PCM-3375

VIA Mark SBC with CFC, USB, LAN, LPT, COM, PC/104 CPU

User Manual

Acknowledgements

For more information on this and our other products, please visit our website at: **http://www.emacinc.com**

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

This manual is for the PCM-3375.

Part No. 2006337501

Ist Edition

Jun. 2006

Packing List

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

- 1 PCM-3375 all-in-one single board computer
- 1 CD disk for utility and drivers
- 1 startup manual
- 1 PS/2 Keyboard & Mouse cable (p/n: 1700060202)
- 2 Serial port cables (p/n: 1700100250)
- 1 Y-cable external cable (p/n: 1703060053)
- 1 Parallel cable (p/n: 1700260250)
- 1 26-34 pin FDD cable converter (p/n: 9681000044)
- 1 Floppy cable for 3.5" FDD only (p/n: 1701340700)
- 1 FDD flat cable (p/n: 1906000001)
- 1 VGA cable (p/n: 1701160150)
- 1 LAN cable (p/n: 1701100202)

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

Model No. List	**Description**
PCM-3375F-L0A1E	PC104 SBC w/VIA Mark 533, LVDS, 2COM, 2USB, LAN, RoHS

FCC

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

1.This device may not cause harmful interference, and

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

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

Caution!

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

Achtung!

Additional Information and Assistance

1. Visit the distributator website at **www.emacinc.com** where you can find the latest information about the product.
2. Contact your distributor, sales representative, or customer service representitive 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

Contents

CHAPTER 1

General Information

This chapter gives background information on the PCM-3375.

Sections include:

- Introduction
- Features
- Specifications
- Board layout and dimensions

Chapter 1 General Information

1.1 Introduction

The PCM-3375 is a solid, general purpose single board computer (SBC) to satisfy various industrial and multimedia applications. With onboard VIA Mark 533MHz CPU, support 10/100 Base-T LAN and 1 x EIDE, 1 x FDD, 1 x RS-232 and 1 x RS-232/422/485 port, 1 x parallel port, 1 x KB/MS,2 x USB 1.1, also support up to 512MB SDRAM, 1 x 24bit TTL LCD panel and 2 channel 18-bit LVDS, CRT display function and ISA interface.
PCM-3375 also be a costive choice for customer, which with a similar I/O layout for PCM-3350. PCM-3375 will be the best choice to replace PCM-3350.

1.2 Features

- Embedded VIA Mark 533MHz processor
- Memory up to 512 MB SDRAM
- Support 10/100Base-T Ethernet
- Support 2 port Host USB1.1
- Support dual display CRT + LVDS, CRT + TTL

1.3 Specifications

Standard SBC Functions

- **CPU:** Embedded VIA Mark 533MHz processor
- **BIOS:** Award 256 KB Flash memory
- **System memory:** 144 pin SO-DIMM socket, support up to 512 MB SDRAM.
- **System chipset:** VIA VT8606
- **2nd cache memory:** 64KB
- **Enhanced IDE interface:** 1 Enhanced IDE interface 1st Interface supports 2 IDE devices (1. Master 2. Slave) 1 is for IDE device, the other one is for CompactFlash PIO mode 3, 4 with Bus Mastering up to 33MB/sec
- **Serial ports:** One serial RS-232 port, one serial RS-232/422/485 port

- **Parallel port:** One parallel port, supports SPP/EPP/ECP mode
- **Keyboard/mouse connector:** Wafer Box 6pin connector
- **Power management:** APM 1.2 compliant
- **Watchdog timer**: 62-level timer intervals
- **USB**: Two USB 1.1 compliant host ports
- **Expansion:** Supports PC/104 ISA module connector

Solid State Disk

- Supports one 50-pin socket for CFC type I, (Type II for optional)

VGA/LCD Interface

- **Chipset:** VIA "Mark" CoreFusion processor
- **Memory Size:** 8/16/32 MB frame buffer shares the system memory
- **Display mode:** CRT Modes: up to 1600 x 1200 x 16bpp
- **LCD mode:** Support 1 channel 24-bit LCD Panel (TTL signal)
- **LVDS:** Support 2 channel 18-bit LVDS LCD panel

Ethernet interface

- **Chipset:**
- Intel 82551ER
- **Ethernet interface:**
- IEEE 802.3u 10/100BASE-T Fast Ethernet compatible

Mechanical and Environmental

- **Dimensions:** (L x W)96 x 90 mm (3.8" x 3.5")complain with PC/104
- **Power supply Voltage:**AT, +5V +/-5%, +12V +/-5% (+5V only, +12 V optional for PC104 add on card and LCD inverter)
- **Power Requirement:**

  Max:1.94A@+5V

  Average:2.06A@+5V (Mark 533MHz SDRAM 256 MB)

- **Operating temperature:**0 ~ 60° C (32~140° F)
- **Operating Humidity:**0% ~ 95% Relative Humidity, noncondensing
- **Weight:** 0.11 kg (0.24Ib)(with heatsink)

1.4 Board layout: dimensions

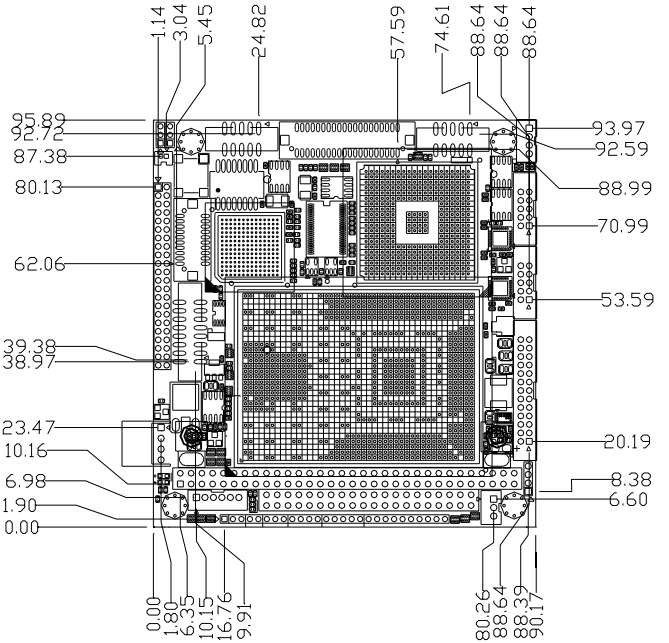


Figure 1.1: Board layout: dimension (component side)

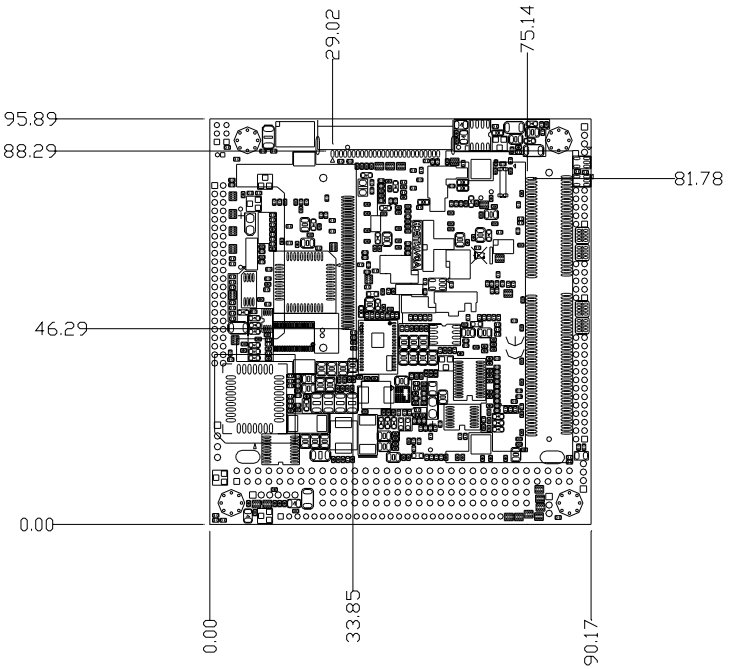


Figure 1.2: Board layout: dimension (solder side)

CHAPTER 2

Installation

This chapter explains the setup procedures of PCM-3375 hardware, including instructions on setting jumpers and connecting peripherals, switches and indicators. Be sure to read all safety precautions before you begin the installation procedure.

Chapter 2 Installation

2.1 Jumpers

The PCM-3375 has a number of jumpers that allow you to configure your system to suit your application. The table below lists the functions of the various jumpers.

Table 2.1: Jumpers

Label	Function
J1	Clear CMOS
J2	LVDS Panel Power Select

2.2 Connectors

On-board connectors link the PCM-3375 to external devices such as hard disk drives, a keyboard, or floppy drives. The table below lists the function of each of the board's connectors.

Table 2.2: Connectors

Label	Function
CN1	LAN Connector
CN2	USB 1/2 Connector
CN3	FPD Connector (TTL)
CN4	RS-422/485 Connector (share with COM2)
CN5	COM1 RS232 Connector
CN6	FPD Connector (LVDS)
CN7	Primary IDE Connector
CN8	COM2 RS232 Connector
CN9	PC104 Connector
CN10	VGA Connector
CN11	LPT Connector
CN12	Power input Connector
CN13	SM-BUS Connector
CN14	KB_MS Connector
CN15	System FAN Connector
CN16	Multi-function Connector
CN17	FDD Connector
CN18	CFC Connector
CN19	Memory Connector
CN20	Battery Connector

2.3 Locating Connectors

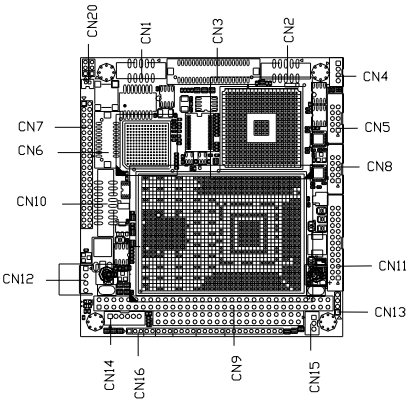


Figure 2.1: Jumper & Connector (component side)

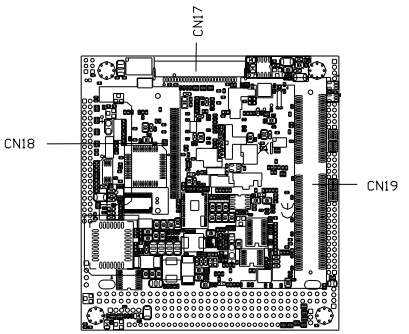
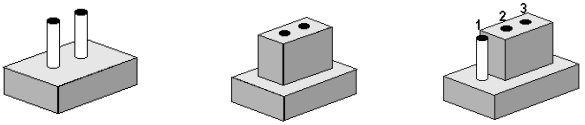


Figure 2.2: Jumper & Connector (solder side)

2.4 Setting Jumpers

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



open closed closed 2-3

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

open closed closed 2-3

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

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.

Generally, you simply need a standard cable to make most connections.

2.5 Installing SO-DIMMs

The procedure for installing SO-DIMMs is described below. Please follow these steps carefully. The number of pins are different on either side of the breaks, so the module can only fit in one way. SO-DIMMs modules

have different pin contacts on each side, and therefore have a higher pin density.

1. Make sure that the two handles of the SO-DIMMs socket are in the “open” position. i.e. The handles remain leaning outward.
2. Slowly slide the SO-DIMMs module along the plastic guides on both ends of the socket.
3. Press the SO-DIMMs module right down into the socket, until you hear a click. This is when the two handles have automatically locked the memory module into the correct position of the socket.

To **remove** the memory module, just push both handles outward, and the module will be ejected from the socket.

2.6 IDE, CDROM hard drive connector (CN7)

The PCM-3375 provides 1 IDE channels which you can attach up to two Enhanced Integrated Device Electronics hard disk drives or CDROM to the PCM-3375’s internal controller. The PCM-3375's IDE controller uses a PCI interface. This advanced IDE controller supports faster data transfer, PIO mode 3, mode 4 and UDMA/33.

2.6.1 Connecting the hard drive

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

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

1. Connect one end of the cable to CN5. Make sure that the red (or blue) wire corresponds to pin 1 on the connector, which is labeled on the board (on the right side).
2. Plug the other end of the cable into the Enhanced IDE hard drive, with pin 1 on the cable corresponding to pin 1 on the hard drive. (See your hard drive’s documentation for the location of the connector.)

If desired, connect a second drive as described above.

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

2.7 Solid State Disk

The PCM-3375 provides a CompactFlash™ card socket for Solid state disk solutions.

2.7.1 CompactFlash (CN18)

The CompactFlash card shares a secondary IDE channel which can be enabled/disabled via the BIOS settings.

2.8 Keyboard and PS/2 mouse connector (CN14)

The PCM-3375 board provides a keyboard connector that supports both a keyboard and a PS/2 style mouse. In most cases, especially in embedded applications, a keyboard is not used. If the keyboard is not present, the standard PC/AT BIOS will report an error or fail during power-on self-test (POST) after a reset. The PCM-3375's BIOS standard setup menu allows you to select "All, But Keyboard" under the "Halt On" selection. This allows no-keyboard operation in embedded system applications, without the system halting under POST.

2.9 Power connectors (CN12)

2.9.1 AT power connector, +5V (CN12)

Supplies main power to the PCM-3375, +5V +/-5%, +12V +/-5% (5V only, 12V optional for PC104 add on card and LCD inverter)

2.10 COM port connector (CN17)

The PCM-3375 provides one RS-232 serial port and one RS-232/422/485 serial port. It provides connections for serial devices (a mouse, etc.) or a communication network. You can find the pin assignments for the COM port connector in Appendix B.

2.11 CRT/LVDS/TTL interface connections (CN10, CN6, CN3)

The PCM-3375's VGA interface can drive conventional CRT displays and is capable of driving a wide range of LVDS/TTL flat panel displays. The board has three connectors to support these displays: one is for standard CRT VGA monitors, another is for LVDS type LCD panel and the other is for TTL LCD panel.

2.11.1 CRT display connector (CN10)

CN10 is a standard 16-pin (2x8) box header connector commonly used for the CRT VGA monitor only. Pin assignments appear in the appendix.

2.11.2 LVDS connector (CN6)

The PCM-3375 uses the VIA Mark CoreFusion processor that supports single- or dual-channel LVDS panel up to SXGA panel resolution with frequency range from 25MHz to 112MHz.

The PCM-3375 supports single or dual-channel LVDS panels up to UXGA panel resolution with frequency range from 25MHz to 112MHz. The display mode can be 2 channel (2 x 18bit) LVDS LCD panel displays.

2.11.3 LVDS Power Select (J2)

Default setting for LVDS power is +5V, if user want to select either 3.3V or 5V, please choose J1.

Table 2.3: LVDS Power Select (J2)

Pin	Signal
1-2*	5V
2-3	3.3V

*: Default

2.12 Ethernet configuration (CN1)

The PCM-3375 is equipped with a high performance 32-bit PCI-bus Ethernet interface which is fully compliant with IEEE 802.3U 10/100Mbps CSMA/CD standards. It is supported by all major network operating systems.

2.13 USB connectors (CN2)

The PCM-3375 board provides two USB (Universal Serial Bus) 1.1 ports. This gives complete Plug and Play, and hot attach/detach for up to 127 external devices. You will need an USB cable if you use USB connectors. The USB interfaces can be disabled in the system BIOS setup.

CHAPTER 3

Software Configuration

This chapter details the software configuration information. It shows you how to configure the card to match your application requirements. The AWARD System BIOS is covered in Chapter 4.

Sections include:

- Introduction
- Connections for standard LCDs

Chapter 3 Software Configuration

3.1 Introduction

The PCM-3375 system BIOS and custom drivers are located in a 512 Kb, Flash ROM device. A single Flash chip holds the system BIOS, VGA BIOS and network Boot ROM image. The display can be configured via CMOS settings. This method minimizes the number of chips and difficulty of configuration. To set different types of LCD panels, please choose “panel type” from the “integrated peripherals” menu in CMOS setup.

CHAPTER 4

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

Chapter 4 Award BIOS Setup

4.1 System test and initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

```
press <F1> to RESUME
```

Write down the message and press the F1 key to continue the bootup sequence.

4.1.1 System configuration verification

These routines check the current system configuration against the values stored in the board's CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The PCM-3375 Series' CMOS memory has an integral lithium battery backup. The battery backup should last ten years in normal service, but when it finally runs down, you will need to replace the complete unit.

4.2 Award BIOS setup

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

4.2.1 Entering setup

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

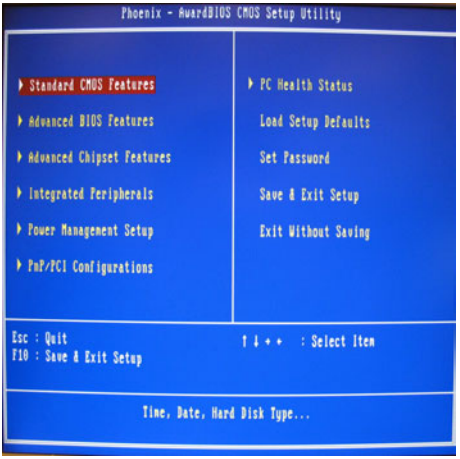


Figure 4.1: BIOS setup program initial screen

4.2.2 Standard CMOS Features setup

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

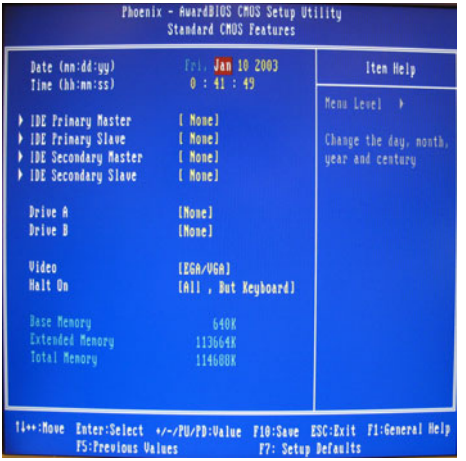


Figure 4.2: CMOS Features setup

4.2.3 Advanced BIOS Features setup

By choosing the Advanced BIOS Features Setup option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-3375 Series.

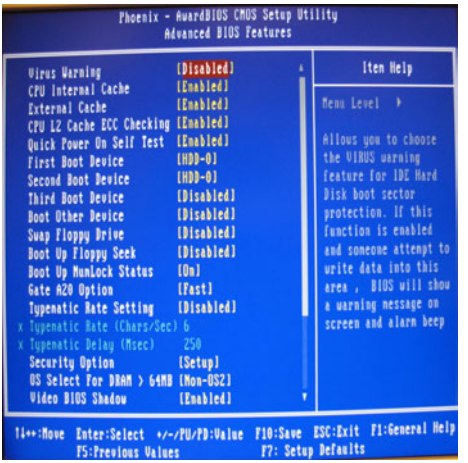


Figure 4.3: Advanced BIOS Features setup

4.2.4 Advanced Chipset Features setup

By choosing the Advanced Chipset Features option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-3375 Series.

Figure 4.4: Advanced Chipset Features setup

4.2.5 Integrated Peripherals

Choosing the Integrated Peripherals option from the Initial Setup Screen menu should produce the screen below. Here we see the manufacturer's default values for the PCM-3375 Series.

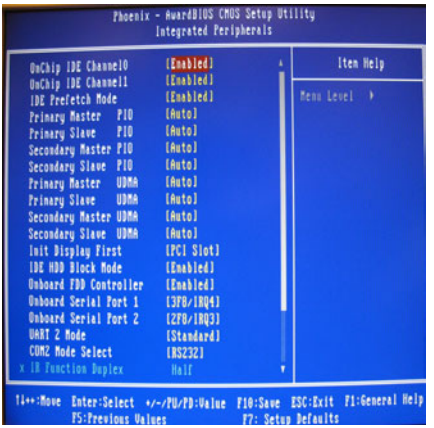


Figure 4.5: Integrated Peripherals

4.2.6 Power Management Setup

By choosing the Power Management Setup option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-3375 Series.

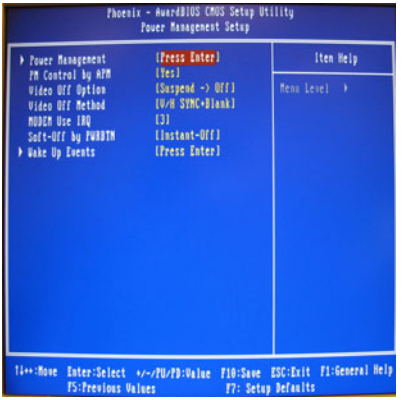


Figure 4.6: Power Management Setup

4.2.7 PnP/PCI Configurations

By choosing the PnP/PCI Configurations option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCM-3375 Series.

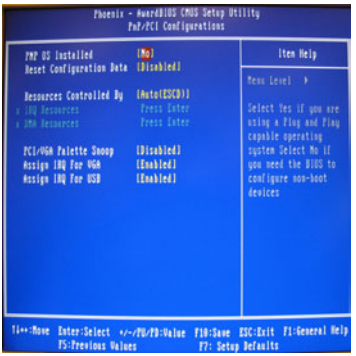


Figure 4.7: PnP/PCI Configurations

4.2.8 Load Optimized Defaults

Load Optimized Defaults loads the default system values directly from ROM. If the stored record created by the Setup program should ever become corrupted (and therefore unusable), these defaults will load automatically when you turn the PCM-3375 Series system on.

4.2.9 Set Password

Note *To enable this feature, you should first go to the Advanced BIOS Features menu, choose the Security Option, and select either Setup or System, depending on which aspect you want password protected. Setup requires a password only to enter Setup. System requires the password either to enter Setup or to boot the system.*

A password may be at most 8 characters long.

To Establish Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see "Enter Password," enter the desired password and press <Enter>.
3. At the "Confirm Password" prompt, retype the desired password, then press <Enter>

4. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

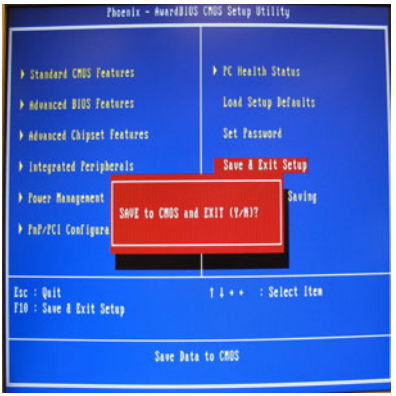


Figure 4.8: To Establish Password

To Change Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see “Enter Password,” enter the existing password and press <Enter>.
3. You will see “Confirm Password.” Type it again, and press <Enter>.
4. Select Set Password again, and at the “Enter Password” prompt, enter the new password and press <Enter>.
5. At the “Confirm Password” prompt, retype the new password, and press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Disable Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see “Enter Password,” enter the existing password and press <Enter>.
3. You will see “Confirm Password.” Type it again, and press <Enter>.

4. Select Set Password again, and at the “Enter Password” prompt, don’t enter anything; just press <Enter>.
5. At the “Confirm Password” prompt, again don’t type in anything; just press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

4.2.10 Save & Exit Setup

If you select this option and press <Y> then <Enter>, the values entered in the setup utilities will be recorded in the chipset’s CMOS memory. The microprocessor will check this every time you turn your system on and use the settings to configure the system. This record is required for the system to operate.

4.2.11 Exit Without Saving

Selecting this option and pressing <Enter> lets you exit the Setup program without recording any new values or changing old ones.

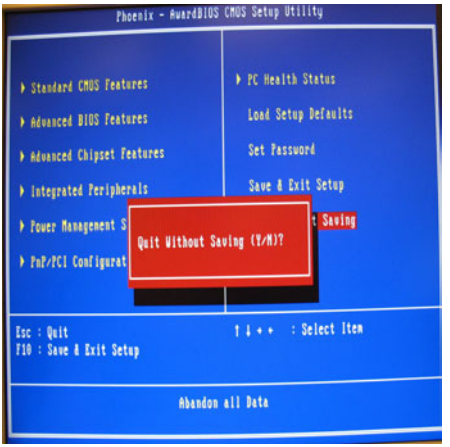


Figure 4.9: Exit Without Saving

3375

CHAPTER 5

AGP 4X Setup

The PCM-3375 3375features an onboard AGP 4X flat panel/VGA interface. This chapter provides instructions for installing and operating the software drivers on the included display driver diskette.

Chapter 5 AGP 4X Setup

5.1 Introduction

The PCM-3375 has an onboard AGP flat panel/VGA interface. The specifications and features are described as follows:

5.1.1 Chipset

The PCM-3375 uses a VIA Twister 8606T chipset from VIA Technology Inc. for its AGP/SVGA controller. It supports many popular LCD, and LVDS LCD displays and conventional analog CRT monitors. The VIA8606T VGA BIOS supports color TFT and DSTN 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.

5.1.2 Display memory

The Twister chip can support 8/16/32MB frame buffer shared with system memory; the VGA controller can drive CRT displays or color panel displays with resolutions up to 1280 x 1024 at 16 M colors.

5.1.3 Display types

CRT and panel displays can be used simultaneously. The PCM-3375 can be set in one of three configurations: on a CRT, on a flat panel display, or on both simultaneously. The system is initially set to simultaneous display mode. If you want to enable the CRT display only or the flat panel display only, please contact VIA Technology Inc., or our sales representative for detailed information.

5.1.4 Dual/Simultaneous Display

The PCM-3375 uses a VIA Twister VT8606T LCD controller that is capable of providing simultaneous dual view display of the same content on a flat panel and CRT.

To set up dual view (simultaneus mode) under Windows 9x, Windows ME, Windows NT/2000/XP, follow these steps:

Step 1. Open the Control panel, and select “Display”, “Settings”.

Step 2. Select " CRT+LCD " or " CRT+TV " for dual view

Step 3. Click “OK”.

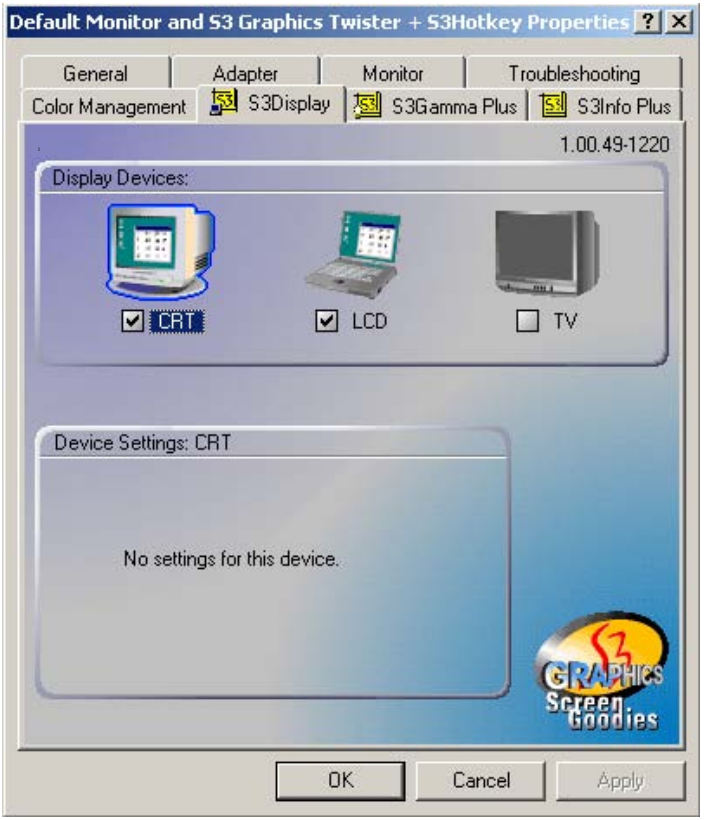


Figure 5.1: Selecting Display Settings

5.2 Installation of the 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 are using within your PCM-3375.

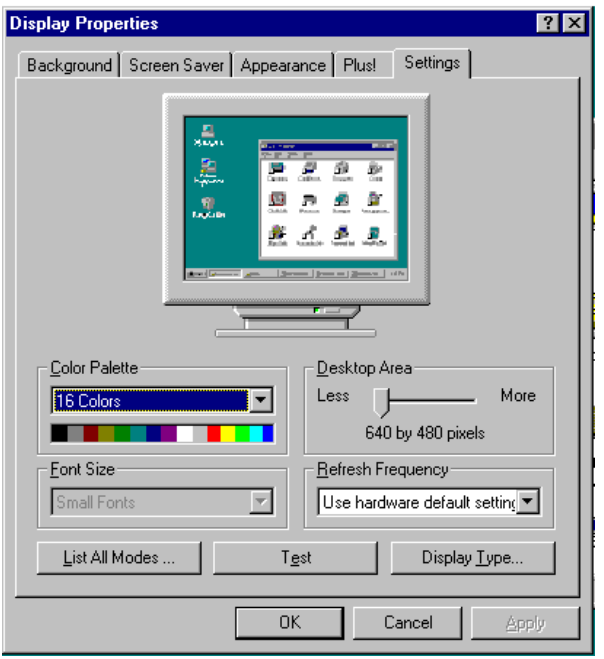
Notes:

1. The windows illustrations in this chapter are intended as examples only. Please follow the listed steps, and pay attention to the instructions which appear on your screen.

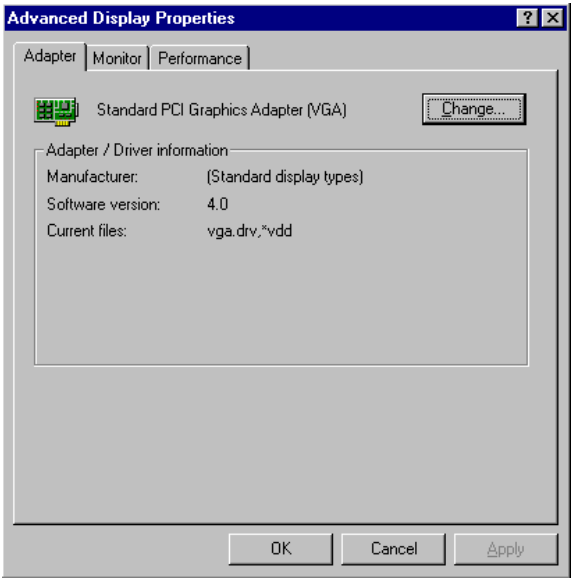
2. For convenience, the CD-ROM drive is designated as "D" throughout this chapter.

5.2.1 Installation for Windows 95

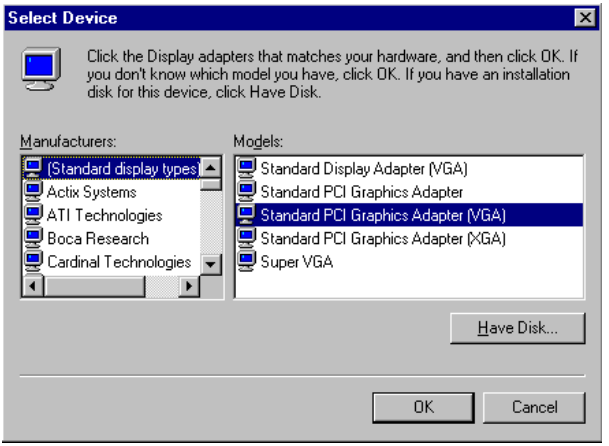
1. Select "Start", "Settings", "Control Panel", "Display", "Settings", and "Advanced Properties".



2. Choose the "Adapter" tab, then press the "Change..." button.

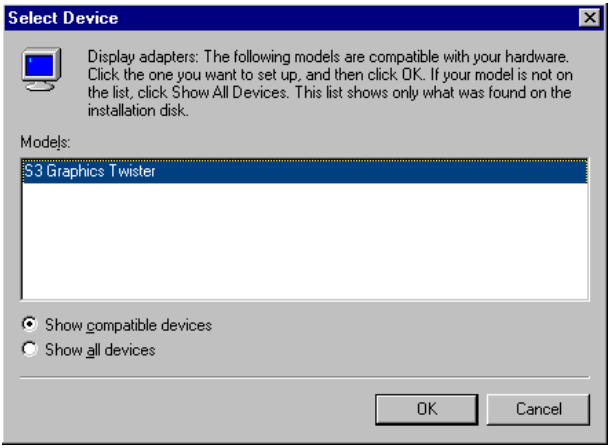


3. Press the "Have Disk" button.

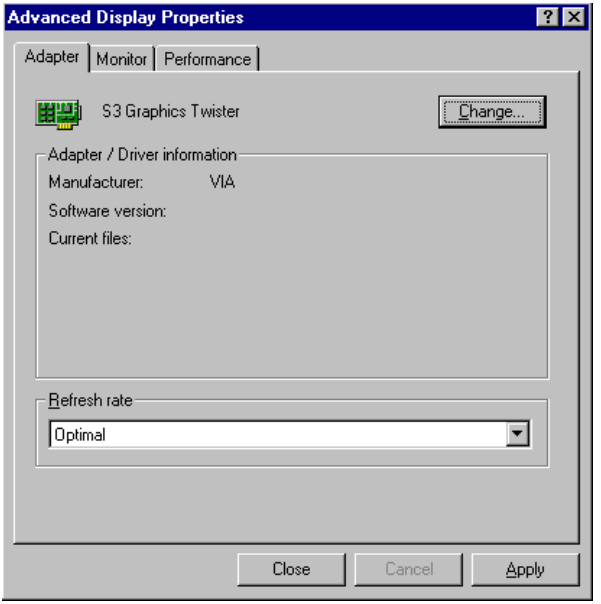


4. Type in the path:
D:\vga\VT8606\Win9x_Me

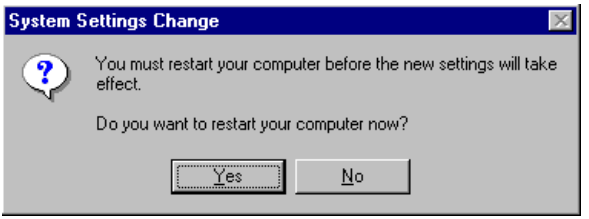
5. Select the highlighted item, and click the "OK" button.



6. "S3 GraphicsTwister" appears under the adapter tab. Click the "Apply" button, then the "OK" button.

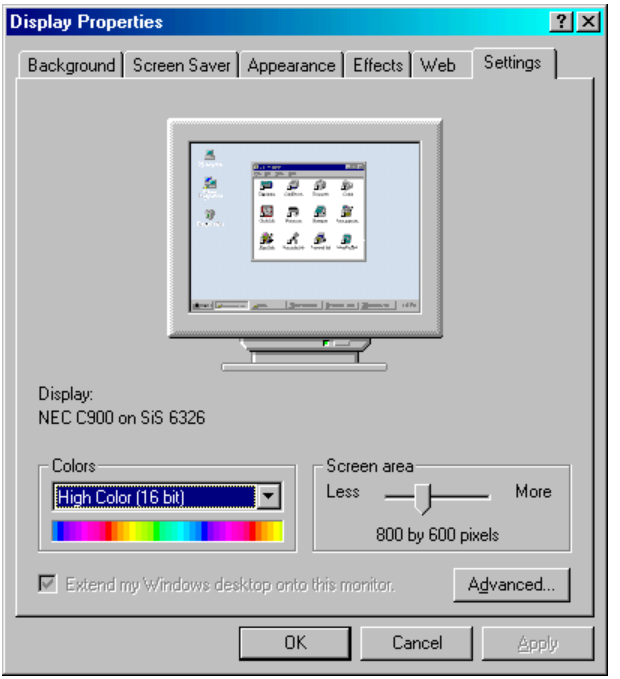


7. Press “Yes” to reboot.

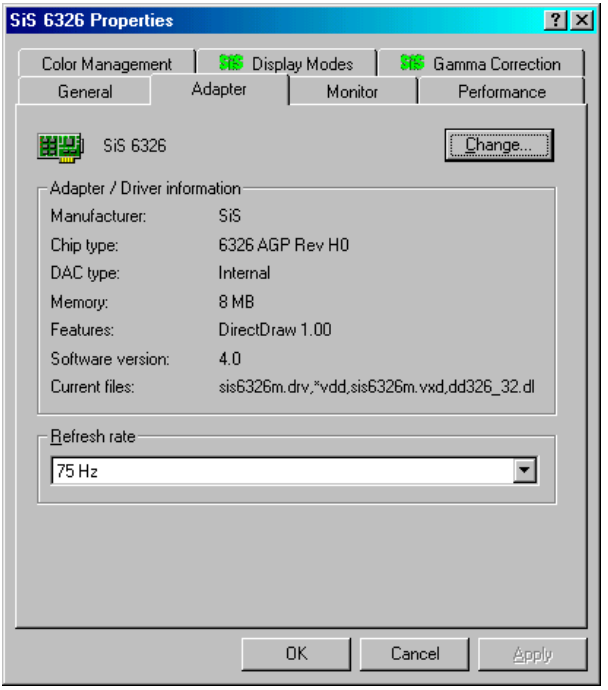


5.2.2 Installation for Windows 98/Me

1. Select "Start", "Settings", "Control Panel", "Display", and "Settings," then press the "Advanced..." button.

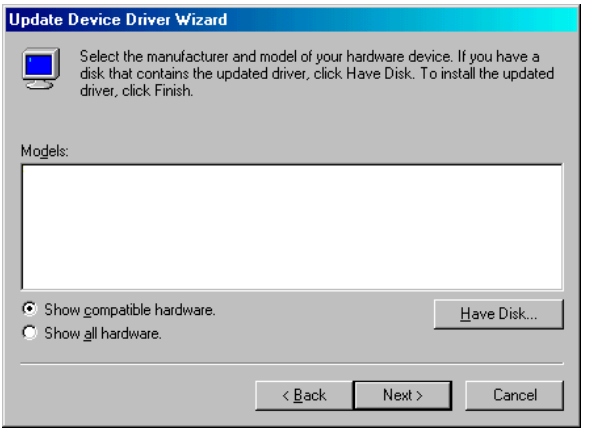


2. Select “Adapter,” then “Change.”



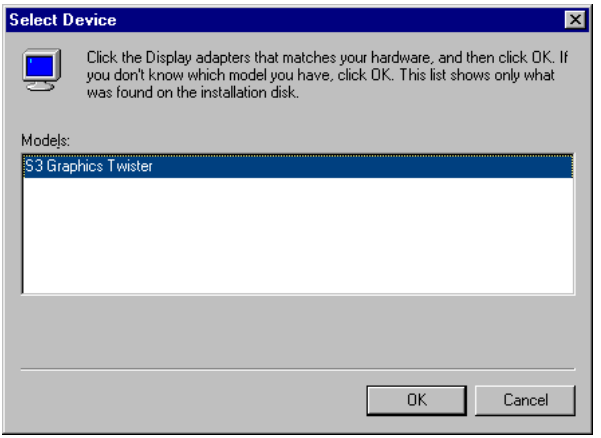
3. Press “Next,” then “Display a list....”

4. Press the “Have disk...” button.

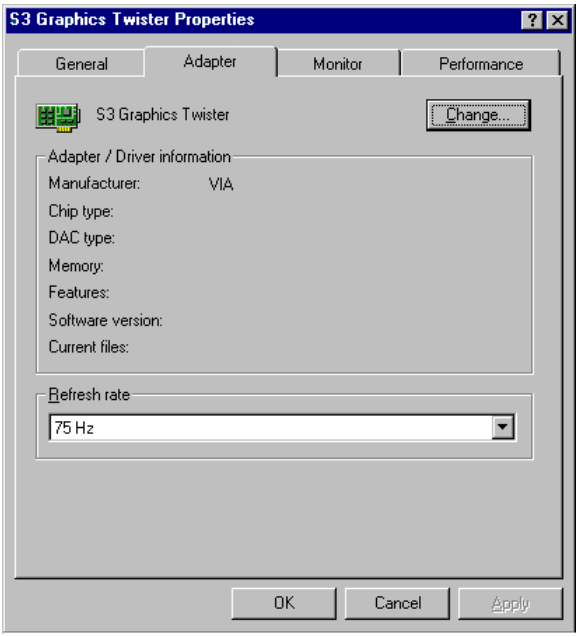


5. Insert the CD into the CD-ROM drive. Type in the path **D:\vga\VT8606\Win9x_Me**
Then press “OK”

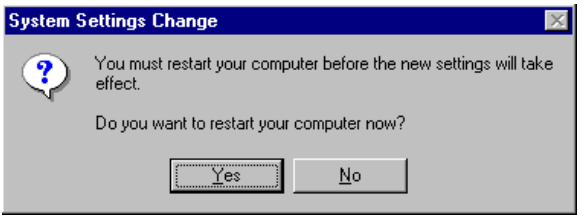
6. Select the highlighted item, then click “OK.”



7. "S3 Graphics Twister"appears under the adapter tab. Click the "Apply" button.



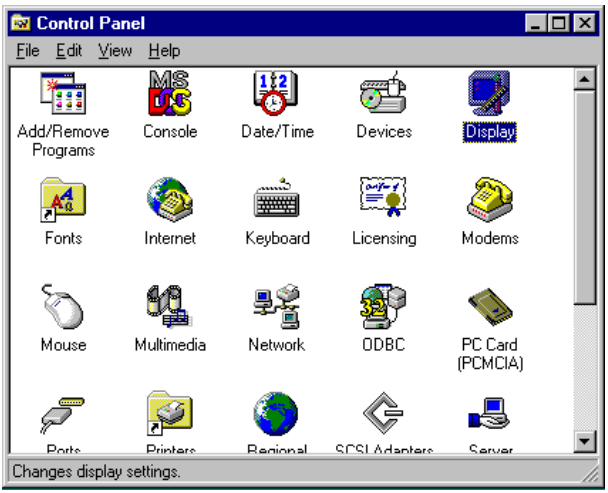
8. Press “Yes” to reboot.



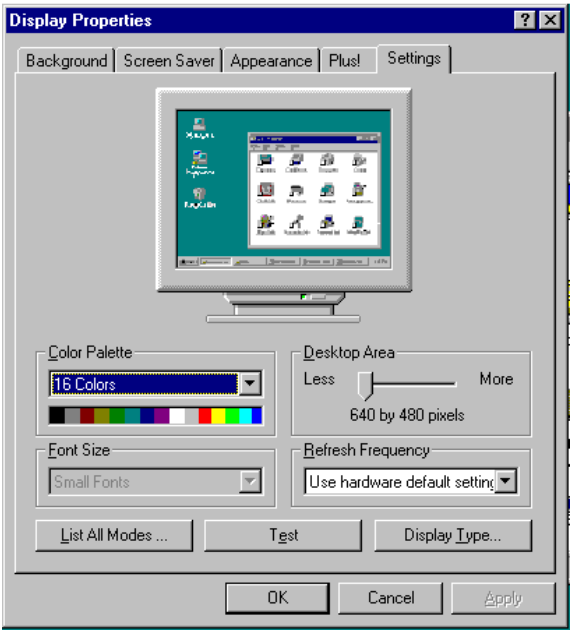
5.2.3 Installation for Windows NT

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

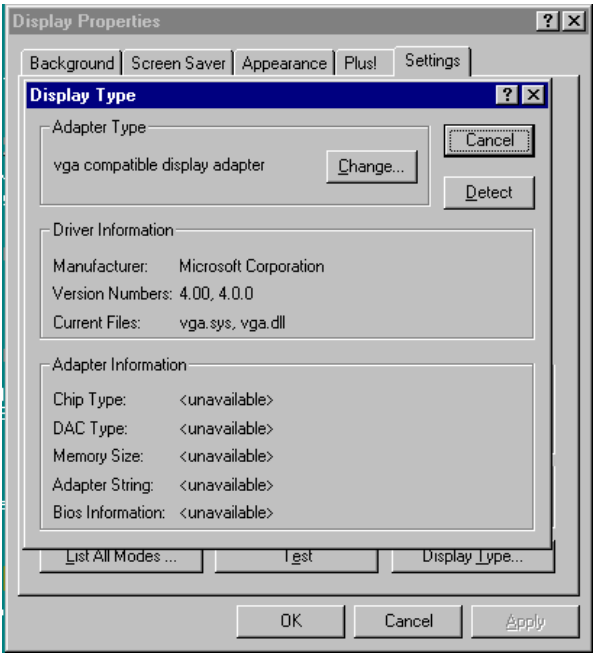
1. Select "Start", "Settings", "Control Panel" and double click the "Display" icon.



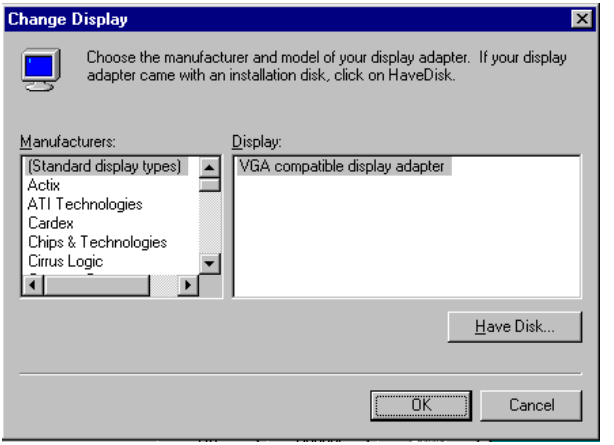
2. Choose the "Settings" tab, and press the "Display Type" button.



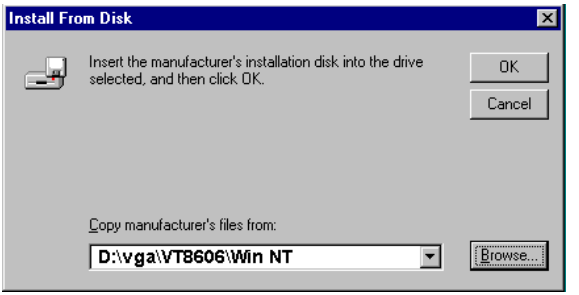
3. Press the "Change..." button.



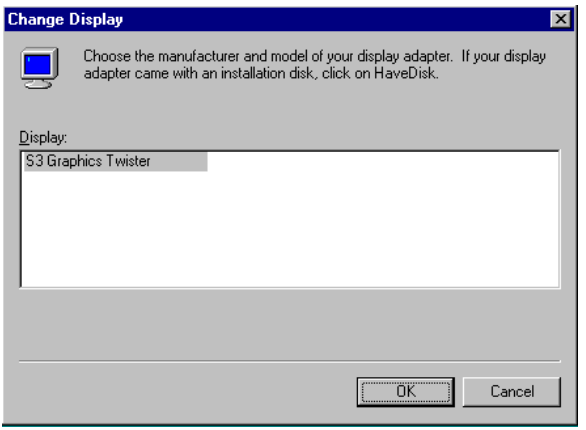
4. Click the "Have Disk..." button.



5. Type the path:
D:\vga\VT8606\Win NT
Press the "OK" button.



6. Select the highlighted item, and click the "OK" button.

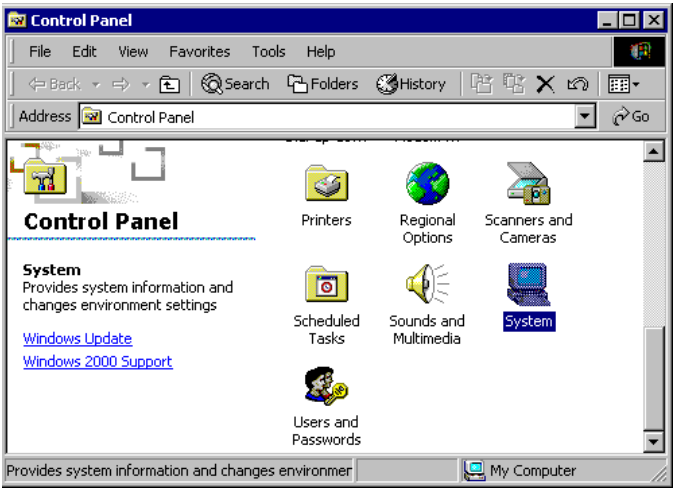


7. Press "Yes" to proceed.

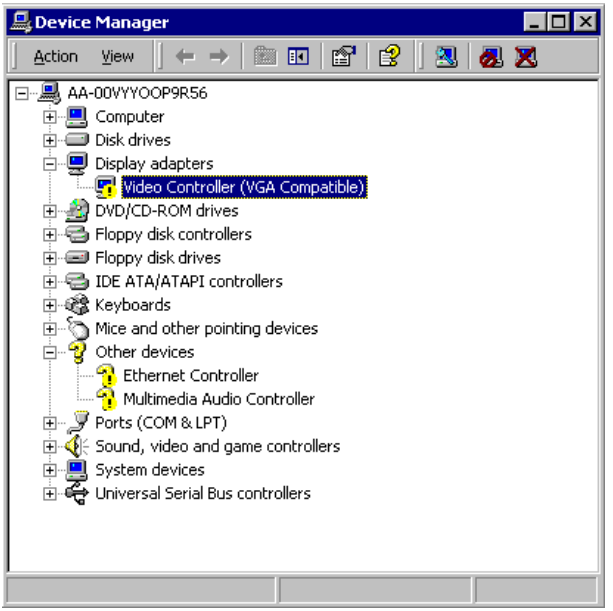
8. Press "OK" to reboot.

5.2.4 Installation for Windows 2000

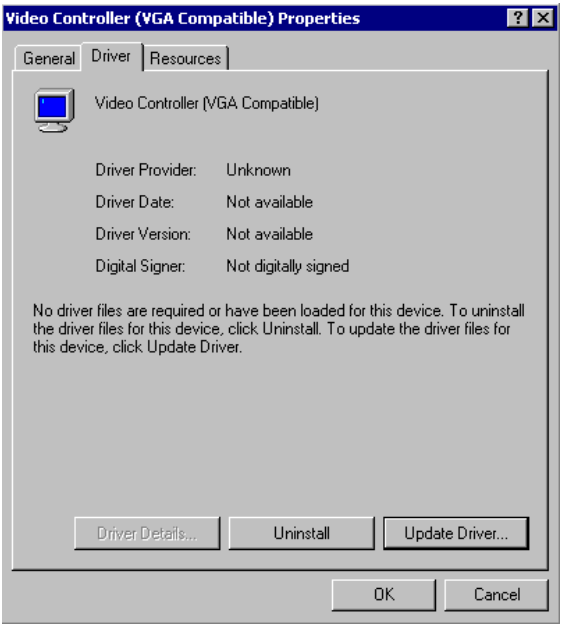
1. Select "System", "Settings", "Control Panel" and double click the "system" icon.



2. Choose the "Video Controller (VGA Compatible)" button.

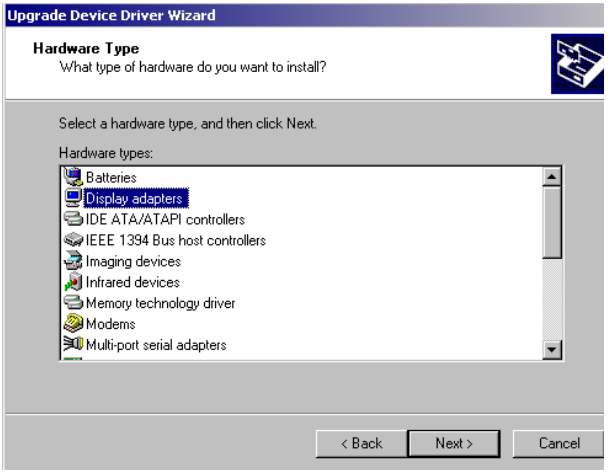


3. Choose the "Drive" button, press “Update Driver...” button.

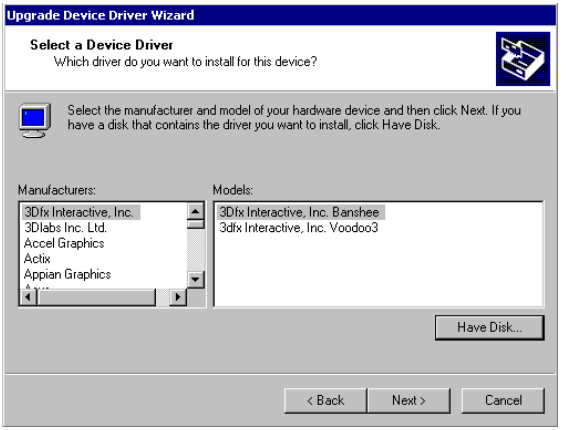


4. Choose "Display a list of..." , then press “Next” button.

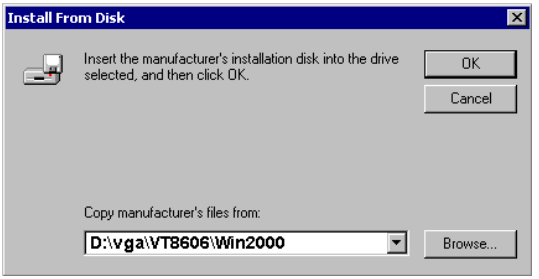
5. Choose “Display adapters”, press “Next” button.



6. Click the “Have Disk” button.



7. Type the path D:\vga\VT8606\Win2000 press the “OK” button.



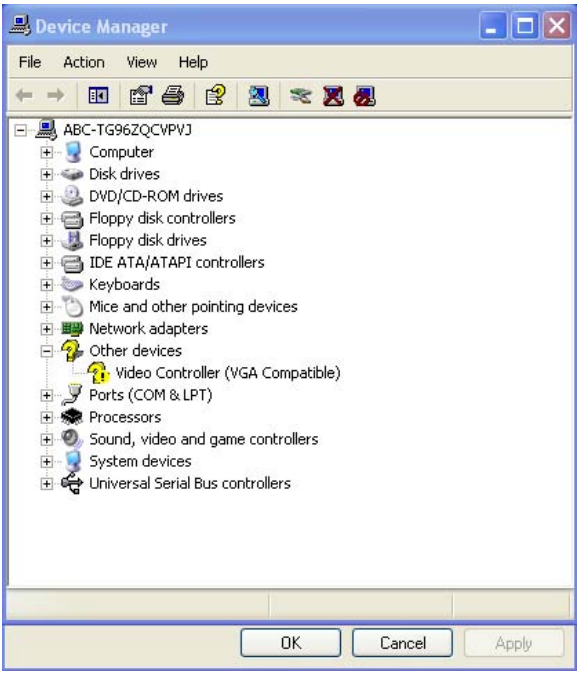
8. Press “Finish" to reboot.

5.2.5 Installation for Windows XP

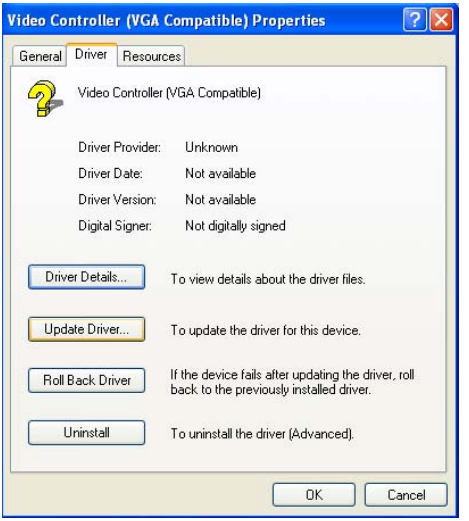
1. Select "System", "Settings", "Control Panel" and double click the "system" icon.

2. Choose “Hardware” and “Device Manager”, press “OK” button.

3. Choose “Video Controller (VGA Compatible), press “OK” button.

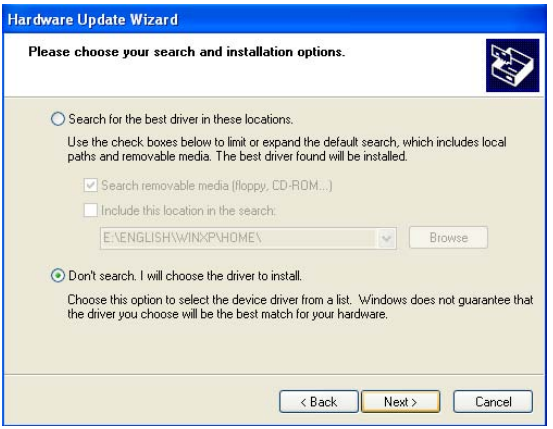


4. Choose "Driver", “Update Driver”, press “OK” button.

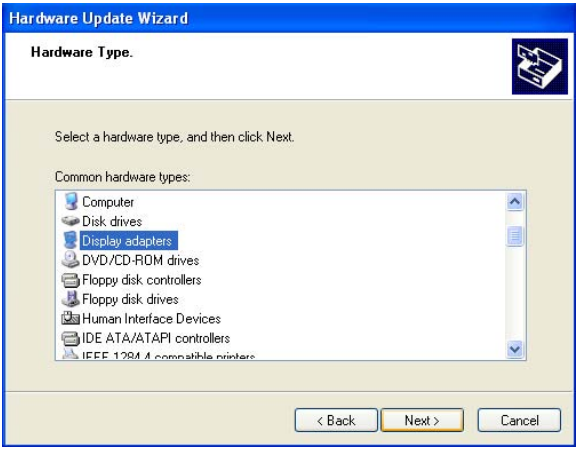


5. Choose “Install from a list.....” , press “Next”.

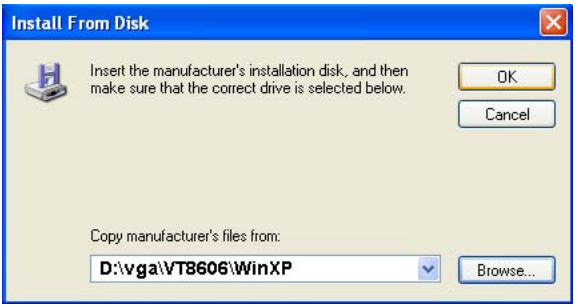
6. Choose “Don’t search. I will....”, press “Next” button.



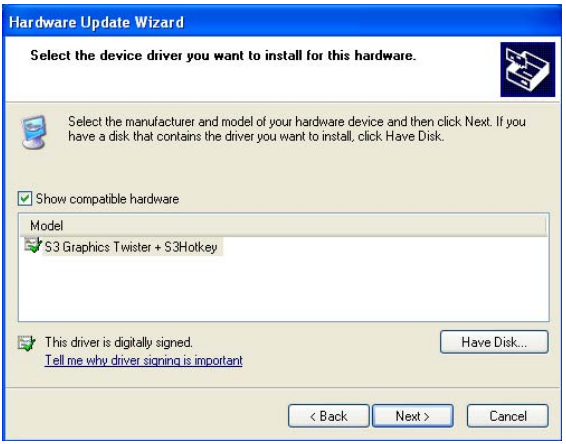
7. Choose “Display adapters”, press “Next” button.



8. Type the path D:\vga\VT8606\WinXP then press “OK” button.



9. Choose “S3 Graphics Twister + S3 Hotkey” then press “Next” button.



10. Press “Finish" to reboot.

5.3 Further Information

For further information about the AGP/VGA installation in your PCM-3375, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

VIA website: www.via.com.tw

EMAC website: www.emacinc.com

CHAPTER 6

Ethernet Interface

This chapter provides information on Ethernet configuration.

Sections include:

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

Chapter 6 Ethernet Interface

6.1 Introduction

The PCM-3375 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 1000Base-T and 100Base-T compatible. 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 PCM-3375 Series, 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 MS-DOS or Windows.

Note: *The windows illustrations in this chapter are examples only. Follow the steps and pay attention to the instructions which appear on your screen.*

6.2.1 Installation for Windows 98

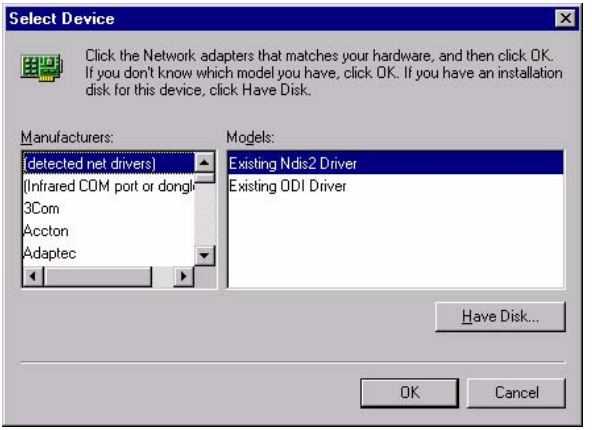
1. a. Select "Start", "Settings". "Control Panel".

b. Double click "Network".

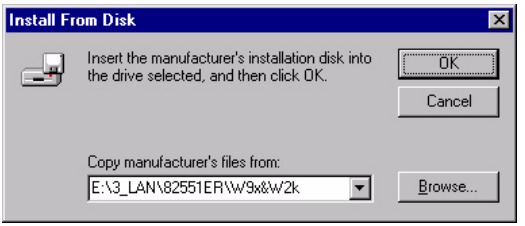
2. a. Click "Add New Hardware" and prepare to install network functions.

3. a. Select the "Adapter" item to add the Ethernet card.

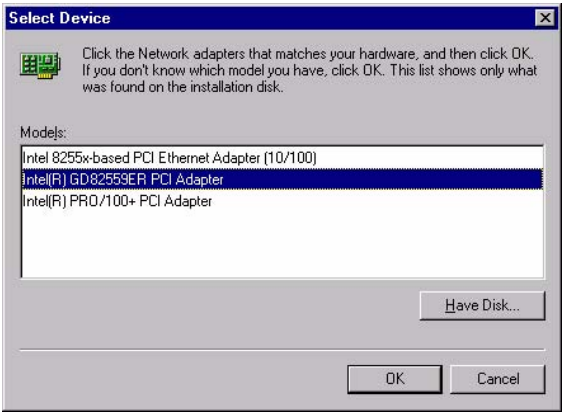
4. a. Click "Have Disk" to install the driver.



5. a. Insert the CD into the D: drive
b. Fill in "E:\3_LAN\82551ER\W9X&W2K"
c. Click "OK"



6. a. Choose the " Choose the "Intel(R) GD82559ER PCI Adapter" item.
b. Click "Next".

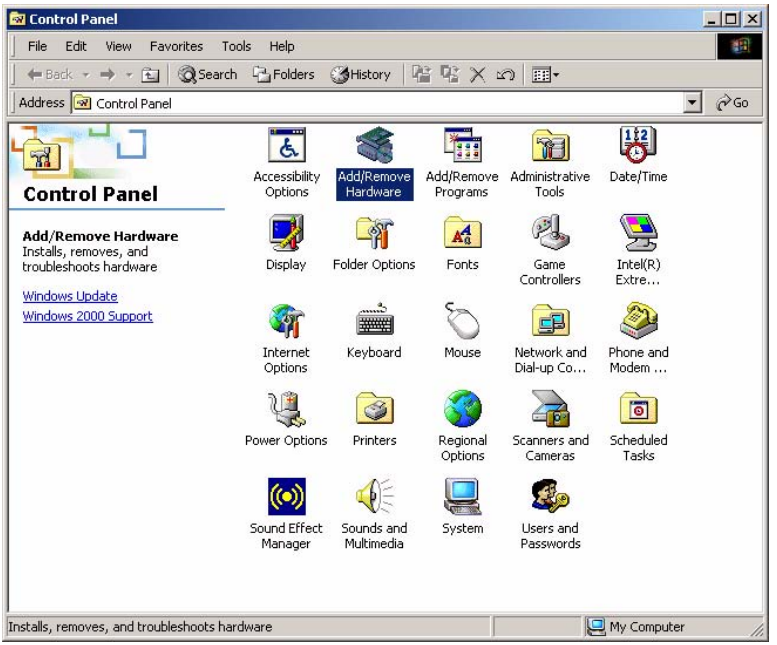


7. a. Make sure the configurations of relative items are set correctly.
b. Click "Finish" to reboot.

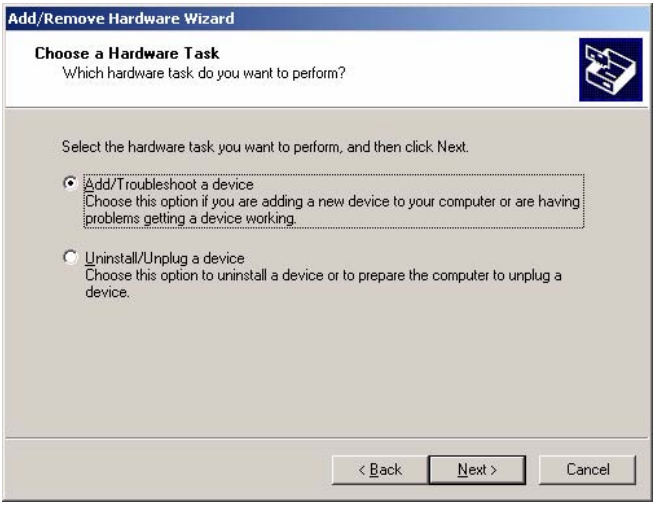
6.2.2 Installation for Windows 2000

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

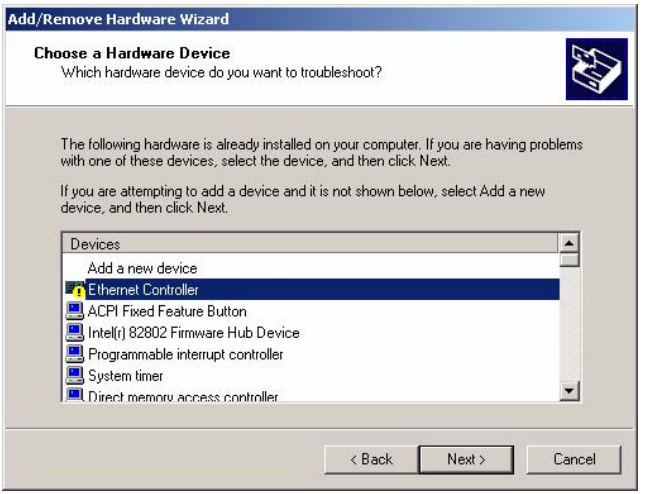
   b. Double click "Network".

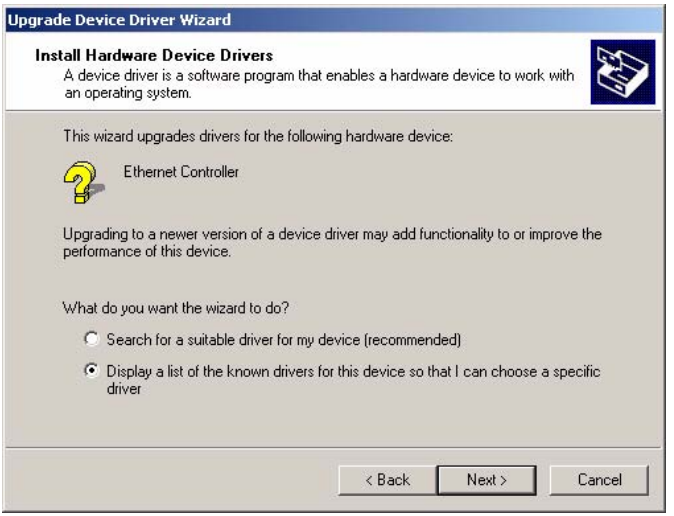


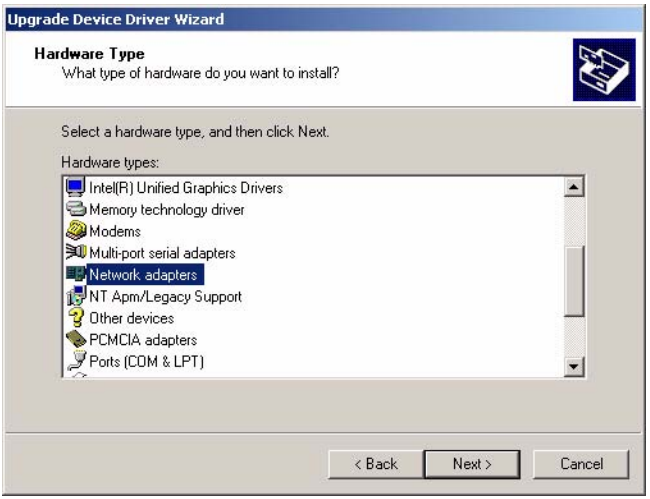
2. Click “Add new hardware wizard” and prepare to install network function



3. Choose Hardware Device “Ethernet Controller”



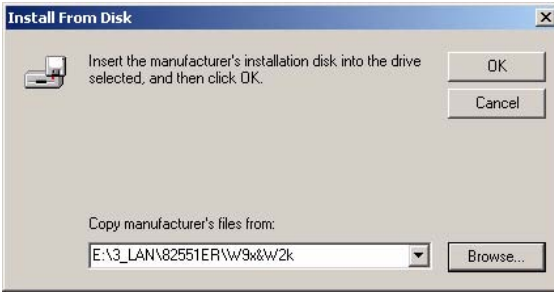




4. Insert the CD into D: drive

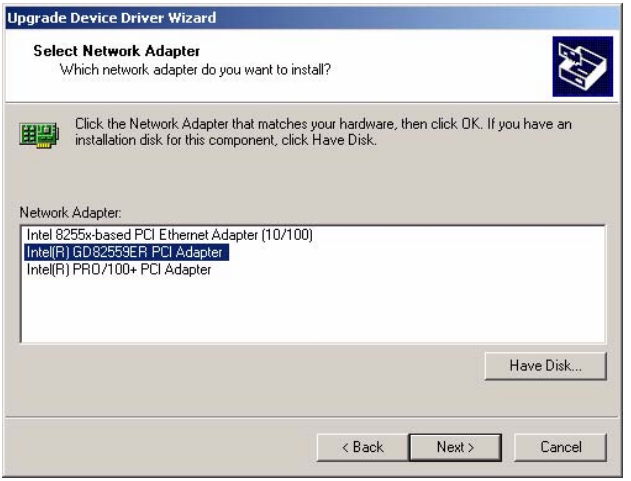
a. Fill in the Find the LAN chipset folder at the directory of PCM-3375 win2000 folder from CD ROM drive

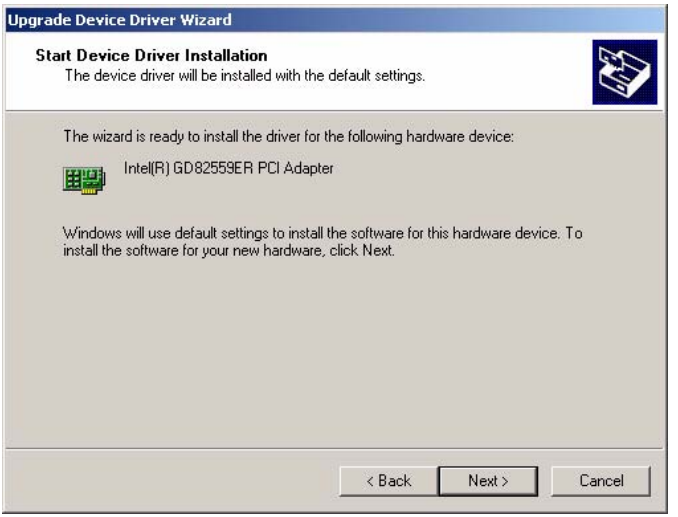
b. Click “OK”.



5. Choose the "Intel(R) GD82559ER PCI Adapter" item

Click “Next”





6 a. Make sure the configurations of relative items are set correctly

b. Click “OK”

6.3 Further information

Intel website: **www.intel.com**
EMAC website: **www.emacinc.com**

Appendix A

Programming the Watchdog Timer

The PCM-3375 is equipped with a watchdog timer that resets the CPU or generates an interrupt if processing comes to a standstill for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

Appendix A Programming Watchdog Timer

A.1 Watchdog programming

Below is a sample of programming code for controlling the Watchdog Timer function.

```
-------------------------------------------------------------------------------
Enter the extended function mode, interruptible double-write |
-------------------------------------------------------------------------------
MOV DX,2EH
MOV AL,87H
OUT DX,AL
OUT DX,AL
-------------------------------------------------------------------------
 Configure logical device 8, configuration register CRF6 |
-------------------------------------------------------------------------
MOV DX,2EH
MOV AL,07H ; point to Logical Device Number Reg.
OUT DX,AL
MOV DX,2FH
MOV AL,08H ; select logical device 8
OUT DX,AL ;
MOV DX,2EH
MOV AL,30H ;Set watch dog activate or inactivate
OUT DX,AL
MOV DX,2FH
MOV AL,01H  ; 01:activate 00:inactivate
OUT DX,AL ;
MOV DX,2EH
MOV AL,F5H ; Setting counter unit is second
OUT DX,AL
```

```
MOV DX,2FH
MOV AL,00H
OUT DX,AL;
MOV DX,2EH
MOV AL,F6H
OUT DX,AL
MOV DX,2FH
MOV AL,05H ; Set 5 seconds
OUT DX,AL
;-----------------------------------------
; Exit extended function mode |
;-----------------------------------------
MOV DX,2EH
MOV AL,AAH
OUT DX,AL
```

Appendix B

Pin Assignments

This appendix provides specialized information regarding:

- LAN Connector
- USB 1/2 Connector
- FPD Connector (TTL)
- RS422/485 Connector (share with COM2)
- COM1 RS232 Connector
- FPD Connector (LVDS)
- Primary IDE Connector
- COM2 RS232 Connector
- VGA Connector
- LPT Connector
- Power input Connector
- SM-BUS Connector
- KB_MS Connector
- System FAN Connector
- Multi-function Connector
- FDD Connector
- CompactFlash Connector
- Battery Connector

Appendix B Pin Assignments

B.1 LAN Connector (CN1)

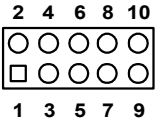


Table B.1: LAN Connector (CN1)

Pin	Signal	Pin	Signal
1	VCC_LAN	2	ACT_LED
3	Rx+	4	Rx-
5	LINK_LED	6	TEMPLANE
7	NC	8	RTEMPLANE
9	Tx+	10	Tx-

B.2 USB 1/2 Connector (CN2)

Table B.2: USB 1/2 Connector (CN2)

Pin	Signal	Pin	Signal
1	VCC_USB1	2	VCC_USB2
3	USB1N	4	USB2N
5	USB1P	6	USB2P
7	GND	8	GND
9	GND		

B.3 FPD Connector (TTL) (CN3)

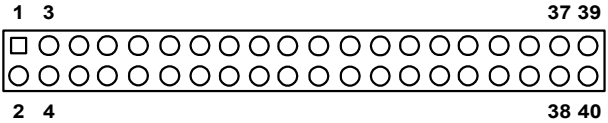


Table B.3: FPD Connector (TTL) (CN3)

Pin	Signal	Pin	Signal
1	VCC_LCD	2	VCC_LCD
3	GND	4	GND
5	VCC3_LCD	6	VCC3_LCD
7	NC	8	GND
9	FP_z_D0	10	FP_z_D1
11	FP_z_D2	12	FP_z_D3
13	FP_z_D4	14	FP_z_D5
15	FP_z_D6	16	FP_z_D7
17	FP_z_D8	18	FP_z_D9
19	FP_z_D10	20	FP_z_D11
21	FP_z_D12	22	FP_z_D13
23	FP_z_D14	24	FP_z_D15
25	FP_z_D16	26	FP_z_D17
27	FP_z_D18	28	FP_z_D19
29	FP_z_D20	30	FP_z_D21
31	FP_z_D22	32	FP_z_D23
33	GND	34	GND
35	FP_z_CLK	36	FP_z_VS
37	FP_z_DE	38	FP_z_HS
39	NC	40	FP_ENVEE

B.4 RS422/485 Connector (CN4)

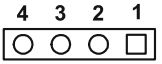


Table B.4: RS422/485 Connector (CN4)

Pin	Signal
1	RXD485-
2	RXD485+
3	TXD485+
4	TXD485-

B.5 COM1 RS232 Connector (CN5)

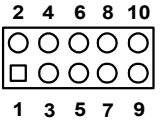


Table B.5: COM1 RS232 Connector (CN5)

Pin	Signal	Pin	Signal
1	DCDA#	2	DSRA#
3	RXA	4	RTSA#
5	TXA	6	CTSA#
7	DTRA#	8	RIA#
9	GND	10	GND

#: Low Active

B.6 FPD Connector (LVDS) (CN6)

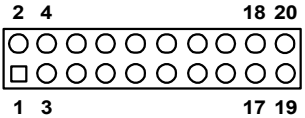


Table B.6: FPD Connector (LVDS)(CN6)

Pin	Signal	Pin	Signal
1	GND	2	GND
3	LVDS0_D0+	4	LVDS1_D0+
5	LVDS0_D0-	6	LVDS1_D0-
7	LVDS0_D1+	8	LVDS1_D1+
9	LVDS0_D1-	10	LVDS1_D1-
11	LVDS0_D2+	12	LVDS1_D2+
13	LVDS0_D2-	14	LVDS1_D2-
15	LVDS0_CLK+	16	LVDS1_CLK+
17	LVDS0_CLK-	18	LVDS1_CLK-
19	VCC_LVDS	20	VCC_LVDS

B.7 Primary IDE Connector (CN7)

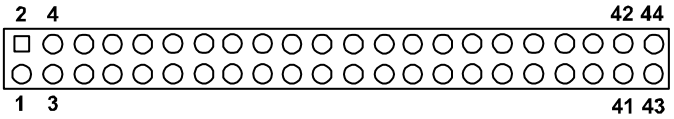


Table B.7: Primary IDE Connector (CN7)

Pin	Signal	Pin	Signal
1	PIDERS#	2	GND
3	PDD7	4	PDD8
5	PDD6	6	PDD9
7	PDD5	8	PDD10
9	PDD4	10	PDD11
11	PDD3	12	PDD12
13	PDD2	14	PDD13
15	PDD1	16	PDD14
17	PDD0	18	PDD15
19	GND	20	NC
21	PDDREQX	22	GND
23	PDIOWX#	24	GND
25	PDIORX#	26	GND
27	PDRDYX	28	GND
29	PDDACKX#	30	GND
31	IIRQ14	32	NC
33	PDA1	34	NC
35	PDA0	36	PDA2
37	CS0P#	38	CS1P#
39	PIDEACT#	40	GND
41	VCC	42	VCC
43	GND	44	NC

#: Low Active

B.8 COM2 RS232 Connector (CN8)

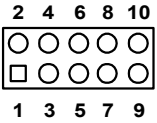


Table B.8: COM2 RS232 Connector (CN8)

Pin	Signal	Pin	Signal
1	DCDB#	2	DSRB#
3	RXB	4	RTSB#
5	TXB	6	CTSB#
7	DTRB#	8	RIB#
9	GND	10	GND

#: Low Active

B.9 VGA Connector (CN10)

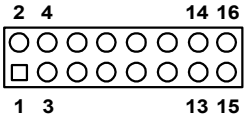


Table B.9: VGA Connector (CN10)

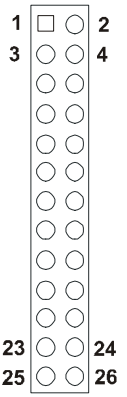
Pin	Signal	Pin	Signal
1	VGA_z_R	2	VCC_VGA
3	VGA_z_G	4	GND
5	VGA_z_B	6	NC
7	NC	8	VGA_v_DDAT
9	GND	10	VGA_v_HS
11	GND	12	VGA_v_VS
13	GND	14	VGA_v_DCLK
15	GND	16	GND

B.10 LPT Connector (CN11)

Table B.10: LPT Connector (CN11)

Pin	Signal	Pin	Signal
1	STB_O	2	PRN_AFD#
3	LPD0_O	4	PRN_ERR#
5	LPD1_O	6	PRN_INIT#
7	LPD2_O	8	PRN_SLIN#
9	LPD3_O	10	GND
11	LPD4_O	12	GND
13	LPD5_O	14	GND
15	LPD6_O	16	GND
17	LPD7_O	18	GND
19	PRN_ACK#	20	GND
21	PRN_BUSY	22	GND
23	PRN_PE	24	GND

#: Low Active



B.11 Power input Connector (CN12)

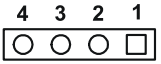


Table B.11: Power input Connector (CN12)

Pin	Signal
1	+12V
2	GND
3	GND
4	+5V

B.12 SM-BUS Connector (CN13)

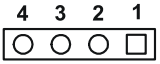


Table B.12: SM-BUS Connector (CN13)

Pin	Signal
1	GND
2	SMB_DATA
3	SMB_CLK
4	VCC3

B.13 KB_MS Connector (CN14)

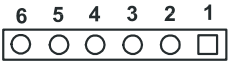


Table B.13: KB_MS Connector (CN14)

Pin	Signal
1	KCK
2	KDT
3	MCK
4	GND
5	VCCKB
6	MDT

B.14 System FAN Connector (CN15)

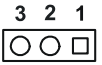


Table B.14: System FAN Connector (CN15)

Pin	Signal
1	FANSPEED
2	VCC
3	GND

B.15 Multi-function Connector (CN16)

Table B.15: Multi-function Connector (CN16)

Pin	Signal	Pin	Signal
1	V-5V	2	GND
3	V-12V	4	SWIN_RST#
5	GND	6	NC
7	WDG_OUT#	8	SWIN_RST#
9	VCC	10	IRRX
11	IRTX	12	GND
13	V12_INVERTER	14	GND
15	ENABLE	16	VBR
17	VCC	18	VCC
19	DIO0	20	DIO1
21	DIO2	22	DIO3
23	DIO4	24	DIO5
25	DIO6	26	DIO7
27	GND		

#: Low Active

B.16 FDD Connector (CN17)

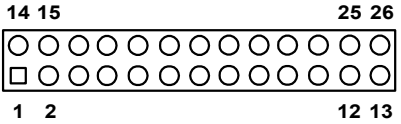


Table B.16: FDD Connector (CN17)

Pin	Signal	Pin	Signal
1	GND	2	INDEX#
3	GND	4	DSA#
5	GND	6	DSKCHG#
7	NC	8	NC
9	NC	10	MOA#
11	NC	12	DIR#
13	NC	14	STEP#
15	GND	16	WD#
17	GND	18	WE#
19	GND	20	TRACK0#
21	GND	22	WP#
23	GND	24	RDATA#
25	GND	26	HEAD#

#: Low Active

B.17 CompactFlash Connector (CN18)

Table B.17: CompactFlash Connector (CN18)

Pin	Signal	Pin	Signal
1	GND	26	GND
2	SDD3	27	SDD11
3	SDD4	28	SDD12
4	SDD5	29	SDD13
5	SDD6	30	SDD14
6	SDD7	31	SDD15
7	SDCS1#	32	SDCS3#
8	GND	33	NC
9	GND	34	SDIOR#
10	GND	35	SDIOW#
11	GND	36	VCC
12	GND	37	IIRQ15
13	VCC	38	VCC
14	GND	39	GND
15	GND	40	NC
16	GND	41	SIDERST#
17	GND	42	SDRDY
18	SDA2	43	SDDREQ
19	SDA1	44	SDDACK#
20	SDA0	45	SDDACT#
21	SDD0	46	PDIAG#
22	SDD1	47	SDD8
23	SDD2	48	SDD9
24	NC	49	SDD10
25	GND	50	GND

#: Low Active

B.18 Battery Connector (CN20)

Table B.18: Battery Connector (CN20)

Pin	Signal
1	VBAT
2	GND

Appendix C

System Assignments

This Appendix contains information of a detailed nature: It includes:

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

Appendix C System Assignments

C.1 System I/O Ports

Table C.1: System I/O Ports

Addr. range (Hex)	Device
000-01F	DMA controller
020-021	Interrupt controller 1, master
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F	Real-time clock, non-maskable interrupt (NMI) mask
080-09F	DMA page register
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller
0F0	Clear math co-processor
0F1	Reset math co-processor
0F8-0FF	Math co-processor
1F0-1F8	Fixed disk
170- 178	Fixed disk (2nd IDE)
200-207	Reserved (Game I/O)
278-27F	Parallel printer port 2 (LPT 3)
2E8-2EF	Series port 4
2F8-2FF	Serial port 2
300-31F	Prototype card
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT 2)
380-38F	SDLC, bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome display and printer adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3E8-3EF	Series port 3
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1

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

C.2 1st MB memory map

Table C.2: 1st MB memory map

Addr. range (Hex)	Device
F0000h - FFFFFh	System ROM
*CC000h - EFFFFh	Unused (reserved for Ethernet ROM)
C0000h - CBFFFh	Expansion ROM (for VGA BIOS)
B8000h - BFFFFh	CGA/EGA/VGA text
B0000h - B7FFFh	Unused
A0000h - AFFFFh	EGA/VGA graphics
00000h - 9FFFFh	Base memory

* If Ethernet boot ROM is disabled (Ethernet ROM occupies about 16 KB)

* E0000 - EFFFF is reserved for BIOS POST

C.3 DMA channel assignments

Table C.3: DMA channel assignments

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

* Audio DMA select 1, 3, or 5

** Parallel port DMA select 1 (LPT2) or 3 (LPT1)

C.4 Interrupt assignments

Table C.4: Interrupt assignments

Interrupt#	Interrupt source
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 3	COM2
IRQ 4	COM1
IRQ 5	COM4
IRQ 6	FDD
IRQ 7	LPT1
IRQ 8	RTC
IRQ 9	Reserved (audio)
IRQ 10	COM3
IRQ 11	Reserved for watchdog timer
IRQ 12	PS/2 mouse
IRQ 13	INT from co-processor
IRQ 14	Primary IDE
IRQ 15	Secondary IDE for CFC

* Ethernet interface IRQ select: 9, 11, 15
* PNP audio IRQ select: 9, 11, 15
* PNP USB IRQ select: 9, 11, 15
* PNP ACPI IRQ select: 9, 11, 15

Appendix D

Mechanical Drawings

Appendix D Mechanical Drawings

D.1 Mechanical Drawings

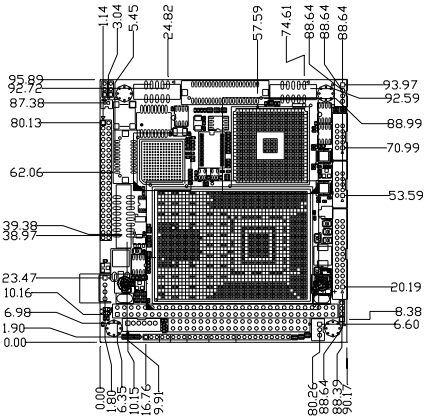


Figure D.1: PCM-3375 Mech Drawing (component side)

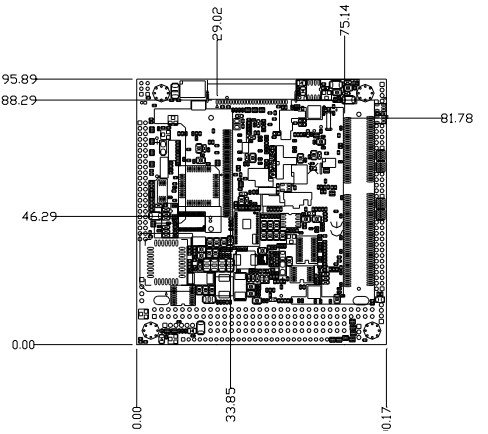


Figure D.2: PCM-3375 Mech Drawing (solder side)