PPC-S153

UltraSlim™ Pentium® III
processor-based 15" panel PC

User's Manual

Copyright notice

Part No. 2008S15330

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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 installing your panel PC, ensure that the following materials have been received:

- PPC-S153 series panel PC
- User's manual
- Accessories for PPC-S153
  - Y-shaped adapter for PS/2 mouse and keyboard
  - Printer port adapter cable
  - CPU push cover
  - CPU push screw driver
  - Warranty card
  - Power cord: USA type
  - AC/DC power adapter
  - Floppy disk with CD-ROM drive driver
  - "Drivers and Utilities" CD-ROM disc
  - VESA-standard bracket for mounting
  - Mounting kits and packet of screws
  - Heat sink (optional) (refer to Notes 1 and 2 below)

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

Note 1: *If the unit you have bought is basic (i.e. without a CPU, HDD, or SDRAM), you will find this optional item in the accessory box.*

Note 2: *If you install an Intel® processor yourself, you must install a heat sink above the CPU. This will avoid heat damage to the CPU.*

Additional Information and Assistance

1. Visit the Advantech websites at **www.advantech.com** or **www.advantech.com.tw** where you can find the latest information about the product.
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

Warning!

1. Input voltage rated 16Vdc~25Vdc, 3.5A max

2. Use a 3 V @ 195 mA lithium battery

3. Packing: please carry the unit with both hands, handle with care

4. Our European representative:

Advantech Europe GmbH
Kolberger Straße 7
D-40599 Düsseldorf, Germany
Tel: 49-211-97477350
Fax: 49-211-97477300

5. Maintenance: to properly maintain and clean the surfaces, use only approved products or clean with a dry applicator

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User's Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may 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 may 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 IS BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS MAY DAMAGE THE EQUIPMENT.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70dB(A).

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

Wichtige Sicherheishinweise

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 NetzanschluBsteckdose 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 überhitzung schützt. Sorgen Sie dafür, daB diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim. AnschluB an das Stromnetz die AnschluBwerte.
9. Verlegen Sie die NetzanschluBleitung 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 Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem 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 funktioni ert 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. Bitte lassen Sie das Gerät nicht unbehehrt hinten unter -20° C (-4° F) oder oben 60° C (140° F), weil diesen Temperaturen das Gerät zerstören könten.

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

DISCLAIMER: This set of instructions is given according to IEC704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

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CHAPTER 1

General Information

This chapter gives background information on the PPC-S153 panel PC.

- Introduction
- General Specifications
- LCD Secifications
- Dimensions

1.1 Introduction

The PPC-S153 panel PC is an UltraSlim™ Pentium® III processor-based computer that is designed to serve as a human machine interface (HMI) and as a multimedia computer. It is a PC-based system with 15" color TFT LCD display, on-board PCI Ethernet controller, multi-COM port interfaces and a 18-bit stereo audio controller. With a built-in CD-ROM drive, floppy drive and mini PCI expansion socket, the PPC-S153 is as compact and user-friendly as a multi-function computer. In addition, its "fit anywhere" design makes it very flexible and able to be used in many different kinds of installations. It can be wall mounted, panel mounted or stood upright on a desktop.

For system integrators, this simple, complete, compact and highly integrated multimedia system lets you easily build a panel PC into your applications. Common industrial applications include factory automation systems, precision machinery, and production process control. It is also suitable for many nonindustrial applications, including interactive kiosk systems, entertainment management, and car park automation. Our panel PC is a reliable, cost-effective solution to your application's processing requirements.

1.2 General Specifications

General

- **Dimensions (W x H x D):** 375 x 299 x 49 mm (14.76" x 11.77" x 1.93")
- **Weight:** 4.9 kg (10.78 lb)
- **Power supply:** 70 watts, ATX type
  Input voltage: 16Vdc~25Vdc
  Output voltage: +5 V @ 12 A, +24 V @ 0.3 A
- **Power adaptor:** AC/DC
  Input voltage: 100Vac~240Vac
  Output voltage: 19V @ 3.79A
- **Disk drive housing:** Space for one 2.5" HDD, one 12.7 mm compact CD-ROM drive, and one slim type 3.5" FDD
- **Front panel:** IP65/NEMA4 compliant

Standard PC functions

- **CPU:** Intel® Pentium® III and Celeron™ up to 1 GHz
- **BIOS:** Award 256 KB Flash BIOS, supports Plug & Play, APM
- **Chipset:** VIA® VT82C694X/VT82C686B
- **Front side bus:** 66/100/133 MHz
- **2nd level cache:** On-die 256 KB for Pentium® III CPU and 128 KB for Celeron™ CPU
- **RAM:** Two 144-pin SODIMM sockets accept 32 ~ 1000 MB SDRAM (3.3 V)
- **PCI bus master IDE interface:** Supports two connectors. Each connector has one channel and supports two IDE devices. Each channel supports PIO modes 0 ~ 4, DMA mode 0 ~ 2, and Ultra DMA 33/66/100 simultaneously. The secondary connector is designated for the CD-ROM drive. BIOS supports IDE CD-ROM boot-up
- **Floppy disk drive:** Supports up to two FDDs (720 KB / 1.44 MB).

One built-in FDD included inside FDD housing

- **Parallel port:** One parallel port, supports SPP/EPP/ECP parallel mode. BIOS configurable to LPT1, LPT2, LPT3 or disabled
- **Serial ports:** Two serial ports with three RS-232 ports, one RS-232/422/485 port (COM2). All ports are compatible with 16C550 UARTs, +5 V power supply selectable
- **Universal serial bus (USB) port:** Supports up to four USB ports, USB v1.1 and Intel **UHCI** v1.1 compatible
- **Mini PCI bus expansion slot:** Accepts one type III mini PCI bus card
- **SSD:** Built in type II CompactFlash socket, suppprts either Compact-Flash card or IBM microdrive
- **Watchdog timer:** 62-level, interval 1 ~ 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:** 3.0 V @ 195 mA lithium battery

Flat panel interface

- **Chipset:** Lynx3DM4 SMI721
- **Display memory:** 4 MB on-die memory
- **Display type:** Simultaneously supports CRT and flat panel displays (EL, LCD and gas plasma)
- **Display resolution:** Supports non-interlaced CRT and TFT LCD displays up to 1280 x 1024 @ 16 M colors

Audio function

- **Chipset:** VIA VT82C686B super south bridge + ALC2000 codec
- **Audio controller:** Dual full-duplex Direct Sound channels between system memory and AC97 link, and standard v1.0 or v2.0 AC97 codec interface

- **Audio Codec:** 18-bit full duplex AC97 2.1-compatible stereo audio codec
- **Stereo sound:** 100% DOS GAME compatible (Sound Blaster or Sound Blaster Pro)
- **Audio interface:** Microphone-in, Line-in, Line-out

PCI bus Ethernet interface

- **Chipset:** Realtek RTL 8139 PCI local bus Ethernet controller
- **Ethernet interface:** Full compliance with IEEE 802.3u 100Base-T and 10 Base-T specifications. Includes software drivers and boot ROM
- **100/10Base-T auto-sensing capability**

Touchscreen (optional)

Type	**Analog Resistive**
Resolution	Continuous
Light Transmission	75%
Controller	PS/2 interface
Power Consumption	<5V @ 100 mA
Software Driver	Supports Windows NT/98/2000/ME
Durability (touches in a lifetime)	10 million

Note: The panel PC with the optionally installed touch-

screen will share PS/2 port. Once the touchscreen is installed, the PS/2 mouse cannot be used.

Optional modules

- **CPU:** Intel® Pentium® III and Celeron™ up to 1 GHz
- **Memory:** 32/64/128/256/512 MB SDRAM
- **HDD:** 2.5" HDD
- **Operating System:** MS-DOS, Windows 98, NT, 2000, ME
- **Touchscreen:** Analog resistive
- **CD-ROM drive:** Compact 24X CD-ROM or above
- **DVD-ROM drive:** Compact 6X DVD-ROM or above
- **CD-RW drive:** Compact 8X/4X/24X CD-RW or above

Environment

- **Temperature:** 0 ~ 45° C (32 ~ 122° F)
- **Relative humidity:** 10 ~ 95% @ 40° C (non-condensing)
- **Shock:** 10 G peak acceleration (11 msec duration)
- **Certification:** EMC: CE, FCC; Safety: UL1950 and EN60950

Note: Because Intel® Pentium® III 933 MHz and 1 GHz CPUs thermal specifications are not as good as other Intel® CPUs, please do not operate the panel PC at the ambient temperature of over 35°C when installing the Intel® Pentium® 933 MHz or 1 GHz CPU.

1.3 LCD Specifications

Display type: 15" TFT LCD

Max. resolution: 1024x 768

Colors: 256 K or above

Dot size (mm): 0.297 x 0.297

Viewing angle: 120°

Luminance: 200 cd/m^2 or above

Temperature: 0 ~ 50° C

***VR control**: Brightness

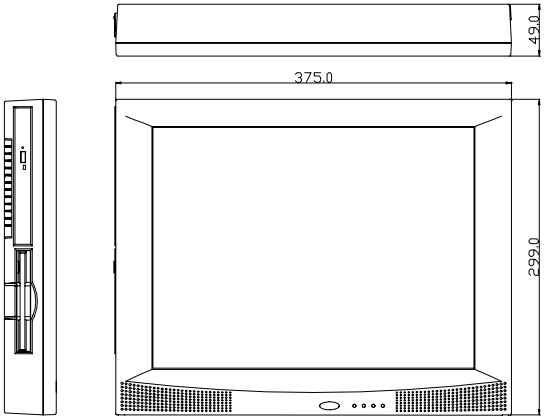
LCD MTBF: 50,000 hours

Backlight lifetime: 25,000 hours

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

Note: The color LCD display installed in the panel PC is high-quality and reliable. However, it may contain a few defective pixels which do not always illuminate. With current technology, it is impossible to completely eliminate defective pixels. Advantech is actively working to improve this technology.

1.4 Dimensions



Unit: mm

Figure 1-1: Dimensions of the PPC-S153

CHAPTER 2

SYSTEM SETUP

- A Quick Tour of the Panel PC
- Installation procedures
- Running the BIOS Setup Program
- Installing System Software
- Installing the Drivers

2.1 A Quick Tour of the Panel PC

Before you start to set up the panel PC, take a moment to become familiar with the locations and purposes of the controls, drives, connectors and ports, which are illustrated in the figures below.

When you place the panel PC upright on the desktop, its front panel appears as shown in Figure 2-1.

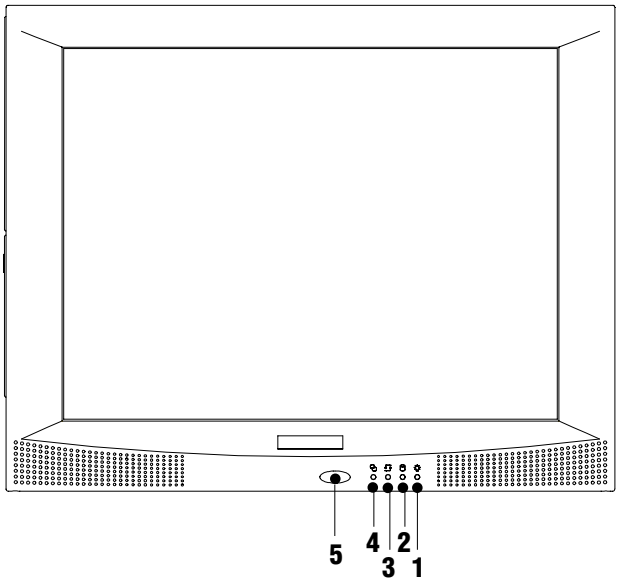


Figure 2-1: Front view of the panel PC

1, 2, 3, 4 are status LEDs which show the system status as noted below:

LED 1: Power On/Off

LED 2: HDD read/write

LED 3: Ethernet transmit/receive

LED 4: Ethernet link

5 is the IrDA sensor for the wireless transmission and reception of infrared data.

When you look at the left side of the panel PC, you will see the floppy disk drive and CD-ROM drive, as shown in Fig. 2-2.

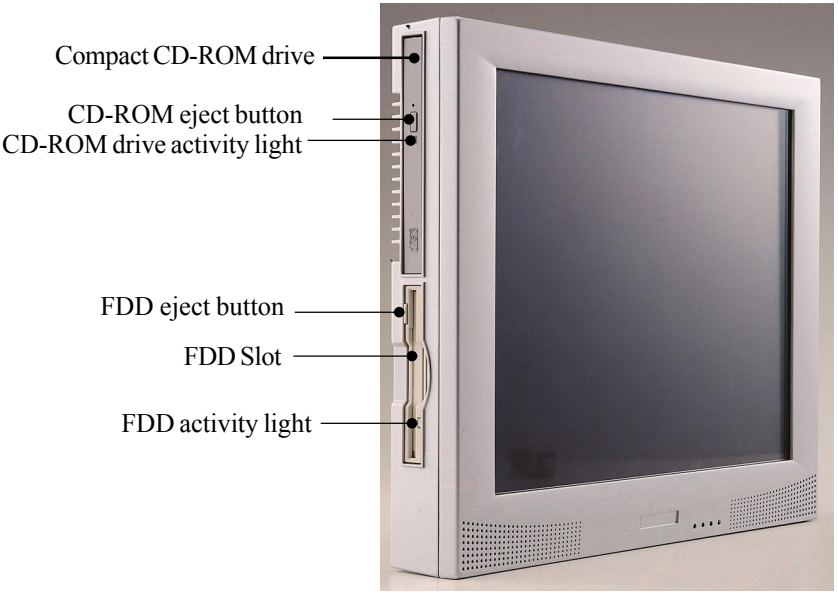


Figure 2-2: Left side view of the panel PC

When you turn the panel PC around and look at its rear cover, you will find the CPU and heat sink space located on the left-top side. This space is covered by a side panel cover and HDD bracket located on the right side, as shown in Figure 2-3. The sunken I/O section is at the bottom of the panel PC, as shown in Fig. 2-4. (The I/O section includes various I/O ports, including serial ports, parallel port, the Ethernet port, USB ports, the microphone jack, and so on.)

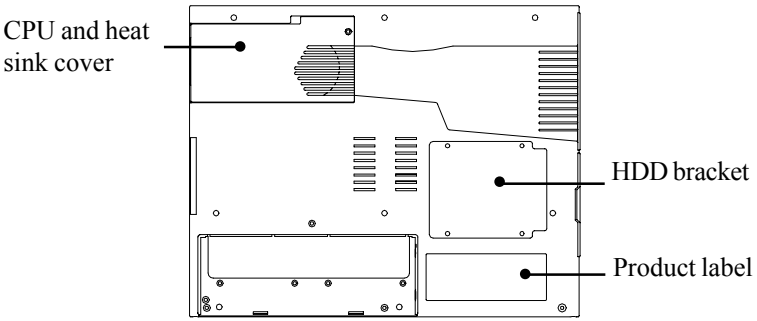


Figure 2-3: Rear view of the panel PC

Figure 2-4 shows the I/O section and power inlet of the panel PC.

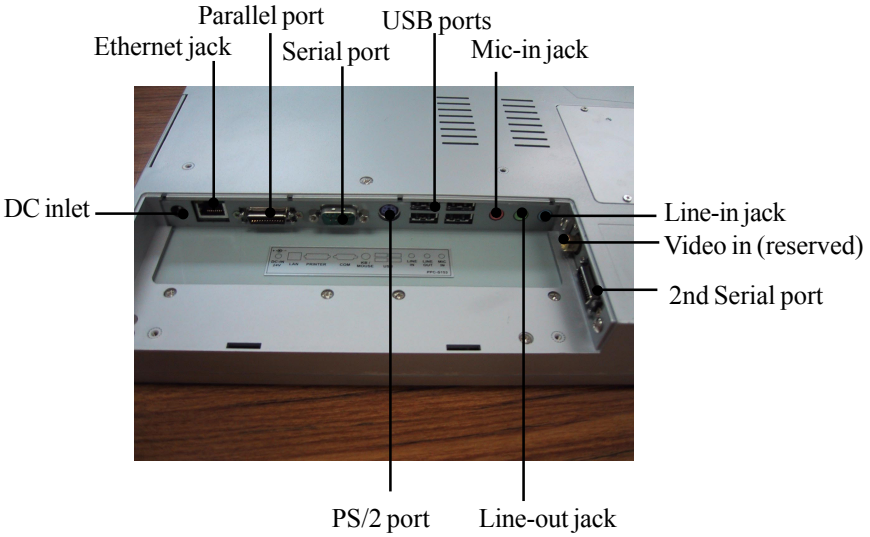


Figure 2-4: Rear and bottom view of the panel PC

2.2 Installation Procedures

2.2.1 Connecting the power cord

The panel PC can only be powered by a DC electrical outlet (16Vdc~25Vdc, 3.5A max.). Be sure to always handle the power cords by holding the plug ends only. Please follow the figure 2-5 to connect the male plug of the power cord to the DC inlet of the panel PC.

2.2.2 Connecting the keyboard or mouse

Before you start the computer, please connect the Y-shaped adaptor to the PS/2 mouse and keyboard port on the I/O section of the panel PC, then connect the necessary mouse or keyboard to the Y-shaped adapter or serial ports.

2.2.3 Switching on the power

When you look at the right side of the panel PC, you will see the power switch as shown in Figure 2-6 and Figure 2-7. When the switch is on horizontal position as Figure 2-6, it is in lock status. You can set it to avoid accidental open or close of the computer. When the switch is on vertical position as Figure 2-7, it can be pushed to open or close the computer.

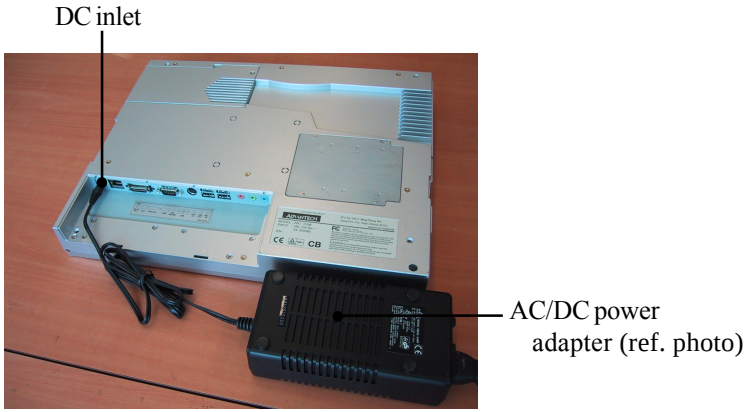


Figure 2-5: Connect the power cord to DC inlet

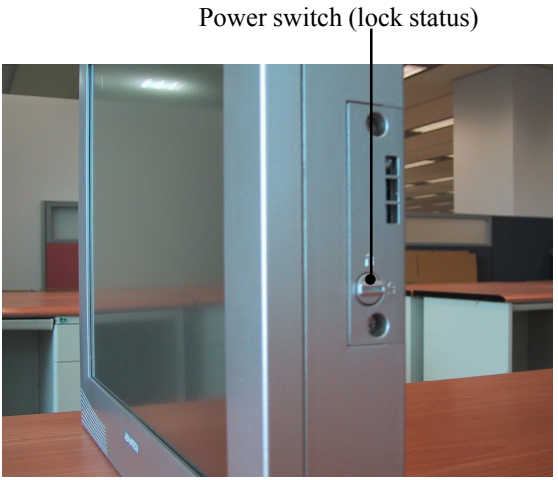


Figure 2-6: Power switch in lock status

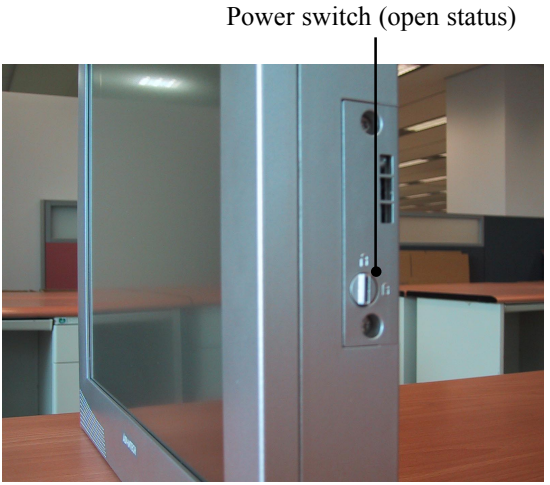


Figure 2-7: Power switch in open status

2.3 Running the BIOS Setup Program

Your panel PC is likely to have been properly set up and configured by your dealer prior to delivery. You may still find it necessary to use the panel PC's BIOS (Basic Input-Output System) setup program to change system configuration information, such as the current date and time or your type of hard drive. The setup program is stored in read-only memory (ROM). It can be accessed either when you turn on or reset the panel PC, by pressing the "Del" key on your keyboard immediately after powering on the computer.

The settings you specify with the setup program are recorded in a special area of memory called CMOS RAM. This memory is backed up by a battery so that it will not be erased when you turn off or reset the system. Whenever you turn on the power, the system reads the settings stored in CMOS RAM and compares them to the equipment check conducted during the power on self-test (POST). If an error occurs, an error message will be displayed on screen, and you will be prompted to run the setup program.

If you want to change the setup of BIOS, refer to Chapter 9 for more detailed information.

2.4 Installing System Software

Recent releases of operating systems from major vendors include setup programs which load automatically and guide you through hard disk preparation and operating system installation. The guidelines below will help you determine the steps necessary to install your operating system on the panel PC hard drive.

Note: Some distributors and system integrators may have already pre-installed system software prior to shipment of your panel PC.

If required, insert your operating system's installation or setup diskette into the diskette drive until the release button pops out. (See Fig. 2-2.)

The BIOS of the panel PC supports system boot-up directly from the CD-ROM drive. You may also insert your system installation CD-ROM into the CD-ROM drive. (See Fig. 2-2.) Refer to Chapter 9 if you wish to change the BIOS settings.

Power on your panel PC or reset the system by pressing the "Ctrl"+"Alt"+"Del" keys simultaneously. The panel PC will automatically load the operating system from the diskette or CD-ROM.

If you are presented with the opening screen of a setup or installation program, follow the instructions on screen. The setup program will guide you through preparation of your hard drive, and installation of the operating system.

If you are presented with an operating system command prompt, such as A:\>, then you must partition and format your hard drive, and manually copy the operating system files to it. Refer to your operating system user's manual for instructions on partitioning and formatting a hard drive.

2.5 Installing the Drivers

After installing your system software, you will be able to set up the Ethernet, SVGA, audio, and touchscreen functions. All the drivers except the CD-ROM drive driver are stored in a CD-ROM disc entitled "Drivers and Utilities." The CD-ROM drive driver is stored in a floppy disk. Both the CD-ROM and the floppy disk can be found in your accessory box.

To set up the CD-ROM function, insert the floppy disk with the CD-ROM drive driver into the floppy disk drive and type "install" after the following prompt is displayed on screen:

```
A: > INSTALL
```

Press "Enter", and the installation process will be completed in a few seconds.

The standard procedures for installing the drivers are described in Chapters 5, 6, 7, 8 respectively.

The utility directory includes multimedia programs. Refer to the README.TXT file inside the VGA folders for more detailed information.

The various drivers and utilities in the CD-ROM disc have their own text files which help users install the drivers and understand their functions. These files are a very useful supplement to the information in this manual.

Note: *The drivers and utilities used for the PPC-S153 panel PCs are subject to change without notice. If in doubt, check Advantech's website or contact our application engineers for the latest information regarding drivers and utlities.*

CHAPTER 3

Hardware and Peripheral Installation

- Overview of Hardware Installation and Upgrading
- Installing the 2.5" Hard Disk Drive (HDD)
- Installing the Central Processing Unit (CPU) and SDRAM Memory Module
- Mini PCI Card Installation
- Adapter Cables Installation

3.1 Overview of Hardware Installation and Upgrading

The panel PC consists of a PC-based computer that is housed in a plastic front and rear panel. Any maintenance or hardware upgrades can be easily completed after removing both panels. Meanwhile your HDD, SDRAM, CPU are all readily accessible by removing the CPU and heatsink cover and HDD bracket.

If you are a systems integrator and need to know how to completely disassemble the panel PC, you can find more useful information in Appendix B.

Warning! *Do not remove the plastic covers until you have verified that no power is flowing within the panel PC. Power must be switched off and the power cord must be unplugged. Every time you service the panel PC, you should be aware of this.*

3.2 Installing the 2.5" Hard Disk Drive (HDD)

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

1. Detach the HDD bracket by unscrewing the four screws on the top of the HDD bracket.
2. Place the HDD inside the HDD bracket and tighten four screws from both sides of the HDD bracket.
3. The HDD cable (1 x 44-pin to 1 x 44-pin) is next to the HDD bracket. Connect the HDD cable to the HDD. Make sure that the red wire corresponds to Pin 1 on the connector, which is labelled on the board. Plug the other end of the cable into the HDD, with Pin 1 on the cable corresponding to Pin 1 on the HDD.

4. Put the HDD bracket with HDD back to original position, then screw the four screws to fix it.

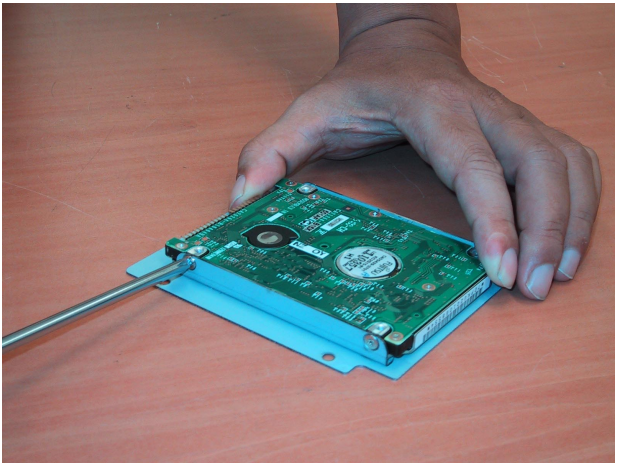


Figure 3-1: Install the HDD on the HDD bracket

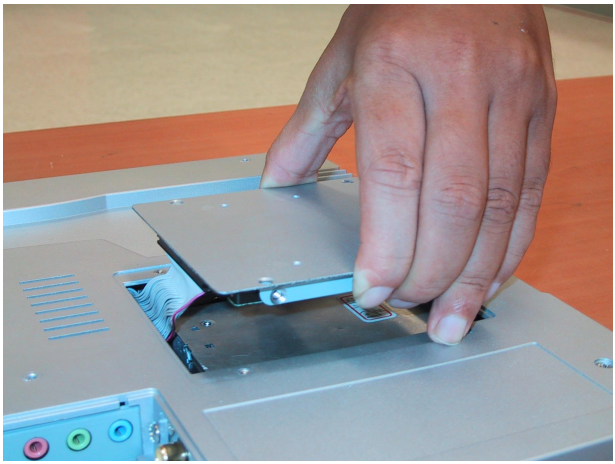


Figure 3-2: Connect HDD to the HDD cable

3.3 Installing the Central Processing Unit (CPU) and SDRAM Memory Module

The panel PC's central processing unit (CPU) can be upgaded to improve system performnace. The panel PC provides one 370-pin socket (Socket 370). The CPU must come with an attached heat sink and CPU fan to prevent overheating. THe panel PC also privides two 144-pin SODIMM sockets which can accept two SDRAM memory modules up to 1000 MB.

Warning! The CPU may be damaged if operated without a heat sink and a fan.

Caution! Always disconnect the power cord from your panel PC when you are working on it. Do not make connections while the power is on as sensitive electronic components can be damaged by the sudden rush of power. Only experience electornics personnel should open the panel PC.

1. Unscrew the screw on the right side for CPU and heat sink cover, slide leftwrad and detach the cover as shown in Figure 3-3, then you can find one 370-pin CPU socket and one 144-pin SODIMM socket.

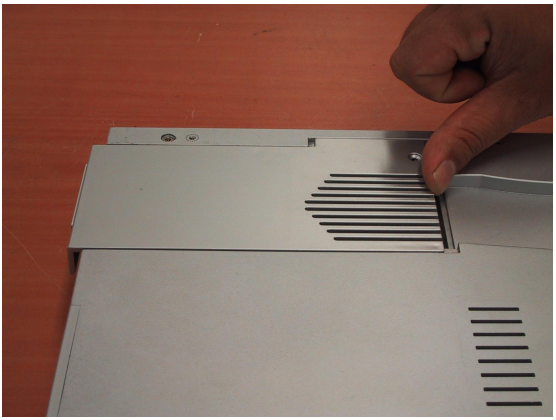


FIgure 3-3: Detach the plastic cover of CPU and heat sink

2. Insert the CPU in the correct orientation and gently slide the CPU in. It should insert easily. Make sure the pin of the CPU corresponds with the hole of socket. Do not use excessive force.

3 Place the metal CPU push cover on the top of the CPU as shown in Figure 3-4.

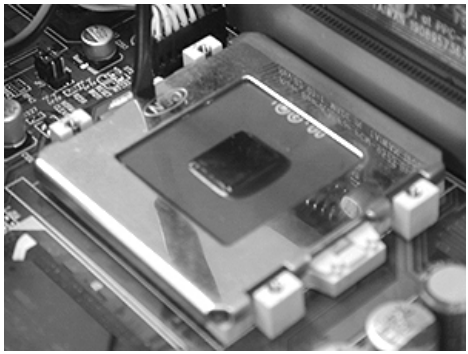


Figure 3-4: Place CPU push cover over CPU

4. Insert a flat-headed screwdriver into the side hole of the CPU at an upward perpendicular angle to the CPU, as shown in Figure 3-5. Make sure the slightly bend screwdriver head is pointing outward.

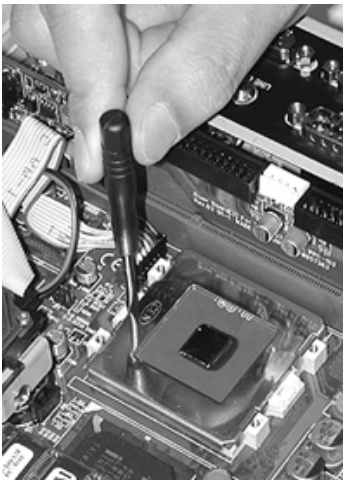


Figure 3-5: Insert screw driver into the hole

5. Gently lever at the CPU push cover by pushing the top end of the screwdriver away from the CPU (Figure 3-6, 3-7). After the CPU has been secured in the right position, remove the screw driver and the CPU push cover.

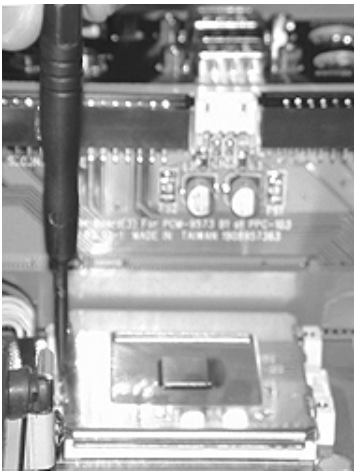
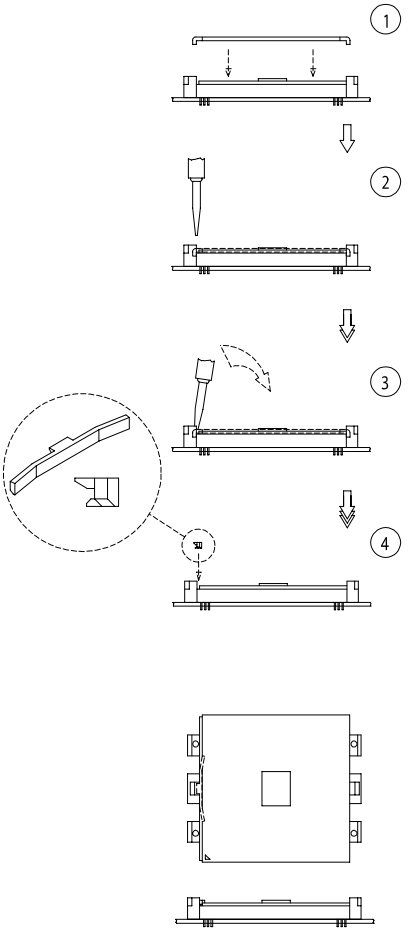


Figure 3-6: Push CPU in position

Figure 3-7 : CPU installation



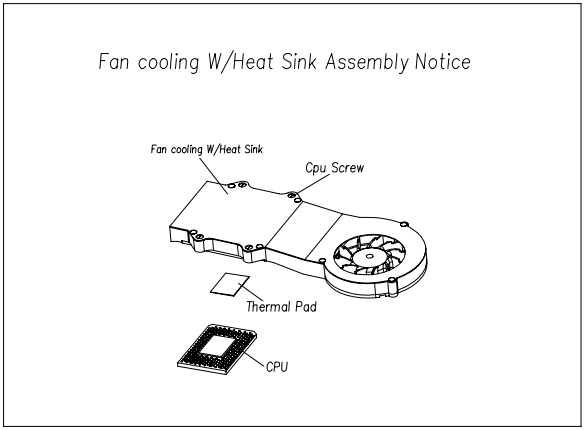


Figure 3-8: Fan cooling with heatsink assembly installation

6. In order to make heat disspation much better, apply an even thickness
of the silicone heat sink paste on the top of the CPU, the heat
sink with thermal pad is then placed on the top of the CPU (Figure 3-8).

7. Next, install an SDRAM module. Slip the memory module into the socket at a 45 degree angle as shown in Figure 3-9.

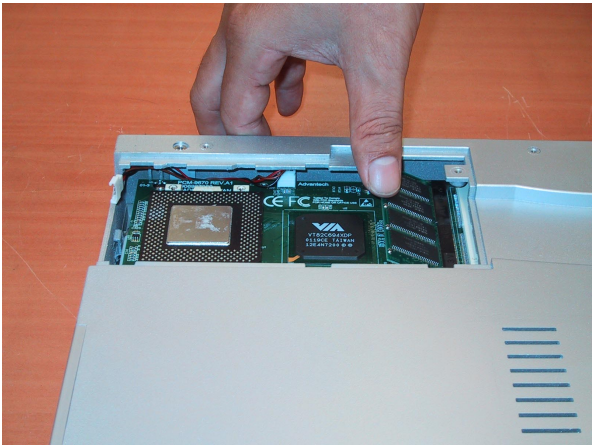


Figure 3-9: Installing the memory module

8. Push the module toward the horizontal ports at both ends of the socket until the module is upright and the retaining clips at both ends of the module click into place. When positioned correctly, the pins on top of the vertical posts should correspond to the circular holes on the ends of the module.

9. If a second 144-pin SODIMM socket is requested to install a second memory module, please follow Appendix B to disassemble the panel PC, then repeat steps 7 and 8 for each module you install.

10. Finally, put the heatsink with the fan back and tighten the four screws as shown in Figure 3-10, then put back and fix the plastic cover.

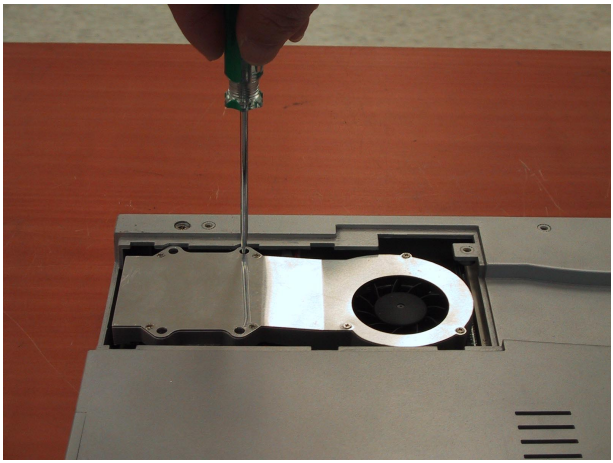


Figure 3-10: Installing the heat sink

3.4 Mini PCI card installation

The panel PC supports one Type III mini PCI bus expansion system card. To integrate a new mini PCI card into your system, follow these instructions:

1. Follow Appendix B to disassemble the panel PC and access the mini PCI socket.

2. Slip the mini PCI bus card into the socket at a 45-degree angle as shown in Figure 3-11.

3. Push the card toward the horizontal posts at both ends of the socket until the card is upright and the retaining clips at both ends of the card click into place.

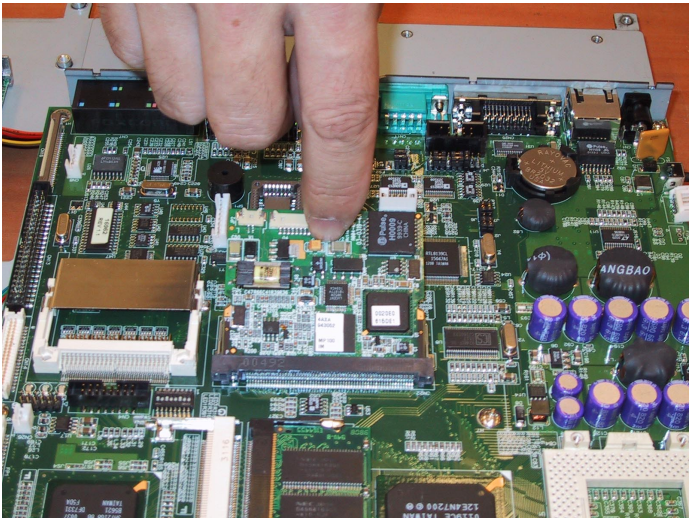


Figure 3-11: Install the mini PCI card

3.5 Adapter cable installation

Due to the PPC's compact design, the panel PC's edge for I/O ports is limited to accommodate fully intregrated I/O ports. So we designed a simplified connector for the printer port. Please follow the instructions below to use this port:

1. A printer port adapter cable is included with the accessory box. Connect this cable with 26-pin MDR printer port on the panel PC (Figure 3-12), then you can connect a standard printer with the panel PC.

Figure 3-12: Install the adapter

CHAPTER 4

Jumper Settings and Connectors

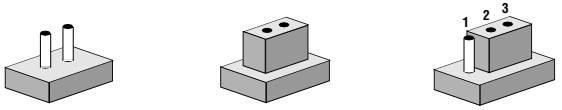
This chapter tells how to set up the panel PC hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all the safety precautions before you begin the installation procedures.

- Jumpers and Connectors
- CPU Installation
- CMOS Clear for External RTC (J7)
- COM-port Interface
- PS/2 port output setting
- VGA Interface
- Watchdog Timer Configuration
- LAN Controller Power Type Select

4.1 Jumpers and Connectors

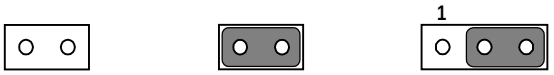
4.1.1 Setting jumpers

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.



Open Closed Closed 2 - 3

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



Open Closed Closed 2 - 3

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

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.

4.1.2 Jumpers and switch

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's jumpers.

Table 4-1: Jumpers and their functions

Label	Function
J2	Wake on LAN (Reserved)
J4	COM2 RS-232/422/485 setting
J5	PS/2 mouse port output setting
J6	Watchdog timer action
J7	CMOS clear for external RTC
J8	COM1 / COM2 Pin 9 output type setting
SW2	Panel type setting

4.1.3 Locating jumpers and switch

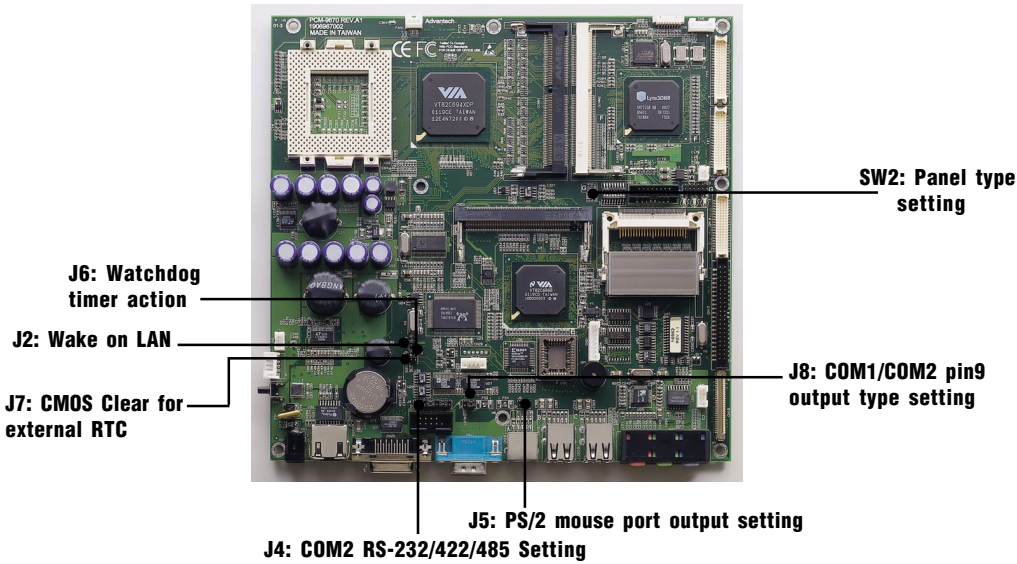


Figure 4-1: Locating jumpers on the PPC-S153 motherboard

4.1.4 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 4-2: Panel PC connectors

Label	Function
CN3	Inverter power connector
CN4	VGA connector
CN5	TV-Output (Reserved)
CN6	Video In (Reserved)
CN8	Internal speaker connector
CN13	HDD/IDE connector
CN14	CD-ROM/IDE connector
CN15	CompactFlash™ disk connector
CN21	Touch screen sensor connector
CN22	Mini PCI connector
CN23	Panel control connector
CN24	SIR connector
CN26	System management bus
FAN1	CPU fan power connector
FAN2	System fan power connector
FP1	Flat panel display connector (24-bit)
FP2	Flat panel display connector (48-bit)

4.1.5 Locating connectors

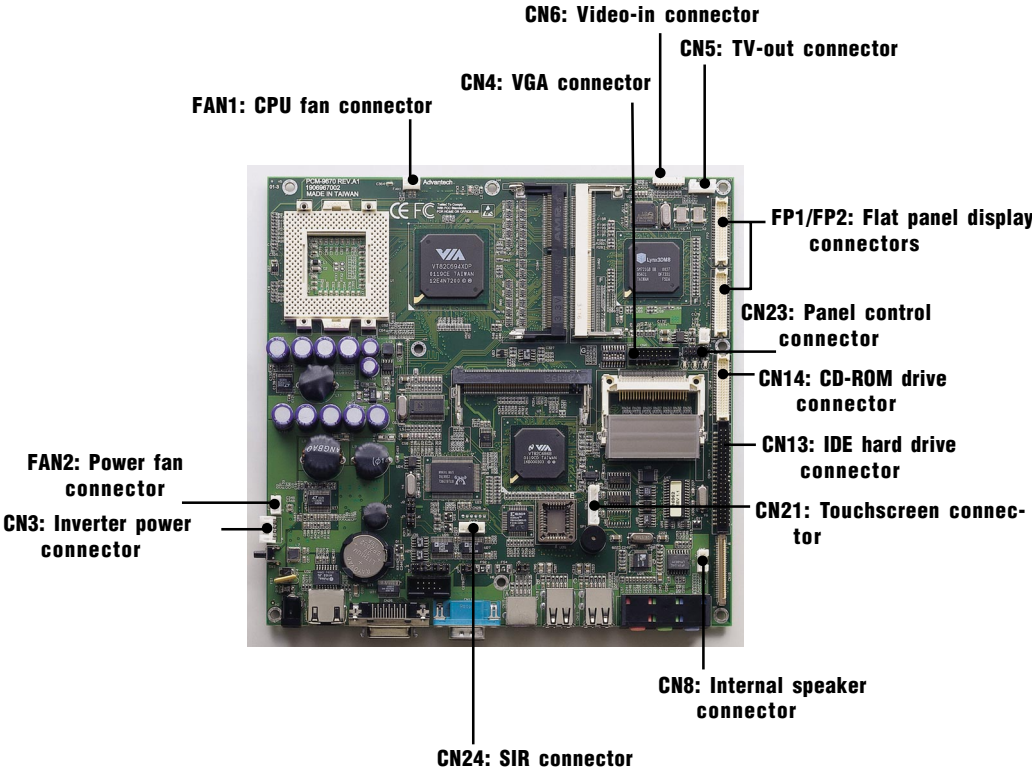


Figure 4-2: Locating connectors on the PPC-S153 motherboard

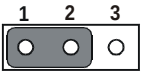
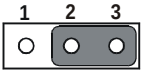
4.2 CPU Installation

You can install an Intel® Pentium® III or Celeron™ CPU without setting any frequency ratio or voltage.

4.3 CMOS Clear for External RTC (J7)

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.*

Table 4-3: Clear CMOS / External RTC (J7)

*Normal operation	Clear CMOS
	

* default setting

4.4 COM-port Interface

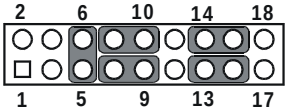
The panel PC provides two serial ports (COM1: RS-232; COM2: RS-232/422/485) in one COM port connector.

4.4.1 COM2 RS-232/422/485 setting (J4)

COM2 can be configured to operate in RS-232, RS-422, or RS-485 mode. This is done via J4 settings.

Table 4-4: COM2 RS-232/422/485 setting (J4)

*RS-232



* default setting

Table 4-5: COM2 RS-232/422/485 setting (J4)

***RS-422**

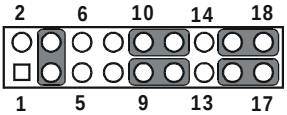
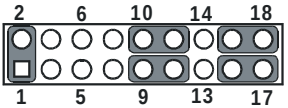


Table 4-6: COM2 RS-232/422/485 setting (J4)

***RS-485**



The IRQ and the address ranges for COM1 and 2 are fixed. However, if you wish to disable the port or change these parameters later you can do this in the system BIOS setup. The table overleaf shows the default settings for the panel PC's serial ports.

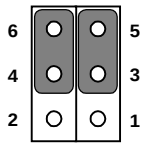
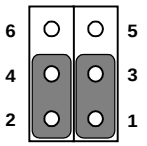
COM1 and COM2 are one set. You can exchange the address range and interrupt IRQ of COM1 for the address range and interrupt IRQ of COM2. After exchanging, COM1's address range is 2F8 ~ 2FF and its request IRQ is IRQ3: and COM2's address range is 3F8 ~ 3FF and its interrupt IRQ is IRQ4.

Table 4-7: Serial port default settings

Port	Address Range	Interrupt
COM1	3F8 ~ 3FF	IRQ4
COM2	2F8 ~ 2FF	IRQ3

4.4.2 COM1 / COM2 pin 9 output type setting (J8)

Table 4-8: COM1 / COM2 pin 9 output type setting (J8)

*Normal operation	+5 V output
	

* default setting

Note: Pins 1, 3 and 5 are for COM1.
Pins 2, 4 and 6 are for COM2.

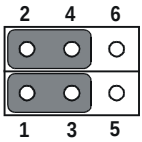
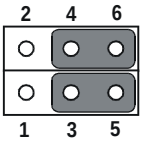
* default setting

4.5 PS/2 port output settings (J5)

The panel PC provides touchscreen option which is controlled through a PS/2 interface. That is, if the touchscreen is requested, the system should be set to enable the touchscreen. The jumper is already

defaulted for the system prior to shipment of the panel PC, so it not necessary to modify the jumper settings.

Table 4-9: PS/2 port output setting (J5)

Mouse port enable	Touchscreen enable
	

4.6 VGA Interface

The panel PC's AGP VGA interface can drive conventional CRT displays. It is also capable of driving a wide range of flat panel displays, including electroluminescent (EL), gas plasma, passive LCD and active LCD displays. The board has two connectors to support these displays simultaneously: one for standard CRT VGA monitors, and one for flat panel displays.

Pin assignments for the flat panel display connector, backlight connector and other related connectors are shown in Appendix C.

4.6.1 LCD panel power setting

The panel PC's AGP SVGA interface supports 5 V and 3.3 V LCD displays. The LCD cable already has a built-in default setting. You do not need to adjust any jumper or switch to select the panel power.

4.6.2 Panel type select (SW2)

SW2 is a 8-pin dip switch for selecting panel type and display mode. A 1024 x 768 TFT LCD is used in the PPC-S153, so the switch is preset according to the table below. The switch is already defaulted for the

PPC-S153's LCD, so it should not be modified. If you require modification for a special purpose, we recommend that you consult your distributor or our sales repreentative for detailed information.

Table 4-10: Panel type select (SW2)

Panel type	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1024 x 768 (36-bit)	ON	ON	ON	OFF	ON	OFF	OFF	ON
1024 x 768 (48-bit)	ON	ON	ON	OFF	OFF	OFF	OFF	ON

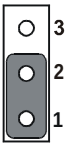
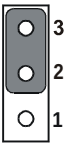
4.7 Watchdog Timer Configuration

An onboard watchdog 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.)

4.7.1 Watchdog activity selection (J6)

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 J6 as shown below:

Table 4-11: Watchdog activity selection (J6)

*System reset	IRQ11
	

* default setting

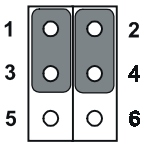
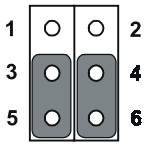
4.8 LAN controller power type select

4.8.1 Network boot

The network boot geature can be utilized by incorporating the boot ROM image files for the appropriate network operating system. The boot ROM BIOS files are included in the system BIOS.

4.8.2 LAN controller power type select (J2)

Table 4-12: LAN controller power type select (J2)

Normal*	Standby 3V
	

* default setting

Note: *PPC-S153 supports Wake-on-LAN, J2 has to be set to the standby 3V position.*

CHAPTER 5

VIA Chipset

This chapter provides information on VIA chipset configuration

- Introduction
- Installation of VIA 4-in-1 driver
  - for Windows 98/NT/2000/ME
- Further information

5.1 Introduction

The PPC-S153 uses the combination of VT82C694X north bridge and VT82C686B super south bridge from VIA technologies, Inc., which is a high integration, high performance, cost-effective and energy efficient chipset for the implementation of AGP/PCI/ISA multifunctional computer systems from 66 MHz, 100 MHz and 133 MHz based on 64-bit Socket 370 processors, meanwhile, it also provides superior performance between the CPU, DRAM, AGP bus, and PCI bus with pipelined, burst and concurrent operation.

The VIA VT82C694X system controller also supports full AGP v2.0 capability for maximum bus utilization including 2x and 4x mode transfers, as well as supports two 32-bit 3.3/5V system buses that are synchronous/pseudo-synchronous to the CPU bus.

The VIA VT82C686B PSIPC (PCI Super-I/O Integrated Peripheral Controller) can support Intel and non-Intel based processor to PCI bus bridge functionality to make a complete Microsoft PC99-compliant PCI/ISA system, moreover, it also supports master mode enhanced IDE controller with dual channel DMA engine (includes UltraDMA-33/66/100) and interlaced dual channel commands.

5.2 Driver Installation

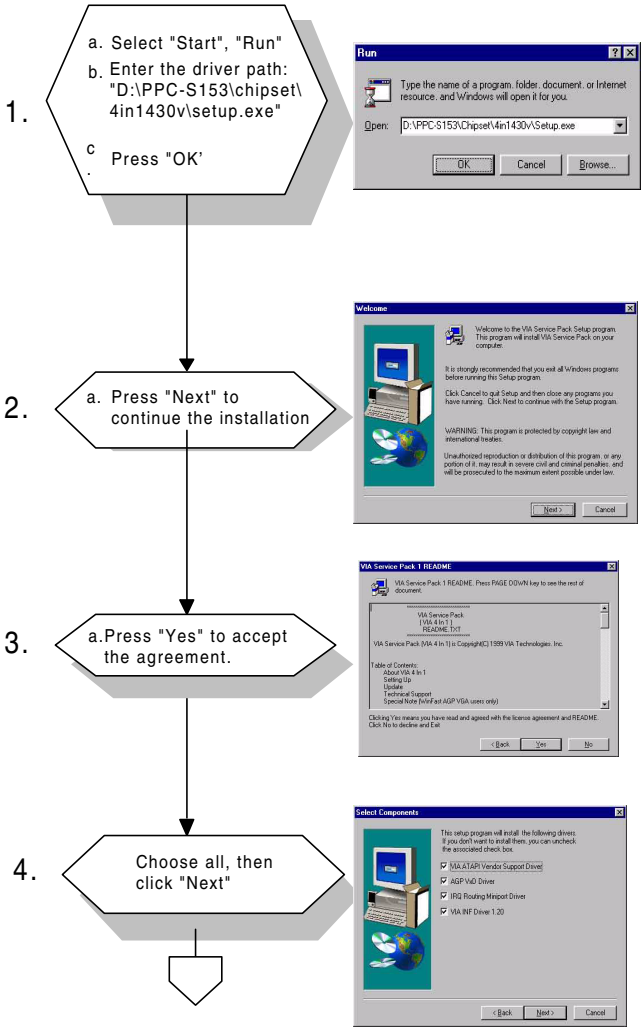
Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your PPC-S153, and then refer to the corresponding installation flow chart. Then just follow the steps described in the flow chart. You will quickly and successfully complete the installation, even if you are not familiar with instructions for Windows.

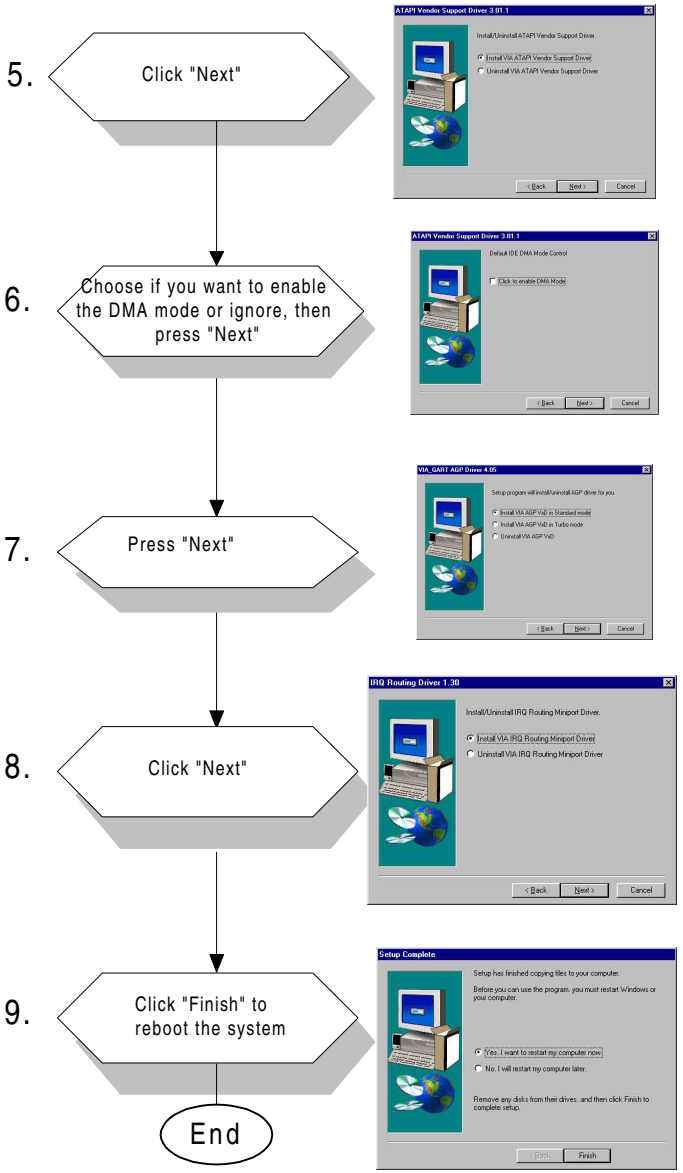
Important: The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

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

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

5.2.1 Installation for Windows 98/NT/2000/ME




5.
Click "Next"
ATAPI Vendor Support Driver 3.01.1
Install/Uninstall ATAPI Vendor Support Driver.
Install VIA ATAPI Vendor Support Driver
Uninstall VIA ATAPI Vendor Support Driver
< Back
Next >
Cancel
6.
Choose if you want to enable the DMA mode or ignore, then press "Next"
ATAPI Vendor Support Driver 3.01.1
Default IDE DMA Mode Control
Click to enable DMA Mode
< Back
Next >
Cancel
7.
Press "Next"
VIA_GART AGP Driver 4.05
Setup program will install/uninstall AGP driver for you.
Install VIA AGP VxD in Standard mode
Install VIA AGP VxD in Turbo mode
Uninstall VIA AGP VxD
< Back
Next >
Cancel
8.
Click "Next"
IRQ Routing Driver 1.30
Install/Uninstall IRQ Routing Miniport Driver.
Install VIA IRQ Routing Miniport Driver
Uninstall VIA IRQ Routing Miniport Driver
< Back
Next >
Cancel
9.
Click "Finish" to reboot the system
Setup Complete
Setup has finished copying files to your computer.
Before you can use the program, you must restart Windows or your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
End

5.3 Further Information

VIA website:
www.via.com.tw

Advantech websites:
www.advantech.com
www.advantech.com.tw

CHAPTER 6

PCI Bus Ethernet Interface

This chapter provides information on Ethernet configuration.

- Introduction
- Installation of Ethernet Driver
  - for Windows 98
  - for Windows NT
  - for Windows 2000/ME
- Further Information

6.1 Introduction

The PPC-S153 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.

6.2 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-S153, 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.

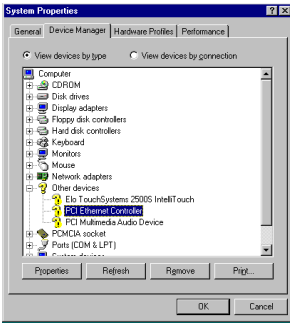
Important: The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

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

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

6.2.1 Installation for Windows 98

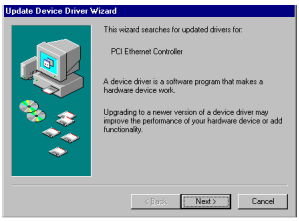
1. a. Select "Start", "Settings", "Control Panel", "System"
   b. Click "Device Manager" and highlight "PCI Ethernet Controller"
   c. Select "Properties"

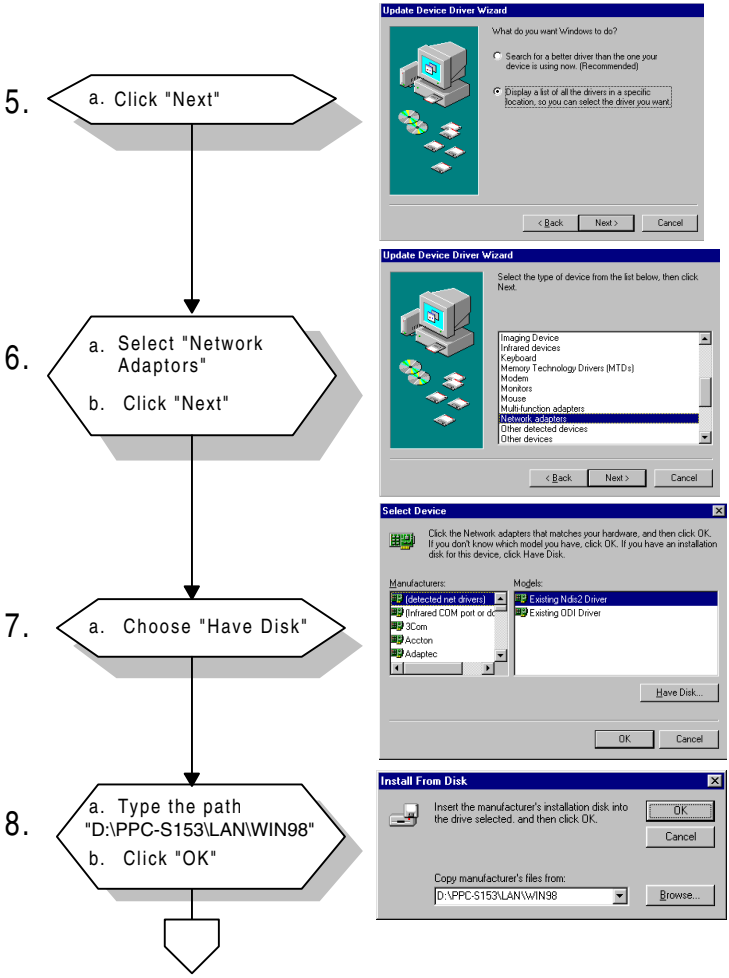


2. a. Choose "Driver" folder

3. a. Click "Update Driver"

4. a. Follow the instructions
   b. Click "Next"




5.
a. Click "Next"
6.
a. Select "Network Adaptors"
b. Click "Next"
7.
a. Choose "Have Disk"
8.
a. Type the path "D:\PPC-S153\LAN\WIN98"
b. Click "OK"
Update Device Driver Wizard
What do you want Windows to do?
Search for a better driver than the one your device is using now. (Recommended)
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel
Update Device Driver Wizard
Select the type of device from the list below, then click Next.
Imaging Device
Infrared devices
Keyboard
Memory Technology Drivers (MTDs)
Modem
Monitors
Mouse
Multi-function adapters
Network adapters
Other detected devices
Other devices
< Back
Next >
Cancel
Select Device
Click the Network adapters that matches your hardware, and then click OK. If you don't know which model you have, click OK. If you have an installation disk for this device, click Have Disk.
Manufacturers:
Models:
(detected net drivers)
(Infrared COM port or dc
3Com
Accton
Adaptec
Existing Ndis2 Driver
Existing ODI Driver
Have Disk...
OK
Cancel
Install From Disk
Insert the manufacturer's installation disk into the drive selected, and then click OK.
OK
Cancel
Copy manufacturer's files from:
D:\PPC-S153\LAN\WIN98
Browse...

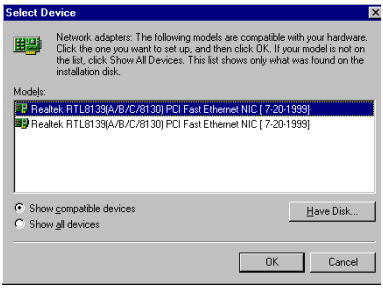
9. a. Click "OK"

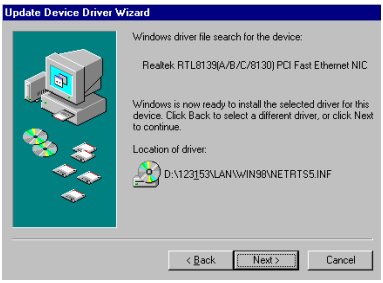
10. a. Click "Next"

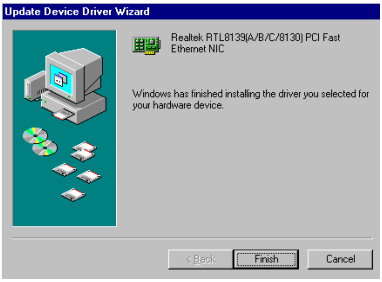
11. a. Click "Finish"

12. a. Select "Yes" to reboot system

End

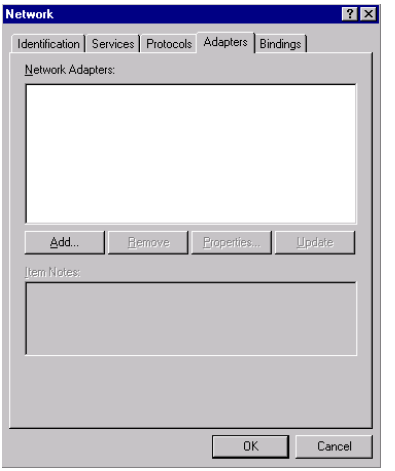




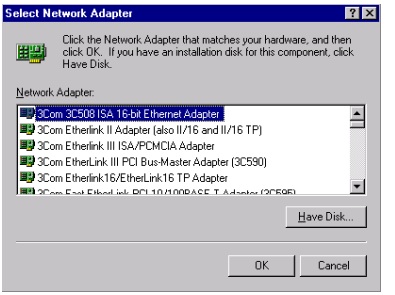


6.2.2 Installation for Windows NT

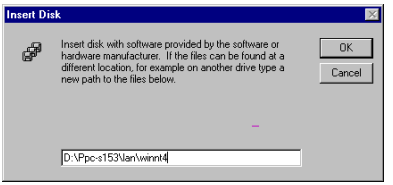
1.
a. Select "Start", "Settings", "Control Panel", and then double click the "Network" icon.
b. Choose the "Adapters" label.
c. Click the "Add" button.

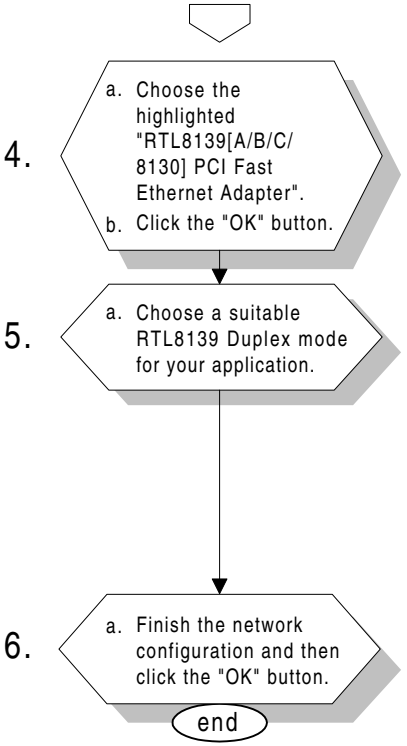


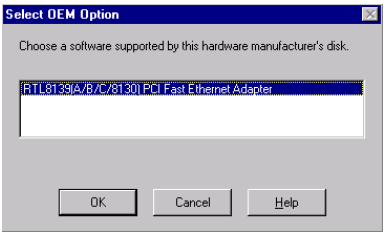
2.
a. Press "Have Disk...".



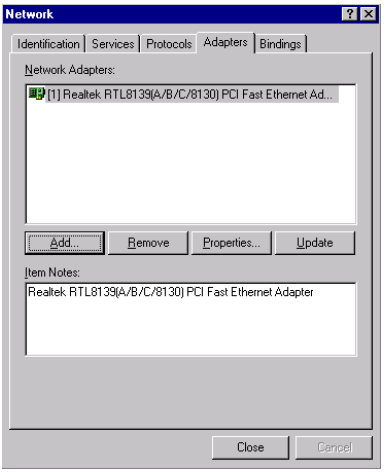
3.
a. Type the path: "D:\PPC-S153\LAN\WINNT4"
b. Press the "OK" button.




4.
a. Choose the highlighted "RTL8139[A/B/C/ 8130] PCI Fast Ethernet Adapter".
b. Click the "OK" button.
5.
a. Choose a suitable RTL8139 Duplex mode for your application.
6.
a. Finish the network configuration and then click the "OK" button.
end


Select OEM Option
Choose a software supported by this hardware manufacturer's disk.
RTL8139(A/B/C/8130) PCI Fast Ethernet Adapter
OK
Cancel
Help


Duplex mode
RTL8139 Duplex Mode
[3] 10 Full Duplex
Choose the proper Duplex Mode from the list.
OK
Cancel
Help


Network
Identification
Services
Protocols
Adapters
Bindings
Network Adapters:
[1] Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet Ad...
Add...
Remove
Properties...
Update
Item Notes:
Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet Adapter
Close
Cancel

6.2.3 Installation for Windows 2000/ME

After finishing the Windows 2000/ME installation, the system will automatically detect the Ethernet hardware and install the Ethernet driver from the drivers database from Windows 2000 or Windows ME when the system reboots.

Users are not required to install the Ethernet driver themselves.

6.3 Further Information

Realtek website: **www.realtek.com.tw**

Advantech websites: **www.advantech.com**
www.advantech.com.tw

CHAPTER 7

AGP SVGA Setup

- Introduction
- Installation of SVGA Driver
  - for Windows 98
  - for Windows NT
  - for Windows 2000
  - for Windows ME
- Further Information

7.1 Introduction

The PPC-S153 has an onboard AGP flat panel/VGA interface. The specifications and features are described as follows:

7.1.1 Chipset

The PPC-S153 uses a Lynx 3DM4 SMI 721 chipset from Silicon Motion Inc. for its AGP/SVGA controller. It supports many popular LCD, EL, and gas plasma flat panel displays and conventional analog CRT monitors. The SMI 721 VGA BIOS supports monochrome LCD, EL, color TFT and STN LCD flat panel displays. 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.

7.1.2 Display memory

With onboard 4 MB display memory, the VGA controller can drive CRT displays or color panel displays with resolutions up to 1280 x 1024 at 16 M colors.

7.2 Installation of SVGA Driver

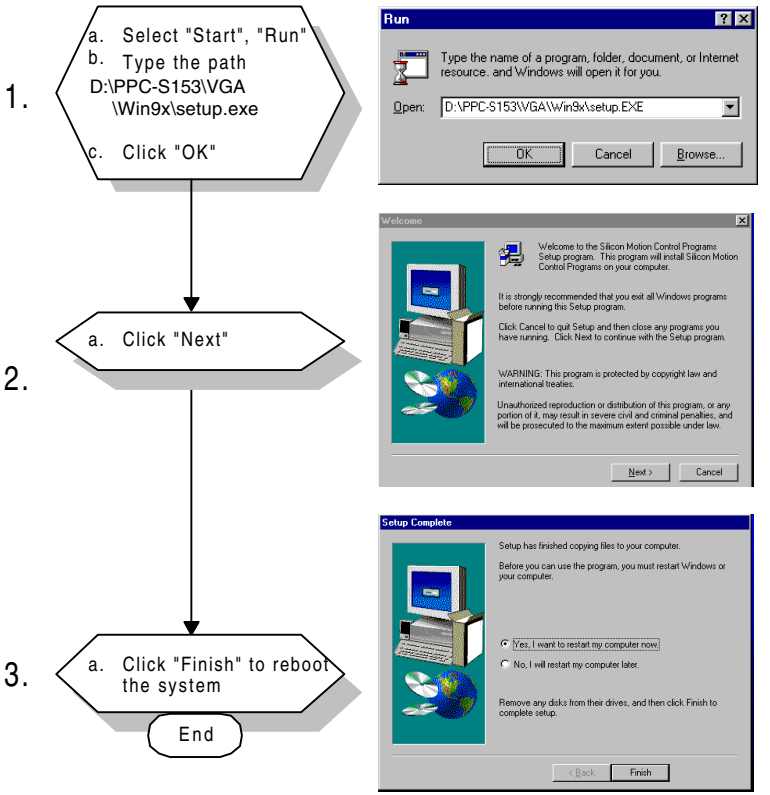
Complete the following steps to install the SVGA driver. Follow the procedures in the flow chart that apply to the operating system that you you are using within your PPC-S153.

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.

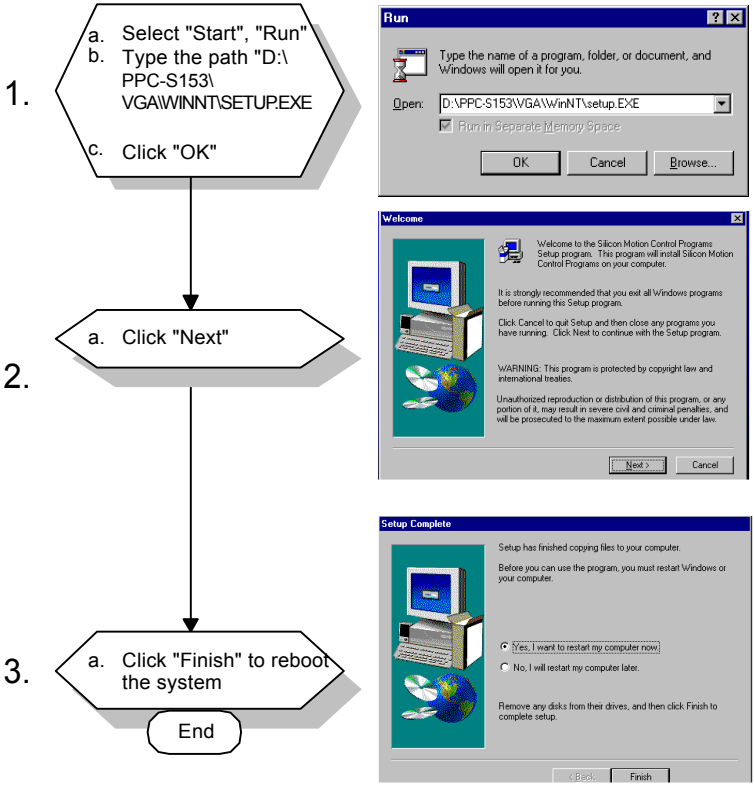
Note 1: The CD-ROM drive is designated as "D" throughout this chapter.

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

7.2.1 Installation for Windows 98

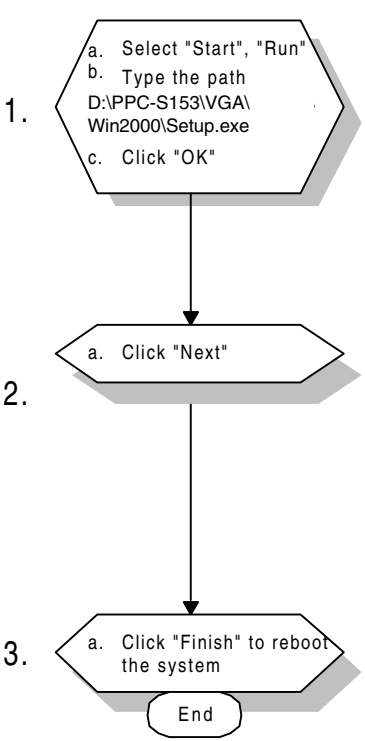


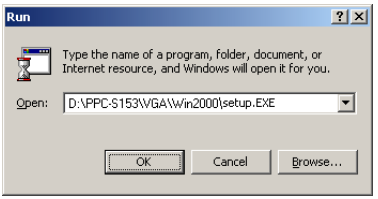
7.2.2 Installation for Windows NT

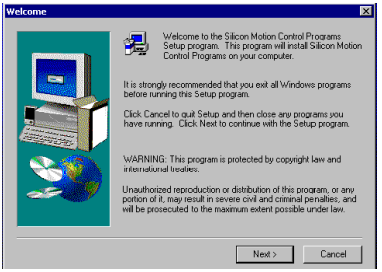


Note: Service Pack X (X=3, 4, 5, 6...) must be installed first before you install the Windows NT VGA driver.

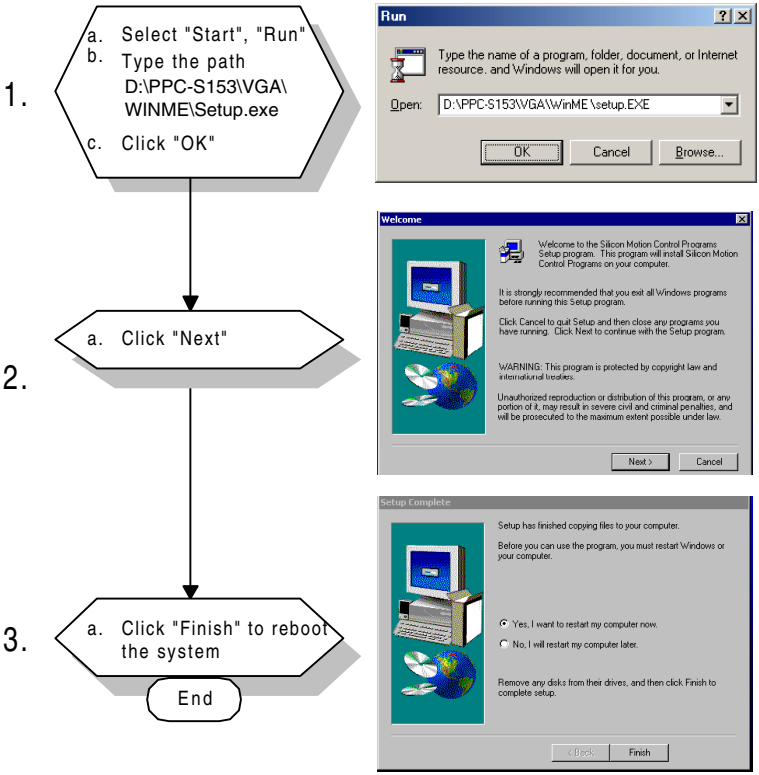
7.2.3 Installation for Windows 2000







7.2.4 Installation for Windows ME



7.3 Further Information

For further information about the AGP/SVGA installation in your PPC-S153, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

Silicon Motion website:
www.siliconmotion.com

Advantech websites:
www.advantech.com
www.advantech.com.tw

CHAPTER 8

Audio

- Introduction
- Installation of Audio Driver
  - for Windows 98
  - for Windows NT
  - for Windows 2000
  - for Windows ME

8.1 Introduction

The PPC-S153's onboard audio interface provides high-quality stereo sound and FM music synthesis (ESFM) by using the VT82C686B super south bridge audio controller from VIA Technology, Inc. The audio interface can record, compress, and play back voice, sound, and music with a built-in mixer control. The PPC-S153's onboard 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.

8.2 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 PPC-S153, 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.

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 98

1. Click "Start" and select "Settings". Click "Control Panel" and double-click "Add New Hardware"

2. In the "Add New Hardware Wizard" window, click "Next"

3. In the following "Add New Hardare Wizard" window, click "Next" for Windows to search for Plug and Play devices

4. In the following "Add New Hardware" window, select "No, the device isn't..." and click "Next

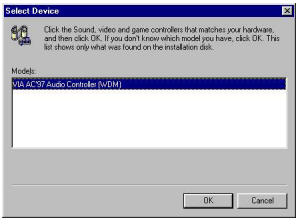
5. In the following "Add New Hardware Wizard" window, select "No, I want to select..." and click "Next"

6. In the following "Add New Hardware Wizard" window, select "Sound, video and game controllers" and click "Next"

7. In the following "Add New Hardare Wizard" window, click "Have Disk..."

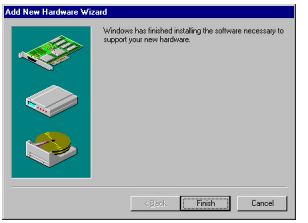
8. Type the path "D:\ppc-s153\audio\audio_v2.31\win98_ME_2000_V2.31\Win98SE" and click "OK"

9. In the select Device Window, select "VIA PCI Audio Controller (WDM)" and click "OK"



10. In the "Add New Hardware Wizard" window, click "Next"

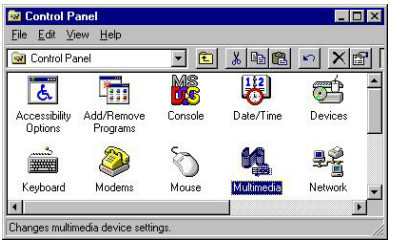
11. In the "Add New Hardware" window, click "Finish". Then reboot the system



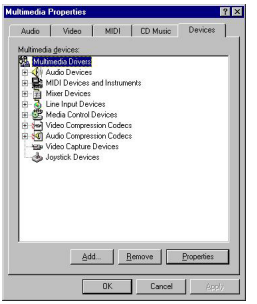
End

8.2.2 Installation for Windows NT

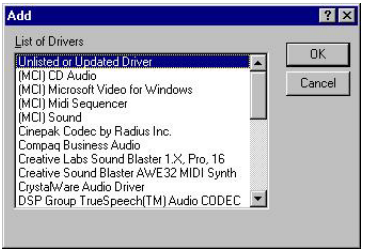
1. Click "Start" and select "Settings". Click "Control Panel" and double-click "Multimedia"



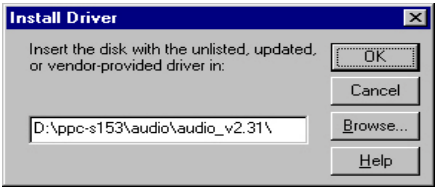
2. In the "Multimedia Properties" window, select the "Devices" tab. Then select the "Audio Devices" item and click "Add..."



3. In the "Add" window, select the "Unlisted..." item and click "OK"



4. When the Install Driver window appears, insert the utility disc into the CD-ROM drive. Type the path: "D\PPC-S153\Audio\Audio_v2.31\ww_NT4_v2.31\WinNT



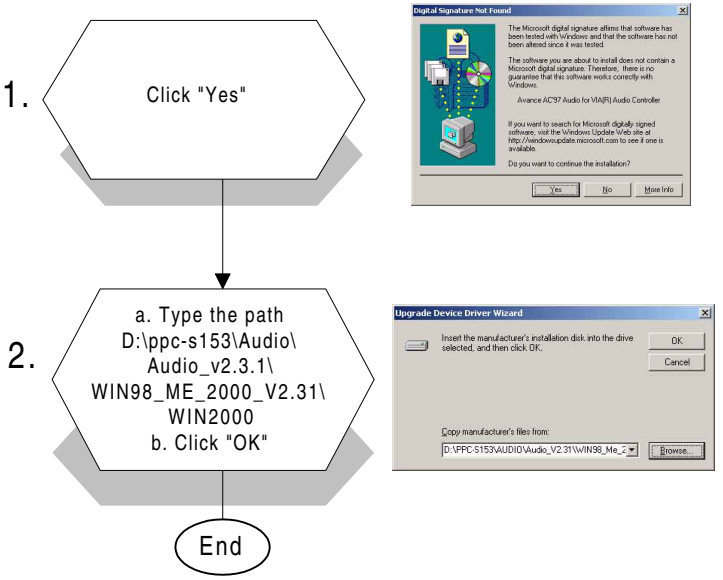
5. In the "Add Unlisted or Updated Driver" window, select the "VIA PCI Audio Controller" idtem. then click "OK"

6. In the System Setting Change, click "Restart Now"

End

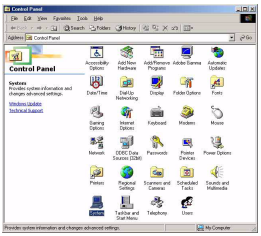
8.2.3 Installation for Windows 2000

When installing OS Windows 2000, the system can automatically detect the Audio hardwire, then follow the instruction to install the driver.

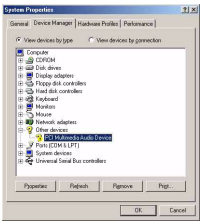


8.2.4 Installation for Windows ME

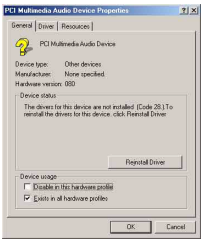
1. Select "Start", Settings", "Control Panel","System"



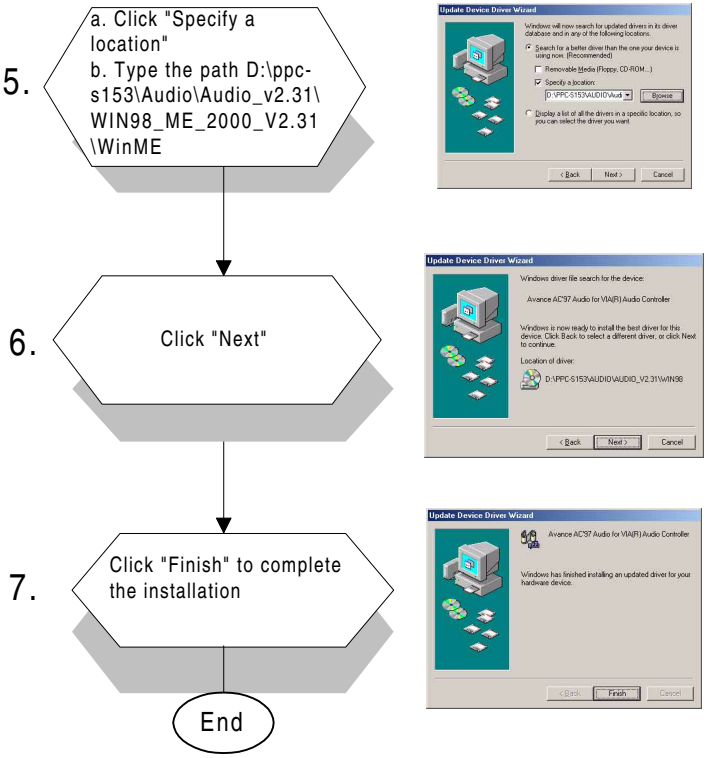
2. a. Click "Device Manager" and highlight "PCI Multimedia Audio Device"
   b. Select "Properties"



3. a. Choose "Driver" folder
   b. Click "Update Driver"



4. Click "Next"


5.
a. Click "Specify a location"
b. Type the path D:\ppc-s153\Audio\Audio_v2.31\WIN98_ME_2000_V2.31\WinME
6.
Click "Next"
7.
Click "Finish" to complete the installation
End
Update Device Driver Wizard
Windows will now search for updated drivers in its driver database and in any of the following locations.
Search for a better driver than the one your device is using now. (Recommended)
Removable Media (Floppy, CD-ROM...)
Specify a location:
D:\PPC-S153\AUDIO\Audi
Browse
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel
Update Device Driver Wizard
Windows driver file search for the device:
Avance AC'97 Audio for VIA(R) Audio Controller
Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
D:\PPC-S153\AUDIO\AUDIO_V2.31\WIN98
< Back
Next >
Cancel
Update Device Driver Wizard
Avance AC'97 Audio for VIA(R) Audio Controller
Windows has finished installing an updated driver for your hardware device.
< Back
Finish
Cancel

CHAPTER 9

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

9.1 Award BIOS Setup

The PPC-S153 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 website for the latest BIOS versions and related information.*

9.2 CMOS Setup Utility

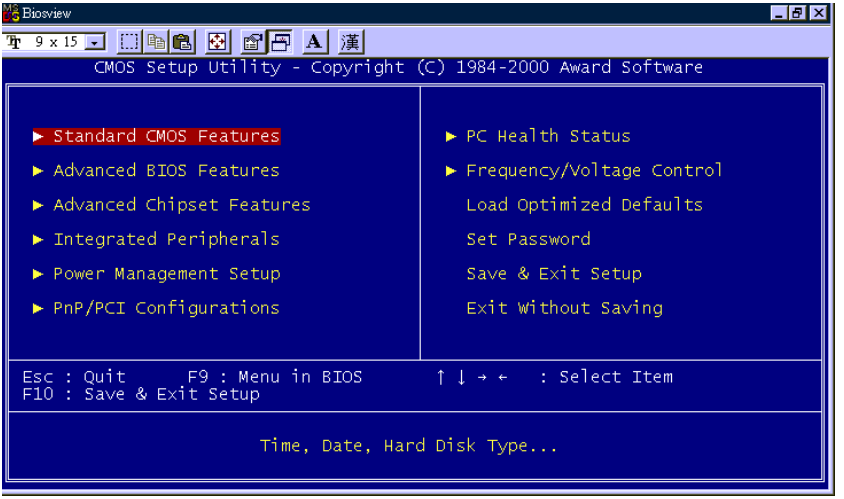


Figure 9-1: Setup program initial screen

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. 9-1. Use the arrow keys to select and press "Enter" to run the selected program.

9.3 Standard CMOS Setup

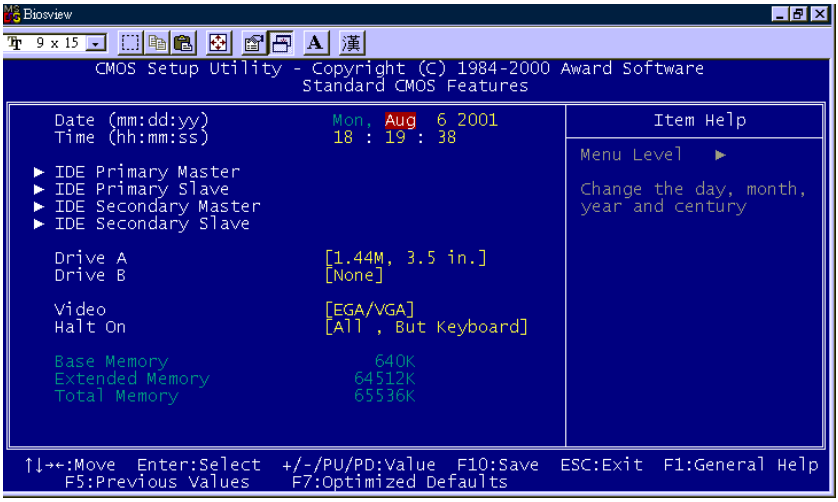


Figure 9-2: CMOS setup screen

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.

9.4 BIOS Features Setup

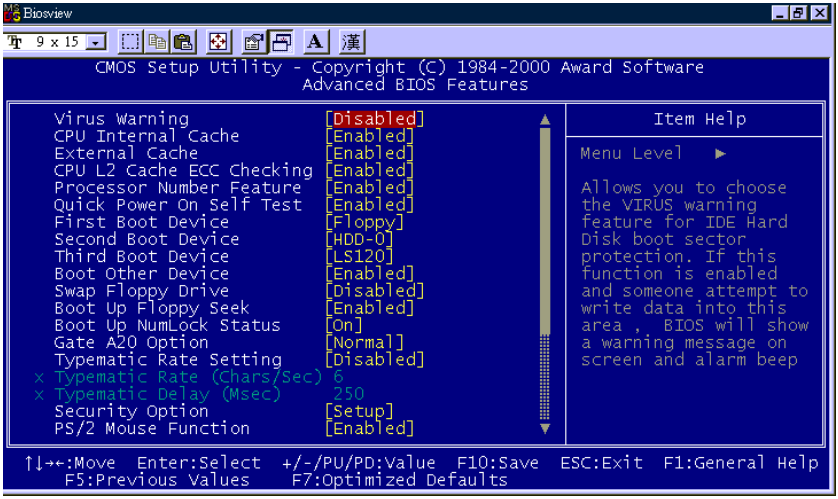


Figure 9-3: BIOS features setup screen

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.

External Cache
When enabled, supports an external cache SRAM.

The options are: Enabled (Default), Disabled.

CPU L2 Cache ECC Checking
Allows the CPU L2 cache to enable the memory parity check.

The options are: Disabled (Default), Enabled.

Quick Power On Self Test
When enabled, allows the BIOS to bypass the extensive memory test.

The options are: Disabled (Default), Enabled.

Boot From LAN First
Enables the system to boot from a LAN.

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:

C, A, SCSI (Default)

LS/ZIP, C

C (only)

SCSI, C, A

SCSI, A, C

F, A, SCSI

E, A, SCSI

D, A, SCSI

CDROM, C, A

C, CDROM, 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.

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.

PS/2 Mouse Function Control
When enabled, the PS/2 mouse is activated.

The options are: Disabled (Default), Enabled.

9.5 Chipset Features Setup

Note: It is strongly recommended that setup items in this section NOT be changed, because advanced knowledge is required to effect such changes.

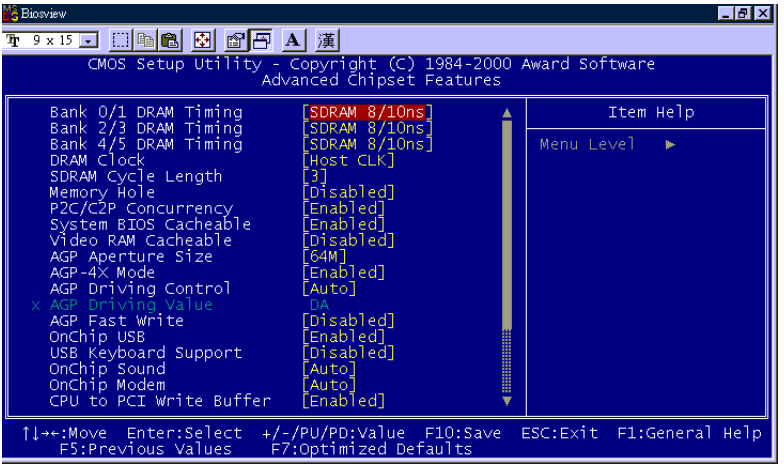


Figure 9-4: Chipset features setup screen

SDRAM Data Integrity Mode
When set as non-ECC, supports standard 64-bit DIMM RAM modules. When set as ECC, supports standard 72-bit ECC RAM modules.

The options are: Non-ECC (Default), ECC.

System BIOS Cacheable
When enabled, allows the ROM area FOOOH-FFFFH to be cacheable when the cache controller is activated. The recommended setting is "Disabled", especially for high speed CPUs (200 MHz and above).

Video BIOS Cacheable
When enabled, allows the system to use the video BIOS codes from SRAMs, instead of the slower DRAMs or ROMs.

The options are: Enabled (Default), Disabled.

Video RAM Cacheable
Enables video RAM to be cacheable.

The options are: Disabled (Default), Enabled.

16 Bit I/O Recovery Time
Sets 16-bit I/O signal recovery time.

The options are: 1 (Default), 2, 3, 4, N/A.

Memory Hole at 15M-16M
When enabled, the memory hole at the 15 MB address will be relocated to the 15 ~ 16 MB address range of the ISA cycle when the processor accesses the 15 ~ 16 MB address area.

When disabled, the memory hole at the 15 MB address will be treated as a DRAM cycle when the processor accesses the 15 ~ 16 MB address.

The options are: Disabled (Default), Enabled.

Delayed Transaction
When disabled, the syatem operates normally. When enabled, the system can support lower-speed ISA devices.

The options are: Disabled (Default), Enabled.

Spread Spectrum

When disabled, the syatem operates normally. When enabled, the spread spectrum will be set to 0.5% (CNTR).

The options are: Disabled (Default), Enabled.

9.6 Power Management Setup

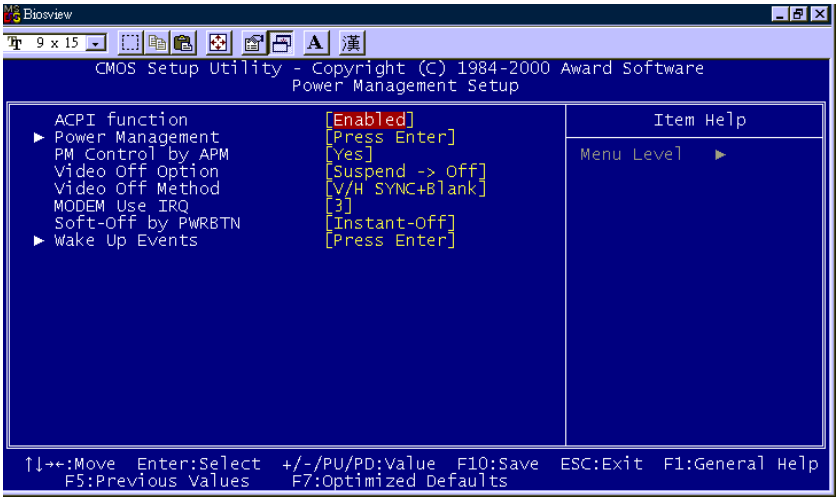


Figure 9-5: Power management setup screen

Power Management

When enabled, allows you to use Power Management features.

The options are: Disabled (Default), Enabled.

PM Control by APM

The option "No" allows the BIOS to ignore the APM (Advanced Power Management) specification. Selecting "Yes" will allow the BIOS to wait for APM's prompt before it enters Doze mode, Standby mode, or Suspend mode. If the APM is installed, it will prompt the BIOS to

set the system into power saving mode after all tasks are done.

The options are: Yes (Default), No.

Video Off Option

This feature provides the selections for the video display power saving mode. The option "Susp, Stby → Off" allows the video display to go blank if the system enters Suspend or Standby mode. The option "Suspend → Off" allows the video display to go blank if the system enters Suspend mode. The option "All Modes → Off" allows the video display to go blank if the system enters Doze mode or Suspend mode. The option "Always On" allows the video display to stay in Standby mode even when the system enters Doze or Suspend mode.

The options are: Susp, Stby → Off (Default), Suspend → Off, All Modes → Off, Always On.

Video Off Method

"DPMS Supported" allows the BIOS to blank off the screen display with your VGA card which supports DPMS (Display Power Management Signaling function). "Blank Screen" allows the BIOS to blank the screen display by turning off the red-green-blue signals.

The options are: DPMS Supported (Default), Blank Screen.

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.

Note: Under certain operating systems such as Windoes 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

9.7 PNP/PCI Configuration Setup

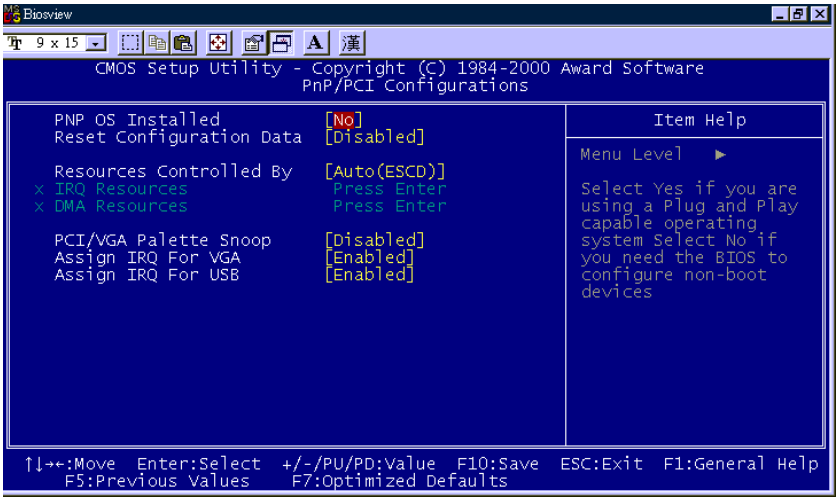


Figure 9-6: PNP/PCI configuration setup screen

PNP OS Installed

Select Yes if the installed system supports the PnP function. Select No if the installed system does not support the PnP function.

The options are: No (Default), Yes.

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.

9.8 Integrated peripherals

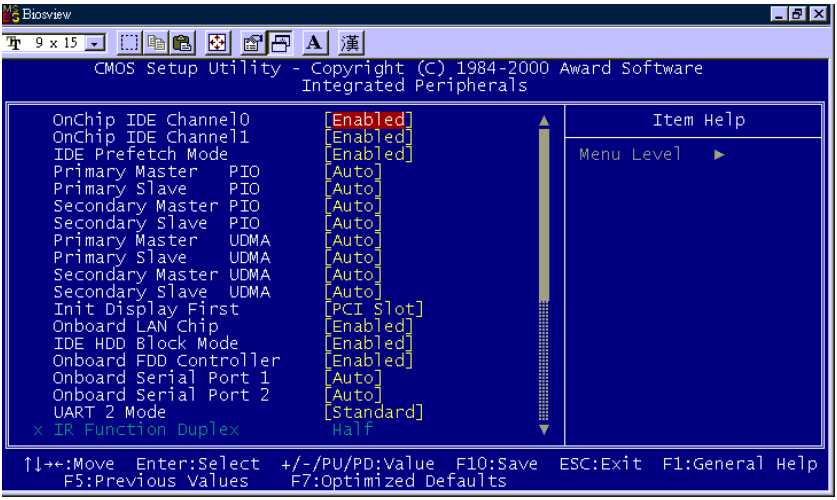


Figure 9-7: Load BIOS defaults screen

DE 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.

Onboard FDD Controller

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

The options are: Enabled (Default), Disabled.

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.

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

9.9 PC Health Status

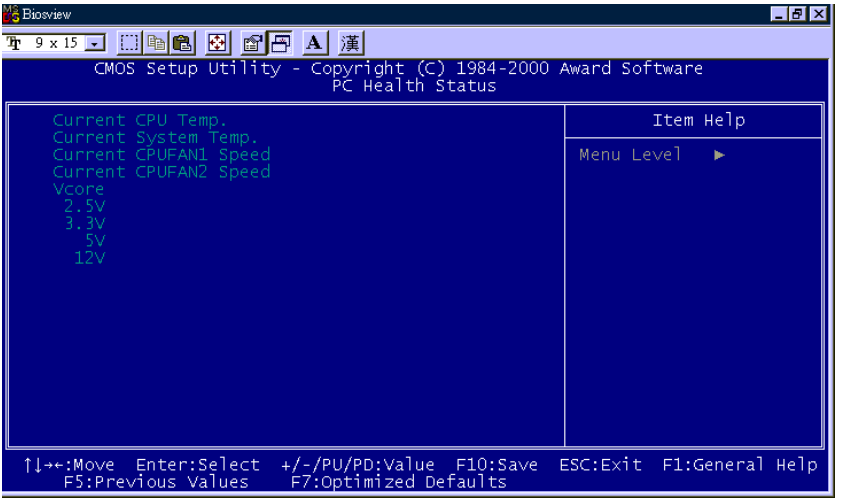


Figure 9-8: PC Health Status

The PC health status is shown above which can automatically detect and display the CPU and system temperature, fan speed and Vcore of the CPU

9.10 Frequency/Voltage Control

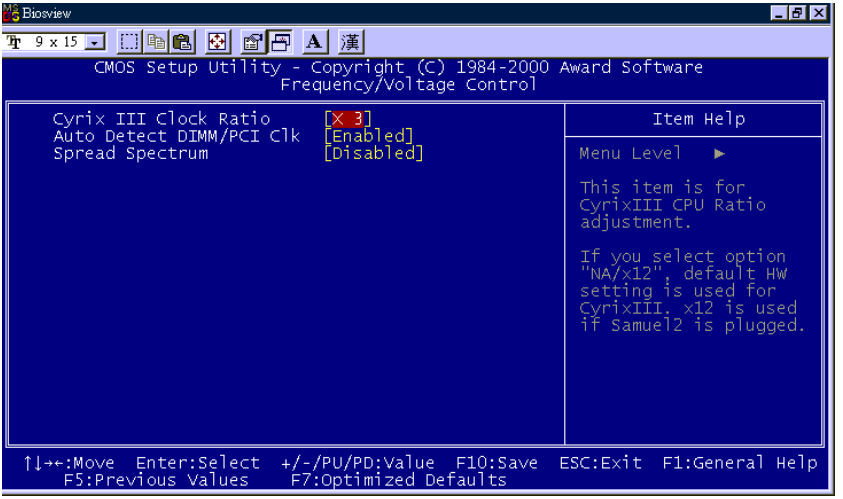


Figure 9-9: Frequency/Voltage Control

9.11 Load Optimized Defaults

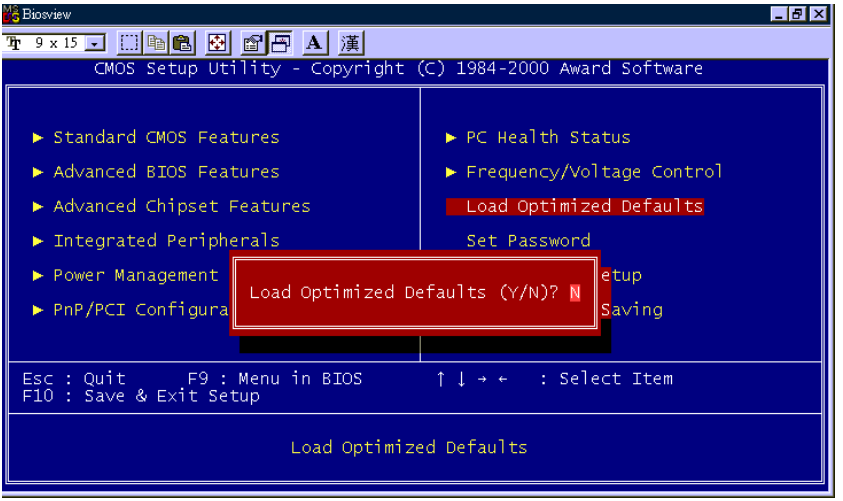


Figure 9-10: Load Optimized Defaults

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

9.12 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.

9.13 Save and Exit Setup

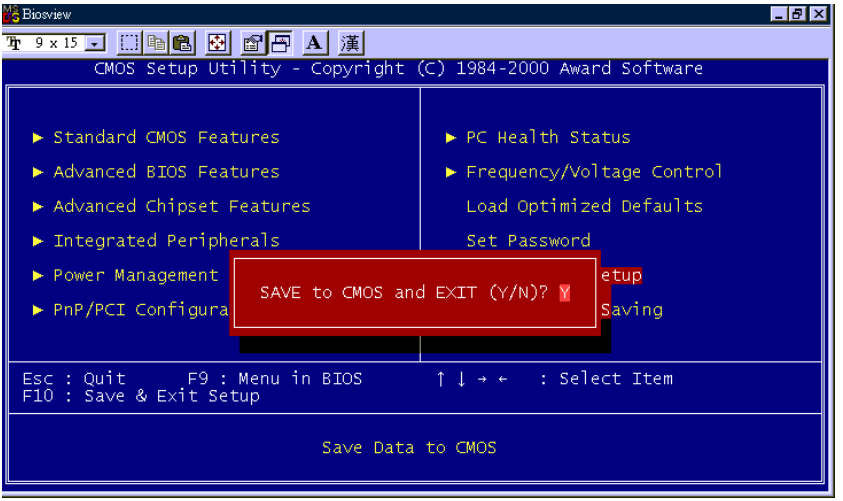


Figure 9-11: Save and exit setup screen

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)?
```

9.14 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) ?
```

CHAPTER 10

Touchscreen

- Introduction
- Installation of Touchscreen Drivers
  - for Windows 98
  - for Windows NT
  - for Windows 2000
  - for Windows ME

10.1 Introduction

10.1.1 General information

The PPC-S153's optional touchscreen incorporates advanced second-generation 8-wire resistive, impact-resistant technology. It allows 75% light transmission. The resistive model has an antiglare surface. This model provides greatly enhanced visual resolution. It also has new improved scratch-resistant features.

The touchscreen is manufactured from UL-recognized components. When properly installed, the touchscreen'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 A and Class B standards.

For more detailed information, please visit the following websites:

www.dynapro.com
or
www.3m.com/us/electronics_mfg/touch_systems

10.1.2 General specifications

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

10.1.3 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 touchscreen 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

10.2 Installation of Touchscreen Drivers

The touchscreen driver for Windows contains a native, 32-bit driver and a 32-bit control panel program for the PPC-S153 system.

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

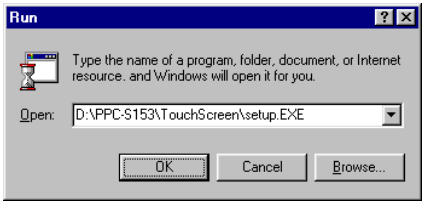
Important: The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

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

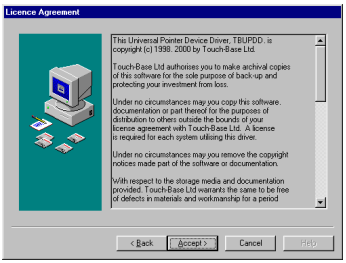
Note 2: <Enter> means pressing the "Enter" key on the keyboard.

10.2.1 Installation for Windows 98/NT/2000/ME

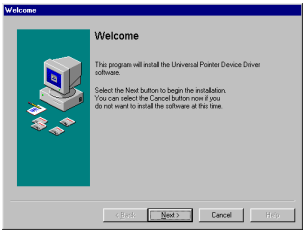
1. a. Select "Start", "Run"
   b.Enter the driver path: D:\ppc-s153\touchscreen\setup.exe"
   c. Press "OK"



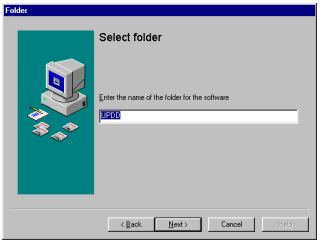
2. Press "Next" to continue the installation



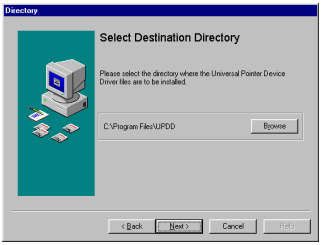
3. Press "Accept" to accept the agreement



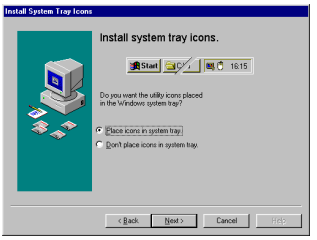
4. Enter the folder name, then click "Next"



5. Choose the directory, then click "Next"



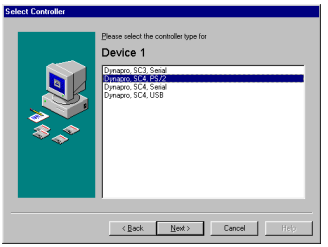
6. Choose "Place icons in system tray" or not, then press "Next"



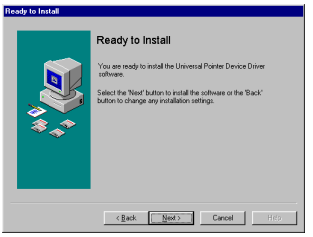
7. Enter the number of device, then press "Next"

8. Define the devices entered, then press "Next"

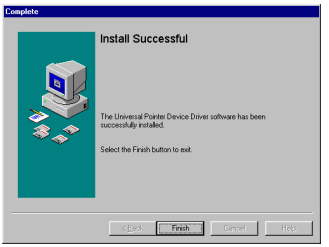
9. Choose the "Dynapro, SC4, PS/2", then press "Next"



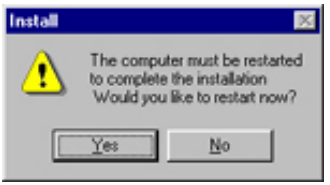
10. Press "Next" to start installing the driver



11. Press "Finish" to exit the installation procedure



12. Press "Yes" to reboot the system



End

10.3 Further Information

Dynapro website:
www.dynapro.com

or

www.3m.com/us/electronics_mfg/touch_systems

Advantech websites: **www.advantech.com/www.advantech.com.tw**

APPENDIX A

Programming the Watchdog Timer

The PPC-S153 is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

A.1 Programming the Watchdog Timer

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

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

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

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

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

1000    REM   Subroutine #1, your application task
•       •
•       •
•       •
1070    RETURN
2000    REM   Subroutine #2, your application task
•       •
•       •
•       •
2090    RETURN
```

APPENDIX B

Full Disassembly Procedures

If you want to completely disassemble the panel PC, follow the step-by-step procedures below. Users should be aware that Advantech Co., Ltd. takes no responsibility whatsoever for any problems or damage caused by the user disassembly of the panel PC. Make sure the power cord of the panel PC is unplugged before you start disassembly.

The following procedures do not include the detailed disassembly procedures for the CPU, HDD, and SDRAM; all of which can be found in Chapter 3.

1. First, unscrew two long screws located on both sides with a flathead screwdriver and remove them.

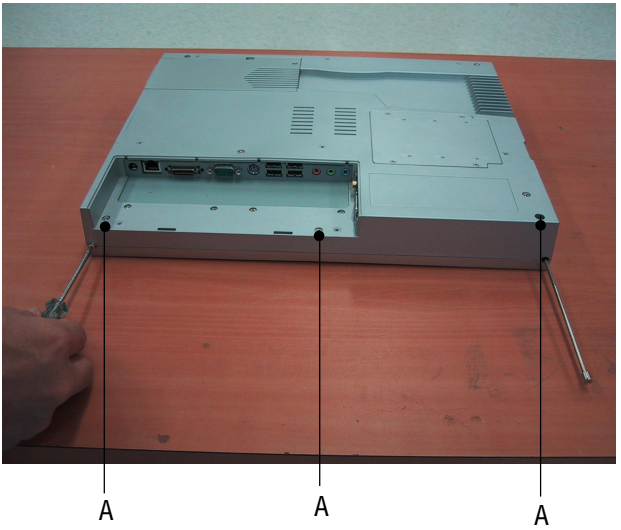


Figure B-1: Remove the two long screws

2. Unscrew all the screws in the rear cover. Before this step, please remove the hard drive.

Figure B-2: Remove the screws on rear cover

3. Turn the panel PC over with care, then slightly life up the front panel, but please do not detach it completely

Figure B-3: Seperate the front panel

4. Flip the front panel with your right hand to the right site. Now the touchscreen cable still connects with the CPU board.

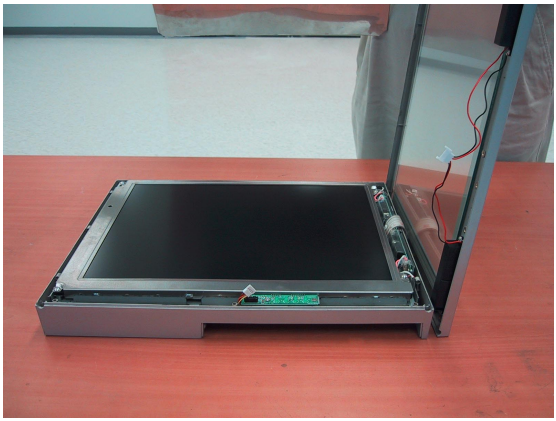


Figure B-4: Flip the front panel

5. Remove the inverter by unscrewing three screws, then disconnect the touch screen cable from the Panel PC.

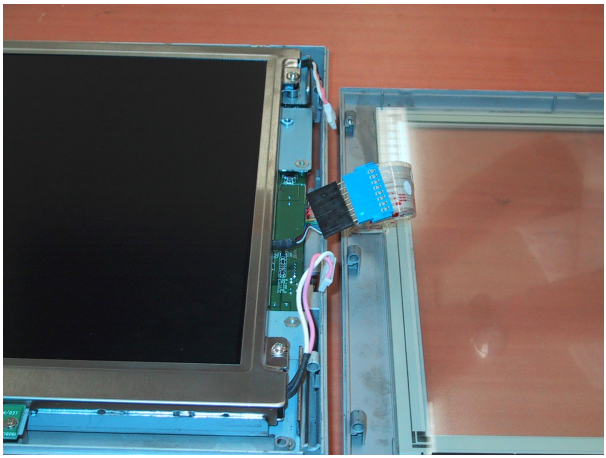


Figure B-5: Remove the inverter and touchscreen

6. After removing the front panel, you can separate the rear cover from the system easily by removing the CPU board and the LCD module.

Figure B-6: Remove the rear cover

7. Detach the LCD by unscrewing the four screws located on each corner.

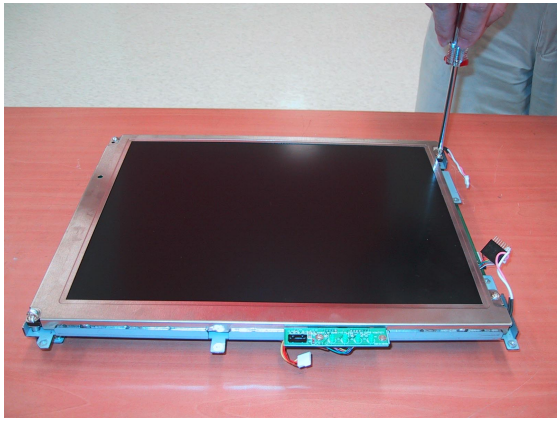


Figure B-7: Remove the LCD

8. Turn the CPU board and LCD bracket over carefully. Detach the cables of the LCD, inverter and touch screen from the CPU board. You can remove the CPU board from the LCD bracket.

Figure B-8: Remove the CPU board

Notes: 1. Because of the modular design of the front panel and touch screen, you do not disassemble the whole system step by step if you would like to replace the defective LCD or touch screen. You simply unscrew the screws marked "A" in step 1. Then you can easily remove the LCD and touchscreen following Steps 1 to 5.

Note: 2. The touch screen is stuck on the front bezel by a strong double sided adhesive tape. We do not recommend you remove it unless the touch screen is defective and you need to replace it.

APPENDIX C

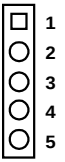
Pin Assignments

- Inverter Power Connector (CN3)
- Internal Speaker Connector (CN8)
- IR Connector (CN24)
- Flat Panel Display Connector (FP1)
- Flat Panel Display Connector (FP2)
- Floppy Drive Connector (CN10)
- EIDE Hard Disk Drive Connector (CN13)
- CD-ROM Connector (CN14)
- CPU Fan Power Connector (FAN1)
- System Fan Power Connector (FAN2)
- Internal PS/2 connector (CN21)
- COM1
- COM2
- VGA connector (CN4)

C.1 Inverter Power Connector (CN3)

Table C-1: Inverter power connector (CN3)

Pin	Signal
1	+12 V
2	GND
3	ENABKL
4	Brightness Adj.
5	+5 V



C.2 Internal Speaker Connector (CN8)

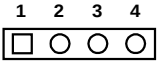


Table C-2: Internal speaker connector (CN8)

Pin	Signal
1	Speaker out_R -
2	Speaker out_R +
3	Speaker out_L +
4	Speaker out_L -

C.3 Floppy Drive Connector (CN10)

Table C-3: Floppy drive connector (CN10)

Pin	Signal	Pin	Signal
1	V_{CC} (+5 V)	14	STEP
2	INDEX	15	GND
3	V_{CC} (+5 V)	16	WRITE ENABLE
4	DRIVE SELECT	17	GND
5	V_{CC} (+5 V)	18	WRITE DATA
6	DISK CHANGE	19	GND
7	NC	20	TRACK 0
8	NC	21	GND
9	NC	22	WRITE PROTECT
10	MOTOR ON	23	GND
11	NC	24	READ DATA
12	DIRECTION	25	GND
13	DENSITY SELECT	26	SIDE 1 SELECT

C.4 EIDE Hard Disk Drive Connector (CN13)

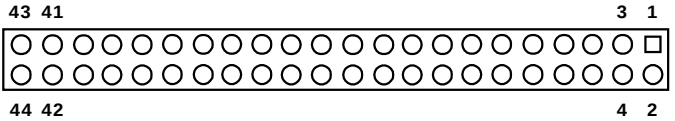


Table C-4: EIDE hard disk drive connector (CN13)

Pin	Signal	Pin	Signal
1	IDE RESET #	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	SIGNAL GND	20	N/C
21	HDD DREQ	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	HD READY	28	CABLE SELECT
29	HDACK 0 #	30	GND
31	IRQ14	32	N/C
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HDD SELECT 0 #	38	HDD SELECT 1 #
39	IDE ACTIVE 0 #	40	GND
41	Vcc	42	V_{cc}
43	GND	44	N/C

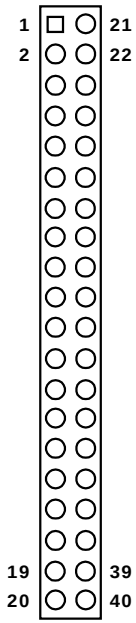
low active

C.5 CD-ROM Connector (CN14)

Table C-5: CD-ROM connector (CN14)

Pin	Signal	Pin	Signal
1	Audio_L	2	Audio_R
3	GND	4	GND
5	IDE RESET #	6	DATA8
7	DATA7	8	DATA9
9	DATA6	10	DATA10
11	DATA5	12	DATA11
13	DATA4	14	DATA12
15	DATA3	16	DATA13
17	DATA2	18	DATA14
19	DATA1	20	DATA15
21	DATA0	22	HDD DREQ
23	GND	24	IO READ
25	IO WRITE	26	GND
27	HD READY	28	HD ACK 0 #
29	IRQ 15	30	NC
31	ADDR1	32	NC
33	ADDR0	34	ADDR2
35	HDD SELECT 0 #	36	HDD SELECT 1 #
37	V_{CC} (+5 V)	38	V_{CC} (+5 V)
39	GND	40	GND

low active



C.6 Touch Screen Sensor Connector (CN21)

Table C-6: Touch Screen Sensor Connector (CN21)

Pin	Signal
1	YE-
2	YS-
3	YS+
4	YE+
5	XE-
6	XS-
7	XS+
8	XE+

C.7 IR Connector (CN24)

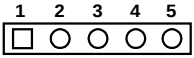


Table C-7: IR connector (CN24)

Pin	Signal
1	V_{cc}
2	NC
3	IR_IN
4	GND
5	IR_OUT

C.8 CPU Fan Power Connector (FAN1)

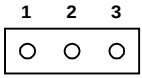


Table C-8: CPU fan power connector (FAN1)

Pin	Signal
1	GND
2	+5 V
3	FAN_DET

C.9 System Fan Power Connector (FAN2)

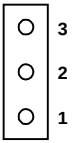


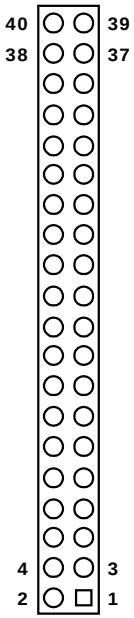
Table C-9: Fan power connector (FAN2)

Pin	Signal
1	GND
2	+5 V
3	FAN_DET

C.10 Flat Panel Display Connector (FP1)

Table C-10: Flat panel display connector (FP1)

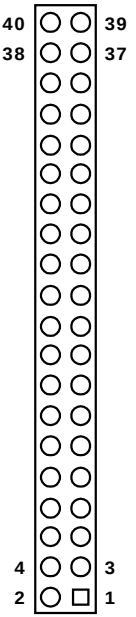
Pin	Signal	Pin	Signal
1	VDDSAFE5	2	VDDSAFE5
3	GND	4	GND
5	VDDSAFE3	6	VDDSAFE3
7	Vcon	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	GND	34	GND
35	SHFCLK	36	FLM
37	M/DE	38	LP
39	ENABKL	40	ENAVEE



C.11 Flat Panel Display Connector (FP2)

Table C-11: Flat panel display connector (FP2)

Pin	Signal	Pin	Signal
1	VDDSAFE5	2	VDDSAFE5
3	GND	4	GND
5	VDDSAFE3	6	VDDSAFE3
7	Vcon	8	GND
9	P24	10	P25
11	P26	12	P27
13	P28	14	P29
15	P30	16	P31
17	P32	18	P33
19	P34	20	P35
21	NC	22	NC
23	NC	24	NC
25	NC	26	NC
27	NC	28	NC
29	NC	30	NC
31	NC	32	NC
33	GND	34	GND
35	SHFCLK	36	FLM
37	M/DE	38	LP
39	ENABKL	40	ENAVEE



C.12 COM1

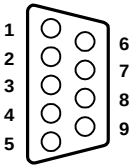


Table C-12: COM1

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

C.13 COM2

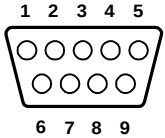


Table C-13: COM2

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.14 VGA connector (CN4)

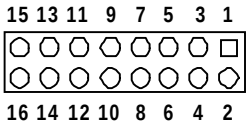


Table C-14: VGA connector (CN4)

Pin	Signal	Pin	Signal
1	RED	9	VGA G
2	Vcc	10	VGA H
3	GREEN	11	VGA G
4	VGA G	12	VGA V
5	BLUE	13	VGA G
6	N/C	14	DDCSCL
7	N/C	15	VGA G
8	DDCSDA	16	N/C