

PPC-105

**NS GX1 processor-based Panel
PC with 10" TFT LCD flat panel
display**

Users Manual

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This manual is for the PPC-105.

Part No. 2008010550

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FCC Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with this user's manual, it may cause harmful interference to radio communications. Note that even when this equipment is installed and used in accordance with this user's manual, there is still no guarantee that interference will not occur. If this equipment is believed to be causing harmful interference to radio or television reception, this can be determined by turning the equipment on and off. If interference is occurring, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment to a power outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Warning! *Any changes or modifications made to the equipment which are not expressly approved by the relevant standards authority could void your authority to operate the equipment.*



Packing List

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

- PPC-105 series panel PC
- User's manual
- Accessories for PPC-105
 - Power cable for both FDD and HDD/CD-ROM
 - FDD flat cable (35 cm)
 - Keyboard extension cable (5-pin DIN female to 6-pin PS/2 male)
 - HDD flat cable (44-pin) (8 cm)
 - IDE flat cable (40-pin) (45 cm)
 - Power cord (1.8 m) - USA type
 - HDD bracket
 - Driver/Utility CD-ROM disk
 - Screws
 - Warranty card

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

Additional Information and Assistance

Step 1. Visit the Advantech web site at **www.advantech.com** where you can find the latest information about the product.

Step 2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

Safety Instructions

1. Please read these safety instructions carefully.
2. Please keep this User's Manual for later reference.
3. Please disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the socket-outlet must be installed near the equipment and must be easily accessible.
5. Please keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
 - a. The power cord or plug is damaged.
 - b. Liquid has penetrated into the equipment.
 - c. The equipment has been exposed to moisture.
 - d. The equipment does not work well, or you cannot get it to work according to the user's manual.
 - e. The equipment has been dropped and damaged.
 - f. The equipment has obvious signs of breakage.
15. **DO NOT LEAVE THIS EQUIPMENT IN AN UNCONTROLLED ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). IT MAY DAMAGE THE EQUIPMENT.**

The sound pressure level at the operator's position according to IEC 704-1:1982 is equal to or less than 70 dB(A).

DISCLAIMER: This set of instructions is supplied according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Wichtige Sicherheitshinweise

1. Bitte lesen sie Sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie Keine Flüssig-oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Die NetzanschlusBsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor überhit-zung schützt. Sorgen Sie dafür, daB diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim. AnschluB an das Stromnetz die AnschluBwerte.
9. Verlegen Sie die NetzanschlusBleitung so, daB niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädi-gung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag aus-lösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von autorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
 - a - Netzkabel oder Netzstecker sind beschädigt.
 - b - Flüssigkeit ist in das Gerät eingedrungen.
 - c - Das Gerät war Feuchtigkeit ausgesetzt.
 - d - Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
 - e - Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
 - f - Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
15. VOSICHT: Explisionsgefahr bei unsachgemaben Austausch der Batte-rie.Ersatz nur durch denselben oder einem vom Hersteller empfohlene-mähnlichen Typ. Entsorgung gebrauchter Batterien navh Angaben des Herstellers.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weiger.

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General Information

This chapter gives background information on the PPC-105.

Sections include:

- Introduction
- Specifications
- LCD Specifications
- Dimensions
- I/O Arrangement
- Cutout (Suggestion)
- Mounting

Chapter 1 General Information

1.1 Introduction

The PPC-105 is a 10" LCD Panel PC with an NS GX1 CPU that is designed to serve as a human machine interface (HMI). It is a PC-based system with 10" color TFT LCD display, on-board PCI Ethernet, multi-COM port interfaces, and a 16-bit audio controller. This simple, complete, compact and highly integrated multimedia system lets you easily build a panel PC into your applications. By incorporating the PPC-105 into your project, your product development time will be shortened.

The PPC-105 is a compact, network-compatible PC with extensive features to control a dedicated system in a wide variety of applications. Common industrial applications include factory automation systems, precision machinery, and production process control. It is also suitable for many nonindustrial applications, including terminal information systems, entertainment management systems, and car park automation systems. Our panel PC is a reliable, cost-effective solution to your application's processing requirements.

1.2 Specifications

General

- **Dimensions** (W x H x D): 342 x 265 x 92.4 mm
(13.5"x10.4"x3.6")
- **Weight:** 3.2 kg (7.1 lbs)
- **Power supply:**
 - AC model: 60 watts
 - Input voltage: 100 ~240Vac, 2A, 50 ~ 60 Hz
 - Output voltage: +5 V @ 5 A, +12 V @ 3 A
 - DC model: 75 watts
 - Input voltage: 18 V DC ~ 36 V DC, typical 24 V DC; 4.2A max
 - Output voltage: +5 V @ 0.5A, +12 V @ 0.1A
 - Optional DC model: 65 watts
 - Input voltage: 9.5 V DC ~ 18 V DC, typical 12 V DC; 6.8A max
 - Output voltage: +5 V @ 0.5A, +12 V @ 0.1A
- **Safety:** UL/CSA, LVD approved

- **Disk drive housing:** Space for one internal 2.5" HDD
- **Front panel protection:** IP 65/NEMA 4 compliant

Standard PC functions

- **CPU:** NS GX1 300 MHz processor on board 352 BGA package
- **BIOS:** AWARD 256KB Flash BIOS, supports Plug & Play, APM v1.2
- **Chipset:** NS CX 5530 352-terminal BGA package
- **2nd level cache:** 16 KB on CPU
- **RAM:** One 144-pin SODIMM sockets accept 16~128MB SDRAM
- **PCI Bus Master IDE interface:** Supports two connectors (one internal, one external extension). Each connector supports two IDE devices on two channels (PIO modes 3/4). BIOS supports IDE (PIO mode 0~4, DMA mode 0~2, and Ultra DMA33 simultaneously).
- **Floppy disk drive interface:** Supports one external FDD (360K/1.2MB/720K/1.44MB/2.88 MB)
- **Parallel port:** One parallel port, supports SPP/EPP/ECP parallel mode.
- **Serial ports:** Four serial ports with three RS-232 ports (COM1, 3, and 4), one RS-232/422/485 port (COM2). All ports with 16C550 compatible UARTs.
- **USB:** Supports two UHCI USB
- **PCI/ISA bus expansion slot:** Accepts either one ISA or one PCI bus card.
- **Watchdog timer:** 62-level interval from 1 to 62 seconds. Automatically generates system reset or IRQ11 when the system stops due to a program error or EMI. Jumperless selection and software enabled/disabled.
- **Battery:** 3 V @ 195 mA lithium battery for CMOS backup

Solid State Disk (SSD)

- **One 50-pin socket:** for one CompactFlash™ Type I storage card, shared with one IDE channel.

PCI SVGA/flat panel interface

- **Chipset:** NS CX 5530
- **Display memory:** 1.5~4 MB share memory
- **Display type:** Simultaneously supports CRT and flat panel displays

- **Display resolution:** Supports non-interlaced CRT and LCD displays up to 800 x 600 @ 256 K colors with 1.5~4 MB shared memory

Audio function:

- **Audio Chipset:** AD1819A, fully compliant AC 97 analog I/O component, 16-bit stereo full-duplex codec, audio interface for microphone-in, line-in and speaker out

PCI bus Ethernet interface

- **Ethernet Chipset:** Realtek RTL8139C PCI local bus Ethernet controller fully compliant with IEEE 802.3u 10/100 Base-T specifications. Supports both boot ROM function and software drivers

Touchscreen (optional)*

- **Type:** Analog resistive
- **Resolution:** Continuous
- **Light transmission:** 75% (Surface meets ASTM-D-1044 standard, Taber Abrasion Test)
- **Controller:** RS-232 interface (uses COM4)
- **Power consumption:** +5 V @ 200 mA
- **Software driver:** Supports DOS, Windows 95/98, Windows NT and Windows 2000
- **Durability:** 30 million touch lifetime

***Note: The PPC-105 with the optionally installed touchscreen will share COM4.**

Environment

- **Temperature:** 0° ~ 40° C (32° ~ 104° F)
- **Relative humidity:** 10 ~ 95% @ 40° C, non-condensing
- **Shock:** 10G peak acceleration (11 msec duration)
- **Power MTBF:** 50,000 hrs
- **Certification:** CE, FCC Class B certification

1.3 LCD Specifications

Table 1.1: PPC-105 series LCD specifications

Display type (LCD)	10" SVGA TFT
Max. resolution	800 x 600
Colors	256 K colors
Dot size (mm)	0.25 x 0.25
View angle	100°
Luminance (cd/m ²)	170
Temperature (°C)	0 ~ 50
VR controls	Yes*
Simultaneous mode	Yes
LCD MTBF	50,000 hours
Backlight MTBF	20,000 hours

* The VR control is defined by hot key in DOS or BIOS mode as follows:
Ctrl-Alt-F3, Ctrl-Alt-F4

1.4 Dimensions

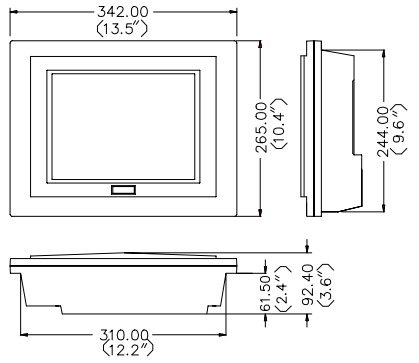


Figure 1.1: PPC-105 panel PC dimensions

1.5 I/O Arrangement

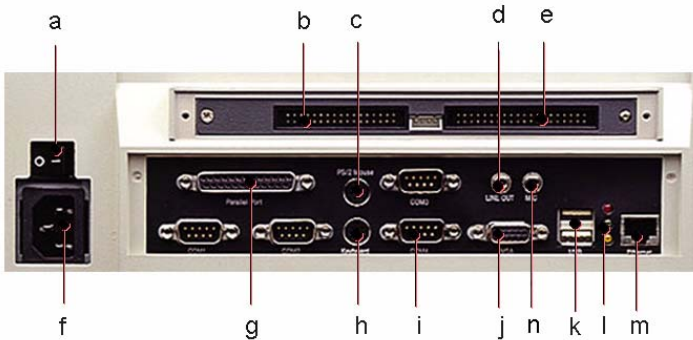


Figure 1.2: PPC-105 back panel I/O arrangement and cable connections

- | | |
|-------------------------|-----------------------|
| a. Power switch | h. Keyboard connector |
| b. FDD port | i. COM port |
| c. PS/2 mouse connector | j. VGA port |
| d. Line out port | k. USB port |
| e. External IDE port | l. Light indicator |
| f. AC inlet | m. Ethernet port |
| g. Parallel port | n. microphone |

* Three RS-232 (COM1, 3, 4) and one RS-232/422/485 (COM2)

1.6 Cutout (Suggestion)

The PPC-105 will stand on a shelf or a table, or you can mount it into a panel. Cutout panel dimensions are as follows

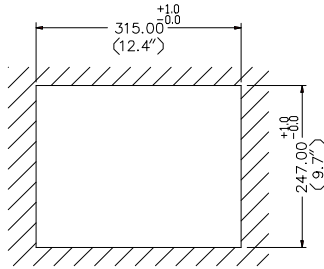


Figure 1.3: PPC-105 panel mounting cutout dimensions

1.7 Mounting

1.7.1 Panel mounting

If you decide to use a cutout within a panel to mount your PPC-105, we have included two panel-mount brackets. The brackets have two screws that fit in the keyhole slots on the panel PC.

Slide the PPC-105 backwards into the panel opening. Attach the two mounting brackets by sliding the two screw heads into the keyhole slots on the rear cover. Secure the PPC-105 against the back of the panel opening.

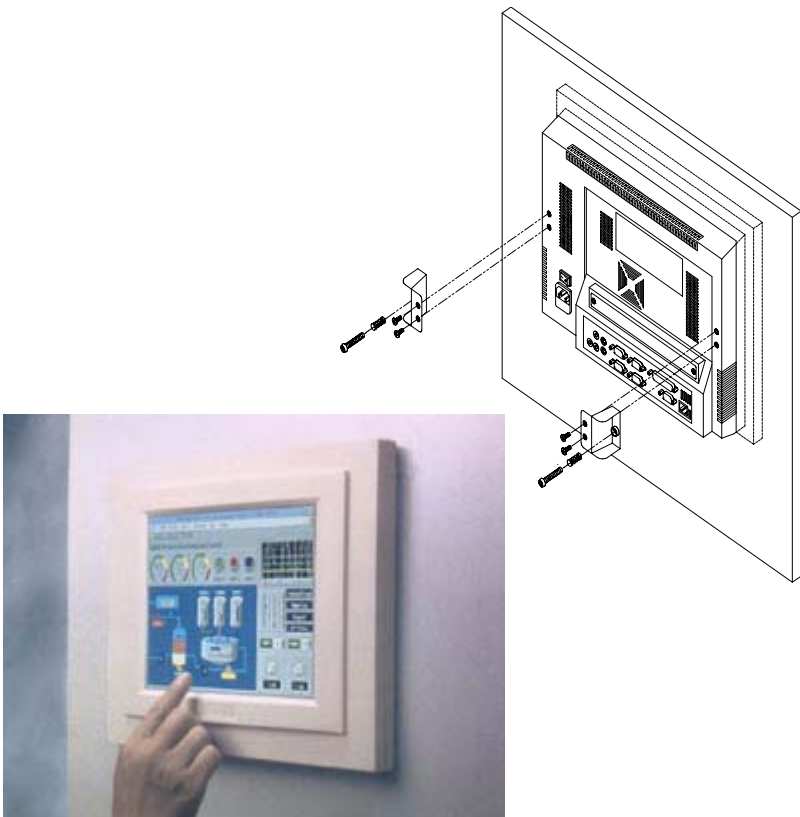


Figure 1.4: PPC-105 rear panel mounting brackets

1.7.2 Desktop stand (optional)

An optional stand is available for mounting the PPC as a desktop PC. The PPC-105 slides into the stand and is held in place by the screws provided. The compactness of the desktop-mounted PPC-105 saves desk space.



Figure 1.5: PPC-105 desktop stand

1.7.3 Wall-mounting (optional)

An optional wall-mounting attachment is also available for mounting the PPC at approximately 45° to a flat surface. Installation instructions follow:

1. The wall-mounting attachment is comprised of three parts: one back bracket, one support bracket, and one mounting bracket.
2. First attach the back bracket to the rear cover of the PPC-105, securing it in place with four of the philips-head screws provided.
3. Using a flat-head screwdriver, attach the support bracket to the back bracket using four of the flat-head screws provided, two on either side of the support bracket. The sides of the support bracket should overlap the sides of the back bracket, and the screws should secure one bracket to the other through the existing holes drilled into each bracket.
4. Mount the mounting bracket on the wall or other flat surface. The support bracket slides vertically from the top into the mounting bracket. It can then be secured to the mounting bracket by screwing one of the philips-head screws provided through the corresponding holes at the tops of the mounting bracket and the support bracket.



Figure 1.6: PPC-105 wall mounting configuration

System Setup

Sections include:

- General
- Removing Rear Panel
- Installing Options
- Installing I/O Equipment
- Installing Software to the HDD
- Exploded Diagram
- PCM-5821 and I/O Adapter
- Replacement
- Power Supply and Cooling Fan
- Replacement

Chapter 2 System Setup

2.1 General

The PPC-105 consists of a PC-based industrial computer that is housed in a protective cover. Your HDD, SDRAM and power supply and are all readily accessible by removing the rear panel. Any maintenance or hardware upgrades can be carried out easily after removing the rear panel.

Warning! *Do not remove the rear cover until you have verified that no power is flowing within the PPC-105. Power must be switched off, and the power cord must be disconnected. Every time you service the PPC-105, you should be aware of this.*



2.2 Preparing For First Time Usage

Before you set up the PPC-105 system, you should have at least the following items ready:

- Power cord (in the accessory box)
- 34-pin external FDD flat cable for FDD (in the accessory box)
- 40-pin external IDE cable for HDD or CD-ROM (in the accessory box)
- 4-pin power cable for both external FDD or IDE device (in the accessory box)
- PS/2 keyboard
- PS/2 mouse (for system software installation, i.e. MS Windows, NT, etc.)

2.3 Installing Options

2.3.1 Removing Rear Panel

Unscrew the eleven screws that secure the rear cover, then remove the cover.

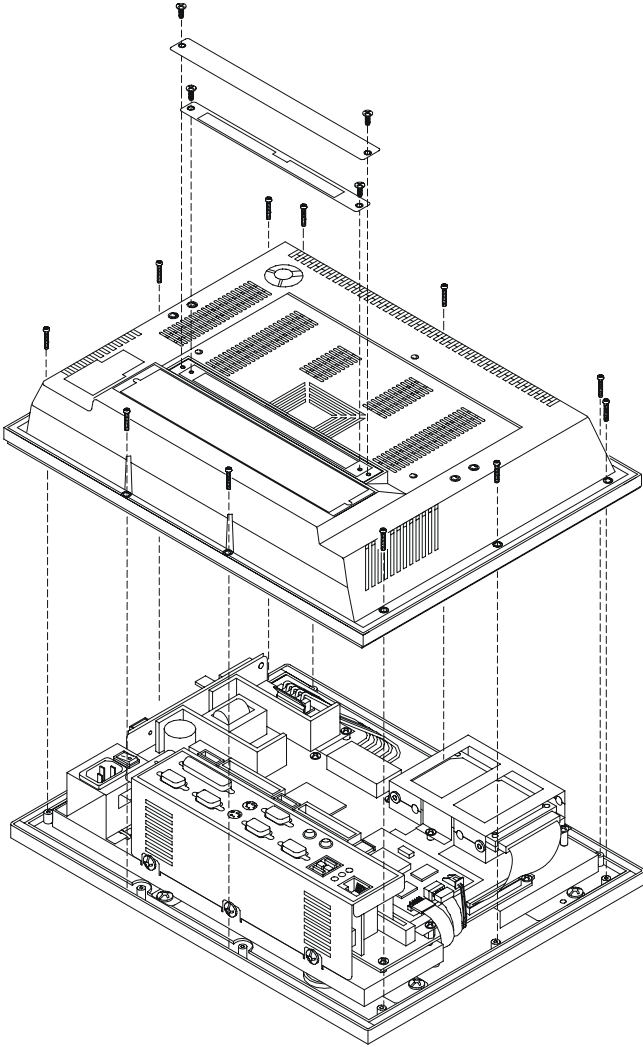


Figure 2.1: Removing the rear panel

2.3.2 Installing a primary 2.5" HDD (internal)

You can attach one enhanced Integrated Device Electronics (IDE) hard disk drive to the PPC-105's internal controller which uses a PCI local-bus interface. The advanced IDE controller supports faster data transfer rates and allows the IDE hard drive to exceed 528 MB. The following are instructions for installation:

1. Detach the rear panel and remove.
2. Place the HDD in the appropriate location inside the PPC-105, and tighten the screws.
3. Connect the cable included in this package (1x44-pin to 1x44-pin) from the HDD to the PC board (CN1). Make sure that the red/blue wire corresponds to pin 1 on the connector, which is labeled on the board. 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.

Warnings!



- (1) *Plug the other end of the cable into the HDD, with pin 1 on the cable corresponding to pin 1 on the hard drive. Improper connection will damage the HDD.*
- (2) *Be careful not to damage the CPU board with your tools!*
- (3) *The PCM-5821 board can accept installation of two hard disks. However, the compact housing of the PPC-105 has room for only one IDE HDD.*

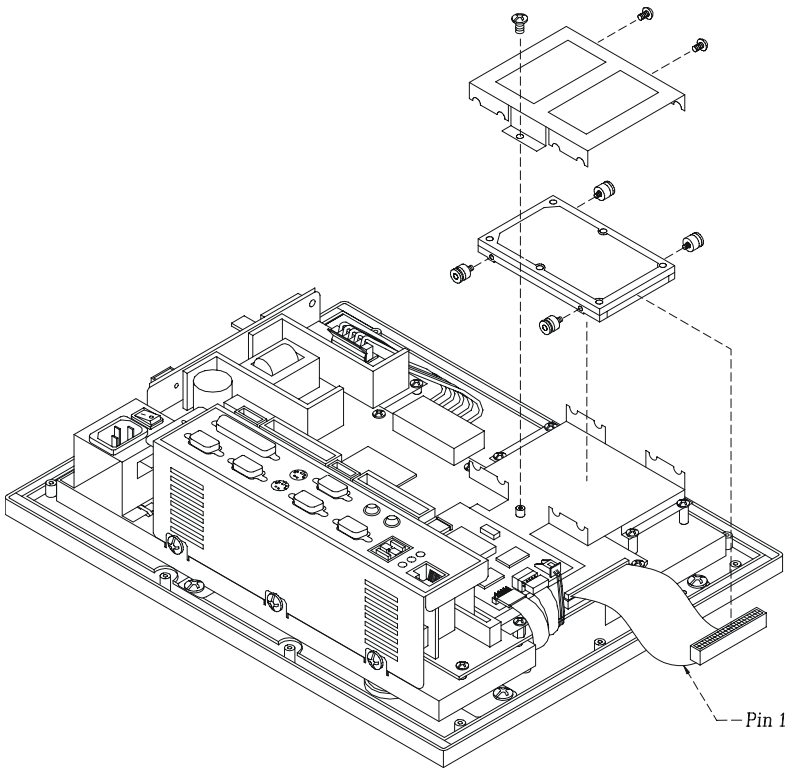


Figure 2.2: Installing a primary 2.5" HDD (internal)

2.4 Installing I/O Equipment

2.4.1 Installing one secondary HDD/CD-ROM device (external)

4. Two connectors are located on the rear panel above the PPC-105's I/O output connectors. The 40-pin connector is for an external set of master and slave hard disks. Connect the single end of the appropriate cable to the PPC-105, and connect the two remaining ends to your hard disk(s).

Warning! All warnings in Section 2.3.1 also apply here.



- Notes:*
- (1) *The 40-pin connector is a secondary channel.*
 - (2) *That part of the secondary HDD cable which is below 45 cm in length is incorporated in the accessory box.*
 - (3) *Make sure the red wire corresponds to pin 1 on the connectors.*

2.4.2 Installing an FDD

Up to two floppy drives can be attached to the PPC-105's I/O controller. Any combination of 5½" (360 KB and 1.2 MB) and/or 3¾" (720 KB, 1.44 MB, and 2.88 MB) drives can be attached.

A 34-pin FDD connector is located on the rear panel of the PPC-105. Unscrew the two attachment screws and detach the metal cover. Connect one end of a 34-pin daisy-chain drive connector cable and one end of a power signal cable (one each of these is included in the accessory box) to the FDD connector on the rear panel, and connect each of the other ends to an FDD.

- Notes
- (1) *Installation of two FDDs requires a flat ribbon connector with two plugs and a y-splitter for the power cable. The flat ribbon cable in the accessory kit has the required plugs. Users will have to procure an*
 - (2) *We recommend that only one FDD be installed on your PPC-105. The requisite power connector cable is included in the PPC-105 accessory box.*
 - (3) *Make sure the red wire corresponds to pin 1 on the connectors*

2.4.3 Parallel port connection

Normally a parallel port is used to connect a printer to a system. The PPC-105 includes one multimode (ECP/EPP) parallel port with a 25-pin D-sub connector.

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

The parallel port interrupt channel is designated to be IRQ7 or IRQ5. The BIOS standard setup menu allows selection of "278H/IRQ5, 378H/IRQ7, 3BCH/IRQ7".

ECP/EPP DMA channels (DMA1 and DMA3) can be selected via the BIOS setup.

2.4.4 PS/2 keyboard and PS/2 mouse

The PPC-105 provides a PS/2 keyboard connector that supports a PS/2 style keyboard and a 5-pin DIN keyboard extension cable. In most cases, especially in embedded applications, a keyboard is not used. The standard PC/AT BIOS will report an error or failure during power-on self-test (POST) after a reset if the keyboard is not present. The BIOS standard setup menu allows you to select* "All, But Keyboard" under the "Halt On" selection. This allows no-keyboard operation in embedded system applications without the system halting under POST. Note that the mouse port on the PPC-105 is a PS/2 mouse port.

Note: "All but keyboard" is the default setting.

2.4.5 Mic-in, line-out

The PPC is equipped with a high quality audio interface, which provides 16-bit Cd quality recording and playback as well as OPL3 compatible FM music. It is supported by all major operating systems and is completely compatible with Sound Blaster Pro.

The audio interface includes two jacks: microphone-in and line-out (See Fig. 1-2). Their functions are: mic in, and line out, respectively. Not too surprising.

2.4.6 External VGA

The PPC-105 can be connected to an external CRT monitor. To connect an external CRT monitor, connect the monitor's VGA cable to the PPC-102's VGA port and connect the monitor's power cable to an AC outlet. The PPC-105's external CRT display (VGA) connector is a standard 15-pin D-SUB connector commonly used for VGA.

2.4.7 Four serial COM ports

Many available peripherals, such as a serial mouse or an optional touchscreen, require connection to a serial COM port. When an optional touchscreen is ordered with a PPC-105, it shares COM4, and COM4 is not available as a serial port.

2.4.8 Ethernet

The PPC-105 is equipped with a high performance 32-bit Ethernet chipset which is fully compliant with the IEEE 802.3 100 Mbps CSMA/CD standards. It is supported by major network operating systems. It is also both 100Base-T and 10Base-T compatible. The medium type can be configured via the RSET8139.EXE program included on the utility disk. (See Chapter 4 "Software Configuration" for detailed information.)

The Ethernet port provides a standard RJ-45 jack. 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.

2.4.9 USB ports

The external USB device may be connected to the system though the 4-pin USB ports located on the rear side of the system unit.

1. Connect the external system to the system
2. The USB ports support hot plug-in connection. You should install the device driver before you use the device.

2.5 Installing Software to the HDD

Installing software requires an installed HDD. Software can be loaded in the PPC-105 using any of four methods:

2.5.1 Method 1: Use the Ethernet

You can use the Ethernet port to download software to the HDD.

2.5.2 Method 2: Use an FDD

The FDD port is located on the rear panel. Unscrew the two screws and detach the metal plate. Attach a communication cable and a power cable to the FDD port, then attach them to an FDD. Insert a disk containing the software and consult your software manual for installation procedures.

2.5.3 Method 3: Use the COM or parallel port

You can use Lap Link 6 or similar transmission software. Connect another PC to the PPC-105 with an appropriate cable and transmit the software to the PPC-105.

2.5.4 Method 4: Use a 3.5" HDD or CD-ROM

Please refer to Section 2.4.1 "Installing one secondary HDD/CD-ROM device (external)".

Microphone-in: Use an external microphone to record voice and sound.

Line-out: Output audio to external devices such as speakers or earphones.

1. Connect the audio device to the system
2. Install the driver before you use the device

2.6 Exploded Diagram

Figure 2-3 shows all the components and parts that make up the PPC-105. Use it as a guide when assembling and disassembling your system.

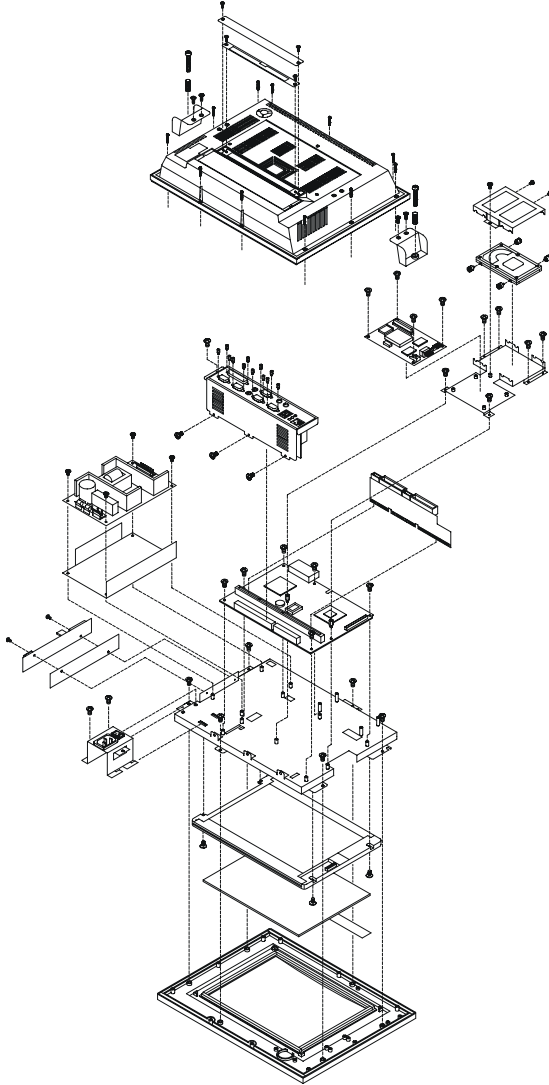


Figure 2.3: PPC-105 exploded diagram

2.7 PCM-5821 and I/O Adapter Replacement

To replace or service the PCM-5821 (the all-in-one CPU board) and I/O adapter, complete the following steps:

1. Turn off the power to the PPC-105
2. Remove the rear protective cover (see Figure 2-1)
3. Install the PCM-5821 in the panel and screw in the eight screws (see Figure 2-4)
4. When the PCM-5821 is mounted in the panel, plug and press the adapter into the socket (see Figure 2-4)
5. Some screws on the left connect the I/O adapter to the PC, and also connect the adapter to the PCM-5821. Screw the screws into the panel..

Note: *You may change the jumper settings for RS-232/422/485 before installing the PCM-5821 and I/O adapter*

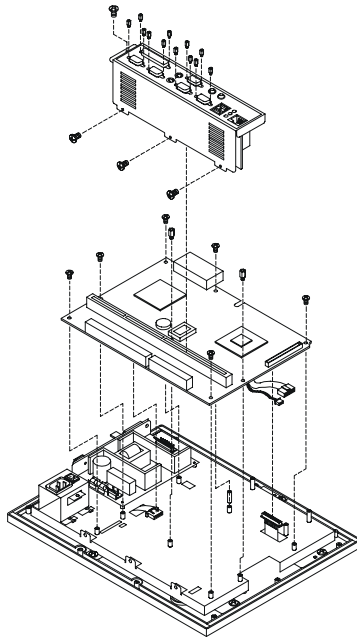


Figure 2.4: *Installing/removing the PCM-5821 & I/O adapter*

2.8 Installation Procedures

2.8.1 Connecting the AC power cord

The panel PC can be powered from an AC electrical outlet. Be sure always to handle the power cords by holding the plug ends only.

Follow these procedures in order:

1. Connect the female end of the power cord to the AC inlet of the panel PC.
2. Connect the 3-pin male plug of the power cord to an electrical outlet.

2.8.2 Installing the DC power insulator with hood

The panel PC can also be powered from a DC electrical outlet (18Vdc~36Vdc, typical 24Vdc or 9.5Vdc~18Vdc, typical 12Vdc, depending on power type). Follow the procedure in order to install the DC power insulator with hood then make sure to connect the insulator with the system.

1. Connect the contact pins individually to the negative and positive power cables of the power adaptor, as well as to the frame ground cable. Solder firmly.

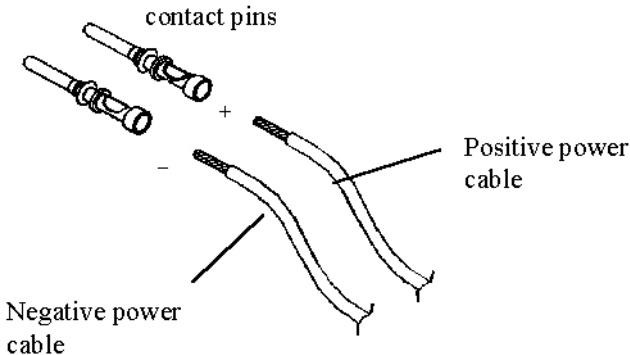


Figure 2.5: DC Insulator Contact Pins

- Align the soldered pins and their cables with the corresponding polarization marks on the front part of the male insulator (+/-). Now plug the pins separately into the holes of the male insulator. Pin 1 should go into the positive DC power input (+), and pin 3 should be plugged into the negative DC power input (-).

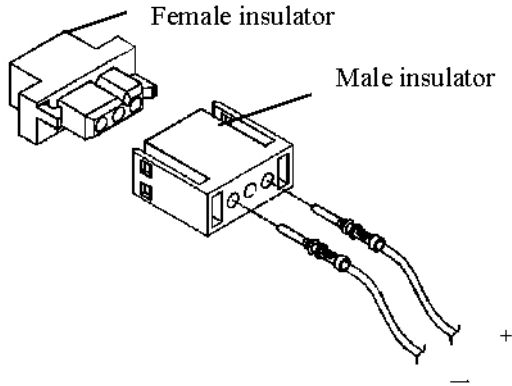


Figure 2.6: DC Male Insulator

- Mount the front part of the male insulator onto the bottom tray.

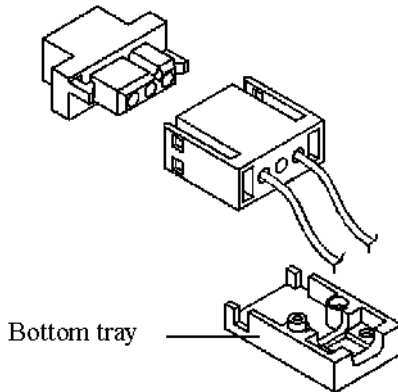


Figure 2.7: DC Male Insulator Tray

4. Use the metal plate and the two screws to secure the cables to the bottom tray. Please refer to the illustration above.

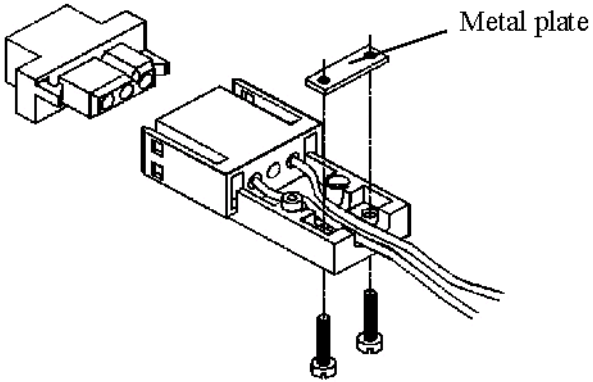


Figure 2.8: DC Male Insulator Cable Clamp

5. Attach the upper cap to the bottom tray and secure it with the screws.

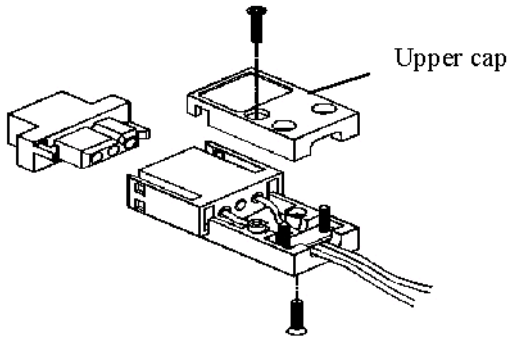


Figure 2.9: DC Male Insulator Cap

6. Now that you have completed the assembly of the male insulator, plug it into the female insulator.

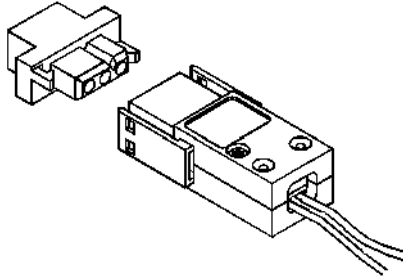


Figure 2.10: DC Insulator Mating

The Engine of the PC-105T (PCM-5821)

Sections include:

- Introduction
- Features
- Jumpers and Connectors
- Wake on LAN selection
- CMOS clear
- Watchdog timer configuration
- COM2 RS-232/422/485 setting
- Buzzer enable

3.1 Introduction

The PCM-5821 is a highly reliable single board computer based on the NS GX1 300MHz CPU. It offers built-in functionality comparable to a complete industrial PC system, including a VGA/LCD controller, network communications, compact flash disk in a small 8" x 5.75" form factor.

For maximum performance, the PCM-5821 also supports an SDRAM SODIMM socket that can accept up to 128 MB memory. On-board features include an Ethernet interface, audio interface, socket for Compact Flash Card, Enhanced IDE interface with up to Ultra DMA transfer protocol, one parallel port, four serial ports (RS-232 and RS-232/422/485) with DB-9 connector, and a mini-DIN PS/2 keyboard/mouse interface. An SVGA/LCD display controller (LCD, and CRT displays) allows LCD screen resolutions up to 800 x 600 @ 256 K colors.

The PCM-5821 complies with the "Green Function" standard and supports three types of power saving features: Normal, Doze, and Sleep modes.

The display type configuration is done through software. A single Flash chip holds the system BIOS and the VGA BIOS. This minimizes the number of chips and eases configuration. You can change the display BIOS simply by programming the Flash chip.

It also offers faster data access and longer MTBF than mechanical disk drives and is an ideal solution for critical commercial or industrial applications. The watchdog timer ensures the system will be reset if it stops due to a program bug or EMI problem.

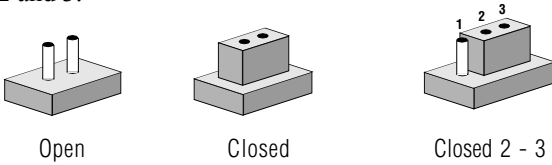
3.2 Features

- Ultra-compact size single board computer as small as a 3 1/2" hard disk drive (145 mm x 102 mm)
- On-board NS GX1 300 MHz CPU
- Up to 128 MB system memory by SODIMM (SDRAM)
- On-board VGA/LCD controller
- On-board 10/100Base-T Ethernet interface
- Supports on-board CompactFlash™ socket
- Built-in Enhanced IDE (AT bus) hard disk drive interface
- Four serial ports: three RS-232, one RS-232/422/485 or infrared selectable (uses 16C550 UARTs with 16 byte FIFO)
- Green engine with sleep mode and low power consumption
- Single +5 V power supply

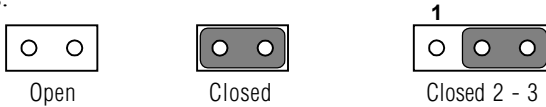
3.3 Jumpers and Connectors

3.3.1 Setting jumpers

You can configure your panel PC to match the needs of your application by setting jumpers. A jumper is the simplest kind of electrical 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, 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 pins 2 and 3.



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



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

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

3.3.2 Jumpers

The motherboard of the panel PC has a number of jumpers that allow you to configure your system to suit your applications. The table below lists the function of each of the board jumpers.

Table 3-1: Jumpers and their functions

Label	Function
JP1	Power type of Lan
JP2	CMOS Clear and Watchdog Timer action
JP3	COM2 RS-232/422/485 Setting
JP4	COM2 RS-232/422/485 Setting
JP5	COM2 RS-232/422/485 Setting
JP10	Buzzer enable

3.3.3 Connectors

Onboard connectors link the panel PC to external devices such as hard disk drives or floppy drives. The table below lists the function of each of the board's connectors.

Table 3-2: Panel PC connectors

Label	Function
J1	Inverter power connector
J2	Flat panel display connector
J3	Primary IDE hard drive connector
J4	Keyboard connector
J5	Internal touchscreen connector
CN1	SODIMM socket
CN2	Compact Flash Disk secondary IDE connector
CN3	CD IN
CN4	I/O board connector
CN5	I/O board connector
CN6	Power FAN power connector
CN7	External KBT2
CN8	CPU FAN power connector
CN10	Power Switch
CN20	Speaker and Microphone connector (Reserved)
PS1	Power test connector (Reserved)
JS2	Brightness VR (Reserved)

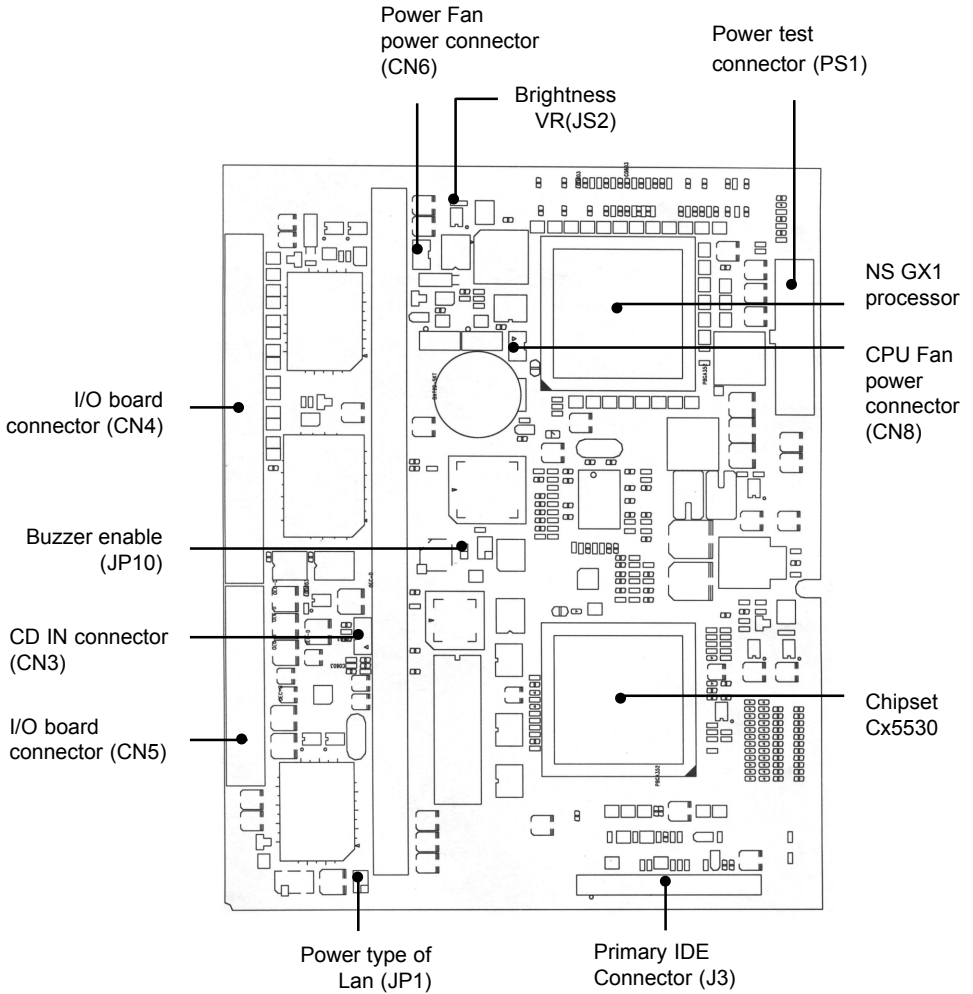


Figure 3-1: Locating jumpers and connectors on PCM-5821 (front side)

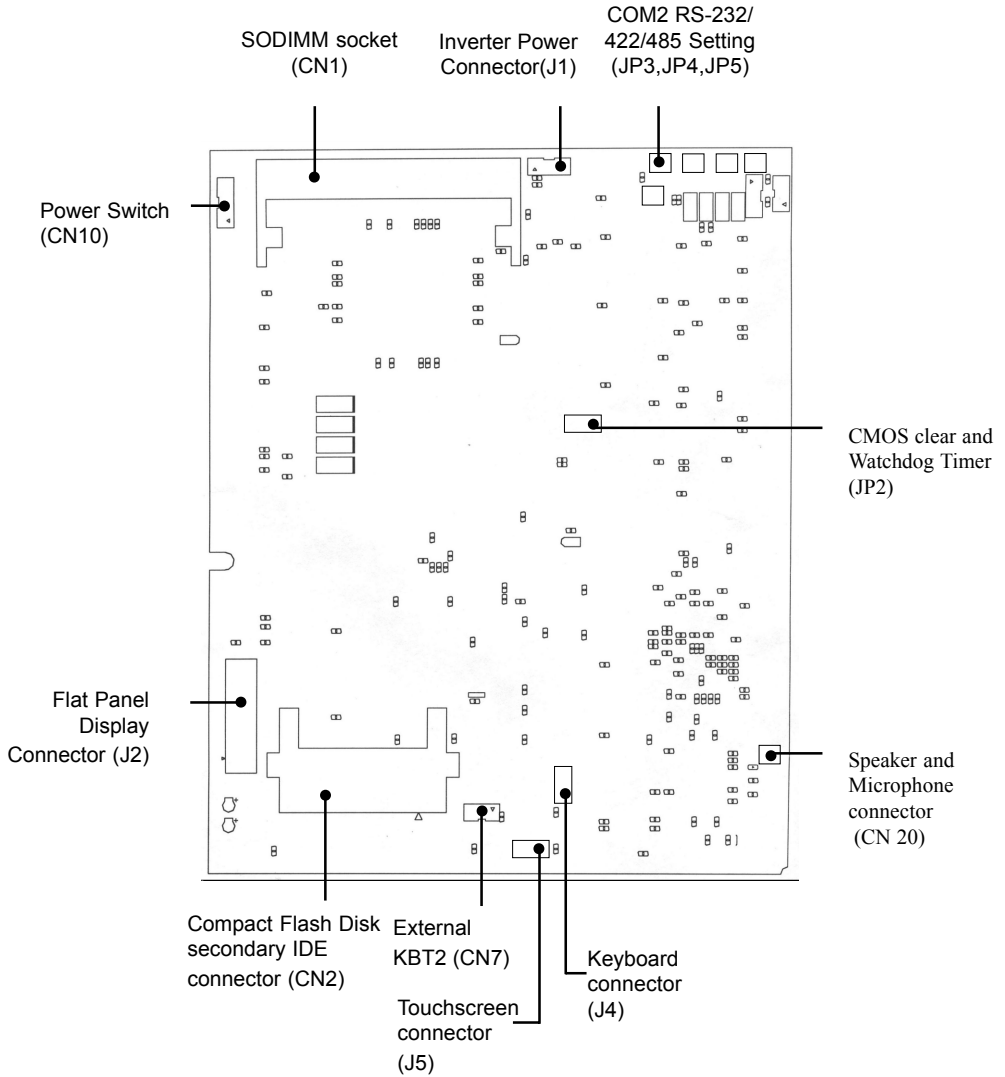
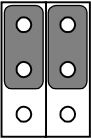




Figure 3-2: Locating jumpers and connectors PCM-5821 (rear side)

3.4 Wake on LAN Selection (Reserved) (JP1)

The PCM-5821 provides Wake-on LAN function when ATX power is used. To enable Wake-on LAN function, the JP1 should be set as shown below:

Table 3-3: Wake-on LAN selection (JP1)




*Normal Power		Wake-on LAN	
1		2	
3		4	
5		6	

* default setting

3.5 CMOS Clear (JP2)

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

Table3-4: Clear CMOS/External RTC (JP2)

*Normal operation		Clear CMOS	
1		3	
5		5	

* default setting

3.6 Watchdog Timer Configuration

An onboard watch timer reduces the chance of disruptions which EMP (electromagnetic 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.)

3.6.1 Watchdog activity selection (JP2)

When the watchdog timer activates (i.e. CPU processing has come to a halt), it can reset the system or generate an interrupt on IRQ11. This can be set via jumper JP2 as shown below:

Table3-5: Watchdog activity selection (JP2)

System reset			IRQ11		
2	4	6	2	4	6
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

* default setting

3.7 COM2 RS-232/422/485 setting (JP3, JP4,JP5)

COM2 can be configured to operate in RS-232/422/485 mode. This is done via JP3,JP4,and JP5.

Table 3-6: COM2 RS-232/422/485 setting (JP3, JP4)

		*RS-232			RS-422/485			
JP4	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
JP3	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

* default setting

Table 3-7: COM2 RS-232/422/485 setting (JP5)

*RS-232	RS-422	RS-485																																				
<table border="1"> <tr> <td>2</td> <td>4</td> <td>6</td> </tr> <tr> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>1</td> <td>3</td> <td>5</td> </tr> </table>	2	4	6	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	1	3	5	<table border="1"> <tr> <td>2</td> <td>4</td> <td>6</td> </tr> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> <td><input type="radio"/></td> </tr> <tr> <td>1</td> <td>3</td> <td>5</td> </tr> </table>	2	4	6	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	1	3	5	<table border="1"> <tr> <td>2</td> <td>4</td> <td>6</td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> </tr> <tr> <td><input type="radio"/></td> <td><input type="radio"/></td> <td><input checked="" type="radio"/></td> </tr> <tr> <td>1</td> <td>3</td> <td>5</td> </tr> </table>	2	4	6	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	1	3	5
2	4	6																																				
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<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>																																				
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>																																				
1	3	5																																				

*default setting

3.8 Buzzer enable (JP10)

Table 3-8: Buzzer enable (JP10)

*Enable	Disable
	

* default setting

PCI Bus Ethernet Interface

This chapter provides information on the Touchscreen setup.

Sections include:

- Introduction
- Installation of Ethernet Driver
 - Installation for WINDOWS 95
 - Installation for WINDOWS 98
 - Installation for WINDOWS NT
- Further Information

4.1 Introduction

The PPC-105T is equipped with a high performance 32-bit Ethernet chipset which is fully compliant with IEEE 802.3 100 Mbps CSMA/CD standards. It is supported by major network operating systems. It is also both 100Base-T and 10Base-T compatible. The medium type can be configured via the RSET8139.exe program included on the utility disk.

The Ethernet port provides a standard RJ-45 jack. 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.

4.2 Installation of Ethernet Driver

Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your PPC-105T, and then refer to the corresponding installation flow chart. Then just follow the steps described in the flow chart. You will quickly and successfully complete the installation, even if you are not familiar with instructions for WINDOWS.

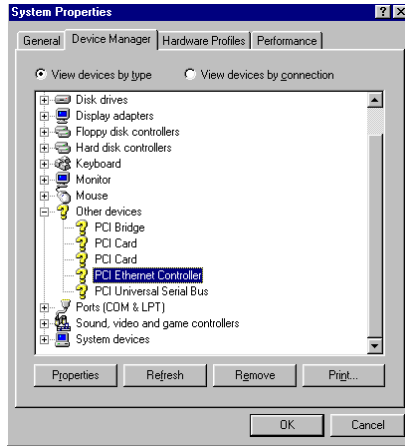
Note 1: The windows illustrations in this chapter are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

Note 2: The CD-ROM drive is designated as "D" throughout this chapter.

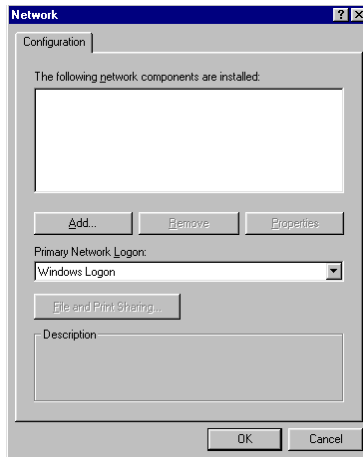
Note 3: <Enter> means pressing the "Enter" key on the keyboard.

4.2.1 Installation for WINDOWS 95

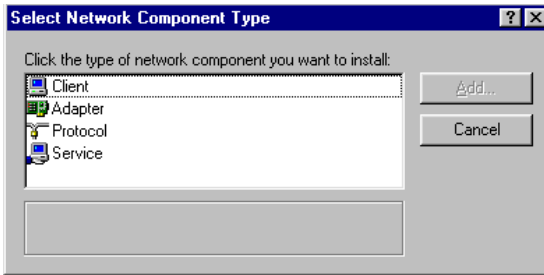
1. a. Select "Start," "Settings" and "Control Panel"
- b. Click "Device Manager," "Other Devices"
- c. Remove "PCI Ethernet Controller" item



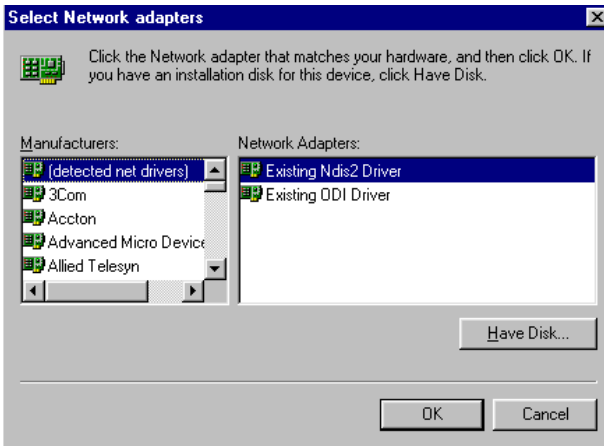
2. a. Select "Start", "Settings," "Control Panel" and "Network"
- b. Click "Add"



3. Select "Adapter" and then click "OK"

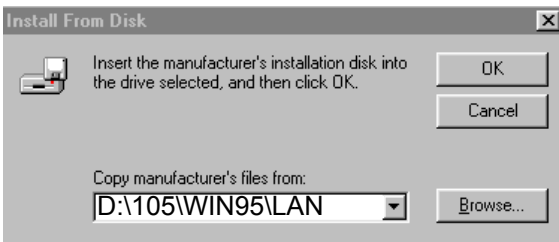


4. Press "Have Disk..."

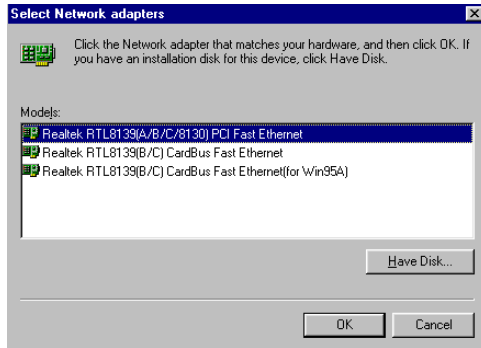


5. a. Type the path "D:\105\WIN95\LAN"

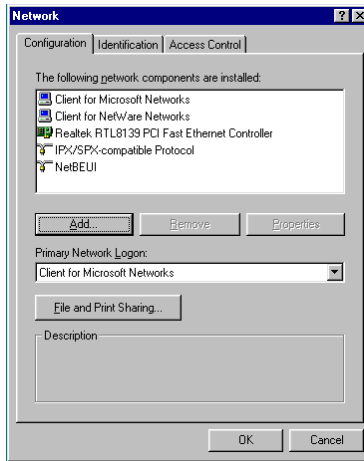
b. Click "OK"



6. a. Select "Realtek RTL8139(A\B\C\8130) PCI Fast Ethernet"
- b. Click "OK"



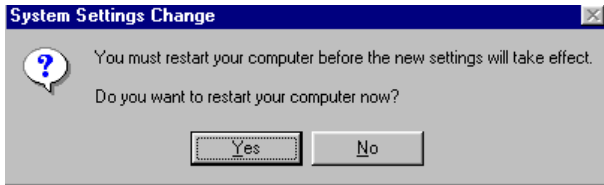
7. Click "OK"



8. a. Insert "Win95" CD to load related file
- b. Click "OK"



9. Press "Yes" to start computer.

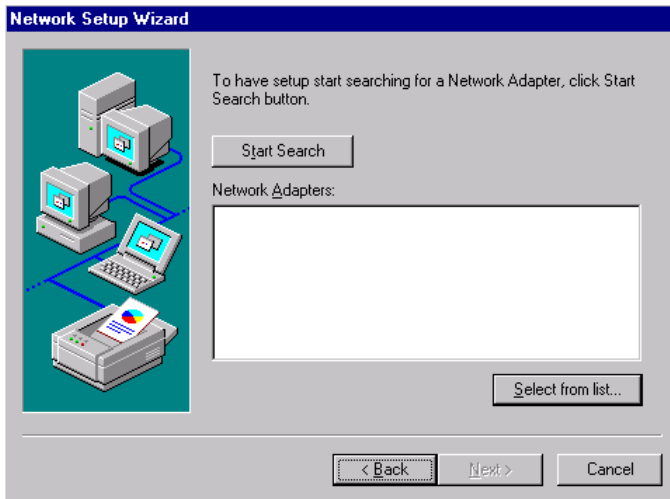


4.2.2 Installation for WINDOWS 98

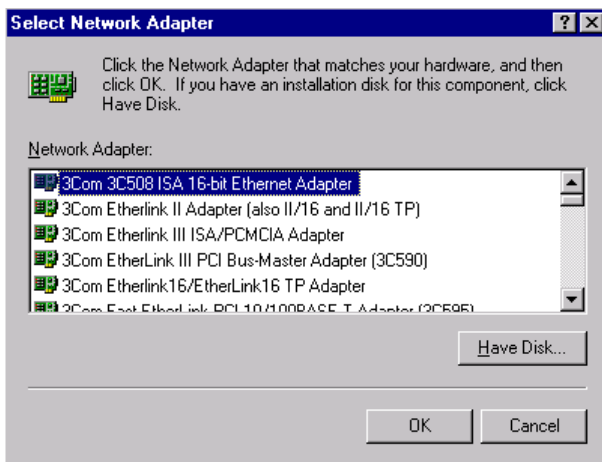
Note that installation of the LAN drivers for Windows 98 is automatic and installation of the PCI Ethernet card is Plug-and-Play. No further instruction is necessary.

4.2.3 Installation for WINDOWS NT

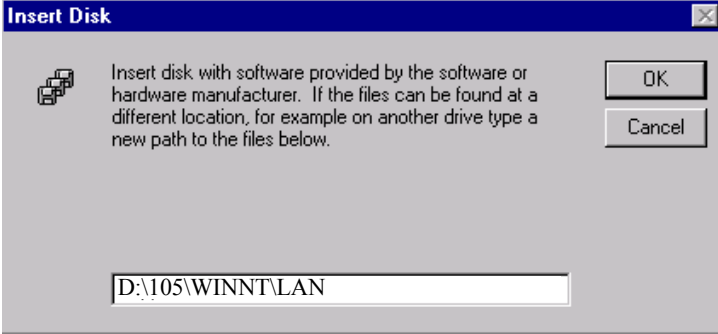
1. a. Select "Start," "Settings," "Control Panel" and double click "Network"
- b. Select from the list



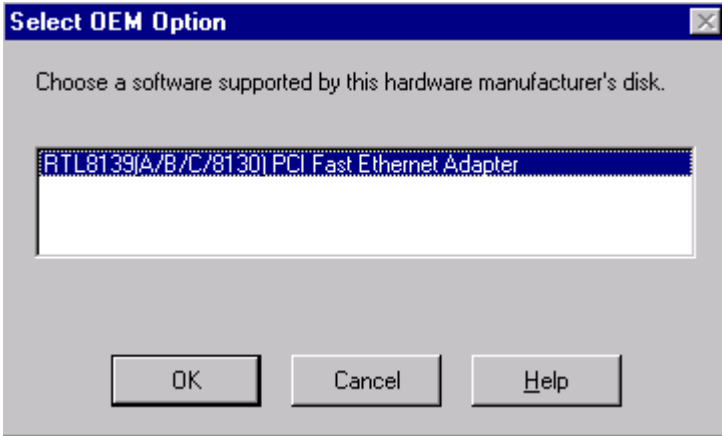
2. Press "Have Disk..."



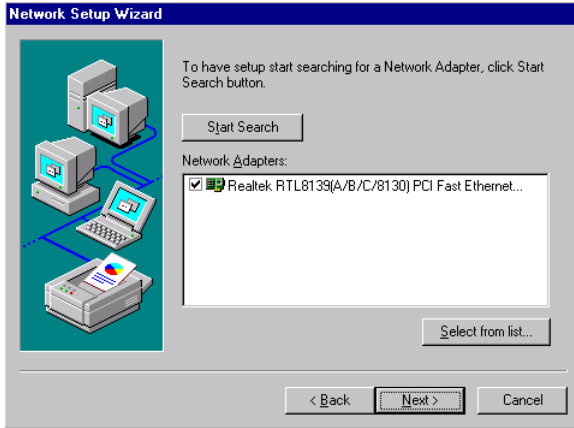
3. a. Insert the "Drivers and Utilities" CD
- b. Enter the path "D:\105\WINNT\LAN"
- c. Press "OK"



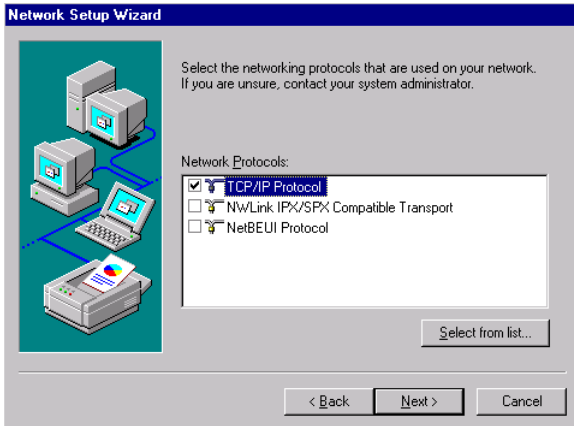
4. a. Choose "The TL8139 Fast Ethernet/Adapter"
- b. Click "OK"



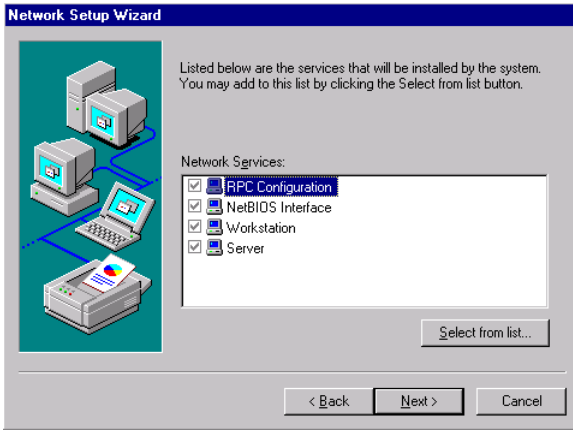
5. Click "Next"



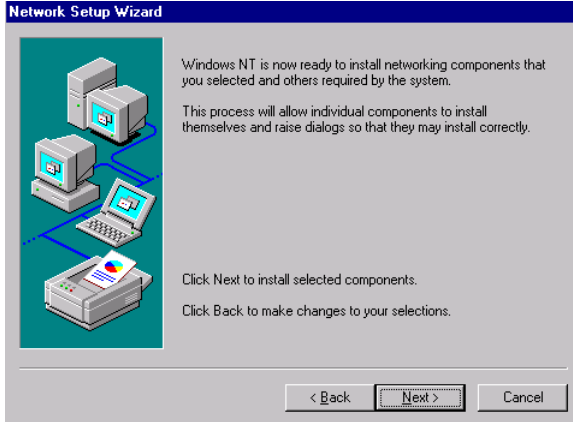
6. Click "Next"



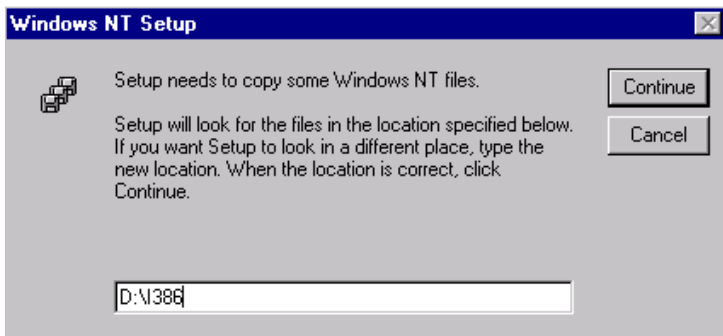
7. Click "Next"



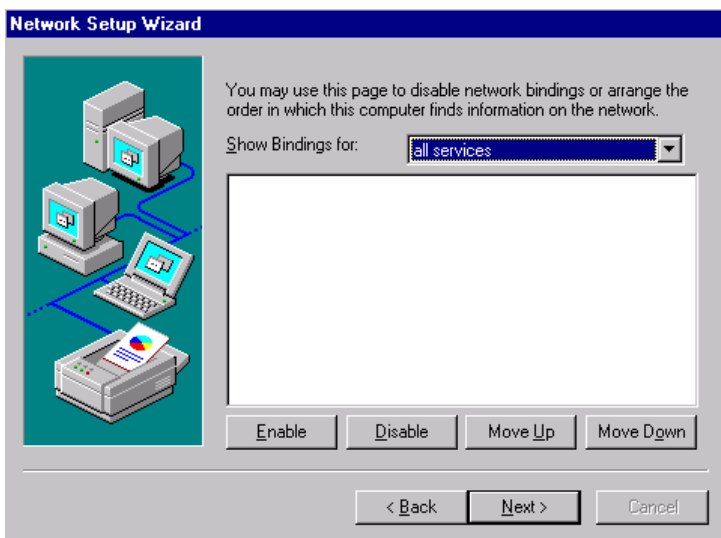
8. Click "Next"



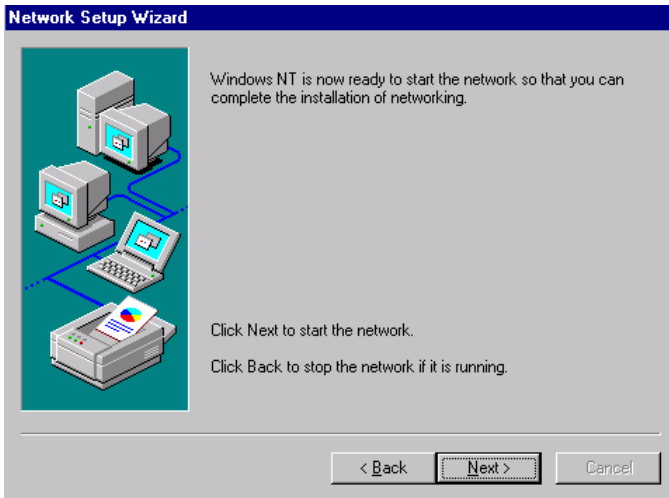
9. a. Insert "WINNT" CD
- b. Click "Continue"



10. Click "Next"



11. Click "Next"



4.3 Further Information

Realtek web site: www.realtek.com.tw

Advantech web site: www.advantech.com

www.advantech.com.tw

PCI SVGA Setup

This chapter provides information on the Touchscreen setup.

Sections include:

- Introduction
- Installation of SVGA Driver
 - Installation for Windows 95
 - Installation for Windows 98
 - Installation for Windows NT
- Further Information

5.1 Introduction

The PPC-105 has an on-board PCI flat panel/VGA interface. The specifications and features are described as follows:

5.1.1 Chipset

The PPC-105 Series uses a NS CX 5530 chipset for its SVGA controller. It supports many popular 18-bit LCD displays and conventional analog CRT monitors. The VGA BIOS supports LCD. In addition, it also 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.

5.1.2 Display memory

With 1.5 ~ 4 MB share memory, the VGA controller can drive CRT displays or flat panel displays with resolutions up to 800 x 600 at 256 K colors. The display memory can be expanded to 4 MB in BIOS.

5.1.3 Display types

CRT and panel displays can be used simultaneously. The PPC-105 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.

5.2 Installation of SVGA Driver

Complete the following steps to install the SVGA and audio driver. Follow the procedures in the flow chart that apply to the operating system that you are using within your PPC-105 .

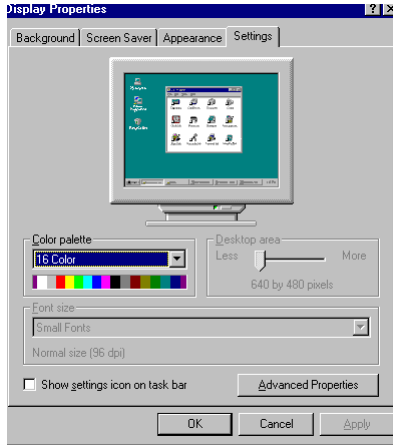
Note1: The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

Note2: The CD-ROM drive is designated as "D" throughout this chapter.

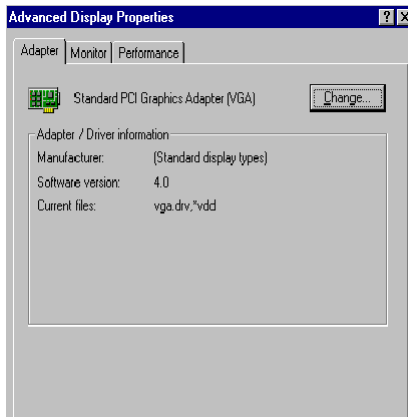
Note3: <Enter> means pressing the "Enter" key on the keyboard.

5.2.1 Installation for Windows 95

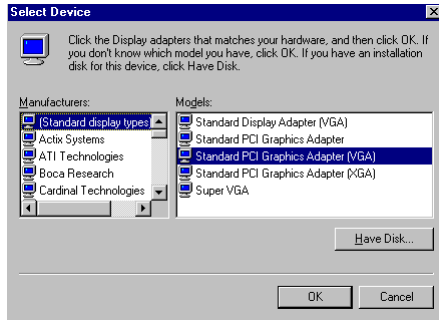
1. a. Select "Start," "Settings," "Control Panel," "Display," "Settings"
- b. Press "Advanced Properties"



2. a. Choose "Adapter" tab
- b. Press the "Change..." button



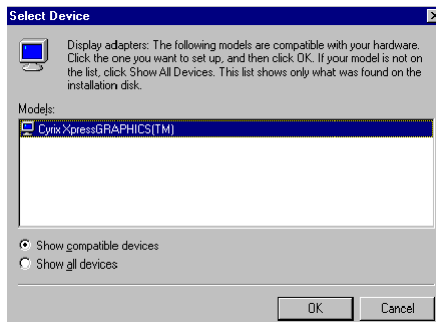
3. Press the "Have Disk" button.



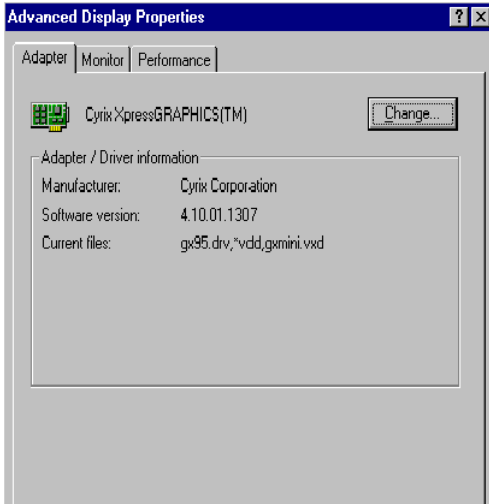
4. a. Insert the utility disk into the CD-ROM drive
- b. Type "D:\105\WIN95\VGA"
- c. Press "OK"



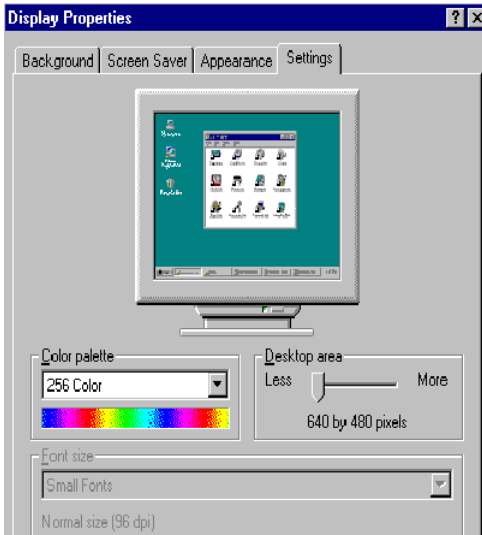
5. a. Select the highlighted "Control Panel" item
- b. Click the "OK" button.



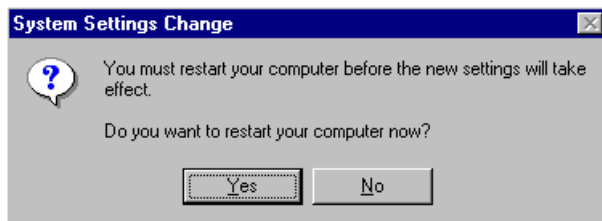
6. a. Cyrix Xpress Graphics™ appears in the adapter tab
- b. Click "Apply" and then "OK"



7. Press "close"

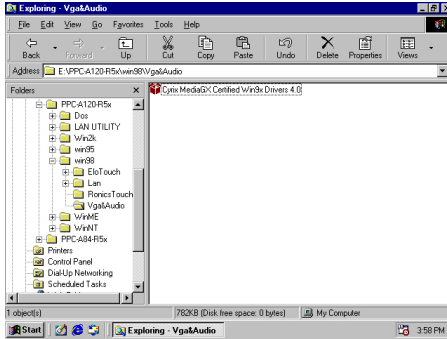


8. Press "Yes" to reboot

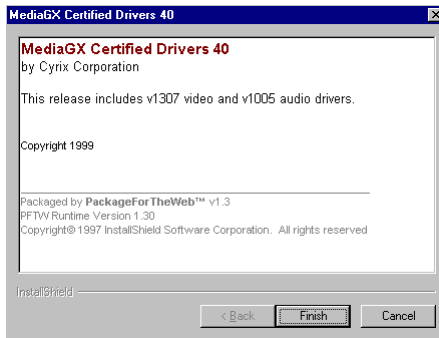


5.2.2 Installation for WINDOWS 98

1. Click the EXE file



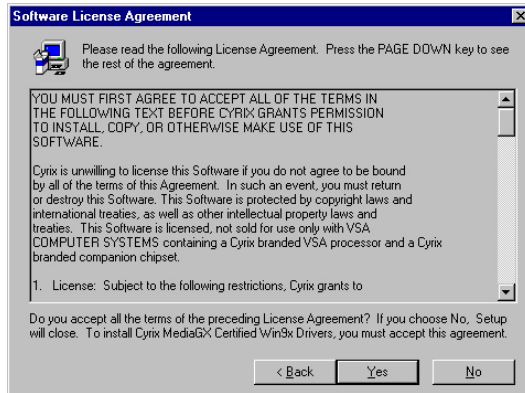
2. Press "Finish"



3. Press "Next"

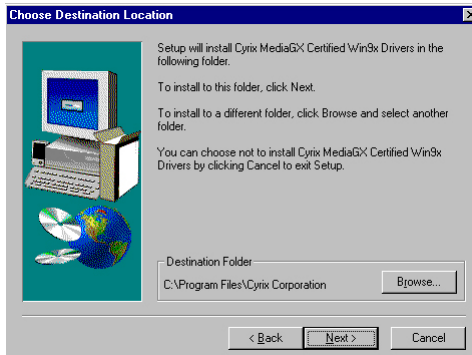


4. Click "Yes"

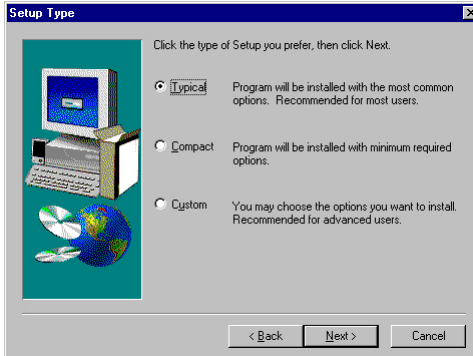


5. a. Insert "Windows 98 CD-ROM"

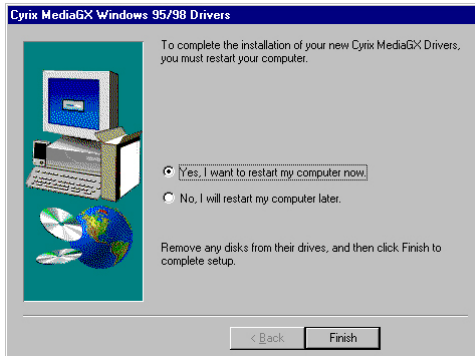
b. Click "Next"



6. Click "Typical"



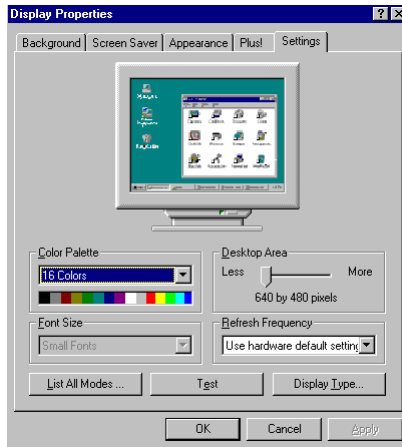
7. Click "Finish" to complete installation



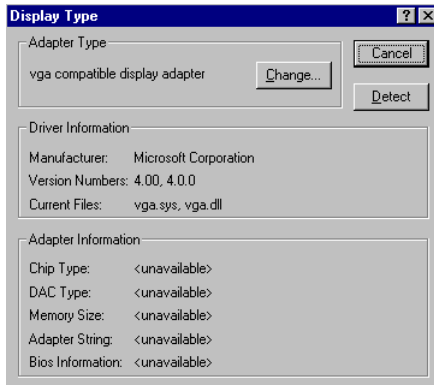
Note: A common driver for Windows98 is used on both SVGA and Audio. While installing the SVGA driver for Windows98, as seen in the above procedure, the Audio driver will also be installed simultaneously.

5.2.3 Installation for WINDOWS NT

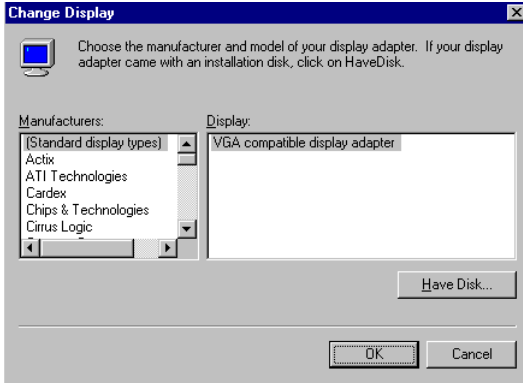
1. a. Select "Start," "Settings," "Control Panel"
- b. Double click "Display"
- c. Choose the "Settings" tab
- d. Press "Display Type"



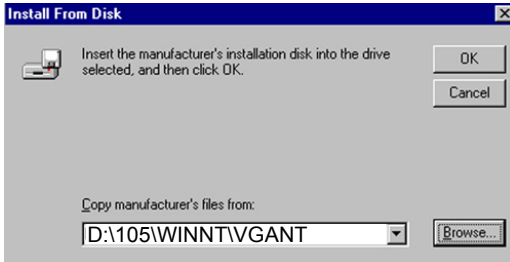
2. Press "Change..."



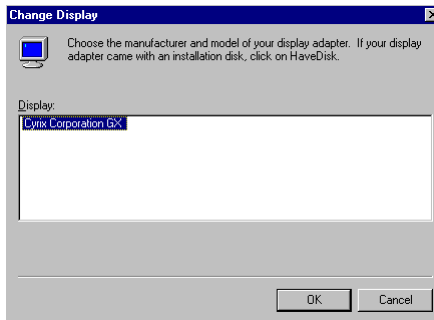
3. Click "Have Disk"



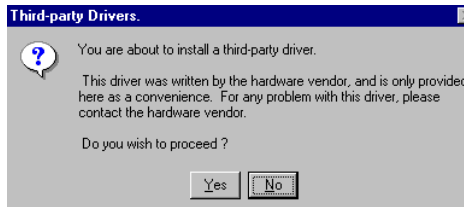
- 4. a. Insert the disk into the CD-ROM drive
- b. Type the driver path "D:\105\WINNT\VGANT"
- c. Press "OK"



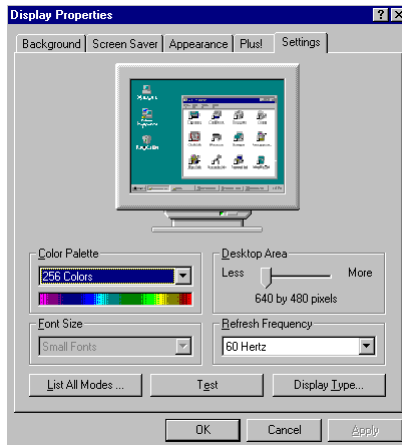
- 5. a. Select the highlighted item
- b. Press "OK"



6. Press "Yes"



- 7. a. Repeat Step 1
- b. Adjust resolution and color
- c. Click "Test" to see the result
- d. Click "OK"



5.3 Further Information

For further information about the PCI/SVGA and audio installation in your PPC-105, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

- NS web site: www.nsc.com
- Advantech web sites: www.advantech.com
www.advantech.com.tw

Audio Setup

This chapter provides information on Audio setup.

Sections include:

- Introduction
- Installation of Audio Drivers
 - for Windows 95
 - for Windows 98
 - for Windows NT
- Further Information

6.1 Introduction

The PCM-5821 on-board audio interface provides high-quality stereo sound and FM music synthesis (ESFM) by using the NS CX 5530 audio controller from National Semiconductor Corporation. The audio interface can record, compress, and play back voice, sound, and music with a built-in mixer control. The PCM-5821 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 Sound Blaster, Sound Blaster Pro version 3.01, 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 panel PC, 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.

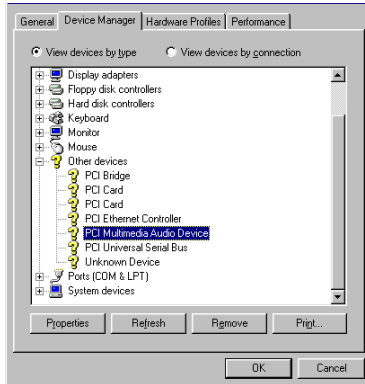
Note 1: The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

Note 2: The CD-ROM drive is designated as "D" throughout this chapter.

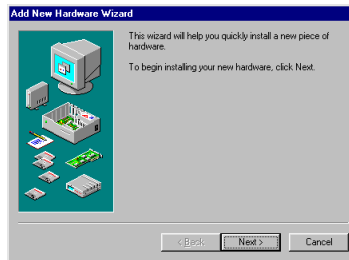
Note 3: <Enter> means pressing the "Enter" key or the keyboard.

6.2.1 Installation for Windows 95

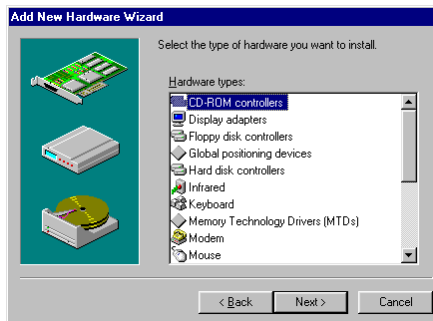
1. a. Remove "PCI Multimedia Audio Device" and "Unknown Device" from Device Manager
- b. Click "Close"



2. Click "Add new hardware" and "Next"



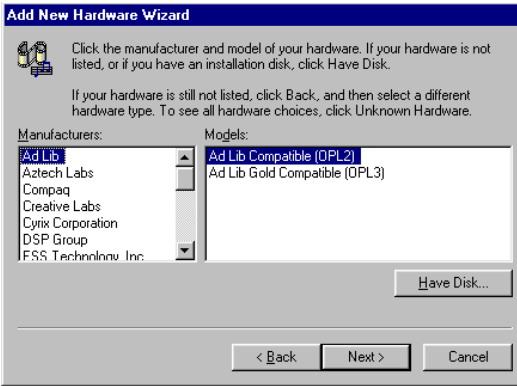
3. Select "No" and then click "Next"



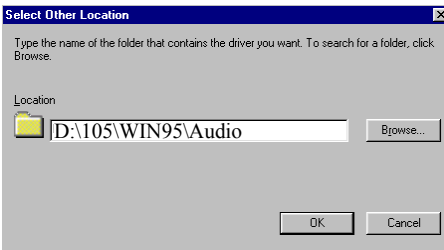
- 4. a. Choose "Sound, video and game controllers"
- b. Click "Next"



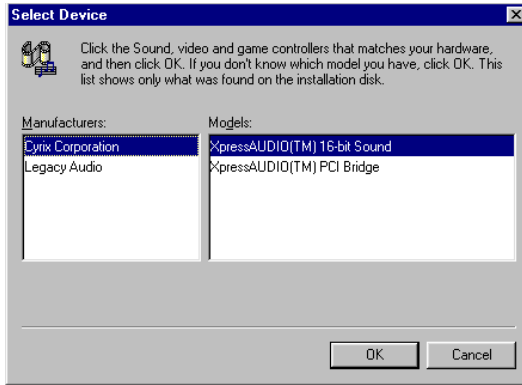
- 5. Press "Have Disk"



- 6. a. Click "Add new hardware" and "Next"
- b. Enter "D:\105\WIN95\Audio"
- c. Click "OK"



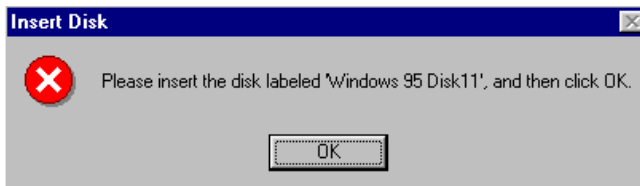
7. a. Select "Xpress Audio™ 16-bit sound"
- b. Press "OK"



8. Click "Finish"



9. a. Insert "Win95" CD to load related files
- b. Click "OK"

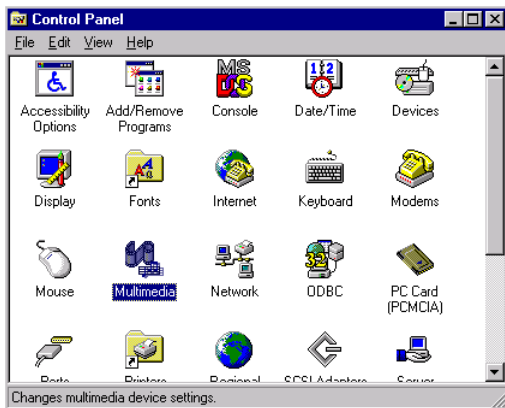


6.2.2 Installation for Windows 98

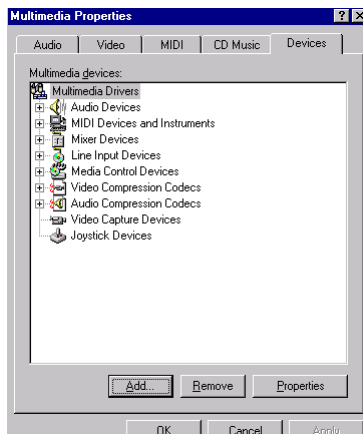
The audio driver is automatically installed after the VGA driver is installed. Further installation information is not needed.

6.2.3 Installation for WINDOWS NT

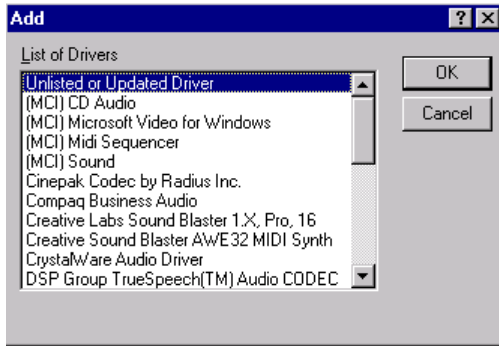
1. a. Select "Start," "Settings," "Control Panel"
- b. Double click "Multimedia"



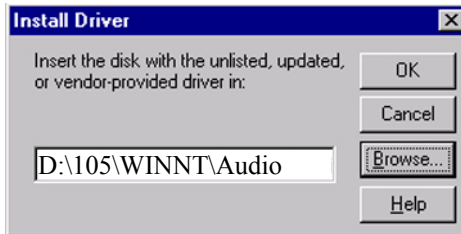
2. a. Select "Devices"
- b. Click "Add..."



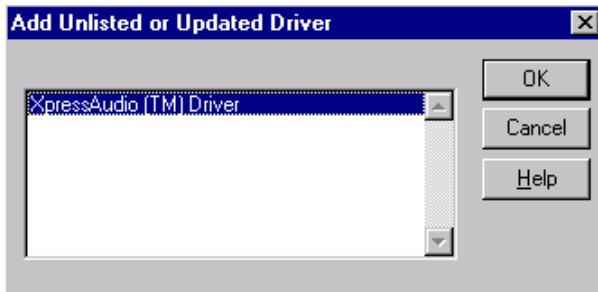
3. a. Choose "Unlisted or Updated Driver"
- b. Click "OK"



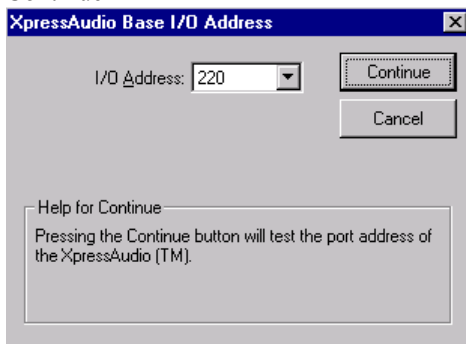
4. a. Insert "Drivers and Utilities" CD-ROM
- b. Enter the path "D:\105\WINNT\Audio"
- c. Click "OK"



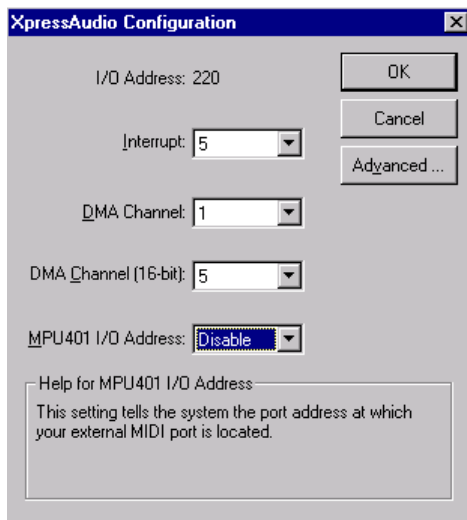
5. a. Select the highlighted item
- b. Press "OK"



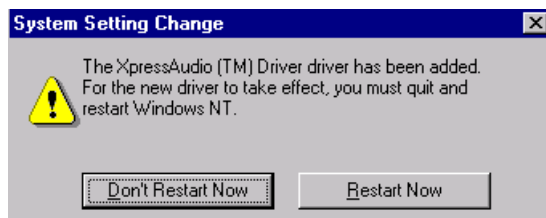
6. Click "Continue"



7. a. Change MPU 40 O/O address to disable by pull down window
b. Press "OK"



8. Press "Restart Now"



6.3 Further Information

For further information about the audio installation in your PPC-105, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

NS web site: **www.nsc.com**

Advantech web site: **www.advantech.com**
www.advantech.com.tw

AWARD BIOS Setup

This chapter provides information on how to configure the BIOS.

7.1 Award BIOS Setup

The PPC-105 comes with an Award BIOS chip that contains the ROM setup for your system. This chip serves as an interface between the processor and the rest of the mainboard's components. This chapter explains the information contained in the setup program and tells you how to modify the settings according to your system configuration. Some setup items will not be explained, because it is recommended that users do not change such items.

Note: Values for the various setup items that appear on your own screen (including default values) may not be the same as the values shown on the screen figures in this chapter. This is because the BIOS is revised and updated from time to time. If in doubt, check Advantech's web site for the latest BIOS versions and related information.

7.2 CMOS Setup Utility

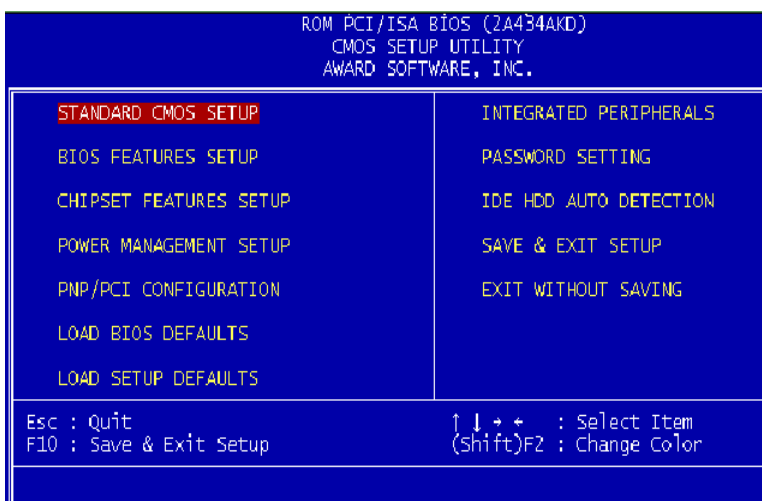


Figure 7-1: Setup program initial screen

A setup program, built into the system BIOS, is stored in the CMOS RAM that allows the configuration settings to be changed. This program is executed when the user changes the system configuration; when the user changes the system backup battery; or when the system detects a configuration error and asks the user to run the setup program. At power-on RAM testing, the message "Press DEL to enter Setup" appears. After pressing the "DEL" key, the CMOS setup utility screen will appear as shown in Fig. 8-1. Use the arrow keys to select and press "Enter" to run the selected program.

7.3 Standard CMOS Setup

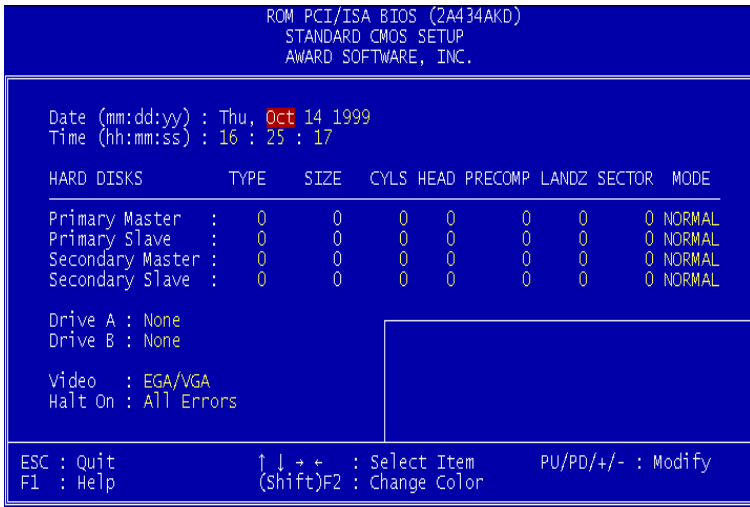


Figure 7-2: CMOS setup screen

The standard CMOS setup screen is shown above. System BIOS automatically detects memory size, so no changes are necessary. It has a few items requiring setting. Each item may have one or more optional settings. System BIOS allows you to change the system date and time, IDE hard disk, floppy disk drive types for drives A: and B:, boot-up video display mode, and POST error handling selection. Use

the arrow keys to highlight the item and then use the "PgUp" or "PgDn" keys to select the value you want for each item.

7.3.1 Hard Disk Configurations

TYPE:

Select from 1 to 45 to fill the remaining fields with predefined values for disk drives. Select "User" to fill the remaining fields. Select "Auto" to detect the HDD type automatically.

SIZE:

Hard disk size. The unit is megabytes (MB).

CYLS:

The cylinder number of the hard disk.

HEAD:

The read/write head number of the hard disk.

PRECOMP:

The cylinder number at which the disk drive changes the write timing.

LANDZ:

The cylinder number where the disk drive heads (read/write) are seated when the disk drive is parked.

SECTOR:

The sector number of each track defined on the hard disk.

MODE:

Select "Auto" to detect the mode type automatically. If your hard disk supports the LBA mode, select "LBA" or "Large". However, if your hard disk supporting cylinder is more than 1024 MB and does not support the LBA function, you have to select "Large". If your hard disk supporting cylinder is below 1024 MB, select "Normal".

7.4 BIOS Features Setup

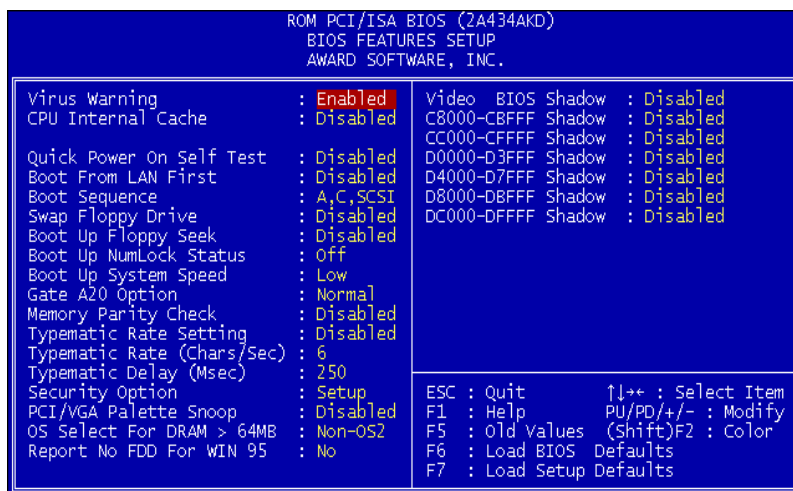


Figure 7-3: BIOS features setup screen

Moving around the BIOS Features and Chipset Features setup programs works the same way as moving around the Standard CMOS setup program. (Refer to the next section for Chipset Features setup.) The BIOS Features setup program is shown above. Users are not encouraged to run the BIOS and Chipset Features setup programs. Your system should have been fine-tuned before shipping. Improper setup may cause the system to fail, so consult your dealer before making any changes.

Virus Warning

When enabled, it assigns the BIOS to monitor the master boot sector and the DOS sector of the first hard disk drive.

The options are: Disabled (Default), Enabled.

CPU Internal Cache

When enabled, it improves system performance. Disable this item

when testing or troubleshooting.

The options are: Enabled (Default), Disabled.

Quick Power On Self Test

When enabled, allows the BIOS to bypass the extensive memory test.

The options are: Disabled (Default), Enabled.

Boot Sequence

Allows the system BIOS to first try to boot the operating system from the selected disk drive.

The options are: A, C, SCSI; C, A, SCSI (default); LS120, C; C (only); SCSI, C, A; SCSI, A,C; F, A, SCSI; E, A, SCSI; D, A, SCSI; CD-ROM, C, A; C, CD-ROM, A.

Swap Floppy Drive

When enabled, allows you to switch the order in which the operating system accesses the floppy drives during boot-up.

The options are: Disabled (Default), Enabled.

Boot Up Floppy Seek

When enabled, assigns the BIOS to perform floppy disk drive tests by issuing seek commands. Note that such tests are time-consuming.

The options are: Enabled (Default), Disabled.

Boot Up NumLock Status

When set to "On", allows the BIOS to automatically enable the NumLock function when the system boots up.

The options are: On (Default), Off.

Memory Parity Check

The options are: Disabled (Default), Enabled.

Typematic Rate Setting

The term typematic means that when a keyboard key is held down, the character is repeatedly entered until the key is released. When this item

is enabled, you may change the typematic repeat rate.

The options are: Disabled (Default), Enabled.

Typematic Rate (Chars/Sec)

Sets the rate of a character repeat when the key is held down.

The options are: 6 (Default), 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (msec)

Sets the delay time before a character is repeated.

The options are: 250 (Default), 500, 750, 1000 milliseconds.

Security Option

Allows you to set the security level of the system.

The options are: Setup (Default), System.

PCI/VGA Palette Snoop

When enabled, allows you to install an enhanced graphics adapter card. If your graphics adapter card does not support the Palette Snoop function, set at "Disabled" to avoid system malfunctions.

The options are: Disabled (Default), Enabled.

OS Select For DRAM > 64MB

If your operating system (OS) is OS2, select "OS2". Otherwise, stay with the default setting Non-OS2.

Video BIOS Shadow

When enabled, allows the BIOS to copy the video ROM code of the add-on video card to the system memory, giving faster access.

The options are: Enabled (Default), Disabled.

C8000-CBFFF Shadow through to DC000-DFFFF Shadow

When enabled, allows the BIOS to copy the BIOS ROM code of the add-on card to the system memory for faster access. It may improve the performance of the add-on card. Some add-on cards will not function properly if their BIOS ROM codes are shadowed. To use this

option correctly, you need to know the memory address range used by the BIOS ROM of each add-on card. The options are: Disabled (Default), Enabled.

7.5 Chipset Features Setup

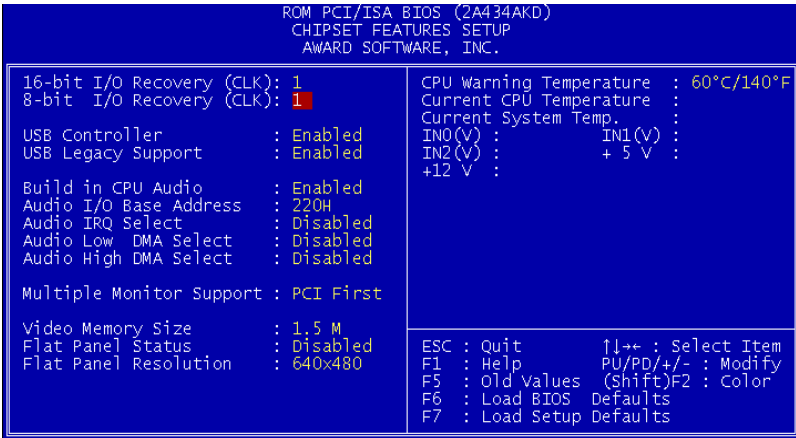


Figure 7-4: Chipset features setup screen

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

The options are: 1(Default), 2,...16

USB Controller/ USB Legacy Support

When enabled, the USB devices are activated.

The options are: Disabled (Default), Enabled.

Build in CPU Audio

When enabled, allows the system to use the CPU build-in audio function.

The options are: Enabled (Default), Disabled.

If enable build-in CPU audio , go on the other audio settings .

Audio I/O Base Address: 220H(Default), 240H, 260H and 280H.

Audio IRQ Select: Disable, IRQ 5, IRQ 7, IRQ 10.

Audio Low DMA Select: Disable, DMA 0, DMA 1, DMA 3.

Audio High DMA Select: Disable, DMA 5, DMA 6, DMA 7.

Video Memory Size

The video memory size is set by the manufacturer, depend on how many video memory on board.

The options are: 1.5M (Default), 2.5M, 4.0M

Flat Panel Status

The system will support 18-bit TFT LCD signal output, because this option is designed as " Enable".

Flat Panel Resolution

The options are: 800 x 600 (default).

7.6 Power Management Setup

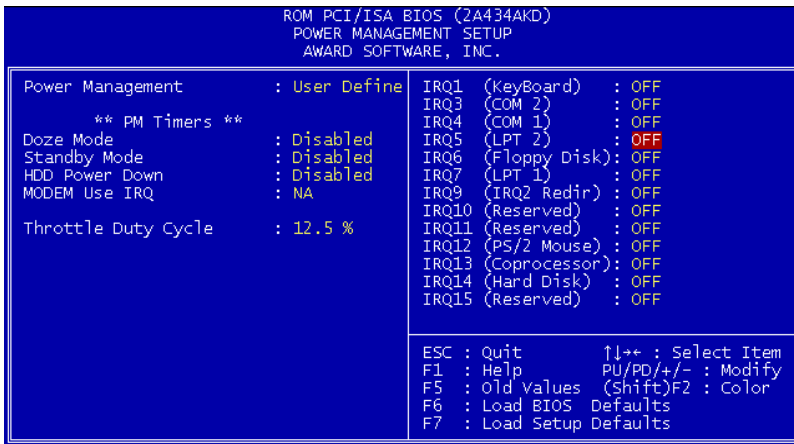


Figure 7-5: Power Management setup screen

Power Management

When enabled, allows you to use Power Management features.

The options are: Disabled (Default), Max Saving, Min Saving, User

define.

Doze Speed (div by)

The options are: 2 (Default), 1, 3, 4, 5, 6, 7, 8.

Stdby Speed (div by)

The options are: 3 (Default), 1, 2, 4, 5, 6, 7, 8.

MODEM Use IRQ

This feature allows you to select the IRQ# to meet your modem's IRQ#.

The options are: 3 (Default), 4, 5, 7, 9, 10, 11, NA.

Throttle Duty Cycle

The options are: 12.5%, 25%, 33.3%, 50%, 75%.

IRQ# Activity

After the time period which you set in the Suspend Mode feature elapses, the system advances from Doze Mode to Suspend Mode, in which the CPU clock stops and the screen display is off. At this moment, if the IRQ activity which is defined as enabled occurs, the system goes directly back to Full-on Mode.

If the IRQ activity which is defined as "Disabled" occurs, the system enters another low power state, Dream Mode. In Dream Mode, the system will function the same as in Full-on Mode, except that the screen display remains off until the corresponding IRQ handler finishes, whereupon the system reverts to Suspend Mode.

For instance, if the system is connected to a LAN and receives an interruption from its file server, the system will enter Dream Mode to execute the corresponding calling routine.

The options are: Enabled, Disabled.

The default values of IRQ3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15 are all: Enabled.

The default value of IRQ8 is: Disabled.

Note: Under certain operating systems such as WIN-

*DOWS NT 4.0 (Build 1381), the CD auto-insertion feature might have some effect on power management. It is recommended that the CD-ROM drive use the secondary channel, and that the following Power Management Setup features be set:
HDD & FDD: Off
IRQ15 (Reserved): Secondary*

7.7 PNP/PCI Configuration Setup

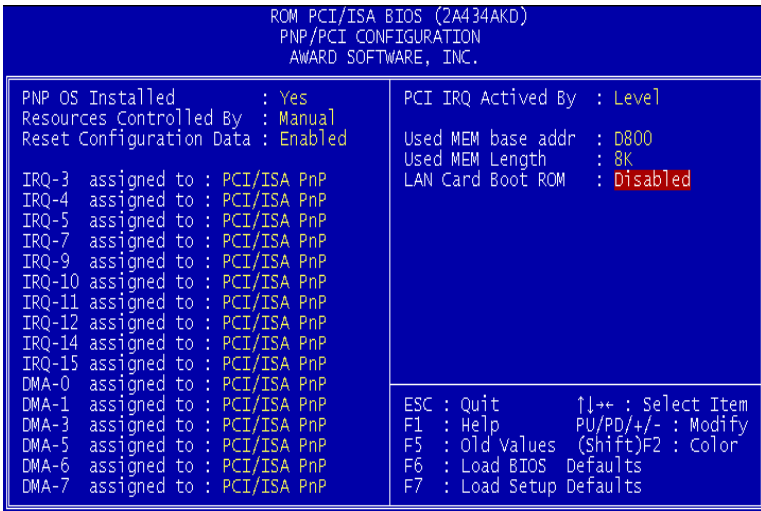


Figure 7-6: PNP/PCI configuration setup screen

Resources Controlled By

If set at "Auto", the BIOS automatically arranges all system resources for you. If there are conflicts or you are not satisfied with the configuration, simply set all the resources listed in the above figure by selecting "Manual".

The options are: Manual (Default), Auto. The manual options assigned to IRQ-/DMA- are: Legacy ISA, PCI/ISA PnP.

Reset Configuration Data

When enabled, this feature allows the system to clear the last BIOS configuration data and then reset the data with the default BIOS configuration data.

The options are: Disabled (Default), Enabled.

PCI IRQ Activated By

If your IDE card is triggered by edge, set it at "Edge".

The options are: Level (Default), Edge.

Lan card Boot ROM

When enabled, your system will be able to boot up through the Ethernet.

The options are: Disabled (Default), Enabled.

7.8 Load BIOS Defaults

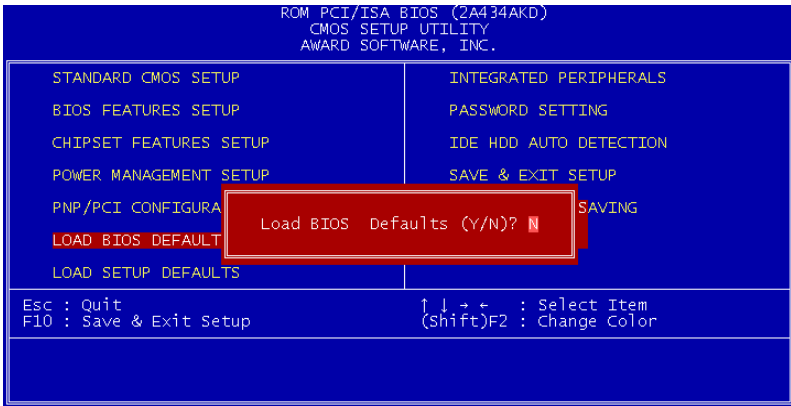


Figure 7-7: Load BIOS defaults screen

The BIOS defaults screen contains the most appropriate values of the system parameters that allow minimum system performance.

7.9 Load Setup Defaults

Selecting this field loads the factory defaults for BIOS and Chipset Features. The system will automatically detect these defaults.

7.10 Integrated Peripherals

```
ROM PCI/ISA BIOS (2A434AKD)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode      : Enabled
Primary IDE Channel     : Enabled
  Master Drive PIO Mode : Auto
  Slave Drive PIO Mode  : Auto
Secondary IDE Channel   : Enabled
  Master Drive PIO Mode : Auto
  Slave Drive PIO Mode  : Auto
IDE Primary Master UDMA : Disabled
IDE Primary Slave UDMA  : Disabled
IDE Secondary Master UDMA: Disabled
IDE Secondary Slave UDMA: Auto

KBC input clock        : 6 MHz
Onboard FDC Controller : Disabled
Onboard Serial Port 1  : 3F8/IRQ4
Onboard Serial Port 2  : 2E8/IRQ5
Onboard IR Controller  :
IR Address Select      : 2F8H
IR Mode                :
IR Transmittiion delay : Disabled

IR IRQ Select          : IRQ3
IR Mode Use DMA        : 1
Onboard Parallel Port  :
Parallel Port Mode     :
ECP Mode Use DMA       : 1
EPP Mode Select        : EPP1.9
Onboard Serial Port 3  : Disabled
Onboard Serial Port 4  : Disabled

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

Figure 7-8: Integrated peripherals screen

IDE HDD Block Mode

This allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

The options are: Enabled (Default), Disabled.

IDE Primary/Secondary Master/Slave PIO

IDE hard disk drive controllers can support up to separate hard drives.

These drives have a master/slave relationship which is determined by the cabling configuration used to attach them to the controller. Your system supports two IDE controllers - a primary and a secondary - so you have the ability to install up to four separate hard disks.

PIO means Programmed Input/Output. Rather than having the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the task by themselves.

Your system supports five modes, numbered from 0 through 4, which differ primarily in timing. When "Auto" is selected, the BIOS will choose the best available mode.

The options are: Auto, (Default), Disabled.

Primary/Secondary Master/Slave Ultra DMA

DMA means Direct Memory Access. Ultra DMA is faster than DMA. DMA is a method of transferring data to or from memory at a fast rate, without involving the CPU.

When you select "Auto", the BIOS will choose the best available mode.

The options are: Auto (Default), Disabled.

KBC input clock

Set the keyboard controller input clock.

The options are: 6MHz, 8MHz, 12MHz, 16MHz

Onboard FDD Controller

When enabled, the floppy disk drive (FDD) controller is activated.

The options are: Enabled (Default), Disabled.

WDT Active When Power ON

This is Advantech's patented watchdog function which can reboot the system should the computer hang in the BIOS checkup.

The options are: 62 sec (Default), Disabled, 31 sec, 15 sec.

Onboard Serial Ports 1 & 2

If the serial ports use the onboard I/O controller, you can modify your serial port parameters.

The options for Port 1 are: 3F8/IRQ4 (Default), 2E8/IRQ3, Disabled, 2F8/IRQ3, 3E8/IRQ4.

The options for Port 2 are: 2F8/IRQ3 (Default), 3E8/IRQ4, 2E8/IRQ3, Disabled, 3F8/IRQ4.

IR Address Select

When enabled, the infrared receptor is activated.

The options are: Disabled (Default), Enabled.

Onboard Parallel Port

If the parallel port uses the onboard I/O controller, you can modify your parallel port parameters. When you select "Disabled", the next two setup items will disappear.

The options are: 378/IRQ7 (Default), 3BC/IRQ7, 278/IRQ5, Disabled.

Parallel Port Mode

You can choose different data transfer modes for your system.

The options are: ECP & EPP (Default), SPP, EPP, ECP.

ECP Mode Use DMA

You can choose different DMA modes for data transfer.

The options are: 3 (Default), 1.

Onboard Serial Ports 3 & 4

If the serial ports use the onboard I/O controller, you can modify your

serial port parameters.

The options for Port 3 are: 3E8/IRQ10 (Default), 2E8/IRQ5, Disabled.

The options for Port 4 are: 2E8/IRQ5 (Default), Disabled, 3E8/IRQ10.

7.11 Password Setting

To enable the password setting, select the item from the Standard CMOS Setup. You will be prompted to create your own password. Type your password up to eight characters and press "Enter". You will be asked to confirm the password. Type the password again and press "Enter". You may also press "Esc" to abort the selection and not enter a password. To disable the password, press "Enter" when you are prompted to enter the password. A message will appear, confirming the password is disabled.

Under the BIOS Features setup, if "System" is selected under the Security Option field and the Supervisor Password is enabled, you will be prompted for the supervisor password every time you try to enter the CMOS Setup utility. If "System" is selected and User Password is enabled, you will be requested to enter the user password every time you reboot the system. If "Setup" is selected under the Security Option field and User Password is enabled, you will be prompted only when you reboot the system.

7.12 IDE HDD Auto Detection

The IDE Hard Disk Drive Auto Detection feature automatically configures your new hard disk. Use it for quick configuration of new hard disk drives. This feature allows you to set the parameters of up to four IDE HDDs. The option with "(Y)" is recommended by the system BIOS. You may also key in your own parameters instead of setting them according to the system BIOS. After keying in all settings, press "Esc" to return to the main menu. For confirmation, enter the Standard CMOS Setup feature.

7.13 Save and Exit Setup

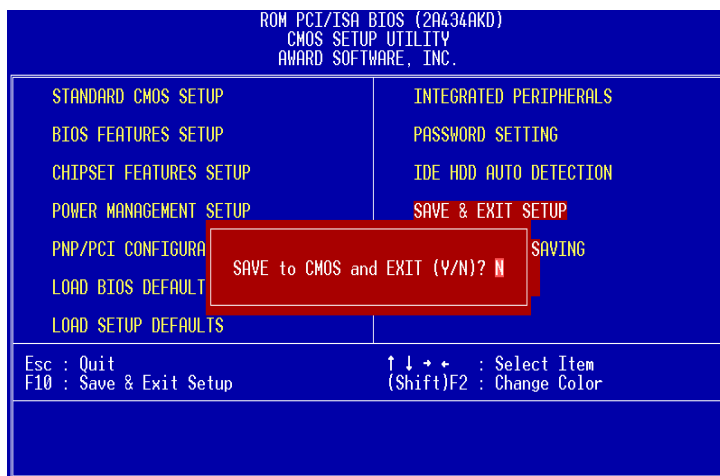


Figure 7-9: Save and exit setup screen

After you have made changes in the BIOS setup, press "Esc" to return to the main menu. Move the cursor to "Save and Exit Setup", or press "F10" and then press "Y", to change the CMOS Setup. If you did not change anything, press "Esc" again or move the cursor to "Exit Without Saving" and press "Y" to retain the setup settings. The following message will appear at the center of the screen to allow you to save data to CMOS and exit the setup utility:

```
SAVE to CMOS and EXIT (Y/N)?
```

7.14 Exit Without Saving

If you select this feature, the following message will appear at the center of the screen to allow you to exit the setup utility without saving CMOS modifications:

```
Quit Without Saving (Y/N) ?
```


Touchscreen

This chapter provides information on the Touchscreen setup.

Sections include:

- Introduction
- Installation of Driver for Resistive Touch Screen
 - for Windows 95
 - for Windows 98
 - for Windows NT
 - for Windows 2000
- Installation of Drivers for Capacitive Touch Screen
 - for Windows 95/98/NT
 - for Windows 2000

8.1 Introduction

8.1.1 General information

The PPC-105's optional touch screen incorporates advanced second-generation 5-wire resistive technology. They allow 75% light transmission. The resistive model has an antiglare surface. All models provide greatly enhanced visual resolution. They also have new improved scratch-resistant features.

The touch screen is manufactured from UL-recognized components. When properly installed, the touch screen's ball impact resistance meets the UL 1950 standard. Its fire resistance meets the UL-746C, 19 mm (0.75") flame test standard. Systems incorporating the touch screen, controllers, and cables have been approved to FCC Class B and Class B standards.

For more detailed information, please visit the following websites:
www.elotouch.com

8.1.2 General specifications

Please refer to Chapter 1, Section 1.2 of this manual.

8.1.3 Environmental specifications

Temperature: -10° ~ 50° C (operating)
-40° ~ 71° C (storage)

Relative humidity: 90 RH at 35° C (operating)
90 RH at 35° C for 240 hours, non-condensing
(storage)

Chemical resistance: The active area of the touch screen is resistant to the following chemicals when exposed for a period of one hour at a temperature of 21° C (71° F):

- Acetone
- Methylene chloride
- Methyl ethyl ketone
- Isopropyl alcohol

- Hexane
- Ammonia-based glass cleaners
- Turpentine
- Mineral spirits
- Foods and beverages

8.2 Installation of Driver for Resistive Touch Screen

The touch screen driver for Windows 95/98 contains a native, 32-bit driver and a 32-bit control panel program for the PPC-105 system.

To facilitate installation of the touch screen driver, you should read the instructions in this section carefully before you attempt installation.

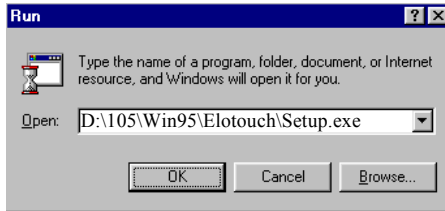
Important: The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

Note 1: The CD-ROM drive is designated as "D" throughout this chapter.

Note 2: <Enter> means pressing the "Enter" key on the keyboard.

8.2.1 Installation for Windows 95

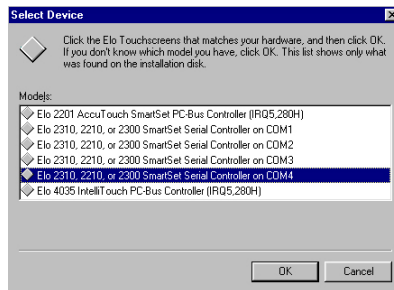
1. a. Insert the “Driveres and Utilities” CD
b. Click the “Start” button and then “Run.”
c. Type the path “D:\105\Win95\Elotouch\Setup.exe”



2. Click “Yes”.



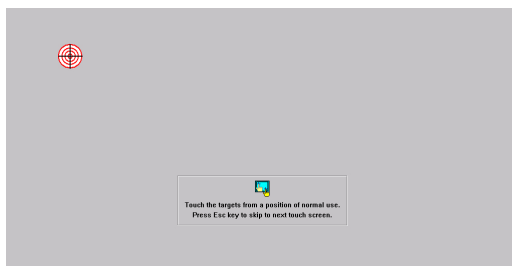
- 3 a. Select the “SmartSet Serial Controller on COM4” item.
b. Press “OK”



4. Click the “Yes” button to restart your computer.

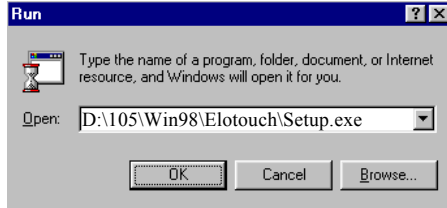


5. Touch targets to calibrate the touch screen controller.

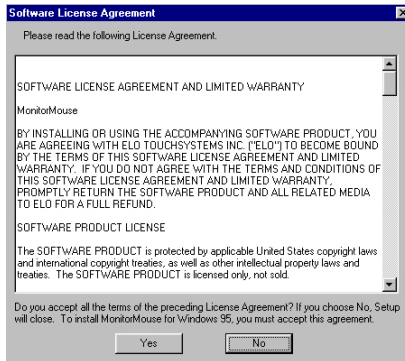


8.2.2 Installation for Windows 98

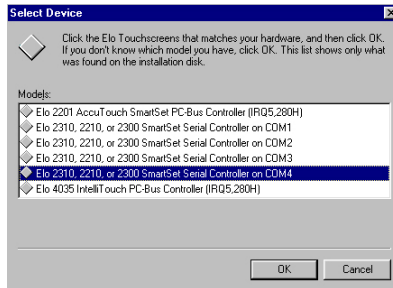
1. a. Insert the “Drivers and Utilites” CD.
 - b. Click the “Start” button and then “Run”
 - c. Type the path “D:\105\Win98\Elotouch\Setup.exe”



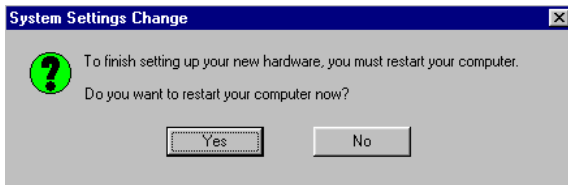
2. Click “Yes”



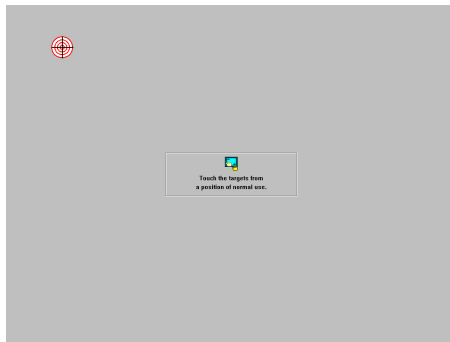
3. a. Select the “SmartSet Serial Controller on COM4” item.
 - b. Press the “OK” button.



4. Click the “Yes” button to restart your computer.



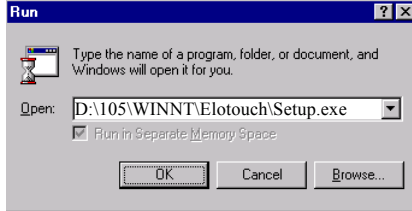
5. Touch target to calibrate the touch screen controller.



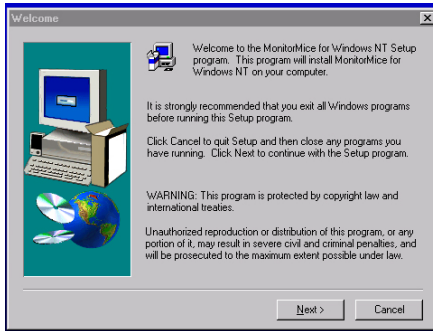
8.2.3 Installation for Windows NT

1. a. Select "Start" and "Run"

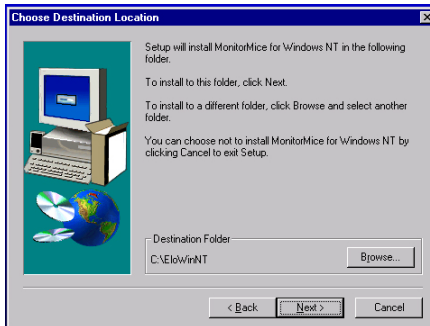
b. Type the path "D:\105\WINNT\Elotouch\Setup.exe"



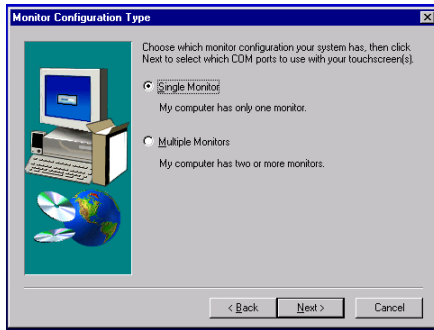
2. Press the "Next" button.



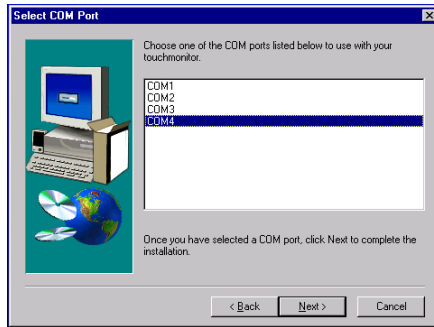
3. Set the directory path.



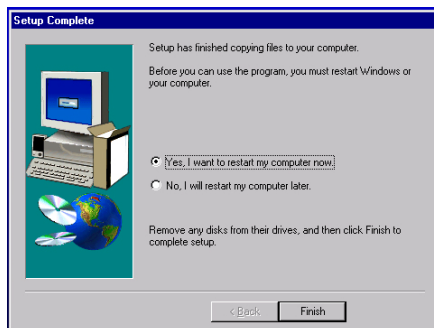
4. Choose a suitable item.



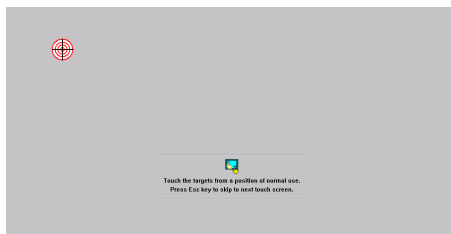
5. a. Choose “COM4”
b. Press “Next”



6. Click “Finish” to restart your computer.

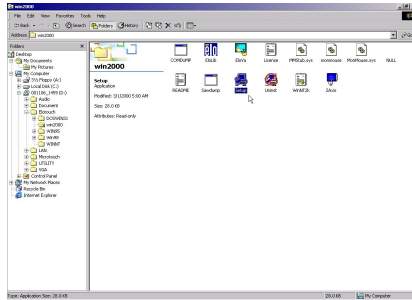


7. Calibrate the touch screen.



8.2.4 Installation for Windows 2000

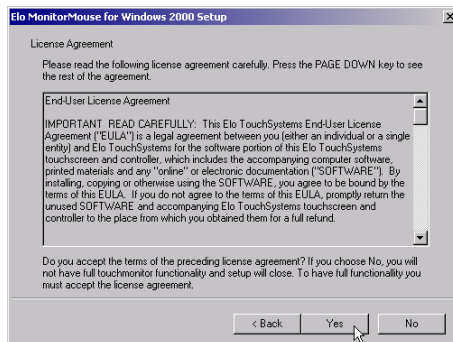
1. Click “D:\105\Win2K\Elotouch\Setup”



2. Click “Next”

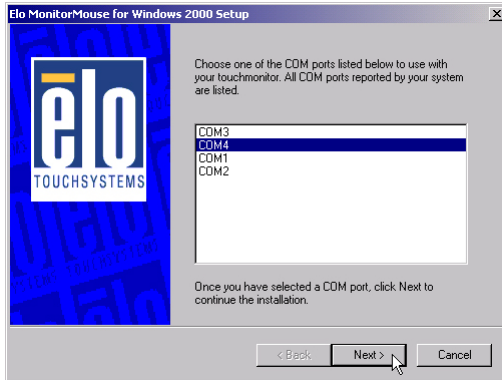


3. Click “Yes”

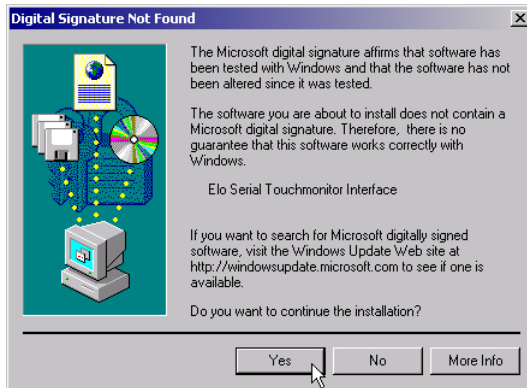


4.a. Select “COM4”

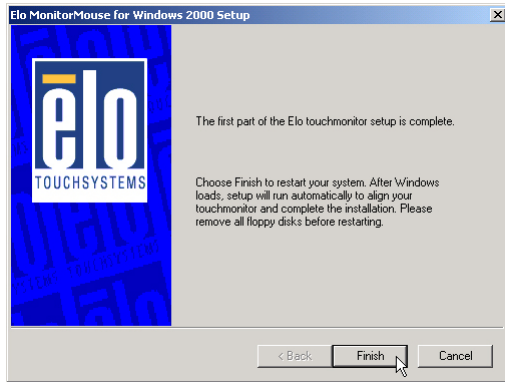
b. Click “Next”



5. Click “Yes”

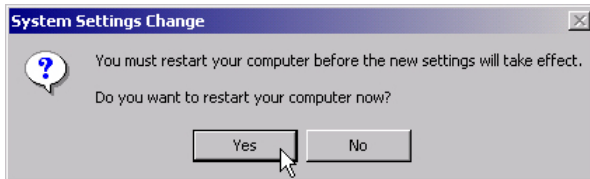


6. Click “Finish”



7. a. Click “Yes”

b. After the system reboots, click “Finish” to complete the installation.



Programming the Watchdog Timer

The PPC-105 is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for whatever reason.

This feature ensures system reliability in industrial stand-alone or unmanned environments.

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 3F (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.
	.
	.
	.
3F	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, you application task
    .
    .
    .
1070 RETURN
2000 REM  Subroutine #2, you application task
    .
    .
    .
2090 RETURN
```

Power Supply Specifications

Sections include:

- Introduction
- Input Specifications
- Output Specifications
- Mechanical Specifications
- Environmental Specifications
- Features

B.1 Introduction

The power supply of the PPC-105 is a 60 W double output, universal input switching power supply. It has been designed for medical technology applications.

B.2 Input Specifications

- **Input voltage:** 100 V_{AC} to 250 V_{AC}
- **Input frequency:** 50 Hz to 60 Hz at AC input
- **Input current:** Less than 2 A at 115 V_{AC} or 1.5 A at 230 V_{AC}
- **Inrush current:** Will not exceed 30 A at 115 V_{AC} input or 60 A at 230 V_{AC} input, cold start at 25° C

B.3 Output Specifications

Table B-1: Load range

Output	Min Load	Rated Load	Peak Load	Voltage Accuracy
+5 V	0 A	5 A	8 A	4.95 ~ 5.05 V
+12 V	0 A	3 A	5.5 A	11.4 ~ 12.6 V

Factory settings: The adjustable range of the +5 V output is from about 4.5 to 6 V. The +5 V output is factory-set between 4.95 and 5.05 V at 60% of the rated load. Similarly, the +12 V output is checked at the factory, to ensure that it is within the specified voltage accuracy range. The peak load can take less than 5 seconds to reach.

Ripple peak and noise: The peak to peak ripple and noise for each output is less than 1% of the output voltage. Measuring and termination of each output is done with a 15 MHz bandwidth limited oscilloscope with a 0.47 uF capacitor.

Line regulation: The line regulation for each output is less than $\pm 1\%$ of the rated load and $\pm 10\%$ for input voltage changing.

Load regulation: The load regulation for +5 V is less than $\pm 1\%$. For +12 V, it is less than $\pm 5\%$. Measuring is performed by changing the measured output load $\pm 40\%$ from 60% of the rated load, and keeping other outputs at 60% of the rated load.

B.4 Environmental Specifications

Operating temperature: 0 ~ 50° C, rated load

Storage temperature: -40 ~ 85° C

B.5 Features

Efficiency: Higher than 70% (typical) while measuring at nominal line and rated load.

Hold up time: Longer than 16 ms at 115 V_{AC} input and rated load, which is measured from the end of the last charging pulse to when the main output drops down to 95% output voltage.

Protection: If the power supply fails to control itself, the built-in excess voltage protection circuit will shut down the outputs to avoid damaging external circuits. The trip point of the crowbar circuit is around 5.7 V to 7.0 V for output voltage. The power supply will go into latch-off mode under short circuit or overload conditions. Recovery from these adverse conditions should be set as cycle AC, input OFF and ON.

Safety ground leakage current: It should be less than 100 μA at 244 V_{AC} input.

APPENDIX

C

I/O Pin Assignments

C.1 Keyboard connector (CN5-1)

Table C-1: Keyboard connector

Pin	Signal
1	KB_DT
2	N/A
3	GND
4	+5 V
5	KB_CK
6	N/A

C.2 Mouse connector (CN5-2)

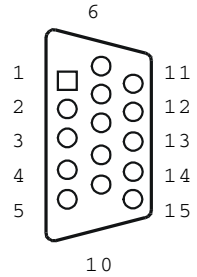
Table C-2: Mouse connector

Pin	Signal
1	MS_DT
2	N/A
3	GND
4	+5 V
5	MS_CK
6	N/A

C. 3 VGA connector (CN6)

Table C-3: VGA connector

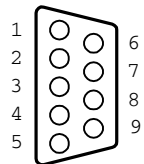
Pin	Signal
1	RED
2	GREEN
3	BLUE
4	N/A
5	GND
6	GND
7	GND
8	GND
9	N/A
10	GND
11	N/A
12	N/A
13	HSYNC
14	VSYNC
15	N/A



C.4 COM1 RS-232 serial port (CN1-2)

Table C-4: COM1 RS-232 serial port

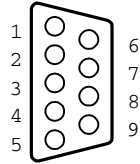
Pin	Signal
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI



C.5 COM3 RS-232 serial port connector (CN2-1)

Table C-5: COM3 RS-232 serial port

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



C.6 COM4 RS-232 serial port connector (CN2-2)

Table C-6: COM4 RS-232 serial port

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

C.7 COM2 Connector

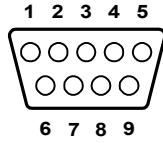


Table C-7: COM2

Pin	Signal	RS-232	RS-422	RS-485
1	DCD	TX-	DATA-	
2	RX	TX+	DATA+	
3	TX	RX+	---	
4	DTR	RX-	---	
5	GND	GND	---	
6	DSR	---	---	
7	RTS	---	---	
8	CTS	---	---	
9	RI	---	---	

C.8 Parallel port connector (CN1-1)

Table C-8: Parallel port connector

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

* active low

