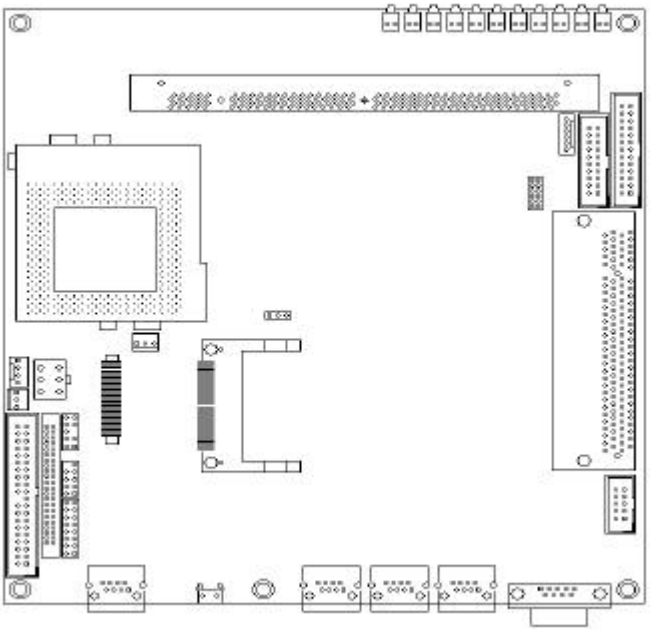
```
MOV DX,37AH   ; Select control register (37AH for 378H address, 27AH for 278H address,
                  3BEH for 3BCH address)
MOV AL,CCH    ; Set Parallel Data pin to output function
MOV DX,378H   ; The Parallel address
MOV AL,xxH    ; Ouput data value "xx"
OUT DX,AL
```

Appendix C. : CompactFlash

CompactFlash™ is a very small removable mass storage device, it provides complete PCMCIA-ATA functionality and compatibility pluse TrueIDE functionality compatible with ATA/ATAPI-4.

CompactFlash storage products are solid state, meaning they contain no moving parts, and provide users with much greater protection of their data than conventional magnetic disk device.

Pin	Assignment	Pin	Assignment	Pin	Assignment	Pin	Assignment	Pin	Assignment
1	Ground	11	Ground	21	D00	31	D15	41	RESET
2	D03	12	Ground	22	D01	32	CS1	42	ORDY
3	D04	13	VCC	23	D02	33	NC	43	NC
4	D05	14	Ground	24	WP	34	IOR	44	REG
5	D06	15	Ground	25	NC	35	IOW	45	LED
6	D07	16	Ground	26	NC	36	WE	46	BVD
7	CS0	17	Ground	27	D11	37	RDY/BSY	47	D08
8	Ground	18	A02	28	D12	38	VCC	48	D09
9	Ground	19	A01	29	D13	39	SCSE;	49	D10
10	Ground	20	A00	30	D14	40	NC	50	Ground




INSERT
QC pass
128
MB
Compact Flash™


INSERT
QC pass
128
MB
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Appendix D. : Optional Cables

Part Number	Cable Description	MAT-A692 Connector	Terminating Connector
46-I002X6-00	VGA/Audio Cable	CN4	2mm, 2x6, 45cm
46-I00FDC-00	Dual 3.5" Floppy Cable	CN7	34-pin Dual Floppy, 53cm +/- 2cm
46-I00IDE-00	2.5" & 1.8" IDE Cable	CN10, 11	44-pin 2mm Dual IDE, 45cm
46-IPS200-00	Keyboard & PS/2 Mouse	CN8	6-pin mini-circular DIN,15cm
46-ICOM00-00	COM Ports Cable	CN12	2.x5 D-Sub, 20cm
46-IP1206-00	Power Cable	CN6	12pin-to-6pin, 5cm
46-IPRINT-00	Printer Cable	CN2	25-pin Female D-Sub, 27cm
46-IUSB01-00	USB Port Cable	CN9	Two-channels USB port, 25cm (pin1 block)