MAT-O672

Low Power Full Function POS SBC
With VGA/LCD, Audio, LAN & SSD

User's Manual

Version 1.0

Manual edition 1.0, Jan. 2002

The content of this manual is intended to be accurate and reliable, the original manufacturer assumes no responsibility for any inaccuracies that may be contained in this manual. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without prior notice.

Trademarks

IBM, EGA, VGA, XT/AT, OS/2 and PS/2 are registered trademarks of International Business Machine Corporation
Intel and Pentium are registered trademarks of Intel Corporation
AMD is a trademark of Advanced Micro Devices, Inc
Award is a trademark of Award Software International, Inc
RTL is a trademark of Realtek Semi-Conductor Co., Ltd
C&T is a trademark of Chips and Technologies, Inc
Winbond is a trademark of Winbond Technology, Inc
CF and CompactFlash are trademark of ScanDisk Corporation
Geode is trademark of National Semiconductor
Microsoft, Windows, Windows NT and MS-DOS are either trademarks or registered trademarks of Microsoft Corporation

All other product names mentioned herein are used for identification purpose only and may be trademarks and/or registered trademarks of their respective companies

Limitation of Liability

While reasonable efforts have been made to ensure the accuracy of this manual, the manufacturer and distributor assume no liability resulting from errors or omissions in this manual, or from the use of the information contained herein.

Chapter 1. General Information

Chapter 2. Installation

Chapter 3. BIOS Setup

Chapter 4. Drivers and Utility Setup

Chapter 1. General Information

1.1 Introduction

The O672 is a full function of LPX format board use NS CX5330A chipset supports processors Geode™ GX1 low power processors from 200MHz up to 300MHz. The O672 supports onboard CRT/18-bit TFT Flat Panel Interface, Realtek® RTL8139C Ethernet chipset with RJ45 jack for 10/100Mbps and AC-97 Audio Interface. Furthermore, the O672 has C&T69000 Flat Panel/CRT Interface optional.

The onboard features include three RS-232 and one RS-232/422/485 serial ports with +5V/+12V power selectable, two bi-directional parallel ports, two USB ports, also with watchdog timer and PCI/ISA expansion slot for flexible expansion capabilities. In addition, the onboard SSD interface supports M-Systems DiskOnChip 2000 series, 50-pin CompfactFlash socket for TypeI/II CompactFlash Cards.

1.2 Specification

Specifications	
General Functions	
CPU	NS GX1-300MHz or GXLV-200MHz low power processors
BIOS	Award® 256KB Flash BIOS
Chipset	NS CX5530A
I/O Chipset	Dual Winbond W83977
Memory	One 168-pin DIMM Socket supports up to 128MB & 16MB SDRAM on board
Enhanced IDE	Support up to two IDE devices (Ultra DMA 33)
FDD interface	Support 34-pin header connector up to two floppy disk drives
Parallel port	Two bi-directional parallel ports. Support SPP/ECP/EPP
Serial port	Three RS-232 and one RS-232/422/485 serial ports +5v/+12v power selectable
IR interface	Support one IrDA Tx/Rx header
Keyboard connector	6-pin Mini-DIN & internal header
USB connectors	Support dual USB ports

Mouse connector	6-pin Mini-DIN & internal header
USB connectors	Support dual USB
Battery	Lithium battery for data retention up to 10 years and CMOS EPROM backup (in normal condition)
Watchdog Timer	Can generate a system reset, or IRQ11. Support software selectable timeout interval.
EISA connector	One EISA bus connector support ISA/PCI signals
Power Input	Support ATX and AT power supply connectors.
Digital I/O	Eight digital output and eight TTL input.
SMBus connector	6-pin header support SMBus LCD interface
Flat Panel/CRT Interface	
Chipset	NS CX5530A
Display memory	Share system memory 1~4MB
Display type	Simultaneous support CRT and 18-bit TFT LCD interface.
Flat Panel/CRT Interface (Optional)	
Chipset	C&T 69000 VGA chip
Display memory	Built-in 2MB SDRAM
Display type	Display CRT and Flat Panel simultaneously
PCI Sound Interface	
Chipset	AC 97 codec
Audio controller	SoundBlaster Pro Hardware and Direct Sound Ready AC97 Digital Audio
Audio interface	Mic in, Line in, Speaker out and CD audio in
Software Driver	Supports for Windows 95, Windows 98 and windows NT
Ethernet Interface	
Chipset	Realtek® RTL8139C
Ethernet interface	PCI 100/10 Mbps Ethernet controller.
SSD Interface	One 50-pin CompactFlash™ socket & one 32-pin DIP socket support
Mechanical and Environmental	
Power supply voltage	VCC (4.75V to 5.25V), +12V (11.4V to 12.6V), -12V(-11.4V to –12.6V)
Max. power	2A @ 5 V, 200mA@ +12V, 120mA@-12V

requirements	
Operating temperature	32 to 140°F (0 to 60°C)
Board size	8.7"(L) x 9.25"(W) (220mm x 235mm)

1.3 O672 Package

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

1. O672 All-in-One LPX board
2. Quick Installation Guide
3. Cables: Optional, please refer to Appendix F
4. CD-ROM which contains the following folders:
   (1) Manual (in PDF format)
   (2) LAN Driver
   (3) VGA Driver
   (4) Audio Driver
   (5) BIOS Utility

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. 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.

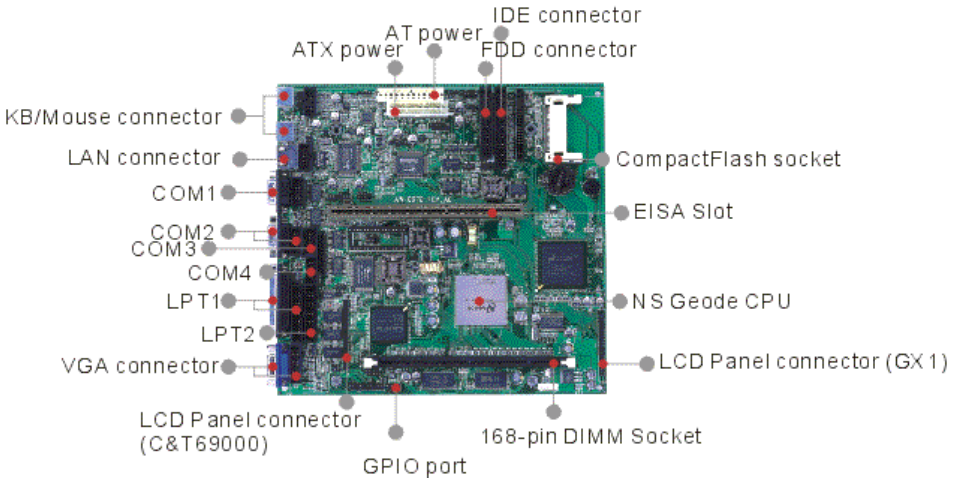
Leave the board in its original packing until you are ready to install

Precautions

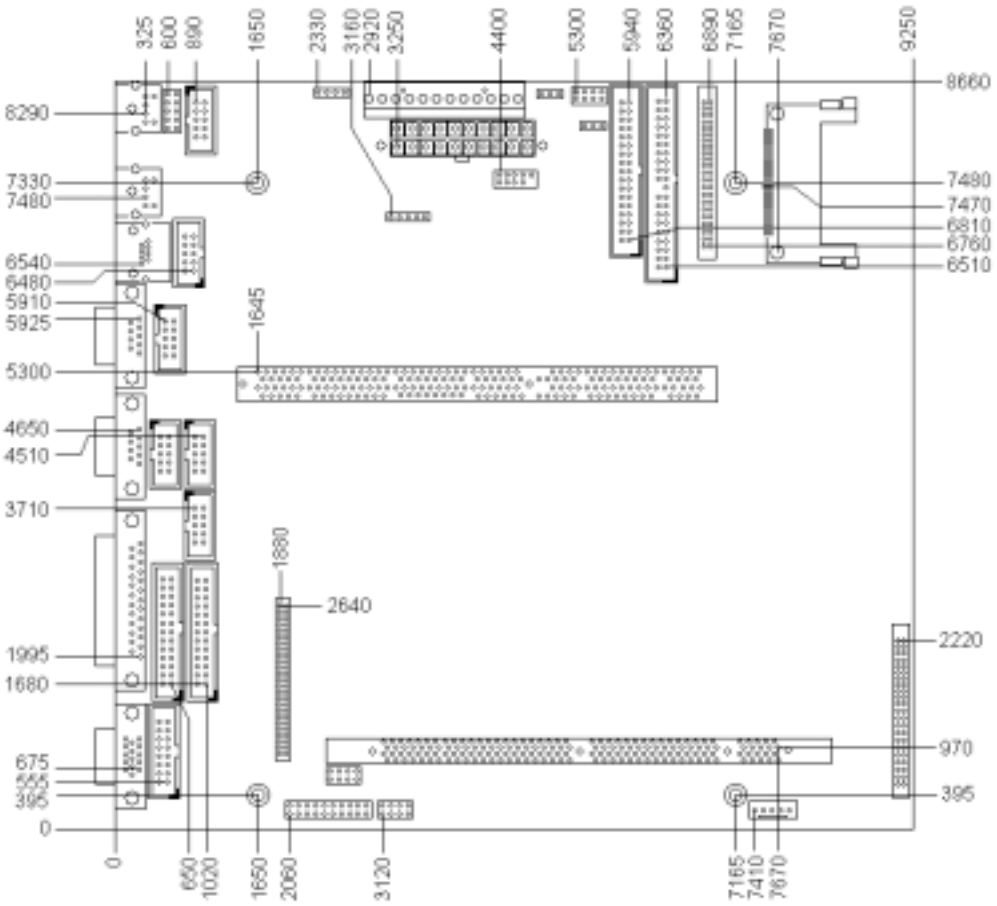
Please make sure you properly ground yourself before handling the O672 board or other system components. Electrostatic discharge can be easily damage the O672 board.

1. Do not remove the anti-static packing until you are ready to install the O672 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 O672 board by its edges and avoid touching its component.

1.4 Board Layout



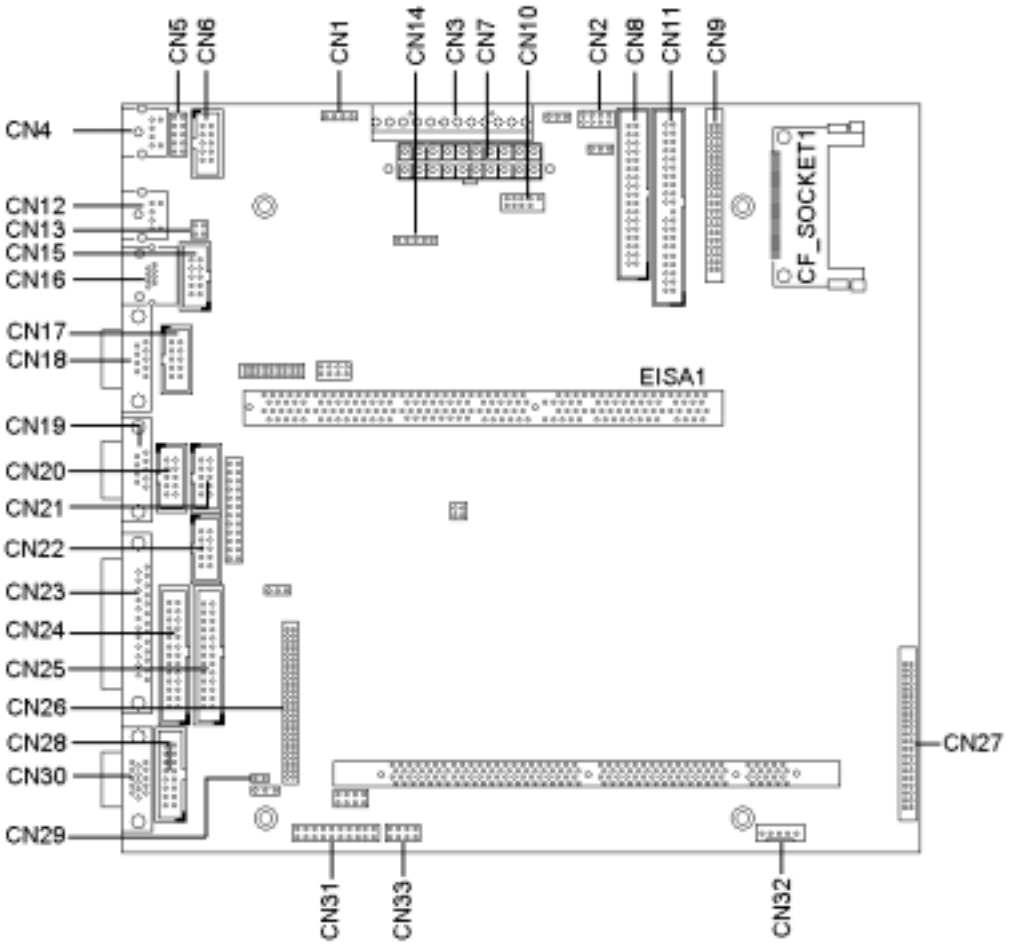
1.5 Board Dimension



Board Dimension (mil)

2. Connectors and Jumpers Configuration

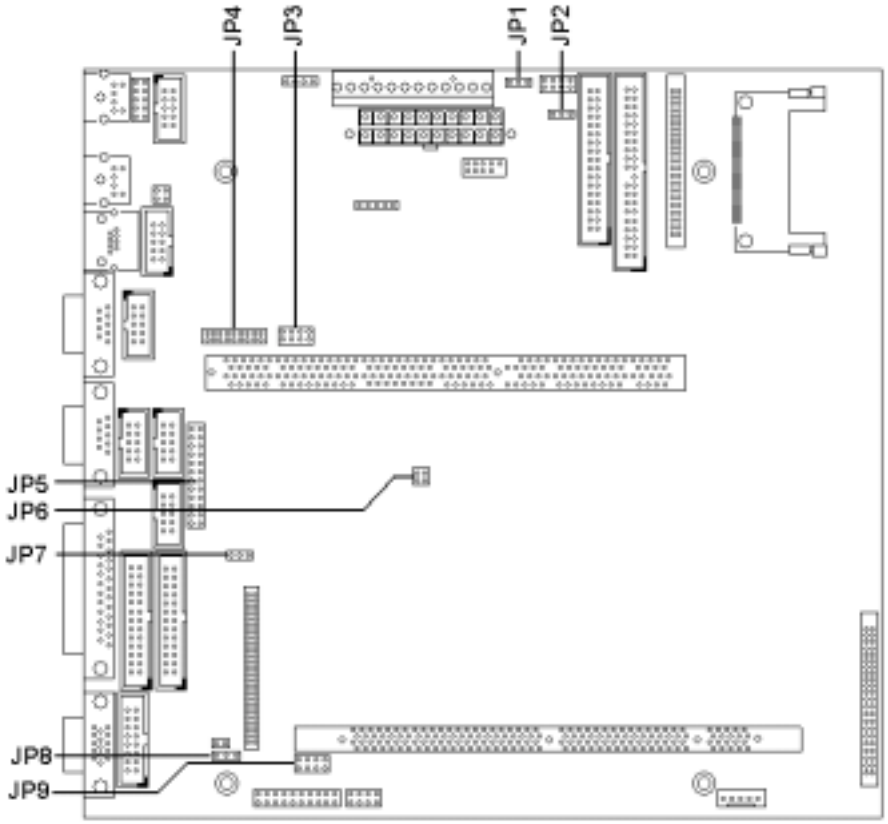
2.1 Location of Connectors



2.2 List of Connectors

Connectors	Description	Connectors	Description
CN1	CD Audio Connector	CN18	COM1 Connector (D-Sub)
CN2	Front Panel Connector	CN19	COM2 Connector (D-Sub)
CN3	AT Power Connector	CN20	COM2 Connector (Pin Header)
CN4	PS/2 Keyboard Connector	CN21	COM3 Connector (Pin Header)
CN5	PS/2 KB/Mouse Connector	CN22	COM4 Connector (Pin Header)
CN6	Audio Signals Connector	CN23	LPT1 Connector (D-Sub)
CN7	ATX Power Connector	CN24	LPT1 Connector (Pin Header)
CN8	Standard Floppy Connector	CN25	LPT2 Connector (Pin Header)
CN9	IDE1 2.00mm Connector	CN26	LCD Display Connector(C&T)
CN10	USB Connector	CN27	LCD Display Connector (GX1)
CN11	IDE2 2.54mm Connector	CN28	CRT Display Connector (Pin Header)
CN12	PS/2 Mouse Connector	CN29	LCD Backlight Connector
CN13	LAN LED Connector	CN30	CRT Display Connector (D-Sub)
CN14	IR Connector	CN31	GPIO Port Connector
CN15	LAN Connector (Pin-Header)	CN32	SMBus Connector
CN16	LAN Connector (RJ45)	CN33	Isolated Output Connector
CN17	COM1 Connector (Pin Header)		

2.3 Location of Jumpers



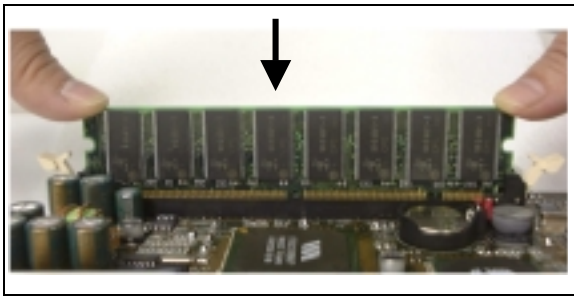
2.4 List of Jumpers

Pin	Define	Pin	Define
JP1	Clear CMOS	JP6	GPIO Port Base Address Select
JP2	Watch Dog Output Select	JP7	LCD Voltage Select
JP3	DiskOnChip Address Select	JP8	LCD Backlight Voltage
JP4	COM2 Mode Select	JP9	Flat Panel Type Select(C&T)
JP5	RI/Voltage Select for COM1-COM4		

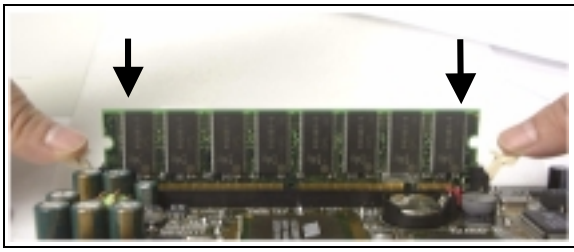
2.5 Installing System Memory

The O672 with 16MB SDRAM onboard and one 168-pin DIMM socket, support ups to 128MB.

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.

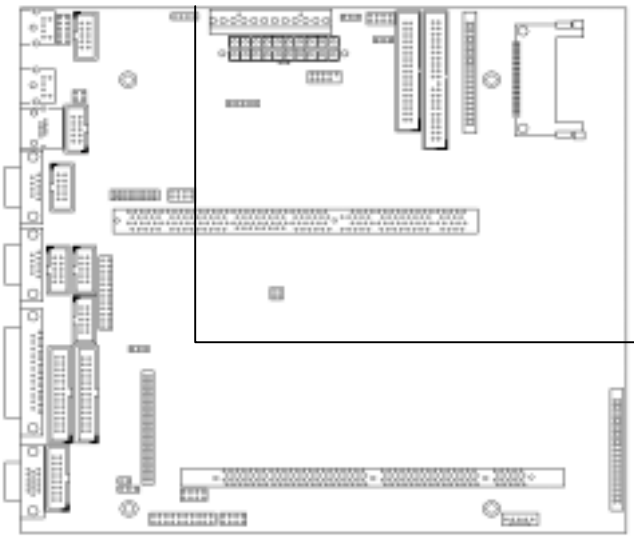
There is only one direction for installing a module in the socket. Do not attempt to force the module into the socket incorrectly.

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

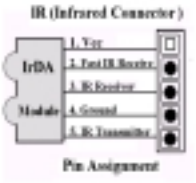
2.6 Connector, Jumper and Switch Settings

CN1: CD Audio Connector

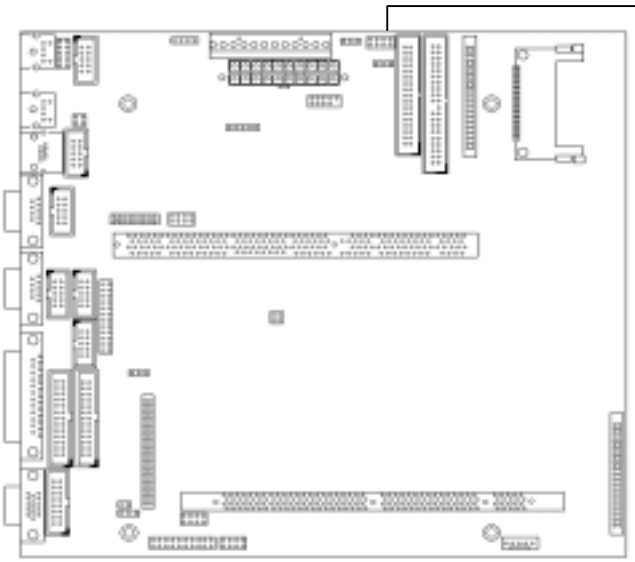
This connector is used to connect to a CD Audio cable. Depending on the type of installed CD-ROM drive, connect the CD-ROM drive cable to one of this 4-pin connector.



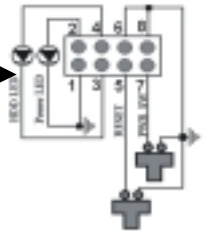
Pin	Assignment
1	L_Input
2	Ground
3	Ground
4	R_Input



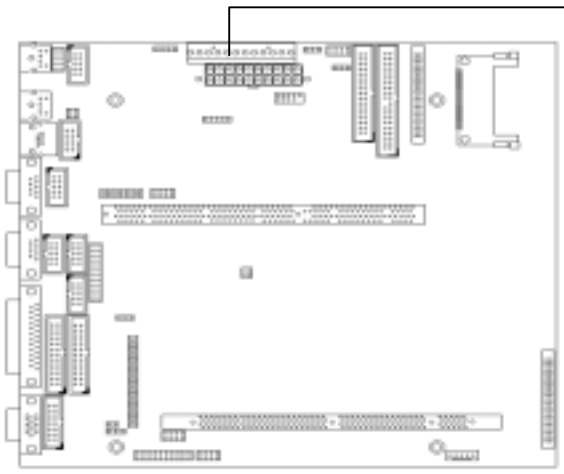
CN2: Front Panel Connector



Pin	Assignment
1-2	Power LED
3-4	HDD LED
5-6	Reset Switch
7-8	ATX Power

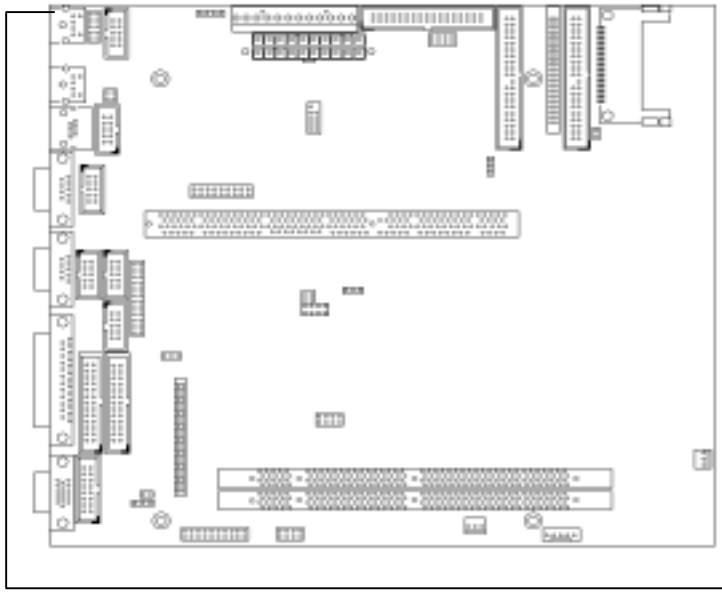


CN3: AT Power Connector

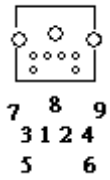


Pin	Assignment
1	PWROK
2	+5V
3	+12V
4	-12V
5	Ground
6	Ground
7	Ground
8	Ground
9	-5V
10	+5V
11	+5V
12	+5V

CN4: PS/2 Keyboard Connector

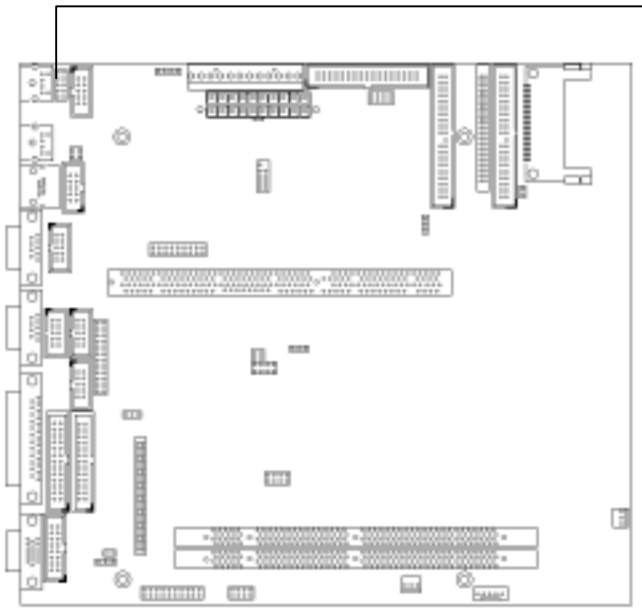


Pin	Assignment
1	KB Data
2	MS Data
3	Ground
4	+5V
5	KB Clock
6	MS Clock
7	Ground
8	Ground
9	Ground

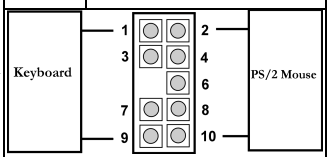


(Top View)

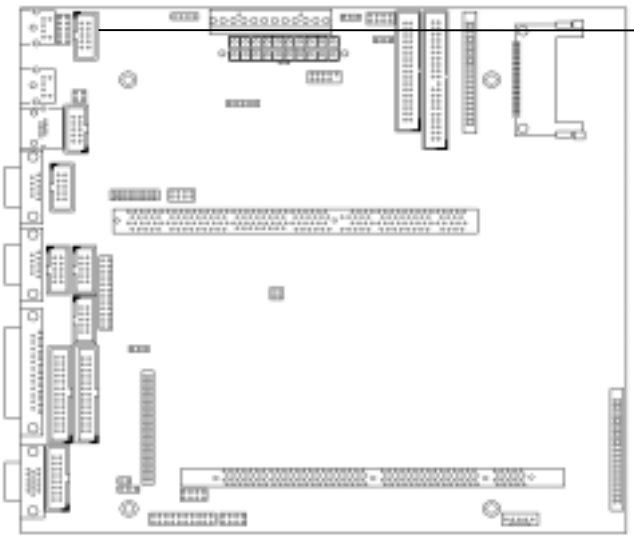
CN5: PS/2 KB/Mouse Connector



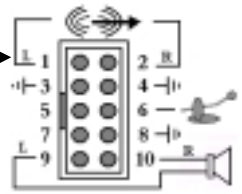
Pin	Assignment
1	KB Clock
2	MS Clock
3	KB Data
4	MS Data
5	Key Pin
6	NC
7	Ground
8	Ground
9	+5V
10	+5V



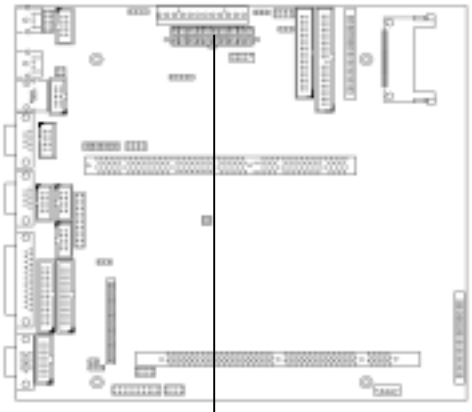
CN6: Audio Signal Connector



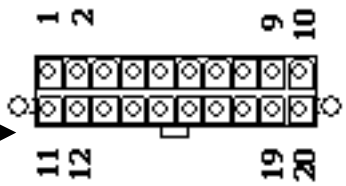
Pin	Assignment
1	Line in left
2	Line in right
3	Ground
4	Ground
5	NC
6	MIC in
7	NC
8	Ground
9	Speaker out left
10	Speaker out right



CN7: ATX Power Connector

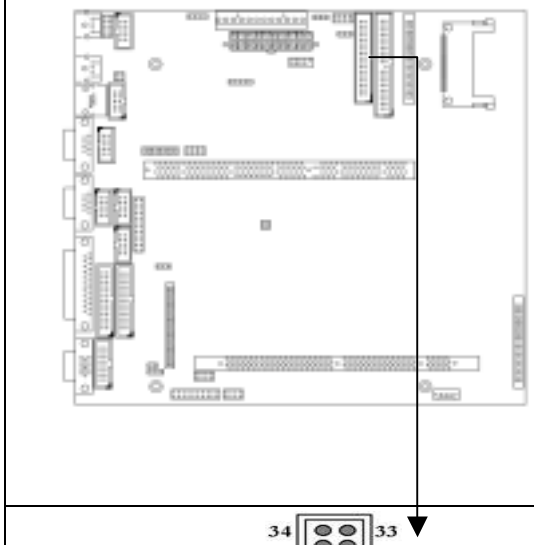


Pin	Assignment	Pin	Assignment
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PSON*
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	PWROK	18	-5V
9	+5VSB	19	+5V
10	+12V	20	+5V



CN8: Floppy Connector

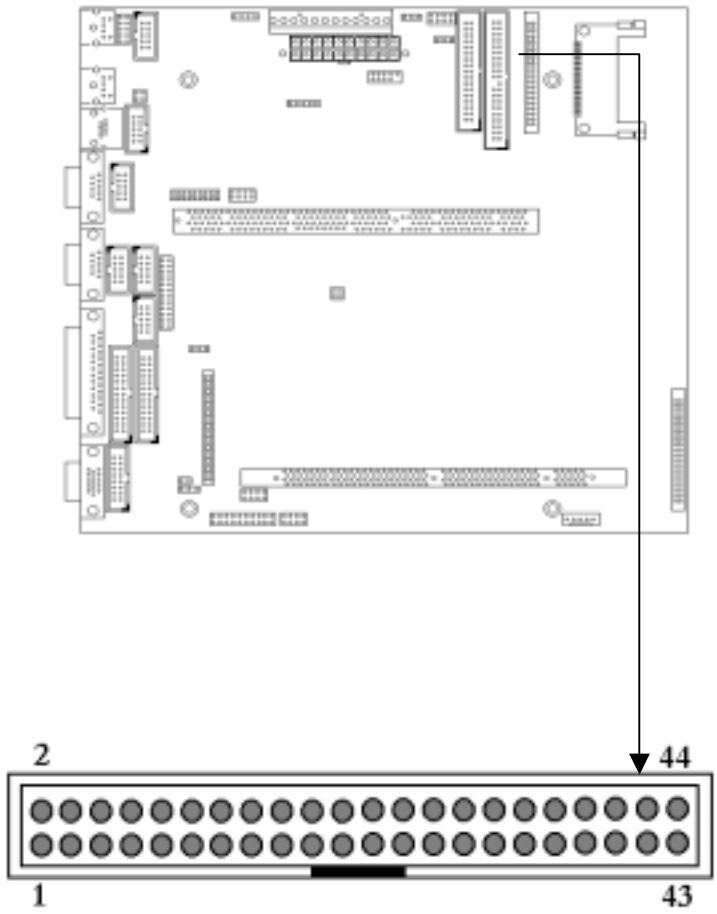
Connect the single end of a floppy disk drive cable to this 34-pin connector block. Connect the other ends of the cable to one or more floppy disk drives. The connector with twisted wires always connects to drive A; the connector without twisted wires connects to drive B.



Pin	Signal	Pin	Signal
1	Ground	2	Drvden0
3	Ground	4	NC
5	Ground	6	NC
7	Ground	8	Index
9	Ground	10	Motor enable 0
11	Ground	12	Drive select 1
13	Ground	14	Driver select 0
15	Ground	16	Motor enable 1
17	Ground	18	Direction
19	Ground	20	Step
21	Ground	22	Write data
23	Ground	24	Write gate
25	Ground	26	Track 00
27	Ground	28	Write protect
29	Ground	30	Read data
31	Ground	32	Side 1 select
33	Ground	34	Diskette change

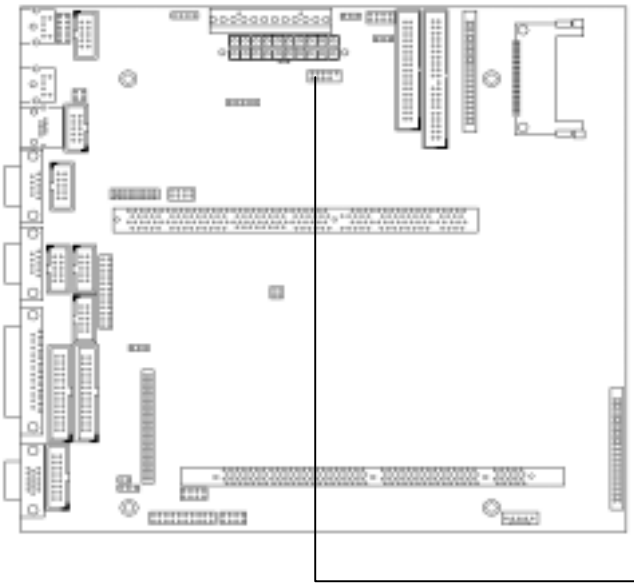
CN9: 44-pin IDE Connector

This is a 2.00mm pitch IDE connector supports IDE hard disk 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 disk 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.

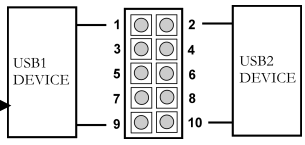


Pin	Signal	Pin	Signal
1	Reset	23	IOW#
2	Ground	24	Ground
3	Data7	25	IOR#
4	Data8	26	Ground
5	Data6	27	IRDY
6	Data9	28	Ground
7	Data5	29	DACK#
8	Data10	30	Ground
9	Data4	31	IRQ14
10	Data11	32	NC
11	Data3	33	Address 1
12	Data12	34	Detect
13	Data2	35	Address 0
14	Data13	36	Address 2
15	Data1	37	Select 0
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

CN10: USB Connector

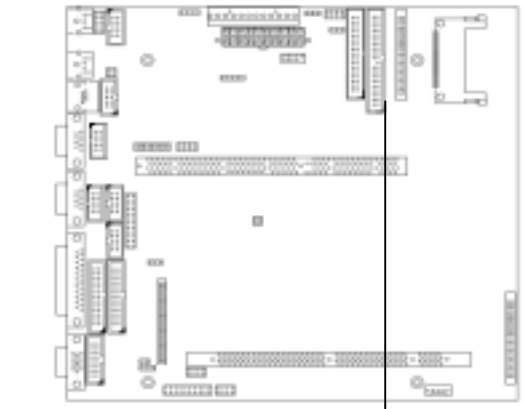


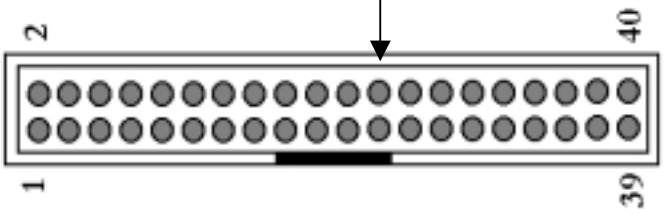
Pin	Assignment
1	+5V
2	+5V
3	USB1DT-
4	USB2DT-
5	USB1DT+
6	USB2DT+
7	Ground
8	Ground
10	Ground



CN11: 40-pin IDE2 Connector

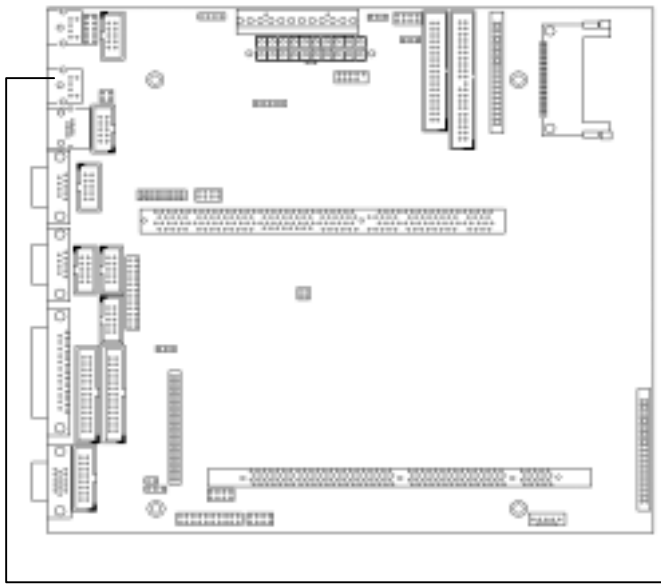
This is a 2.54mm pitch IDE connector supports IDE hard disks and CD-ROM drives. After connecting the single end of the provided IDE ribbon cable to the board, connect the two plugs at the other end to your hard disks or CD-ROM drives. If you install two hard disks from the same connector, you must set 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.



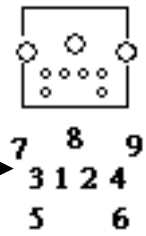


Pin	Signal	Pin	Signal
1	IDE Reset	21	IDE DREQ
2	Ground	22	Ground
3	Data 7	23	IOW
4	Data 8	24	Ground
5	Data 6	25	IOR
6	Data 9	26	Ground
7	Data 5	27	CHRDY
8	Data 10	28	NC
9	Data 4	29	IDE DACK
10	Data 11	30	Ground
11	Data 3	31	IDE IRQ
12	Data 12	32	NC
13	Data 2	33	A1
14	Data 13	34	NC
15	Data 1	35	A0
16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

CN12: PS/2 Mouse Connector

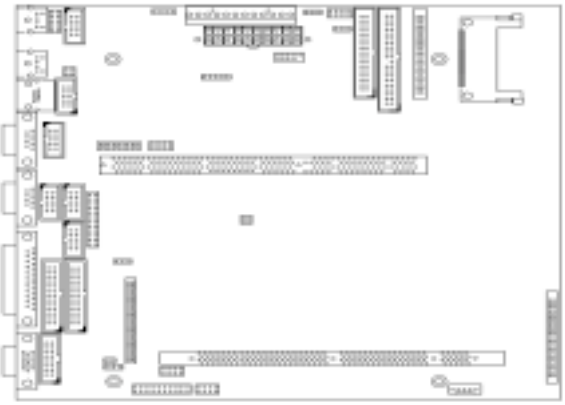


Pin	Assignment
1	MS Data
2	KB Data
3	Ground
4	+5V
5	MS Clock
6	KB Clock
7	Ground
8	Ground
9	Ground



(Top View)

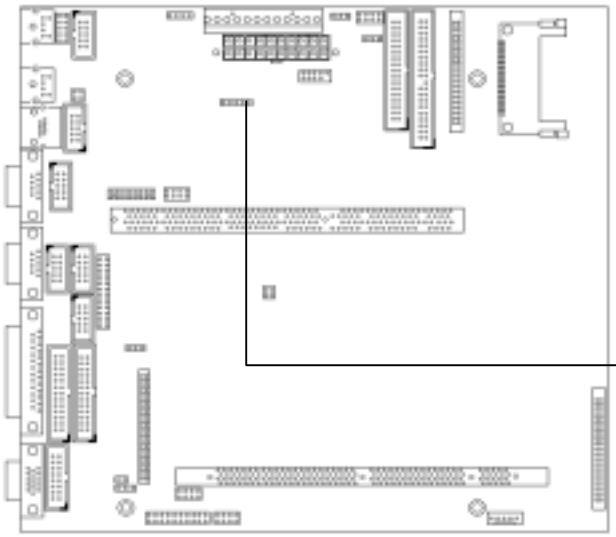
CN13: LAN LED Connector



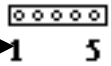
Setting	Define
1-2	Active LED
3-4	10/100M LED

CN14: IR Connector

This 5-pin connector supports an optional wireless transmitting and receiving infrared module. This module mounts to a small opening on system cases that support this feature. Connect a ribbon cable from the module to the connector according to the pin definitions.

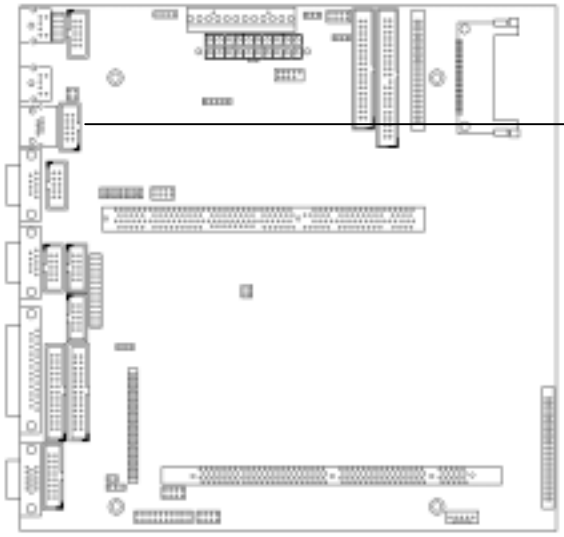


Pin	Assignment
1	+5V
2	NC
3	SIRIN
4	Ground
5	SIROUT

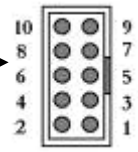


CN15: LAN Connector

The O672 included an onboard Ethernet port accessed through CN15. You need an adapter cable if you use a standard RJ-45 connector. The cable has 10-pin connector on one end and a standard 100Base-TX Ethernet RJ-45 on the other. The onboard Intel® 82559ER or Realtek RTL8139C fast Ethernet controller supports 100Mbps and 10Mbps N-way auto-negotiation operations.

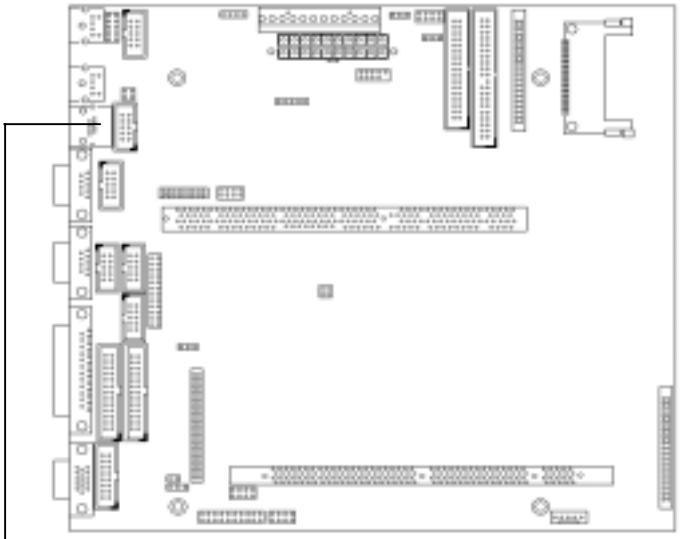


Pin	Assignment
1	TX+
2	TX-
3	RX+
4	Chassis Ground
5	Chassis Ground
6	RX-
7	Chassis Ground
8	Chassis Ground
9	Ground
10	Ground

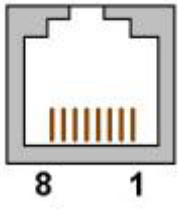


CN16: LAN Connector (RJ45)

The O672 supports one Ethernet RJ-45 connector onboard.



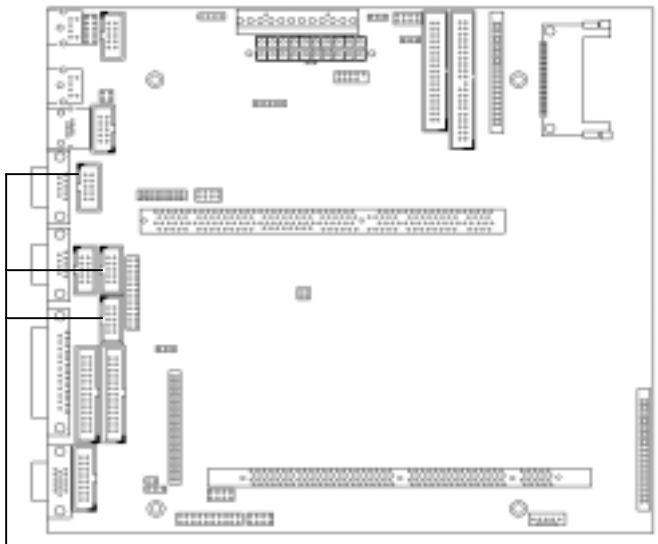
Pin	Assignment
1	TX+
2	TX-
3	RX+
4	Chassis Ground
5	Chassis Ground
6	RX-
7	Chassis Ground
8	Chassis Ground



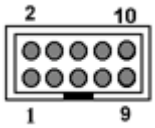
(Top View)

CN17, CN20, CN21, CN22: COM1-4 Pin-Header Connector

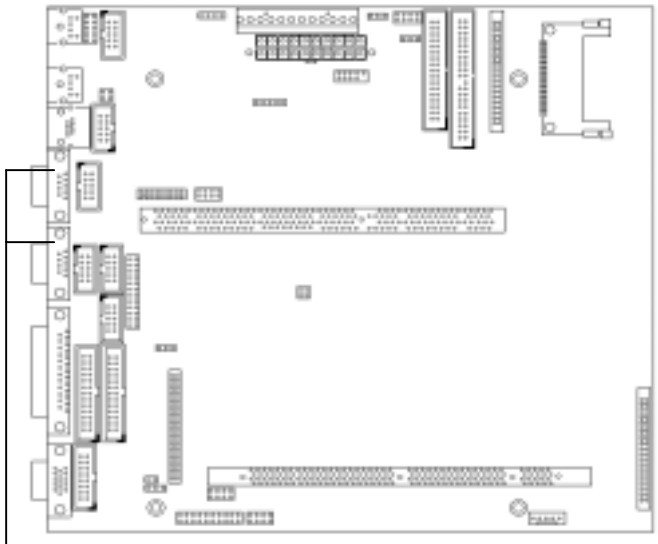
The O672 supports COM1-4 pin header for various using.



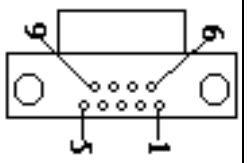
Pin	Assignment
1	CD
2	DSR
3	RX
4	RTS
5	TX
6	CTS
7	DTR
8	RI
9	Ground
10	NC



CN18, CN19: COM1/COM2 9-pin D-SUB Connector



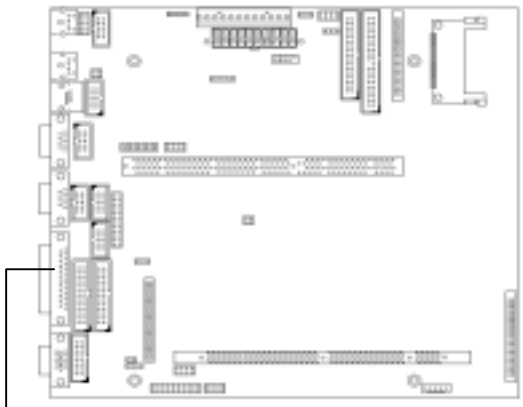
Pin	Assignment
1	CD
2	DSR
3	RX
4	RTS
5	TX
6	CTS
7	DTR
8	RI
9	Ground



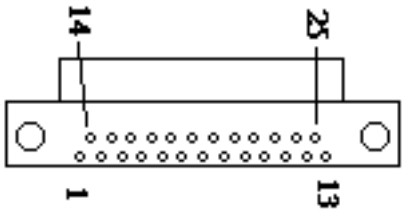
(Top View)

CN23: LPT1 25-pin D-Sub Connector

The O672 supports one D-Sub LPT connector to connect the LPT device directly.

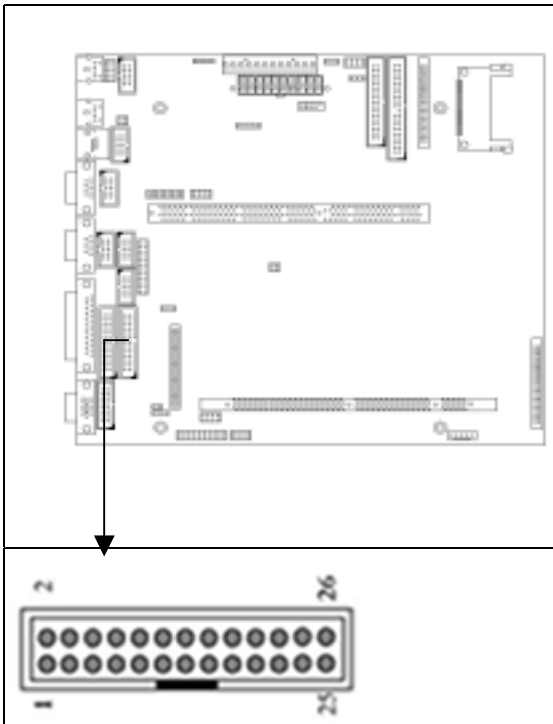


Pin	Assignment	Pin	Assignment
1	STROBE	14	AUTO FEED
2	PD0	15	ERROR
3	PD1	16	INIT
4	PD2	17	SELECT IN
5	PD3	18	Ground
6	PD4	19	Ground
7	PD5	20	Ground
8	PD6	21	Ground
9	PD7	22	Ground
10	ACK	23	Ground
11	BUSY	24	Ground
12	PE	25	Ground
13	SELECT		



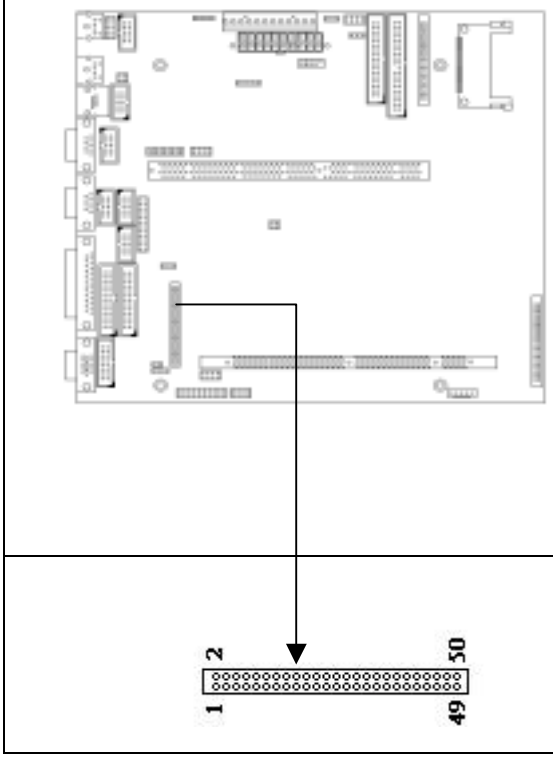
CN24, CN25: LPT1/LPT2 26-pin Header Connector

The O672 supports 26-pin connectors through CN24 and CN25



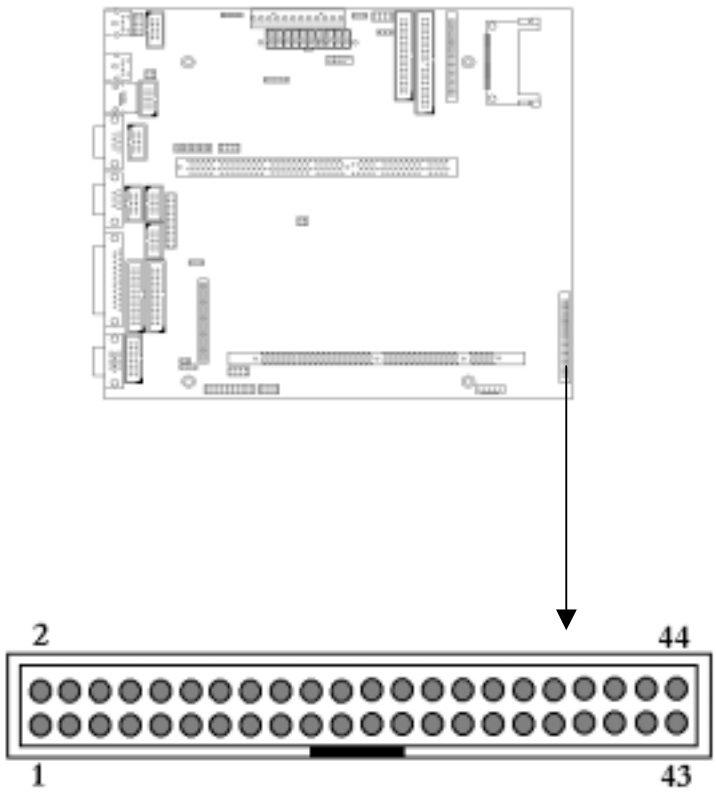
Pin	Assignment	Pin	Assignment
1	STROBE	2	AUTO FEED
3	PD0	4	ERROR
5	PD1	6	INIT
7	PD2	8	SELECT IN
9	PD3	10	Ground
11	PD4	12	Ground
13	PD5	14	Ground
15	PD6	16	Ground
17	PD7	18	Ground
19	ACK	20	Ground
21	BUSY	22	Ground
23	PE	24	Ground
25	SELECT	26	Ground

CN26: LCD Panel Connector (C&T 69000)



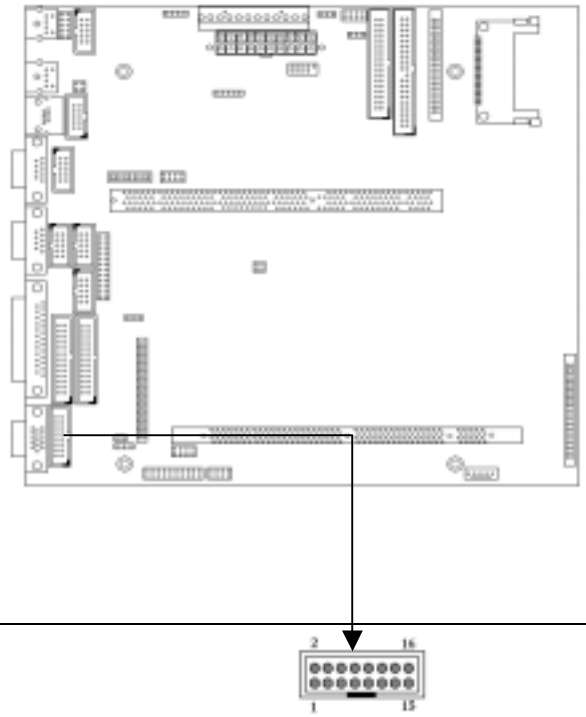
Pin	Signal	Pin	Signal	Pin	Signal
1	+12V	17	P8	33	P24
2	+12V	18	P9	34	P25
3	Ground	19	P10	35	SHFCLK
4	Ground	20	P11	36	FLM
5	+5V	21	P12	37	M
6	+5V	22	P13	38	LP
7	ENAVEE	23	P14	39	Ground
8	Ground	24	P15	40	ENABKL
9	P0	25	P16	43	P28
10	P1	26	P17	44	P29
11	P2	27	P18	45	P30
12	P3	28	P19	46	P31
13	P4	29	P20	47	P32
14	P5	30	P21	48	P33
15	P6	31	P22	49	P34
16	P7	32	P23	50	P35

CN27: LCD Connector (GX1)



Pin	Signal	Pin	Signal
1	+12V	23	P10
2	+12V	24	P11
3	Ground	25	NC
4	Ground	26	NC
5	+5V	27	P12
6	+5V	28	P13
7	NC	29	P14
8	Ground	30	P15
9	NC	31	P16
10	NC	32	P17
11	P0	33	Ground
12	P1	34	Ground
13	P2	35	SHFCLK
14	P3	36	FLM
15	P4	37	M
16	P5	38	LP
17	NC	39	Ground
18	NC	40	ENABKL
19	P6	41	NC
20	P7	42	NC
21	P8	43	NC
22	P9	44	+5V

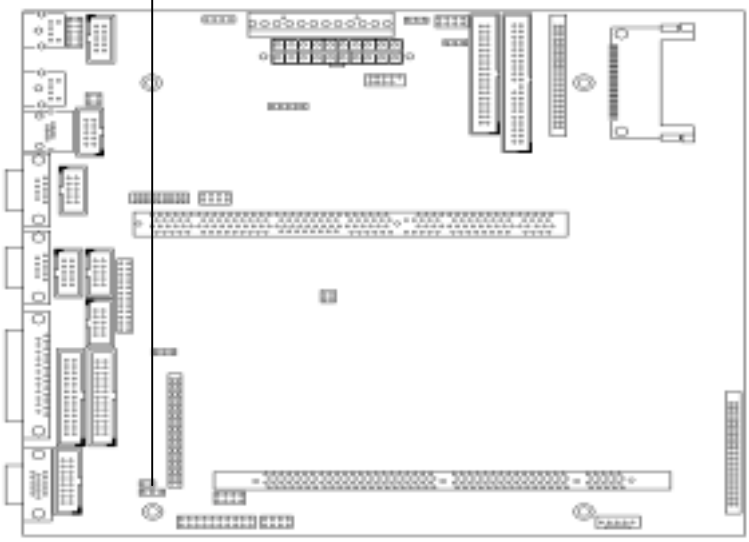
CN28: 16-pin Header CRT Display Connector



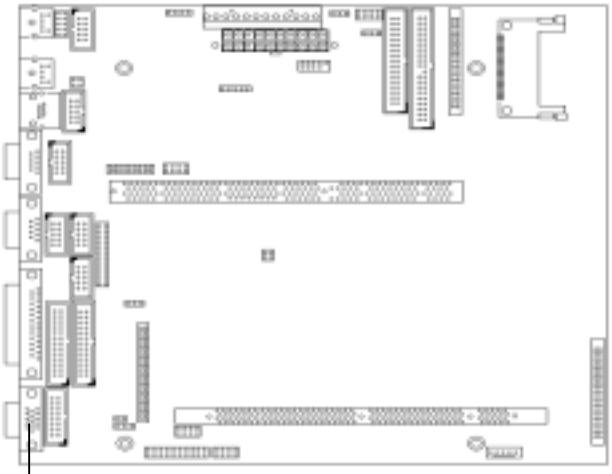
Pin	Signal
1	RED
2	GREEN
3	BLUE
4	NC
5	Signal Ground
6	Chassis Ground
7	Chassis Ground
8	Chassis Ground
9	NC
10	Signal Ground
11	NC
12	DDC Data
13	H-SYNC
14	V-SYNC
15	DDC Clock
16	NC

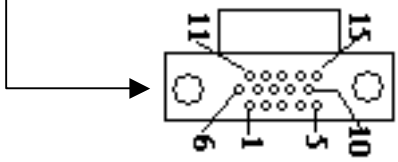
CN29: LCD Backlight Connector

Pin	Assignment
1	Power Pin (5/12V)
2	Ground



CN30: CRT Display D-Sub Connector

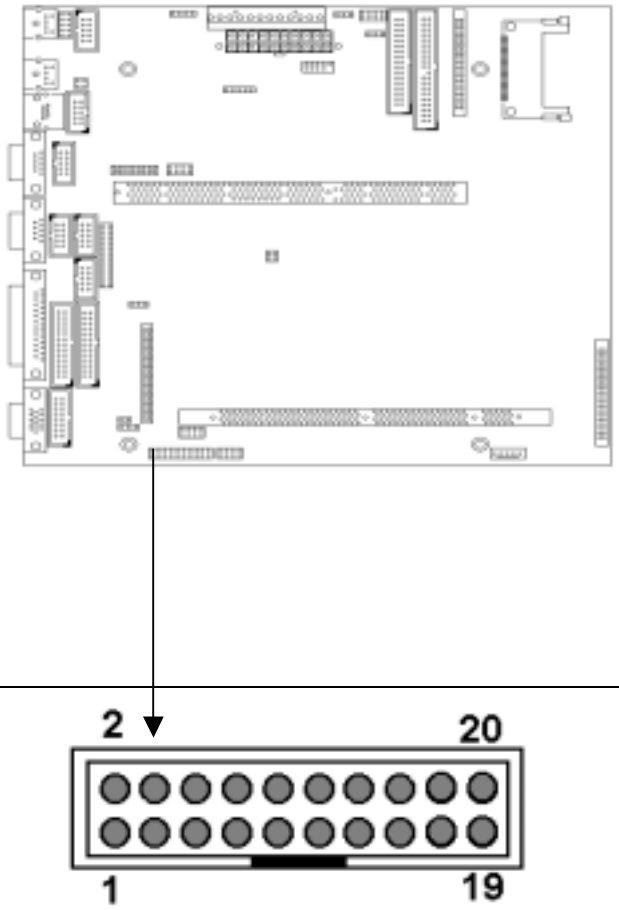




(Top View)

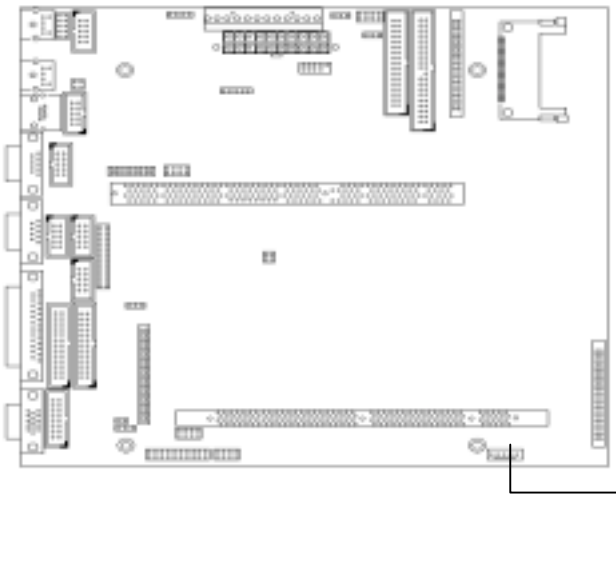
Pin	Signal
1	RED
2	GREEN
3	BLUE
4	NC
5	Ground
6	Ground
7	Ground
8	Ground
9	Ground
10	Ground
11	NC
12	DDC Data
13	H-SYNC
14	V-SYNC
15	DDC Clock

CN31: GPIO Port



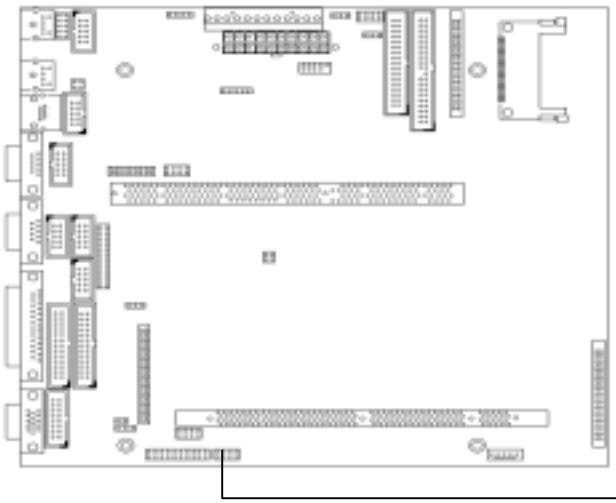
Pin	Assignment
1	+5V
2	+3.3V
3	GPI0
4	GPI1
5	GPI2
6	GPI3
7	GPI4
8	GPI5
9	GPI6
10	GPI7
11	Ground
12	Ground
13	GPO0
14	GPO1
15	GPO2
16	GPO3
17	GPO4
18	GPO5
19	GPO6
20	GPO7

CN32: SMBus Connector

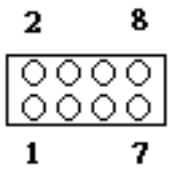


Pin	Assignment
1	Ground
2	+5V
3	SMBus CLK
4	SMBus Data
5	+12V
6	NC

CN33: Isolated Output Connector



Pin	Assignment
1	V5P0
2	V5P0
3	OUT0
4	OUT1
5	+12V
6	+5V
7	Ground
8	Ground



JP1: Clear CMOS

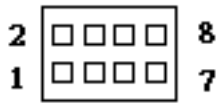
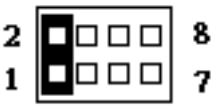
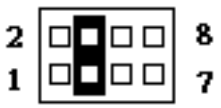
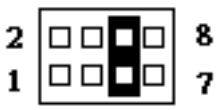
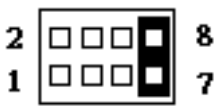
Setting		Define
	1-2	Hold Data
	2-3	Clear CMOS

JP2: Watch Dog Output Select

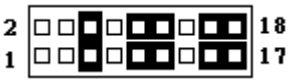
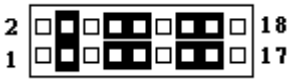
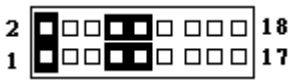
Setting		Define
	1-2	Reset
	3-4	IRQ11

JP3: DiskOnChip Address Select

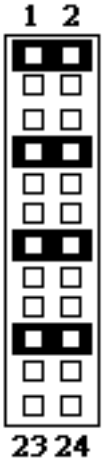
You can select the DiskOnChip address by setting JP3. The DOC occupies an 8Kbyte window in the upper memory address range of D0000 to EFFFF. These addresses might be already occupied by the ROM BIOS of other peripheral. Please select the appropriate memory address to avoid memory conflicts.

Setting		DOC Address
	All open	Disable
	1-2 close	D0000h-D3FFFh
	3-4 close	D4000h-D7FFFh
	5-6 close	D8000h-DBFFFh
	7-8 close	DC000h-DFFFFh

JP4: COM2 Mode Select

Setting		Function
	5-6, 9-11, 10-12, 15-17, 16-18	RS-232 (Default)
	3-4, 7-9, 8-10, 13-15, 14-16	RS-422
	1-2, 7-9, 8-10	RS-485

JP5: RI/Voltage Select for COM1/COM2/COM3/COM4

Setting	Setting	COM Port	RI/Voltage
	1-2	COM1	RI (Default)
	3-4	COM1	+5V
	5-6	COM1	+12V
	7-8	COM2	RI (Default)
	9-10	COM2	+5V
	11-12	COM2	+12V
	13-14	COM3	RI (Default)
	15-16	COM3	+5V
	17-18	COM3	+12V
	19-20	COM4	RI (Default)
	21-22	COM4	+5V
	23-24	COM4	+12V

JP6: GPIO Port Base Address Select

Setting	Setting	Address
	Open	2E0h
	Close	300h

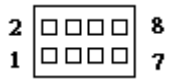
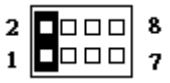
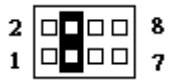
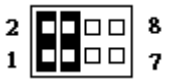
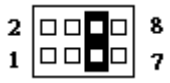
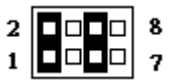
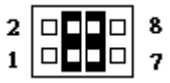
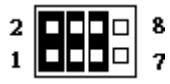
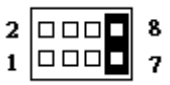
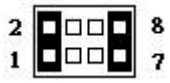
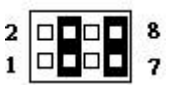
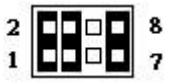
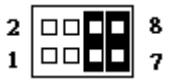
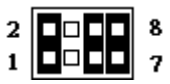
JP7: LCD Voltage Select

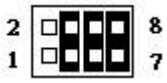
Setting		Define
	1-2	+5V
	2-3	+3.3V(Default)

JP8: LCD Backlight Voltage Select

Setting		Define
	1-2	+5V
	2-3	+12V

JP9: Flat Panel Type Select (Optional for C&T69000)

Setting		Resolution/Type	
	All Open	1024 x 768	TFT
	1-2 Close	1024 x 600	DSTN
	3-4 Close	1280 x 1024	DSTN
	1-2, 3-4 Close	1024 x 768	TFT
	5-6 Close	800 x 600	DSTN
	1-2, 5-6 Close	800 x 600	DSTN
	3-4, 5-6 Close	800 x 600	TFT
	1-2, 3-4, 5-6 Close	800 x 600	TFT
	7-8 Close	800 x 600	TFT
	1-2, 7-8 Close	1024 x 768	TFT
	3-4, 7-8 Close	640 x 480	TFT 18-bit
	1-2, 3-4, 7-8 Close	640 x 480	TFT Sharp
	5-6, 7-8 Close	1024 x 768	DSTN
	1-2, 5-6, 7-8 Close	1024 x 768	DSTN

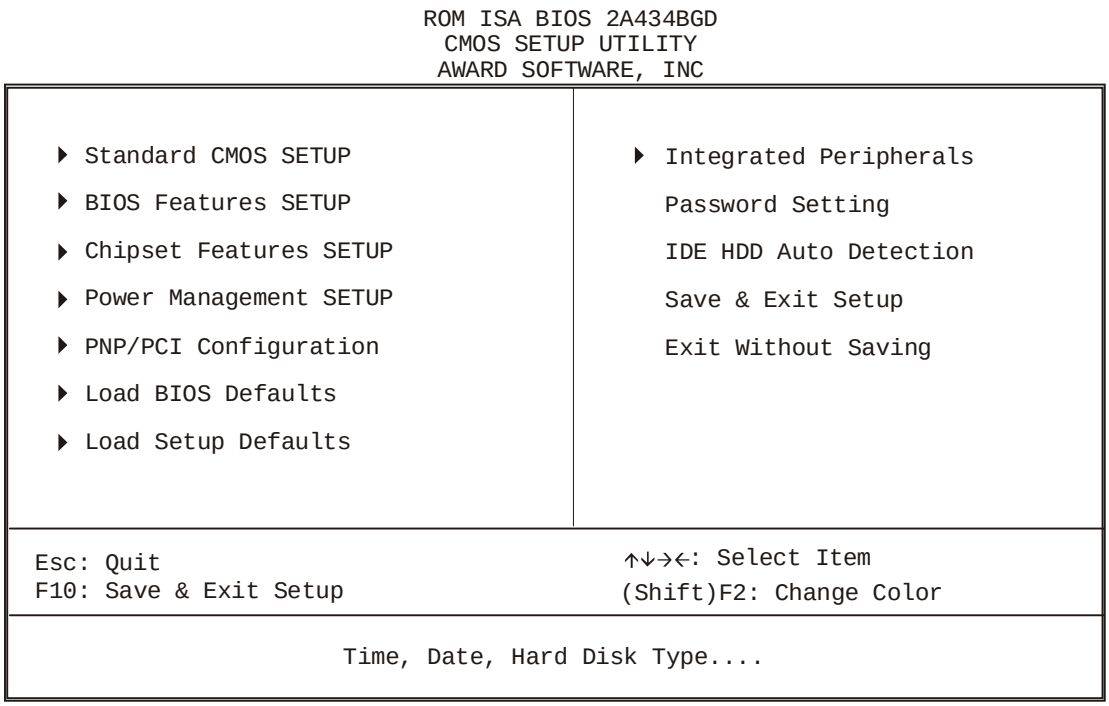
	3-4, 5-6, 7-8 Close	1280 x 1024	TFT
	All Close	1024 x 768	DSTN

Chapter 3. BIOS Setup

Award's BIOS ROM has a built-in Setup program that allows user to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

3.1 Entering CMOS Setup

Power on the computer and press <Del> immediately. This will allow you to enter Setup.



3.3.1 Standard CMOS Setup

When you choose the Standard CMOS Setup option from the Initial Setup Screen menu, the screen shown below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive and display. Once a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen.

Standard CMOS Setup

⇩Use the Standard CMOS Setup option as follows:

1. Choose "STANDARD CMOS SETUP" from the main menu. The following screen appears:

```
                    ROM PCI/ISA BIOS (2A434BGD)
                        Standard CMOS SETUP
                        AWARD SOFTWARE, INC

   Date (mm:dd:yy)      Tue, Feb 19 2002
   Time (hh:mm:ss)      15 : 57 : 42

   HARD DISK          TYPE   SIZE   CYLS  HEAD  PRECOMP LANDZ SECTOR  MODE
   Primary Master  :   47     0      0     0     0       0     0       Auto
   Primary Slave   :   47     0      0     0     0       0     0       Auto
   Secondary Master:   47     0      0     0     0       0     0       Auto
   Secondary Slave :   47     0      0     0     0       0     0       Auto
   Drive A : 1.44MB, 3.5in
   Drive B : None

   Video   : EGA/VGA
   Halt On : All Errors

ESC : Quit          ↑↓→←     : Select Item     +/-/PU/PD:Modify
F1  : Help          (Shift)F2 : Change Color
```

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 (mn/date/year)	Type the current date
Time (hour:min:sec)	Type the current time (24-hour clock)
Hard Disks	Choose from "Auto," "User," "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: 360K, 5.25in 1.2M, 5.25in 720K, 3.5in 1.44M, 3.5in 2.88M, 3.5in or

	None
Video	Choose: Mono CGA40 CGA80, or EGA/VGA
Halt On	Controls whether the system stops in case of an error detected during power up. Choose: All Errors (the default) No Errors All, But Keyboard All, But Diskette All, But Disk/Key

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

3.3.2 BIOS Features Setup

By choosing the BIOS Features Setup option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the O672.

1. Use the BIOS Features Setup from the main menu. The following screen appears:

```
                    ROM PCI/ISA BIOS (2A434BGD)
                        BIOS FEATURES SETUP
                        AWARD SOFTWARE, INC

Virus Warning               :Disabled
CPU Internal Cache          :Enabled


Quick Power On Self Test    :Enabled
Boot Sequence               :A,C,SCSI
Swap Floppy Drive           :Disabled
Boot Up Floppy Seek         :Enabled
Boot Up NumLock Status      :On
Boot Up System Speed        :High
Gate A20 Option             :Fast
Memory Parity Check         :Enabled
Typematic Rate Setting      :Disabled
Typematic Rate (Chars/Sec)  :6
Typematic Delay (Msec)      :250
Security Option             :Setup
PCI/VGA Palette Snoop       :Disabled
OS Select For DRAM >64MB    :Non-OS
Report No FDD For Win 95    :Yes

Video BIOS Shadow   : Disabled
C8000-CBFFFF Shadow : Disabled
CC000-CFFFF Shadow  : Disabled
D0000-D3FFF Shadow  : Disabled
D4000-D7FFF Shadow  : Disabled
D8000-DBFFF Shadow  : Disabled
DC000-DFFFF Shadow  : Disabled
Cyrix 6x86/MII CPUID: Enabled

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

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
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,
CPU Internal Cache	Enables the CPU internal cache. The default setting is Enabled
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 Sequence	By default, the BIOS attempts to first boot from drive C: and then, if unsuccessful, from drive A:. You can change this sequence from A, C, D~F, CD ROM, SCSI, LS120, or USB
Swap Floppy Drive	Swaps the drive designation for A: and B: floppy disk drives
Boot Up Floppy Seek	When enabled, the BIOS will check whether there is a floppy disk drive installed. The default setting is 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 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 system
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 a 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 option 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.
PCI/VGA Palette Snoop	Enabling this item informs the PCI/VGA card to keep silent when palette register is updated.
OS Select For DRAM > 64M	Set to OS/2 if your system is using OS/2 and has memory size of more than 64MB
Video BIOS Shadow	When enabled, the ROM BIOS on the video display card is copied into system DRAM to enhance performance. The default setting is Disabled.

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

3.3.3 Chipset Features Setup

By choosing the Chipset Features Setup option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the O672.

1. Use the Chipset Features Setup from the main menu. The following screen appears:

```
                ROM PCI/ISA BIOS (2A434BGD)
                  CHIPSET FEATURES SETUP
                   AWARD SOFTWARE, INC

SDRAM CAS Latency Time     :3T                 Multiple Monitor Support: M/B First
SDRAM Clock Ratio Div By   :4                  Video Memory Size       : 2.5M
                                               Flat Panel Support      : Disabled


16-bit I/O Recovery (CLK)  :5
8-bit I/O Recovery (CLK)   :5


USB Controller             :Enalbed
USB Legacy Support         :Enabled

Build in CPU Audio         :Enabled
Audio I/O Base Address     :220H
MPU-401 I/O Base Address   :330H
Audio IRQ Select           :IRQ 10
Audio Low DMA Select       :DMA 1          ESC  : Quit         ↑↓→←    :Select Item
Audio High DMA Select      :DMA 5          F1   : Help         PU/PD/+/-: Modify
                                           F5   : Old Values   (Shift)F2: Color
Multiple Monitor Status    :PCI First      F6   : Load BIOS Defaults
Video Memory Size          :1.5M           F7   : Load Setup Defaults
Flat Panel Status          :Disabled
```

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
SDRAM CAS Latency Time	The value 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 w for better performance when your SDRAM meets this timing specification.
16-Bit I/O Recovery	Choose NA or 1 to 5 CPU clocks. This option lets you determine the recovery time of 16-bit I/O. The I/O recovery mechanism adds bus cycles between PCI-originated I/O cycles to the ISA bus. This delay takes place because the PCI bus is much faster than the ISA bus.
8-Bit I/O Recovery	Choose NA or 1 to 8 CPU clocks. This option lets you determine the recovery time of 8-bit I/O. The I/O recovery mechanism adds bus cycles between PCI-originated I/O cycles to the ISA bus. This delay takes place because the PCI bus is much faster than the ISA bus
Built in CPU Audio	Choose Enable or Disable To enable/disable the audio function
Audio I/O Base Address	To select the I/O address for audio function.
MPU-401 I/O Base Address	To select the I/O address for MPU-401 (midi interface)
Audio IRQ Select	To select the interrupt for audio function
Audio Low DMA Select	To select the low DMA channel
Audio High DMA Select	To select the high DMA channel
Multiple Monitor Status	To select the primary VGA for multiple monitor support in WINDOWS
Video Memory Size	To select the size of video memory. It makes use of system memory for display. ***Note: The VGA shared memory should be set at 4.0M if your system run with Windows 2000***

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

3.3.4 Power Management Setup

By choosing the Power Management Setup option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the O672.

1. Use the Power Management Setup from the main menu. The following screen appears:

```
                    ROM PCI/ISA BIOS (2A434BGD)
                      POWER MANAGEMENT SETUP
                       AWARD SOFTWARE, INC

Power Management           :Disabled        IRQ1  (Keyboard)         :ON
                                            IRQ3  (COM 2)            :OFF
       ** PM Timers **                      IRQ4  (COM 1)            :OFF
Doze Mode                  :Disabled        IRQ5  (LPT 2)            :OFF
Standby Mode               :Disabled        IRQ6  (Floppy Disk)      :OFF
HDD Power Down             :Disabled        IRQ7  (LPT 1)            :OFF
MODEM Use IRQ              :NA              IRQ9  (IRQ2 Redir)       :OFF
                                            IRQ10 (Reserved)         :OFF
Throttle Duty Cycle        :33.3%           IRQ11 (Reserved)         :OFF
                                            IRQ12 (PS/2 Mouse)       :OFF
                                            IRQ13 (Coprocessor)      :OFF
                                            IRQ14 (Hard Disk)        :OFF
                                            IRQ15 (Reserved)         :OFF
                                            ESC  : Quit         ↑↓→←    :Select Item
                                            F1   : Help         PU/PD/+/-: Modify
                                            F5   : Old Values   (Shift)F2: Color
                                            F6   : Load BIOS Defaults
                                            F7   : Load Setup Defaults
```

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.

Item	Description
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" – Predefined timer value of 4-12 minutes. "Max Saving" – Predefined timer value of 1 minute.
Doze Mode	Sets the timer for Doze mode or disables it.
Standby Mode	Sets the time for Standby mode or disables it
HDD Power Down	Sets the time for the HDD power down mode or disables it
MODEM Use IRQ	Choose the IRQ used by the modem.

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

3.3.5 PnP/PCI Configuration

By choosing the PnP/PCI Configuration option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the O672.

1. Use the PNP/PCI Configuratioin from the main menu. The following screen appears:

```
                ROM PCI/ISA BIOS (2A434BGD)
                   PNP/PCI CONFIGURATION
                    AWARD SOFTWARE, INC

PNP OS Installed           :No          PCI IRQ Actived By      :Level
Resources Controlled By    :Auto
Reset Configuration Data   :Disabled

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

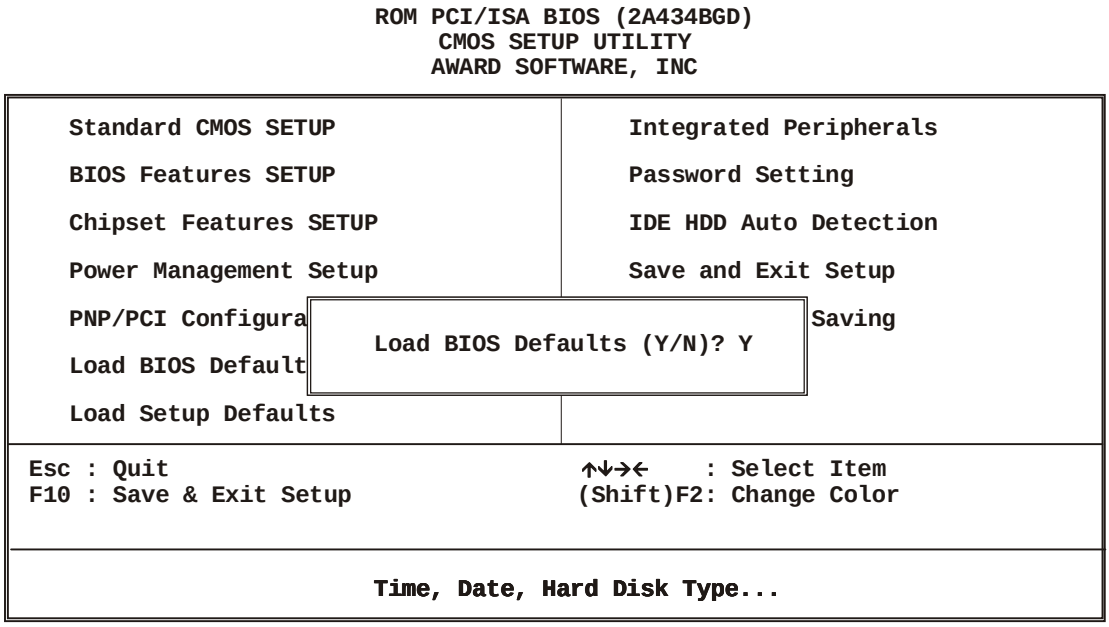
2. Use the arrow keys to move between fields. Modify the selected field using the PgUP/PgDn/+/- keys. Some fields let you enter numeric values directly.

Item	Description
PNP OS Installed	Choose Yes or No. When Yes is selected, an IRQ will be assigned by the OS
Resources Controlled By	Choose Auto or Manual. This option specifies whether resources are controlled by automatic or manual configuration
Reset Configuration Date	Choose Enable or Disable "Enable" – PNP configuration data is reset in BIOS "Disable" – PNP configuration date is retained in BIOS

3. After you have finished with the PNP/PCI Configuration program, press the <ESC> key to return to the main menu.

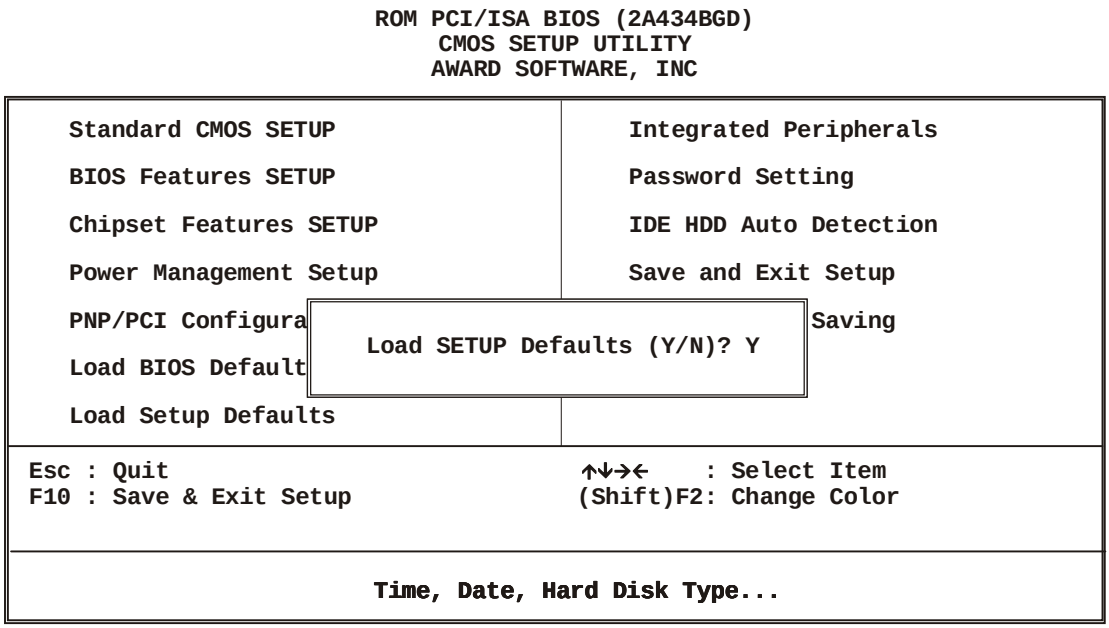
3.3.6 Load BIOS Defaults

Load BIOS Default loads the default system values directly from ROM. If the stored record created by the Setup program becomes corrupted (and therefore unusable), these defaults will load automatically when you turn the O672 on.



3.3.7 Load Setup Default

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

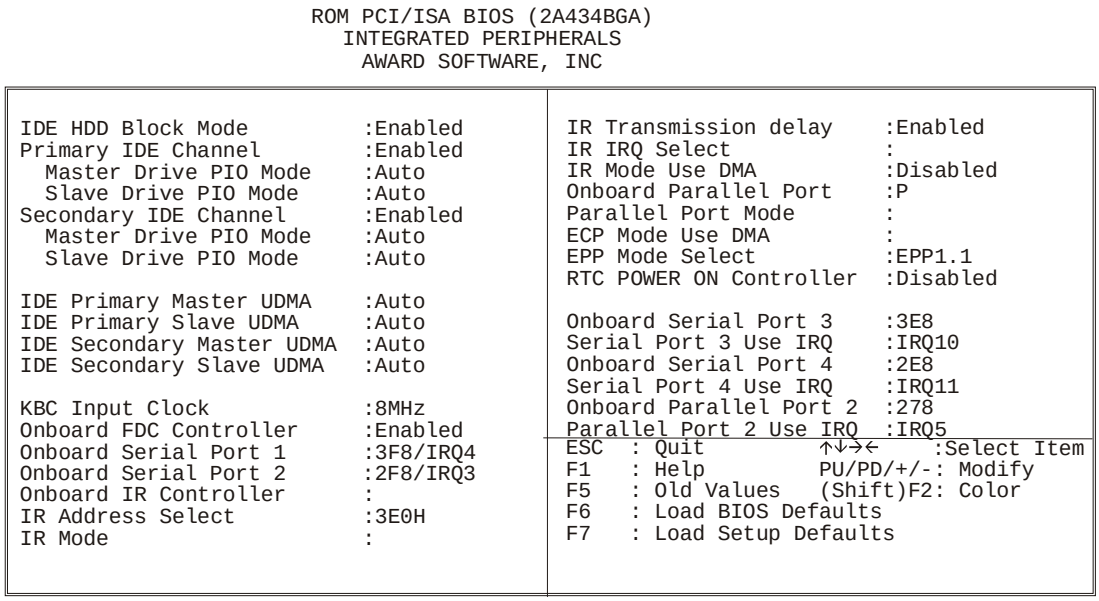


To Use this feature, highlight it on the main screen and press <Enter>. A line will appear on the screen asking if you want to load the SETUP default values. Press the <Y> key and then press <Enter> if you want to load the SETUP default

3.3.8 Integrated Peripherals

By choosing the Integrated Peripherals option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the O672.

1. Use the Integrated Peripherals 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
IDE HDD Block Mode	Enables/Disables the IDE HDD Block Mode function Note: Not all drives support this function
IDE Primary Master/Slave PIO	Enables/Disables the first/second onboard PCI IDE
IDE Secondary Master PIO	Lets you select a PIO mode for the onboard PCI IDE
IDE Primary Master/Slave UDMA	Enables/disables support for Ultra DMA/33 IDE devices
IDE Secondary Master UDMA	Enables/disables support for Ultra DMA/33 IDE devices
KBC Input Clock	Have 6MHz, 8MHz (Default), 12MHz, 16MHz select KBC input clock
Onboard FDC Controller	Enables/Disables the onboard FDD controller
USB Keyboard Support	Enabled/Disabled USB keyboard support
Onboard Serial Port 1 and 2	Enables/Disables the onboard serial port 1 and 2 respectively
Onboard Parallel Port	Enables/Disables the onboard parallel port
Parallel Port Mode	Lets you select the parallel port mode

ECP Mode Use DMA	Select a DMA channel for the port
EPP Mode Select	Choose Normal for general use or IRDA ASKIK for infrared use
Onboard Serial Port 3 and 4	Enables/Disables the onboard serial port 3 and 4 respectively

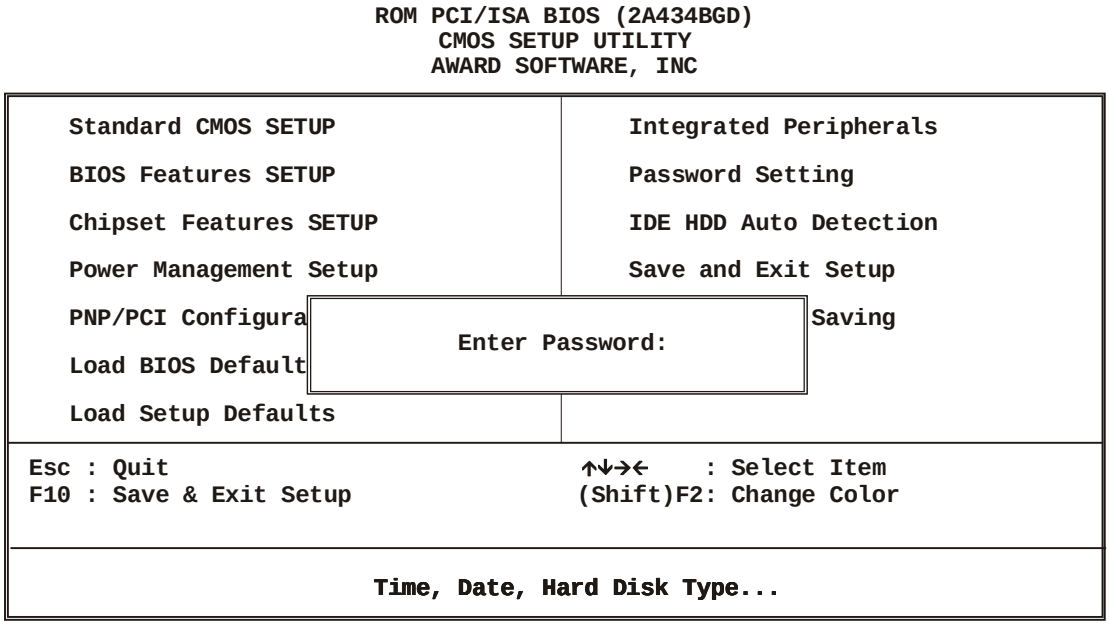
3. After you have finished with the Integrated Peripherals program, press the <ESC> key to return to the main menu.

3.3.9 Password Setting

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.

3.3.10 IDE HDD Auto Detection

If you System with an IDE hard disk drive installed, you can use this utility to detect its parameters and enter them into the Standard CMOS Setup automatically. This utility will detect as many as four IDE drives if your system configuration supports that many. In sequence, a set of parameters for each drive will appear in the box. To accept the entries displayed, press the <Y> key. To skip to the Next drive, press the <N> key. If you accept the value, the parameters will appear listed beside the drive letter on the screen, and the program will attempt to detect the parameters for the Next drive. If you press the <N> key to skip rather than accept a set of parameters, zeroes are entered after that drive letter.
Any entries accepted will be automatically entered on the line for that drive in the standard CMOS setup. Any entries skipped are ignored and nothing is entered for that drive in standard CMOS setup.

The onboard IDE controller supports Enhanced IDE and has two connectors that support a total of four IDE devices. If you use another IDE controller that does not have Enhanced IDE support for four devices, you can only install two IDE hard disk drives. Your IDE controller must support Enhanced IDE features in order to use drive E: and F:

Important: This utility will only detect one set of parameters for an IDE drive. Some IDE drives can use more than one set. This is not a problem if the drive is new and there is nothing on it. If the hard disk drive is already formatted when you install it and different parameters were used rather than those detected here, you will have to enter them manually.

If the parameters listed don't match the ones used when the drive was formatted, the drive won't be readable. If the auto-detect parameters displayed do not match the ones that should be used in your drive, do not accept them. Press the <N> key to reject the values and enter the correct ones manually from the standard CMOS Setup screen.

1. Choose "IDE HDD AUTO DETECTION" in the main menu and press <Enter>. The following screen appears:

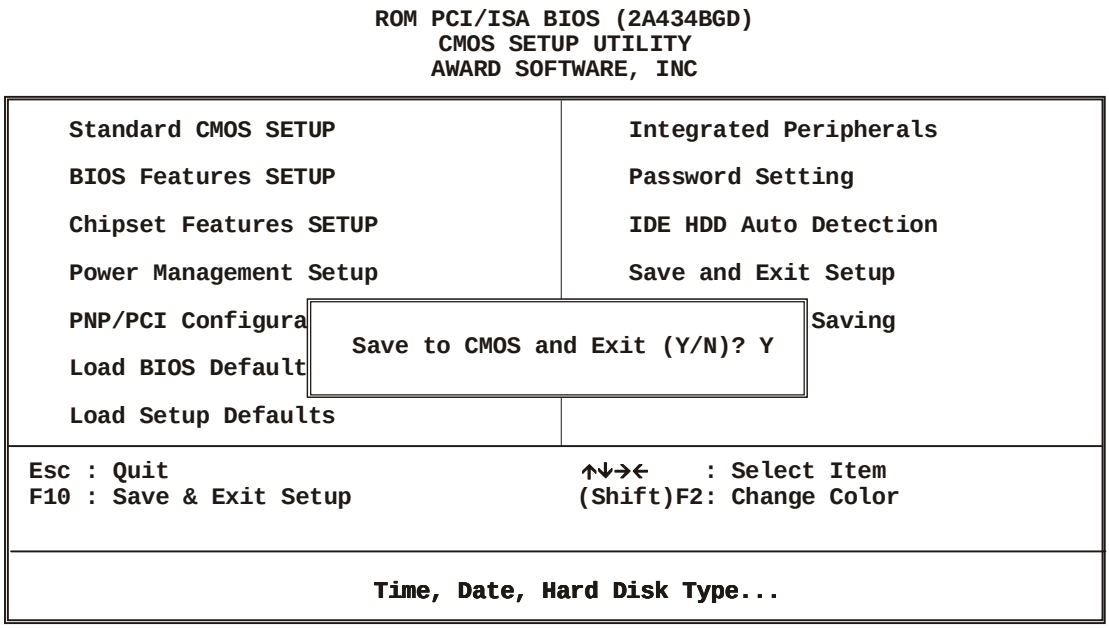
```
                ROM PCI/ISA BIOS (2A434BGD)
                   CMOS SETUP UTILITY
                  AWARD SOFTWARE, INC.

HARD DISKS         TYPE   SIZE    CYLS HEAD PRECOMP LANDZ SECTOR  MODE
-------------------------------------------------------------------------
Primary Master   :

  Select Primary Master Option (N=Skip) : N

    OPTIONS     SIZE   CYLS HEAD PRECOMP LANDZ SECTOR  MODE
    ------------------------------------------------------
       2(Y)     4310    524  255       0   8911    63 LBA
       1        4312   8912   15   65535   8911    63 Normal
       3        4312    557  240   65535   8911    63 Large

Note: Some OSes (like SCO-UNIX before V5.0) must use "Normal" for installation

                              ESC : Skip
```

2. Press <ESC> to exit to the main menu.

If you are setting up a hard disk drive that supports LBA mode, three lines will appear in the parameter box. Choose the line that lists LBA or an LBA drive. Do not choose Large or Normal.

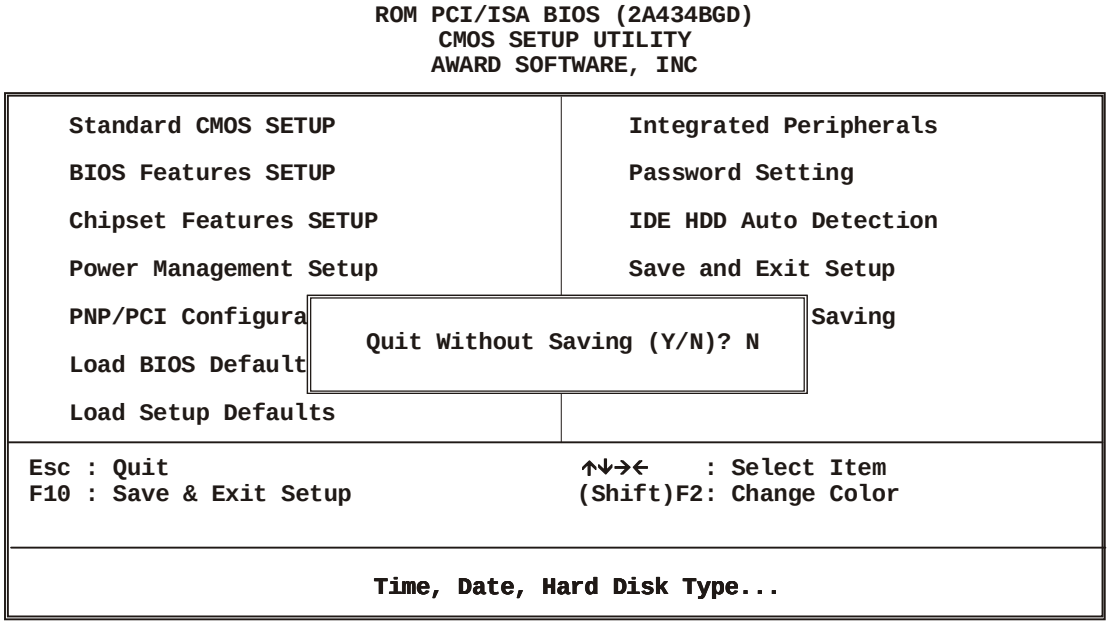
3.3.11 Save and Exit Setup

This function automatically saves all CMOS values before exiting Setup.



3.3.12 Exit Without Saving

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

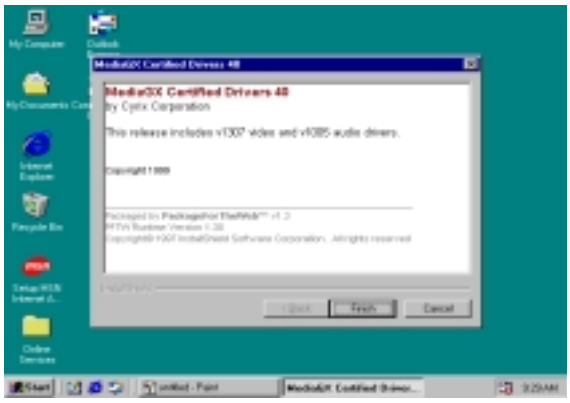
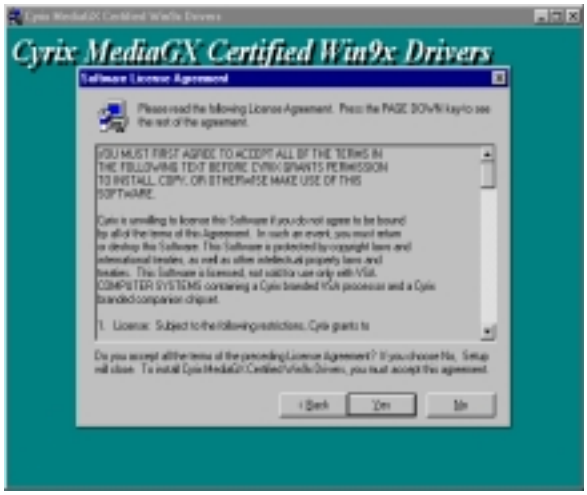


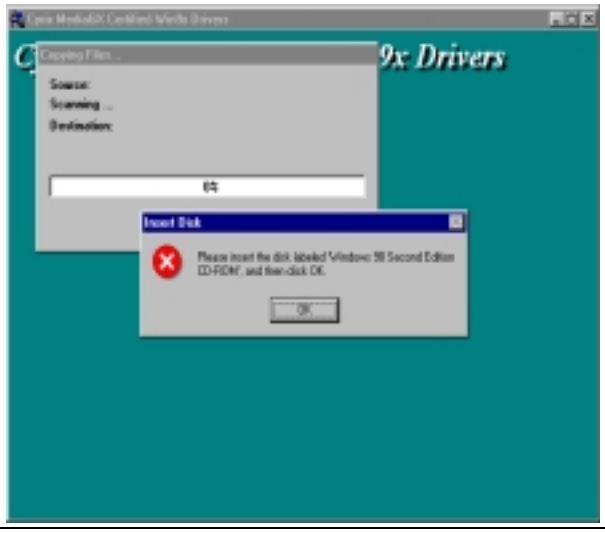
Chapter 4. Driver and Utilities Installation

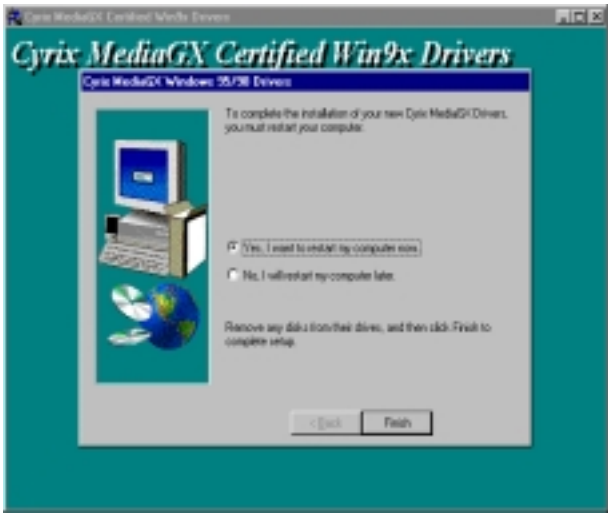
4.1 Installing the VGA/Audio Driver for Windows 98

⇩ **Install the VGA/Audio drive for Windows98 as follows:**

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 note: when you setup VGA for WIN 98, it installs Audio at the same time. Please type in the correct path, for example: 1. Please type **D:\Chipset\Win9x1\Cyrix MediaGX Certified Win 9x Drivers 4.0.** 2. Click "Finish"	
2. Please click Next> to the next step of installation.	
3. Please click "Yes" after you reading and accepting the license agreement.	

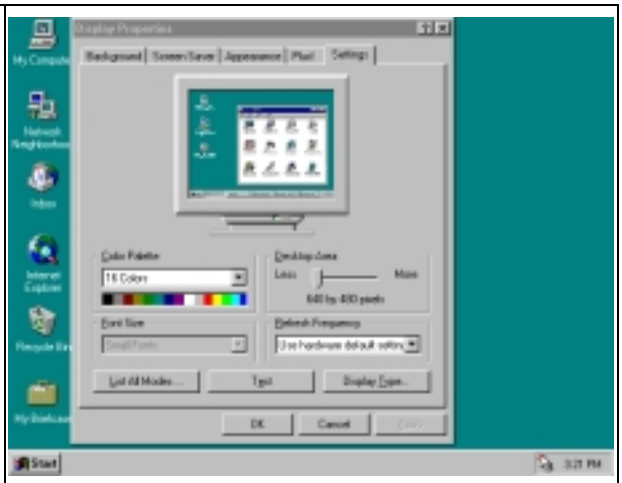
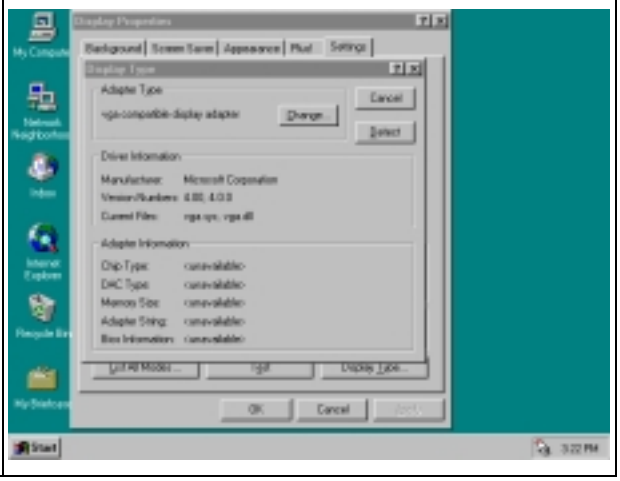
4. Please click "Next> after choosing the proper location.	
5. Please select "Typical" and click "Next> to the next step of installation.	
6. Please insert the Windows 98 CD-ROM, and then click "OK"	

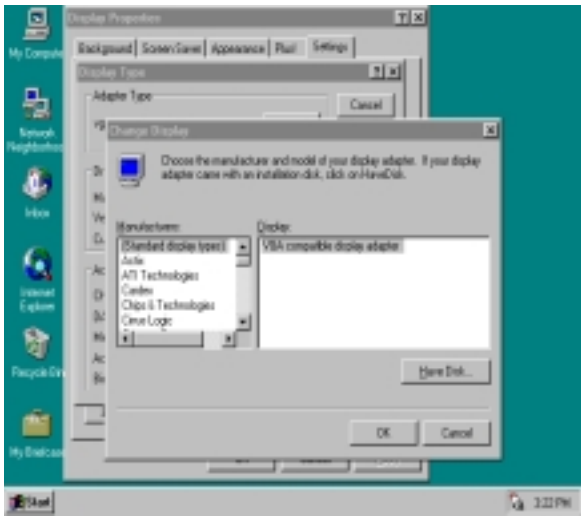
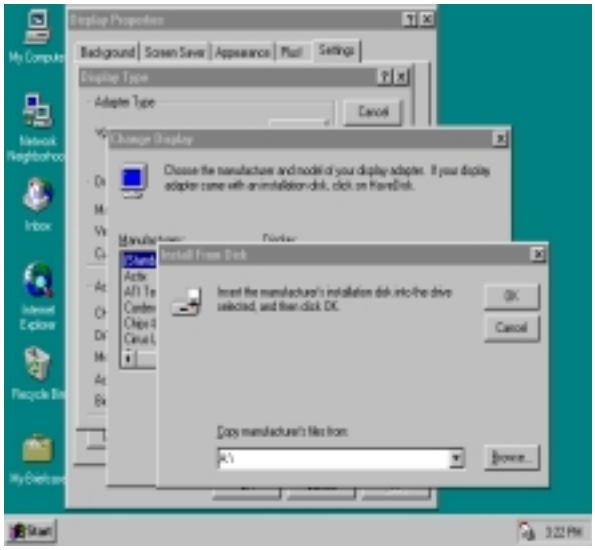
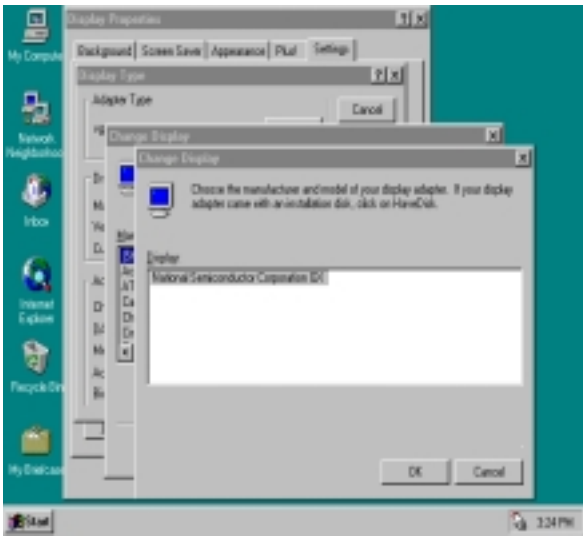
7. Please choose "Yes", and click "Finish" to restart the computer.	

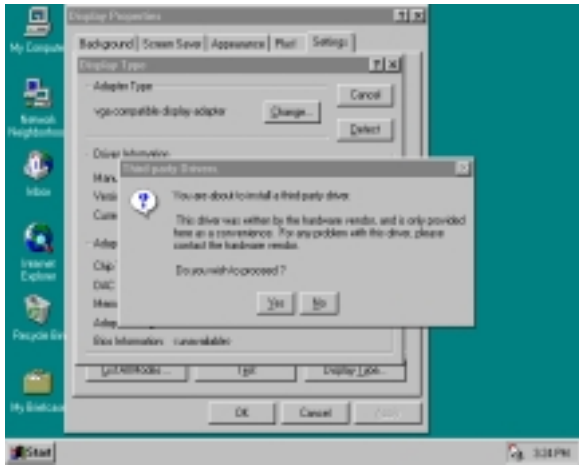
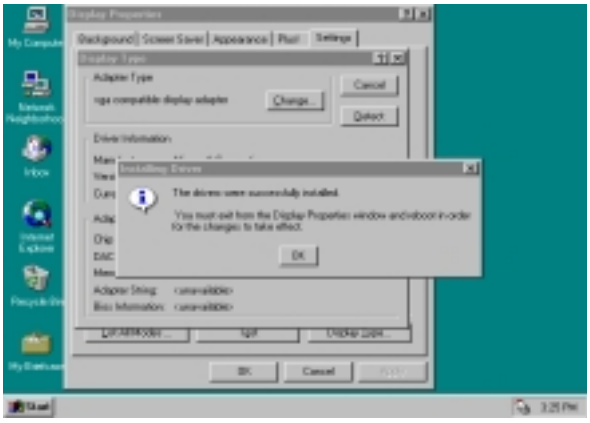
4.2 Installing the VGA Driver for Windows NT

1. Install the onboard CX5330A VGA Driver for Windows NT

⇩ **Install the VGA drive for Windows NT as follows:**

1. Please Click **"Start"**, go to **"Setting"** and click **"Control Panel"**. Choose the **"Display"** icon and double-click the icon, the next configuration screen will appear	
2. Please press "Change" to the next step of installation.	

3. Please click "Have Disk.." to the next step of installation.	
4. Please insert the utility disc in to the CD-ROM drive. 1. Please type **D:\Chipset\winnt** 2. Press "OK" to the next step of installation.	
5. Please select the highlighted item and press "OK" to the next step	

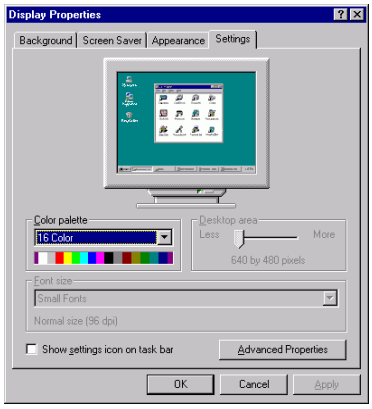
6. Please click "Yes" to the next step	
7. Please press "OK" to reboot	

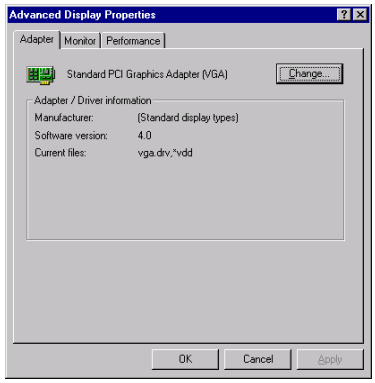
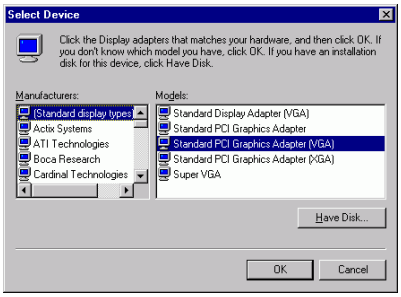
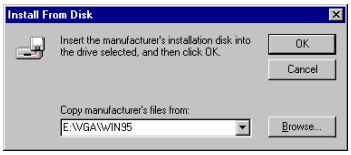
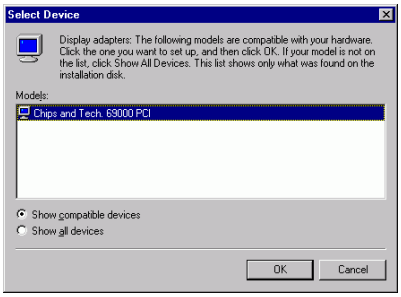
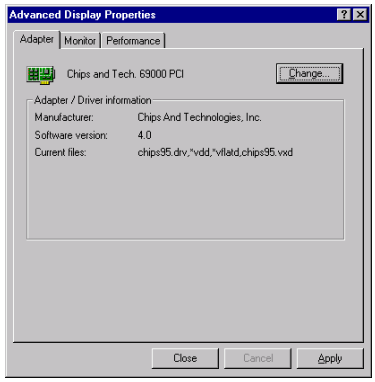
2. Install C&T69000 VGA Driver

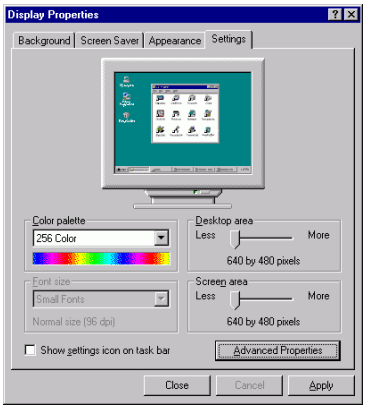
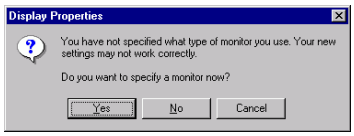
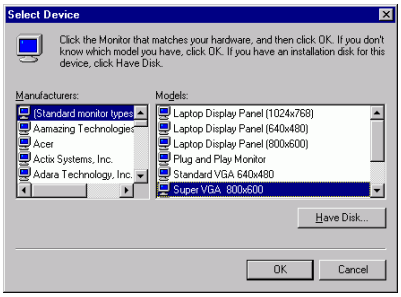
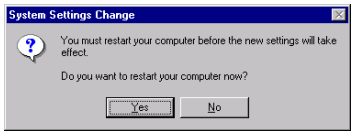
The O672 has optional for the VGA by using C&T69000 series VGA chipset. It supports many popular flat panel and CRT display. With a C&T69000 series VGA chipset, 2MB of memory can drive the display with resolutions up to 1024 x 768 with 64K colors.

Installing for Windows 95/98

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

1. Click **"Start"**, go to **"Settings"** and click **"Control Panel"**. Choose the **"Display"** icon and double-click the icon. Select the **"Settings"** tab, then click **"Advanced Properties".** The ***Advanced Display Properties*** screen appears.	

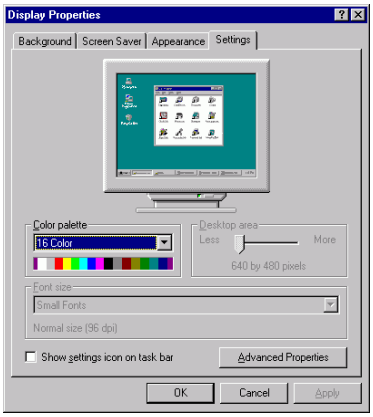
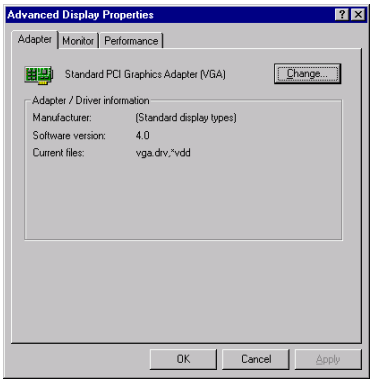
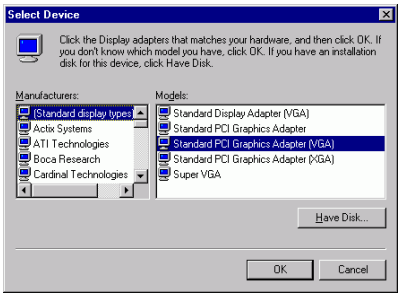
2. Select the "Adapter" tab and click "Change" to continue.	
3. In the ***Select Device*** dialog box, click **"Have Disk".**	
4. Insert the Drivers and Utilities CD into the CD-ROM drive (example E:). Click **Browse** to find the INF file. For Windows 95, the "chips95.inf" file is located at **E:\vga\win95;** for Windows 98, the "chips98.inf" file is located at **E:\vga\win98.**	
5. Select the highlighted item and click **"OK"**.	
6. Click the **"Apply"** button.	

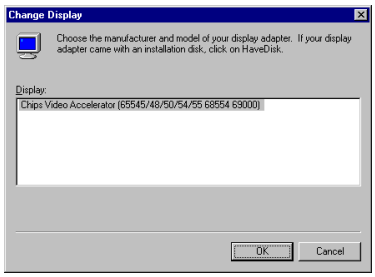
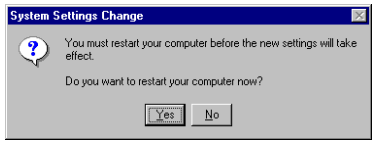
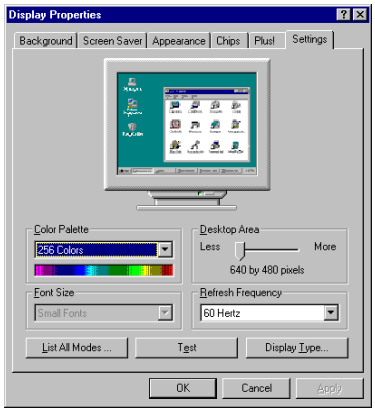
7. Click **"Apply"** in the **Display Properties** dialog box.	
8. Click **"Yes"** to specify a monitor. You also select **"No"** to specify a monitor later after the setup is complete and you have rebooted.	
9. Choose the display type that you have and click **"OK".**	
10. Click **"Yes"** to restart the system for the new settings to take effect.	

Installation for Windows NT

Please install the Windows NT 4.0 Server Pack 3 or later before you starting to install the drivers for Windows NT 4.0. Please contact your software vendor or download it from Microsoft's Web Site if you don't have the Windows NT 4.0 Server Pack 3 or later.

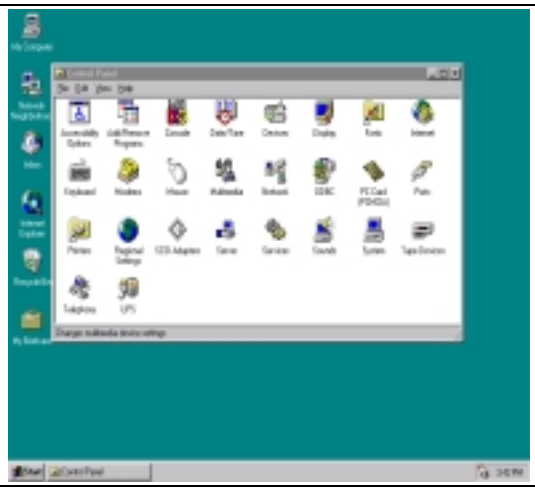
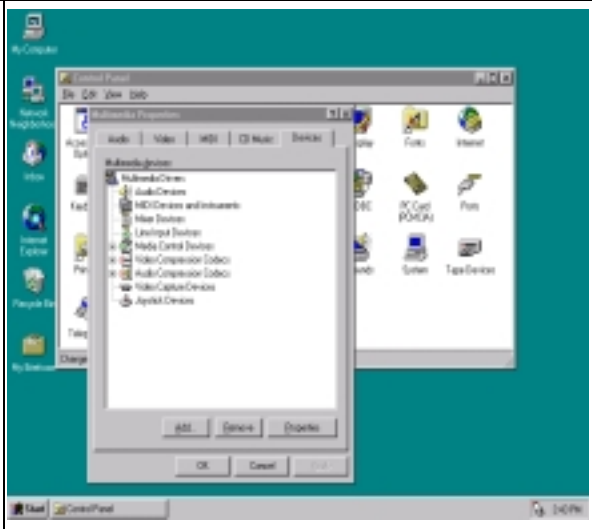
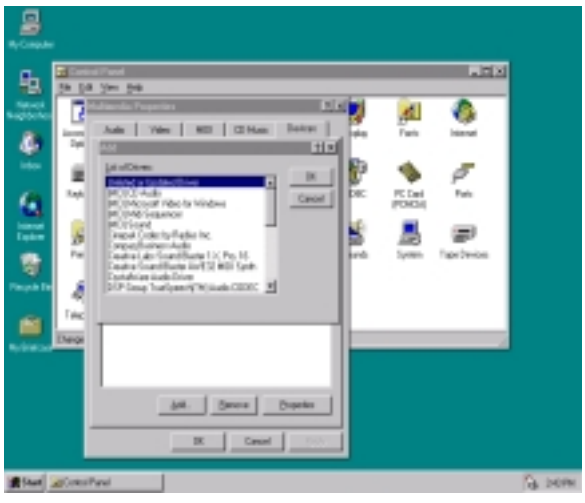
Please install the drivers for Windows NT as follows:

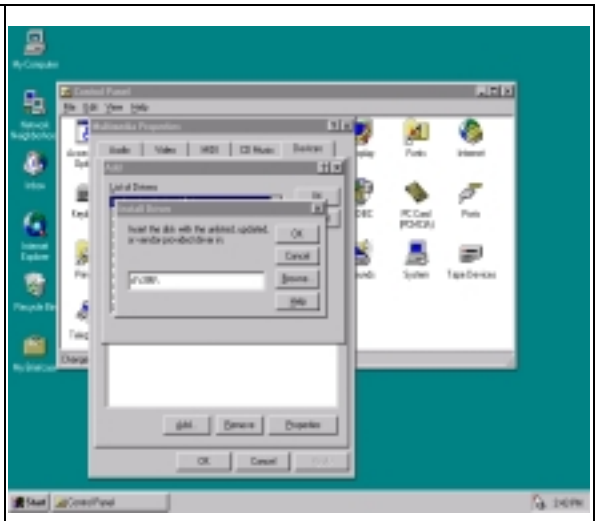
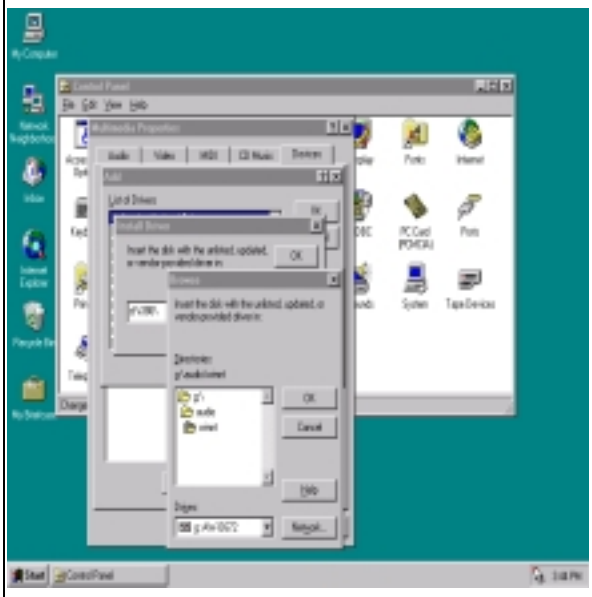
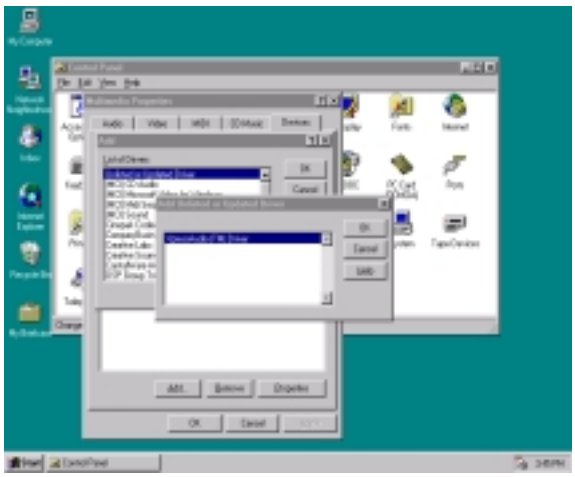
1. Click **"Start"**, go to **"Settings"** and click **"Control Panel"**. Choose the **"Display"** icon and double-click the icon. Select the **"Settings"** tab, then click **"Advanced Properties".** The ***Advanced Display Properties*** screen appears.	
2. Select the "Adapter" tab and click "Change" to continue.	
3. In the ***Select Device*** dialog box, click **"Have Disk".**	
4. Insert the Drivers and Utilities CD into the CD-ROM drive (example E:). Click **Browse** to find the INF file. For Windows NT, the "chipsnt.inf" file is located at **E:\vga\winNT.**	

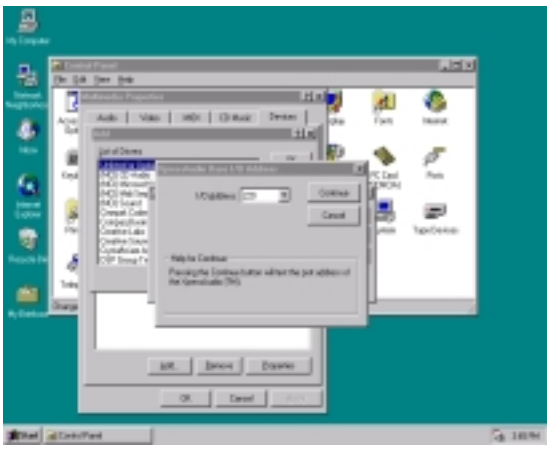
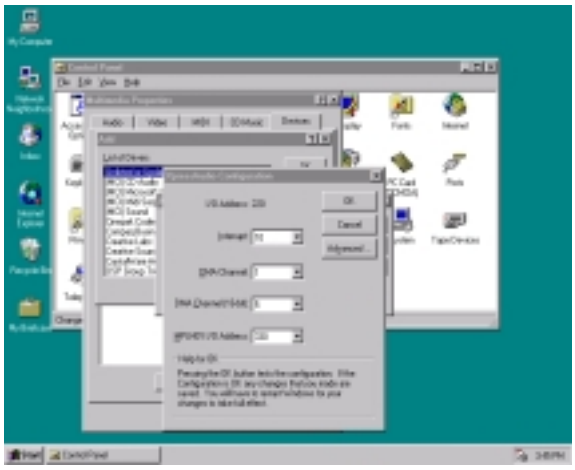
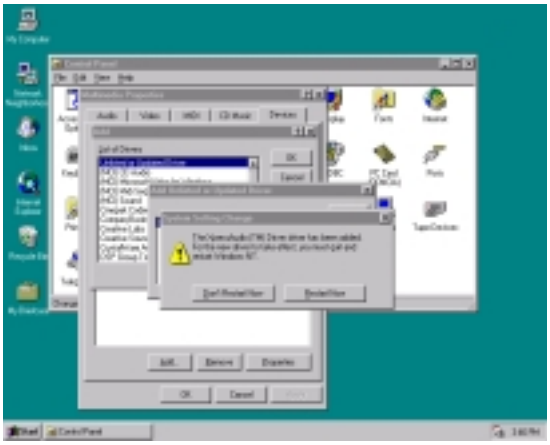
5. Select the highlighted item and click **"OK"**.	
6. Click **"Yes"** to proceed.	
7. Click **"OK"** to complete the installation.	
8. Click **"Yes"** to restart the system for the new settings to take effect.	
9. After the system has restarted, repeat step 1. Adjust the display resolution and color. Click **"Test"** to see the result. If the setting is correct, then click **"OK"** to save the setting.	

4.3 Installing the Audio Driver for Windows NT

⇩**Please install the audio drivers for Windows NT as follows:**

1. Please Click **"Start"**, go to **"Setting"** and click **"Control Panel"**. Choose the **"Multimedia"** icon and double-click the icon, the next configuration screen will appear	
2. Select the "Device" item and click "Add" to next step of installation.	
3. Please select the "Unlisted or Updated Driver" and click "OK"	

4. Please insert the utility disc in to the CD-ROM drive. 1. Please type **D:\Audio\winnt** 2. Press "OK" to the next step	
5. Please click "OK" to the next step	
6. Please select the highlighted item and click "OK" to the next step of installation	

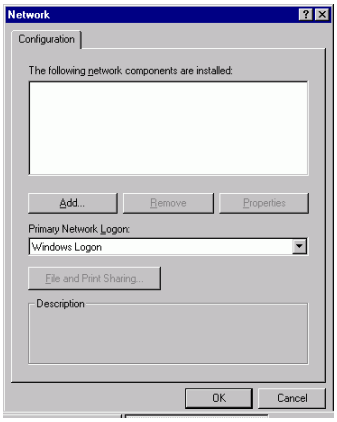
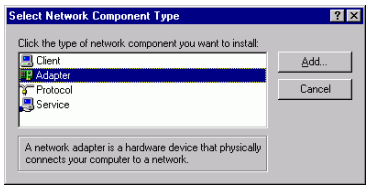
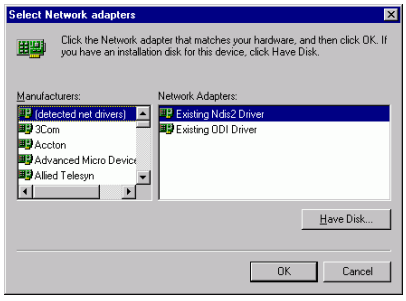
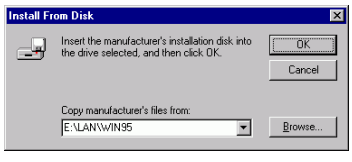
7. Set the I/O Address and click "Continue" to the next step	
8. Set the XpressAudio Configuration and click "OK" to the next step.	
9. Click "Restart Now"	

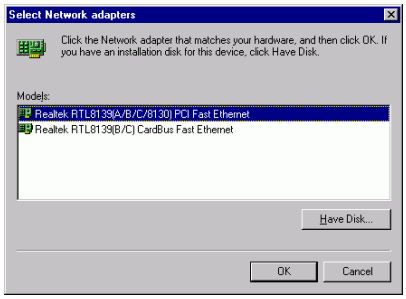
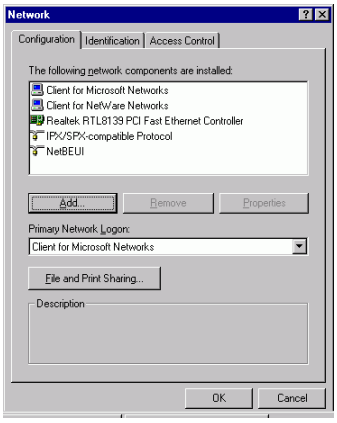
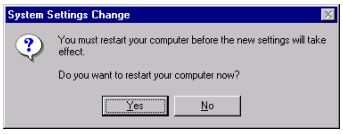
4.4 Install the Ethernet Driver

Installing the Ethernet Drivers

The O672 has a high-performance Ethernet chipset 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.

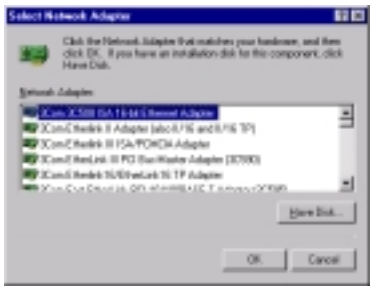
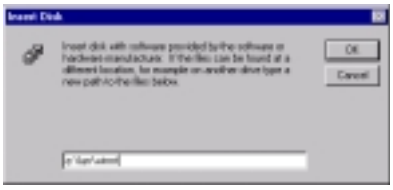
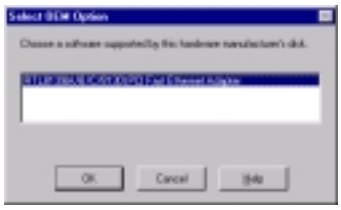
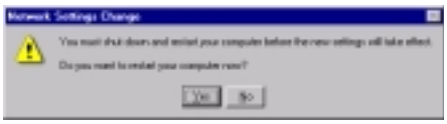
1. Installation for Windows 95/98 (Realtek RTL8139C)

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\win9598.	
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.	

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\winnt.**	
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.	

Appendix A: Programming the Watchdog Timer

The O672 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	O 370 2C
OUT DX,AL	O 371 08
MOV AL,2CH	
MOV DX,370H	
OUT DX,AL	
MOV AL,08H	
MOV DX,371H	
OUT DX,AL	
MOV AL,07H	O 370 07
OUT DX,AL	O 371 08
MOV DX,371H	
MOV AL,08H	
OUT DX,AL	
MOV AL,30H	
MOV DX,370H	
OUT DX,AL	
MOV AL,01H	
MOV DX,37H	
OUT DX,AL	
MOV AL,0F4H	
MOV DX,370H	
OUT DX,AL	
MOV AL,40H	
MOV DX,371H	
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,0F2H		O 370 AA

```
OUT DX,AL
MOV DX,371H
MOV AL,XXH       ; Timer interval *** see note ***
OUT DX,AL
MOV DX,370H
MOV AL,0AAH
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).

Appendix B: Programming the GPIO Port

The O672 provides an 8-bit GPIO port that you can use to read and write data through. You can set this port address by jumper settings via JP6. The default address is 300h; this can be changed to 2E0h or 300h by jumper settings.

Reading the GPIO Data

```
MOV DX,300h    ; the GPIO address
IN AL,DX       ; read the data into AL register
```

Writing the GPIO Data

```
MOV DX,300h    ; the GPIO address
MOV AL,XXH     ; output data value "XX"
OUT DX,AL
```

bit0 : GPI(O)0
bit1 : GPI(O)1
bit2 : GPI(O)2
bit3 : GPI(O)3
bit4 : GPI(O)4
bit5 : GPI(O)5
bit6 : GPI(O)6
bit7: GPI(O)7

Appendix C: DiskOnChip 2000 Installation

When installing or removing the DiskOnChip (DOC), be sure to first touch a grounded surface to discharge any static electricity from your body.

- **Use the following procedure to install the DiskOnChip:**
  1. Align pin 1 on the DiskOnChip with pin 1 of the socket.
  2. Push the DiskOnChip into the socket carefully until it is fully seated.
  3. Check to make sure the DiskOnChip is installed securely, and there are no bent pins.

  Caution: The DiskOnChip may be permanently damaged if installed incorrectly!

  4. Set the jumper switch (JP3) for the memory address of the DOC.

  The memory shadow function sometimes will create conflicts with the memory window. You should disable the memory shadow from the BIOS Setup if the DOC cannot be accessed.

To install the DiskOnChip as drive C on a system without a hard disk, set the CMOS setup of drive C to "not installed" (indicating that no physical magnetic disk is installed), and reboot the computer. The DiskOnChip 2000 will install as drive C. The DiskOnChip needs to be formatted with the system files in order for it to be a bootable drive. See "Configuring the DiskOnChip as the BOOT device" below.

To install the DiskOnChip as drive D on a system with a hard disk, just reboot the system, and the DiskOnChip will install as drive D.

To install the DiskOnChip as Drive C on a system with a hard disk, see below "Configuring the DiskOnChip as the first drive".

Configuring the DiskOnChip 2000 as the Boot Device

In order to configure the DiskOnChip as the boot device, the operating system files need to be copied into it. Copying the operating system files into DiskOnChip should be done like in any other hard disk. The following is an example of a typical initialization process:

Set the DiskOnChip as a regular drive in your system (not a boot drive).

Install a bootable floppy diskette in drive A and boot the system.

At the DOS prompt, type *SYS C:* to transfer the DOS system files to the DiskOnChip (assuming the DiskOnChip is installed as drive C).

Copy any files needed into the DiskOnChip.

Remove the floppy diskette and reboot the system. The system will boot from the DiskOnChip, and will allow you to run and access any files that have been copied into the DiskOnChip.

Configuring the DiskOnChip 2000 as the First Drive

You can configure the DiskOnChip to be installed as the last drive (default), or as the first drive in the system. When configured as the last drive, the DiskOnChip is installed as disk D if there is another hard drive installed, and as drive C if no other hard disk is installed. When configured as the first drive, the DiskOnChip is always installed as drive C.

The DiskOnChip is shipped from the factory, configured to install as the last drive.

To configure the DiskOnChip to be installed as the first drive, proceed as follows:

Boot the system and make sure the DiskOnChip is installed correctly as drive D.

At the DOS prompt type:

DUPDATE D: /FIRST /S:DOC2000.EXB

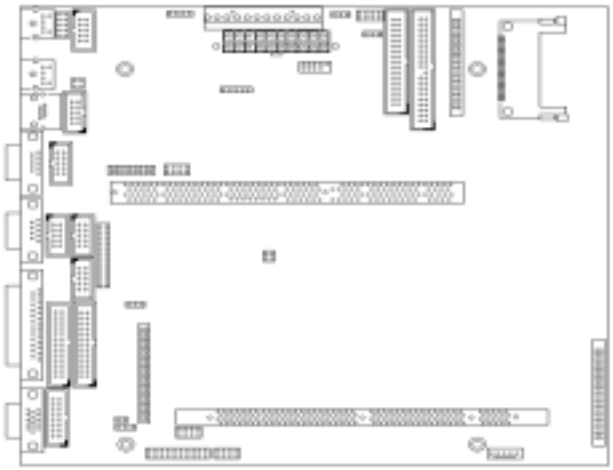
After re-booting the system, the DiskOnChip will appear as drive C:

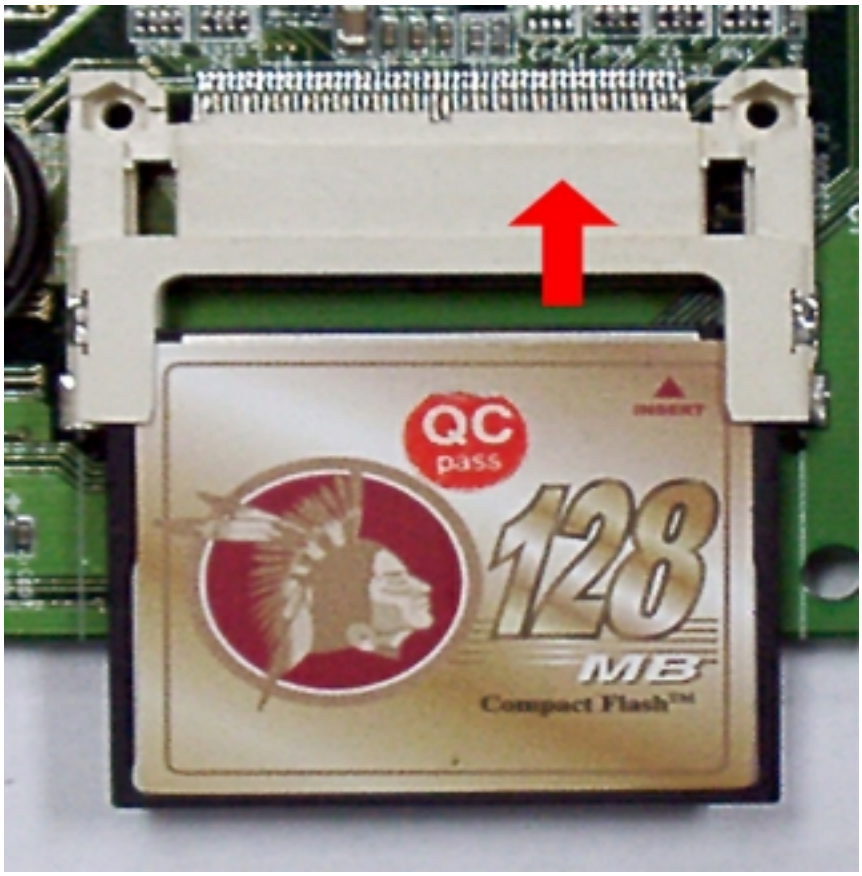
Appendix D: Installing CompactFlash Memory

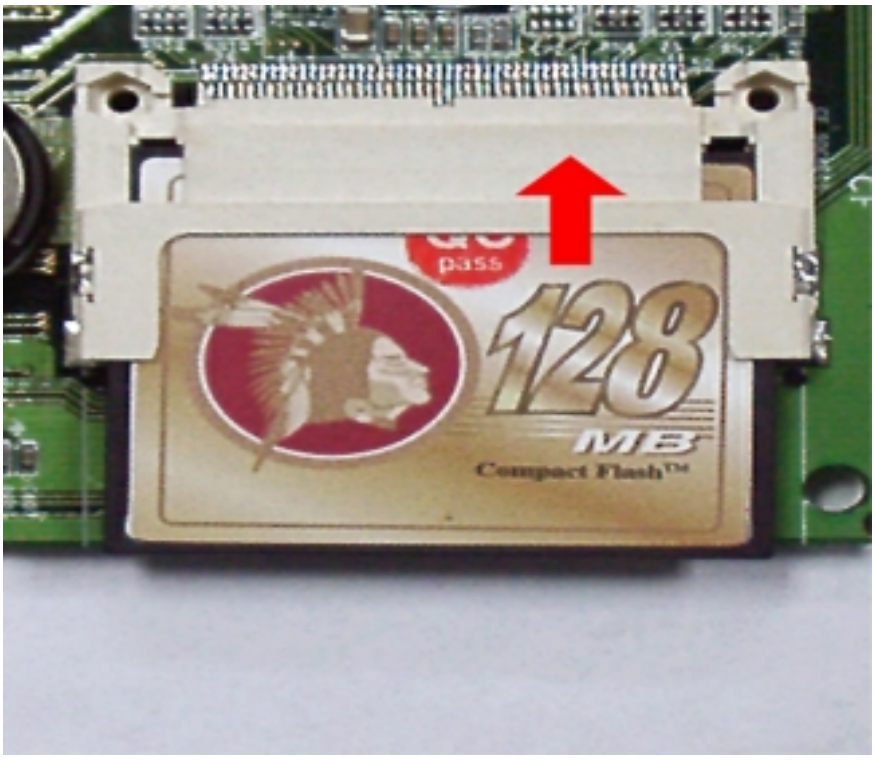
CompactFlash™ is a very small removable mass storage device, it provides complete PCMCIA-ATA functionality and compatibility pluse TrueIDE functionality compatible with ATA/ATAPI-4.

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	CS	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	CS	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







Note: Face-up the CompactFlash Card and slide into the socket till the CF card at the end of socket.

Appendix E: PCI/ISA Slot

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A1	IOCHK	B1	Ground	E1	Ground	F1	Ground
A2	SD7	B2	RST	E2	Ground	F2	Ground
A3	SD6	B3	VCC	E3	INTA	F3	INTC
A4	SD5	B4	IRQ9	E4	INTB	F4	INTD
A5	SD4	B5	-5V	E5	VCC	F5	VCC
A6	SD3	B6	DRQ2	E6	NC	F6	NC
A7	SD2	B7	-12V	E7	VCC	F7	VCC
A8	SD1	B8	OWS	E8	PCIRST	F8	PCLK1
A9	SD0	B9	+12V	E9	GNT0	F9	Ground
A10	IORDY	B10	Ground	E10	REQ0	F10	GNT1
A11	AEN	B11	SMW	E11	Ground	F11	Ground
A12	SA19	B12	SMR	E12	PCLK0	F12	REQ1
A13	SA18	B13	IOW	E13	Ground	F13	AD31
A14	SA17	B14	IOR	E14	AD30	F14	AD29
A15	SA16	B15	DACK3	E15	PCLK2	F15	NC
A16	SA15	B16	DRQ3	E16	NC	F16	NC
A17	SA14	B17	DACK1	E17	GNT2	F17	REQ2
A18	SA13	B18	DRQ1	E18	AD28	F18	AD27
A19	SA12	B19	REF	E19	AD26	F19	AD25
A20	SA11	B20	SCLK	E20	AD24	F20	CBE3
A21	SA10	B21	IRQ7	E21	AD22	F21	AD23
A22	SA9	B22	IRQ6	E22	AD20	F22	AD21
A23	SA8	B23	IRQ5	E23	AD18	F23	AD19
A24	SA7	B24	IRQ4	E24	NC	F24	NC
A25	SA6	B25	IRQ3	E25	NC	F25	NC
A26	SA5	B26	DACK2	E26	NC	F26	NC
A27	SA4	B27	TC	E27	AD16	F27	AD17
A28	SA3	B28	ALE	E28	FRAME	F28	IRDY
A29	SA2	B29	VCC	E29	CBE2	F29	DEVSEL
A30	SA1	B30	OSC	E30	TRDY	F30	LOCK
A31	SA0	B31	Ground	E31	STOP	F31	PERR

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
C1	SBHE	D1	MEM16	G1	NC	H1	SERR
C2	LA23	D2	IO16	G2	NC	H2	AD15
C3	LA22	D3	IRQ10	G3	CBE1	H3	AD14
C4	LA21	D4	IRQ11	G4	PAR	H4	AD12
C5	LA20	D5	IRQ12	G5	Ground	H5	Ground
C6	LA19	D6	IRQ15	G6	NC	H6	NC
C7	LA18	D7	IRQ14	G7	Ground	H7	Ground
C8	LA17	D8	DACK0	G8	AD13	H8	AD10
C9	MEMR	D9	DRQ0	G9	AD11	H9	AD8
C10	MEMW	D10	DACK5	G10	AD9	H10	AD7
C11	SD8	D11	DRQ5	G11	CBE0	H11	AD5
C12	SD9	D12	DACK6	G12	AD6	H12	AD3
C13	SD10	D13	DRQ6	G13	AD4	H13	AD1
C14	SD11	D14	DACK7	G14	AD2	H14	AD0
C15	SD12	D15	DRQ7	G15	NC	H15	NC
C16	SD13	D16	VCC	G16	VCC	H16	VCC
C17	SD14	D17	MASTER	G17	VCC	H17	VCC
C18	SD15	D18	Ground	G18	Ground	H18	Ground
				G19	Ground	H19	Ground

Appendix F: Optional Cables

Part Number	Cable Description	AW-O672 Connector	Terminating Connector
46-I00IDE-00	Notebook Type IDE Cable	CN9	Dual IDE Cable, 45cm
46-ISUB01-00	USB Cable	CN10	USB Cable, 25cm, Block pin9
46-IAUDIO-00	Audio Cable	CN6	Female Phone Jack x 3
46-ICOM00-00	Serial Port Cable	CN17,20,21,22	2x5-pin D-Sub, 20cm
46-IDEFDC-01	Dual 3.5" Floppy + 3.5" IDE Cable	CN8: 34pin CN11: 40pin	34-pin Dual Floppy+40-pin 2.54mm Dual IDE, 45cm/55cm
46-IPRINT-00	Printer Cable	CN24, CN25	25-pin Female D-Sub, 27cm