



Allen-Bradley

DeviceNet Communication Card

1784-PCD

Installation
Instructions

Rockwell
Automation

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this manual we use notes to make you aware of safety considerations:

ATTENTION



Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss.

Attention statements help you to:

- identify a hazard
- avoid a hazard
- recognize the consequences

IMPORTANT

Identifies information that is critical for successful application and understanding of the product.

Allen-Bradley is a trademark of Rockwell Automation

European Communities (EC) Directive Compliance

If this product has the CE mark it is approved for installation within the European Union and EEA regions. It has been designed and tested to meet the following directives.

EMC Directive

This product is tested to meet the Council Directive 89/336/EC Electromagnetic Compatibility (EMC) by applying the following standards, in whole or in part, documented in a technical construction file:

- EN 50081-2 EMC — Generic Emission Standard, Part 2 — Industrial Environment
- EN 50082-2 EMC — Generic Immunity Standard, Part 2 — Industrial Environment

This product is intended for use in an industrial environment.

Low Voltage Directive

This product is tested to meet Council Directive 73/23/EEC Low Voltage, by applying the safety requirements of EN 61131-2 Programmable Controllers, Part 2 - Equipment Requirements and Tests. For specific information required by EN 61131-2, see the appropriate sections in this publication, as well as the Allen-Bradley publication Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1.

Open style devices must be provided with environmental and safety protection by proper mounting in enclosures designed for specific application conditions. See NEMA Standards publication 250 and IEC publication 529, as applicable, for explanations of the degrees of protection provided by different types of enclosure.

Notes:

This release of the 1784-PCD installation instructions contains new and updated information about Windows Me and 2000. It also contains information about the new PCD Test Utility. You will see change bars, as shown to the left of this paragraph, throughout this manual to help you quickly identify revisions.

Other information was revised extensively. For those chapters that contain all new information, or extensively revised information, you will find a change bar in the margin of the chapters.

In this Chapter or Section:	We:
Preface	made changes as noted by change bars
Chapter 2	added information pertaining to Windows Me and 2000
Chapter 3	re-wrote the chapter to include only Windows 95 16-and 32-bit driver information
Chapter 4	re-wrote the chapter to include Windows 98 and Me driver information
Chapter 5	- re-wrote the chapter to include more information about third-party plug-and-play software - extensively revised Windows NT driver installation information
Chapter 6	added a new chapter covering Windows 2000 driver information
Chapter 9	re-wrote the chapter to include instructions for running the new 1784-PCD Test Utility and diagnostics
Chapter 10	re-wrote the chapter to include more extensive troubleshooting tips for all operating systems

Notes:

About the Manual

Use this manual to install, configure, and troubleshoot the DeviceNet[®] PC card (PCMCIA interface), catalog number 1784-PCD. This interface enables a computer with PCMCIA slots to communicate on a DeviceNet network.

Audience

The information in this manual is intended for users who are:

- familiar with Windows 2000, Windows NT, Windows 98, Windows ME, or Windows 95
- experienced with DeviceNet configuration software and the DeviceNet network

Refer to the following table for the version of RSLinx you will need for your operating system.

Operating System:	Version of RSLinx:
Windows 95/98/Me/NT	2.00.97 or later
Windows 2000	2.2 or later with RSLinx Service Pack 2 installed Note: For RSLinx versions later than 2.2, no Service Pack is required for the 1784-PCD card to work.

Rockwell Automation Support

Rockwell Automation offers support services worldwide, with over 75 sales/support offices, over 500 authorized distributors, and 260 authorized systems integrators located throughout the United States alone, plus Rockwell Automation representatives in every major country around the world. Contact your local Rockwell Automation representative for:

- sales and order support
- product technical training
- warranty support
- support service agreements

Obtain Pre-Sales Product Support

If you need to contact Rockwell Automation for pre-sales product support, try one of the following methods:

- Call your local Rockwell Automation representative
- Network pre-sales support line, 1.440.646.3638 (3NET)
- Pre-Sales e-mail, RACle3net@ra.rockwell.com

Obtain Technical Product Support

If you need to contact Rockwell Automation for technical assistance, try one of the following methods:

Type of technical support:	Access at:
Personalized Service	Call your local Rockwell Automation representative
Post-sales Technical Support	1.440.646.5800
Email your questions to	racleasktheexpert@ra.rockwell.com
Internet site	www.ab.com , then select Product Support or www.ab.com/support/products/pccards.html
Note: You can access Rockwell Automation Knowledge documents from this internet address.	

Abbreviations

Throughout this manual, we abbreviate some terms. Use the following table to become familiar with our terminology.

This abbreviation:	Means:
PCMCIA	Personal Computer Memory Card International Association
IRQ	Interrupt Request
PC	Personal Computer

Conventions

You will see the following conventions used in this document:

Convention:	Shows:
bold	text you type, items you select from a menu, or anything you click
this symbol: ⇒	the mouse movement you make to access a sub-menu selection (for example, Start ⇒ Settings ⇒ Control Panel)

IMPORTANT

The driver and firmware versions that appear in the screen captures in this manual may differ from the versions you are using.

In this document, we refer to the DeviceNet PC card as the 1784-PCD card or the PCD card.

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About the PCD Card

What's in This Chapter?

Read this Chapter to familiarize yourself with PCMCIA technology and the PCD card.

For information on:	See page:
What is PCMCIA?	1-1
What is a PC Card?	1-1
What is the PCD card?	1-4

What is PCMCIA?

The Personal Computer Memory Card International Association (PCMCIA) developed a standard for credit-card size personal computer (PC) cards. The PCMCIA standard defines an architecture and communication method for these PC cards.

PC cards developed under Release 1.0 of the PCMCIA standard are used for data storage. PC cards developed under Release 2.0 of the PCMCIA standard can be used for both I/O and data storage.

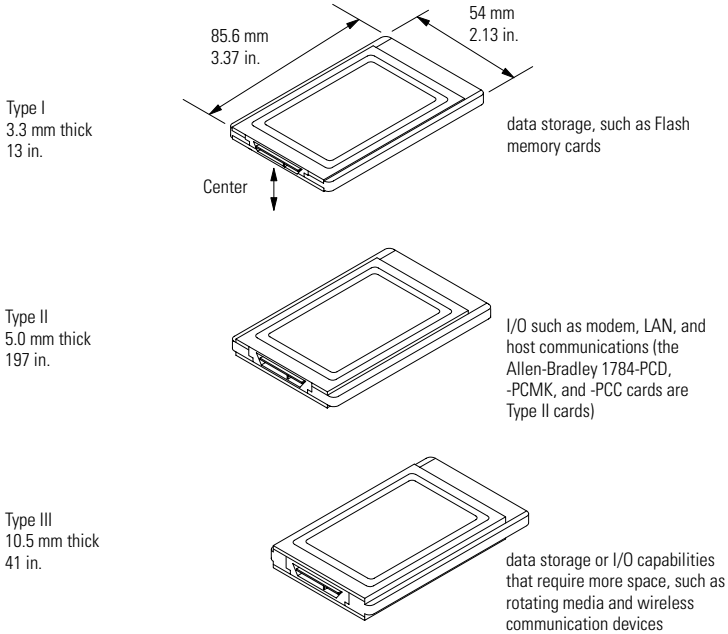
What is a PC Card?

Since personal computers have become smaller, a need for smaller storage media developed. The PC card is a small form-factor adapter that can add memory, storage, and I/O capabilities to these smaller computers.

Architecture

All PC cards measure the same length and width (85.6 mm x 54 mm or 3.37 in. by 2.13 in.), but differ in thickness at the center. The thickness at the connector end along the rails is the same for all types of PC cards.

Currently there are three types of PC cards:

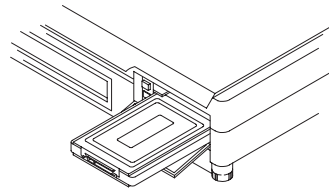


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IMPORTANT

If the PCMCIA slot in your computer is thick enough to accommodate a Type III card, then it can also accommodate a Type I or II card.

All three types of PC cards use the same 68-pin connector. The pins are in two parallel rows of 34 pins. When inserted into the PCMCIA slot on your computer, the connector mates with a single molded socket.



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Communication

The socket provides the physical connection to the PC card. The PC card then is connected to the I/O bus in your computer through a hardware interface called the adapter.

Software interfaces defined by PCMCIA enable communications between an installed PC card and the computer. We call these software interfaces Card and Socket Services. Windows 95/98, Me, NT and 2000 have built-in card and Socket Services capabilities. Once you establish communication, the PC card identifies itself through its Card Information Structure.

Socket Services identifies how many sockets are present in your computer and detects if a PC card is inserted into one of these sockets. The PCMCIA adapter handles communication between the PC card and the sockets in your computer. Socket Services controls this adapter.

Card Services provides access to system resources (such as memory and interrupt requests) and automatically releases the system resources when you remove the PC card from a socket. Card Services also provides an interface to higher-level software if you need to load any hardware drivers.

After the PC card establishes communication with the computer, the card Information Structure provides configuration information about the PC card, such as available storage, device type, and data format to the computer.

What is the PCD card?

The PCD card is a PCMCIA Type II form-factor card that interfaces between your computer and a DeviceNet network.

IMPORTANT

Your computer must be PCMCIA 2.1 compliant to support the 1784-PCD card. To verify that your computer is PCMCIA 2.1 compliant, see your computer's user manual.

Pre-installation Procedures

What's in This Chapter?

The following table describes what this Chapter contains and where to find specific information.

For information on:	See page:
Verify Your Package Contents	2-1
System Requirements	2-2
Remove Previously Installed Drivers	2-2
Determine Which Driver to Install	2-3
Locate the 1784-PCD Driver	2-3

Verify Your Package Contents

Be certain that you have these items before you discard any packing material. If an item is missing or incorrect, contact your local sales representative.

- 1784-PCD Communication card
- three 1784-PCD Setup disks. The one you use will depend upon your operating system. The disks are labelled:
 - 1784-PCD Installation Windows 95/98/2000/Me 32-bit Setup Disk
 - 1784-PCD Installation Windows NT 4.0 Setup Disk
 - 1784-PCD Installation Windows 95 16-bit Setup Disk
- 1784-PCD1 cable
- clear, plastic PC card carrying case
- installation manual, publication 1784-IN029C-EN-P

System Requirements

operating system	Microsoft® Windows 95/98/Me, 2000, or NT 4.0
application software	RSNetWorx for DeviceNet software Windows 95/98/Me/NT: RSLinx 2.00.97 or later Windows 2000: RSLinx 2.2 or later with RSLinx Service Pack 2 installed Note: For RSLinx versions later than 2.2, no Service Pack is required for the 1784-PCD card to work. DeviceNet Manager software version 3.005 or later (16-bit driver only)
memory for computer resources	at least 8 MB
memory for card resources	4KB
IRQ	1 available IRQ
hard disk space	300K
diskette drive	one 3.5" diskette drive
PCMCIA slot	one Type II slot

Remove Previously Installed Drivers

Always remove PCD drivers you may have installed previously before you install new ones. Refer to the procedures for uninstalling the driver in the chapter specific to your operating system.

Determine Which Driver to Install

Before you install the PCD card, you will need to determine which driver to install. Refer to the table below to help you decide.

If you are using this operating system:	And this software:	Do this:
Windows 95 (16-bit)	• DeviceNet Manager • third-party WinDNet16 • DeviceNet Monitor	Install the Windows 95 16-bit driver. Refer to Chapter 3 for more information.
Windows 95 (32-bit)	• RSNetWorx for DeviceNet • RSLinx (version 2.00.97 or later)	Install the Windows 95 32-bit driver. Refer to Chapter 3 for more information.
Windows 98/Me	• RSNetworx for DeviceNet • RSLinx (version 2.00.97 or later)	Install the Windows 95/98/Me 32-bit driver. Refer to Chapter 4 for more information.
Windows NT	• RSNetWorx for DeviceNet • RSLinx (version 2.00.97 or later)	Install the Windows NT driver. Refer to Chapter 5 for more information.
Windows 2000	• RSNetWorx for DeviceNet • RSLinx (version 2.2 or later, Service Pack 2 installed) Note: For RSLinx versions later than 2.2, no Service Pack is required for the 1784-PCD card to work.	Install the Windows 2000 driver. Refer to Chapter 6 for more information.

Locate the 1784-PCD Driver

There are three ways to obtain the 1784-PCD driver. The driver is located:

- on one of the following disks shipped with the card:
 - 1784-PCD Installation Windows 95/98/2000/Me 32-bit Setup Disk
 - 1784-PCD Installation Windows NT 4.0 Setup Disk
 - the 1784-PCD Installation Windows 95 16-bit Setup Disk
- on the RSLinx product CD, located in the PnPDrivers folder
- or, for the latest versions, visit www.ab.com, then select Product Support or www.ab.com/support/products/pccards.html

Notes:

Install and Use the 16- and 32-bit Drivers for Windows 95

What's in This Chapter?

This Chapter describes installation procedures for the 16- or 32-bit Windows 95 drivers. This Chapter describes how to:

For information on:	See page:
Guidelines for Using the Driver	3-2
Install the Driver	3-4
Stop the PCD Card	3-7
Remove the Driver	3-8

The instructions in this Chapter assume that you:

- have already determined which operating system you are using, and which driver you need to install
- are using Windows 95

TIP

You can have only one PCD card inserted into your computer at one time in Windows 95. If you insert more than one card, Windows 95 recognizes only the first card.



TIP



Depending on the version of Windows 95 you are using, your screens may look slightly different from the ones shown in this Chapter.

TIP



If you plan to use DeviceNet Manager software, DeviceNet Monitor software, or other WinDNet16 software, you must install the Windows 95 16-bit driver.

If you plan to use RSNetWorx for DeviceNet or RSLinx, you must install the Windows 95 32-bit driver.

IMPORTANT

If you have a previously installed PCD driver on your PC, you must remove it from your computer before installing the current driver. Refer to Remove the Driver on page 3-8.

Guidelines for Using the Driver

Follow these guidelines for using the driver:

- Do not simultaneously load 16- and 32-bit drivers

IMPORTANT

Although you can alternate between using the 16-bit and the 32-bit driver in your application, do not load both the 16-bit and 32-bit drivers simultaneously. Windows 95 operating systems allow only one driver per card type. You must remove one driver before you install the other.

- Do not use the Update Driver option in the Windows 95 Device Manager:

Instead, remove any existing drivers, then load the new drivers as described in this Chapter. For information on how to remove the drivers, refer to page 3-8.

- When changing the series of the PCD card in Windows 95:

If you change the series of the PCD card, when the PC recognizes the new PCD card for the first time, Windows reports that it has found new hardware and may prompt you to insert the appropriate setup disk. If prompted, insert the setup disk with the driver for your application. Be certain to install the same type of driver (16- or 32-bit) for both cards. You will need to reboot your PC after you install the card.

TIP

These drivers will work with the series A, B, and C PCD cards. The series A, B, and C PCD cards use the same setup disks.



Install the Driver

1. Some earlier versions of the driver do not appear in the Add/Remove Programs utility on the Windows Control Panel and can only be removed by running the pcdupdt.exe program. To verify that an earlier version of the driver is not installed, run the pcdupdt.exe program from the root of the 1784-PCD Installation Windows 95/98/Me 32-bit Setup Disk.
 - a. Place the 1784-PCD Installation Windows 95/98/2000/Me 32-bit Setup Disk into your computer's floppy disk drive.
 - b. Browse to **x:\pcdupdt.exe** where x: is your floppy disk drive letter.
 - c. Double-click on the pcdupdt.exe file to run it.
2. Insert one of the following disks into your floppy disk drive:
 - the disk labelled 1784-PCD Installation Windows 95/98/Me 32-bit Setup Disk
 - the disk labelled 1784-PCD Installation Windows 95 16-bit Setup Disk
3. Insert the PCD card into your system as described in Chapter 7.

After you insert the card, the system will detect it and begin to build the driver information needed to run it. To do this, the system must locate the driver for the card, so it prompts you to specify where to find the driver.

4. Click **Next**. You see the following dialog box:

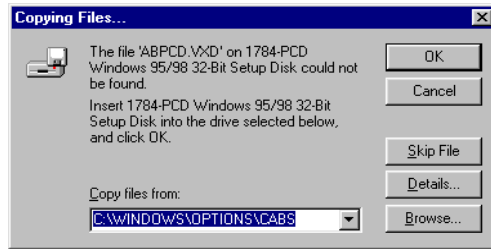


5. Click **Next**. You see a dialog box similar to this one:

**TIP**

You may see a message indicating that no driver was found. If you do get this message, type the path where the driver is located (on the disk, or on your hard drive, if you downloaded it). If Windows is still unable to find the driver, reboot your PC.

6. Click **Finish**. The system begins to load the driver, then prompts you with the following dialog box:



TIP



If you see this dialog box, specify the drive letter for your disk drive (usually a:) in the Copy files from... pulldown (see the screen capture shown above). Press Enter or click OK.

You may be prompted to restart your computer for the driver to take effect.

7. For the 32-bit driver, run the PCD Test Utility to verify the installation. Refer to Chapter 9 of this manual.
8. For the 16-bit driver, follow these instructions to verify the installation:
- Start DeviceNet Manager Software.
 - Select **Utilities** ⇒ **Set Up Online Communications**.
 - Select **PCD Interface version 2.2 or Later**.
 - Click **Ok**.
 - Click **Test Card**.
 - Click **Ok**.

If:	Then:
you do not see the message: All Tests Passed	refer to Chapter 10. If you are still having problems, contact Rockwell Automation Technical Support.
your computer is not connected to a DeviceNet network	you see the following message on the bottom of the DeviceNet Manager window: 1784-PCD is not connected to a network or there is no network power

Stop the PCD Card

Before you remove the PCD card from its socket, you should stop the card, which also stops the driver. There are two methods for stopping the card.

Method 1



1. Right-click the **PC card icon** in the Windows taskbar.

2. Select **Adjust PC Card Properties**.

3. On the list of PC cards that appears, click on the 1784-PCD card you want to stop.
4. Click **Stop**.
5. When you see the message that tells you that you may safely remove this device, click **OK**.

Method 2



1. Left-click the **PC card icon** in the Windows taskbar.

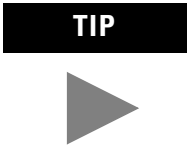
2. On the list of PC cards that appears, click on the 1784-PCD card you want to stop.

3. When you see the message that tells you that you may safely remove this device, click **OK**.

Remove the Driver

You can use the uninstaller provided by Windows 95 to remove the driver from your system.

1. Stop the PCD card as directed above.
2. Click **Start** ⇒ **Settings** ⇒ **Control Panel**.
3. Double-click the **Add/Remove Programs icon**.
4. Select **Allen-Bradley 1784-PCD**.
5. Click **Add/Remove**. Click **Next**.
6. Before files are deleted, you are prompted to confirm that you want to remove the PCD card.



TIP

As an alternative, you can remove the driver by running the pcdupdt.exe program from the root of the 1784-PCD Installation Windows 95/98/Me 32-bit Setup Disk.

- a. Place the 1784-PCD Installation Windows 95/98/2000/Me 32-bit Setup Disk into your computer's floppy disk drive.
- b. Browse to **x:\pcdupdt.exe** where x: is your floppy disk drive letter.
- c. Double-click on the pcdupdt.exe file to run it.

Install and Use the 32-bit Driver for Windows 98/Me

What's in This Chapter?

This Chapter describes installation procedures for the 32-bit Windows 95/98/Me driver. This Chapter describes how to:

For information on:	See page:
Guidelines for Using the Driver	4-2
Install the Driver in Windows 98	4-3
Install the Driver in Windows Me	4-7
Stop the PCD Card	4-9
Remove the Driver	4-10

TIP

16-bit drivers may work on some Windows 98/Me computers. However, Rockwell Automation does not support this configuration.

TIP

You can have only one PCD card inserted into your computer at one time in Windows 98/Me. If you insert more than one card, Windows 98/Me recognizes only the first card.

The instructions in this Chapter assume that you:

- have already determined which operating system you are using, and which driver you need to install
- are using Windows 98 or Me
- are using RSNetWorx or RSLinx software. RSLinx software must be at version 2.00.97.30 or later.

IMPORTANT

Always remove PCD drivers you may have installed previously before you install new ones. Refer to Remove the Driver on page 4-10.

Guidelines for Using the Driver

Follow these guidelines for using the driver:

- Do not use the Update Driver option in the Windows 95/98/Me Device Manager:

Instead, remove any existing drivers, then load the new drivers as described in this Chapter. For information on how to remove the drivers, refer to page 4-10.

- When changing the series of the PCD card in Windows 98/Me:

If you replace the series A or B PCD card with a series C PCD card or vice versa, the first time the PC recognizes the new PCD card, Windows reports that it has found new hardware and may prompt you to insert the appropriate setup disk. If prompted, insert the setup disk with the driver for your application. You will need to reboot your PC after you install the card.

TIP

The series A, B, and C PCD cards use the same setup disks.



Install the Driver in Windows 98

1. Insert the 1784-PCD Installation Windows 95/98/2000/Me 32-bit Setup Disk into your floppy disk drive.
 - a. Some earlier versions of the driver do not appear in the Add/Remove Programs utility on the Windows Control Panel and can only be removed by running the pcdupdt.exe program. To verify that an earlier version of the driver is not installed, run the pcdupdt.exe program from the root of the 1784-PCD Installation Windows 95/98/2000/Me 32-bit Setup Disk.
 - b. Browse to **x:\pcdupdt.exe** where x: is your floppy disk drive letter.
 - c. Double-click on the pcdupdt.exe file to run it.
2. Insert the PCD card into your system as described in Chapter 7. Windows 98 displays this screen.



3. Click **Next**.

4. You see this screen:



5. Click **Next**. You see this screen:



6. Select one of the following:

- **Floppy disk drives** if you are going to use the 1784-PCD Installation Windows 95/98/2000/Me 32-bit Setup Disk that ships with the 1784-PCD card
- **CD-ROM drive** if you are going to get the file from the RSLinx CD-ROM

- **Specify a location** if you downloaded the driver file from www.ab.com/support.

If you select:	Then:
Floppy disk drives	insert the 1784-PCD Installation Windows 95/98/2000/Me 32-bit Setup Disk into the drive and click Next . Windows 98/Me will search for the appropriate driver.
CD-ROM drives	insert the RSLinx CD into the drive and click Next . Windows 98/Me will search for the appropriate driver.
Specify a location	use this selection if you have downloaded the driver from www.ab.com/support . You will be prompted for the location path of the driver.

7. You see this screen:



TIP

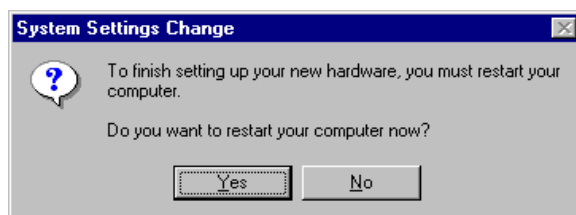


You may see a message indicating that no driver was found. If you do get this message, type the path where the driver is located (on the disk, or on your hard drive, if you downloaded it). If Windows is still unable to find the driver, reboot your PC.

8. Click **Next**. You see this screen:



9. Click **Finish**. You see this screen:



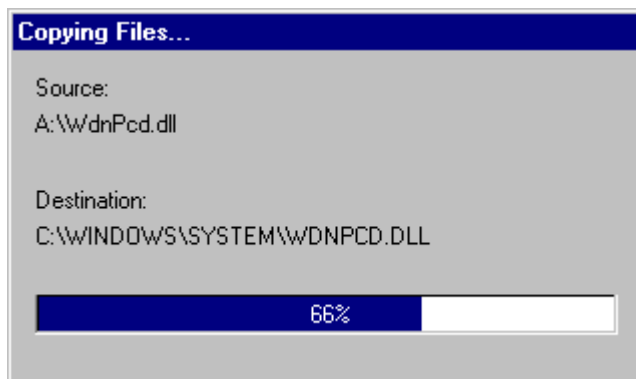
10. Click **Yes** to reboot your computer.
11. Run the PCD Test Utility to verify the installation. Refer to Chapter 9 of this manual.

Install the Driver in Windows Me

1. Insert the 1784-PCD Installation Windows 95/98/2000/Me 32-bit Setup Disk into your floppy disk drive.
 - a. Some earlier versions of the driver do not appear in the Add/Remove Programs utility on the Windows Control Panel and can only be removed by running the pcdupdt.exe program. To verify that an earlier version of the driver is not installed, run the pcdupdt.exe program from the root of the 1784-PCD Installation Windows 95/98/2000/Me 32-bit Setup Disk.
 - b. Browse to **x:\pcdupdt.exe** where x: is your floppy disk drive letter.
 - c. Double-click on the pcdupdt.exe file to run it.
2. Insert the PCD card into your system as described in Chapter 7. Windows Me displays this screen:



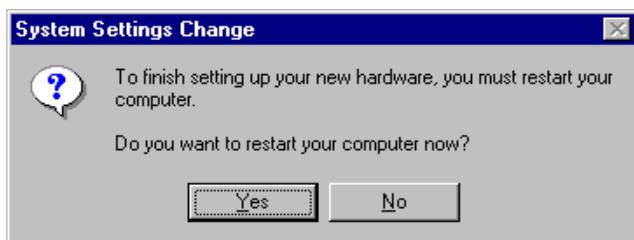
3. Click **Next**. You see this screen:



4. When the files finish copying, you see this screen:



5. Click **Finish**. You see this screen:



6. Click **Yes** to reboot your computer.
7. Run the PCD Test Utility to verify the installation. Refer to Chapter 9 of this manual.

Stop the PCD Card

Before you remove the PCD card from its socket, you should stop the card, which also stops the driver.

Method 1

1. Right-click the **PC card icon** in the Windows taskbar.
2. Select **Adjust PC Card Properties**.
3. On the list of PC cards that appears, click on the 1784-PCD card you want to stop.
4. Click **Stop**.
5. When you see the message that tells you that you may safely remove this device, click **OK**.



Method 2



1. Left-click the **PC card icon** in the Windows taskbar.

2. On the list of PC cards that appears, click on the 1784-PCD card you want to stop.

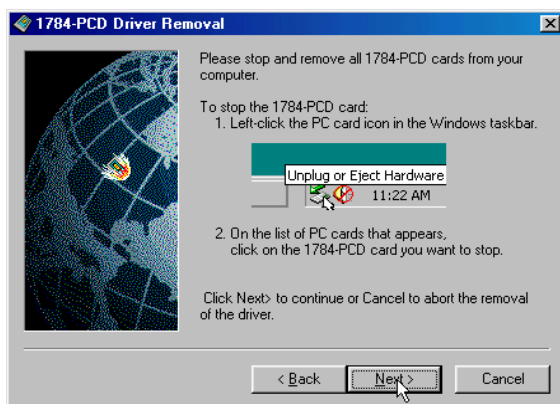
3. When you see the message that tells you that you may safely remove this device, click **OK**.

Remove the Driver

You can use the uninstaller provided by Windows 98/Me to remove the driver from your system.

1. Stop the PCD card as directed above.
2. Click **Start** ⇒ **Settings** ⇒ **Control Panel**.
3. Double-click the **Add/Remove Programs icon**.
4. Select **Allen-Bradley 1784-PCD**.
5. Click **Next**.

6. Click **Add/Remove**. If you have not already stopped the card, you see a screen similar to the one below.



7. Before files are deleted, you are prompted to confirm that you want to remove the PCD card.

TIP

As an alternative, you can run the pcdupdt.exe file from the root of the 32-bit driver disk to remove the driver.

- Place the 1784-PCD Installation Windows 95/98/2000/Me 32-bit Setup Disk into your computer's floppy disk drive.
- Browse to **x:\pcdupdt.exe** where x: is your floppy disk drive letter.
- Double-click on the pcdupdt.exe file to run it.

Notes:

Install and Use the Driver for Windows NT

What's in This Chapter?

This Chapter describes how to:

To:	See page:
Use Third-party Windows NT Plug-and-play Software	5-2
Install the Driver	5-4
Test the PCD Card	5-7
Remove the Driver	5-8

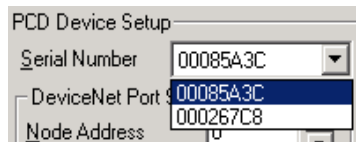
The instructions in this Chapter assume that you:

- have already determined which operating system you are using, and which driver you need to install
- are using Windows NT
- are using RSNetworkx for DeviceNet software with RSLinx 2.00.97.30 or later

TIP



With certain third-party plug-and-play software packages, two PCD cards can be used at the same time. To determine if your system will support two PCD cards, install two cards and configure the PCD driver in RSLinx (select **Communications** ⇒ **Configure Drivers**). If your system supports two cards, you will see two serial numbers as shown in this excerpt from the RSLinx PCD Driver Configuration Screen.



Native NT (with no third-party plug-and-play software installed) supports one PCD card at a time.

Do You Have Any of the Following Third-Party Plug-and-Play PC Card Controller Software?

If:

Then:

you do have third-party plug-and-play card controller software



a PC card icon (circled in this illustration) will appear on the Windows task bar

you do not have third-party plug-and-play card controller software

go to page 5-4 and continue with the driver installation.

TIP



To find the version of your third-party plug-and-play software, you can usually do the following:

1. Double-click the **PC card icon**.
2. When a dialog box appears, click **Help** ⇒ **About**.

TIP

Whenever you upgrade third-party plug-and-play software, you must also upgrade all associated power management and docking service software, if loaded, to the same version to which you have upgraded the plug-and-play software.

SystemSoft's CardWizard

If you have SystemSoft's CardWizard plug-and-play software, you must upgrade it to version 4.0 or later. In addition, you will be able to use the A-B 1784-PCD card Control Panel to assign memory and interrupt resources for the card.

IMPORTANT

You **cannot** use a series A 1784-PCD card with SystemSoft's CardWizard. Attempting to use the series A card may cause your computer to lock up. If your computer locks up, remove the series A card from your computer and reboot it.

IMPORTANT

You cannot configure and use 2 PCD cards at the same time with SystemSoft's CardWizard.

For more information on obtaining the CardWizard upgrade for use with the 1784-PCD card, contact SystemSoft:

- Internet: www.systemsoft.com
- Phone: 1.800.796.0088 or 508.651.0088 (ask for sales)

Phoenix/Softex's Card Executive

If you have Phoenix/Softex's Card Executive plug-and-play software, you must upgrade to version 2.21 or later.

Do not use the Allen-Bradley 1784-PCD card icon in the Control Panel to assign memory and interrupt resources. The Phoenix/Softex PC card controller software assigns these resources for you automatically.

For more information, contact Phoenix/Softex:

- Internet: www.softexinc.com
- Phone: 512.452.8836
- Fax: 512.795.8702

Unicore/Touchstone Software's CardWare

If you have Unicore/Touchstone Software's CardWare, you must upgrade to version 2.11 or later.

Do not use the Allen-Bradley 1784-PCD card icon in the Control Panel to assign memory and interrupt resources. The Unicore/Touchstone Software PC card controller assigns these resources for you automatically.

For more information, contact Touchstone or Unicore:

- Touchstone: Internet: www.touchstonesoftware.com
- Unicore: Internet: www.unicore.com/products

Install the Driver

To install the driver, do the following:

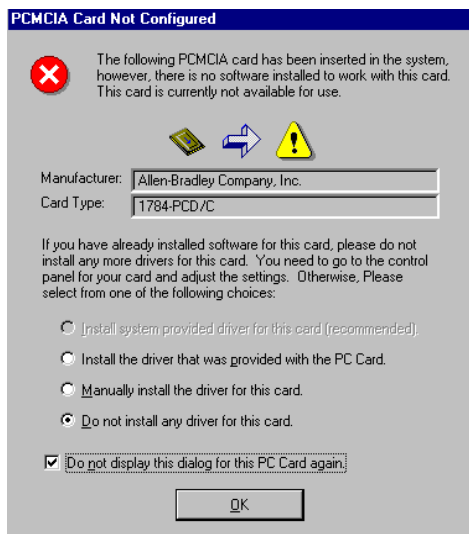
1. To verify that an earlier version of the driver is not installed, click **Start** ⇒ **Settings** ⇒ **Control Panel**. Double-click the **Add/Remove Programs** icon. Click the **Install/Uninstall** tab. Scroll down the list to ensure the driver is not listed.

If:	Then:
the driver is installed	remove it. Refer to Remove the Driver on page 5-8.
the driver is not installed	click OK or Cancel .

2. Shut down the PC.
3. Insert the PCD card into your computer as described in Chapter 7.
4. Start Windows NT.

If:	Then:
you have third-party plug-and-play card controller software	refer to the bulleted list following this table
you do not have third-party plug-and-play card controller software	go to step 5 on page 5-6

- If you have Phoenix/Softex's Card Executive on your system, you may see the following message:



If you get this message, do the following:

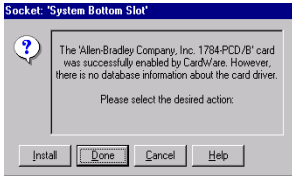
- Choose the **Do not install any driver for this card** radio button.
- Check the **Do not display this dialog for the PC card again** checkbox.
- Press **Enter** or click **Ok**. You still need to install the driver. Go on to step 5.
 - If you have SystemSoft's CardWizard, you may see a screen that tells you the PCMCIA card is not configured. Click **Exit** and continue with step 5.
 - If you have Unicare/Touchstone Software's CardWare, you may see a screen similar to one of the following screens at any time during the installation.

TIP

Different versions of Unicare/Touchstone Software's CardWare show the screens at different times.



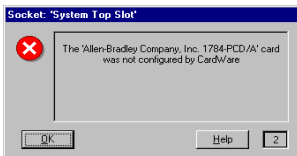
If you see this screen:



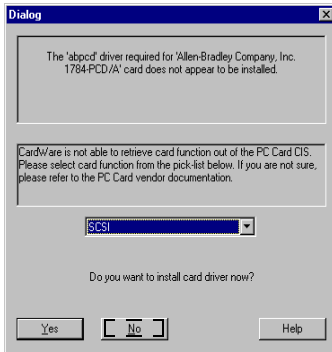
Do this:

Click **Done**. If you do not, you will see this screen every time you reboot your pc.

Click **OK**.



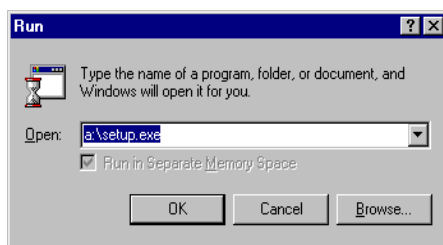
Click **No**.



5. Insert the 1784-PCD Installation Windows NT 4.0 Setup Disk into the floppy disk drive.
6. Access the Run window by selecting **Start ⇒ Run**.
7. In the Run dialog box, type the path

a:\setup.exe

Substitute for a:\ the drive letter of your floppy disk, (for example, b:\).



8. Click **OK**.

The InstallShield Wizard starts up. You see a progress bar advance as the installation progresses.

9. Click **Next**.

10. At the Setup Complete screen, click the **Yes I want to restart my computer now** radio button.

11. Click **Finish**.

IMPORTANT

If CardWare displays a message saying the driver could not be started, you may have a resource conflict. Refer to Chapter 10 for troubleshooting information.

Test the PCD Card

To test the PCD card, refer to Chapter 9 of this manual.

Remove the Driver

You can use the uninstaller provided by Windows NT to remove the driver from your system.

1. Click **Start** ⇒ **Settings** ⇒ **Control Panel**.
2. Double-click the **Add/Remove Programs** icon.
3. Close the Control Panel. Doing this allows you to completely uninstall the driver without rebooting your computer.
4. Select **Allen-Bradley 1784-PCD Driver** from the Add/Remove Programs list box.
5. Click **Add/Remove**. Before files are deleted, you are prompted to confirm that you want to remove the PCD card.

Install and Use the Driver for Windows 2000

What's in This Chapter?

This Chapter describes how to:

To:	See page:
Install the Driver	6-2
Update the 1784-PCD Plug and Play Driver	6-7
Stop and Eject the 1784-PCD Card	6-8
Show the Card Unplug/Eject Icon on the Taskbar	6-11

In order to follow the instructions in this Chapter, you must:

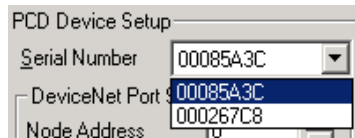
- have Windows 2000 loaded
- have the Windows 2000 driver for the PCD card
- have RSLinx version 2.2 or later with RSLinx Service Pack 2 installed

For RSLinx versions later than 2.2, no Service Pack is required for the 1784-PCD card to work.

TIP



You can have two PCD cards installed to monitor different networks or access different devices. If you install two PCD cards, each card will have a unique serial number, as shown in this excerpt from the RSLinx PCD Driver Configuration Screen.



IMPORTANT

If you are using Windows 2000, we strongly recommend that you verify that your system BIOS supports Windows 2000. If you have problems using the 1784-PCD card with a system running Windows 2000, check that you have the latest system BIOS installed. You can download BIOS updates from most computer manufacturers' websites. Contact your computer manufacturer for details.

Install the Driver

TIP



If you are upgrading your system from Windows NT to Windows 2000, keep the following in mind:

- Check that you have a Windows 2000-compatible BIOS installed. You can download BIOS updates from most computer manufacturers' websites. Contact your computer manufacturer for details.
- be sure to uninstall Windows NT PCD drivers before attempting to install Windows 2000. If you do not, and you see a wdnpcd.dll error message in RSLinx, remove the old driver by running the pcdupdt.exe utility from the root of your driver installation disk. Refer to Update the 1784-PCD Plug and Play Driver on page 6-7 for instructions for removing the old driver. If you still have problems, contact Rockwell Automation Technical Support.

1. Insert the PCD card into your computer as described in Chapter 7.

IMPORTANT

Before you can install the driver for the 1784-PCD card, you must be logged in as an administrator of the machine. Being an administrator gives you permission to install or make changes to the machine software. If you try to install the driver without being an administrator, you will get error messages and the driver will not install.

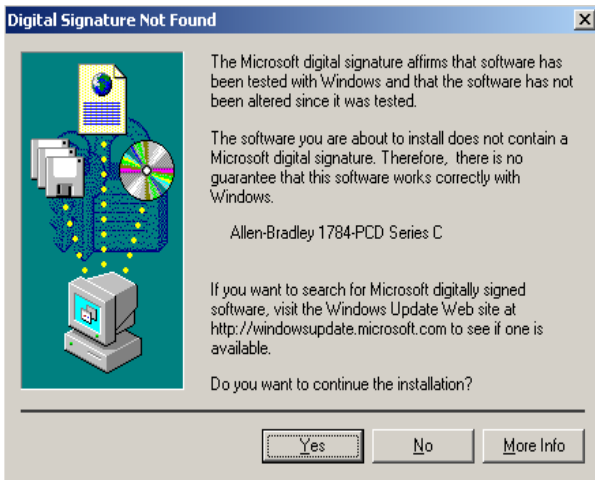
TIP

If you insert multiple PC Cards, you may hear more than one tonal notification per card. Windows 2000 detects devices during the power up process, and adjusts the device resources accordingly. This results in sounding multiple tones. When the system changes settings, for example, when removing a card, the tones will sound again for each change.

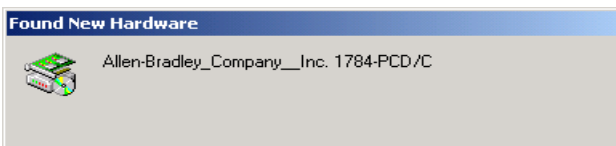
IMPORTANT

If a PCD driver is already installed, remove it by running the `pcdupdt.exe` utility from the root of your driver installation disk. Refer to Update the 1784-PCD Plug and Play Driver on page 6-7.

2. After you insert the PCD card, the system detects the hardware and begins to build the driver information needed to run the hardware. If you see the Digital Signature Not Found screen, click **Yes** to continue the installation.



3. Because the driver has not been loaded, Windows 2000 displays a new hardware dialog box and the following message:

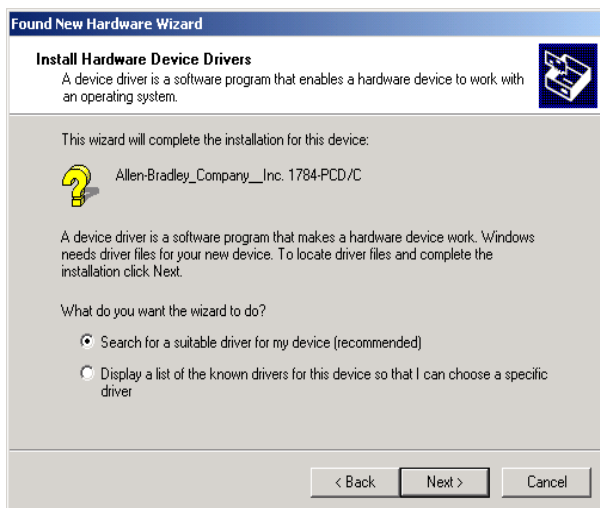


Windows 2000 displays:

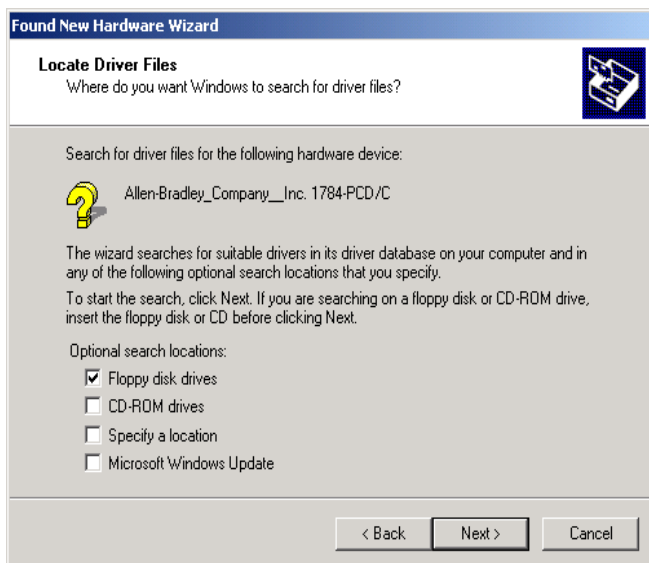


4. Click **Next**.

Windows 2000 displays:



5. Select **Search for a suitable driver** and click **Next**.

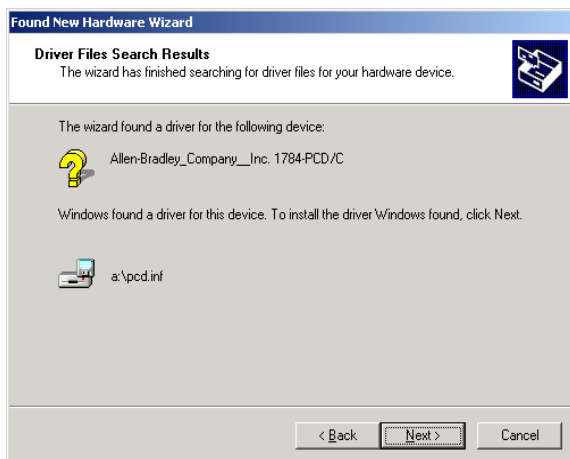


At this point you need to select where the file is located.

6. Select one of the following:
- **Floppy disk drives** if you are going to use the floppy disk that ships with the 1784-PCD card
 - **CD-ROM drives** if you are going to get the file from the RSLinx CD-ROM, Version 2.2 Service Pack 2 or later.
 - **Specify a location** if you downloaded the driver file from www.ab.com/support/products/pccards.html.

If you select:	Then:
Floppy disk drives	insert the 1784-PCD Installation Windows 95/98/2000/Me 32-bit Setup Disk into the drive and click Next . Windows 2000 will search for the appropriate driver.
CD-ROM drives	insert the RSLinx CD into the drive and click Next . Windows 2000 will search for the appropriate driver.
Specify a location	use this selection if you have downloaded the driver from www.ab.com/support/products/pccards.html . You will be prompted for the location path of the driver.

7. Click **Next**.



TIP



You may see a message indicating that no driver was found. If you do get this message, type the path where the driver is located (on the disk, or on your hard drive, if you downloaded it). If Windows is still unable to find the driver, reboot your PC.

8. Once Windows 2000 installs the driver, the following displays.



9. Click **Finish**.

You may be prompted to restart your computer for the driver to take effect.

10. Run the 1784-PCD Test Utility to verify the installation. Refer to Chapter 9 of this manual.

Update the 1784-PCD Plug and Play Driver

Perform these steps to update the driver to a newer version:

1. Run the pcdupdt.exe utility from the root of your driver installation disk.
 - a. Place the 1784-PCD Installation Windows 95/98/2000/Me 32-bit Setup Disk into your computer's floppy disk drive.
 - b. Browse to **x:\pcdupdt.exe** where x: is your floppy disk drive letter.
 - c. Double-click on the pcdupdt.exe file to run it.
2. Refer to Install the Driver on page 6-2 to continue installing the driver.
3. Run the 1784-PCD Test Utility to verify the installation. Refer to Chapter 9 of this manual.

Stop and Eject the 1784-PCD Card

Before you remove the PCD card from its socket, you should stop the card, which also stops the driver.

1. Double-click on the **card unplug/eject icon** on your task bar.

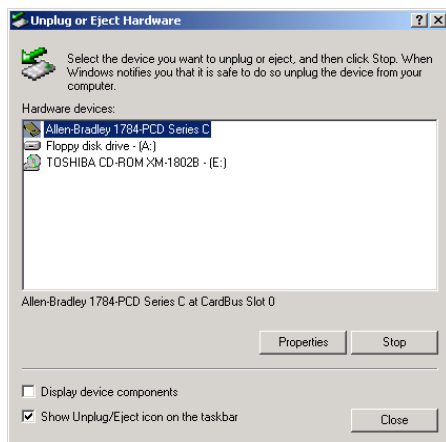


TIP

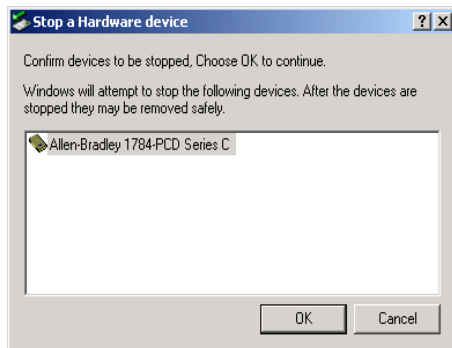
If you don't have the icon on your taskbar, go to page 6-11 to activate the icon.



2. Click on the PCD card you want to stop from the list of cards.



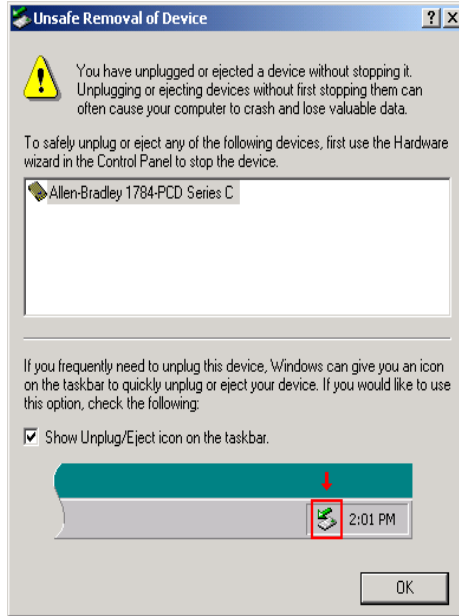
3. Click **Stop**. You see this screen:



4. Click **OK**.
5. When you see the window that states you may safely remove this device, click **OK**.
6. Remove the card.

Unsafe Removal of Card

If you do not stop the communication to your card before you remove a card from your computer, Windows 2000 displays:



To stop the card, refer to Stop and Eject the 1784-PCD Card on page 6-8.

IMPORTANT

Use the Unplug/eject icon on the taskbar to insure you do not damage your card.

Show the Card Unplug/Eject Icon on the Taskbar

If you frequently need to eject the PCD card, be sure to check the **Show Unplug/Eject icon on the taskbar** box in the **Completing the Add/Remove Hardware** wizard page. You can check the box the first time you install the card. The next time you want to unplug or eject the device, you can use the icon on the taskbar instead of the Add/Remove Hardware wizard.

1. Double-click **My Computer** on your desktop.
2. Double-click **Control Panel**.
3. Double-click **Add/Remove Hardware**.
4. Click **Next**.
5. Check **Uninstall/Unplug a device** and click **Next**.
6. Check **Unplug/Eject a device** and click **Next**.
7. Select the **1784-PCD card** and click **Next**.
8. Confirm the device and click **Next**.
9. Check **Show Unplug/Eject icon** on the taskbar.
10. Click **Finish**.
11. Remove your card.

Notes:

Insert and Remove the 1784-PCD Card

What's in This Chapter?

Read this Chapter to understand how to insert and remove the card from your laptop computer.

To:	See page:
Insert the PCD Card	7-1
Remove the PCD Card	7-3

Insert the PCD Card

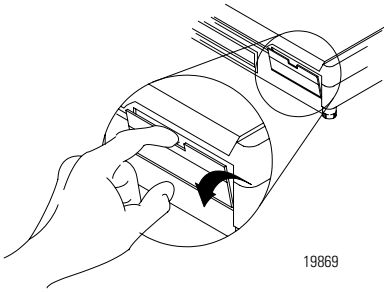
IMPORTANT

If you are using Windows 95/98/Me or 2000, you can insert or remove the 1784-PCD card from a powered computer. Be sure to stop the card first. Refer to the Chapter for each operating system for the procedure for stopping the card.

If you are using Windows NT, shut down the computer before inserting or removing the card.

TIP

The following diagrams show a PCMCIA 2.1 compliant system. If you are using another computer, your installation may be slightly different.

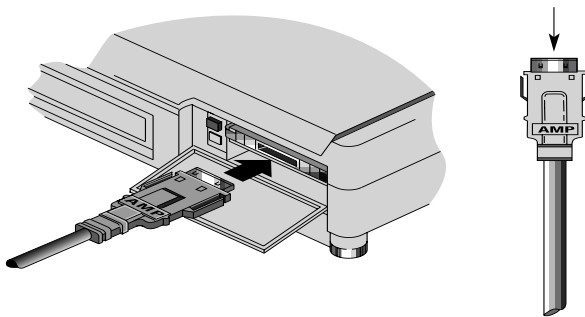


1. Open the door to the PCMCIA slot.
Some slots do not have doors.

IMPORTANT

If you have more than one slot in your computer, you can insert the 1784-PCD card into any empty slot. Check your computer's documentation for the slot numbers. You can use the other available slots for other PC cards such as network or modem cards.

2. Grasp the card by the edges with the logo facing upward and the 68-pin connector facing into the PCMCIA slot.
3. Insert the card into the PCMCIA slot and slide the card in until it is firmly seated in the connector. Some computers have an ejector button that pops out when the card is seated in the connector.



If the computer is configured properly, your sound/speaker is enabled, and you installed the 1784-PCD card successfully, you hear multiple tones when you insert a card or boot the computer.

Multiple Tones

If you insert multiple PC cards, you may hear more than one tonal notification per card. Windows 95/98/Me, and 2000 detect devices during the power-up process, and adjust the device resources accordingly. This results in sounding multiple tones. When the system changes settings, for example, when a card is removed, the tones will sound again for each change.

IMPORTANT

Do not remove the card under power on a Windows NT system.

Remove the PCD Card

IMPORTANT

Before removing the PCD card, you must first stop communication to it, which also stops the card. Refer to the appropriate Chapter for your operating system for procedures for stopping the card.

On most computers, you press the release button and remove the card from the slot. If this is not applicable to your computer, follow the instructions specified in its user manual.

You hear multiple tones for each card that you remove, if your system is configured properly. These tones indicate the card is now disabled.

IMPORTANT

You should stop any software communicating with the card before removing the PCD card. If you do not do this, the stray processes may affect the system's performance, potentially halting the system.

Notes:

Connect the Card to the DeviceNet Network

This Chapter describes how to connect the PCD card to a Devicenet network. These instructions assume that you have installed:

- your application software
- the card (Chapter 7)
- the 1784-PCD drivers (Chapters 3 through 6) and restarted Windows

TIP

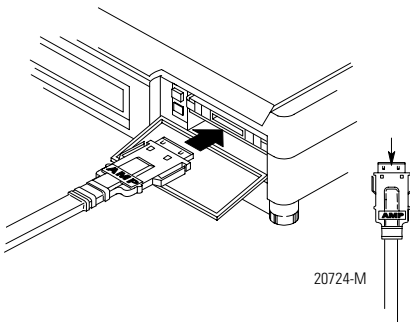
If you need additional information about connecting cables, see the DeviceNet Cable Planning and Installation Manual, publication DN-6.7.2.

The following diagrams show a PCMCIA-2.1-compliant system. If you are using another system, your installation may appear slightly different.

IMPORTANT

Be sure that your PCD driver is configured to the same baud rate as your network. If the baud rates are different, operation of devices on the network could be affected.

To connect the cable to the card:



1. Attach the smaller end of the 1784-PCD1 cable to the 1784-PCD card.

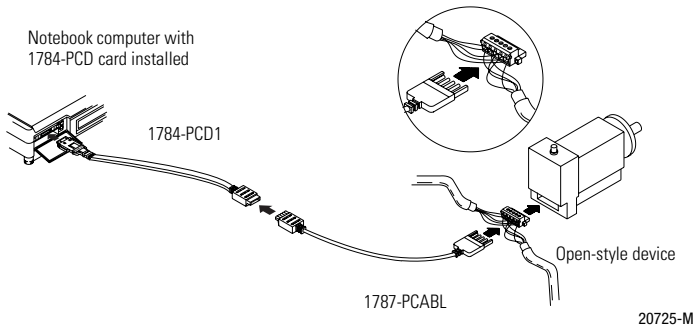
The silver side should face upward as you connect the cable to the 1784-PCD card.

2. Attach the other end of the 1784-PCD1 cable to the DeviceNet network.

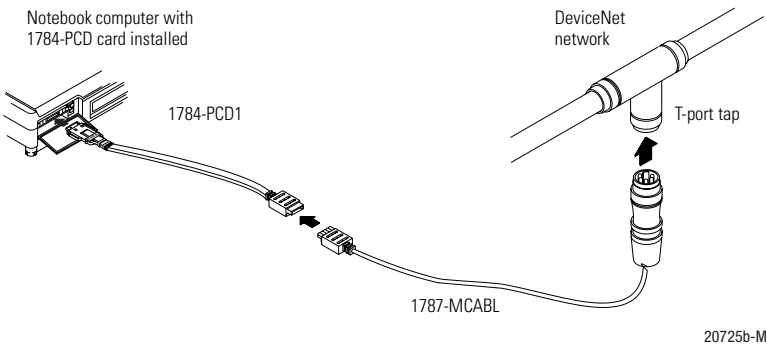
Connect the card to the network in any of the following ways:

Connect to the network using a:	Catalog or part no.:	See this portion of the figure below:
5-pin probe cable	1787-PCABL	1
sealed mini-male cable	1787-MCABL	2
linear plug	1787-PLUG10R	3
optional 1787-OPCAB	1787-OPCAB/A	4

1 1784-PCD1 to 1787-PCABL to DeviceNet network

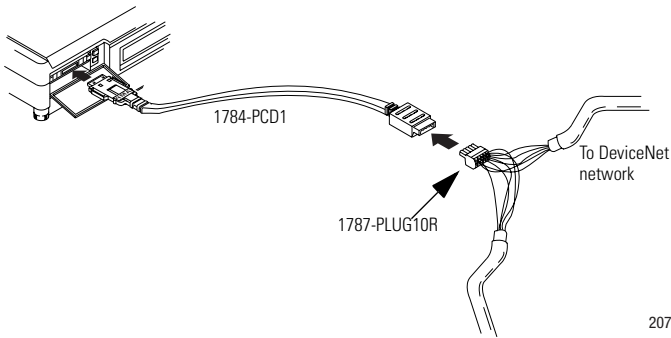


2 1784-PCD1 to 1787-MCABL to DeviceNet network

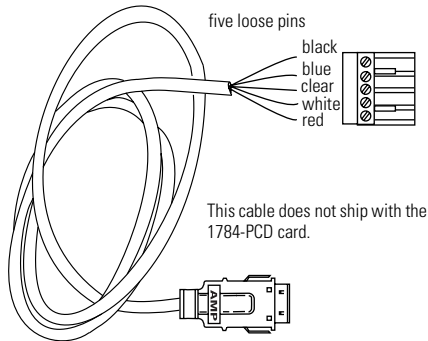


3 1784-PCD1 to 5-pin linear plug to DeviceNet network

Notebook computer with
1784-PCD card installed



4 1784-PCD to 1787-OPCAB/A



3. Verify that you can go online with the card and your application software. If you have difficulty establishing communication, check your cable connections and refer to the documentation for your application software. Refer to Chapter 9 for information on testing the cable with the PCD Test Utility.

Notes:

Run the 1784-PCD Test Utility and Access Diagnostics

Before You Begin

The 1784-PCD Test Utility lets you verify and troubleshoot the installation of your 1784-PCD card on Windows 95/98/Me/2000 and NT platforms. Follow the procedure in this Chapter to run the test utility and access diagnostics.

IMPORTANT

This utility does not work with the Windows 95 16-bit driver.

Use the PCD_Test.exe program to test the card and driver. The program is in the PCD_TEST directory on any of the following floppy disks:

- 1784-PCD Installation Windows 95/98/2000/Me 32-Bit Setup Disk
- 1784-PCD Installation Windows NT 4.0 Setup Disk

TIP



Copy the PCD_Test program to your hard drive for easy access. The batch file

A:\PCD_TEST\CopyPCD_Test2HardDrive.bat

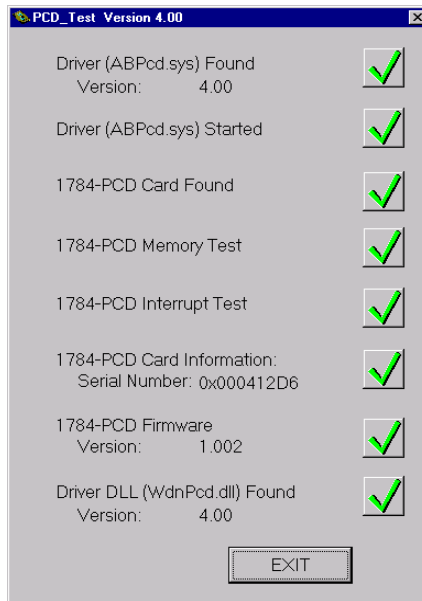
will copy the A:\PCD_Test\ directory to your hard drive as C:\PCD_Test\.

To:	See page:
Run the PCD Test Utility	9-2
Access Diagnostics	9-6

Run the PCD Test Utility

1. Navigate to the location of the PCD Test Utility, for example, A:\PCD_TEST\pcd_test.exe.
2. Double-click on the **pcd_test.exe** file to start the PCD Test Utility.

The 1784-PCD Installation Test Utility automatically looks for your card and begins the tests. As the tests are completed, a green check mark appears, showing that the particular test was successful. If there is an error, you will see a red X and an explanation.



If you:	Follow the directions specified in a failure message you may receive, or:
do not see all green check marks or you do not see the message stating that the 1784-PCD completed all tests successfully	• In Windows NT, adjust system resources. Refer to Change Memory and Interrupt Resources on page 10-8. • In Windows 95/98/Me and 2000, go to Device Manager and adjust resources. Refer to Chapter 10 for details. If you are unable to adjust resources, contact Rockwell Automation Technical Support. • In Windows 2000, check with your computer manufacturer to ensure you have a Windows 2000 BIOS installed. In most cases, you can download the system BIOS from your computer manufacturer's website.
are still getting an error	• Review the Chapter for your operating system. • Refer to Chapter 10 for troubleshooting information. • Follow the instructions again. If you are still having problems, contact your Rockwell Automation service representative for assistance. • Refer to the Preface of this manual for information on Rockwell Automation Support.

3. Once the tests are finished and successful, you see a screen asking if you want to test the PCD cable.

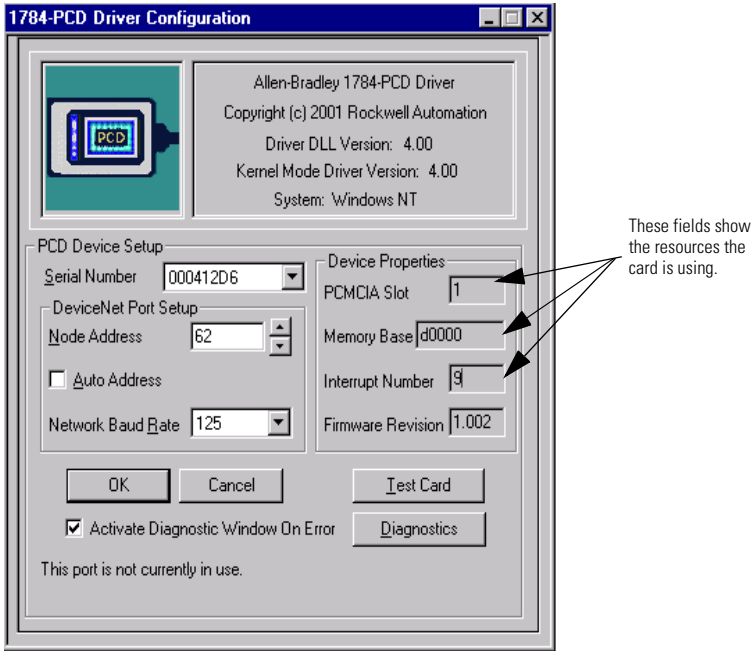
If you:	Then:
want to test the cable	go to step a, below
do not want to test the cable	click No

TIP


To see the resources assigned to the card, click **Yes** when prompted whether you want to test the cable, even if you do not intend to perform a cable test.

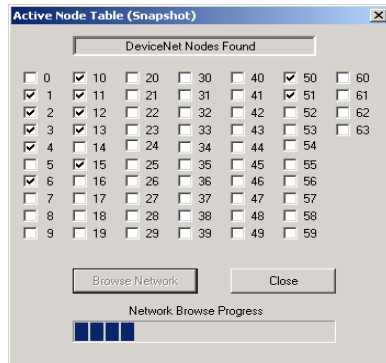
- Attach the cable to the network access port as described in Chapter 8.
- Click **Yes**.

- c. When you click **Yes**, you see the PCD Configuration screen.



- d. Click **OK** to run the test.

If you are properly connected to your network, the test utility will browse your network to find active nodes. You will see a node table with the active nodes checked:



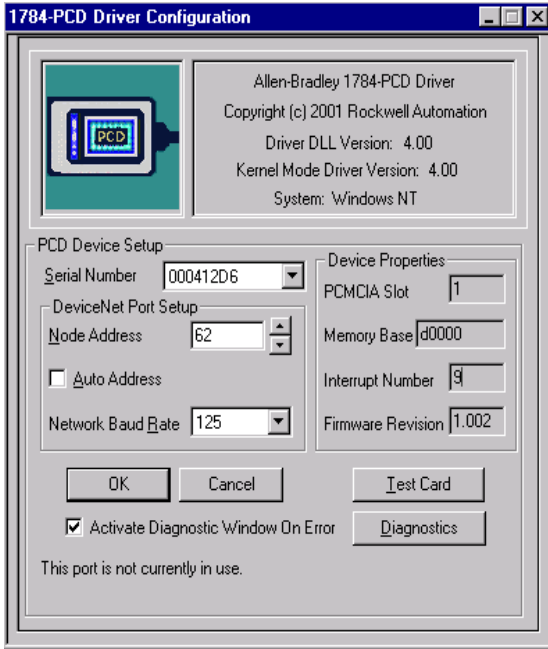
TIP

If you get an error message telling you the 1784-PCD card does not appear to be connected to a network, check or replace your network cabling.

Access Diagnostics

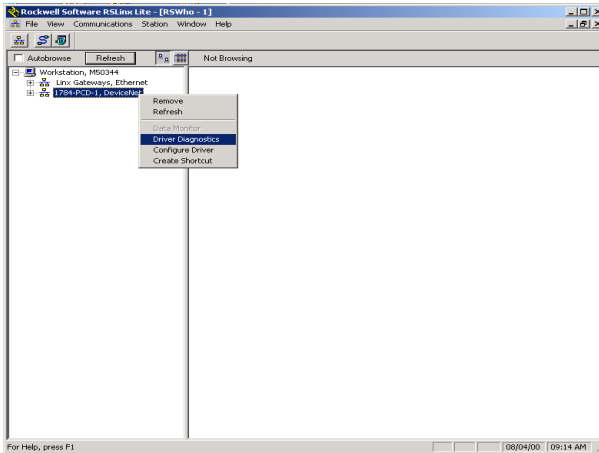
Whenever you configure the PCD card, you will see the 1784-PCD Driver Configuration screen.

This screen lets you access diagnostics by clicking the **Diagnostics** button. To cause the Diagnostics window to appear automatically when a system problem occurs, check the **Activate Diagnostic Window on Error** checkbox.



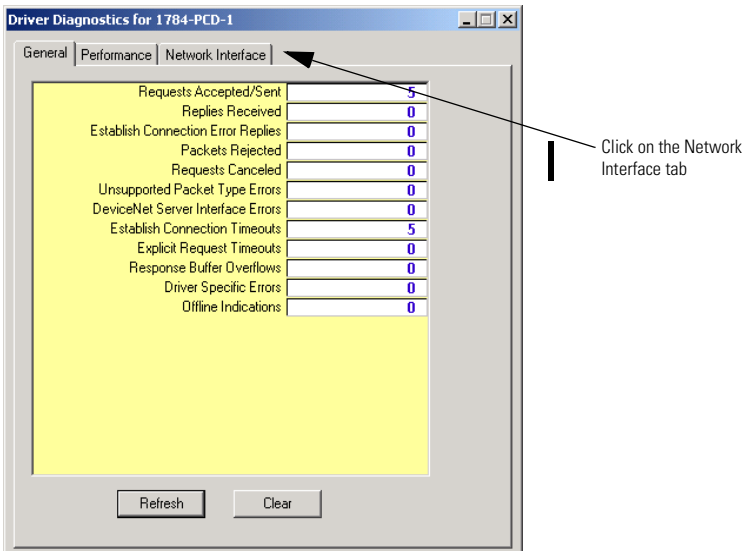
You can also access diagnostics in RSLinx with the following procedure:

1. Click on the 1784-PCD entry to highlight it.
2. Right-click your mouse button and select **Driver Diagnostics**.

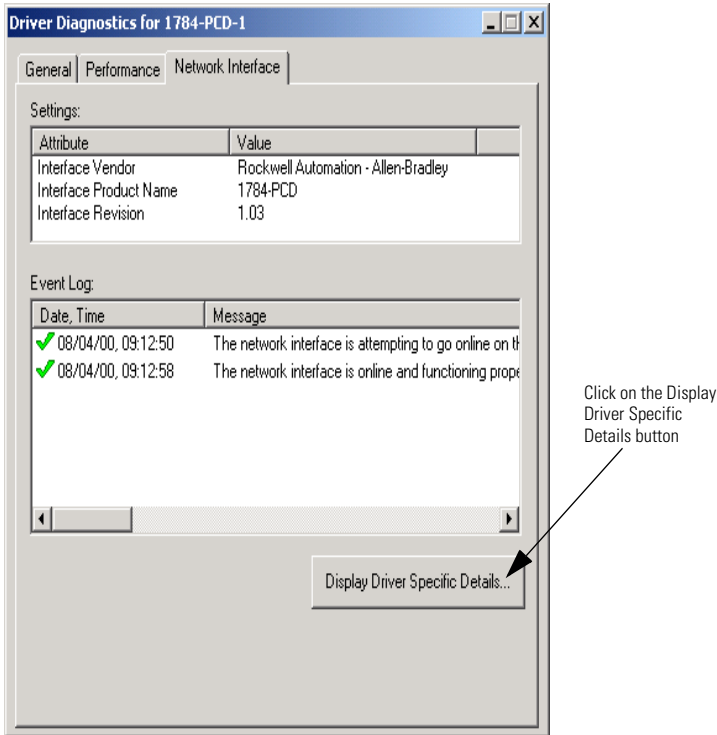


An RSLinx PCD Driver Diagnostics window will appear. To activate the PCD Detailed Diagnostic window:

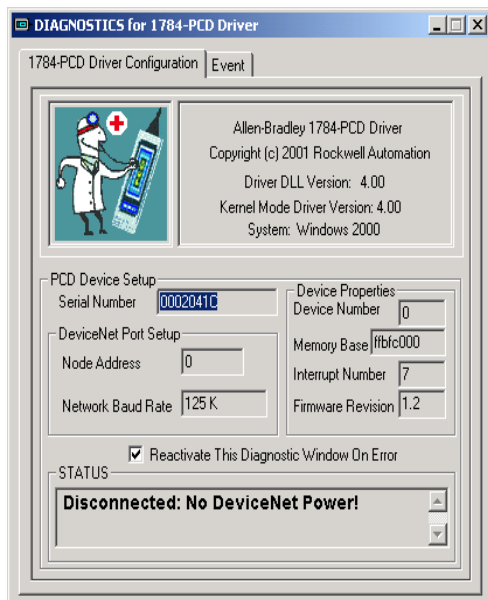
3. Select the Network Interface tab.



4. Click on the Display Driver Specific Details button at the bottom of the window.



5. You see a Diagnostics window similar to the one shown below.



Notes:

Troubleshoot the Card

Occasionally, you may need to modify your system to help the PCD card to function properly. Use the tips and suggestions that follow to help you set up the PCD card and driver(s) successfully.

TIP

The first step in troubleshooting is running the PCD Test Utility and viewing diagnostics. Refer to Chapter 9 for more information on running the utility and viewing diagnostics.

For information on:	See page:
General Troubleshooting Guidelines	10-1
Troubleshooting on Windows 95/98/Me	10-2
Troubleshooting on Windows NT	10-7
Troubleshooting on Windows 2000	10-10

General Troubleshooting Guidelines

The following guidelines apply to all operating systems, unless specified otherwise.

Avoid Network Errors by Specifying a Unique Node Address and the Correct Baud Rate

To avoid network errors, be certain to configure the PCD card with a unique node address and the correct baud rate for the DeviceNet network to which you are connecting.

Understand What Hearing Multiple Tones Means

If you insert multiple PC cards, you may hear more than one tonal notification per card. Windows detects devices during power-up, and adjusts the device resources accordingly. This results in multiple tones sounding. When the system changes settings, for example, when you remove a card, the tones sound again for each change.

Use the PCD Test Utility

You can use the PCD Test Utility to test card operation and show system diagnostics when a problem occurs. Refer to Chapter 9 for instructions for running the PCD Test Utility and viewing system diagnostics.

IMPORTANT

The PCD_Test.exe utility will not work with the Windows 95 16-bit driver.

Troubleshooting on Windows 95/98/Me

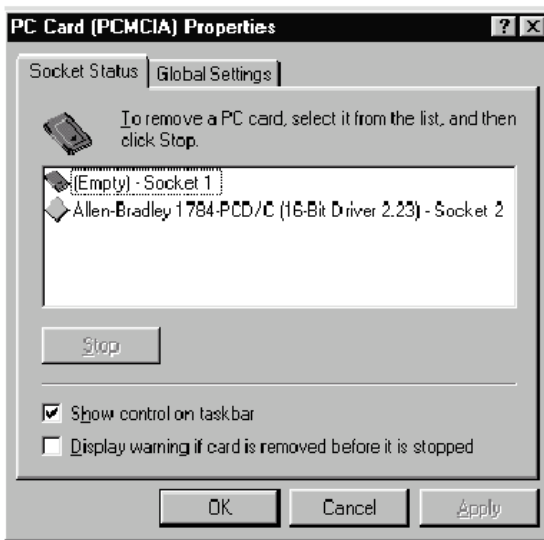
Understand What a Missing PC Card (PCMCIA) Icon Means

If you find that there is no PC card (PCMCIA) icon in the Control Panel, this indicates that there is a problem with the PCMCIA socket hardware that prevents Windows from locating the card. Contact your computer manufacturer for help in solving this problem.

Enable the PC Card Icon in the Taskbar

The PC card icon in the taskbar informs you about the status of your PC card and lets you stop any processing before you remove or change PC cards. Follow this procedure to configure your system to display this icon within the taskbar:

1. Select **Start** ⇒ **Settings** ⇒ **Control Panel**.
2. Double-click on the PC card (PCMCIA) icon.
3. When the PC Card Properties dialog box appears, click on **Show control on taskbar**. You see:

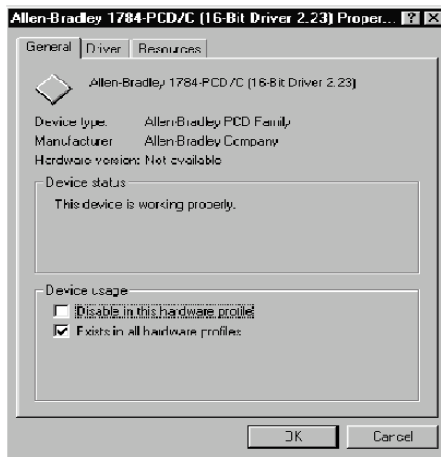


4. Click **OK**. The PC card icon appears in the taskbar.

If the Driver Does Not Work

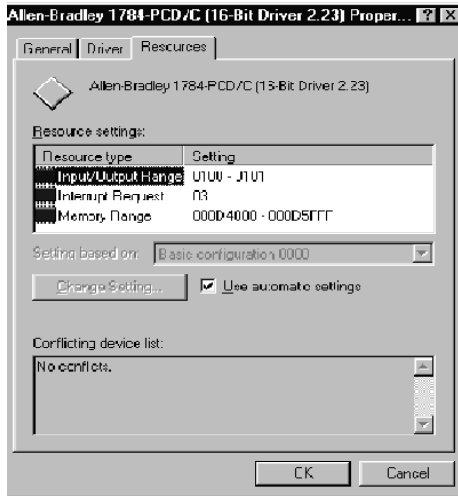
Use the following procedure to resolve other driver issues.

1. Access the Device Manager by right-clicking on **My Computer** and selecting **Properties**.
2. Select the **Device Manager** tab.
3. Scroll through the device list until you see the **Allen-Bradley PCD family** entry.
4. Double-click on the + sign to the left of this entry to expand it.
5. Click on **Allen-Bradley 1784-PCD card** to select it.
6. Click the **Properties** button.



If code 10 (conflicting memory resources) or another conflict is reported in the Device Status box, continue with the following steps.

7. In the Properties dialog box, click on the **Resources** tab.



8. Do the following:
 - check for conflicts listed in the Conflicting Device list
 - verify that you have assigned resources to the PCD card. You should have, at minimum, an interrupt and memory range assigned.

TIP



Be aware that:

- series A 1784-PCD cards do not use an Input/Output range
- you may have to disable a device to make an interrupt available

9. If there are no conflicts, continue with step 10 below. If there are conflicts, you may need to alter the settings of the conflicting devices to get the PCD card to work properly. First try unchecking the **Use Automatic Settings** box and then changing the memory or interrupt resources.

TIP

To find free memory and interrupt resources on Windows 95/98/Me systems, in the Device Manager window, right-click on **Computer** and select **Properties**. You see the Computer Properties screen, which shows you the resources in use.

To change the resources:

- a. Click on the resource you want to change.
- b. Click the **Change Setting** button.
- c. Change the memory or interrupt resources to a free memory or interrupt resource.

TIP

Depending on your Windows 98 operating system, unchecking the **Use Automatic Settings** box may not be successful. Contact Rockwell Automation Technical Support for more information.

10. Select **My Computer** ⇒ **Properties** ⇒ **Device Manager**.
11. Scroll through the list until you see the PCMCIA sockets entry.

- 12. Double-click on **PCMCIA sockets** to expand it.
- 13. Click on the PCMCIA controller used by your system.
- 14. Click on **Properties**. Verify that the socket controller is enabled in the hardware profile you are using.

If:	Then:
you get this message: This device is not present, not working properly, or does not have all drivers installed, code 10	• click on the Resources tab and check the Conflicting Device list for possible hardware conflicts • verify that the Use automatic settings option is enabled You may have a general PCMCIA problem. Contact your computer manufacturer for assistance.
you do not get this message	This device is working properly.

Troubleshooting on Windows NT

Understand What a Missing PC Card (PCMCIA) Icon Means

If you find that there is no PC card (PCMCIA) icon in the Control Panel, this indicates that there is a problem with the PCMCIA socket hardware that prevents Windows from locating the card. Contact your computer manufacturer for help in solving this problem.

TIP



When using Unicore/Touchstone Software's Cardware or Phoenix/Softex's Card Executive third-party plug-and-play software on Windows NT, use the plug-and-play software's PC card configuration tool on the Windows Control Panel for information about the PC (PCMCIA) cards. Do not rely on the PC card (PCMCIA) icon on the Windows control panel.

Change Memory and Interrupt Resources

If you experience difficulty in configuring the PCD card, you should change the memory and interrupt resources.

If You Are using:	Change Resources by:
pure NT (no third-party plug-and-play software)	using the PCD card configuration tool on the Windows Control Panel
SystemSoft's CardWizard third-party plug-and-play software	using the PCD card configuration tool on the Windows Control Panel
Unicore/Touchstone Software's CardWare third-party plug-and-play software	contacting Rockwell Automation Technical Support for assistance
Phoenix/Softex's Card Executive third-party plug-and-play software	contacting Rockwell Automation Technical Support for assistance

To find the available resources in your system,

Select **Start ⇒ Programs ⇒ Administrative Tools ⇒ Windows NT Diagnostics**. If no interrupts are available, you may need to disable another device.

IMPORTANT

Windows NT diagnostics may not show all interrupts that are in use. If you continue to have problems, try another IRQ. Recommended IRQ values are 7, 9, 10, 11, 12, and 15.

IMPORTANT

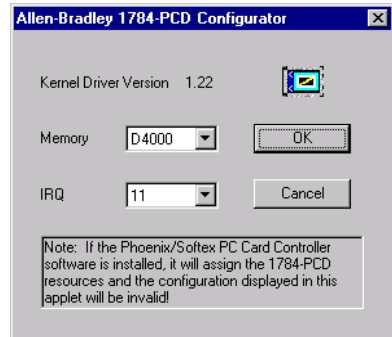
After you change these resources, you must reboot your PC for the changes to take effect.

If you are using pure NT (no third-party plug-and-play software) or SystemSoft's CardWizard, follow this procedure to assign available resources with the PCD card configuration tool.

1. Select **Start ⇒ **Settings** ⇒ **Control****

Panel. Double-click the **Allen-Bradley 1784-PCD icon**.

You see the Allen-Bradley 1784-PCD Configurator screen. You can use this screen to assign available resources.



2. To find available resources in your system, do the following:

a. Select **Start** ⇒ **Programs** ⇒

Administrative Tools

⇒ **Windows NT Diagnostics**.

b. Click on the **Resources** tab.

c. Look for an interrupt number that is not listed.

d. Enter it in the 1784-PCD Configurator screen.

e. In the Windows NT Diagnostics tool, click on the **Memory** tab to see which addresses the system is using (not available).

IMPORTANT

Be aware that Windows NT protects its memory as well as its interrupts and may not list all the resources it is using. We suggest that you select a memory address in the range from 000D0000 to 000DFFFF.

f. Enter the memory address in the 1784-PCD Configurator screen.

3. Click **OK twice.**

4. Reboot the computer.

IMPORTANT

You must restart Windows NT in order for your PCD card to work with your software application.

TIP



Since Windows NT may be using a resource and may not report it in Windows NT diagnostics, always run the PCD Test Utility after configuring resources.

If the driver will not start or cannot find a card, try reconfiguring the resources.

- If the IRQ test fails, try another IRQ.
- If the memory test fails, try another memory range.

You can also access diagnostics in RSLinx. Refer to Chapter 9 for information on accessing diagnostics.

Troubleshooting on Windows 2000

Check for Incompatible BIOS

In Windows 2000, check with your computer manufacturer to ensure you have a Windows 2000-compatible BIOS installed. In most cases, you can download the system BIOS from your computer manufacturer's website.

If the Driver Does Not Work in Windows 2000

To access Hardware Properties and verify that the 1784-PCD card is OK, follow the steps below.

1. Double click on the **Unplug/eject hardware** icon



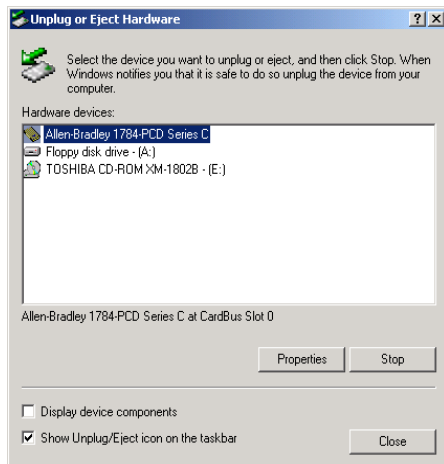
in

the taskbar.

TIP

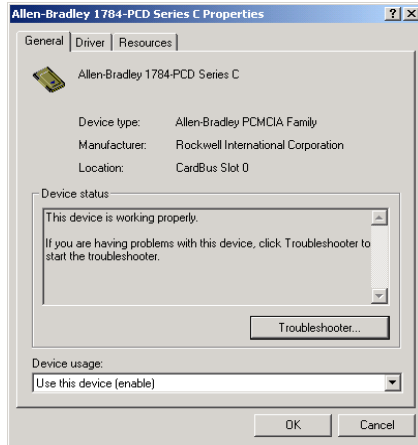


If you don't have the icon on your task bar, refer to Show the Card Unplug/Eject Icon on the Taskbar on page 6-11.



2. Select the card.
3. Click **Properties**.

4. Click the **General** tab.



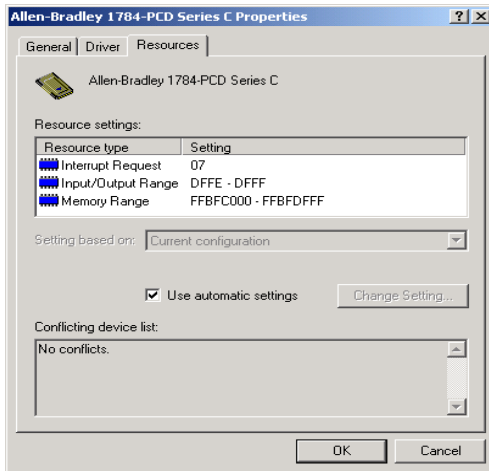
If:

the device status displays this message:
This device is not present, not working properly, or
does not have all drivers installed.

Then:

- click on the **Resources** tab and check the Conflicting Device list for possible hardware conflicts
 - try disabling the **Automatic Settings** option. Go to Step 5, below.
-

5. Click on the **Resources** tab.

**TIP**

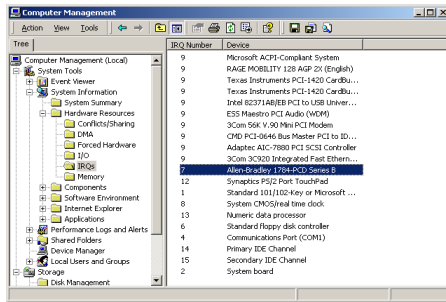
The majority of the time, we recommend that you use the automatic settings. The card will assign an interrupt (memory location) for you. An interrupt must be assigned to the 1784-PCD card. Verify that there is an interrupt assigned and no resource conflicts display in the Conflicting Device list.

- In the unlikely event that you have a resource conflict, you may need to assign a specific interrupt to free the resource for another device.

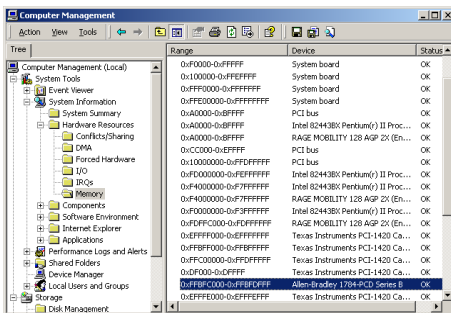
TIP

On Windows 2000 systems, you can find free memory and interrupt resources with this procedure:

- Right-click on **My Computer** and select **Manage**.
- Click the + sign to the left of **System Tools** to expand it.
- Click the + sign to the left of **System Information** to expand it.
- Click the + sign to the left of **Hardware Resources** to expand it.
- Click on the **IRQs** folder in the left window. You see the interrupts in use.



- Click on the **Memory** folder in the left window. You see the memory resources in use.



7. To manually assign an interrupt:
 - a. Deselect the **Use automatic settings** box.
 - b. Click on **Interrupt Request**.
 - c. Click **Change Setting...** and select an interrupt location.

TIP

You may need to disable another device, such as an unused serial or parallel port to make an interrupt available for the PCD card.



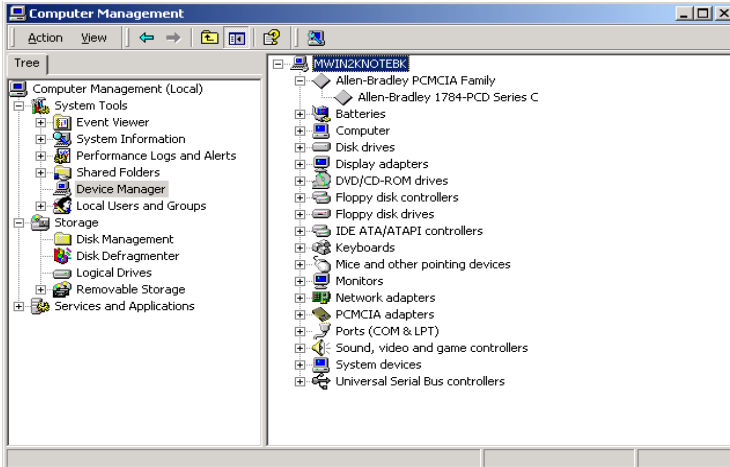
8. In some cases, a device other than the 1784-PCD card may be determined to use the interrupt that the PCD card wants. If this happens, let the other device have the interrupt and assign the 1784-PCD card another interrupt location.

Use the Hardware Properties Screen to Verify Your Card is Working Properly

To verify that your card is working properly:

1. Right click **My Computer**.
2. Select **Manage**.

3. On the Computer Management screen that appears, select **Device Manager**.

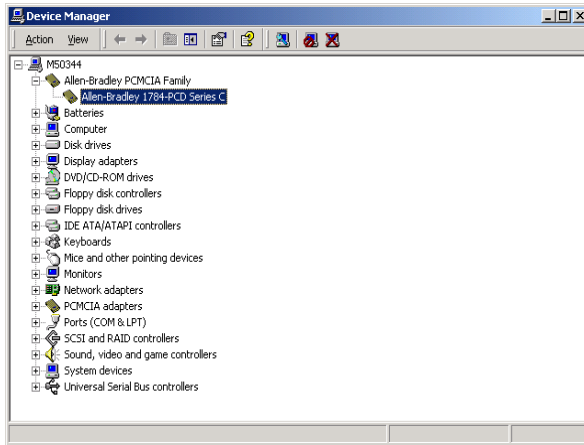


TIP

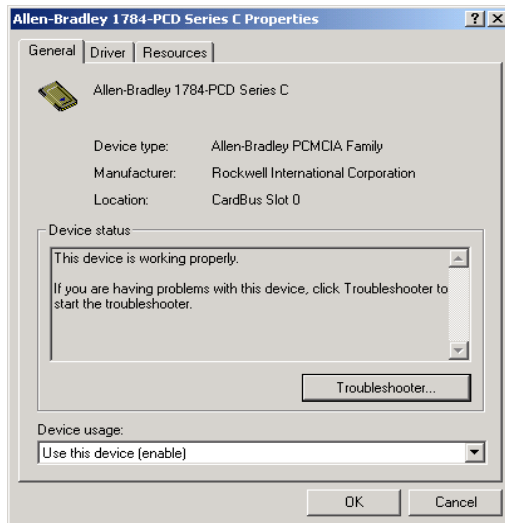
Alternately, you can access Device Manager by selecting **My Computer** ⇒ **Properties** ⇒ **Hardware** ⇒ **Device Manager**.



4. Click on the + next to Allen-Bradley PCMCIA Family to display the available Allen-Bradley cards.



5. Double-click on **1784-PCD**. You see this screen.



6. Check the Device Status field. You should see a message indicating the device is working properly.

Notes:

Specifications

1784-PCD Communication Card (Series C)

PCMCIA Type	Type II form-factor network adapter card	
PCMCIA Standard	Compliant to PCMCIA Standard, release 2.1	
Card and Socket Services Standard	Compliant to PCMCIA Card and Socket Services Standard, revision 2.1 or greater	
Power Requirements	PC 5V @ 210 mA maximum ¹	DeviceNet Network RATED: 24V dc ² 25 V dc maximum 10 mA minimum
Environmental Conditions	Operating³	Non-operating
Slot Temperature	0-50° C (32-122° F)	-40-85° C (-40-185° F)
Humidity	5-95% without condensation	5-95% without condensation
Vibration	0-70 Hz constant.012" displacement 70-500 Hz, constant 2 G acceleration	N/A
Shock	30 G peak/11 ms	50 G peak/11 ms

Agency Certification

(when product or packaging is marked)



UL Recognized Component - Industrial Control Equipment



marked for all applicable directives

1784-PCD1 Cable

Total length of cable	34.9 cm (13.75 in.)
Pin Assignments	See Figure A.1 on page A-2.

¹ From host computer, which must be UL Listed Information Technology Equipment or UL Listed Industrial Control Equipment.

² Power supplied to the DeviceNet terminals of this equipment must be Class 2 as defined in NFPA-70 National Electrical Code.

³ The operating parameters describe the environment within the PCMCIA slot. Refer to the documentation for your computer for environmental requirements. The 1784-PCD card should not exceed those specifications.

Figure A.1 1747-PCD1 Cable pin assignment

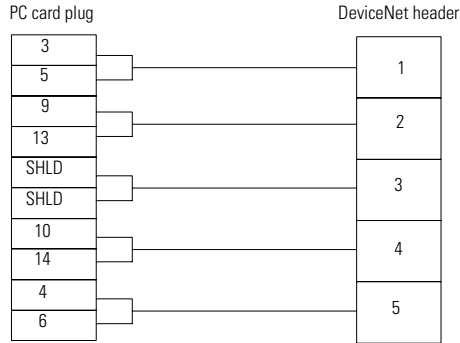
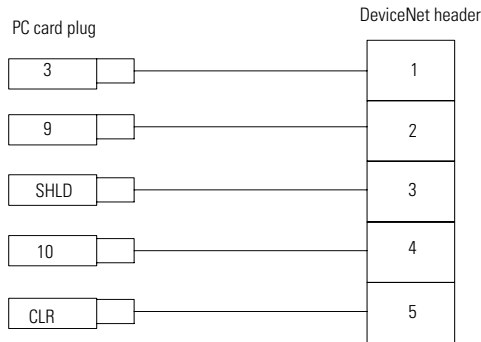


Figure A.2 1787-OPCAB cable pin assignment



adapter

The hardware that connects the computer bus to the 68-pin PC card sockets in the PCMCIA slot. *See also* socket.

application programming interface (API)

The set of services that an operating system makes available to programs that run under it.

binary file

A file consisting of a sequence of 8-bit data or executable code, as distinguished from files consisting of human-readable ASCII text.

Card Identification Structure

A PC card that complies with the PCMCIA standard. Card Information Structure (CIS) contains configuration information about the PC card and communicates it to the computer.

Card Services

The software interface that coordinates traffic among the computer and the PC cards, sockets, and system resources. *See also* Socket Services.

dual-port memory

Memory that can be viewed from two different hosts. This memory allows the PCD card and a host computer to communicate. The memory range marked as dual-port memory is a common, shared memory area.

enabler

Software used to control PC cards. There are three types of enablers: generic (which can control many different types of cards), specific (which is designed for a specific manufacturer's PC card), and point enabler (which is designed for a specific manufacturer's PC card but does not require Card and Socket Services).

MS-DOS mode

Used in reference to a Windows machine when Windows is shut down to access MS-DOS only. This removes the plug-and-play system from a notebook's memory and eliminates any conflict between virtual file managers, virtual display drivers, and other virtual hardware drivers with any other DOS-only software packages.

PC card

Credit-card size, 68-pin add-in cards that were designed to meet PCMCIA standards.

socket

The 68-pin physical connection in the PCMCIA slot in your computer that connects to the 68-pins on the PC card.

Socket Services

The software interface that manipulates the PC cards, sockets, and adapters. *See also* PC cards, sockets, adapters.

type

Refers to the physical size of the PC card. There are three types of cards that have the same length and width (54 mm x 85.6 mm). The cards differ in thickness in the center, but have identical thickness at the connector end and along the rails. This lets you use all three types in the same PCMCIA slot, if the slot is thick enough in the center.

Type I

A 3.3 mm thick PC card that is used for memory enhancements, such as Flash memory cards. *See also* PC card.

Type II

A 5 mm thick PC card that is used for I/O features such as modem, LAN, and host communications. *See also* PC card.

Type III

A 10.5 mm thick PC card that is used for memory enhancements or I/O capabilities that require more space, such as rotating media and wireless communication devices. *See also* PC card.

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