ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Advantech PCI-6870F* at our website: ***Click HERE***

PCI-6870 series

Socket370 Pentium® III/celeron™ Half-sized CPU Card with High Speed PCI Bus, VGA,Fast Enthernet CompactFlash Type II card

User's Manual

Copyright

This document is copyrighted, 2002. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced,copied,translated or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, nor for any infringerments upon the rights of third parties that may result form such use.

Acknowledgements

Award is a trademark of award Software International,Inc.
IBM,PC/AT,PS/2and VGA are trademarks of International Business Machines Corporation.
Intel and Pentium are trademarks of Intel Corporation.

Microsoft Window® is a registered trademark of Microsoft Corp.

UMC is a trademark of United Microelectronics Corporation.
All other product names or trademarks are properties of their respective owners.

For more information on this and other Advantech products, please visit our websites at: **http://www.advantech.com**
http://www.advantech.com/epc

For technical support and service, please visit our support website at:
http://support.advantech.com

This manual is for the PCI-6870 series Rev.A2
Part No. 200K687002

4th Edition, Sep, 2004

Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 ea. PCI-6870 SBC
- 1 ea. Keyboard/Mouse cable(1700060202)
- 1 ea. COM port cable(1700100250)
- 1 ea. LPT cable(1700260250)
- 1 ea. power cable(1703080101)
- 1 ea. FDD cable(1703340400)
- 1 ea. IDE cable(1701400452)
- 1 ea. Startup Manual
- 1 ea. CD (driver & utility)
- 1 ea. Warranty card

Note 1: For detailed contents of the PCI-6870 series. please refer to the enclosed CD-ROM or disk (in PDF format)

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Optional Devices

- 1759209100 Fan/Heatsink module
- 9689000042 TrDA adapter
- 1703100260 USB cable adapter
- 1700160160 Audio cable
- CF-HDD-ADP CompactFlash 50-pin to IDE 44-pin adapter

FCC

This device complies with the requirements in part 15 of the FCC rules: Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation

This equipment has been tested and found to aomply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection agaonst harmful interference when the equipment is operated in a commerical enviroment. This equipment generates, uses, and can radiate radio frequency energy and, if not insalled and used in accordance with the instruction manual, may cause harmful interference to radio communications.Operation of this device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. The user is advised that any equipment changes or modifications not expressly approved by the party responsible for compliance would void the compliance to FCC regulations and therefore, the user's authority to operate the equipment.

Caution!



Achtung!

There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacture. Discard used batteries according to the manufacture's instruction.

Contents

Chapter 1 General Information 1

1.1 Introduction 2
1.2 Specifications 3
1.3 Features 5
1.4 Board layout: dimensions 6
Figure 1.1:PCI-6870 dimension (component side) 6
Figure 1.2:PCI-6870 dimension (solder side) 6

Chapter 2 Installation 7

2.1 Safety Precautions 8
2.2 Jumpers 9
Table 2.1:Jumpers 9
2.3 Connectors 10
Table 2.2:Connectors 10
2.3.1 Locating Connectors&Jumpers 11
Figure 2.1:Jumper & Connector location (component side) 11
2.4 Setting Jumpers 12
2.4.1 COM2 settings for RS-232/422/485 (J3) 13
Table 2.3:COM2 settings for RS-232/422/485 (J3) 13
2.4.2 CMOS clear function (J4) 13
Table 2.4:RTC power and CMOS clear (J4) 13
2.4.3 Watchdog timer config. (J5) 14
Table 2.5:Watchdog timer (J5) 14
2.4.4 Hardware Reset (J6) 14
2.4.5 HDD LED (J7) 14
2.4.6 Power LED (J8) 14
2.4.7 PS-ON(J9) 15
2.5 Installation Caution 15
2.5.1 IrDA Connector (CN1) 15
2.5.2 VGA Display Connector (CN2) 16
2.5.3 RS-232 connector (COM1-CN3) 16
2.5.4 Keyboard & PS/2 Mouse Connector (CN4) 16
2.5.5 Ethernet Configuration 16
2.5.6 ATX Feature Connector (CN6) 17
2.5.7 Parallel Port Connector (CN7) 17
2.5.8 RS-232/422/485 connector (CN8) (COM2:RS-232/422/485) 18
Table 2.6:PCI-6870 serial port default settings 18
2.5.9 USB Connector (CN9) 18
2.5.10 EBX Power Connector (CN11) 18
2.5.11 CPU Fan Power Supply Connector (CN12) 18
2.5.12 Primary EIDE Connector (CN15) 19
2.5.13 Serial IRQ (CN16) 19

2.5.14 Audio connector (CN17) 20
2.5.15 Secondary EIDE connector (CN18) 20
2.5.16 Floppy Drive Connector (CN20) 20
2.5.17 CompactFlash Disk (SK1) 20
2.6 Adding System Memory (DIMM) 21
2.6.1 Installing DIMMs 21
2.7 CPU installation and upgrading 22
Chapter 3 Award BIOS Setup.....23
3.1 Award BIOS Setup 24
3.1.1 Entering setup 24
Figure 3.1:Setup program initial screen.....24
3.1.2 Standard CMOS setup 25
Figure 3.2:CMOS setup screen.....25
3.1.3 Advanced BIOS Features..... 26
Figure 3.3:Advanced BIOS Features setup screen.....26
3.1.4 Advanced Chipset Features 30
Figure 3.4:Advanced Chipset Features screen.....30
3.1.5 Integrated Peripherals 31
Figure 3.5:Integrated Peripherals.....31
3.1.6 Power management setup 32
Figure 3.6:Power management setup screen.....32
3.1.7 PnP PCI configuration setup..... 33
Figure 3.7:PCI configuration screen.....33
3.1.9 Frequency/Voltage Control..... 35
Figure 3.9:Frequency/Voltage Control.....35
3.1.10 Load Optimized Defaults..... 36
3.1.11 Set Password 36
3.1.12 Save & Exit Setup..... 37
3.1.13 Exit Without Saving..... 37
Chapter 4 AGP SVGA Setup 39
4.1 Introduction 40
4.1.1 Chipset 40
4.1.2 Dual/simultaneous display..... 40
Figure 4.1:Selecting display settings.....41
4.2 Installation of SVGA driver 42
4.2.1 Installation for Windows 98 and 2000..... 43
4.2.2 Installation for Windows NT 49
4.3 Further information 53
Chapter 5 PCI Bus Ethernet Interface.....55
5.1 Introduction 56
5.2 Installation of the Ethernet Driver..... 56
5.2.1 Installation for Windows 98 and 2000..... 57
5.2.2 Installation for Windows NT 69

5.3 Further information 84
Chapter 6 Audio 85
6.1 Introduction 86
6.2 Installation of audio driver 86
6.2.1 Installation for Windows 98 and 2000..... 87
6.2.2 Installation for Windows NT 94
Appendix A Programming the Watchdog Timer 97
A.1 Programming the Watchdog Timer..... 98
Appendix B Pin Assignments 101
B.1 CompactFlash Card Connector (SK1)..... 102
Table B.1:CompactFlash card connector 102
B.2 IR Connector (CN1) 103
Table B.2:IR connector 103
B.3 VGA Display Connector (CN2)..... 104
Table B.3:VGA Display Connector (CN2 104
B.4 COM1 RS-232 Serial Port (CN3) 105
Table B.4:COM1 RS-232 serial port 105
B.5 Keyboard and Mouse Connnector (CN4)..... 106
Table B.5:Keyboard and mouse connector 106
B.6 ATX Power Connector (CN6)..... 107
Table B.6: ATX power connector 107
B.7 Printer Port Connector (CN7) 108
Table B.7:Parallel port connector 108
B.8 COM2 RS-422/485 Serial Port (CN8) 109
Table B.8:COM2 RS-232/422/485 serial port 109
B.9 USB1/USB2 Connector (CN9) 110
Table B.9:USB1/USB2 Connector 110
B.10 EBX Power Connector (CN11)..... 111
Table B.10:EBX Power Connector 111
B.11 CPU Fan Power Connector (CN12)..... 112
Table B.11:CPU Fan Power Connector 112
B.12 CD-ROM in connector (CN14)..... 112
Table B.12:CD-ROM in connector 112
B.13 Primary IDE (CN15) 113
Table B.13:Primary IDE connector (CN15) 113
B.14 Audio connector (CN17)..... 114
Table B.14:Audio connector(CN17) 114
B.15 IDE Hard Drive Connector (CN18) 115
Table B.15:IDE hard drive connector 115
B.16 Floppy Drive Connector (CN20)..... 116
Table B.16:Floppy Drive Connector 116
Appendix D System Assignments 117

D.1 System I/O Ports 118
Table D.1:System I/O ports 118
D.2 DMA Channel Assignments 119
Table D.2:DMA Channel Assignments 119
D.3 Interrupt Assignments 120
Table D.3:Interrupt assignments 120
D.4 1st MB Memory Map 120
Table D.4:1st MB Memory Map 120

CHAPTER 1

General Information

This chapter gives background information on the PCI-6870.

Sections include:

- Introduction
- Features
- Specifications
- Board layout and dimensions

Chapter 1 General Information

1.1 Introduction

The PCI-6870 all-in-one industrial grade PCI-bus CPU card uses Intel's highly acclaimed Celeron® processor or Pentium® III processor, together with the Intel 815E PCI chipset.
The CPU provides 128/256 KB (or 256/512 KB for Pentium III) on-CPU L2 cache, eliminating the need for external SRAM chips. It has two PCI EIDE interfaces for up to four devices and a floppy disk drive interface for up to two devices. Other features include two serial ports (16C550 UARTs with 16-byte FIFO or compatible), one enhanced parallel port (supports SPP/EPP/ECP) and two USB (Universal Serial Bus) ports. The PCI enhanced IDE controller supports Ultra DMA100, Ultra DMA33 and PIO Mode 4 operation. This provides data transfer rates of over 33 MB/sec. System BIOS supports boot-up from an IDE, CD-ROM, USB devices, and LS-120.

A backup of CMOS data is stored in the Flash memory, which protects data even after a battery failure. Also included is a 62-level Watchdog timer which resets the CPU or generates an interrupt if a program cannot be executed normally. This enables reliable operation in unattended environments.

The PCI-6870 offers several impressive industrial features such as VGA (AGP) controller, one DIMM slot for up to 512 MB RAM memory and a 10/100Base-T Ethernet controller. In addition, the PCI-6870 series supports a solid state disk (SSD) using a CompactFlash™. Type II disk that is not as vulnerable to the hazards of an industrial computing environment. These features make it an ideal choice for applications that require both high performance and full functionality.

1.2 Specifications

Standard SBC Functions

• **CPU:** Socket 370 for Intel® Pentium III processors up to 1.26 GHz, and Celeron™ processor up to 1.2 GHz (The original Intel heatsink for this CPU card is no longer available; if you need a heatsink, you can use the Advantech Fan/heatsink module (Advantech P/N:1759209100).

• **BIOS:** 2 Mbit Flash BIOS,
Supports Plug & Play, APM 1.2
Supports Ethernet Boot ROM
Supports boot from USB device
Supports boot from CD-ROM
Supports boot from LS-120 ZIP™ Drive
Optional Customer icon

• **Chipset:** Intel® 815E PCI set, FSB 133/100 MHz

• **2nd level cache:** 512/256 KB on Pentium III or 256/128 KB on Celeron™ Processor

• **System memory:** One 168-pin DIMM socket, supports 8 MB to 512 MB, accepts 8/16/32/64/128/256/512 MB Synchronous DRAM

• **PCI IDE interface:** Two Enhanced IDE interfaces, support 4 IDE devices. Channel One supports up to UltraDMA 100. Channel Two supports up to UltraDMA 33.

• **Floppy disk drive interface:** Supports up to two FDDs (360 KB/ 720 KB/1.2 MB/1.44 MB/2.88 MB) with Hirose 20 pin FDD connector

• **Parallel port:** One parallel port, supports EPP/ECP

• **IR port:** One 115 kbps IrDA compliant serial infrared

• **Serial ports:** 2 serial ports
COM1: RS-232, COM2: RS-232/422/485

• **Watchdog timer:** 62 levels timer interval, setup by software, jumperless selection, generates system reset.

VGA function

AGP SVGA Intergace

• **Chipset:** Intel 815E embedded

• **Display memory:** Shares system memory up to 4MB

• **Display type:** CRT

• **Interface:** Direct AGP, Accelerator Graphics Ports 1.0 compliant

• **Display mode:** CRT display supports up to 800 x 600 @ 24 bpp, 1024 x 768 @ 24 bpp

Ethernet controller functions

• Intel 815E Chipset MAC embedded + 82562ET PHY
PCI Ethernet controller, IEEE 802.3 protocol compatible
Supports 10/100 Mbps Base-TMechanical and Environmental

Solid state disk

• Supports CompactFlash™ Type I/II disks

Mechanical and environmental specifications

• Standard Mode Power Consumption
6.68 A @ 5 V with Pentium III 850 and 256MB DIMM
• **Operating temperature**:
0 ~ 60°C (32 ~ 140°F)
• **Size:** 185 mm x 122 mm
• **Weight:** 0.27 kg

1.3 Features

- Supports Socket 370 for Intel® Pentium® III/Celeron™ processor (The Intel original heatsink is unavailable for this CPU card. See section 1.2 Specifications for alternative.)
- Direct AGP supports 24 bit CRT
- USB interface compliant with USB rev. 1.1
- System overheat temperature control
- 62-levels Watchdog timer with system reset or IRQ11.
- Supports both wake on LAN and wake on modem.
- Supports PCI interface compliant with PCI rev. 2.1.
- Supports four PCI Bus masters.

1.4 Board layout: dimensions

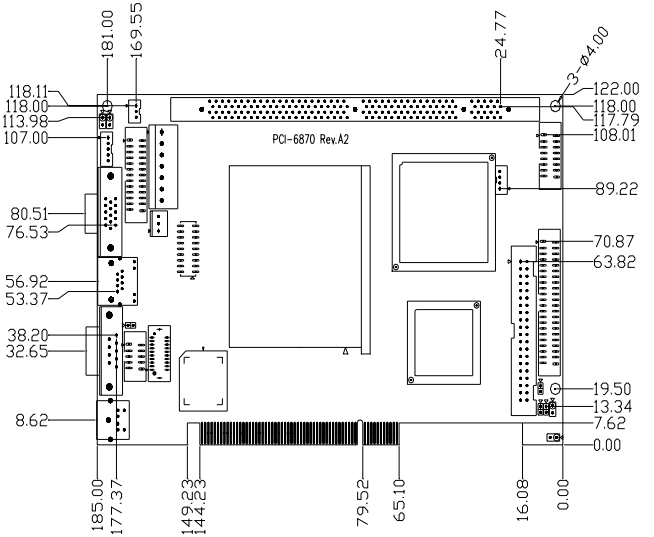


Figure 1.1: PCI-6870 dimension (component side)

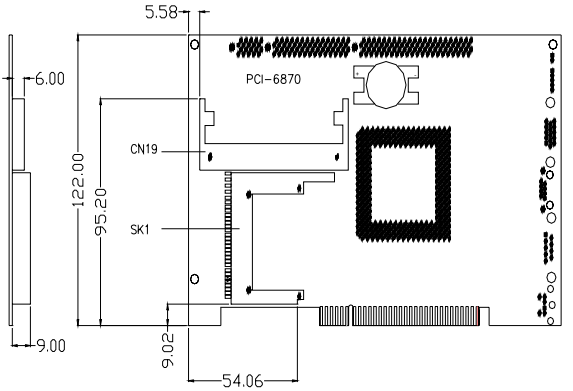


Figure 1.2: PCI-6870 dimension (solder side)

CHAPTER 2

Installation

This chapter explains the setup procedures of PCI-6870 hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all safety precautions before you begin the installation procedure.

Chapter 2 Installation

2.1 Safety Precautions

Follow these simple precautions to protect yourself from harm and your PC from damage.

1. To avoid electric shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
2. Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.
3. Always ground yourself to remove any static charge before you touch your CPU card. Be particularly careful not to touch the chip connectors. Modern integrated electronic devices, especially CPUs and memory chips, are extremely sensitive to static electric discharges and fields. Keep the card in its antistatic packaging when it is not installed in the PC, and place it on a static dissipative mat when you are working with it. Wear a grounding wrist strap for continuous protection.

2.2 Jumpers

The PCI-6870 has a number of jumpers that allow you to configure your system to suit your application. The table below lists the function of the various jumpers.

Table 2.1: Jumpers

Label	Function
J2	reserve (FWH)
J3	RS-232/422/485 select
J4	clear CMOS
J5	Watchdog timer
J6	reset
J7	HDD LED
J8	Power LED
J9	PS-ON

2.3 Connectors

On-board connectors link the PCI-6870 to external devices such as hard disk drives, a keyboard, or floppy drives. The table below lists the function of each of the board's connectors

.

Table 2.2: Connectors

Label	Function
SK1	CompactFlash Type II
CN1	IrDA
CN2	VGA
CN3	COM 1
CN4	PS/2 Keyboard
CN5	RJ45 with LED
CN6	ATX con (WHL3V-2M)
CN7	Printer port connector
CN8	COM 2
CN9	USB x 2
CN11	EBX power
CN12	CPU fan
CN14	CDROM-IN
CN15	Primary IDE (ATA100)
CN16	Serial IRQ
CN17	Audio connector
CN18	Secondary IDE (ATA33)
CN19	Video Expansion connector
CN20	FDD connector

2.3.1 Locating Connectors&Jumpers

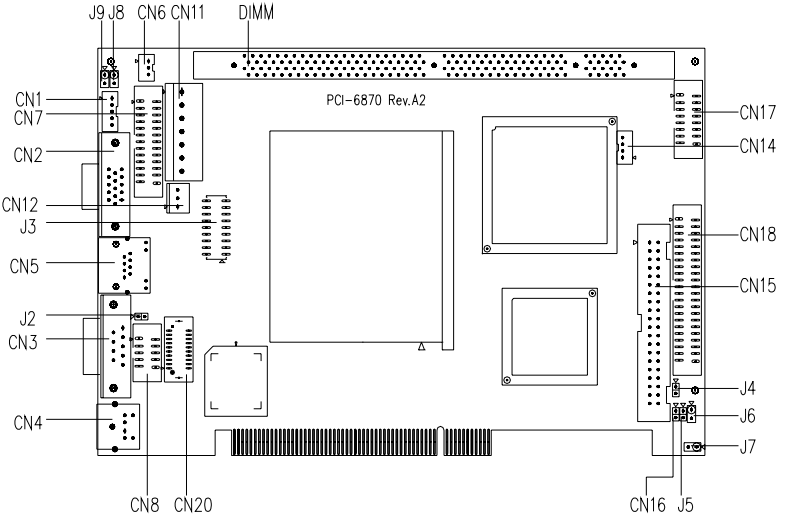
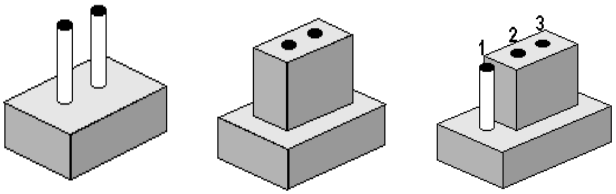


Figure 2.1: Jumper & Connector location (component side)

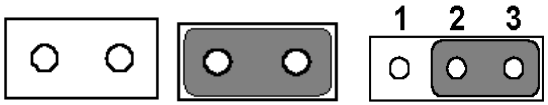
2.4 Setting Jumpers

You may configure your card to match the needs of your application by setting jumpers. A jumper is a metal bridge used to close an electric circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper, you connect the pins with the clip. To "open" a jumper, you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2, or 2 and 3.



open closed closed 2-3

The jumper settings are schematically depicted in this manual as follows:.



open closed closed 2-3

A pair of needle-nose pliers may be helpful when working with jumpers.

Setting switches is slightly different but more simple.

Simply slide the desired switch to the on or off position. In the example below, the 6 element switch would be. 1:off, 2:on, 3:off,4:off, 5:off, 6:off.



If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative .

2.4.1 COM2 settings for RS-232/422/485 (J3)

Table 2.3: COM2 settings for RS-232/422/485 (J3)

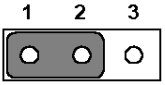
Jumper positions					
RS-232*	(5-6)*	(7-9)*	(8-10)*	(13-15)*	(14-16)*
RS-422	(3-4)	(9-11)	(10-12)	(15-17)	(16-18)
RS-485	(1-2)	(9-11)	(10-12)	(10-12)	(10-12)

* default setting

2.4.2 CMOS clear function (J4)

Warning: *To avoid damaging the computer, always turn off the power supply before setting "Clear CMOS". Set the jumper back to normal before turning on the power supply.*

Table 2.4: RTC power and CMOS clear (J4)

***Normal**	**CMOS data clear**
	

* default setting

2.4.3 Watchdog timer config. (J5)

An on-board watchdog timer reduces the chance of disruptions which EMP (electro-magnetic pulse) interference can cause. This is an invaluable protective device for standalone or unmanned applications. Setup involves one jumper and running the control software. (Refer to Appendix A.)

When the watchdog timer is enabled and the CPU shuts down, the watchdog timer will automatically reset the system.

Table 2.5: Watchdog timer (J5)

Pin 1-2	Function
closed	enable*
open	disable



* default setting

2.4.4 Hardware Reset (J6)

If you install a reset switch, it should be an open single pole switch. Momentarily pressing the switch will activate a reset. The switch should be rated for 10 mA, 5 V.

2.4.5 HDD LED (J7)

Basic HDD activity indicator. Connect an LED to J7, and when there is disk activity, the LED lights up.

2.4.6 Power LED (J8)

J8 is for your basic power on indicator. Connect an LED to J8, and when system power is on, the LED will be on.

2.4.7 PS-ON(J9)

Short J9 to turn on the power

2.5 Installation Caution

The following sections tell how to make each connection. In most cases, you will simply need to connect a standard cable. All of the connector pin assignments are shown in Appendix B.

Warning! *Always completely disconnect the power cord from your chassis whenever you are working on it. Do not make connections while the power is on. Sensitive electronic components can be damaged by a sudden rush of power. Only experienced electronics personnel should open the PC chassis.*



Caution! *Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis.*



2.5.1 IrDA Connector (CN1)

This connector supports the optional wireless infrared transmitting and receiving module. This module mounts on the system case. You must configure the setting through BIOS setup.

2.5.2 VGA Display Connector (CN2)

The PCI-6870 provides a VGA controller for a high resolution VGA interface. The PCI-6870 CN2 is a DB-15 connector for VGA monitor input. Pin assignments for the CRT display are detailed in Appendix B.

2.5.3 RS-232 connector (COM1-CN3)

Different devices implement the RS-232 standard in different ways. If you are having problems with a serial device, be sure to check the pin assignments for the connector.

2.5.4 Keyboard & PS/2 Mouse Connector (CN4)

The PCI-6870 board provides a keyboard connector. A 6-pin mini-DIN connector (CN4) on the card mounting bracket supports single-board computer applications. The card comes with an adapter to convert from the 6-pin mini-DIN connector to a standard DIN connector and to a PS/2 mouse connector.

2.5.5 Ethernet Configuration

The PCI-6870 is equipped with a high performance 32-bit PCI-bus Fast Ethernet interface which is fully compliant with IEEE 802.3u 10/100Base-T specifications. It is supported by all major network operating systems.

The medium type can be configured via the RSET8139.EXE program included on the utility disk. (See Chapter 5 for detailed information.)

RJ-45 connector with LED (CN5)

10/100Base-T connects to the PCI-6870 via an adapter cable to the RJ-45 standard jack.

Network boot

The network boot feature is built into the BIOS. It can be enabled or disabled in the chipset setup of the CMOS configuration. Refer to "BIOS Setting" in Chapter 3 for more information.

2.5.6 ATX Feature Connector (CN6)

When the PCI-6870 is used as a stand alone card, both the 7-pin main power connector (CN11) and the ATX feature connector (CN6) must be connected to the power supply. If the PCI-6870 is used with a passive backplane, the main power connector (CN11) should not be connected as the card will be powered from the backplane.

The ATX adapter cable (optional) is used to connect the PCI-6870 to the ATX power supply. The ATX adapter cable has different connectors at both ends. On one end is the ATX 20-pin (female type) which connects to the (male) ATX power supply source. The other end has a 3-pin connector (female type) which connects to the ATX feature connector (CN6) on the board itself. This end also has the 7-pin main power connector (CN11).

2.5.7 Parallel Port Connector (CN7)

The parallel port is normally used to connect the CPU card to a printer. The PCI-6870 includes an on-board parallel port, accessed through a 26-pin flat-cable connector, CN7. The card comes with an adapter cable which lets 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, mounted on a retaining bracket. The bracket installs at the end of an empty slot in your chassis, giving you access to the connector.

The parallel port is designated as LPT1, and can be disabled or changed to LPT2 or LPT3 in the system BIOS setup.

To install the bracket, find an empty slot in your chassis. Unscrew the plate that covers the end of the slot. Screw in the bracket in place of the plate. Next, attach the flat-cable connector to CN7 on the CPU card. Wire 1 of the cable is red or blue, and the other wires are gray. Make sure that wire 1 corresponds to pin 1 of CN7. Pin 1 is on the right side of CN7.

2.5.8 RS-232/422/485 connector (CN8) (COM2:RS-232/422/485)

COM2 is an RS-232/422/485 serial port. The specific port type is determined by jumper settings (J3), as detailed in Section 2.4.1. The IRQ and address range for both ports are fixed. However, if you wish to disable the port or change these parameters later, you can do this in the system BIOS setup. The table below shows the settings for the PCI-6870 board's ports:

Table 2.6: PCI-6870 serial port default settings

Port	Address	Interrupt	Default
COM1	3F8, 3E8	IRQ4	3F8
COM2	2F8, 2E8	IRQ3	2F8

2.5.9 USB Connector (CN9)

The PCI-6870 board provides two USB (Universal Serial Bus) interfaces, which give complete plug and play and also hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification rev. 1.0 and are fuse protected.

The USB interfaces are accessed through a 10-pin flat-cable connector, CN9. The adapter cable has a 10-pin connector on one end and a USB connector on the bracket.
The USB interfaces can be disabled in the system BIOS setup.

2.5.10 EBX Power Connector (CN11)

If you prefer not to acquire power through PCI-6870's backplane via the gold H-connectors, CN11 also provides power input connectors for +5 V and +12 V. (see Appendix B)

2.5.11 CPU Fan Power Supply Connector (CN12)

This provides power supply to the optional CPU cooling fan. This connector is only available when +12 V power is supplied to the board.

Warning! *Before making the connection, make sure the voltage is absolutely correct and matched with the correct connector.*

2.5.12 Primary EIDE Connector (CN15)

You can attach four IDE (Integrated Device Electronics) drives to the PCI-6870's internal controller. The PCI-6870 CPU card has an EIDE connector, CN15.

Wire number 1 on the cable is red or blue, and the other wires are gray. Connect one end to connector CN15 on the CPU card. Make sure that the red (or blue) wire corresponds to pin 1 on the connector (on the right side). See Chapter 1 for help in finding the connector.

Unlike floppy drives, IDE hard drives can connect in either position on the cable. If you install two drives, you will need to set one as the master and one as the slave. You do this by setting the jumpers on the drives. If you use just one drive, you should set it as the master. See the documentation that came with your drive for more information.

Connect the first hard drive to the other end of the cable. Wire 1 on the cable should also connect to pin 1 on the hard drive connector, which is labeled on the drive circuit board. Check the documentation that came with the drive for more information.

Connect the second drive, as described above, on CN15.

2.5.13 Serial IRQ (CN16)

This connector has two pins. Pin1 is CON_SERIRQ, and Pin2 is GND.

2.5.14 Audio connector (CN17)

The PCI-6870 CPU card supports AC97 with the help of an optional cable connected to CN17. The optional audio cable is P/N 1700160160.

2.5.15 Secondary EIDE connector (CN18)

The secondary channel supports UDMA/33 only.

Connecting the hard drive

Connecting drives is done in a daisy-chain fashion. It requires one of two cables (not included in this package), depending on the drive size. 1.8" and 2.5" drives need a 1 x 44-pin to 2 x 44-pin flatcable connector. 3.5" drives use a 1 x 44-pin to 2 x 40-pin connector.

Wire number 1 on the cable is red or blue, and the other wires are gray.

Connect one end of the cable to CN18. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).

Plug the other end of the cable into the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive's documentation for the location of the connector.)

If desired, connect a second drive as described above.

Unlike floppy drives, IDE hard drives can connect to either end of the cable. If you install two drives, you will need to set one as the master and one as the slave by using jumpers on the drives. If you install only one drive, set it as the master.

2.5.16 Floppy Drive Connector (CN20)

You can attach up to two floppy disk drives to the PCI-6870's onboard controller. You can use any combination of 5.25" (360 KB/1.2 MB) and/or 3.5" (720 KB/1.44/2.88 MB) drives.

The card uses a Hirose 20 connector (DF13-20DP-1.25V).

2.5.17 CompactFlash Disk (SK1)

The PCI-6870 is equipped with a CompactFlash^{TM} disk socket on the solder side that supports the IDE interface for CompactFlash cards. The on-board CompactFlash socket is designed to prevent incorrect installation. Be sure that the system power is off when

installing and removing CompactFlash™ cards.
The CompactFlash card is defaulted as the Secondary channel slave drive on your PC system.

2.6 Adding System Memory (DIMM)

You can install anywhere from 8 to 512 MB of SDRAM into your PCI-6870 series card. The card is provided with a 168-pin DIMM socket, which accepts 32, 64, 128, 256, or 512 MB 3.3 V power level DIMMs.

Note: The PCI-6870 card only supports SDRAM DIMM modules. EDO DIMM is not supported.

2.6.1 Installing DIMMs

Note: The modules can only fit into the socket one way. Their gold pins must point down into the DIMM socket.

The procedure for installing DIMMs appears below. Please follow these steps carefully.

1. Ensure that all power supplies to the system are switched Off.
2. Install the DIMM card. Install the DIMM so that its gold pins point down into the DIMM socket.
3. Slip the DIMM into the socket at a 45 degree angle and carefully fit the bottom of the card against the connectors.
4. Gently push the DIMM into a perpendicular position until the clips on the ends of the DIMM sockets snap into place.
5. Check to ensure that the DIMM is correctly seated and all connector contacts touch. The DIMM should not move around in its socket.

2.7 CPU installation and upgrading

1. If you are upgrading the CPU, remove the old CPU from the socket. If it is difficult to remove, you may find chip lubricant (designed for pin-grid-array devices, PGAs) and a chip puller helpful. Both are available at electronics hobby supply stores.
2. Plug the new CPU into the empty socket. Follow the instructions that came with the CPU or math coprocessor. If you have no instructions, do the following: Lubricate the CPU pins with lubricant made for PGA devices. This will make the new CPU slide in much more easily, and reduce the chance of damaging it. Next, carefully align the CPU so that it is parallel to the socket and the notch on the corner of the CPU corresponds with the notch on the inside of the socket. Gently slide the CPU in. There will probably be a gap between the CPU and the connector when it is fully seated - do not push too hard!

CHAPTER 3

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

Chapter 3 Award BIOS Setup

3.1 Award BIOS Setup

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

3.1.1 Entering setup

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

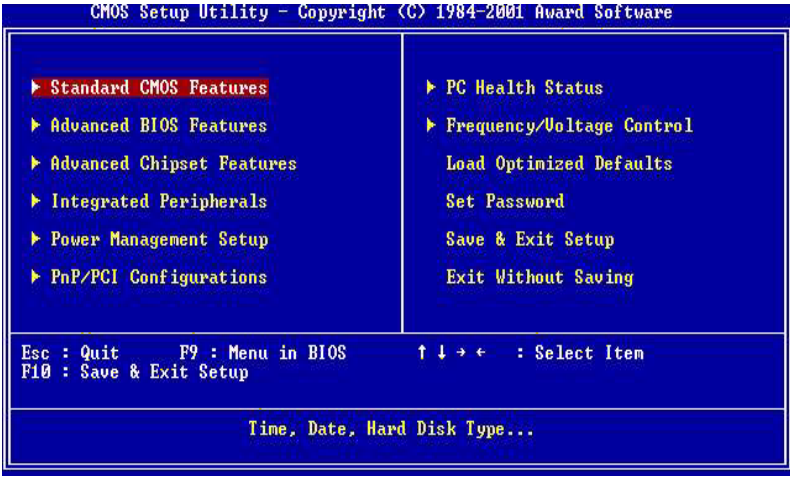


Figure 3.1: Setup program initial screen

3.1.2 Standard CMOS setup

Choose the “STANDARD CMOS SETUP” option from the INITIAL SETUP SCREEN Menu, and the screen below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive, display, and memory.

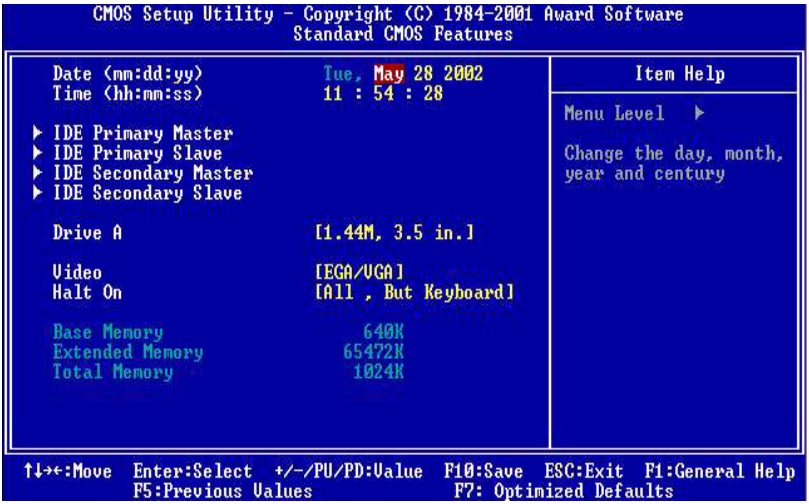


Figure 3.2: CMOS setup screen

3.1.3 Advanced BIOS Features

The ADVANCED BIOS FEATURES is a submenu from the initial BIOS setup screen. It allows the user to configure the PCI-6870 according to his particular requirements.

Below are some major items that are provided in the ADVANCED BIOS FEATURES SETUP screen:

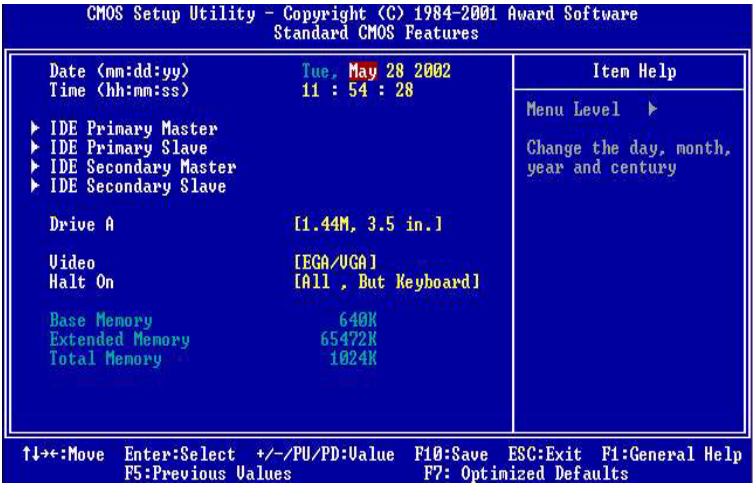


Figure 3.3: Advanced BIOS Features setup screen

Virus Warning

During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system. In this case, a warning message will be displayed. You can run the anti-virus program to locate the problem.

If Virus Warning is Disabled, no warning message will appear if

anything attempts to access the boot sector or hard disk partition.

CPU Internal Cache/External Cache

Depending on the CPU/chipset design, these options can speed up memory access when enabled.

Quick Power On Self Test

This option speeds up the Power-On Self Test (POST) conducted as soon as the computer is turned on. When enabled, BIOS shortens or skips some of the items during the test. When disabled, normal POST procedures assumes.

Boot Sequence(First/Second/Third/Other Boot Device)

This function determines the sequence in which the computer will search the drives for the disk operating system. The selections in First/ Second/Third boot device are Floppy, LS120, HDD-0/HDD-1/HDD-2/ HDD-3, SCSI, CDROM, LAN, ZIP100,USB-FDD,USB-ZIP,USB-CDROM,USB-HDD and Disabled. The selections in other boot device are Enable and Disable.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360 KB type is 40 tracks while 720 KB, 1.2 MB, and 1.44 MB are all 80 tracks.

Enabled	BIOS searches the floppy drive to determine if it is 40 or 80 tracks. Note that BIOS cannot differentiate 720 KB, 1.2 MB, and 1.44 MB type drives as they are all 80 tracks.
Disabled	BIOS will not search for the floppy drive type by track number. Note that there will not be any warning message if the drive installed is 360 KB.

Boot Up NumLock Status

The default is “On”.

On	Keypad boots up to number keys.
Off	Keypad boots up to arrow keys.

Gate A20 option

Normal	The A20 signal is controlled by the keyboard controller or chipset hardware
Fast	Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method.

Typematic Rate Setting

The typematic rate determines the characters per second accepted by the computer. Typematic Rate setting enables or disables the typematic rate.

Typematic Rate (Char/Sec)

BIOS accepts the following input values (character/second) for Typematic Rate: 6, 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (msec)

When holding down a key, the Typematic Delay is the time interval between the appearance of the first and second characters. The input values (msec) for this category are: 250, 500, 750, 1000.

Security Option

This setting determines whether the system will boot if the password is denied, while limiting access to Setup.

System	The system will not boot, and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note: To disable security, select PASSWORD SETTING in the main menu. At this point, you will be asked to enter a password. Simply hit the <ENTER> key to disable security. When security is disabled, the system will boot, and you can enter Setup freely.

OS Select for DRAM>64 MB

This setting is under OS/2 system.

Video BIOS Shadow

This determines whether video BIOS will be copied to RAM, which is optional according to the chipset design. When enabled, Video Shadow increases the video speed.

C8000 - CFFFF Shadow/DC000-DFFFF Shadow

These determine whether optional ROM will be copied to RAM in blocks of 16 KB.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

3.1.4 Advanced Chipset Features

By choosing the "ADVANCED CHIPSET FEATURES" option from the INITIAL SETUP SCREEN Menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCI-6870.

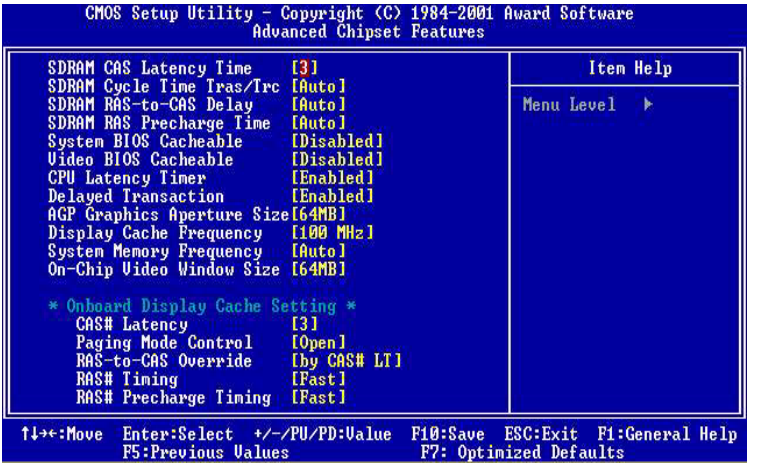


Figure 3.4: Advanced Chipset Features screen

3.1.5 Integrated Peripherals

Choosing the Integrated Peripherals option from the Initial Setup Screen menu should produce the screen below. Here we see the manufacturer's default values for the PCI-6870 Series.

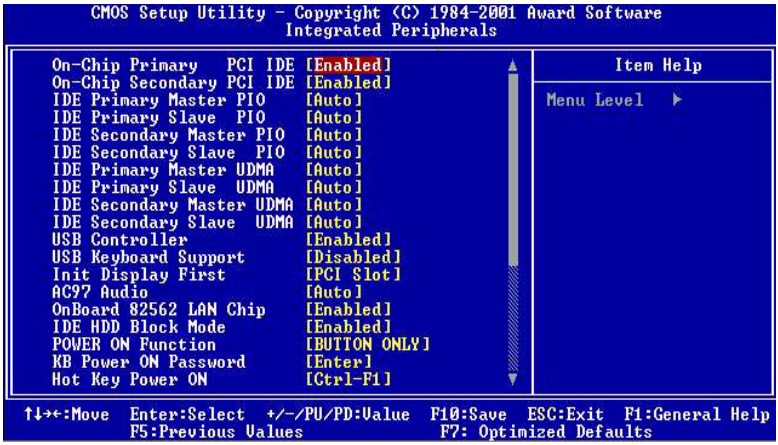


Figure 3.5: Integrated Peripherals

3.1.6 Power management setup

The power management setup controls the CPU cards' "green" features. The following screen shows the manufacturer's defaults.

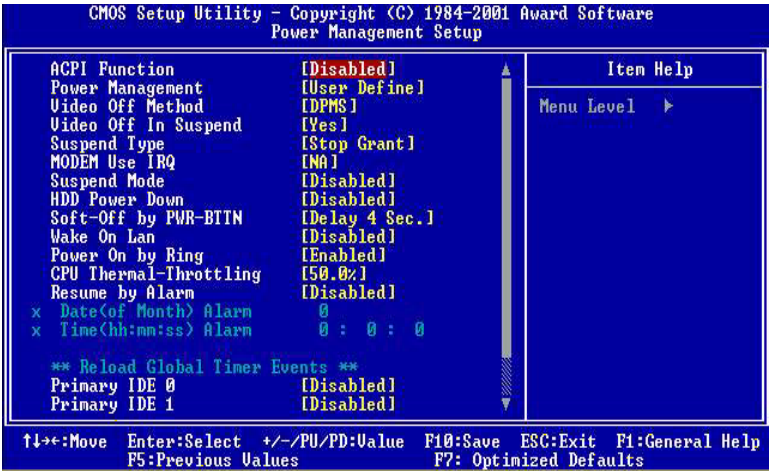


Figure 3.6: Power management setup screen

Power Management

This option allows you to determine if the values in power management are disabled, user-defined, or predefined.

HDD Power Management

You can choose to turn the HDD off after one of the time intervals listed, or when the system is in Suspend mode. If in a power saving mode, any access to the HDD will wake it up.

Note: *The HDD will not power down if the Power Management option is disabled.*

IRQ Activity

IRQ can be set independently. Activity on any enabled IRQ will wake up the system.

3.1.7 PnP PCI configuration setup

By choosing the PnP/PCI Configurations option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCI-6870 Series.

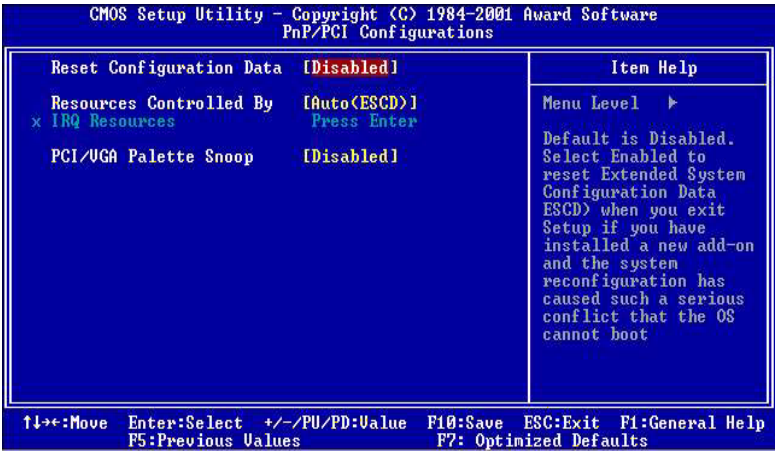


Figure 3.7: PCI configuration screen

3.1.8 PC Health Status

The PC Health Status screen looks like this. It displays information such as CPU and motherboard temperatures, fan speeds, and core voltage.

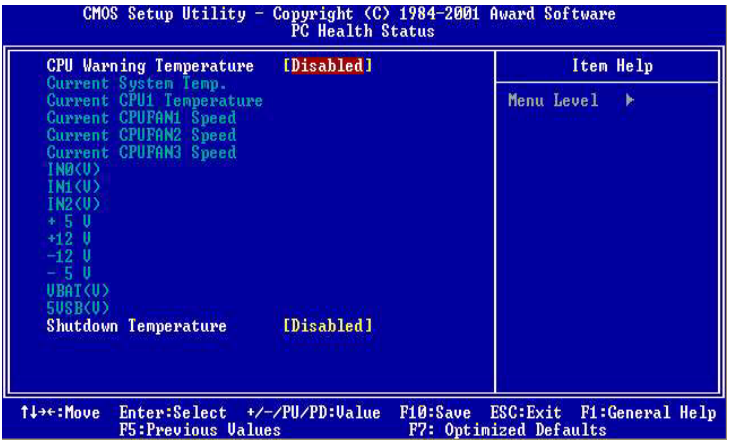


Figure 3.8: PC Health Status

3.1.9 Frequency/Voltage Control

By choosing the Frequency/Voltage Control option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCI-6870.

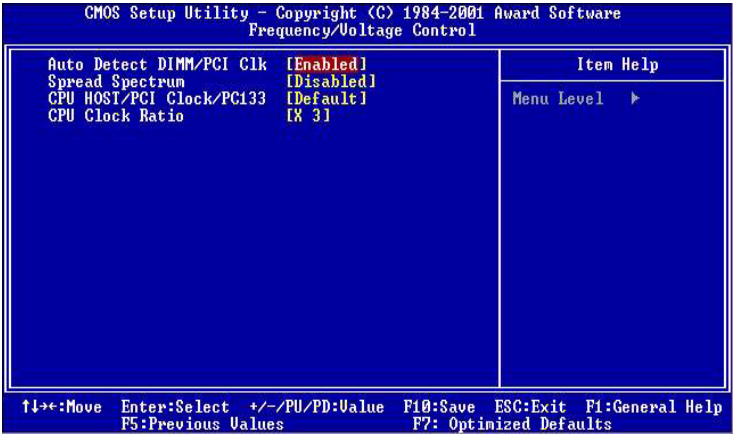


Figure 3.9: Frequency/Voltage Control

Caution *Incorrect settings in Frequency/Voltage Control may damage the system CPU, video adapter, or other hardware.*

3.1.10 Load Optimized Defaults

Load Optimized Defaults loads the default system values directly from ROM. If the stored record created by the Setup program should ever become corrupted (and therefore unusable), these defaults will load automatically when you turn the PCI-6870 Series system on.

3.1.11 Set Password

To establish, change, or disable the password, choose the “SET PASSWORD” option form the Setup main menu and press [Enter]. The password can be at most 8 characters long.

Remember, to enable this feature, you must first select the Security Option in the Advanced BIOS Features Setup to be either “Setup” or “System”.

To Establish Password

Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.

When you see “Enter Password,” enter the desired password and press <Enter>.

At the “Confirm Password” prompt, retype the desired password, then press <Enter>.
Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Change Password

Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.

When you see “Enter Password,” enter the existing password and press <Enter>.

You will see “Confirm Password.” Type it again, and press <Enter>. Select Set Password again, and at the “Enter Password” prompt, enter the new password and press <Enter>.

At the “Confirm Password” prompt, retype the new password, and press <Enter>.
Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Disable Password
Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.

When you see “Enter Password,” enter the existing password and press <Enter>.

You will see “Confirm Password.” Type it again, and press <Enter>. Select Set Password again, and at the “Enter Password” prompt, don’t enter anything; just press <Enter>.

At the “Confirm Password” prompt, again don’t type in anything; just press <Enter>.
Select Save & Exit Setup, type <Y>, then <Enter>.

3.1.12 Save & Exit Setup
If you select this, type <Y>, and press the [Enter] key, the values entered in the setup utilities will be recorded in the CMOS memory of the chipset. The microprocessor will check this every time you turn your system on and compare this to what it finds as it checks the system. This record is required for the system to operate.

3.1.13 Exit Without Saving
Selecting this option and pressing the [Enter] key lets you exit the Setup program without recording any new values or changing old ones.

CHAPTER 4

AGP SVGA Setup

- Introduction
- Installation of SVGA drivers for
  - Windows 98 and 2000
  - Windows NT

Chapter 4 AGP SVGA Setup

4.1 Introduction

The PCI-6870 has an on-board AGP flat panel/VGA interface. The specifications and features are described as follows:

4.1.1 Chipset

The PCI-6870 makes use of the display properties of the Intel 815E AGP/SVGA controller. It supports interlaced and non-interlaced analog monitors (color and monochrome VGA) in high-resolution modes while maintaining complete IBM VGA compatibility. Digital monitors (i.e. MDA, CGA, and EGA) are NOT supported. Multiple frequency (multisync) monitors are handled as if they were analog monitors.

4.1.2 Dual/simultaneous display

he PCI-6870 uses the Intel 815e controller that is capable of providing multiple views and simultaneous display with mixed video and graphics on a flat panel and CRT.

To set up dual display under Windows 98, follow these steps:

1. Select “Windows98”, “Control panel”, “Display”, “Settings”.
2. Select “1” for current display, or “2” for second display.
3. Enable “Extend my Windows desktop onto this monitor”.
4. Click “OK”.

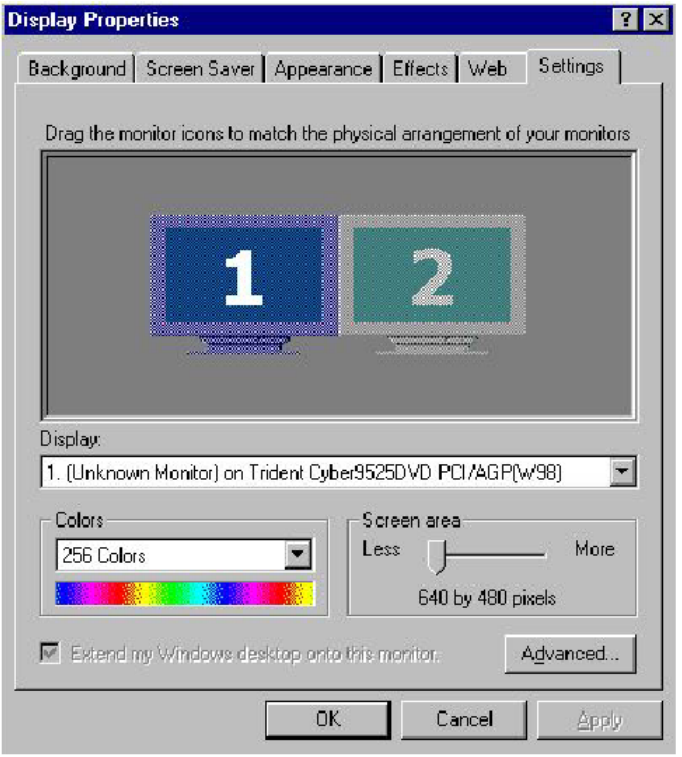


Figure 4.1: Selecting display settings

4.2 Installation of SVGA driver

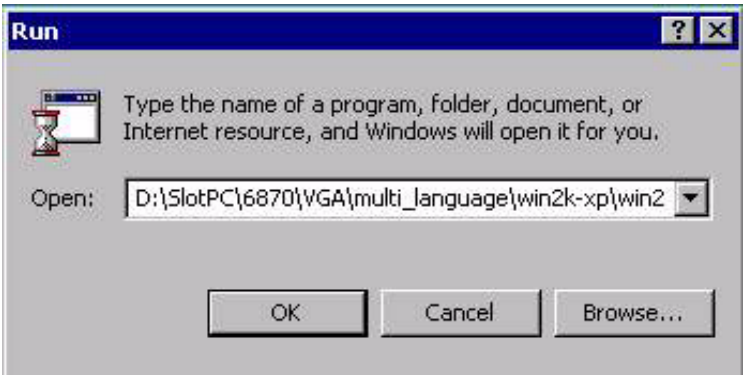
Complete the following steps to install the SVGA driver. Follow the procedures that apply to the operating system that you are using within your PCI-6870.

Important: *The following windows illustrations are examples only. You must follow the instructions which appear on your screen.*

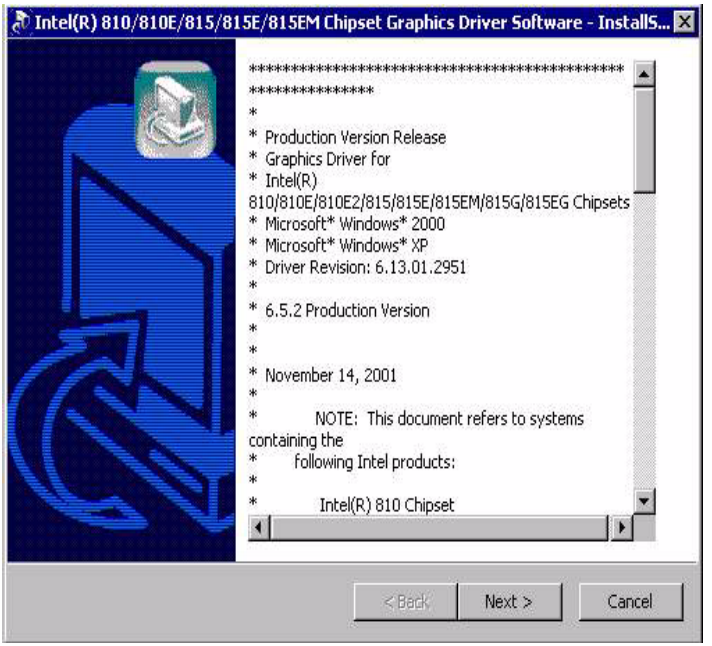
4.2.1 Installation for Windows 98 and 2000

Insert the disk, or otherwise make the files available to the system, and run setup. Then proceed as directed by the prompts.

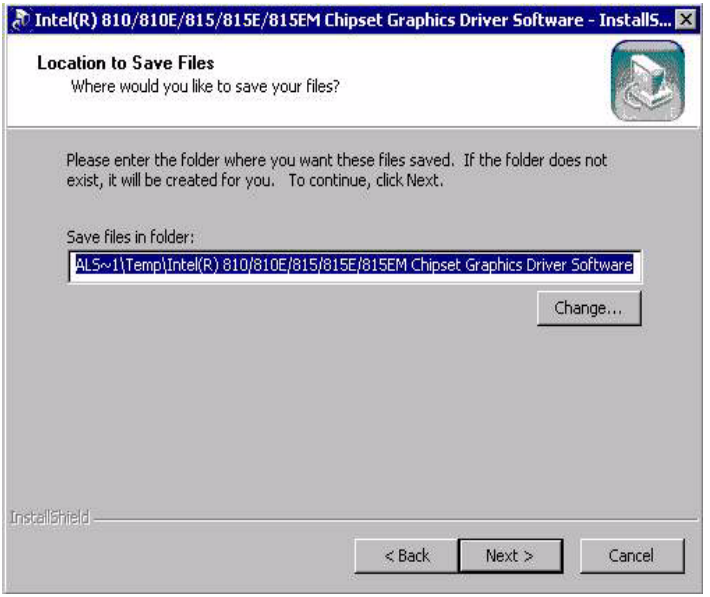
Step 1 When the Run window appears ,type:
"D:\SlotPC\6870\VGA\multi_language\win2k-xp\win2



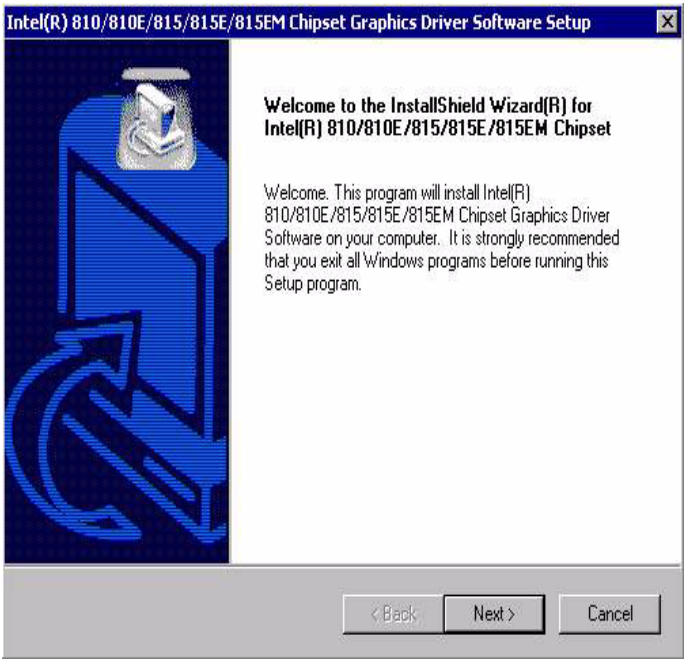
Step 2 Press “Next” button



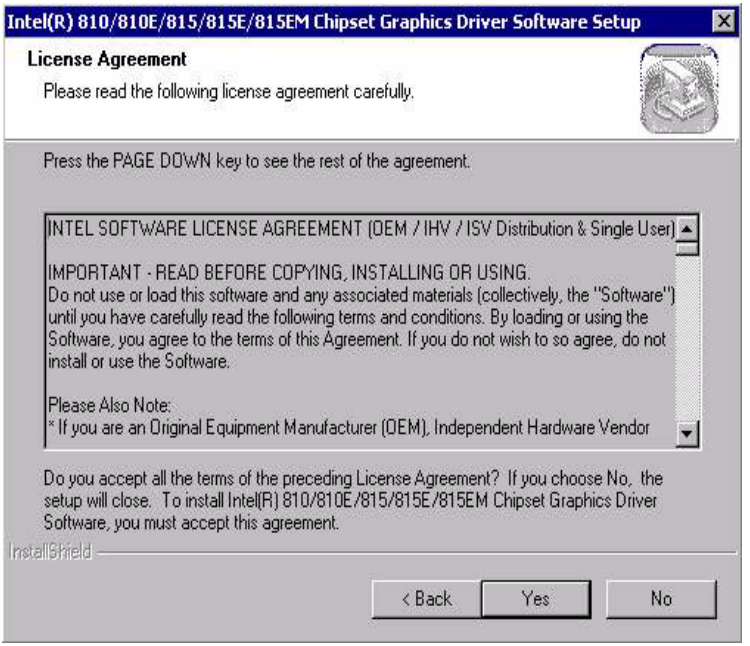
Step 3 Enter the folder where you want to save these files, Then click "Next" button



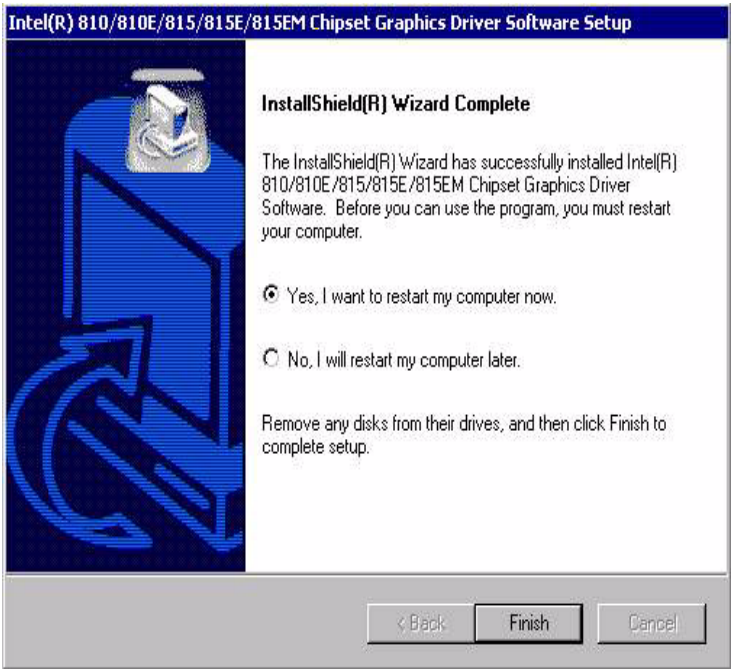
Step 4 Press “Next” button



Step 5 Press “Yes” button



Step 6 Press “Finish” to reboot



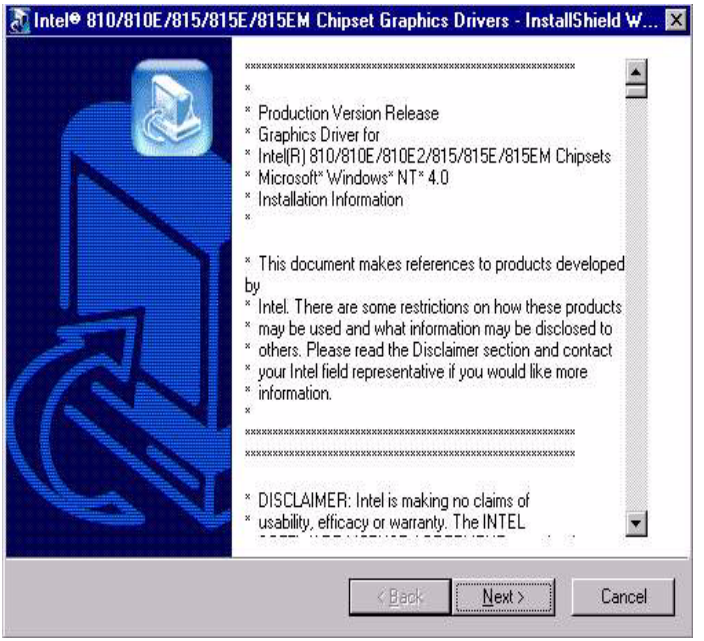
4.2.2 Installation for Windows NT

Insert the disk, or otherwise make the files available to the system, and run setup. Then proceed as directed by the prompts.

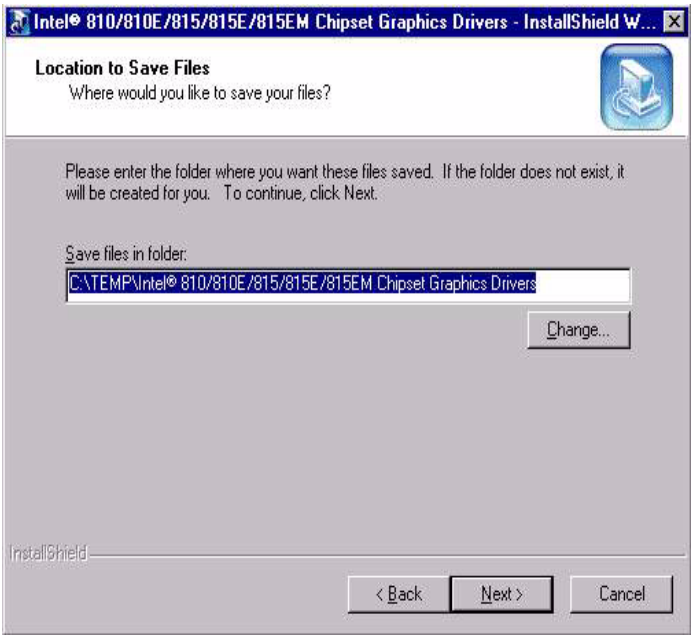
Step 1 When the Run window appears, Type:
"C:\TEMP\VGA\multi_language\winnt4m63"



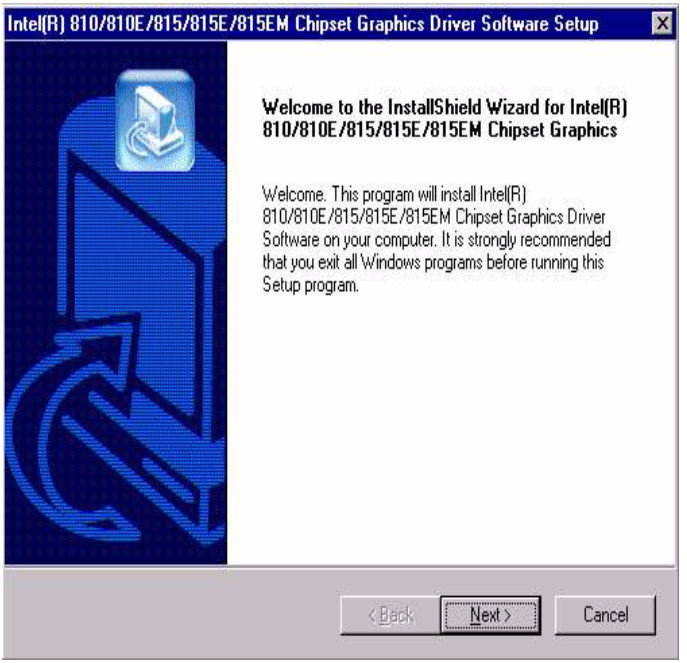
Step 2 Press “Next” button



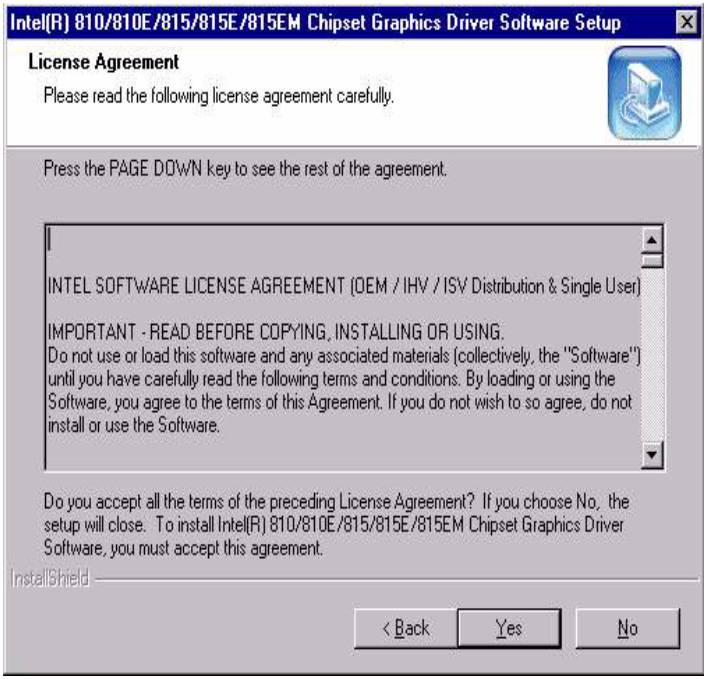
Step 3 Enter the folder where you want to save these files, Then click "Next" button



Step 4 Press “Next” button



Step 5 Press “Yes” to accept all the terms of the preceding license agreement



4.3 Further information

For further information about the AGP/SVGA installation in your PCI-6870, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

Trident website:**www.trid.com**
Advantech websites: **www.advantech.com**
www.advantech.com.tw

CHAPTER 5

PCI Bus Ethernet Interface

This chapter provides information on

Ethernet configuration

- Introduction
- Installation of Ethernet drivers for Windows 98/2000/NT
- Further information

Chapter 5 PCI Bus Ethernet Interface

5.1 Introduction

The PCI-6870 is equipped with a high performance Intel 82562ET 32-bit Ethernet chipset. This is a highly integrated Platform LAN Connect (ICH2/3/4) device combining 10BASE-T and 100BASE-TX physical layer capabilities. It is fully compliant with the IEEE 802.3/ 802.3u standard. The IEEE 802.3u standard for 100BASE-TX defines networking over two pairs of Category 5 unshielded twisted pair cable. The 82562ET complies with the IEEE 802.3u Auto-Negotiation (and 100BASE-TX) standard and the IEEE 802.3x Full-Duplex Flow Control standard.

The Ethernet port provides a standard RJ-45 jack on board. The network boot feature can be utilized by incorporating the boot ROM image files for the appropriate network operating system. The boot ROM BIOS files are combined with system BIOS, which can be enabled/disabled in the BIOS setup.

5.2 Installation of the Ethernet Driver

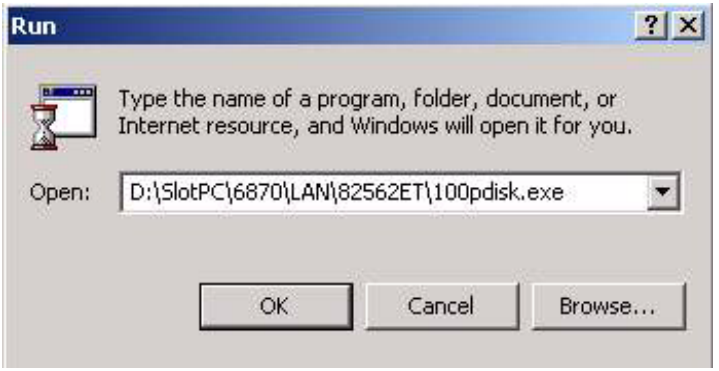
Before installing the Ethernet driver, note the procedures below. Select the operating system you are using in your PCI-6870, and then refer to the corresponding installation illustrations..

Notes: *The windows illustrations in this chapter are examples only. You must follow the instructions which appear on your screen.*

5.2.1 Installation for Windows 98 and 2000

Insert the disk, or otherwise make the files available to the system, and run the executable. Then proceed as directed by the prompts.

Step 1. When the Run window appears, Type: "D:\SlotPC\6870\LAN\82562ET\100pdisk.exe" Then click "OK"



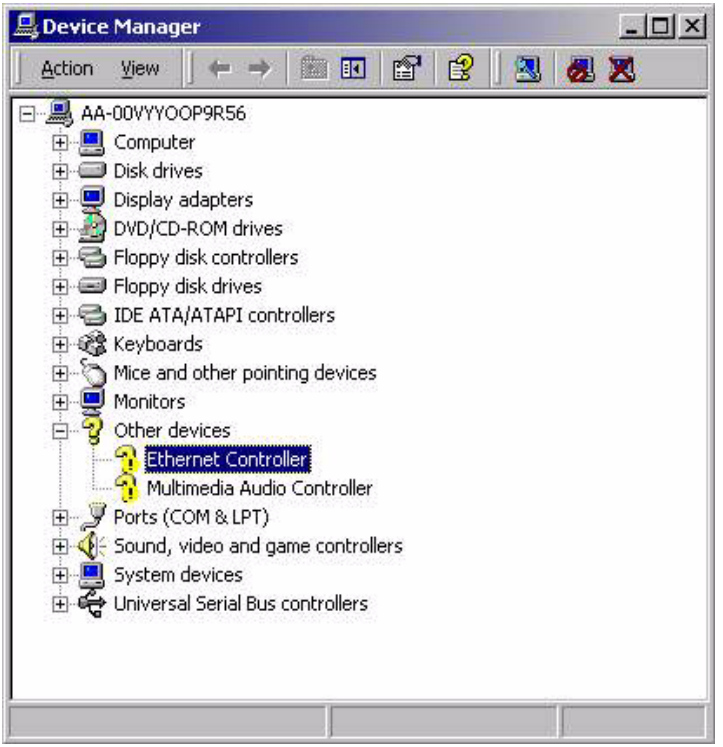
Step 2. Choose “I accept the termsin the license agrement” and then click “Next” button



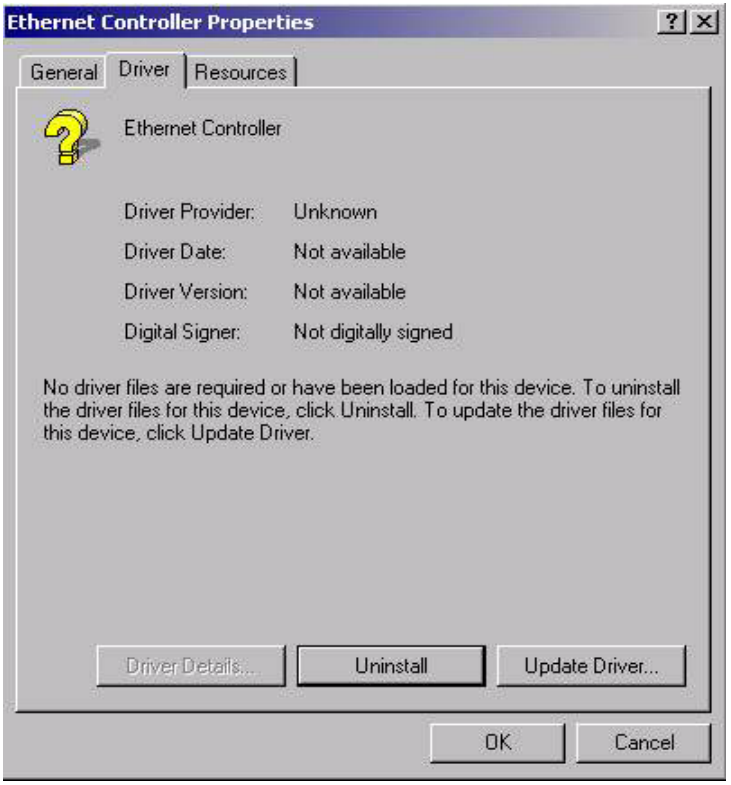
Step 3. Enter the folder where you want to save these files, then click "Next" button



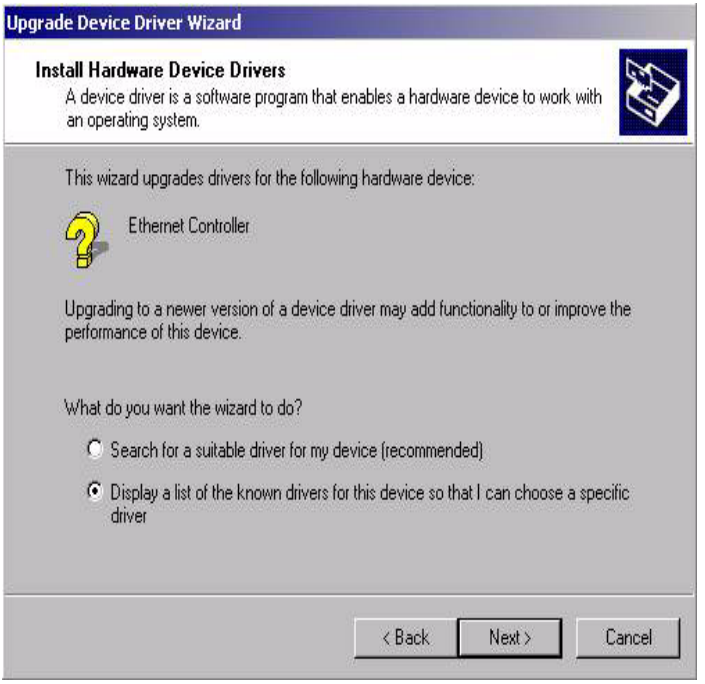
Step 4. Choose the “Ethernet controller” button



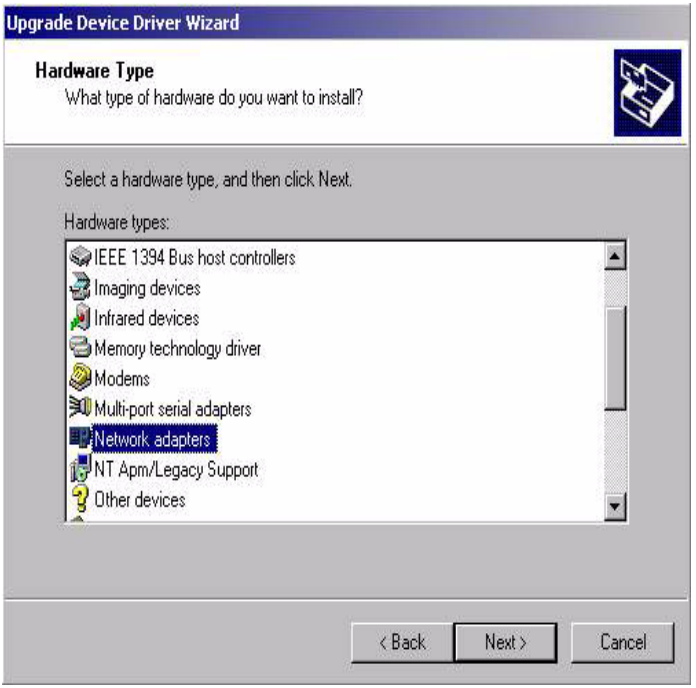
Step 5. Choose the “Driver” button, Press “Update Driver....” button



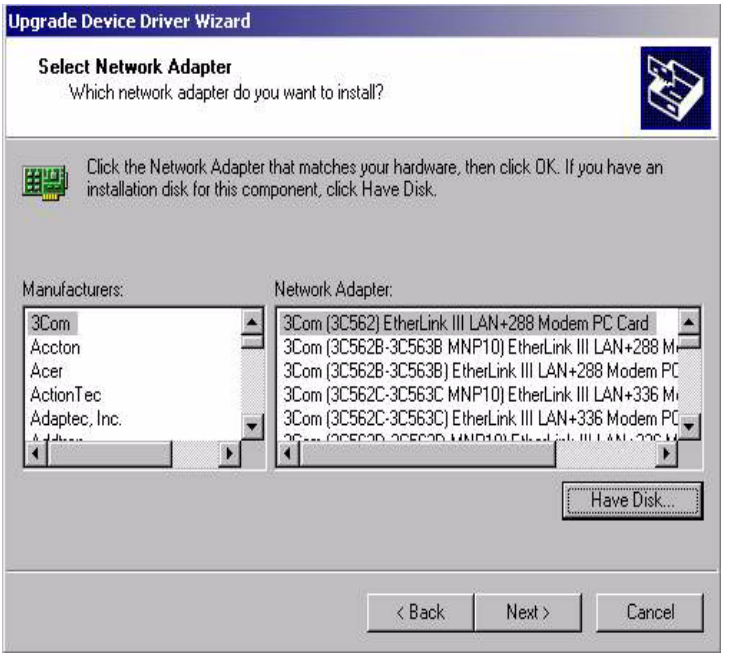
Step 6. Choose “Display a list of .....” , press “Next” button



Step 7. Choose “Network adapters”, press “Next” button



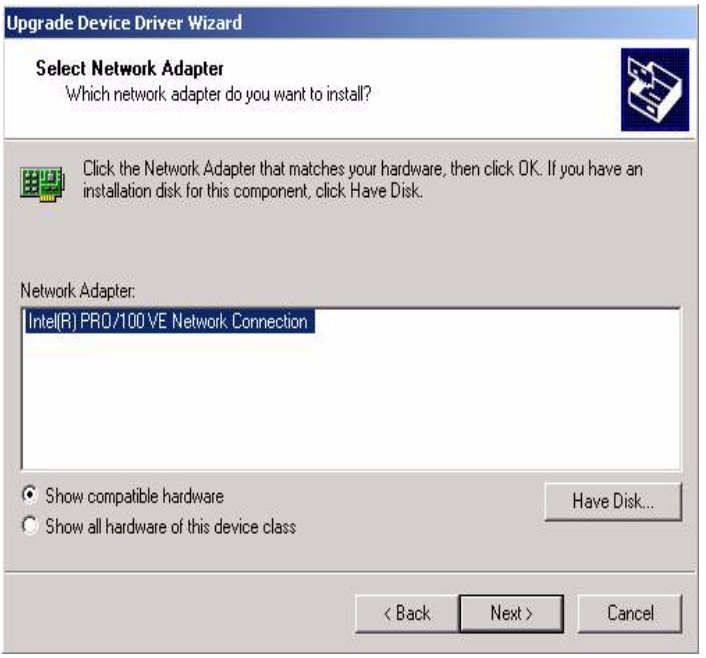
Step 8. Click the “Have Disk” button



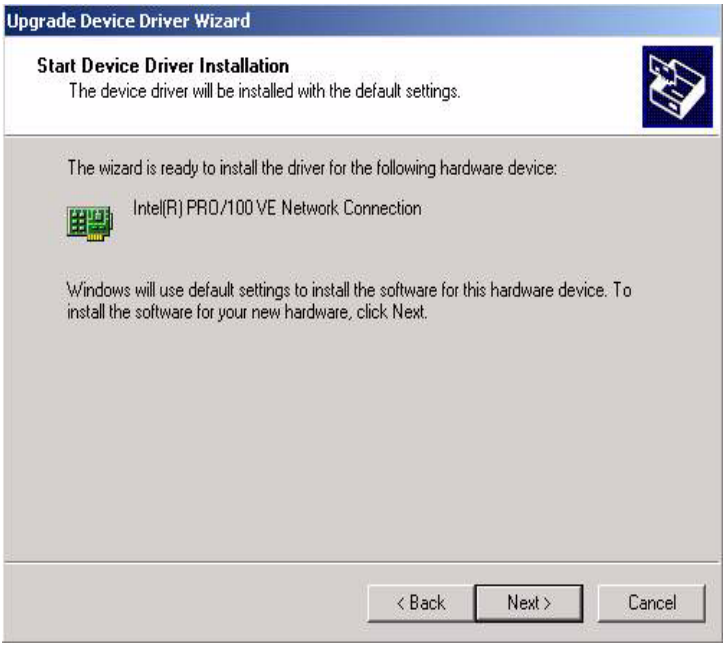
Step 9. Type the folder where you have saved files, press “OK” button



Step 10. Select “Intel(R) PRO/100VE Network connection”, press “Next” button



Step 11. Press “Next” button



Step 12. Press “Finish” to reboot



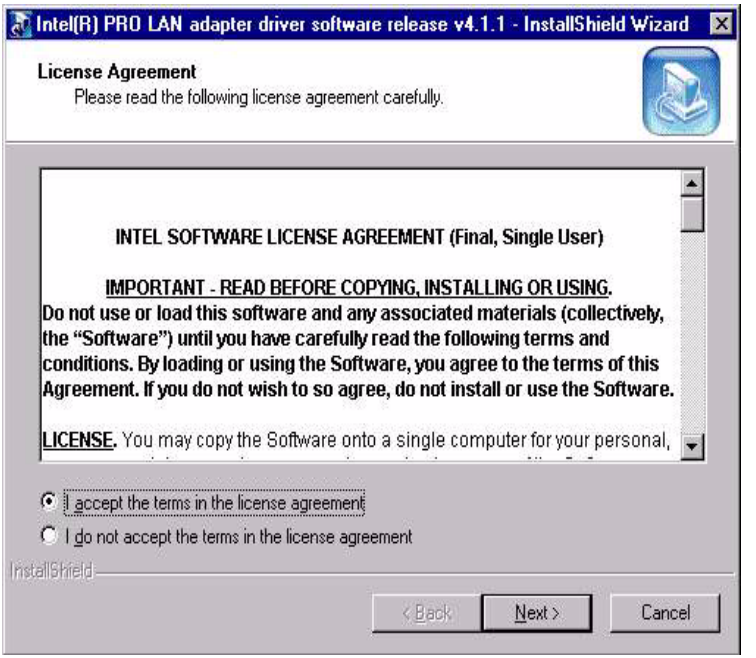
5.2.2 Installation for Windows NT

Insert the disk, or otherwise make the files available to the system, and run the appropriate executable. Then proceed as directed by the prompts.

Step 1. When the Run window appears, type:
"C:\TEMP\LAN\82562ET\100pdisk.exe", press "OK" button



Step 2. Choose “I accept the terms in the license agreement”, press “Next” button



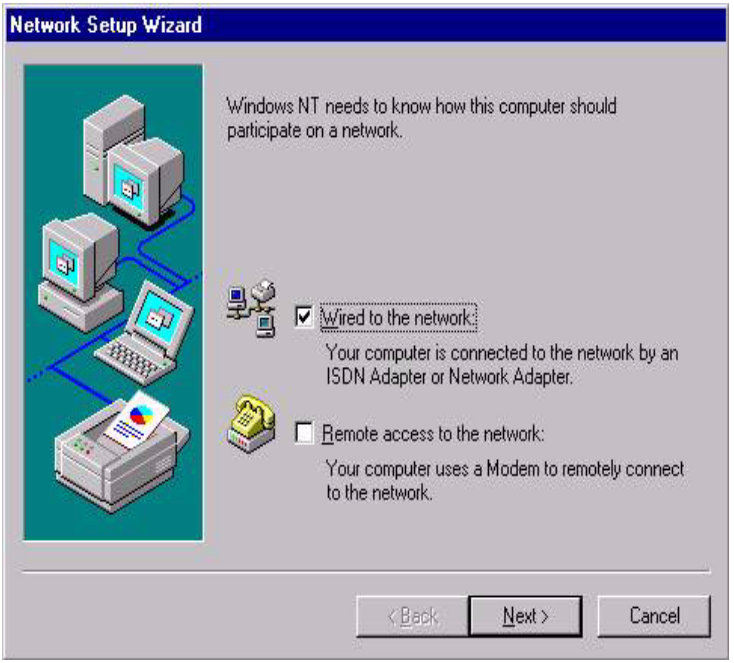
Step 3. Enter the folder where you want to save these files, then click "Next" button



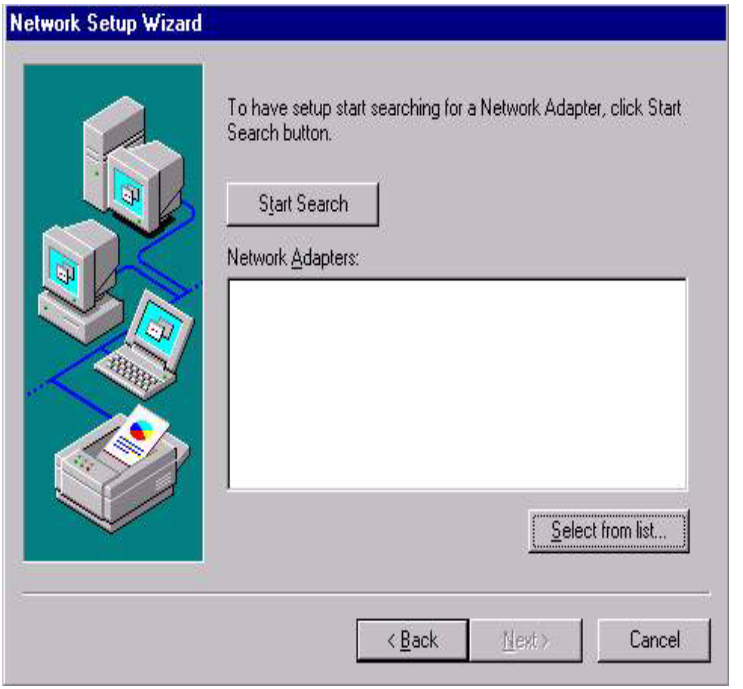
Step 4. Select “Start”, “Settings”, “Control panel” , double click the “Network” icon.



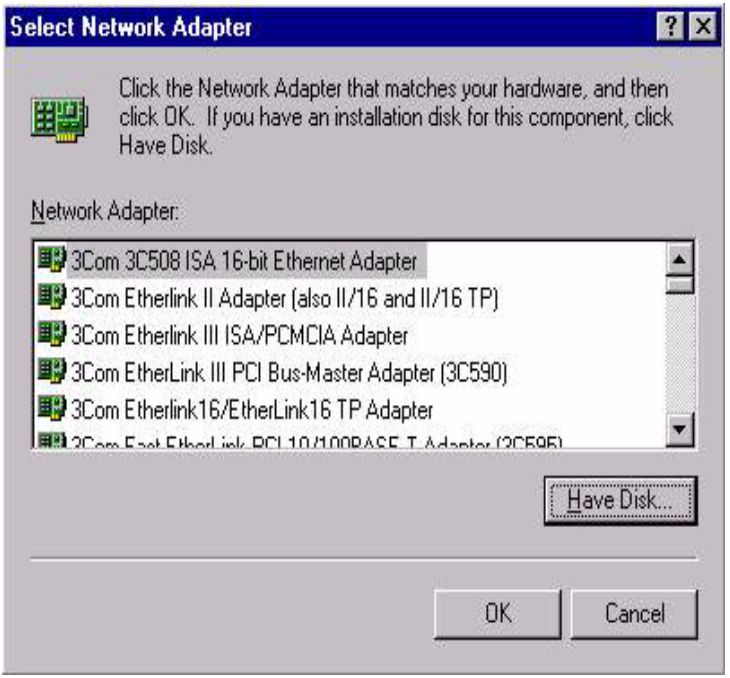
Step 5. Choose type of network., press “Next” button



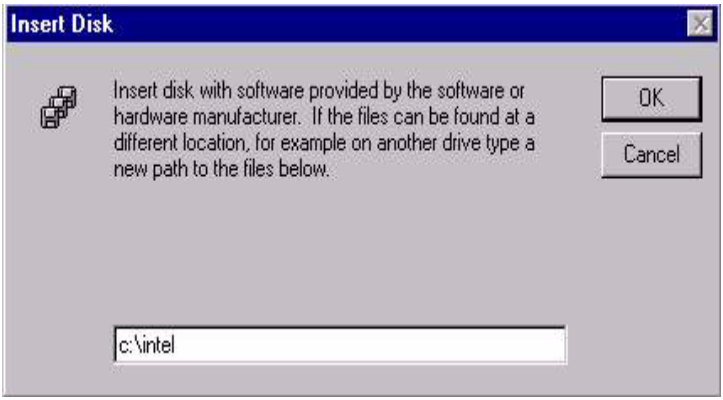
Step 6. Choose “Select form list.....” button



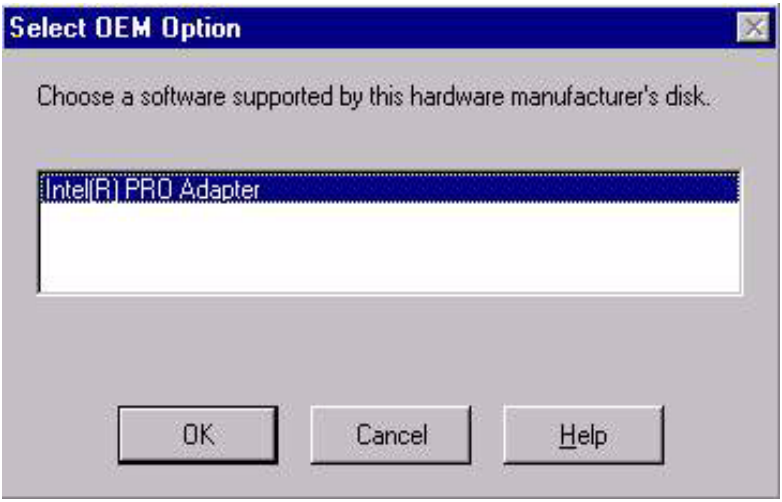
Step 7. Click the "Have Disk" button



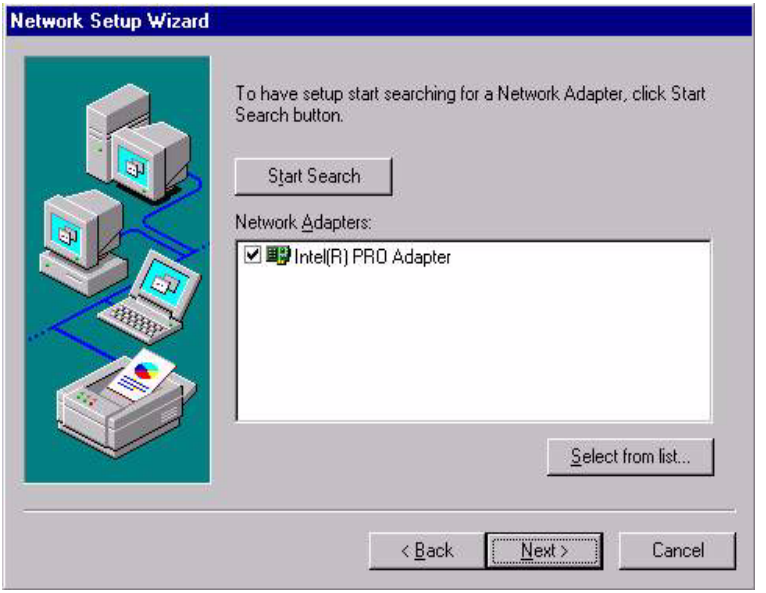
Step 8. Type the folder where you have saved files, press “OK” button



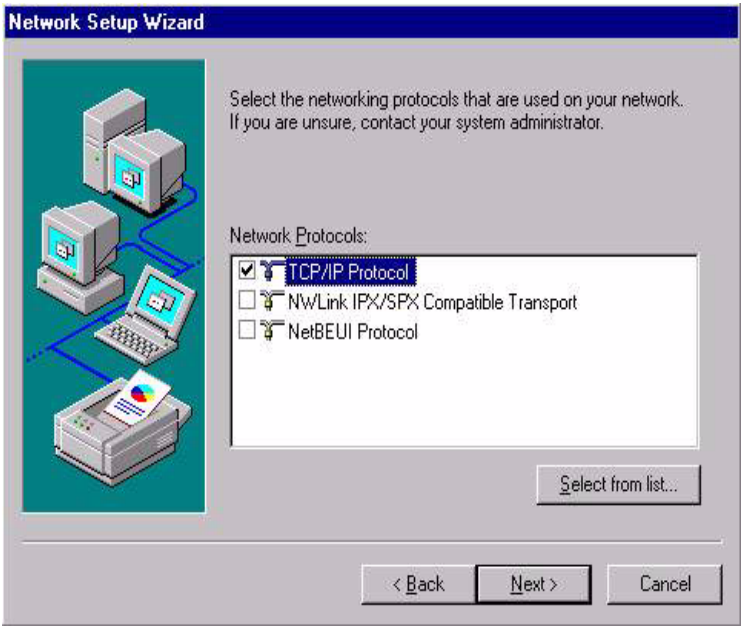
Step 9. Select the highlighted item, and click “OK,” button



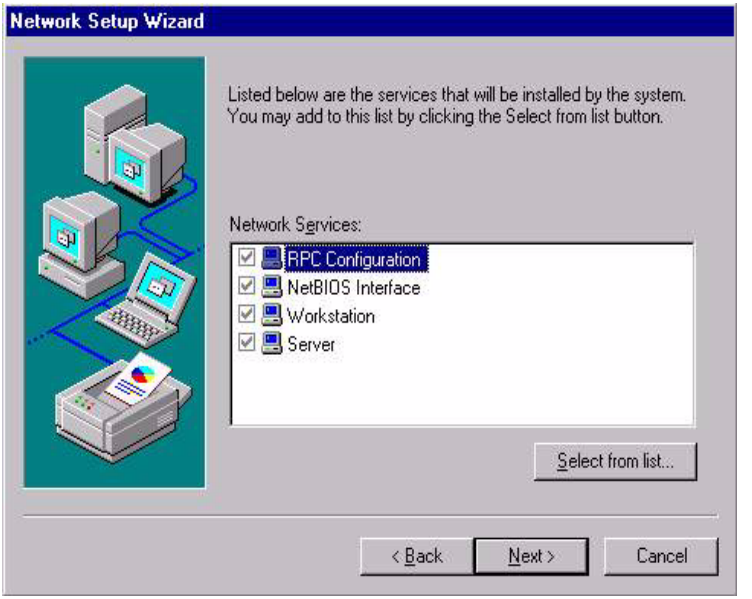
Step 10. Click “Next” to continue setup.



Step 11. Choose the Networking protocols, then click “Next”



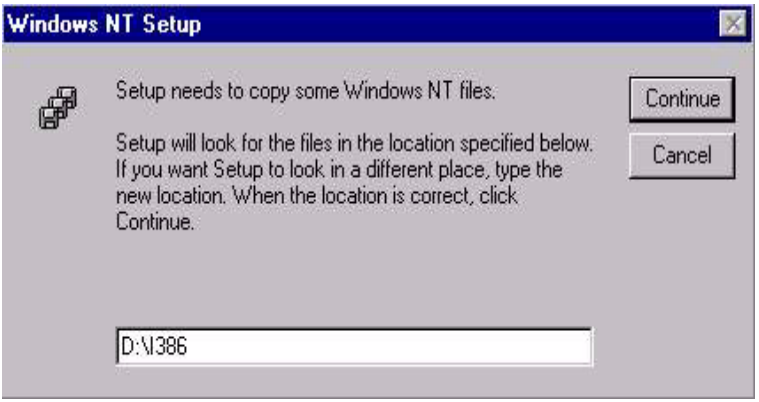
Step 12. Select the correct Network Services then click “Next”



Step 13. Click “Next” to continue setup.



Step 14. Type the new location if you want setup to look in a different place, then click “Continue”



Step 15. Click “Yes” to reboot



5.3 Further information

Intel website:

http://www.intel.com/design/network/products/lan/controllers/82562.htm

Advantech website: **www.advantech.com**

www.advantech.com.tw

CHAPTER 6

Audio

- Introduction
- Installation of audio driver for Windows 98 and 2000
- Installation of audio driver for Windows NT

Chapter 6 Audio

6.1 Introduction

The PCI-6870's on-board audio interface utilizes Realtek's ALC201 audio controller to provide two pairs of stereo outputs with independent volume controls, a mono output, and multiple stereo and mono inputs, along with flexible mixing, gain and mute functions.
The PCI-6870's on-board audio interface also supports the Plug and Play (PnP) standard and provides PnP configuration for audio, FM, and MPU-104 logical devices. It is compatible with AC97 version 2.0 voice and music functions. The ESFM synthesizer is registered compatible with the OPL3 and has extended capabilities. The PCI-6870 CPU card can support AC97 with the aid of an optional audio cable connected to CN17; this optional cable is P/N 1700160160.

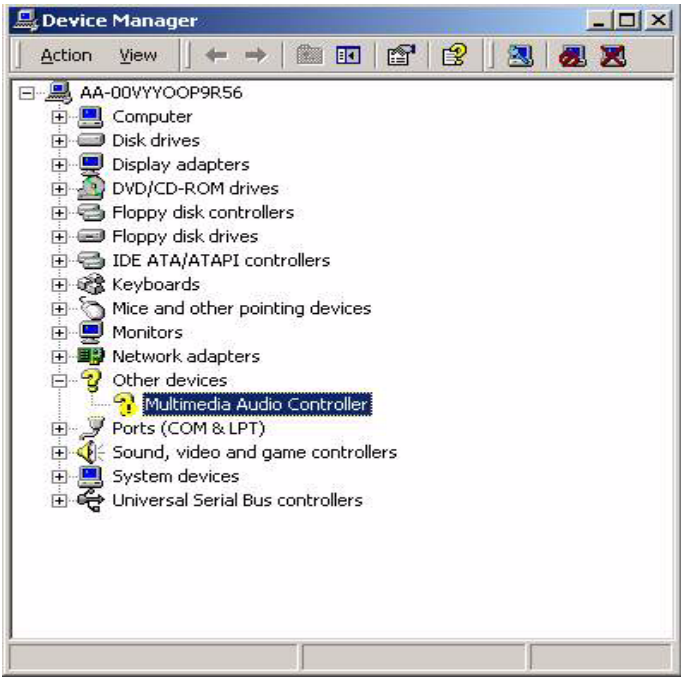
6.2 Installation of audio driver

Before installing the audio driver, please take note of the procedures detailed below. You must know which operating system you are using in your PCI-6870's, and then refer to the corresponding installation flow chart. Just follow the steps in the flow chart. You can quickly and successfully complete the installation, even though you are not familiar with instructions for Windows.

Note: *The CD-ROM drive is designated as "D" throughout this chapter.*

6.2.1 Installation for Windows 98 and 2000

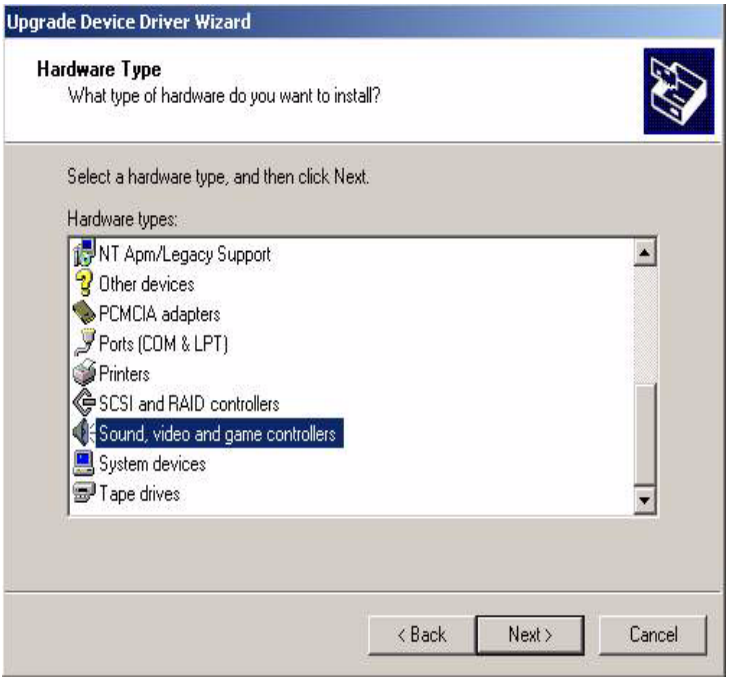
Step 1. Choose “Multimedia Audio Controller” button.



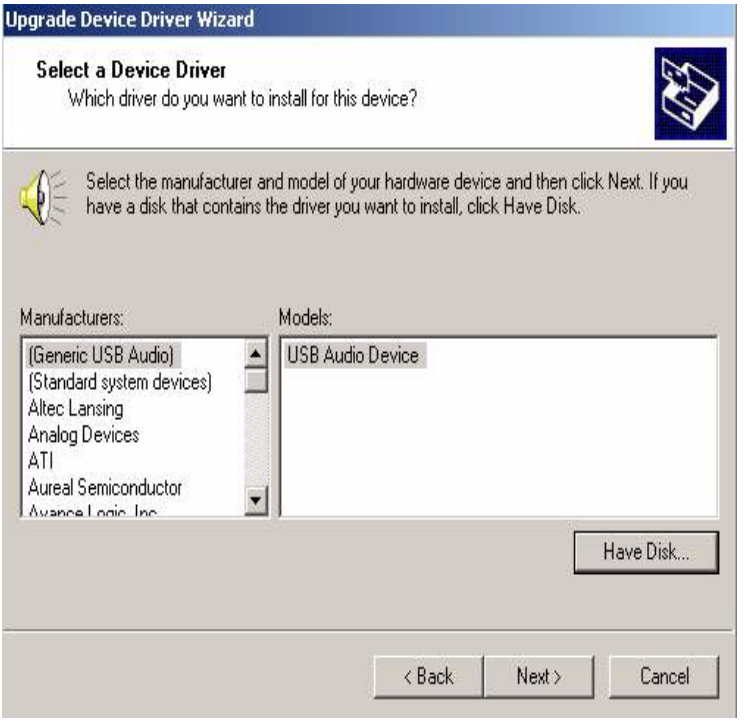
Step 2. Choose “Driver “button, press “Update Driver” button.



Step 3. Choose “Sound, video and game controllers”, press “Next”



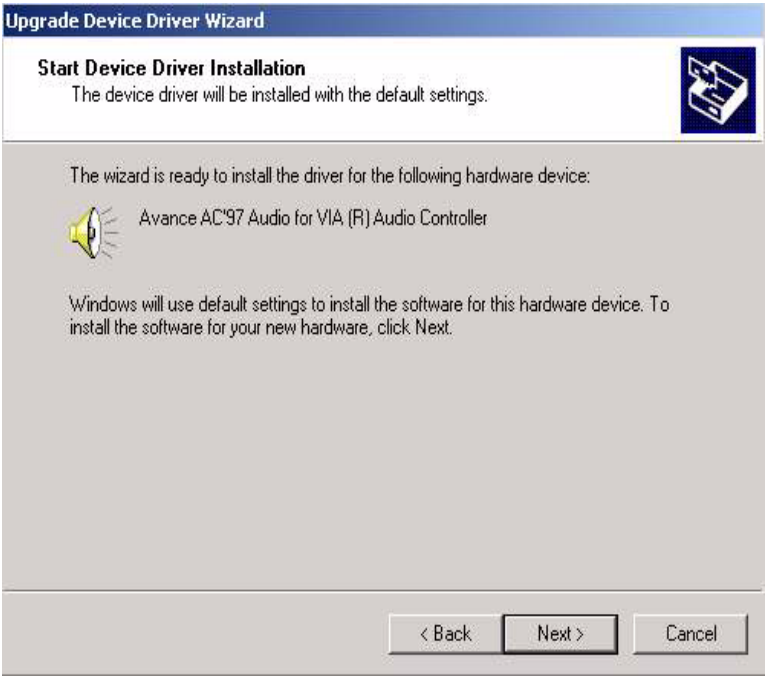
Step 4. Click the “Have Disk...” button



Step 5. Type the path D:\SlotPC\6870\Audio\98se_Me_2k_xp\Win2000 press the “OK” button



Step 6. Click “Have Disk” button



Step 7. Press “Finish” to reboot

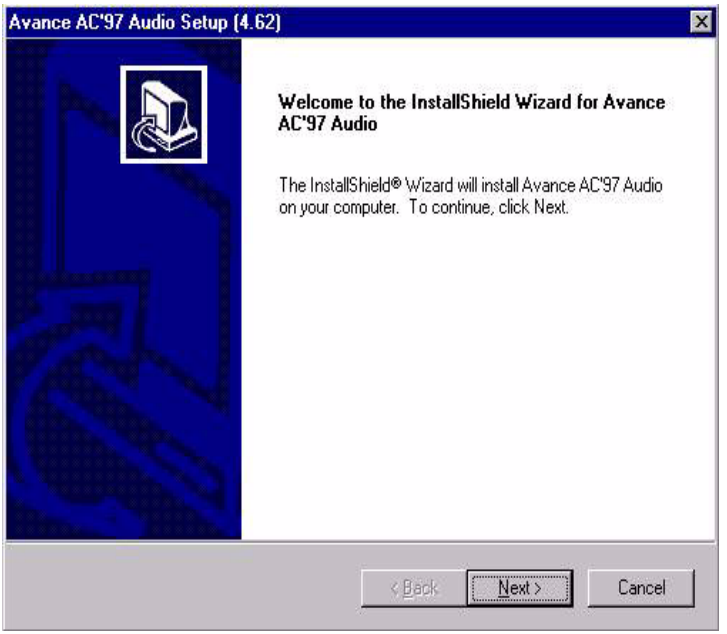


6.2.2 Installation for Windows NT

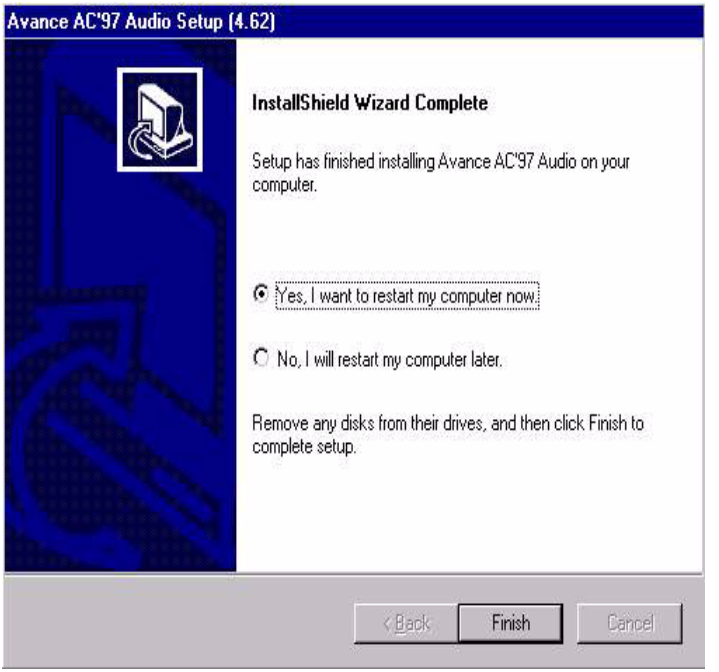
Step 1. When the “Run” window appears, type:
“C:\TEMP\Audio\alc201\WinNT\Setup.exe” then click “OK”



Step 2. Press “Next” button.



Step 3. Press “Finish” to reboot



Appendix A

Programming the Watchdog Timer

The PCI-6870 is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

Appendix A Programming the Watchdog Timer

A.1 Programming the Watchdog Timer

In order to program the watchdog timer, you must write a program which writes I/O port address 443 (hex). The output data is a value of time interval. The value range is from 01 (hex) to 3E (hex), and the related time interval is 1 sec. to 62 sec.

Data	Time Interval
01	1 sec.
02	2 sec.
03	3 sec.
04	4 sec.
.	.
.	.
.	.
3E	62 sec.

After data entry, your program must refresh the watchdog timer by rewriting the I/O port 443 (hex) while simultaneously setting it. When you want to disable the watchdog timer, your program should read I/O port 443 (hex).

The following example shows how you might program the watchdog timer in BASIC:

```
10      REM Watchdog timer example program
20      OUT &H443, data  REM Start and restart the
        watchdog
30      GOSUB 1000  REM Your application task #1
40      OUT &H443, data  REM Reset the timer
50      GOSUB 2000  REM Your application task #2
60      OUT &H443, data  REM Reset the timer
70      X=INP (&H443)  REM Disable the watchdog timer
80      END

1000    REM  Subroutine #1, your application task
        .
        .
        .
```

```
1070    RETURN
2000    REM  Subroutine #2, your application task
        .
        .
        .
2090    RETURN
```

Appendix B

Pin Assignments

This appendix contains information of a detailed or specialized nature. It includes

- CRT Display Connector
- RS-232/422/485 serial port connector
- Keyboard and mouse connector
- External keyboard connector
- Main power connectors (AT/ATX)
- IDE connector
- RS-232 serial port connector
- Ethernet RJ-45 connector
- Floppy connector
- Parallel connector
- IR connector
- HDD LED connector
- Compact Flash card Connector

Appendix B Pin Assignments

B.1 CompactFlash Card Connector (SK1)

Table B.1: CompactFlash card connector

Pin	signal	Pin	signal
1	GND	2	D03
3	D04	4	D05
5	D06	6	D07
7	* CS0	8	A10[2]
9	* ATA SEL	10	A09[2]
11	A08[2]	12	A07[2]
13	+5 V	14	A06[2]
15	A05[2]	16	A04[2]
17	A03[2]	18	A02
19	A01	20	A00
21	D00	22	D01
23	D02	24	* IOCS16
25	* CD2	26	* CD1
27	D111	28	D121
29	D131	30	D141
31	D151	32	* CS11
33	* VS1	34	* IORD
35	* IOWR	36	*WE3
37	INTRQ	38	+5 V
39	* CSEL	40	* VS2
41	* RESER	42	IORDY
43	* INPACK	44	* REG3
45	* DASP	46	* PDIAG
47	D081	48	D091
49	D10	50	GND

* low active

B.2 IR Connector (CN1)

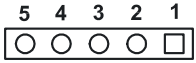


Table B.2: IR connector

Pin	Signal
1	+5V
2	CIRRX
3	IRRX
4	GND
5	IRTX

B.3 VGA Display Connector (CN2)

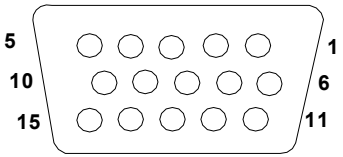


Table B.3: VGA Display Connector (CN2

Pin	Signal	Pin	Signal
1	RED	9	N/C
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	N/C
5	GND	13	H-SYNC
6	GND	14	V-SYNC
7	GND	15	N/C
8	GND		

B.4 COM1 RS-232 Serial Port (CN3)

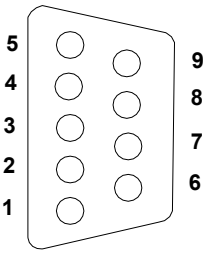


Table B.4: COM1 RS-232 serial port

Pin	Signal
1	DCD
2	SIN
3	SOUT
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

B.5 Keyboard and Mouse Connnector (CN4)

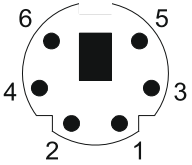


Table B.5: Keyboard and mouse connector

Pin	Signal
1	KBCLK
2	KBDATA
3	MSCLK signal
4	GND
5	+5V
6	MSDATA signal

B.6 ATX Power Connector (CN6)

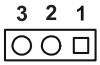


Table B.6: ***ATX power connector***

Pin	Signal
1	5 V SB
2	GND
3	PS_ON

B.7 Printer Port Connector (CN7)

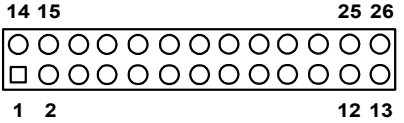


Table B.7: Parallel port connector

Pin	Signal
1	* STROBE
2	* AUTOFD
3	D0
4	ERR
5	D1
6	* INIT
7	D2
8	* SLCTINI
9	D3
10	GND
11	D4
12	GND
13	D5
14	GND
15	D6
16	GND
17	D7
18	GND
19	*ACK
20	GND
21	BUSY
22	GND
23	PE
24	GND
25	SLCT
26	GND

* low active

B.8 COM2 RS-422/485 Serial Port (CN8)

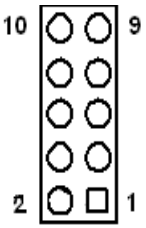


Table B.8: COM2 RS-232/422/485 serial port

Pin	
1	CM2_1
2	DSRB
3	CM2_2
4	RTSB
5	CM2_3
6	CTSB
7	CM2_4
8	RIB_OUT
9	GND
10	GND

B.9 USB1/USB2 Connector (CN9)

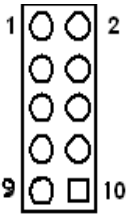


Table B.9: USB1/USB2 Connector

	USB1		**USB2**
1	USBV0	2	USBV1
3	USBD0-	4	USBD1-
5	USBDO+	6	USBD1+
7	USBG0	8	USBG1
9	Chassis GND	10	N/C

B.10 EBX Power Connector (CN11)

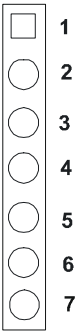


Table B.10: EBX Power Connector

Pin	signal
1	+5V
2	GND
3	GND
4	+12V
5	N/C
6	GND
7	+5V

B.11 CPU Fan Power Connector (CN12)

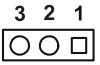


Table B.11: CPU Fan Power Connector

Pin	Signal
1	GND
2	+12 V
3	FAN_DEC

B.12 CD-ROM in connector (CN14)

Table B.12: CD-ROM in connector

Pin	Signal
1	CD_R
2	GND
3	GND
4	CD_L

B.13 Primary IDE (CN15)

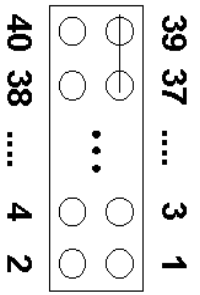


Table B.13: Primary IDE connector (CN15)

pin	signal	pin	signal
1	IDE RESET	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	NC
21	REQ	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	READY	28	Cable Select (Pull-Low)
29	DACK	30	GND
31	IRQ	32	NC
33	A1	34	Cable check
35	A0	36	A2
37	CS0	38	CS1
39	Active LED	40	GND

B.14 Audio connector (CN17)

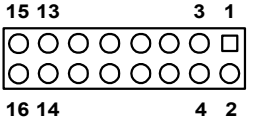


Table B.14: Audio connector(CN17)

Pin	Signal	Pin	Signal
1	SPEAKER OUT R+	2	SPEAKER OUT R-
3	SPEAKER OUT L+	4	SPEAKER OUT L-
5	LINE OUT R	6	LINE OUT L
7	GND	8	GND
9	LINE IN R	10	LINE IN L
11	GND	12	GND
13	MIC1	14	NC
15	MIC2	16	GND

B.15 IDE Hard Drive Connector (CN18)

Table B.15: IDE hard drive connector

Pin	Signal	Pin	Signal
1	IDE RESET*	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	N/C
21	DRQ	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO CHAN-NEL READY	28	Cable Select
29	HDACKO*	30	GND
31	IRQ14	32	N/C
33	ADDR 1	34	Reserved
35	ADDR 0	36	ADDR 2
37	CS1#	38	CS3#
39	IDE ACTIVE*	40	GND
41	5 V	42	5 V
43	GND	44	NC

* low active

B.16 Floppy Drive Connector (CN20)

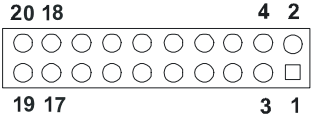


Table B.16: Floppy Drive Connector

Pin	Signal	Pin	Signal
1	GND	2	REDWC
3	GND	4	DS1
5	GND	6	INDEX
7	GND	8	MOTSA
9	DSKCHG	10	DRVSB
11	SIDE1	12	DRVSA
13	RDATA	14	MOTEB
15	WPT	16	DIR
17	TK00	18	STEP
19	WGATE	20	WDATA

Appendix D

System Assignments

This appendix contains information of a detailed nature. It includes:

- System I/O ports
- 1st MB memory map
- DMA channel assignments
- Interrupt assignments

Appendix D System Assignments

D.1 System I/O Ports

Table D.1: System I/O ports

Addr. range (Hex)	Device
000-01F	DMA controller
020-021	Interrupt controller 1, master
022-023	Chipset address
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F	Real-time clock, non-maskable interrupt (NMI) mask
080-09F	DMA page register
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
200-207	Game I/O
278-27F	Parallel printer port 2 (LPT 3)
2F8-2FF	Serial port 2
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT 2)
380-38F	SDLC, bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome display and printer adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1

* PNP audio I/O map range from 220 ~ 250H (16 bytes)
MPU-401 select from 300 ~ 330H (2 bytes)

D.2 DMA Channel Assignments

Table D.2: DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

* Audio DMA select 0, 1 or 3

D.3 Interrupt Assignments

Table D.3: Interrupt assignments

Interrupt#	Interrupt source
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 8	Real-time clock
IRQ 9	Cascaded to INT 0A (IRQ 2)
IRQ 10	Available
IRQ 11	Watchdog Timer
IRQ 12	PS/2 mouse (non-releasable)
IRQ 13	INT from co-processor
IRQ 14	Fixed disk controller (primary)
IRQ 15	Fixed disk controller (secondary)
IRQ 3	Serial communication port 2
IRQ 4	Serial communication port 1
IRQ 5	Parallel port 2
IRQ 6	Diskette controller (FDC)
IRQ 7	Parallel port 1 (print port)

* PNP audio IRQ select: 5, 7, 9 or 10

* Ethernet function is auto-sensing

D.4 1st MB Memory Map

Table D.4: 1st MB Memory Map

Addr. range (Hex)	Device
F000h - FFFFh	System ROM
C800h - EFFFh	Expansion ROM
C000h - C7FFh	System ROM
B800h - BFFFh	CGA/EGA/VGA text
B000h - B7FFh	Unused
A000h - AFFFh	EGA/VGA graphics
0000h - 9FFFh	Base memory

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP