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PCA-6741

ISA STPC Consumer II 133 Half-sized CPU card with CPU/32MB SDRAM/ VGA/LAN/DOC/CF/PC104

User's Manual

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This manual is for the PCA-6741 series half-size CPU card.

Part No. 200K674100

1st Edition Published in Taiwan Dec., 2002

Packing list

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

- 1 PCA-6741 Series all-in-one single board computer
- 1 Startup Manual (part no. 200K674110)
- 1 utility disk / CD including utilities and manual (in PDF format)
- 1 hard disk drive (IDE) interface cable (40-pin) (part no. 1701400601)
- 1 keyboard / PS/2 mouse cable (part no. 1700060202)
- 1 COM port / parallel port cable (part no. 1701260303)
- 1 floppy disk drive interface cable 700 mm (28") (part no. 1701340700)
- 1 Warranty Certificate

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

Optional devices

- IrdA adapter (part#: 968900042)

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CHAPTER 1

General Information

This chapter gives background information on the PCA-6741.

Sections include:

- Board specifications
- Board layout and dimensions

1.1 Introduction

The PCA-6741 is the ultimate cost-effective solution for limited-space applications. It offers all the functions of an AT-compatible industrial computer on a single board. The PCA-6741 comes with an embedded high-performance STPC Consumer II 133 processor and 32MB SDRAM on board. For maximum performance, the PCA-6741 also supports one optional SODIMM socket that can accept up to 64 MB memory.

On-board features include an Ethernet interface, a socket for DOC® 2000, Enhanced IDE interface, one parallel port, two serial ports (RS-232 and RS-232/422/485) with DB-9 connector as COM1, and a mini-DIN PS/2 keyboard/mouse interface. The PCA-6741 supports CRT resolutions up to 1280 x 1024 @ 256 colors.

The PCA-6741 complies with the "Green Function" standard and supports three types of power saving features: Normal, Doze and Sleep modes.

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

If you need any additional functions, the PCA-6741 has a PC/104 connector for future upgrades.

1.2 Features

- On-board Low power STMicroelectronics STPC Consumer II 133 processor (fanless)
- On-board 32 MB SDRAM
- Embedded Consumer II VGA display controller
- 62-level watchdog timer, jumperless on-line setup supported
- Supports wake-up on LAN, ring-on by Modem
- SSD supports DiskOnChip® 2000
- Supports CMOS data backup functions
- PC/104 connector supports face-up installation

1.3 Specifications

1.3.1 Standard SBC functions

- **CPU**: Embedded STMicroelectronics STPC Consumer II 133 MHz processor (provides fanless operation)
- **BIOS**: 2 Mbit Flash BIOS,
  -Supports Plug & Play, APM
  -Supports Ethernet Boot ROM
  -Supports boot from CD-ROM
  -Supports boot from LS-120 ZIP™ Drive
  -Optional Customer icon can be supplied
- **Chipset**: STPC Consumer II 133
- **System memory**: Onboard 32MB SDRAM,
  and one optional SDRAM SODIMM max. 64MB socket
- **PCI IDE interface**: One Enhanced IDE interface. Supports 2 IDE devices PIO mode 3,4 with bus mastering up to 14 MB/sec.
- **Floppy disk drive interface**: Supports up to two FDDs (360 KB/ 1.2 MB/720 KB/1.44 MB/2.88 MB)
- **Parallel port**: One parallel port, supports EPP/ECP
- **IR port**: One 115 kbps IrDA compliant serial infrared
- **Serial ports**: 2 serial ports COM1: RS-232, COM2: RS-232/422/ 485
- **Watchdog timer**: 62-level timer interval, setup by software or jumperless selection, generates system reset or IRQ11.

1.3.2 VGA interface

- **Chipset**: Consumer II embedded
- **Frame buffer**: Supports 1/2/4 MB frame buffer with system memory
- **Display type**: CRT
- **Resolution:** Non-interlaced CRT monitor resolution up to 1280 x 1024 @ 256 colors

1.3.3 Ethernet interface (PCA-6741F-0CA2 only)

- **Chipset**: RTL 8139C
- **Ethernet interface**: PCI 10/100 Mbps Ethernet. IEEE 802.3 u protocol compatible
- **Connection**: On-board RJ-45 connector
- I/O address switchless setting
- Built-in boot ROM

1.3.4 Mechanical and environmental

- **Dimensions (L x W)**: 185 mm x 122 mm
- **Power supply voltage**: +5 V (4.75 ~ 5.25 V)
- **Power consumption** :
  - Maximum: 5 V @ 4.6 A
    Typical: +5 V @ 1.39 A (w/32 MB SDRAM)
- **Operating temperature**: 0 ~ 60° C (32 ~ 140° F)
- **Weight**: 0.27 kg (0.59 lbs)

1.3.5 Solid state disk

- Provides support for one DOC® 2000.

1.4 Board layout and dimensions

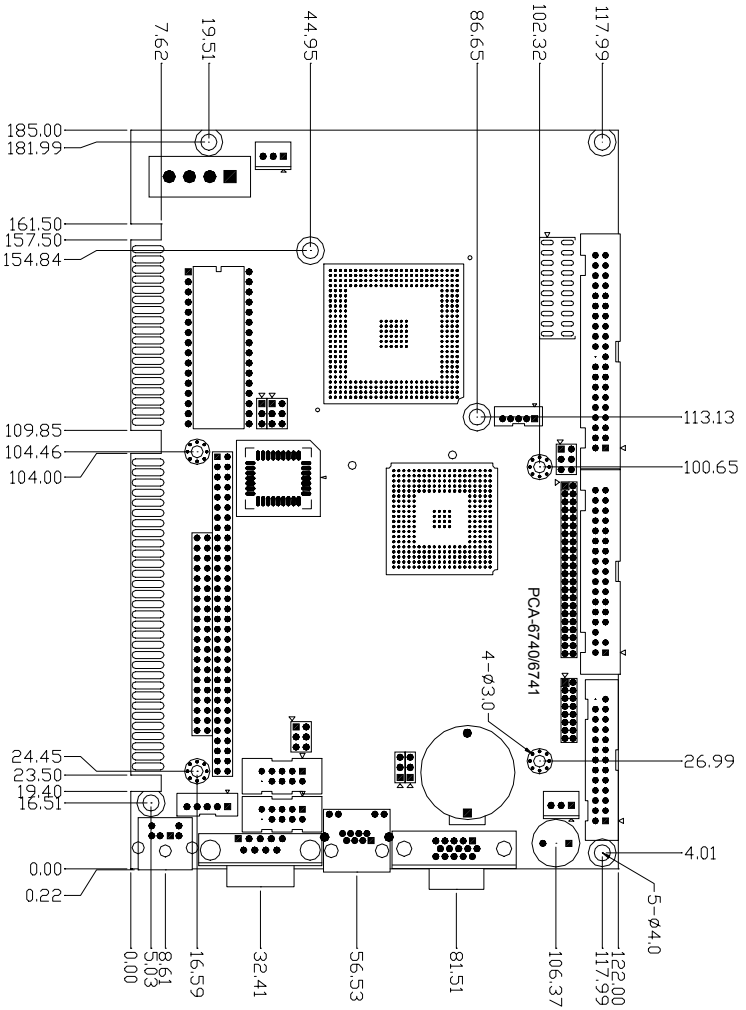


Figure 1-1: PCA-6741 dimensions (component side)

CHAPTER 2

Connecting Peripherals

This chapter tells how to connect peripherals, switches and indicators to the PCA-6741 board. You can access most of the connectors from the top of the board while it is installed in the chassis. If you have a number of cards installed, or your chassis is very tight, you may need to partially remove the card to make all the connections.

2.1 Connector locations (component side)

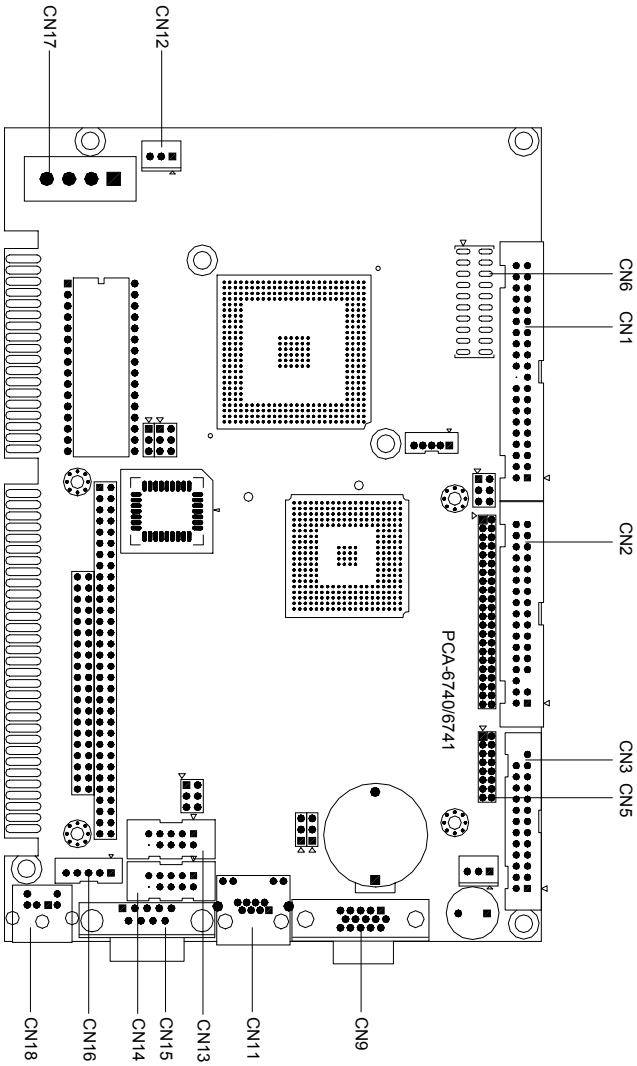


Figure 2-1: Board Layout: Connector Locations(component side)

2.2 Locating jumpers

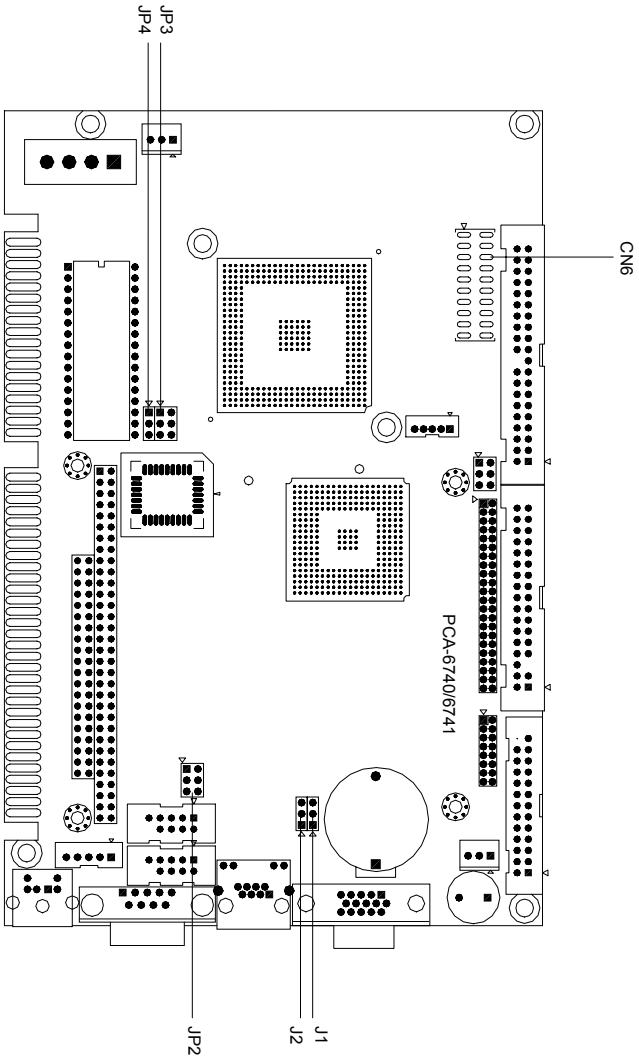


Figure 2-2: Locating Jumpers

2.3 Jumpers and connectors

Connectors on the board link it to external devices such as hard disk drives, a keyboard or expansion bus connectors. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

The table below lists the function of each of the board jumpers and connectors:

Table 2-1: Jumpers

Label	Function
J1	CMOS Charge & Discharge
J2	LAN Power select
JP2	RS-232/RS-422/RS-485 select
JP3	DOC® 2000 Address select
JP4	Watchdog timer

The following table lists the connectors on the PCA-6741.

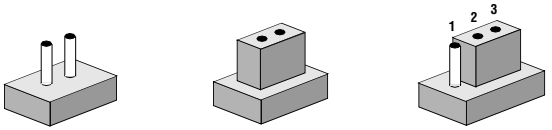
Table 2-2: Connectors

Label	Function
CN1	IDE connector
CN2	FDD connector
CN3	Printer port connector
CN5	Reserved
CN6	Multiple connector
CN7	ATX Power Standby connector
CN9	CRT connector
CN10	PC/104 connector
CN11	LAN connector
CN12	Reserved
CN13	COM2 connector (RS-422/RS-485)
CN14	COM2 connector (RS-232)
CN15	COM1 connector
CN16	Internal Keyboard connector
CN17	AT (Big 4P) power connector
CN18	PS2 Keyboard/Mouse connector
CN19	ISA Gold-Finger connector
CN 20	CompactFlash connector

2.4 Setting jumpers

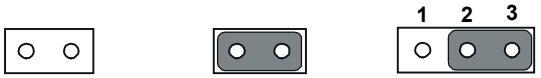
2.4.1 Introduction

You may configure your card 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 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.

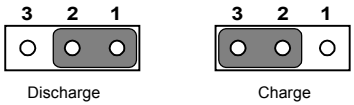
If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

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

2.4.2 Settings details

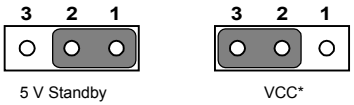
J1: CMOS Charge & Discharge

Pin	Function
1-2	Discharge
2-3	Charge



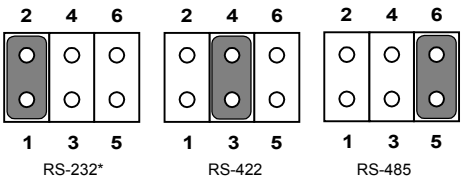
J2: LAN Power Select

Pin	Function
1-2	5 V Standby
2-3	VCC*

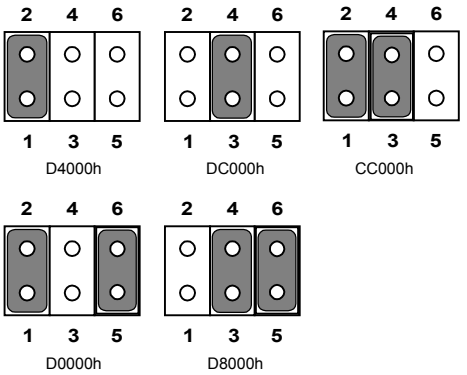


JP2: RS-232/422/485 Select

Pin	Function
1-2 (CN10 connector)	COM2/RS-232*
3-4 (CN11 connector)	COM2/RS-422
5-6 (CN11 connector)	COM2/RS-485



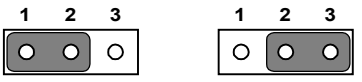
JP3: DOC address select	
Pin	**Address at**
1-2	D4000h
3-4	DC000h
1-2, 3-4	CC000h
1-2, 5-6	D0000h
3-4, 5-6	D8000h



2.5 Watchdog timer action (JP4)

When the watchdog timer activates (CPU processing has come to a halt), it can reset the system or generate an interrupt on IRQ11. This can be set via JP4 as shown below:

JP4: Watchdog timer	
Pin	**Function**
1-2	Reset*
2-3	IRQ11



*Default Settings

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

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

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

2.6 Enhanced IDE connector (CN1)

You can attach two IDE (Integrated Device Electronics) drives to the PCA-6741 internal controller. The PCA-6741 CPU card has an EIDE connector, CN1.

Wire number 1 on the cable is red or blue, and the other wires are gray. Connect one end to connector CN1 on the CPU card. Make sure that the red (or blue) wire corresponds to pin 1 on the connector. See Figure 2-1, where pin 1 is indicated with a triangle and a solid square.

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

Connect the first hard drive to the other end of the cable. Wire 1 on the cable should also connect to pin 1 on the hard drive connector, which should be labeled on the drive circuit board. Check the documentation that came with the drive for more information. If you are using a second drive, connect it to the remaining connector on the same cable.

2.7 FDD connector (CN2)

You can attach up to two floppy disk drives to the PCA-6741's onboard controller. You can use any combination of 5.25" (360 KB/ 1.2 MB) and/or 3.5" (720 KB/1.44/2.88 MB) drives.

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

2.8 Parallel port connector (CN3)

The parallel port is designated as LPT1, and is normally used to connect the CPU card to a printer. The PCA-6741 includes an on-board parallel port, accessed through a 26-pin flat-cable connector, CN3. The card comes with an adapter cable which lets you use a traditional DB-25 connector. The cable has a 26-pin connector on one end and a DB-25 connector on the other, mounted on a retaining bracket. The bracket installs at the end of an empty slot in your chassis, giving you access to the connector.

To install the bracket, find an empty slot in your chassis. Unscrew the plate that covers the end of the slot. Screw in the bracket in place of the plate. Next, attach the flat-cable connector to CN3 on the CPU card. Wire 1 of the cable is red or blue, and the other wires are gray. Make sure that wire 1 corresponds to pin 1 of CN3. Pin 1 is on the right side of CN3.

2.9 ATX power button (CN6, pins 17,19)

The PCA-6741 provides an ATX power input connector. When connected with the ATX power switch, the ATX power switch connector (CN6) enables power On/Off from the chassis.

2.10 Reset switch (CN6, pins 9,11)

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

For reset switch pin assignments, please see Appendix A.

2.11 IR connector (CN6 pins 12,14,16,18,20)

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

2.12 ATX Feature Connector (CN7)

When the PCA-6741 is used as a standalone card, the main power connector (CN7) is used. If the PCA-6741 is used with a passive backplane, the main power connector (CN7) should not be connected. This is because the card will be powered from the backplane.

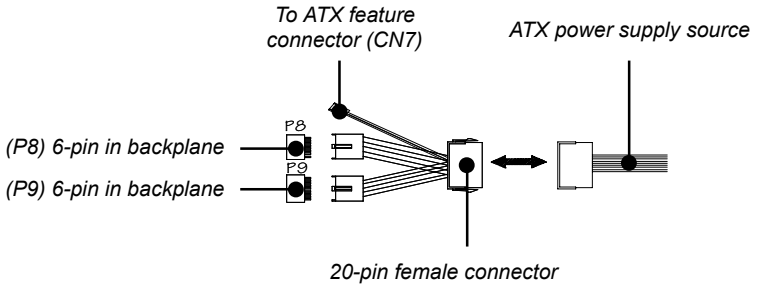


Figure 2-4: ATX adaptor cable

The ATX adapter cable (optional) is used to connect the PCA-6741 to the ATX power supply. The ATX adapter cable has different connectors at both ends. On one end is the ATX 20-pin (female type) which connects to the (male) ATX power supply source. The other end has a 3-pin connector (female type) which connects to the ATX feature connector (CN7) on the board itself. This end also has the 6-pin main power connector (P8) and a 6-pin connector (P9) which is used when the board is mounted on a passive backplane.

2.13 VGA display connector (CN9)

The PCA-6741 provides a VGA controller for a high resolution VGA interface. The PCA-6741 CN9 is a DB-15 connector for VGA monitor input. Pin assignments for the CRT display are detailed in Appendix A.

2.14 PC/104 connectors (CN10)

The PCA-6741 is equipped with a 16-bit ISA signal PC/104 connector for future expansion. See Appendix D for details.

2.15 Ethernet connector (CN11)

The PCA-6741 is equipped with a high performance 32-bit PCI-bus Fast Ethernet interface which is fully compliant with IEEE 802.3u 10/100Base-T specifications. It is supported by all major network operating systems.

The medium type can be configured via the **rset8139.EXE** program included on the utility disk. (See Chapter 5 for detailed information.)

2.16.1 Network boot

The network boot feature is built into the BIOS. It can be enabled or disabled in the chipset setup of the CMOS configuration. Refer to "BIOS Setting" in Chapter 4 for more information.

2.16 Serial ports (CN15: COM1; CN14: COM2/RS-232; CN13: COM2/RS-422/485)

The PCA-6741 offers two serial ports: COM1 in RS-232 and COM2 (CN14: RS-232, CN13:RS-422/485). These ports let you connect to serial devices (a mouse, printers, etc.) or a communication network.

You can select the address for each port (for example, 3F8H [COM1], 2F8H [COM2]) or disable each port. Use the BIOS Advanced Setup program, which is covered in Chapter 4.

The card mounting bracket holds the serial port connector for the one port. The parallel port and serial port adapter kit (supplied with the card) holds the connector for the other port. This lets you connect and disconnect cables after you install the card. The DB-9 connector on the bottom of the bracket is the first RS-232 port, COM1. The DB-9 connector on the adapter kit is the second serial port, COM2.

Table 2-3: Serial port connections (COM1, COM2)

Connector	Function
COM1,3*,4*	RS-232
COM2	RS-232/422/485

2.17.1 RS-232 connection (COM1:CN15)

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

2.17.2 RS-232/422/485 connection (COM2: CN10: RS-232; CN11: RS-422/485)

COM2 is an RS-232/422/485 serial port. The specific port type is determined by jumper settings (JP2), as detailed in Chapter 1.

The IRQ and address range for both ports are fixed. However, if you wish to disable the port or change these parameters later, you can do this in the system BIOS setup. The table below shows the settings for the PCA-6741 series' board's ports:

Table 2-4: Serial port default settings

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

2.17 Internal keyboard connector (CN16)

In addition to the PS/2 mouse/keyboard connector, an additional external keyboard connector is provided.

For external keyboard pin assignments, see Appendix A.

2.18 AT power connector (CN17)

If you prefer not to acquire power through the PCA-6741 backplane via the gold H-connectors, The big 4P power connector (CN17) also provides power input connectors for +5 V, and +12 V.

2.19 Keyboard and PS/2 mouse connector (CN18)

The PCA-6741 board provides a keyboard connector. A 6-pin mini-DIN connector (CN18) on the card mounting bracket supports single-board computer applications. The card comes with an adapter to convert from the 6-pin mini-DIN connector to a standard DIN connector and to a PS/2 mouse connector.

2.20 ISA gold fingers (CN19)

The 16-bit ISA gold fingers are used for connecting the PCA-6741 Series to an ISA passive backplane.

CHAPTER 3

Award BIOS Setup

This chapter describes how to set BIOS configuration data.

3.1 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.

3.1.1 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 PCA-6741 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.

3.2 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.

3.2.1 Entering setup

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

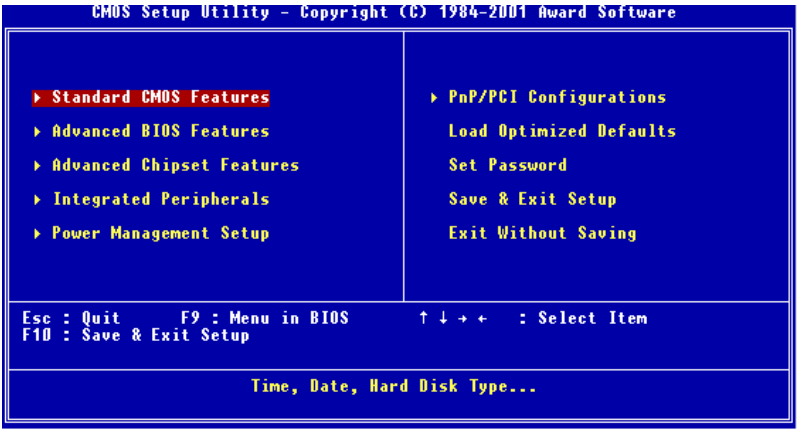


Figure 3-1: BIOS setup program initial screen

3.2.2 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.

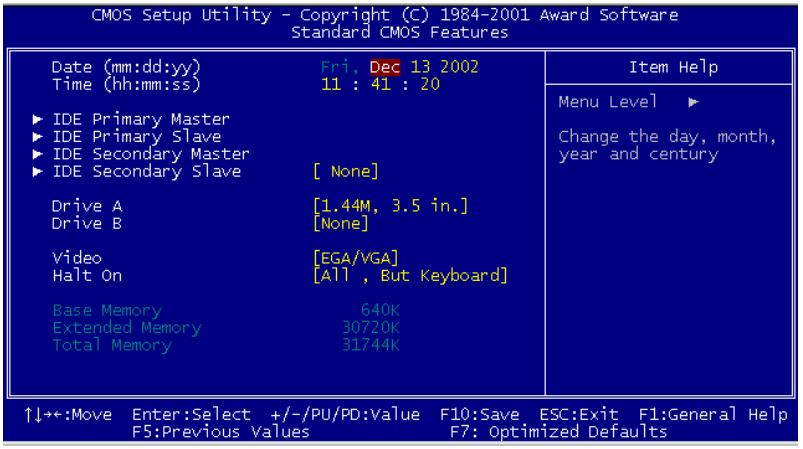


Figure 3-2: Standard CMOS Features screen

3.2.3 Advanced BIOS Features Setup

By choosing the Advanced BIOS Features option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCA-6741.

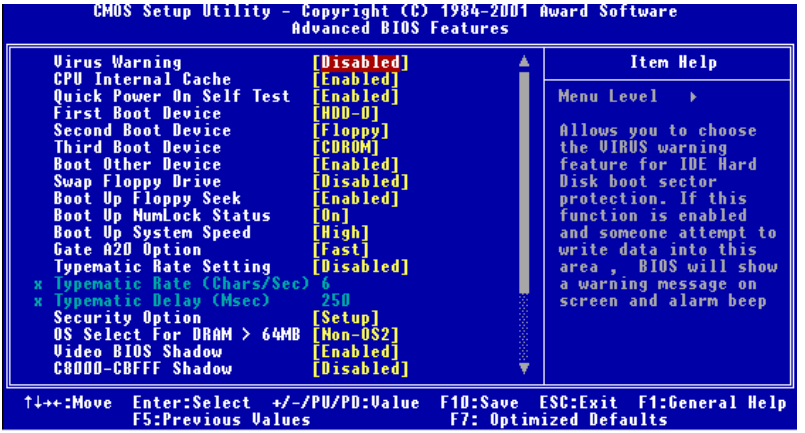


Figure 3-3: Advanced BIOS Features setup

3.2.4 Advanced Chipset Features Setup

By choosing the Advanced Chipset 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 PCA-6741.

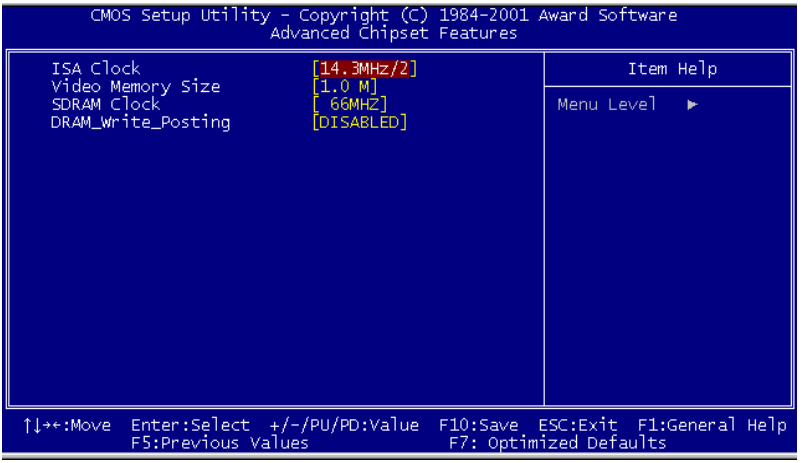


Figure 3-4: Advanced Chipset Features Setup

3.2.5 Integrated Peripherals Setup

By choosing the Integrated Peripherals option from the Initial Setup screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCA-6741.

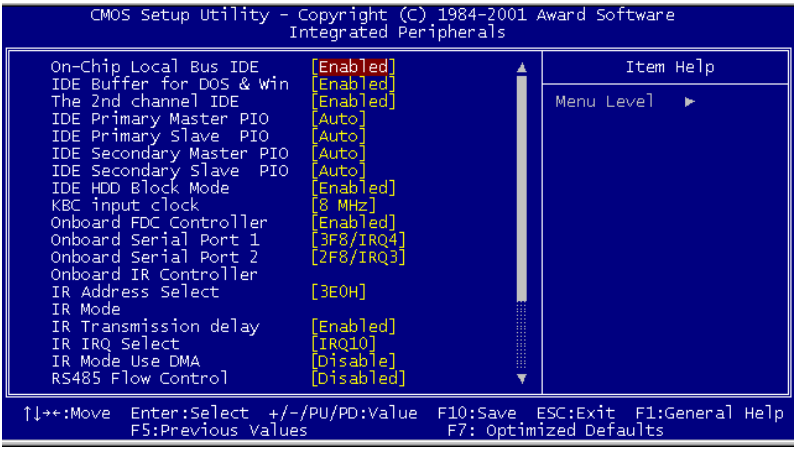


Figure 3-5: Integrated Peripherals Setup

3.2.6 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 PCA-6741.

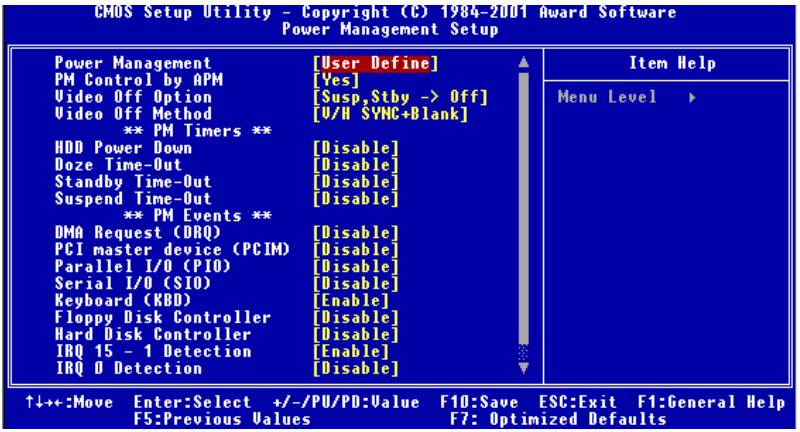


Figure 3-6: Power Management Setup

3.2.7 PnP/PCI Configurations Setup

By choosing the PnP/PCI Configurations option from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the PCA-6741.

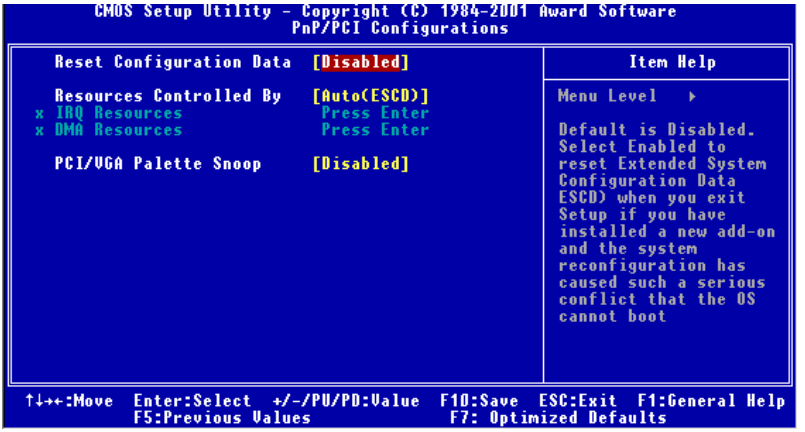


Figure 3-7: PnP/PCI Configurations

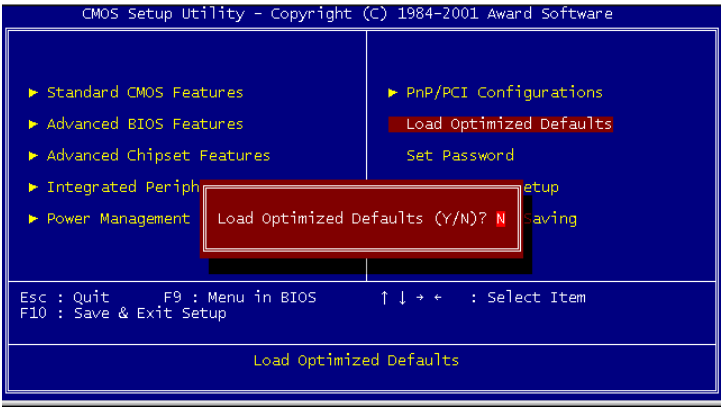
3.2.8 Load Optimized Defaults

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 PCA-6741 Series system on.



3.2.8 Set Password

To enable the password feature, you must first select either Setup or System under the Security Option in the Advanced BIOS Features Setup.

To change the password, choose the Set Password option from the Initial Setup Screen menu and press <Enter>.

1. If the CMOS is bad or this option has never been used, a default password is stored in the ROM. The screen will display the following messages:

   Enter Password:

   Press <Enter>.

2. If the CMOS is good or this option has been used to change the default password, the user is asked for the password stored in the CMOS. The screen will display the following message:

   Confirm Password:

   Enter the current password and press <Enter>.

3. After pressing <Enter> (ROM password) or the current password (user-defined), you can change the password stored in the CMOS. The password can be at most eight (8) characters long.

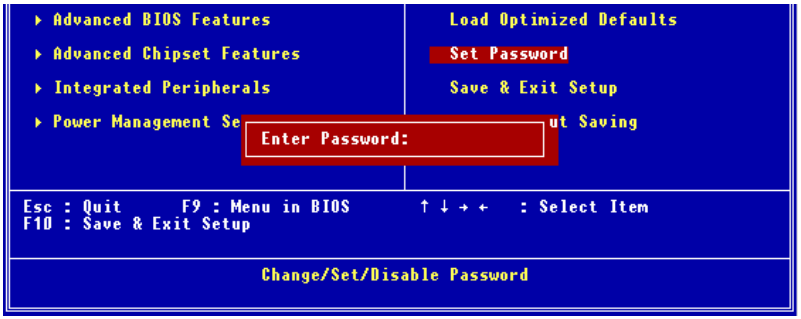


Figure 3-8: Set Password Screen

3.2.9 Save & Exit Setup

If you select this option and press <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 compare this to what it finds as it checks the system. This record is required for the system to operate.

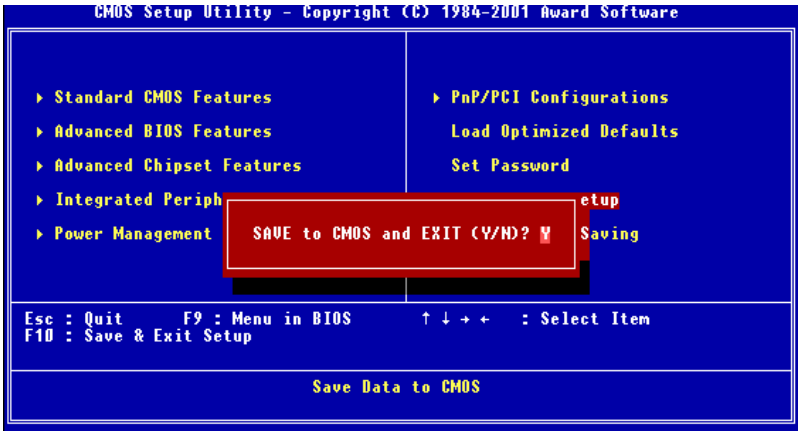


Figure 3-9: Save & Exit Setup

3.2.10 Exit without saving

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

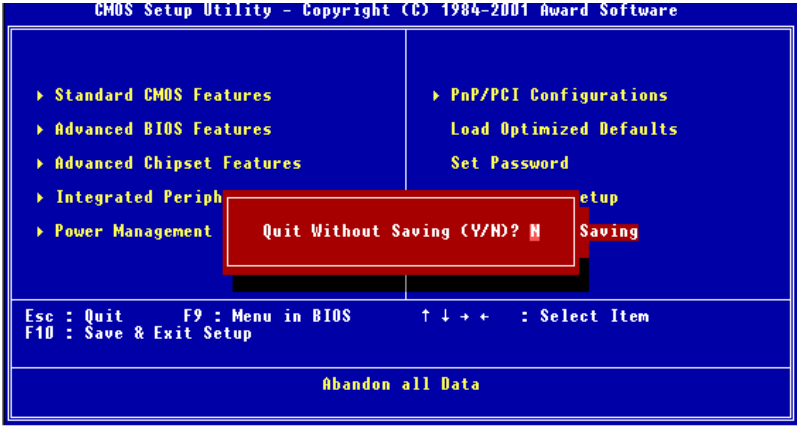


Figure 3-10: Exit Setup Without Saving

CHAPTER 4

SVGA Setup

- Introduction
- Installation of SVGA driver for Windows 98/NT4.0

4.1 Introduction

The PCA-6741 has an on-board VGA interface. The specifications and features are described as follows:

4.1.1 Chipset

The PCA-6741 uses a Consumer II embedded display chipset. It supports conventional analog CRT monitors. It supports interlaced and non-interlaced analog monitors (color and monochrome VGA) in high-resolution modes while maintaining complete IBM VGA compatibility. Digital monitors (i.e. MDA, CGA, and EGA) are NOT supported. Multiple frequency (multisync) monitors are handled as if they were analog monitors.

4.1.2 Display memory

With 1/2/4 MB shared memory, the VGA controller can drive CRT displays with resolutions up to 1280 x 1024 at 256 colors.

4.2 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 are using within your PCA-6741.

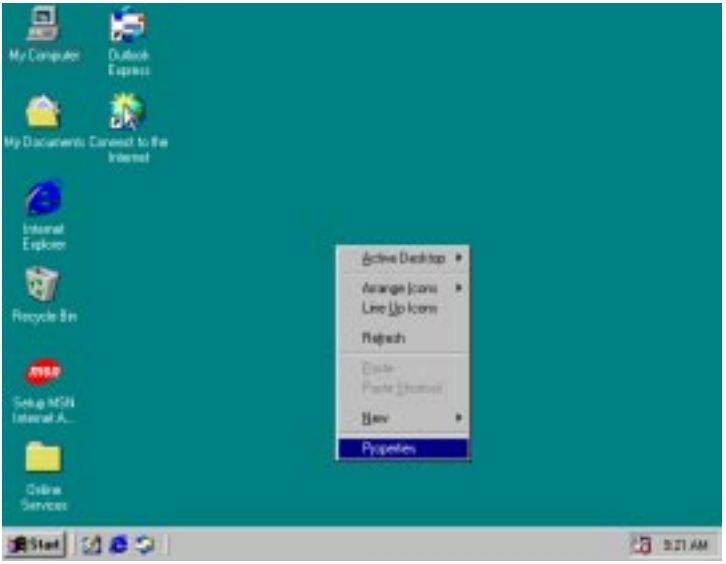
Important: The following windows illustrations are examples only. You must follow the flow chart instructions and pay attention to the instructions which then appear on your screen.

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

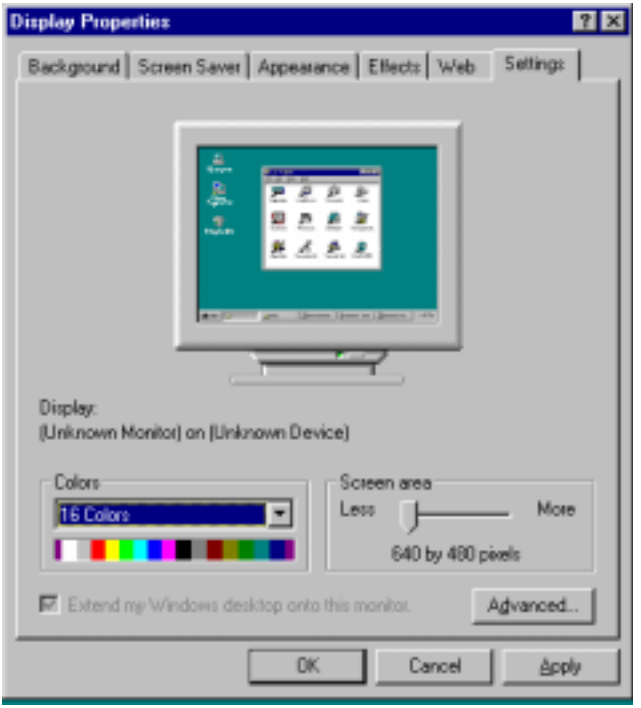
Note 2: <Enter> means pressing the "Enter" key on the keyboard.

4.2.2 Installation for Windows 98

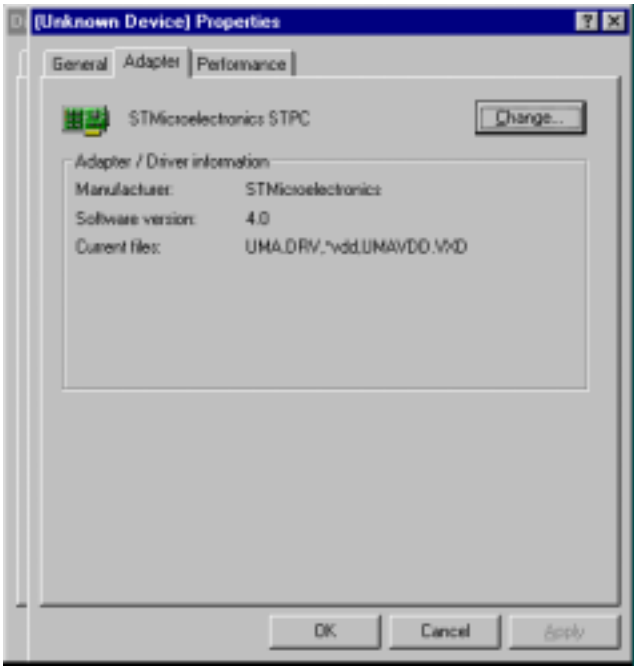
1. Insert the disk into the CD-ROM drive.
2. Click on the "Start" icon, then select "Settings," "Control Panel," and double click on "Display."



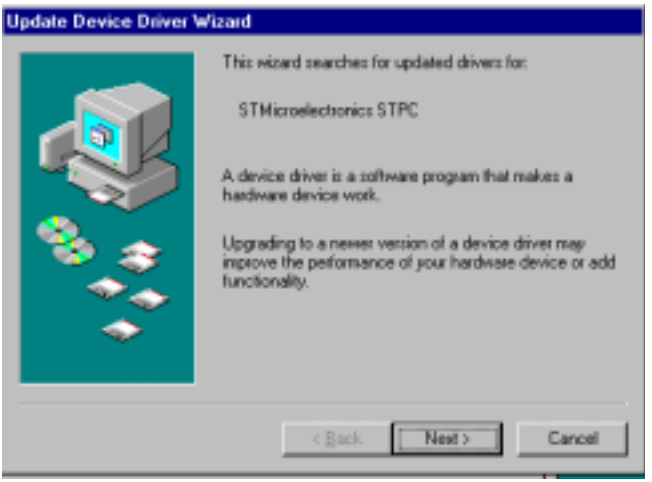
3. Select the "Settings" tab, then click "Advanced..."



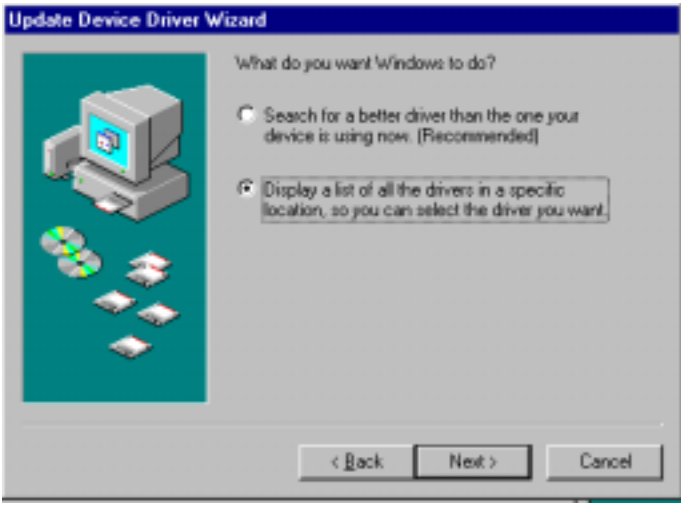
4. Click the "Adapter" tab, and then the "Change ..." button.



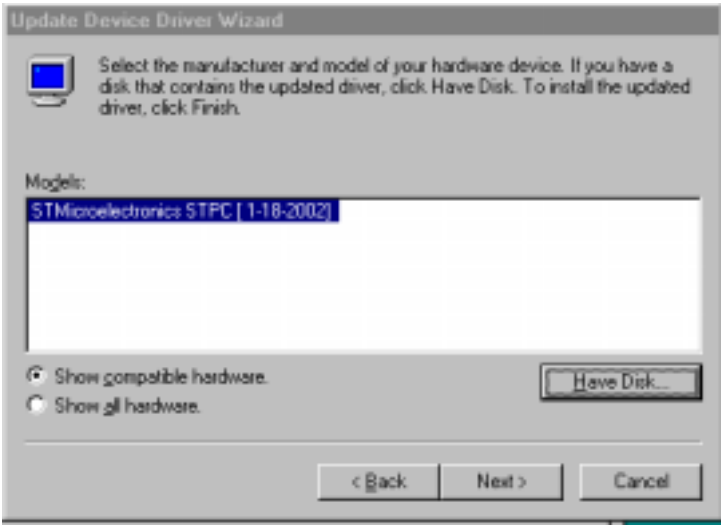
Then click "next..."

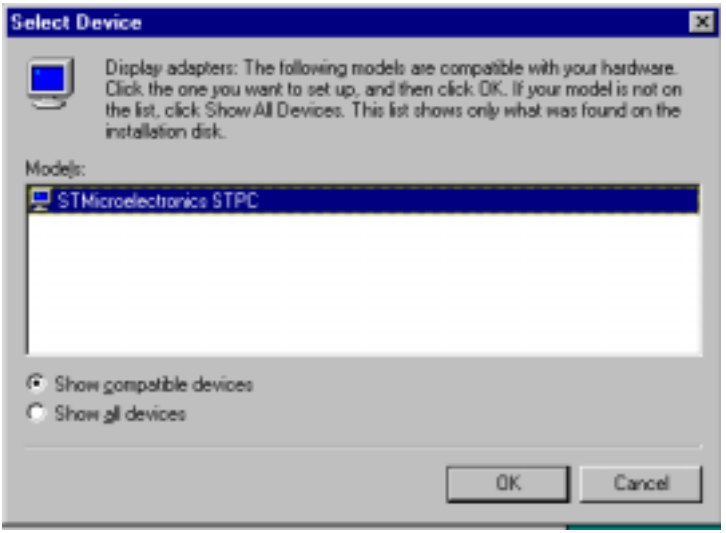


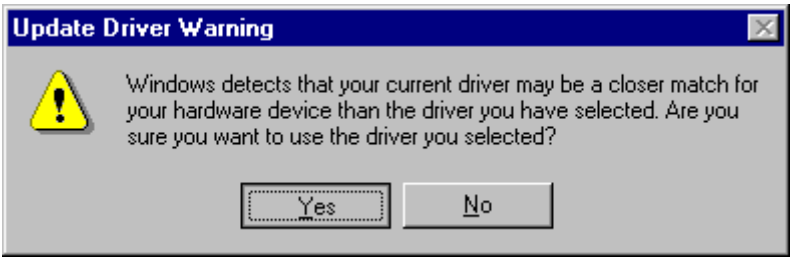
5. Select "Display a list of all the drivers in a specific location..." then click "Next."



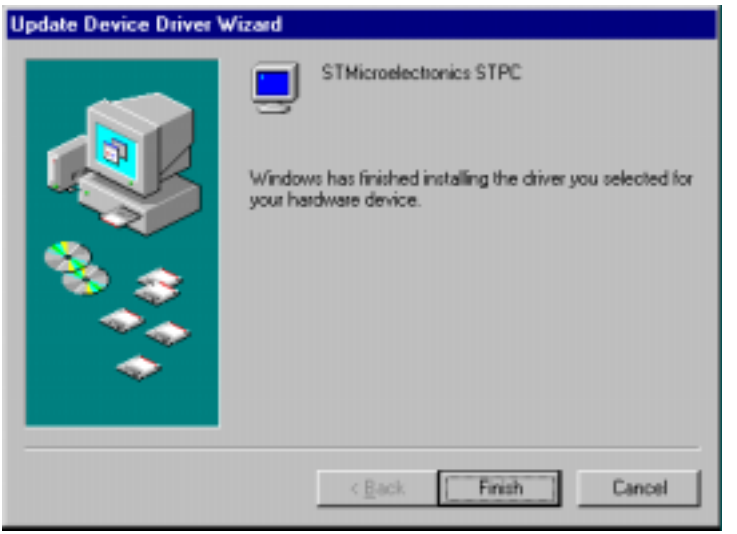
6. Click the "Have Disk ..." button



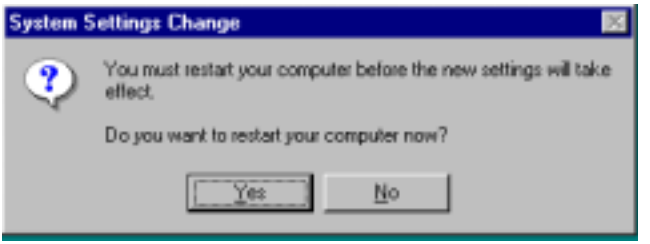




7. Click "Finish" to install the driver.

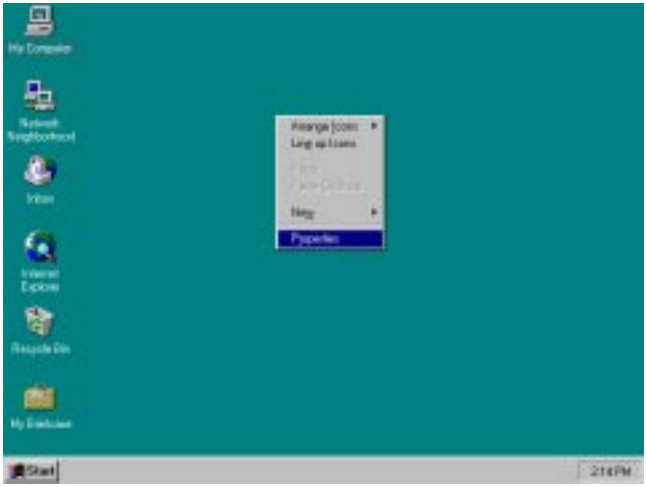


8. Reboot the system.

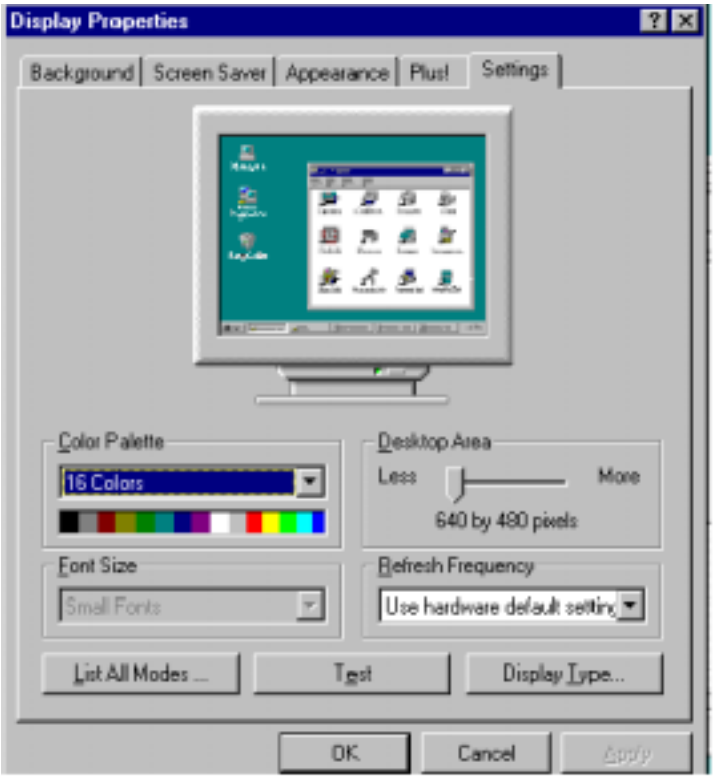


4.2.3 Installation for Windows NT

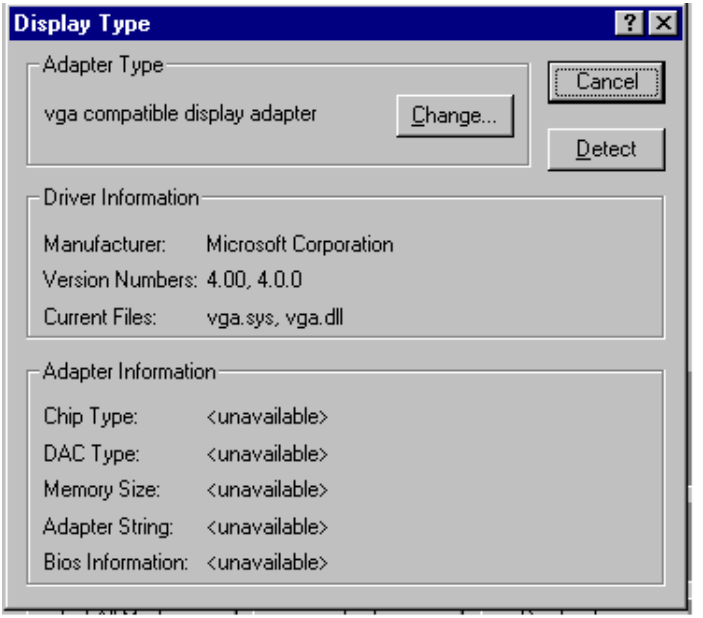
1. Click the right key of mouse on the desktop, select "Properties,"



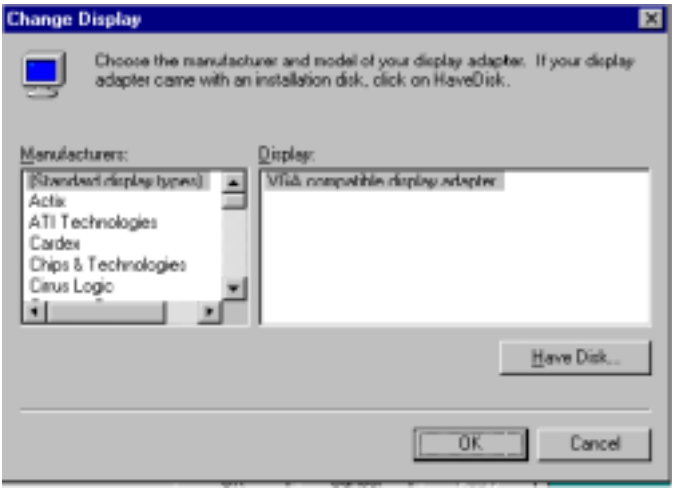
2. Click the "Settings" tab, then the "Display Type..." button.



3. Click "Change..."



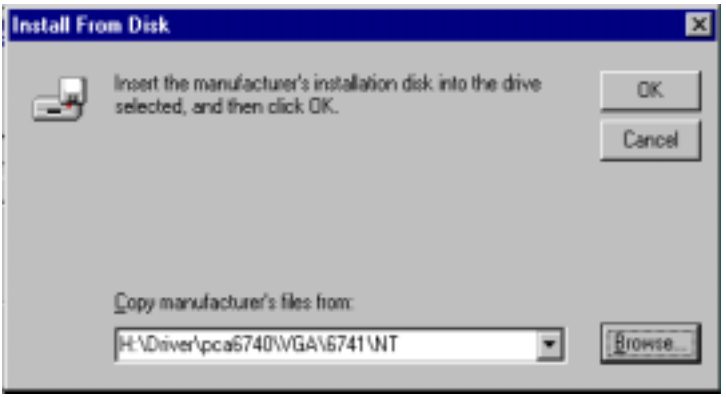
4. Click the "Have Disk..." button.

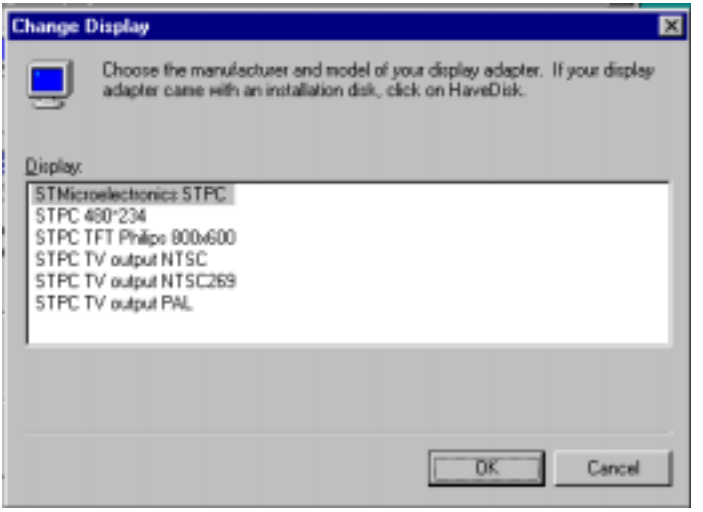


5. a. Insert the disk into the CD-ROM drive.

   b. Type “H:\Driver\pca6740\VGA\6741\NT”
   (where H: represents your CD-ROM drive) in the blank.

   c. Press “OK”.



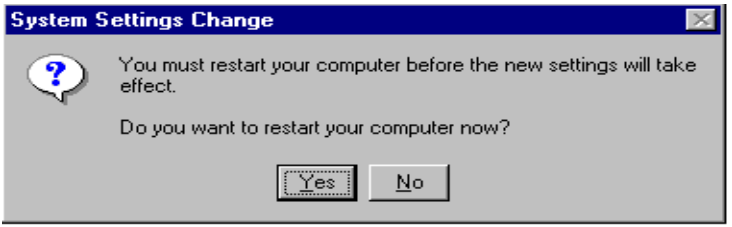


6. Press "Yes" to proceed.





7. Press "Yes" to restart the system.



4.3 Further information

For further information about the PCI/SVGA installation in your PCA-6741, including driver updates, troubleshooting guides and FAQ lists, visit the following web resources:

SMI web site:	**http://www.siliconmotion.com**
Advantech web sites:	**http://www.advantech.com** **http://www.advantech.com.tw**

CHAPTER 5

PCI Bus Ethernet Interface

This chapter provides information on Ethernet configuration.

- Introduction
- Installation of Ethernet driver for Windows 95/98/NT
- Further information

5.1 Introduction

The PCA-6741 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 on board. The network boot feature can be utilized by incorporating the boot ROM image files for the appropriate network operating system. The boot ROM BIOS files are combined with system BIOS, which can be enabled/disabled in the BIOS setup.

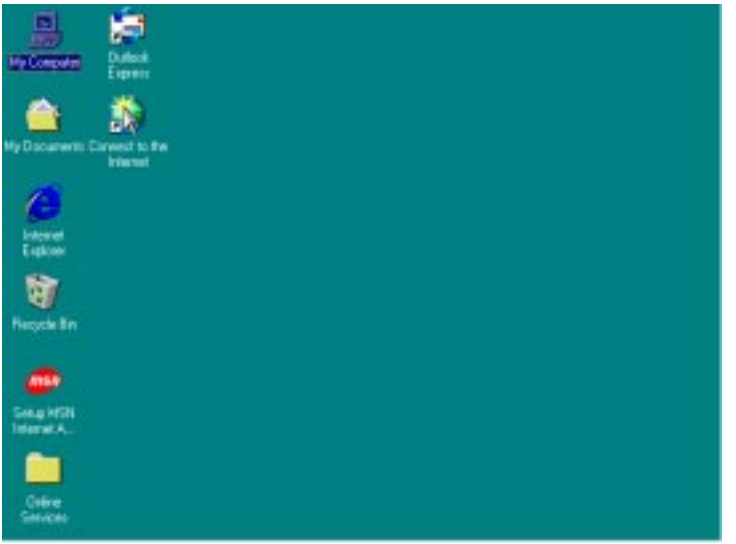
5.2 Installation of Ethernet driver

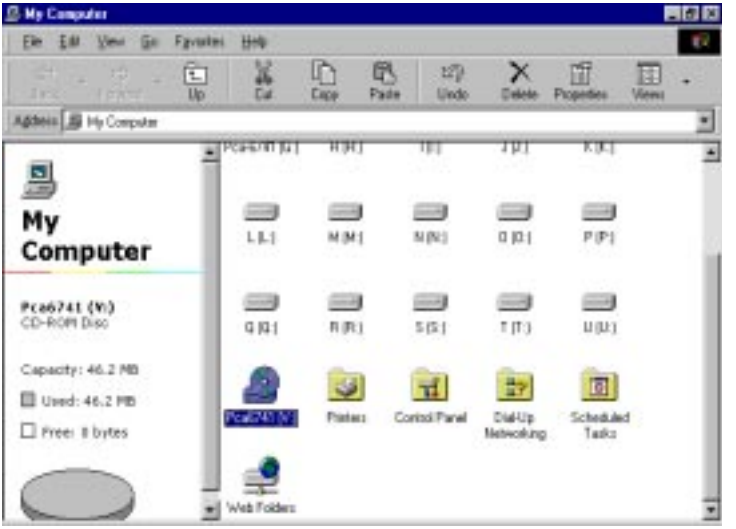
Before installing the Ethernet driver, note the procedures below. You must know which operating system you are using in your PCA-6741, and then refer to the corresponding installation flow chart. Then just follow the steps described in the flow chart. You will quickly and successfully complete the installation, even if you are not familiar with instructions for MS-DOS or Windows.

Note: *The Windows illustrations in this chapter are examples only. You must pay attention to and follow the instructions which appear on your screen.*

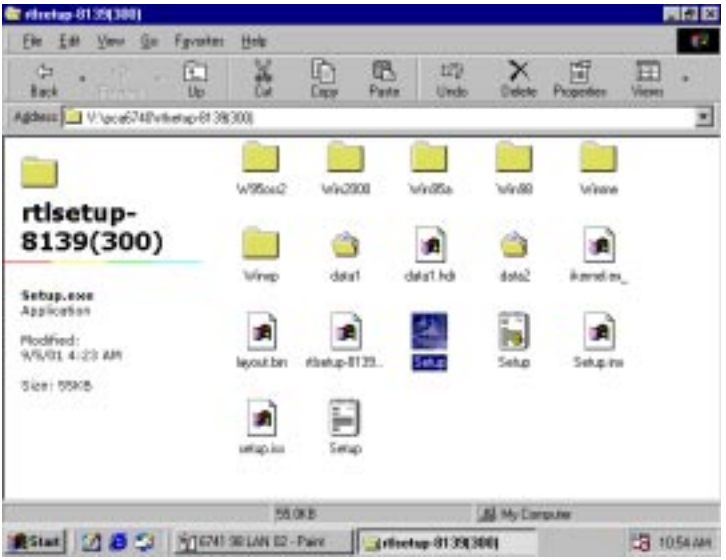
5.2.1 Installation for Windows 98

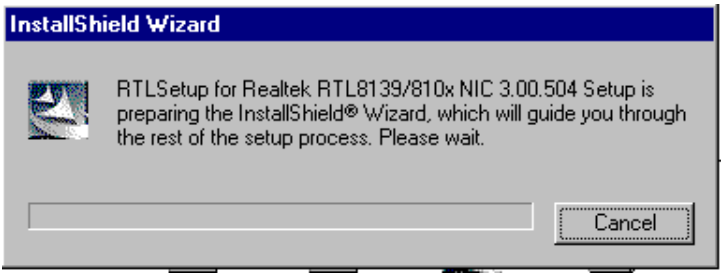
1. Click "My computer," then "PCA6741 (V:)"



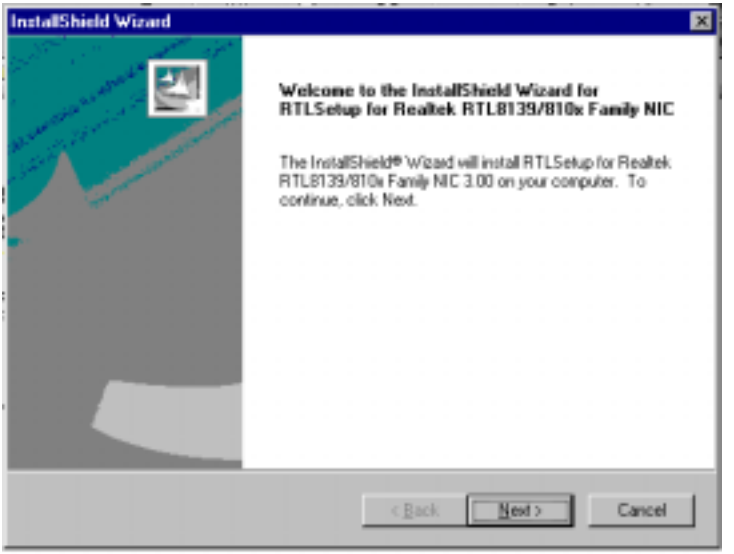


2. Click the "Setup"

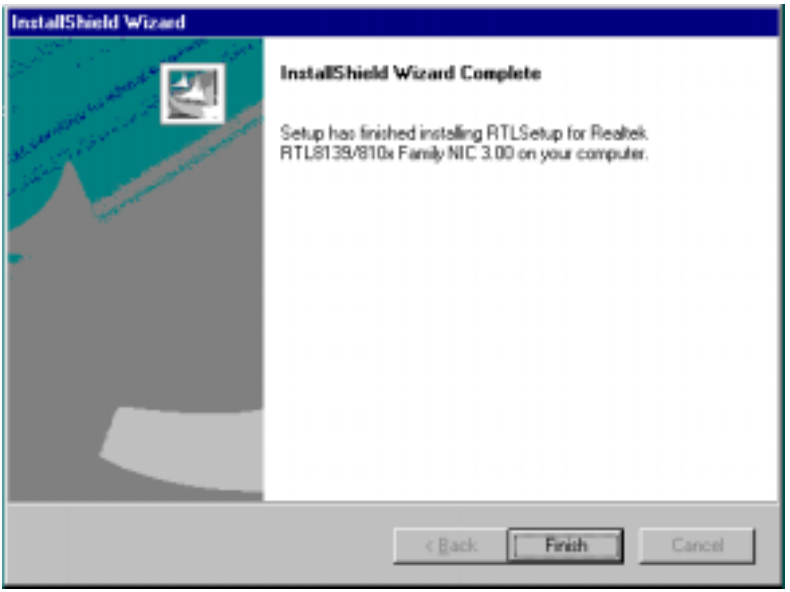




3. Click on "Next," select the "Driver" tab, then "Update Driver..."



4. Click "Finish," then hit "NEXT."



10. Reboot the system.





5.3 Further information

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

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

www.advantech.com.tw

CHAPTER 6

Floppy Disk Drive Installation

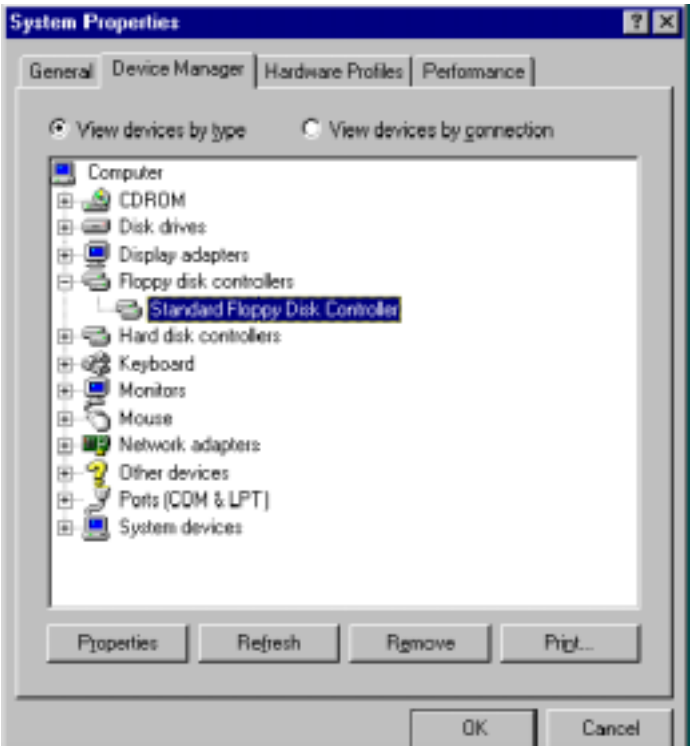
This chapter provides information on installation of a standard floppy drive for Windows 98.

6.1 Installation for Windows 98

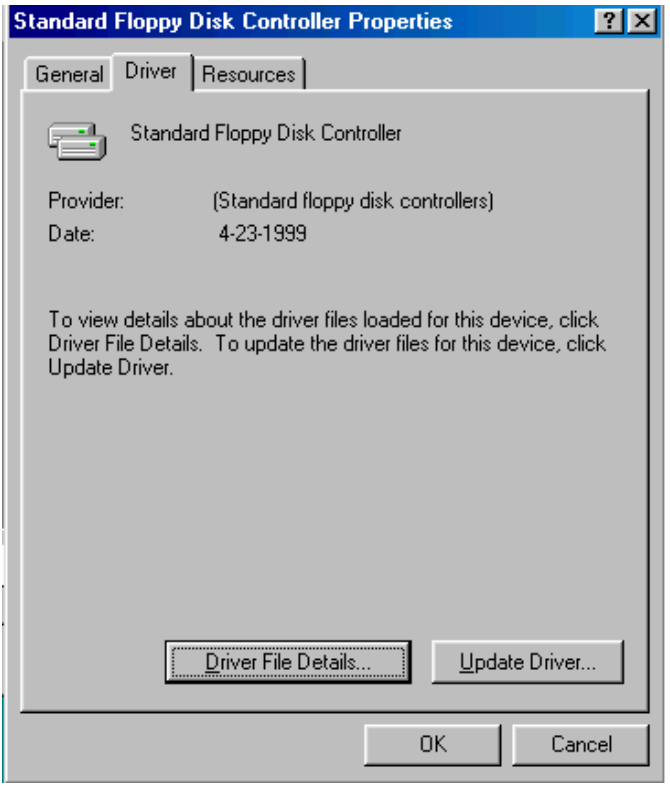
1. Click “Start,” “Settings,” “Control Panel,” and then “System”



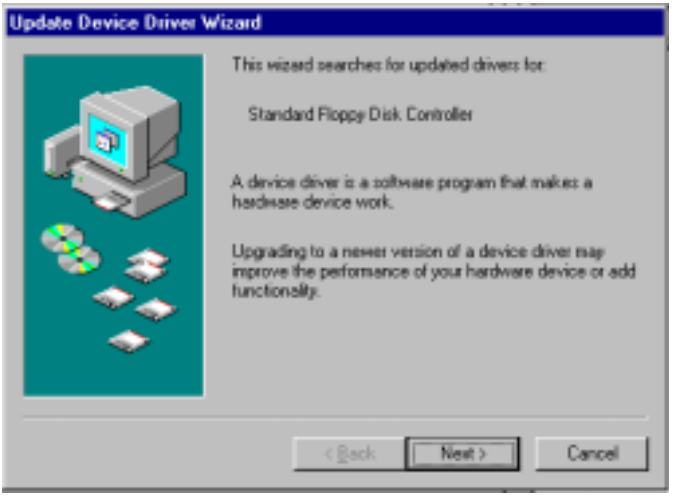
2. In “System Properties,” click “Device Manager” and select the “Standard Floppy Disk Controller” listing.



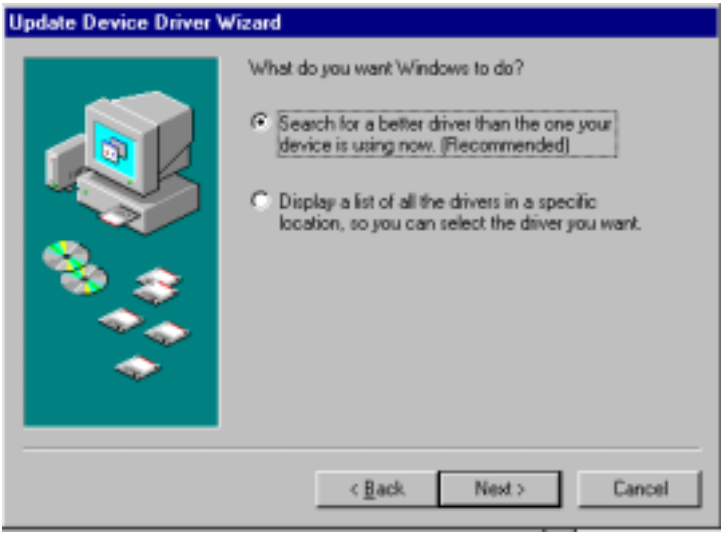
3. Click “Properties,” and select “Driver.” Click “Update Driver …”



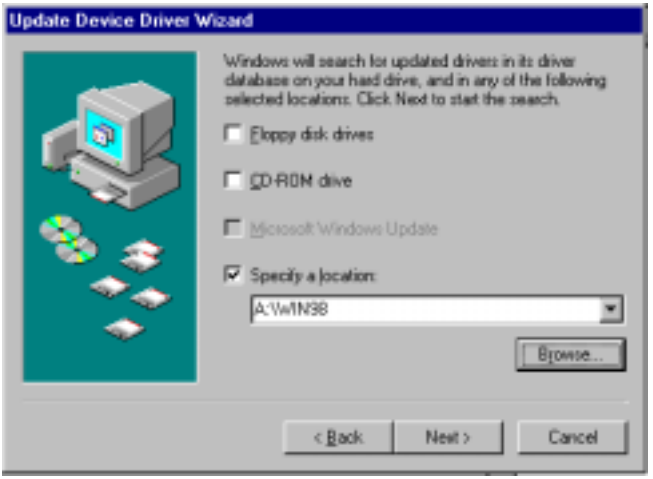
4. Click “NEXT.”


Update Device Driver Wizard
This wizard searches for updated drivers for:
Standard Floppy Disk Controller
A device driver is a software program that makes a hardware device work.
Upgrading to a newer version of a device driver may improve the performance of your hardware device or add functionality.
< Back
Next >
Cancel

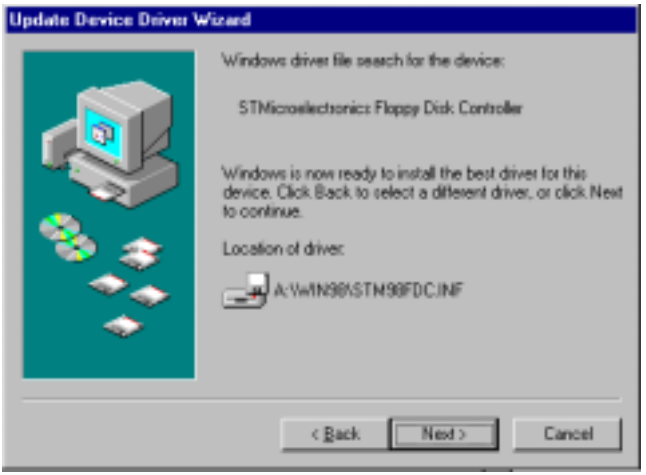
5. Click the “Search for a better driver”.



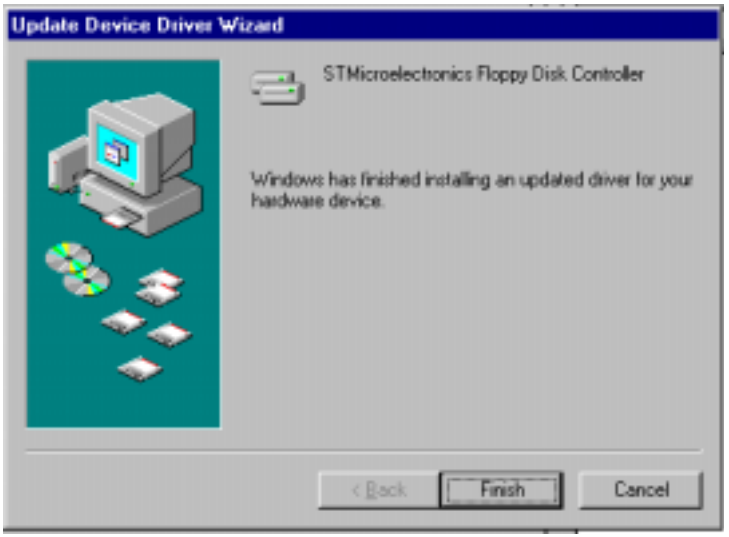
6. Select the "Specify a location...", type "A:\WIN98", then click "NEXT".

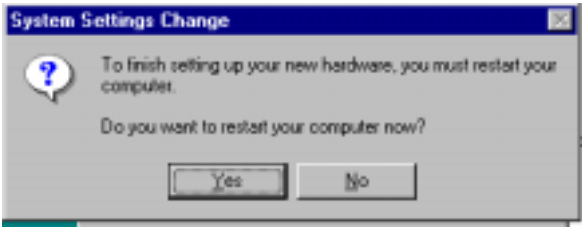


7. Click "NEXT".



8. Click "Finish", then click "Yes" to restart your computer.





APPENDIX A

Pin Assignments

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

- IDE hard drive connector
- Floppy drive connector
- Parallel port connector
- External speaker connector
- Keyboard lock connector
- System reset switch connector
- IR connector
- HDD LED connector
- ATX power button connector
- ATX power standby connector
- COM2 RS-232/422/485 serial port connector
- CRT display connector
- COM2 RS-232 connector
- COM1 RS-232 connector
- Internal keyboard connector
- AT power connector
- Keyboard and mouse connector

IDE hard drive connector (CN1)

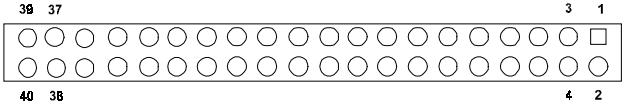


Table A-1: IDE hard drive connector

Pin	Signal	Pin	Signal
1	IDE RESET*	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	SIGNAL GND	20	N/C
21	DRQ*	22	GND
23	IO WRITE*	24	GND
25	IO READ*	26	GND
27	IO CHANNEL READY	28	N/C
29	ACK	30	GND
31	IRQ14 (IDE IRQ)	32	IOCS16*
33	ADDR 1	34	N/C
35	ADDR 0	36	ADDR 2
37	HARD DISK SELECT 0	38	HARD DISK SELECT 1
39	IDE ACTIVE*	40	GND

* low active

Floppy drive connector (CN2)

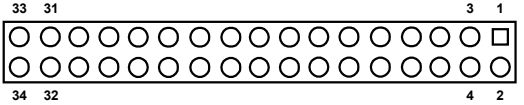


Table A-2: Floppy drive connector

Pin	Signal	Pin	Signal
1	GND	2	DENSITY SELECT*
3	GND	4	N/C
5	GND	6	N/C
7	GND	8	INDEX*
9	GND	10	MOTOR 0*
11	GND	12	DRIVE SELECT 1*
13	GND	14	DRIVE SELECT 0*
15	GND	16	MOTOR 1*
17	GND	18	DIRECTION*
19	GND	20	STEP*
21	GND	22	WRITE DATA*
23	GND	24	WRITE GATE*
25	GND	26	TRACK 0*
27	GND	28	WRITE PROTECT*
29	GND	30	READ DATA*
31	GND	32	HEAD SELECT*
33	GND	34	DISK CHANGE*

* low active

Parallel port connector (CN3)

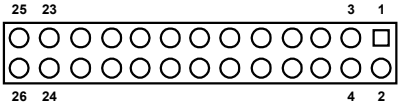


Table A-3: Parallel port connector

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

* low active

CN6- External speaker (pins 1,3,5,7)

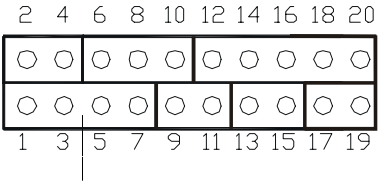


Table A-5a: External speaker connector

Pin	Signal
1	+ 5 V
3	N/C
5	Internal speaker input
7	External speaker signal

CN6- Keyboard lock connector (pins 2,4)

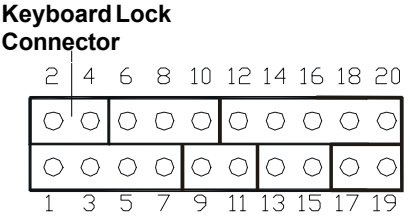


Table A-5b: Keyboard lock connector

Pin	Signal
2	keyboard lock
4	GND

CN6- System reset switch conn (pins 9,11)

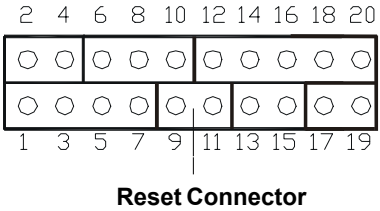


Table A-5c: System reset switch connector

Pin	Signal
9	MR_RESET
11	GND

CN6- IR connector (pins 12,14,16,18,20)

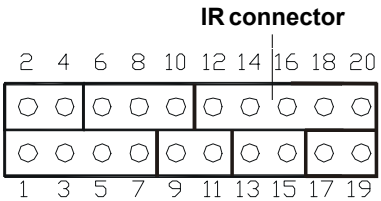


Table A-5d: IR connector

Pin	Signal
12	+5 V
14	N/C
16	IR_RX
18	GND
20	IR_TX

CN6- HDD LED connector (pins 13,15)

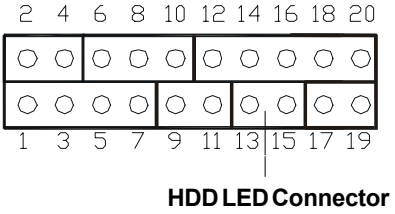


Table A-5e: HDD LED connector

Pin	Signal
13	IDE LED +
15	IDE LED -

CN6- ATX power button (pins 17,19)

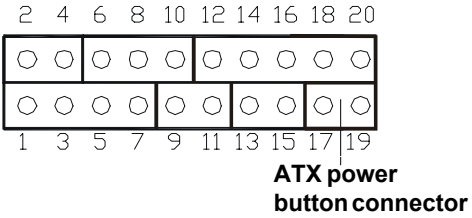


Table A-5f: ATX power button

Pin	Signal
17	Power ON
19	GND

ATX power standby connector (CN7)

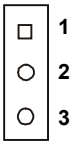


Table A-6: ATX power standby connector

Pin	Signal
1	5 V SB
2	N/C
3	PS_ON

CRT Display Connector (CN9)

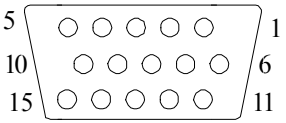


Table A-8: CRT display connector

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

COM2 RS-422/485 connector (CN13)

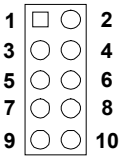


Table A-9: COM2 RS-232/422/485 connector

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

COM2 RS-232 connector (CN14)

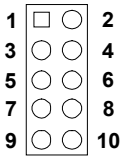


Table A-10: COM2 RS-232 connector

Pin	RS-232 port	Pin	RS-232 port
1	DCD	6	CTS
2	DSR	7	DTR
3	RxD	8	RI
4	RTS	9	GND
5	TxD	10	N/C

COM1 RS-232 connector (CN15)

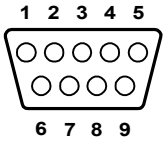


Table A-11: COM1 RS-232 connector

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

Internal keyboard connector (CN16)

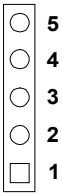


Table A-12: External keyboard connector

Pin	Signal
1	CLK
2	DATA
3	NC
4	GND
5	+ 5 V

AT power connector (CN17)



Table A-13: AT power connector

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

Keyboard and mouse connnector (CN18)

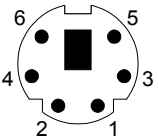


Table A-14: Keyboard and mouse connector

Pin	Signal
1	KB DATA
2	MS DATA
3	GND
4	V_{CC}
5	KB CLOCK
6	MS CLOCK

APPENDIX B

System Assignments

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

B.1 System I/O ports

Table B-1: System I/O ports

Addr. range (Hex)	Device
000-01F	DMA controller
020-021	Interrupt controller 1, master
022-023	Chipset address
040-05F	8254 timer
060-06F	8042 (keyboard controller)
070-07F mask	Real-time clock, non-maskable interrupt (NMI)
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
170- 178	2nd fixed disk for CompactFlash
1F0-1F8	1st fixed disk
200-207	Game I/O
278-27F	Reserved
2F8-2FF	Serial port 2
300-31F	Ethernet**
360-36F	Reserved
378-37F	Parallel printer port 1 (LPT2)
380-38F	SDLC, bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome display and printer adapter (LPT1)

3C0-3CF	Reserved
3D0-3DF	Color/graphics monitor adapter
3F0-3F7	Diskette controller
3F8-3FF	Serial port 1
443	Watchdog timer

** default setting

B.2 DMA channel assignments

Table B-2: DMA channel assignments

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

** Parallel port DMA default setting: DMA 3

Parallel port DMA select: DMA 1.3

B.3 Interrupt assignments

Table B-3: Interrupt assignments

Interrupt#	Interrupt source
NMI	Parity error detected
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 8	Real-time clock
IRQ 9	Reserve
IRQ 10	Available
IRQ 11	Reserved for watchdog timer
IRQ 12	PS/2 mouse
IRQ 13	INT from co-processor
IRQ 14	Preliminary IDE
IRQ 15	Secondary IDE for CompactFlash
IRQ 3	Serial communication port 2
IRQ 4	Serial communication port 1
IRQ 5	Available
IRQ 6	Diskette controller (FDC)
IRQ 7	Parallel port 1 (print port)

USB and Ethernet IRQ is automatically set by the system

B.4 1st MB memory map

Table B-4: 1st MB memory map

Addr. range (Hex)	Device
F000h - FFFFh	System ROM
E000 - EFFF	Unused
CC00 - DFFF	available
C800 - CBFF	Ethernet ROM*
C000h - C7FFh	VGA BIOS
B800h - BFFFh	CGA/EGA/VGA text
B000h - B7FFh	Reserved for graphic mode usage
A000h - AFFFh	EGA/VGA graphics
0000h - 9FFFh	Base memory

* default setting

APPENDIX C

Installing PC/104 Modules

This appendix gives instructions for installing PC/104 modules.

C.1 Installing PC/104 modules

The PCA-6741F PC/104 connectors give you the flexibility to attach PC/104 modules.

Installing these modules on the PCA-6741F is quick and simple. The following steps show how to mount the PC/104 modules:

1. Remove the PCA-6741F from your system, paying particular attention to the safety instructions already mentioned above.
2. Make any jumper or link changes required to the CPU card now. Once the PC/104 module is mounted you may have difficulty in accessing these.
3. Normal PC/104 modules have male connectors and mount directly onto the main card. (Refer to the diagram on the following page.)
4. Mount the PC/104 module onto the CPU card by pressing the module firmly but carefully onto the mounting connectors.
5. Secure the PC/104 module onto the CPU card using the four mounting spacers and screws.

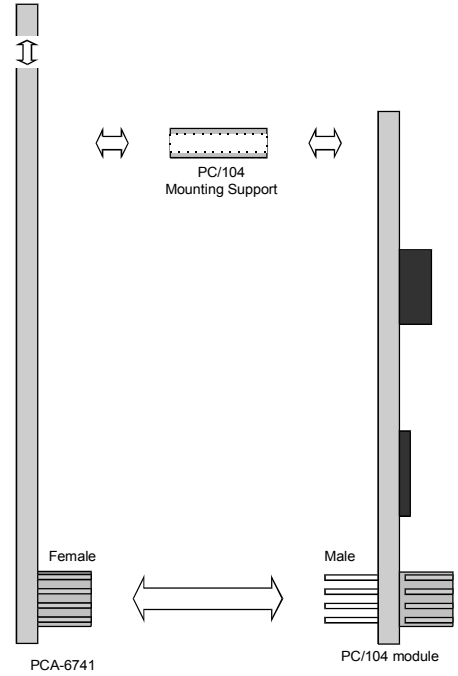


Figure C-1: PC/104 module mounting diagram

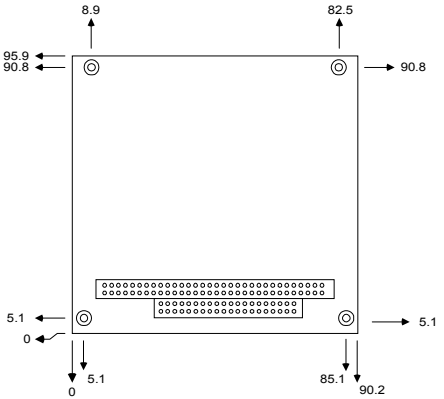


Figure C-2: PC/104 module dimensions (mm) (±0.1)

Table C-1: PC/104 connectors (CN10)

Pin Number	Signal Row A	Row B	Signal Row C	Row D
0	—	—	0 V	0 V
1	IOCHCHK*	0 V	SBHE*	MEMCS16*
2	SD7	RESETDRV	LA23	IOCS16*
3	SD6	+5 V	LA22	IRQ10
4	SD5	IRQ9	LA21	IRQ11
5	SD4	-5 V	LA20	IRQ12
6	SD3	DRQ2	LA19	IRQ15
7	SD2	-12 V	LA18	IRQ14
8	SD1	ENDXFR*	LA17	DACK0*
9	SD0	+12 V	MEMR*	DRQ0
10	IOCHRDY	N/C	MEMW*	DACK5*
11	AEN	SMEMW*	SD8	DRQ5
12	SA19	SMEMR*	SD9	DACK6*
13	SA18	IOW*	SD10	DRQ6
14	SA17	IOR*	SD11	DACK7*
15	SA16	DACK3*	SD12	DRQ7
16	SA15	DRQ3	SD13	+5 V
17	SA14	DACK1*	SD14	MASTER*
18	SA13	DRQ1	SD15	0 V
19	SA12	REFRESH*	KEY	0 V
20	SA11	SYSCLK	—	—
21	SA10	IRQ7	—	—
22	SA9	IRQ6	—	—
23	SA8	IRQ5	—	—
24	SA7	IRQ4	—	—
25	SA6	IRQ3	—	—
26	SA5	DACK2*	—	—
27	SA4	TC	—	—
28	SA3	BALE	—	—
29	SA2	+5 V	—	—
30	SA1	OSC	—	—
31	SA0	0 V	—	—
32	0 V	0 V	—	—

* active low

APPENDIX D

Programming the Watchdog Timer

The PCA-6741 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.

D.1 Programming the watchdog timer

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

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

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

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

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

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

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