PCI-6870 series

Socket 370 Pentium® III/Celeron™
Half-sized CPU Card with High Speed
PCI Bus, VGA, Fast Ethernet and
CompactFlash Type II card

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This manual is for the PCI-6870 Series Rev. A1

Packing List

Before installing your board, ensure that the following materials have been received:

- 1 ea. PCI-6870 SBC
- 1 ea. Keyboard/Mouse cable (1700060202)
- 1 ea. COM port cable (1700100250)
- 1 ea. EIDE HDD cable (1700260250)
- 1 ea. Power cable (1703080101)
- 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   IrDA adapter
- 1700100170   USB cable adapter

Contents

Contents continued, next page.

General Information

This chapter gives background information on the PCI-6870.

Sections include:

- Introduction

- Features

- Specifications

- Board layout and dimensions

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 RS-232 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

- **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 B-stepping 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 MB Synchronous DRAM

- **PCI IDE interface**: Two Enhanced IDE interfaces, support 4 IDE devices. Channel One supports up to UltraDMA 100. Channel Two supports PIO mode 3,4 with bus mastering up to 33MB/sec.

- **Floppy disk drive interface**: Supports up to two FDDs (360 KB/ 1.2 MB/720 KB/1.44 MB/2.88 MB)

- **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 Interface

- **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-T

Solid state disk

- Supports CompactFlash™ Type II disks

Mechanical and environmental specifications

- Standard Mode Power Consumption

  6.68 A @ 5 V with Pentium III 850 and 256MB DIMM
- **Operating temperature**:
  $0 \sim 60° C (32 \sim 140° F)$
- **Size**: 185 mm x 122 mm
- **Weight**: 0.27 kg

1.3 Features

- Supports Socket 370 for Intel® Pentium® III/Celeron™ processor
- Direct AGP supports 24 bit CRT
- USB interface compliant with USB rev. 1.0
- 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
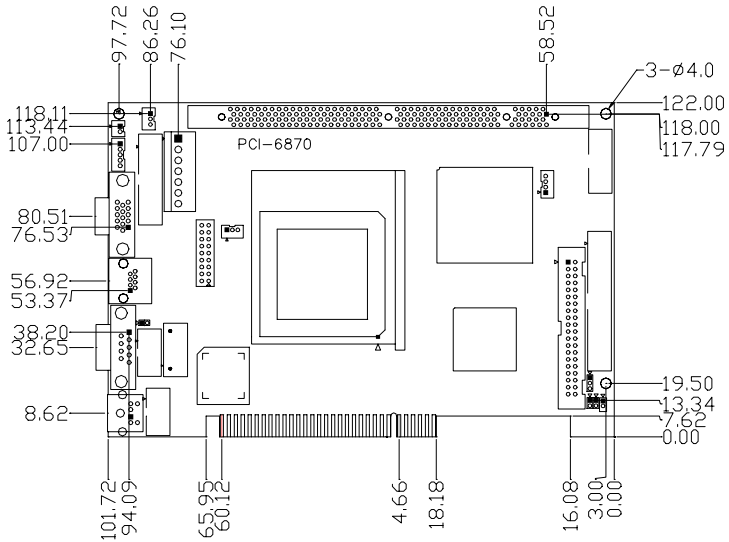
Figure 1-1: PCI-6870 (dimensions)

Installation

This chapter tells how to set up the PCI-6870 hardware. It includes instructions on setting jumpers, and connecting peripherals, switches and indicators. Be sure to read all the safety precautions before you begin the installation procedure.

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 each of the board's jumpers.

Table 2-1: Jumpers

Label	Function
J2	reserve (FWH)
J3	RS-232/422/485 select
J4	clear CMOS
J5	watchdog timer enable
J6	reset

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 I
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
CN13	ATX PS-ON SW
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 Jumpers and Connectors

CN6 CN11 DIMM CN12

CN13
CN1
CN7
CN2
J3
CN5
CN20
CN3
CN8
CN9
CN4

PCI-6870

CN17
CN14

CN18
CN15

J4
J6

BIOS   CPU   CN16   J5
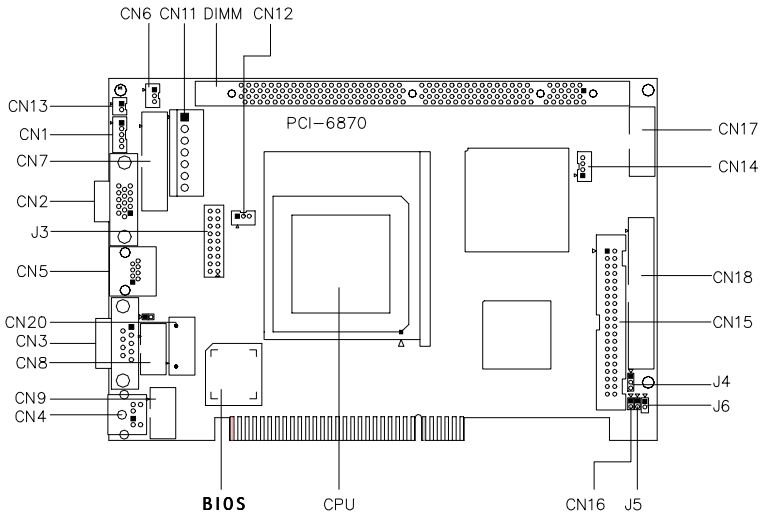
Figure 2-1: Locating connectors (component side)

2.4 Setting jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. 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, connect the pins with the clip. To "open" a jumper, 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.
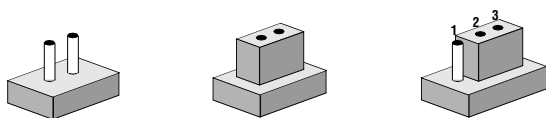
Open   *Closed*   *Closed 2-3*

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

Open   *Closed*   *Closed 2-3*
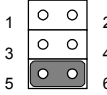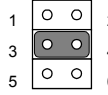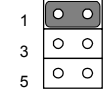
A pair of needle-nose pliers may be helpful when working with jumpers. Setting switches is slightly different but more simple. Simply slide the desired switch to the **on or off** position. In the example below, the 6 element switch would be. 1:off, **2:on**, 3:off, 4:off, 5:off, 6:off.

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)

*RS-232	**RS-422**	**RS-485**

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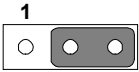
An on-board watchdog timer reduces the chance of disruptions which EMP (electro-magnetic pulse) interference can cause. This is an invaluable protective device for standalone or unmanned applications. Setup involves one jumper and running the control software. (Refer to Appendix A.)

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

Table 2-5: Watchdog timer system reset select (J5)

*System Reset	off

* 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.

2.5 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 C.

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 IR 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 C.

2.5.3 RS-232 connection (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.

*Note: For **CN5**, see Ethernet Configuration*

2.5.5 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).

2.5.6 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.

2.5.7 RS-232/422/485 connection
(COM2-CN8: RS-232; CN8: RS-422/485)

COM2 is an RS-232/422/485 serial port. The specific port type is determined by jumper settings (J3), as detailed in Chapter 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

2.5.8 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.

2.5.9 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 C)

2.5.10 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.*

2.5.11 ATX power button (CN13)

The PCI-6870 provides an ATX power input connector. When connected with the ATX power switch, the ATX power switch connector (CN13) enables power On/Off from the chassis.

2.5.12 Ethernet Configuration (CN14)

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-45A connector (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.

2.5.13 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.

2.5.14 Serial IRQ ???? (CN16)

2.5.15 Audio connector (CN17)

Connect external speakers to CN17. To activate the on-board buzzer, set the connector so that Pins 3 and 4 are closed.

2.5.16 EIDE, CDROM, HDD connector (CN18)

The PCI-6870 provides 2 IDE channels which you can attach up to four Enhanced Integrated Device Electronics hard disk drives or CDROM to the PCI-6870's internal controller. The PCI-6870's IDE controller uses a PCI interface. This advanced IDE controller supports faster data transfer, PID mode 3, mode 4 and UDMA/100. 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 flat-cable 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 CN14 or CN16. 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.

2.5.17 Video Expansion Connector ???? (CN19)

2.5.18 Floppy Drive Connector (CN20)

You can attach up to two floppy disk drives to the PCI-6870's on-board 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 comes with a 34-pin daisy-chain drive connector cable. On one end of the cable is a 34-pin flat-cable connector. On the other end are two sets of floppy disk drive connectors. Each set consists of a 34-pin flat-cable connector (usually used for 3.5" drives) and a printed-circuit-board connector (usually used for 5.25" drives). You can use only one connector in each set. The set on the end (after the twist in the cable) connects to the A: floppy. The set in the middle connects to the B: floppy.

2.5.19 CompactFlash Disk (SK1)

The PCI-6870 is equipped with a CompactFlash™ 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 the
card's BIOS configuration data.

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.

```
      CMOS Setup Utility - Copyright (C) 1984-2001 Award Software

   ► Standard CMOS Features          ► PC Health Status

   ► Advanced BIOS Features          ► Frequency/Voltage Control

   ► Advanced Chipset Features         Load Optimized Defaults

   ► Integrated Peripherals            Set Password

   ► Power Management Setup            Save & Exit Setup

   ► PnP/PCI Configurations            Exit Without Saving


   Esc : Quit       F9 : Menu in BIOS      ↑ ↓ → ←    : Select Item
   F10 : Save & Exit Setup

                    Time, Date, Hard Disk Type...
```

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.

```
        CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                         Standard CMOS Features

    Date (mm:dd:yy)           Tue, May 28 2002          Item Help
    Time (hh:mm:ss)           11 : 54 : 28
                                                   Menu Level    ▶
  ▶ IDE Primary Master
  ▶ IDE Primary Slave                              Change the day, month,
  ▶ IDE Secondary Master                           year and century
  ▶ IDE Secondary Slave

    Drive A                   [1.44M, 3.5 in.]

    Video                     [EGA/VGA]
    Halt On                   [All , But Keyboard]

    Base Memory                      640K
    Extended Memory                65472K
    Total Memory                    1024K


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

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:

```
          CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                          Advanced BIOS Features

     Virus Warning              [Disabled]              Item Help
     CPU Internal Cache         [Enabled]
     External Cache             [Enabled]         Menu Level    ▶
     CPU L2 Cache ECC Checking  [Enabled]
     Processor Number Feature   [Enabled]         Allows you to choose
     Quick Power On Self Test   [Enabled]         the VIRUS warning
     First Boot Device          [CDROM]           feature for IDE Hard
     Second Boot Device         [HDD-0]           Disk boot sector
     Third Boot Device          [Floppy]          protection. If this
     Boot Other Device          [Enabled]         function is enabled
     Swap Floppy Drive          [Disabled]        and someone attempt to
     Boot Up Floppy Seek        [Enabled]         write data into this
     Boot Up NumLock Status     [On]              area , BIOS will show
     Gate A20 Option            [Fast]            a warning message on
     Typematic Rate Setting     [Disabled]        screen and alarm beep
   x Typematic Rate (Chars/Sec) 6
   x Typematic Delay (Msec)     250
     Security Option            [Setup]
     PS/2 Mouse Function Control[Enabled]

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

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

This function determines the sequence in which the computer will search the drives for the disk operating system (i.e. DOS). The default value is "C, A".

A , C	System will first search the FDD, then the HDD.
C , A	System will first search the HDD, then the FDD.
C only	System will only search the HDD.
•	•
•	•
•	•

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.

Boot Up System Speed

High	Sets the speed to high
Low	Sets the speed to low

IDE HDD Block Mode

Enabled	Enable IDE HDD Block Mode. BIOS will detect the block size of the HDD and send a block command automatically.
Disabled	Disable IDE HDD Block Mode

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.

```
        CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                        Advanced Chipset Features
┌──────────────────────────────────────────────┬─────────────────────────┐
│ SDRAM CAS Latency Time     [3]                 │        Item Help         │
│ SDRAM Cycle Time Tras/Trc  [Auto]              │                          │
│ SDRAM RAS-to-CAS Delay     [Auto]              │  Menu Level   ▶          │
│ SDRAM RAS Precharge Time   [Auto]              │                          │
│ System BIOS Cacheable      [Disabled]          │                          │
│ Video BIOS Cacheable       [Disabled]          │                          │
│ CPU Latency Timer          [Enabled]           │                          │
│ Delayed Transaction        [Enabled]           │                          │
│ AGP Graphics Aperture Size[64MB]               │                          │
│ Display Cache Frequency    [100 MHz]           │                          │
│ System Memory Frequency    [Auto]              │                          │
│ On-Chip Video Window Size [64MB]               │                          │
│                                                │                          │
│ * Onboard Display Cache Setting *              │                          │
│   CAS# Latency             [3]                 │                          │
│   Paging Mode Control      [Open]              │                          │
│   RAS-to-CAS Override      [by CAS# LT]        │                          │
│   RAS# Timing              [Fast]              │                          │
│   RAS# Precharge Timing    [Fast]              │                          │
├──────────────────────────────────────────────┴─────────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│            F5:Previous Values            F7: Optimized Defaults           │
└──────────────────────────────────────────────────────────────────────────┘
```

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.

```
            CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                             Integrated Peripherals
┌──────────────────────────────────────────────────────┬──────────────────────┐
│  On-Chip Primary   PCI IDE [Enabled]                ▲ │      Item Help       │
│  On-Chip Secondary PCI IDE [Enabled]                  │                      │
│  IDE Primary Master PIO    [Auto]                     │ Menu Level    ▶      │
│  IDE Primary Slave  PIO    [Auto]                     │                      │
│  IDE Secondary Master PIO  [Auto]                     │                      │
│  IDE Secondary Slave  PIO  [Auto]                     │                      │
│  IDE Primary Master  UDMA  [Auto]                     │                      │
│  IDE Primary Slave   UDMA  [Auto]                     │                      │
│  IDE Secondary Master UDMA [Auto]                     │                      │
│  IDE Secondary Slave  UDMA [Auto]                     │                      │
│  USB Controller            [Enabled]                  │                      │
│  USB Keyboard Support      [Disabled]                 │                      │
│  Init Display First        [PCI Slot]                 │                      │
│  AC97 Audio                [Auto]                     │                      │
│  OnBoard 82562 LAN Chip    [Enabled]                  │                      │
│  IDE HDD Block Mode        [Enabled]                  │                      │
│  POWER ON Function         [BUTTON ONLY]              │                      │
│  KB Power ON Password      [Enter]                    │                      │
│  Hot Key Power ON          [Ctrl-F1]                ▼ │                      │
├──────────────────────────────────────────────────────┴──────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│            F5:Previous Values              F7: Optimized Defaults             │
└──────────────────────────────────────────────────────────────────────────────┘
```

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.

```
         CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                           Power Management Setup
 ┌──────────────────────────────────────────────────┬─────────────────────┐
 │ ACPI Function            [Disabled]            ▲  │     Item Help       │
 │ Power Management         [User Define]            │                     │
 │ Video Off Method         [DPMS]                   │  Menu Level   ▶     │
 │ Video Off In Suspend     [Yes]                    │                     │
 │ Suspend Type             [Stop Grant]             │                     │
 │ MODEM Use IRQ            [NA]                      │                     │
 │ Suspend Mode             [Disabled]               │                     │
 │ HDD Power Down           [Disabled]               │                     │
 │ Soft-Off by PWR-BTTN     [Delay 4 Sec.]           │                     │
 │ Wake On Lan              [Disabled]               │                     │
 │ Power On by Ring         [Enabled]                │                     │
 │ CPU Thermal-Throttling   [50.0%]                  │                     │
 │ Resume by Alarm          [Disabled]               │                     │
 │ x Date(of Month) Alarm    0                       │                     │
 │ x Time(hh:mm:ss) Alarm    0 :  0 :  0             │                     │
 │                                                   │                     │
 │   ** Reload Global Timer Events **                │                     │
 │ Primary IDE 0            [Disabled]               │                     │
 │ Primary IDE 1            [Disabled]            ▼  │                     │
 ├──────────────────────────────────────────────────┴─────────────────────┤
 │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
 │            F5:Previous Values              F7: Optimized 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.
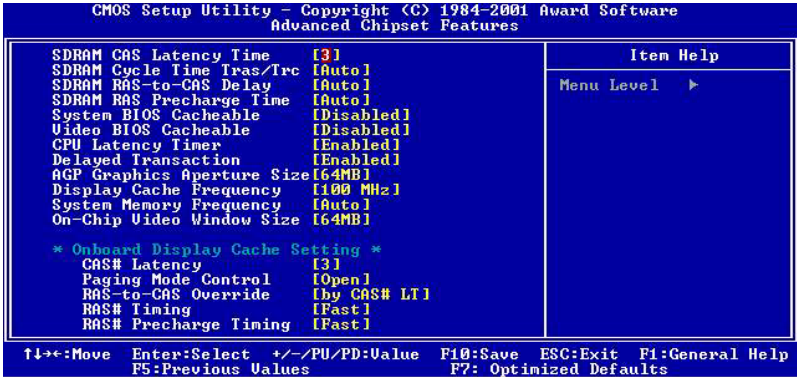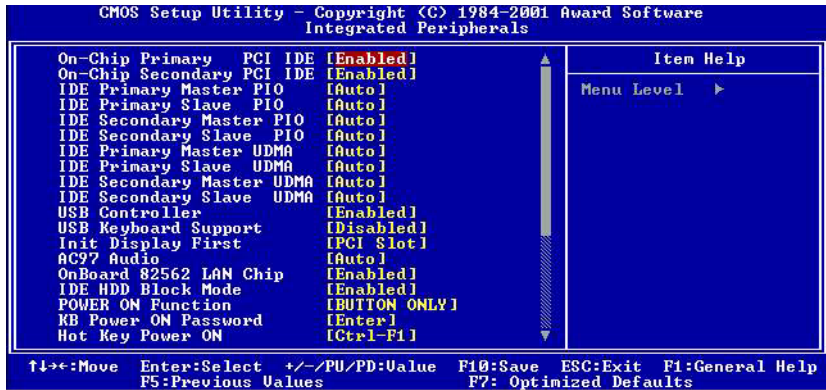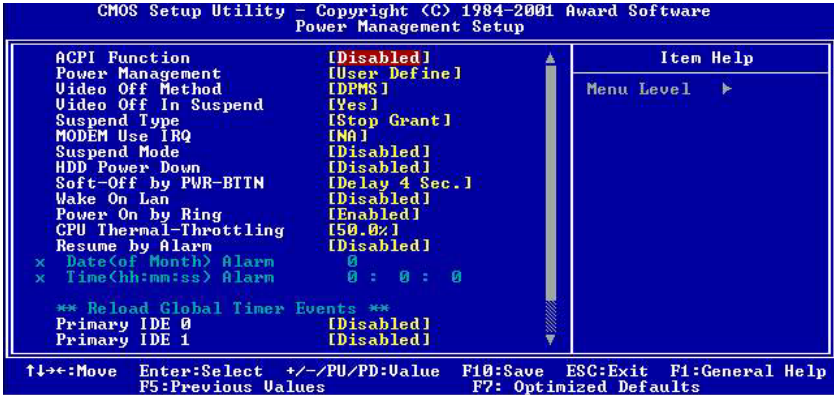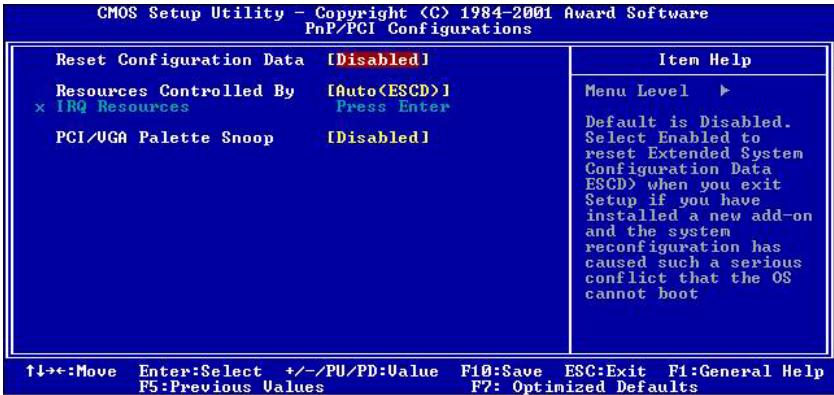


```
       CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                          PnP/PCI Configurations

   Reset Configuration Data    [Disabled]                    Item Help

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




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

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.
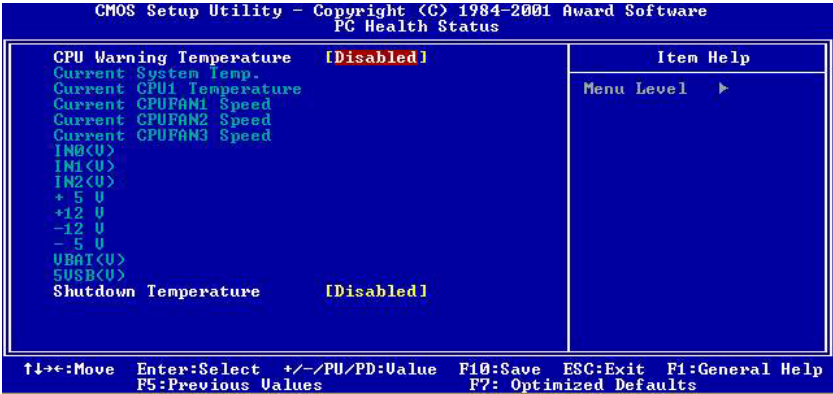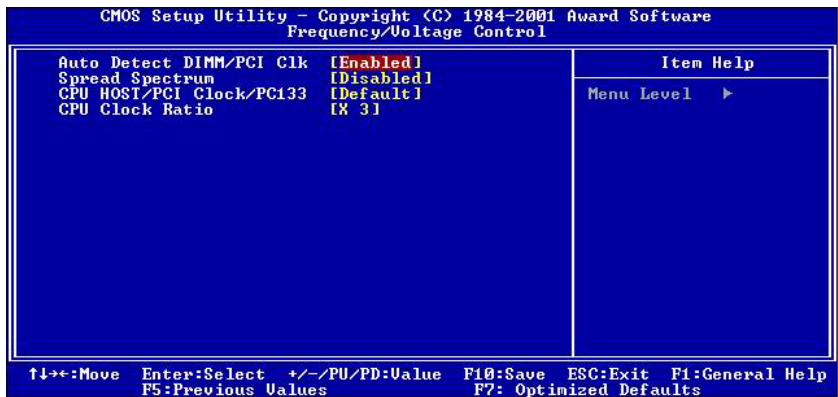

Figure 3-8: PC Health Status

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.

```
           CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                          Frequency/Voltage Control
 ┌──────────────────────────────────────────────┬─────────────────────────┐
 │  Auto Detect DIMM/PCI Clk    [Enabled]         │        Item Help        │
 │  Spread Spectrum             [Disabled]        │                         │
 │  CPU HOST/PCI Clock/PC133    [Default]         │  Menu Level    ▶        │
 │  CPU Clock Ratio             [X 3]             │                         │
 │                                                │                         │
 │                                                │                         │
 │                                                │                         │
 │                                                │                         │
 │                                                │                         │
 │                                                │                         │
 │                                                │                         │
 │                                                │                         │
 │                                                │                         │
 │                                                │                         │
 └──────────────────────────────────────────────┴─────────────────────────┘
  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
            F5:Previous Values              F7: Optimized Defaults
```

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.

AGP SVGA Setup

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

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 Display memory

With 2.5 MB display memory on chip, the VGA controller can drive CRT displays or color panel displays with resolutions up to 1024 x 768 at 16.8 M colors. (With an option of 8 MB display memory on chip). This yields true-color resolution of 1280 x 1024.

4.1.3 Display types

CRT and panel displays can be used simultaneously. The PCI-6870 can be set in one of three configurations: on a CRT, on a flat panel display, or on both simultaneously. The system is initially set to simultaneous display mode. The BIOS setup can be used to configure the display. In BIOS, select "Integrated Peripherals", then "Boot-up display type." You can then choose one of the following modes: "CRT only", "Panel only", or "Simultaneous."

4.1.4 Dual/simultaneous display

The 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".
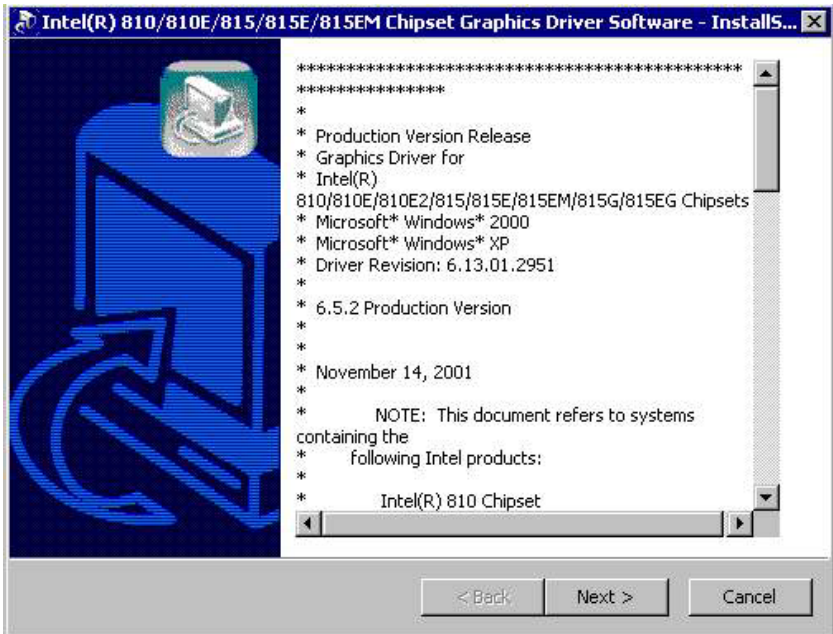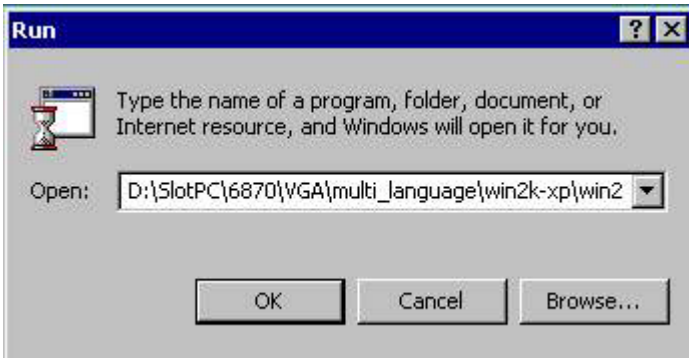4. Click "OK".
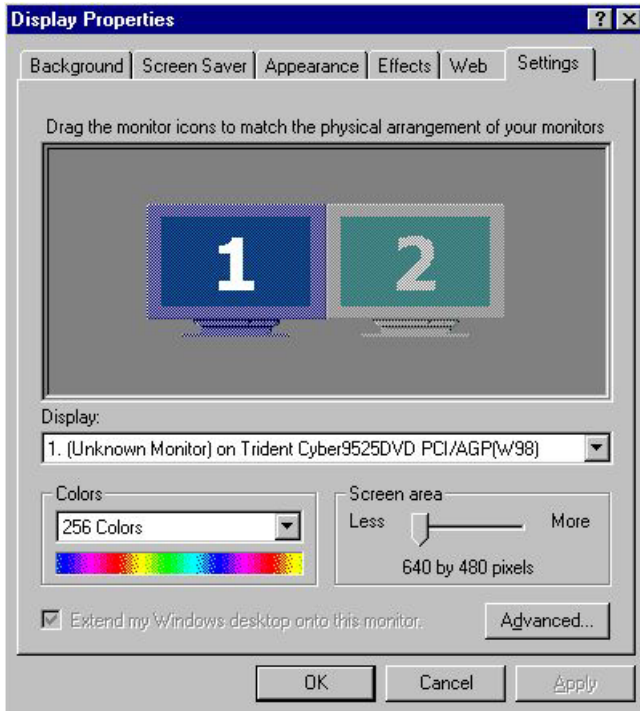
4.2 Installation of SVGA driver

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.
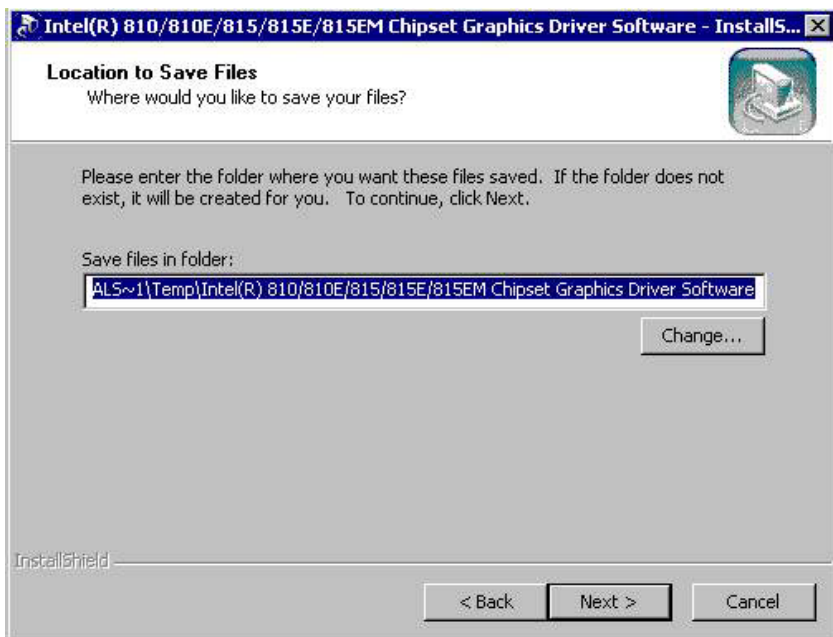
Important: *The following windows illustrations are examples only. You must follow the instructions which appear on your screen.*
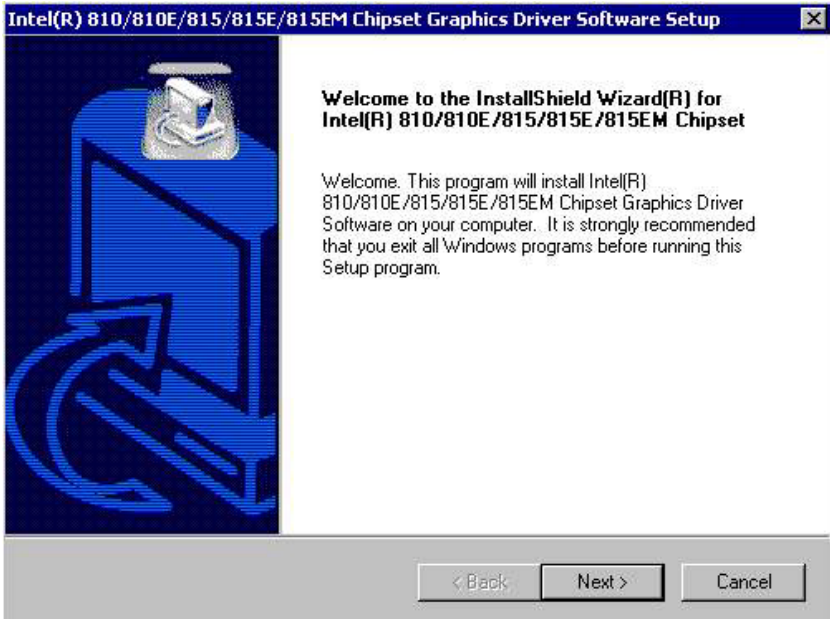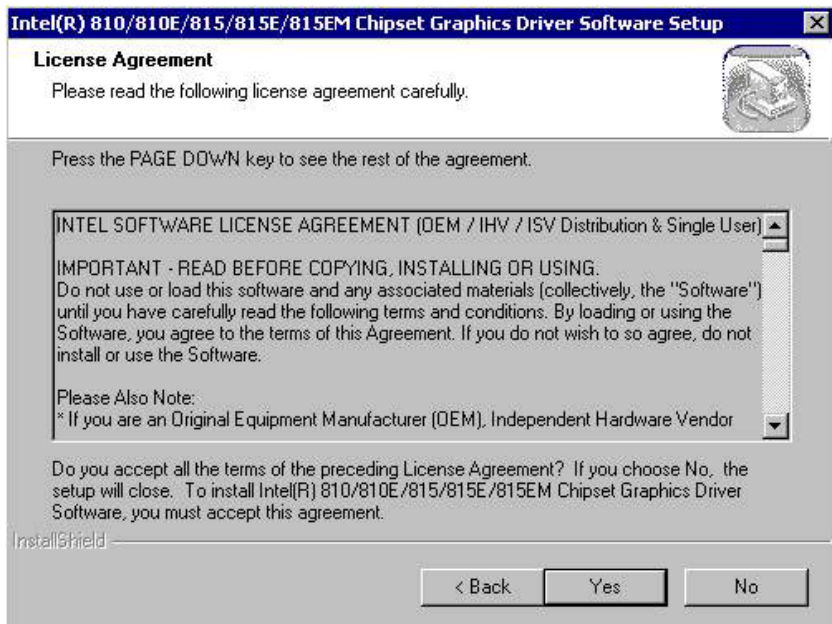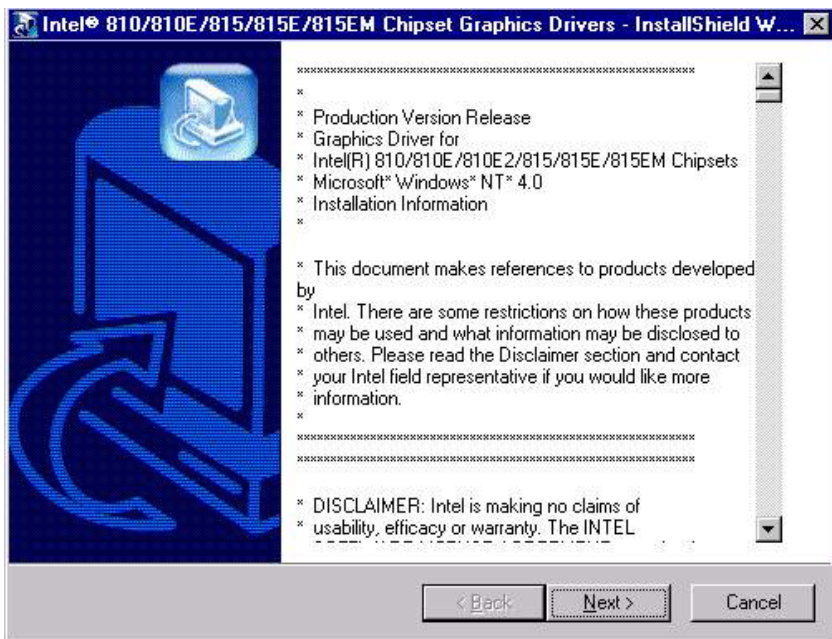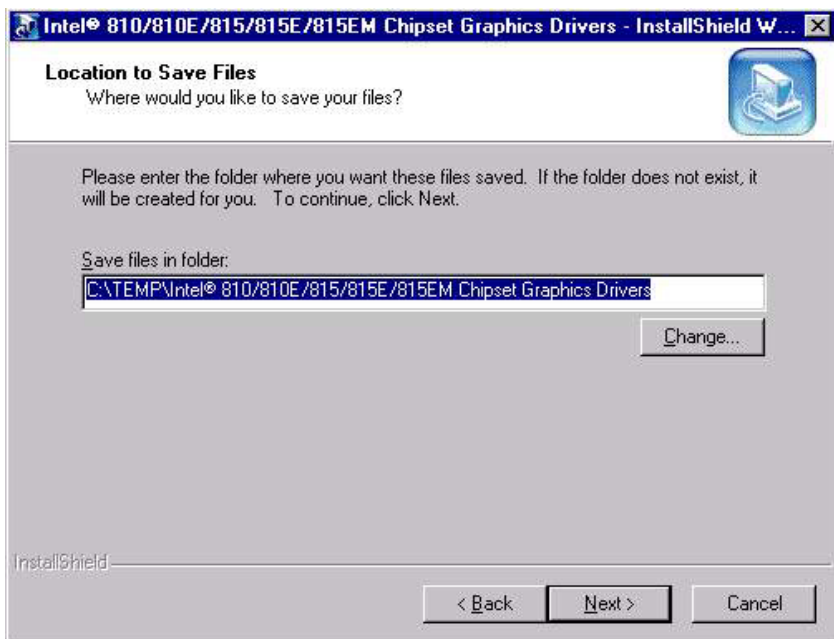
4.2.1 Installation for Windows 98 and 2000

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

Run   ? ✕

Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: D:\SlotPC\6870\VGA\multi_language\win2k-xp\win2 ▾

OK   Cancel   Browse...

Intel(R) 810/810E/815/815E/815EM Chipset Graphics Driver Software - InstallS... ✕

```
************************************************
***************
*
* Production Version Release
* Graphics Driver for
* Intel(R)
810/810E/810E2/815/815E/815EM/815G/815EG Chipsets
* Microsoft* Windows* 2000
* Microsoft* Windows* XP
* Driver Revision: 6.13.01.2951
*
* 6.5.2 Production Version
*
*
* November 14, 2001
*
*          NOTE:  This document refers to systems
containing the
*          following Intel products:
*
*          Intel(R) 810 Chipset
```

< Back   Next >   Cancel

Intel(R) 810/810E/815/815E/815EM Chipset Graphics Driver Software Setup

Welcome to the InstallShield Wizard(R) for Intel(R) 810/810E/815/815E/815EM Chipset

Welcome. This program will install Intel(R) 810/810E/815/815E/815EM Chipset Graphics Driver Software on your computer. It is strongly recommended that you exit all Windows programs before running this Setup program.

< Back   Next >   Cancel

Intel(R) 810/810E/815/815E/815EM Chipset Graphics Driver Software Setup

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Please read the following license agreement carefully.

Press the PAGE DOWN key to see the rest of the agreement.

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Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor

Do you accept all the terms of the preceding License Agreement? If you choose No, the setup will close. To install Intel(R) 810/810E/815/815E/815EM Chipset Graphics Driver Software, you must accept this agreement.

InstallShield

[< Back]　[Yes]　[No]

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.
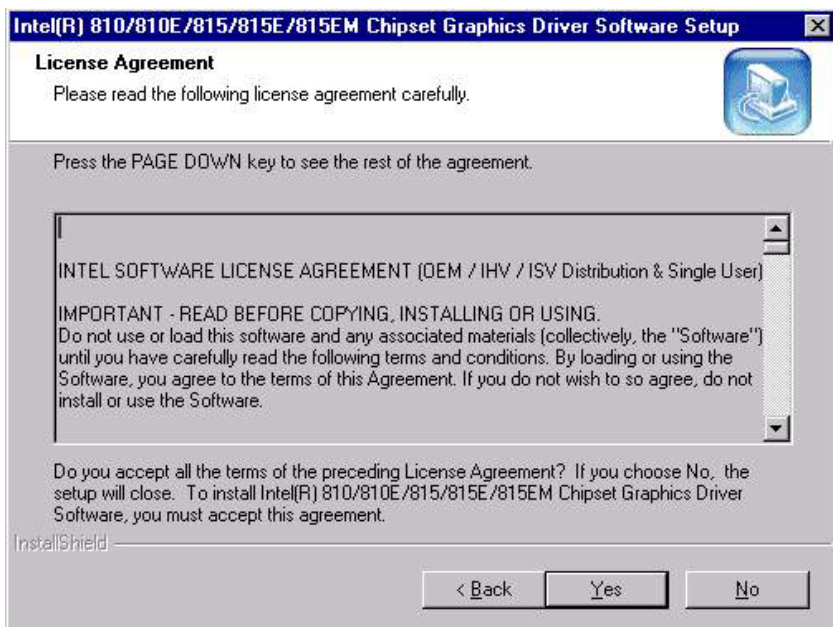
Welcome to the InstallShield Wizard for Intel(R) 810/810E/815/815E/815EM Chipset Graphics

Welcome. This program will install Intel(R) 810/810E/815/815E/815EM Chipset Graphics Driver Software on your computer. It is strongly recommended that you exit all Windows programs before running this Setup program.

< Back   Next >   Cancel

Intel(R) 810/810E/815/815E/815EM Chipset Graphics Driver Software Setup ☒

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Do you accept all the terms of the preceding License Agreement? If you choose No, the setup will close. To install Intel(R) 810/810E/815/815E/815EM Chipset Graphics Driver Software, you must accept this agreement.

InstallShield ──────────────────

< Back   Yes   No

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

PCI Bus Ethernet Interface

This chapter provides information on Ethernet configuration.

- Introduction

- Installation of Ethernet driver for Windows 98 & 2000

- Installation of Ethernet driver for Windows NT

- Further information

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 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.

Note: *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.
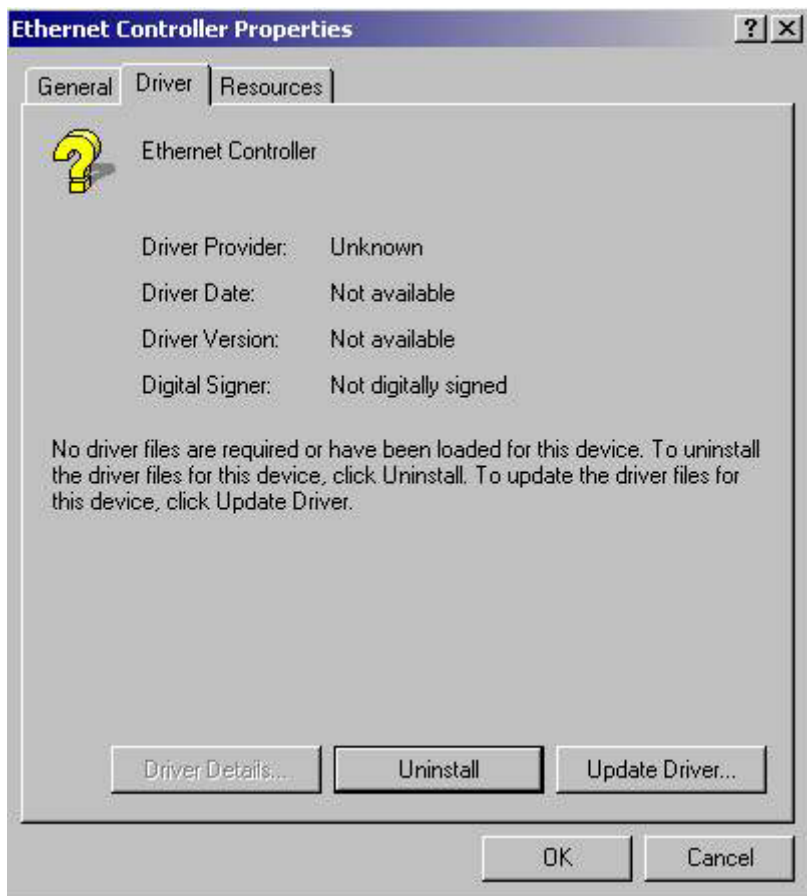
Intel(R) PRO LAN adapter driver software release v4.1.1 - InstallShield Wizard

License Agreement
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LICENSE. You may copy the Software onto a single computer for your personal,

○ I accept the terms in the license agreement
○ I do not accept the terms in the license agreement

InstallShield

< Back   Next >   Cancel

Intel(R) PRO LAN adapter driver software release v4.1.1 - InstallShield Wizard ✕

Location to Save Files
Where would you like to save your files?

Please enter the folder where you want these files saved. If the folder does not exist, it will be created for you. To continue, click Next.

Save files in folder:

C:\INTEL

Change...

InstallShield

< Back   Next >   Cancel

Ethernet Controller Properties   ? X

General   Driver   Resources

    ？   Ethernet Controller

            Driver Provider: Unknown

            Driver Date: Not available

            Driver Version: Not available

            Digital Signer: Not digitally signed

    No driver files are required or have been loaded for this device. To uninstall
    the driver files for this device, click Uninstall. To update the driver files for
    this device, click Update Driver.

            Driver Details...   Uninstall   Update Driver...

                                          OK   Cancel

Upgrade Device Driver Wizard

Install Hardware Device Drivers
A device driver is a software program that enables a hardware device to work with an operating system.

This wizard upgrades drivers for the following hardware device:

Ethernet Controller

Upgrading to a newer version of a device driver may add functionality to or improve the performance of this device.

What do you want the wizard to do?

○ Search for a suitable driver for my device (recommended)

◉ Display a list of the known drivers for this device so that I can choose a specific driver

[< Back] [Next >] [Cancel]

Upgrade Device Driver Wizard

Hardware Type
What type of hardware do you want to install?

Select a hardware type, and then click Next.

Hardware types:

- IEEE 1394 Bus host controllers
- Imaging devices
- Infrared devices
- Memory technology driver
- Modems
- Multi-port serial adapters
- Network adapters
- NT Apm/Legacy Support
- Other devices

[< Back] [Next >] [Cancel]

Install From Disk

Insert the manufacturer's installation disk into the drive selected, and then click OK.

OK

Cancel

Copy manufacturer's files from:

C:\INTEL

Browse...

Upgrade Device Driver Wizard

Start Device Driver Installation
The device driver will be installed with the default settings.

The wizard is ready to install the driver for the following hardware device:

Intel(R) PRO/100 VE Network Connection

Windows will use default settings to install the software for this hardware device. To install the software for your new hardware, click Next.

[< Back] [Next >] [Cancel]

Upgrade Device Driver Wizard

Completing the Upgrade Device Driver Wizard

Intel(R) PRO/100 VE Network Connection

Windows has finished installing the software for this device.

To close this wizard, click Finish.

< Back   Finish   Cancel

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.

Run [?] [X]

Type the name of a program, folder, or document, and Windows will open it for you.

Open: `C:\TEMP\LAN\82562ET\100pdisk.exe` ▼

☑ Run in Separate Memory Space

[OK] [Cancel] [Browse...]
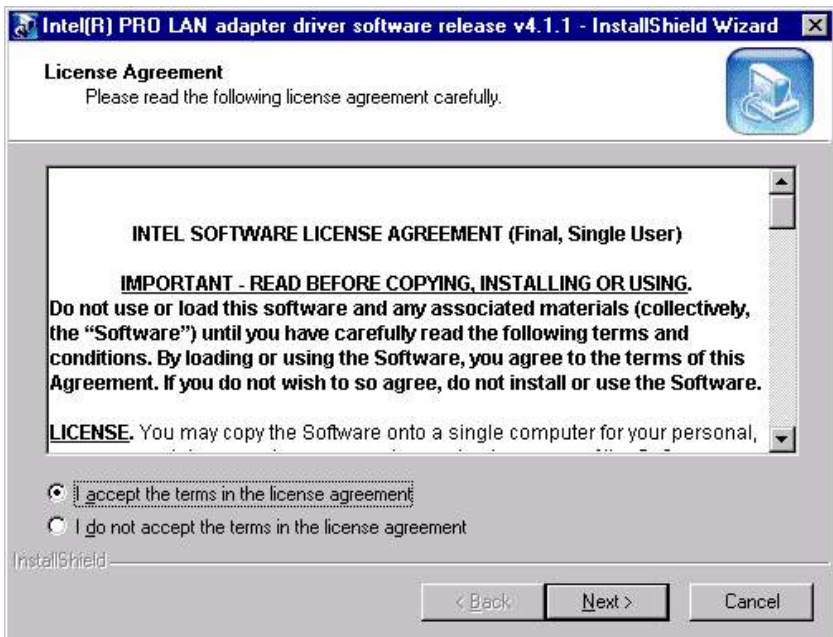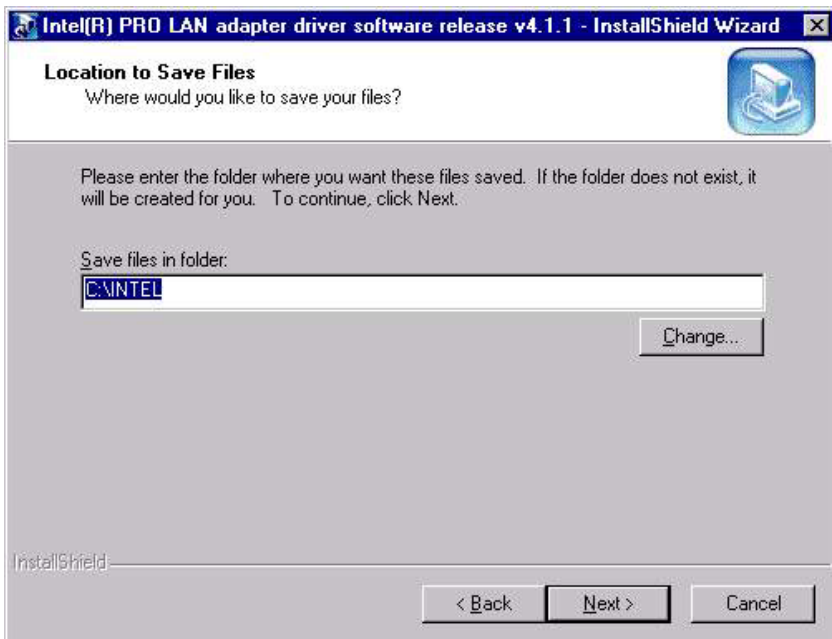
Network Setup Wizard

Windows NT needs to know how this computer should participate on a network.

☑ Wired to the network:
    Your computer is connected to the network by an ISDN Adapter or Network Adapter.

☐ Remote access to the network:
    Your computer uses a Modem to remotely connect to the network.

[< Back]   [Next >]   [Cancel]

Network Setup Wizard

To have setup start searching for a Network Adapter, click Start Search button.

Start Search

Network Adapters:

Select from list...

< Back   Next >   Cancel

Select Network Adapter

Click the Network Adapter that matches your hardware, and then click OK. If you have an installation disk for this component, click Have Disk.

Network Adapter:

- 3Com 3C508 ISA 16-bit Ethernet Adapter
- 3Com Etherlink II Adapter (also II/16 and II/16 TP)
- 3Com Etherlink III ISA/PCMCIA Adapter
- 3Com EtherLink III PCI Bus-Master Adapter (3C590)
- 3Com Etherlink16/EtherLink16 TP Adapter
- 3Com Fast EtherLink PCI 10/100BASE-T Adapter (3C595)

Have Disk...

OK   Cancel

Insert Disk

Insert disk with software provided by the software or hardware manufacturer. If the files can be found at a different location, for example on another drive type a new path to the files below.

OK

Cancel

c:\intel

Select OEM Option

Choose a software supported by this hardware manufacturer's disk.

Intel(R) PRO Adapter

[OK] [Cancel] [Help]

Network Setup Wizard

Select the networking protocols that are used on your network. If you are unsure, contact your system administrator.

Network Protocols:

☑ 📶 TCP/IP Protocol
☐ 📶 NWLink IPX/SPX Compatible Transport
☐ 📶 NetBEUI Protocol

Select from list...

< Back   Next >   Cancel

Network Setup Wizard

Listed below are the services that will be installed by the system. You may add to this list by clicking the Select from list button.

Network Services:

- ☑ 🖥 RPC Configuration
- ☑ 🖥 NetBIOS Interface
- ☑ 🖥 Workstation
- ☑ 🖥 Server

Select from list...

< Back   Next >   Cancel

Network Setup Wizard

Windows NT is now ready to install networking components that you selected and others required by the system.

This process will allow individual components to install themselves and raise dialogs so that they may install correctly.

Click Next to install selected components.

Click Back to make changes to your selections.

[< Back] [Next >] [Cancel]

Windows NT Setup

Setup needs to copy some Windows NT files.

Setup will look for the files in the location specified below. If you want Setup to look in a different place, type the new location. When the location is correct, click Continue.

Continue

Cancel

D:\I386

Network Settings Change

You must shut down and restart your computer before the new settings will take effect.

Do you want to restart your computer now?

[Yes]   [No]

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

Audio

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

6.1 Introduction

The PCI-6870's on-board audio interface provides high-quality stereo sound and FM music synthesis (ESFM) by using the Cs5530A audio controller from Cyrix Corporation. The audio interface can record, compress, and play back voice, sound, and music with a built-in mixer control. 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 register compatible with the OPL3 and has extended capabilities.

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
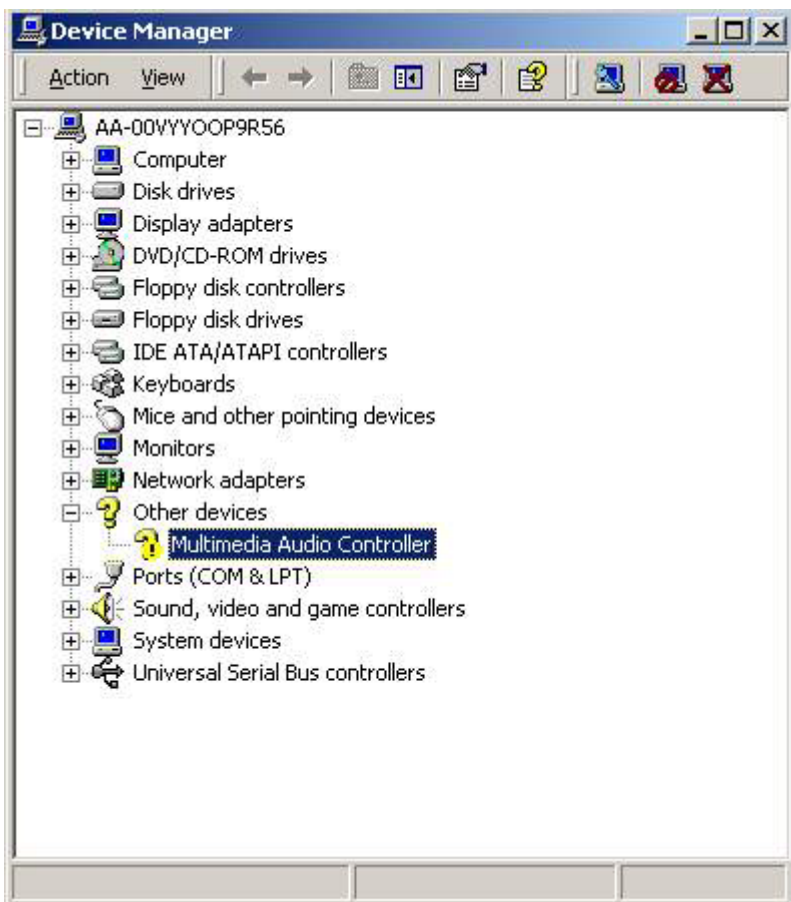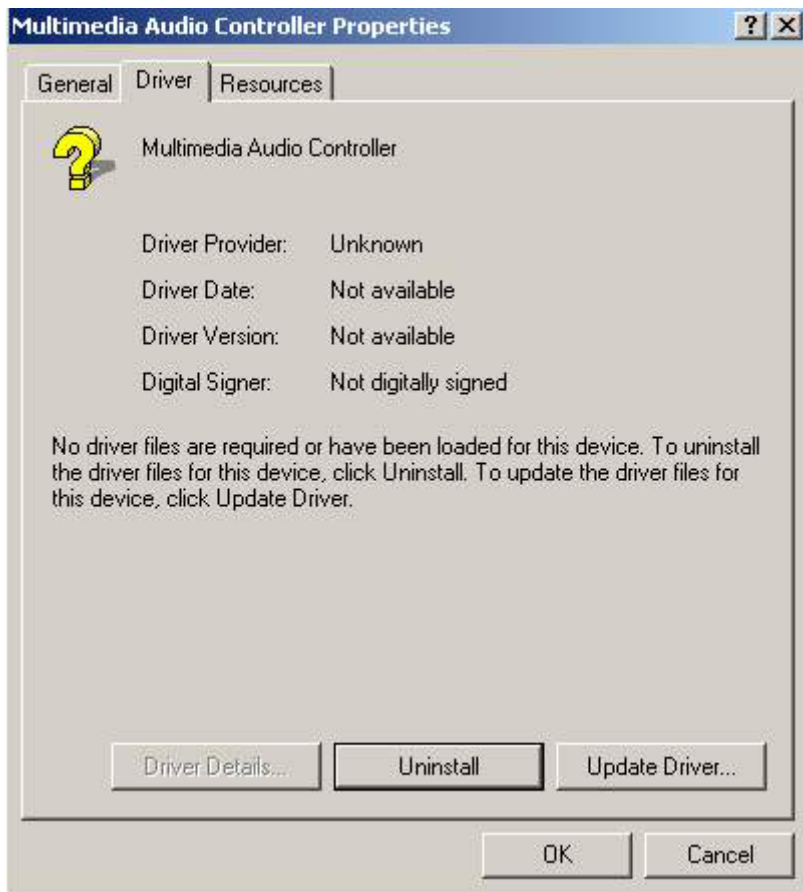
Multimedia Audio Controller Properties   ? X

General | Driver | Resources

Multimedia Audio Controller

Driver Provider: Unknown
Driver Date: Not available
Driver Version: Not available
Digital Signer: Not digitally signed

No driver files are required or have been loaded for this device. To uninstall the driver files for this device, click Uninstall. To update the driver files for this device, click Update Driver.

Driver Details...   Uninstall   Update Driver...

OK   Cancel

Upgrade Device Driver Wizard

Hardware Type
What type of hardware do you want to install?

Select a hardware type, and then click Next.

Hardware types:

- NT Apm/Legacy Support
- Other devices
- PCMCIA adapters
- Ports (COM & LPT)
- Printers
- SCSI and RAID controllers
- **Sound, video and game controllers**
- System devices
- Tape drives

< Back   Next >   Cancel

Install From Disk

Insert the manufacturer's installation disk into the drive selected, and then click OK.

OK

Cancel

Copy manufacturer's files from:

D:\SlotPC\6870\Audio\alc201\98se_Me_2K_XP\ ▼

Browse...

Upgrade Device Driver Wizard

Start Device Driver Installation
The device driver will be installed with the default settings.

The wizard is ready to install the driver for the following hardware device:

Avance AC'97 Audio for VIA (R) Audio Controller

Windows will use default settings to install the software for this hardware device. To install the software for your new hardware, click Next.
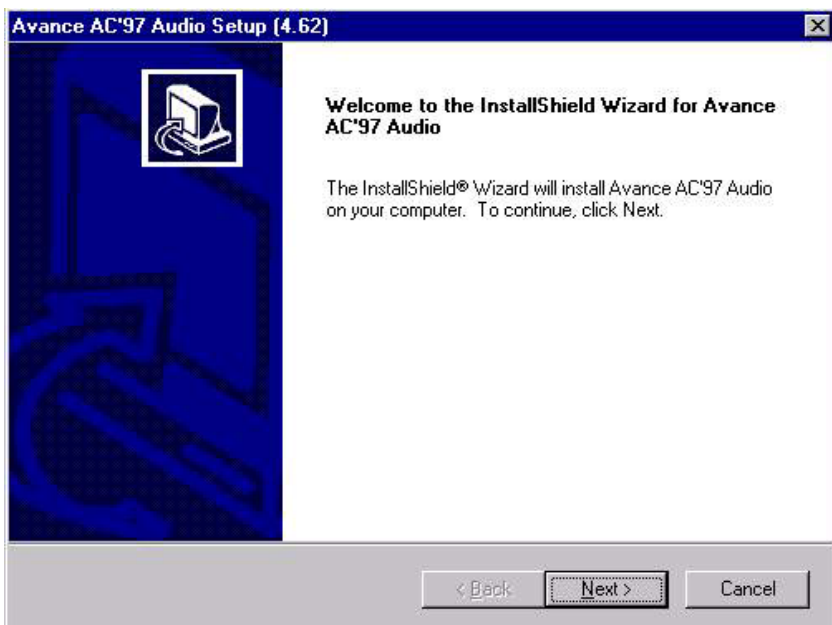
[< Back] [Next >] [Cancel]

Upgrade Device Driver Wizard

Completing the Upgrade Device Driver Wizard

Avance AC'97 Audio for VIA (R) Audio Controller

Windows has finished installing the software for this device.

To close this wizard, click Finish.

< Back   Finish   Cancel

6.2.2 Installation for Windows NT

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.

A.1   Programming the Watchdog Timer

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
```

B

Filler

This appendix is supplied so that we can use the old Appendixes C and D, which are perfectly good, without changing all the references to them that appear in the text. We didn't want anyone to think that we *forgot* Appendix B.

This page intentionally left pretty much blank.

APPENDIX **C**

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
- CompactFlash card connector

C.1 CompactFlash Card Connector (SK1)

Table C-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	D11^1	28	D12^1
29	D13^1	30	D14^1
31	D15^1	32	* CS1^1
33	* VS1	34	* IORD
35	* IOWR	36	* WE^3
37	INTRQ	38	+5 V
39	* CSEL	40	* VS2
41	* RESER	42	IORDY
43	* INPACK	44	* REG^3
45	* DASP	46	* PDIAG
47	D08^1	48	D09^1
49	D10	50	GND

* low active

C.2 IR Connector (CN1)

```
 1   2   3
○ ○ ○ ○ ○
```
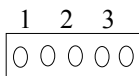
Table C-2: IR connector

Pin	Signal
1	+5 V
2	IRRX
3	IR_RX
4	GND
5	IR_TX

C.3 VGA Display Connector (CN2)
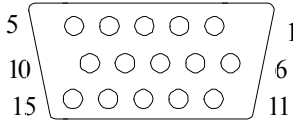
Table C-3: CRT display connector

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		

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

```
5  ○  ○   9
4  ○  ○   8
3  ○  ○   7
2  ○  ○   6
1  ○
```
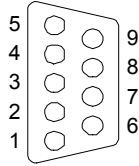
Table C-4: COM1 RS-232 serial port

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

C.5 Keyboard and Mouse Connnector (CN4)
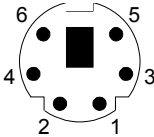
Table C-5: Keyboard and mouse connector

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

C.6 ATX Power Connector (CN6)

```
   1   2   3
  ┌──────────┐
  │ ○   ○   ○ │
  └──────────┘
```
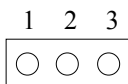
Table C-6: ATX power connector

Pin	Signal
1	5 V SB
2	GND
3	PS_ON

C.7 Printer Port Connector (CN7)

```
 25  23      3  1
┌─────────────────┐
│ ○  ○  •••  ○  ○ │
│ ○  ○       ○  ○ │
└─────────────────┘
 26  24      4  2
```
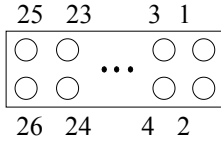
Table C-7: Parallel port connector

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

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

```
10 ◯ ◯ 9
   ◯ ◯
   ◯ ◯
   ◯ ◯
2  ◯ ◯ 1
```
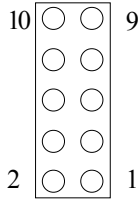
Table C-8: COM2 RS-232/422/485 serial port

Pin	RS-422 port	RS-485 port
1	TXD-	DATA-
2	N/C	N/C
3	TXD+	DATA+
4	N/C	N/C
5	RXD+	N/C
6	N/C	N/C
7	RXD-	N/C
8	N/C	N/C
9	GND	GND
10	N/C	N/C

C.9 USB1/USB2 Connector (CN9)

```
1  ◯ ◯  2
   ◯ ◯
   ◯ ◯
   ◯ ◯
9  ◯ ◯  10
```
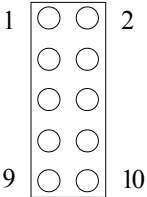
Table C-9: USB1/USB2 connector

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

C.10 EBX Power Connector (CN11)

C.11 CPU Fan Power Connector (CN12)

```
  1   2   3
 ┌─────────┐
 │ ○  ○  ○ │
 └─────────┘
```
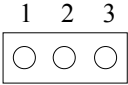
Table C-10: CPU fan power connector

Pin	Signal
1	GND
2	+12 V
3	FAN_DEC

C.12 ATX Power Switch (CN13)

1

Table C-11:ATX power switch

Pin	Signal
1	Standby 5 V
2	Power ON

C.13 CD-ROM in connector (CN14)

Table C-12: CD-ROM connector

Pin	Signal
1	CD_R
2	GND
3	GND
4	CD_L

C.14 IDE Hard Drive Connector (CN15)

Table C-13: 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 CHANNEL 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

C.15 Audio connector (CN17)

```
  15  13              3   1
 ┌─────────────────────────┐
 │ ○ ○ ○ ○ ○ ○ ○ □ │
 │ ○ ○ ○ ○ ○ ○ ○ ○ │
 └─────────────────────────┘
  16  14              4   2
```
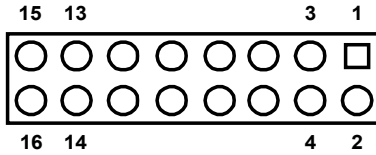
Table C-14: Audio connector (CN12)

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

C.16 Secondary IDE (ATA33)

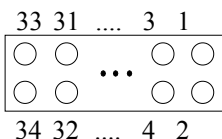# C.17 Video Expansion Connector (CN19)

C.18 Floppy Drive Connector (CN20)

```
33 31  ....   3   1
○  ○        ○  ○
      •••
○  ○        ○  ○
34 32  ....   4   2
```

Table C-15: Floppy drive connector

Pin	Signal	Pin	Signal
1	GND	2	RWC#
3	GND	4	N/C
5	GND	6	DS1
7	GND	8	INDEX#
9	GND	10	MOA#
11	GND	12	DSB#
13	GND	14	DSA#
15	GND	16	MOB#
17	GND	18	DIR#
19	GND	20	STEP#
21	GND	22	WD#
23	GND	24	WE#
25	GND	26	TRAK0#
27	GND	28	WP#
29	GND	30	RDATA#
31	GND	32	HEAD#
33	GND	34	DSKCHG#

* low active

APPENDIX

D

System Assignments

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

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

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 $220 \sim 250H$ (16 bytes)
  MPU-401 select from $300 \sim 330H$ (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