

# **1** *Uniden Data 2000 Introduction*

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## **1.1 What is the Uniden Data 2000?**

The Uniden Data 2000 is a wireless CDPD PC Card which enables most vendors' laptops, handheld computers, and Personal Digital Assistants with Type II PC Card slots to communicate with host-based applications such as web servers, intranet servers, databases, dispatch systems, and other host computer systems. The Uniden Data 2000 uses the Internet suite of protocols running over the CDPD (Cellular Digital Packet Data) system. The product is fully Windows compatible, supporting Windows 95, Windows NT, and Windows CE, and provides a Graphical User Interface (GUI) which offers the user simplified access to operational status and statistics, as well as the ability to configure, control, and monitor the performance of the device. The Uniden Data 2000's compact size makes it an easily portable communications tool that can be stored conveniently in a briefcase or purse when not in use.

## **1.2 What is CDPD?**

CDPD or Cellular Digital Packet Data is a wireless, public access, packet data standard designed to operate over existing analog cellular phone systems. Since it is designed to use existing cellular phone systems, CDPD provides a large coverage area, low service pricing, and fast transaction execution. CDPD's primary benefit is quick, inexpensive, and efficient transmission of data packets over the existing cellular network. Additional benefits include built-in encryption for security (where applicable); a billing structure which charges for message size rather than on-line time (depending on individual service provider's service plans); forward error correction methods that reduce the effects of noise and interference on the airlink; and availability.

### **1.3 What is the PCMCIA Standard for PC Cards?**

Over the past several years, mobile computers have experienced explosive growth. While prices have fallen sharply, features are becoming more advanced and reliability has been greatly improved. One of the most notable features of today's mobile computers is the PC Card slot. Over the last four years, the personal computer industry has rapidly adopted the PC Card slot feature, and today nearly 75 percent of laptops include a PC Card slot. This has been the driving force in the innovation and development of PC Card technology.

In 1989, an international standards body and trade association was founded, called the PCMCIA (Personal Computer Memory Card International Association.). This organization was founded in order to establish standards for Integrated Circuit cards and to promote interchangeability among mobile computers where ruggedness, low power, and small size are critical.

Even though PCMCIA is a rather young technology, it has been quickly adopted by every major personal computer manufacturer in the world. Since its inception, PCMCIA has published a PC Card Standard which contains all of the physical, electrical and software specifications for PC Card technology. This standard is in a constant state of improvement by the PCMCIA technical committee.

## **1.4 Product Highlights**

- Compatible with most vendors' laptops, handheld computers and Personal Digital Assistants (PDAs) with PCMCIA Type II PC Card slots.
- Windows compatible (Windows 95, Windows NT, and Windows CE.)
- Graphical User Interface (GUI) provides simplified access to operational status and statistics, and allows the user to configure, control, and monitor the performance of the device.
- AT command interface allows the user to query status and statistics, change operational modes, and configure and control the device.
- External antenna connector allows a high gain antenna to be substituted for maximum performance.
- Full Duplex operation with CDPD System Specification Version 1.1.
- Data transfer via SLIP or PPP to a connected host, using the PCMCIA interface.
- Embedded TCP/UDP/IP stack from which an embedded application can achieve data transfer capability to the CDPD network.
- Embedded network connectivity application, for testing end-to-end connectivity.
- Maximum of 10 unicast Network Equipment Identifiers (NEIs) which can be stored and activated one at a time.
- Onboard battery for operation independent of host.
- External power option for desktop use.

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### **1.5 Package Contents**

- **Uniden Data 2000 Wireless CDPD PC Card:** The physical module containing all of the electronic and other hardware elements. (Includes the battery compartment, antenna and PCM-CIA interface connector.) The PC Board is protected by a clam shell structure made from a 2-piece plastic sub-frame, molded together with a stamped stainless steel cover.
- **Installation Diskette:** \*\*need info
- **Support Utilities Diskette:** \*\*need info
- **Uniden Data 2000 Operation and Programming Guide**

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**1.6 *Optional Accessories***

- NiCd battery pack
- NiCd battery charger
- Antenna adapter (To allow use of high gain antenna.)

## **2** *Setting Up the Uniden Data 2000*

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This chapter explains how to set up the Uniden Data 2000 Wireless CDPD PC Card for operation with host terminals running Windows 95, Windows NT, and Windows CE.

### **2.1 Setup Preparation**

#### **2.1.1 Hardware Required for Uniden Data 2000 Set Up**

- A host terminal, (laptop, handheld computer, or Personal Digital Assistant)
- The Uniden Data 2000 Wireless CDPD PC Card.

#### **2.1.2 Software Required for Uniden Data 2000 Set Up**

One of the following operating systems is required:

- Windows 95
- Windows NT
- Windows CE

#### **2.1.3 Requesting Service Activation**

Before you can use the Uniden Data 2000, you must contact your local cellular service provider to request the activation of your PC Card.

To activate the Uniden Data 2000, you need to give the service provider the PC Card's Equipment Identifier (EID) code which is printed on the unit. The provider will set up your account, tell you which side they provide for channel acquisition (Side A or Side B), and give you an IP address (NEI) which you can use to register your Uniden Data 2000.

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## **2.2 Installation Procedures/Windows 95**

To install the Uniden Data 2000, take the following steps:

1. Insert the Uniden Data 2000 into the PC Card slot of the host terminal you are using.
2. Move the On/Off Power Switch to the 'on' position.

The following dialog box displays on screen:



3. Insert the **Uniden Data 2000 Setup Diskette** into drive a: of the host terminal.
4. Click Next.

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The following dialog box displays on screen:



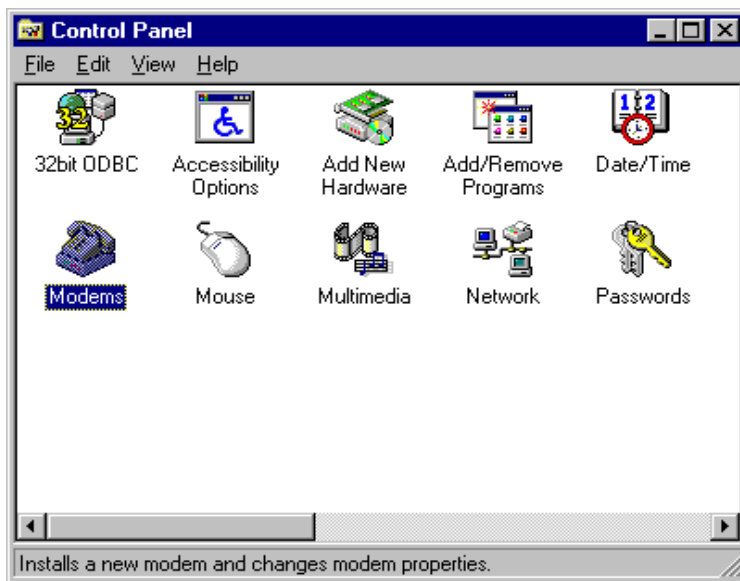
5. Click Finish. You will hear a 'beep' from the host terminal.



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To check to see which COM port was selected during the setup process, take the following steps:

6. Click the **Start** button on your Windows 95 desktop, then select **Settings, Control Panel**.
7. Double-click the **Modems** icon.



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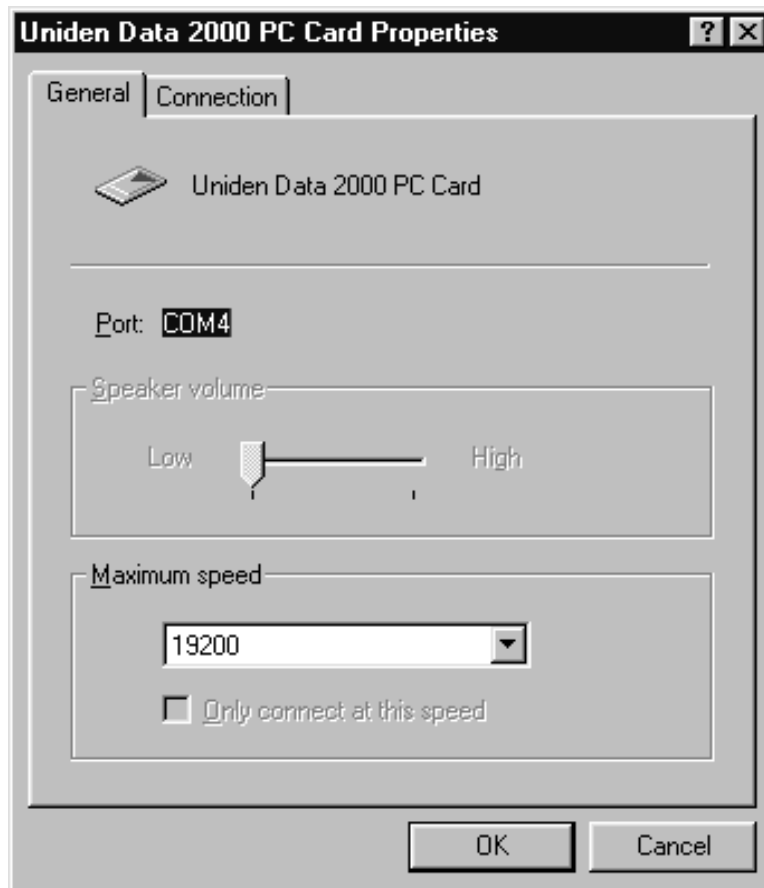
The following dialog box displays on screen:



8. Select **Uniden Data 2000 PC Card**
9. Click **Properties**.

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The following dialog box displays on screen:



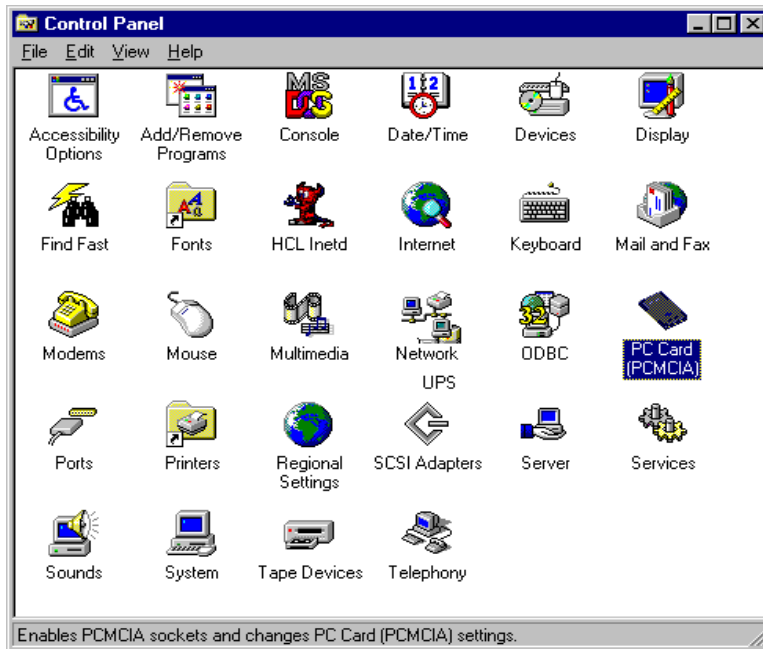
10. The COM port that was selected during the setup process is displayed on the **General** tab.

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**2.2.1 Verifying the Connection**

The host terminal should display a Uniden Data 2000 icon in the system tray when the PC Card has made a proper connection. If you do not see this icon on screen, take the following steps to determine if your host terminal has been set to display system tray icons:

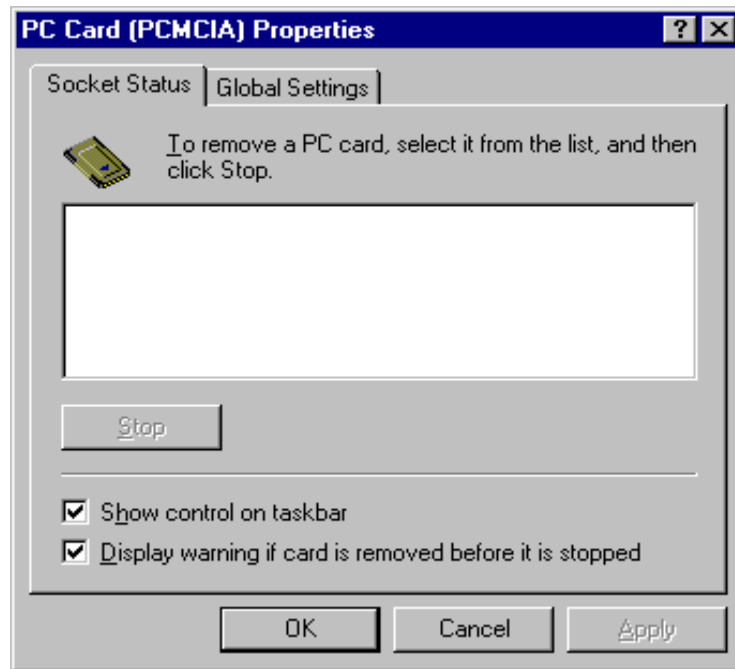
1. Click the **Start** button on your Windows 95 desktop, then select **Settings, Control Panel**.



2. Double-click the **PCCard (PCMCIA)** icon.

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The following dialog box displays on screen:



3. Select the **Show control on taskbar** checkbox, then click OK.

If you have verified that the host terminal has been set to display system tray icons, and you do not see the Uniden Data 2000 icon in the system tray, then the Uniden Data 2000 has *not* made a proper connection.

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### **2.3 Installation Procedures/Windows NT**

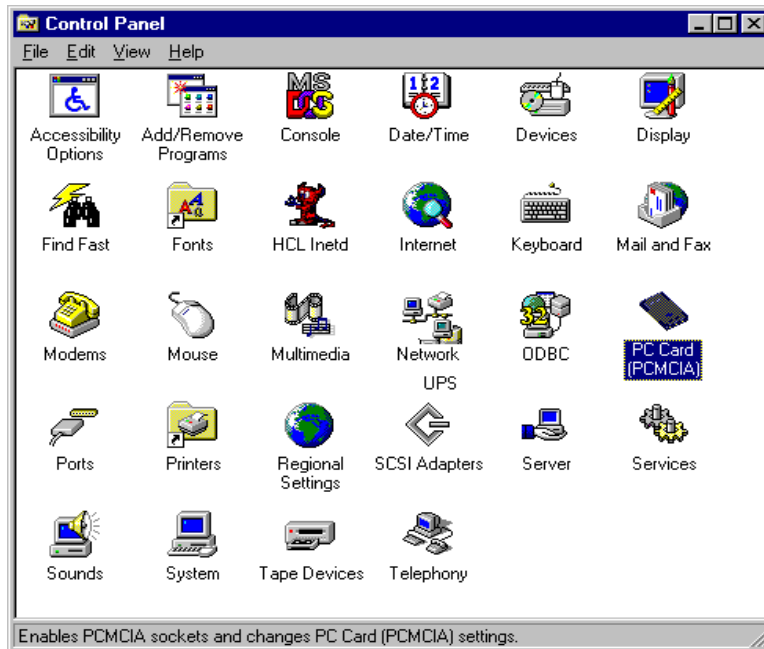
1. Turn your host terminal *off*.
2. Insert the Uniden Data 2000 into the PC Card slot of the host terminal.
3. Move the Uniden Data 2000 On/Off Power Switch to the 'on' position.
4. Turn your host terminal *on*.

**Note:** Windows NT does not support *hot swapping*, (the process of inserting or removing a PC Card into or from a PC Card slot while the host terminal is running.) Therefore, you must turn your host terminal *off* before inserting or removing the Uniden Data 2000.

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To check which COM port was selected during the setup process, take the following steps:

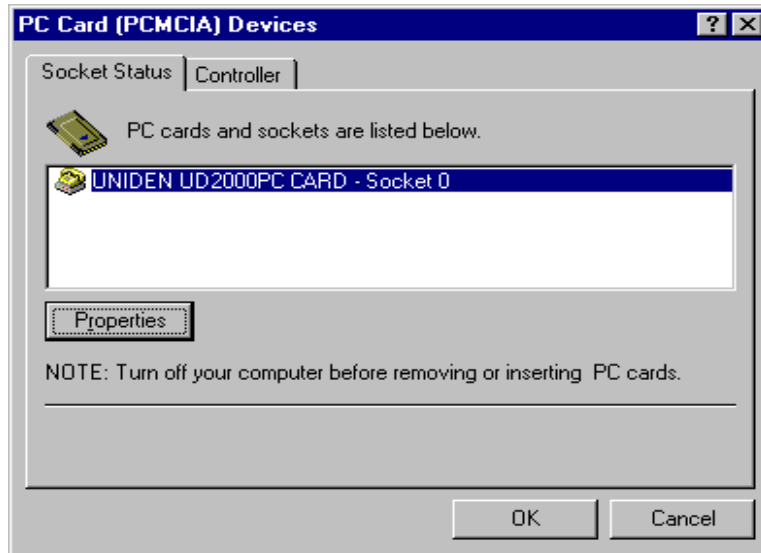
5. Click the **Start** button on your Windows 95 desktop, then select **Settings, Control Panel**.



6. Double-click the **PC Card (PCMCIA)** icon.

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The following dialog box displays on screen.

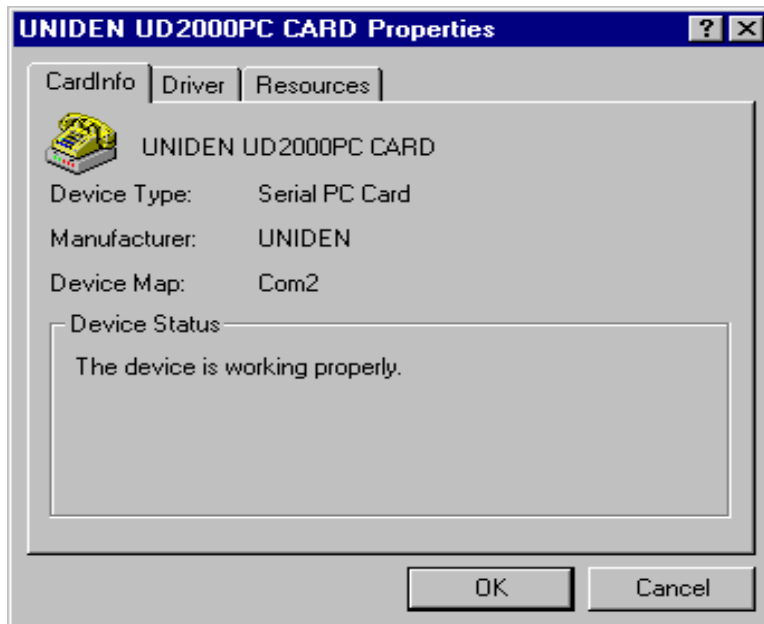


7. Click **Properties**.



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The following dialog box displays on screen:



8. The COM port that was selected during the setup process is displayed on the **CardInfo** tab.

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**2.3.1 Verifying the Connection**

\*\*\*Add correct steps for verifying the connection using Win NT

**2.4 Installation Procedures/Windows CE**

\*\*\*Add correct installation procedures for Windows CE, when engineers are able to provide.

**2.4.1 Verifying the Connection**

\*\*\*Add correct steps for verifying the connection using Win NT

**2.5 Using Windows 95 Dial-up Networking**

After you have connected the Uniden Data 2000 to the host terminal (regardless of platform: Windows 95, Windows NT, or Windows CE), your next step is to run Windows 95 Dial-up Networking.

To use your Uniden Data 1000 modem with Windows 95 Dial-up Networking, take the following steps:

**2.5.1 Preparation**

You must install the Uniden Data 1000 host applications, UDConfig and UDInsight, before using Windows 95 Dial-up Networking. The two new files necessary for Windows 95 Dial-up Networking are:

- **mdmud1k.inf**
- **rnapius.inf.**

These files will be installed in the **c:\program files\uniden** sub-directory during the installation process. For Uniden Data 1000 host application installation and setup procedures, refer to section **5.2.1 Uniden Data Host Applications/Installation and Setup**.

**2.5.2 Installing dial-up networking**

To determine if dial-up networking is already installed, double-click on the **My Computer** icon. If you don't see an icon for **Dial-up Networking**, you will need to add this feature:

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**Note:** It is possible that Windows 95 setup software will be required for installation.

1. Click on the **My Computer** icon.
2. Select **Control Panel**.
3. Select **Add/Remove Programs**.
4. Select **Windows Setup** tab.
5. Select **Communication**.
6. Check the **Dial-up Networking** box, then click **OK**.

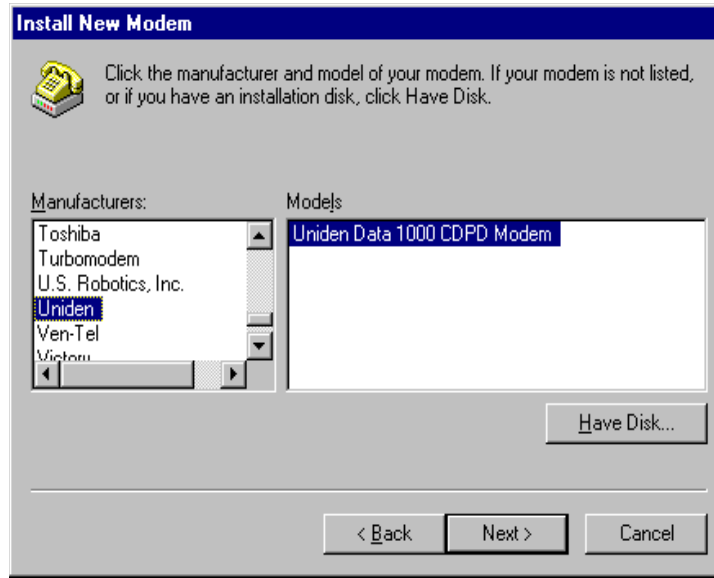
**2.5.3 Installing the Uniden Data 1000 Modem**

To install the Uniden Data 1000, take the following steps:

1. Select **Control Panel**.
2. Double-click on the **Modems** icon.
3. Click **Add**.
4. From the “Install New Modem” screen, select **Other**, then click **Next**.
5. Check the “Don’t detect my modem...” box, then click **Next**.
6. If you are installing from the floppy disk, click **Have Disk**, and select **c:\program files\uniden\mdmud1k.inf**.

**Note:** This file defines the Uniden parameters necessary for the “Install new modem” dialog box.

▲ **Uniden Data 2000 Wireless CDPD PC Card**

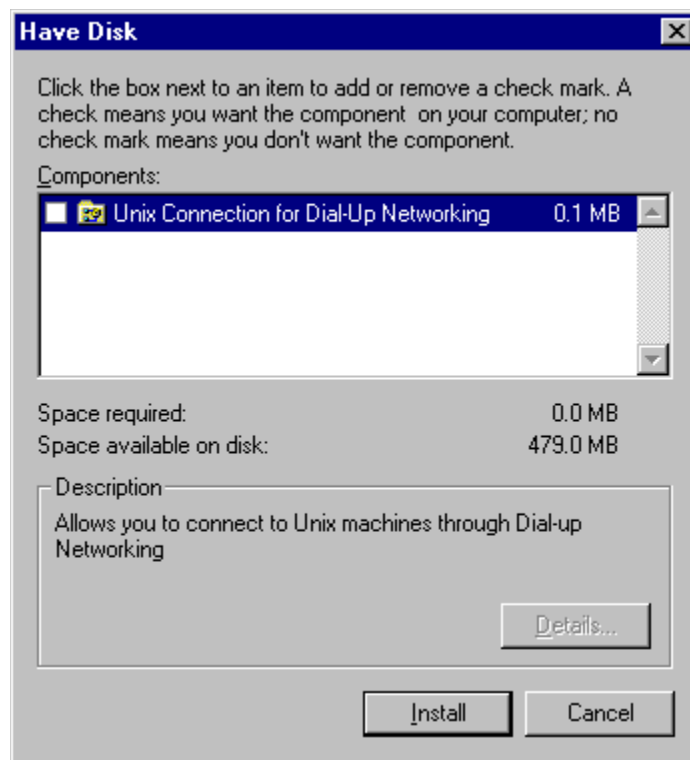


7. Select Uniden Data 1000 CDPD Modem from the list, then click **Next**.
8. Select the Communications Port you plan to use with the Uniden Data 1000, then click **Next**.
9. Wait a moment while installation completes, then click **Finish**.

### 2.5.4 Installing Win95 Support for SLIP

To add SLIP support, take the following steps:

1. Start the **Add/Remove Programs** tool from the **Control Panel**.
2. Select the **Windows Setup** tab.
3. Click **Have Disk**. If you know where the file **rnaplus.inf** is located, enter its path (i.e. **c:\program files\uniden\rnaplus.inf**). Otherwise, select **Browse** and locate the file, then select **OK**.
4. Check the box for the “Unix Connection for Dial-Up Networking”, then click **Install**.



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**2.5.5 Set up Dial-up Networking for PPP**

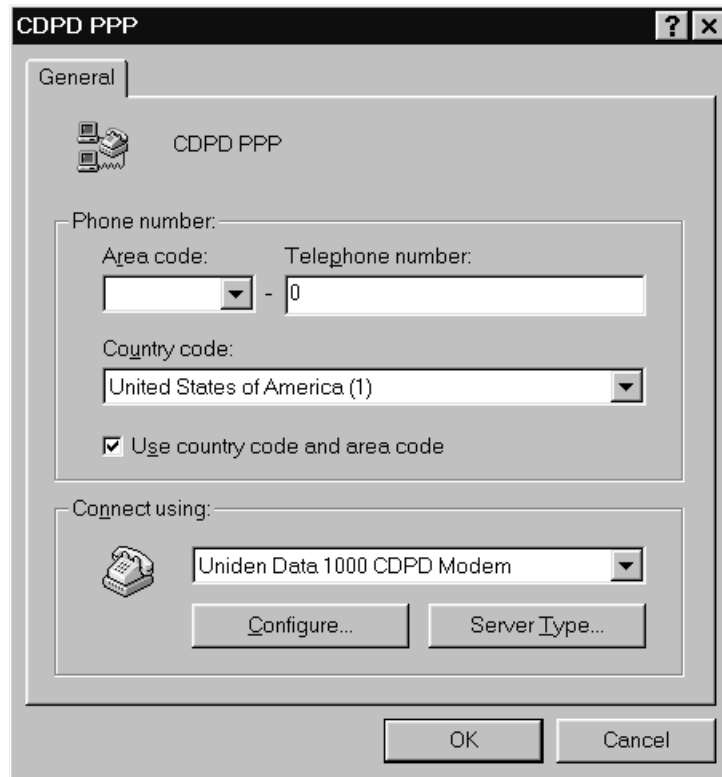
To set up Dial-up Networking for PPP, take the following steps:

1. Double-click on the **My Computer** icon.
2. Open the **Dial-Up Networking** folder.
3. Double-click on the **Make New Connection** icon.
4. When you are instructed to select a modem, click on Uniden Data 1000 CDPD Modem. Change the name of the connection from “My Connection” to “CDPD PPP”, then click **Next**.
5. In the **Telephone Number** box, enter the single digit: 0.
6. Click **Next**, then click **Finish** to create a new Windows 95 connection icon named **CDPD PPP**.
7. Right mouse-click the new icon, then select **Properties** from the sub-menu.

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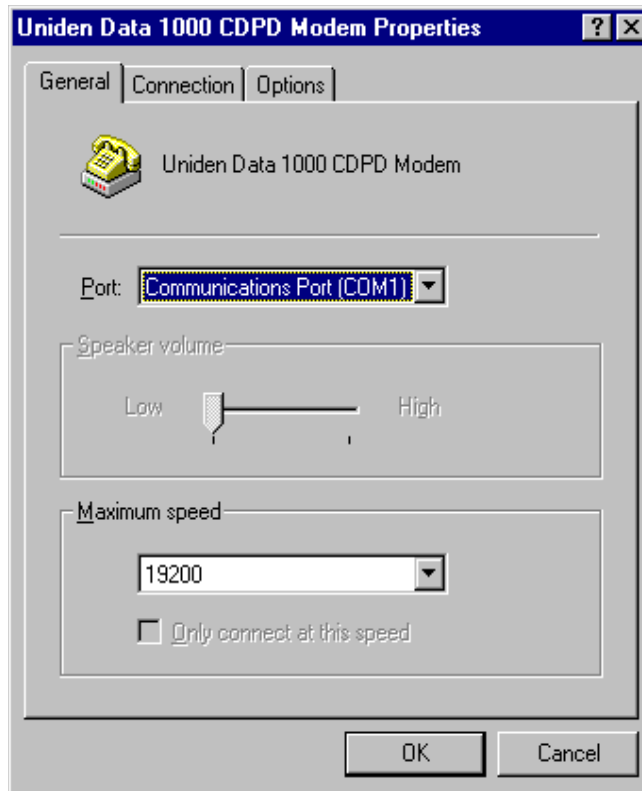
8. Select **Configure** from the **CDPD PPP** screen.

**Important:** The baud rate that you set for dial-up networking must match the baud rate of the Uniden Data 1000 modem. The modem is set to 9600 baud at the factory. To change the baud rate, use the command **AT BAUD 19200**.



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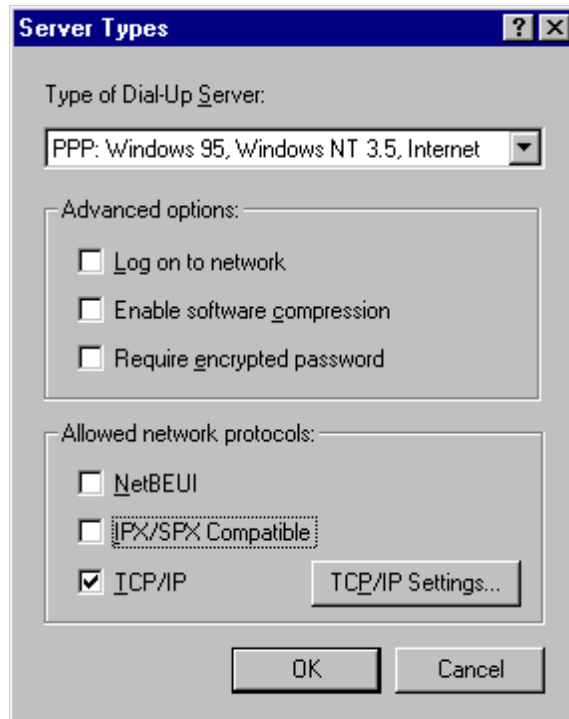
9. Select the appropriate communications port, then click **OK**.





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10. Click on **Server Type**.



11. From the **Type Of Dial-Up Server** box, click on PPP: Windows 95, Windows NT, Internet.
12. In the **Advanced options** box, deselect **Log on to network**, **Enable software compression**, and **Require encrypted password**.
13. In the **Allowed network protocols** box, deselect **NetBEUI**, and **IPX/SPX Compatible**
14. Select **TCP/IP**.
15. From the **TCP/IP Settings** box, if you have been given the address of a Domain Name Server (DNS), select **Specify name server addresses**. Enter the address as your **Primary DNS**.

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**Note:** A DNS is needed to access sites by name, i.e. www.uniden.com.

16. Deselect **Use IP header compression**.

**Note:** This setting is independent of the header compression setting on the modem (AT CMPR 1 or 0).

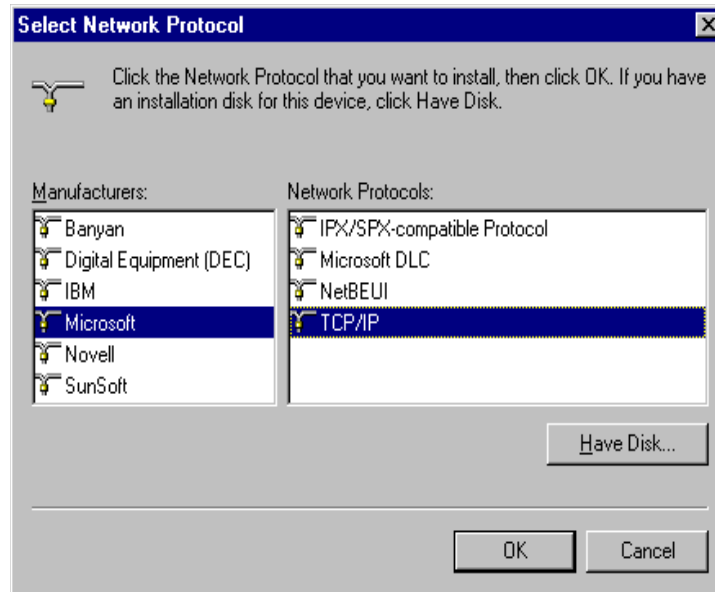
17. Click on **OK** 3 times to exit the Properties program.

**2.5.6 Adding TCP/IP Protocol Support**

To add TCP/IP Protocol Support, take the following steps:

1. Double-click on the **Network** icon in the **Control Panel**.
2. Click **Add**.
3. Click **Protocol**, then click **Add**.
4. From the **Manufacturers** box, select **Microsoft**.

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5. From the **Network Protocols** box, select **TCP/IP**.
6. Click **OK** twice. Now Windows 95 will install the TCP/IP stack and any other protocol it requires.
7. After the protocols are installed, click **OK**.
8. Restart Windows 95.

### **2.5.7 Setting up Dial-up Networking for SLIP**

To set up Dial-up Networking, take the following steps:

1. Double-click on the **My Computer** icon.
2. Open the **Dial-Up Networking** folder.
3. Double-click on the **Make New Connection** icon. Follow the instructions provided for making a new connection.
4. When you are instructed to select a modem, click on Uniden Data 1000 CDPD Modem. Change the name of the connection from "My Connection" to "CDPD SLIP." Click **Next**.

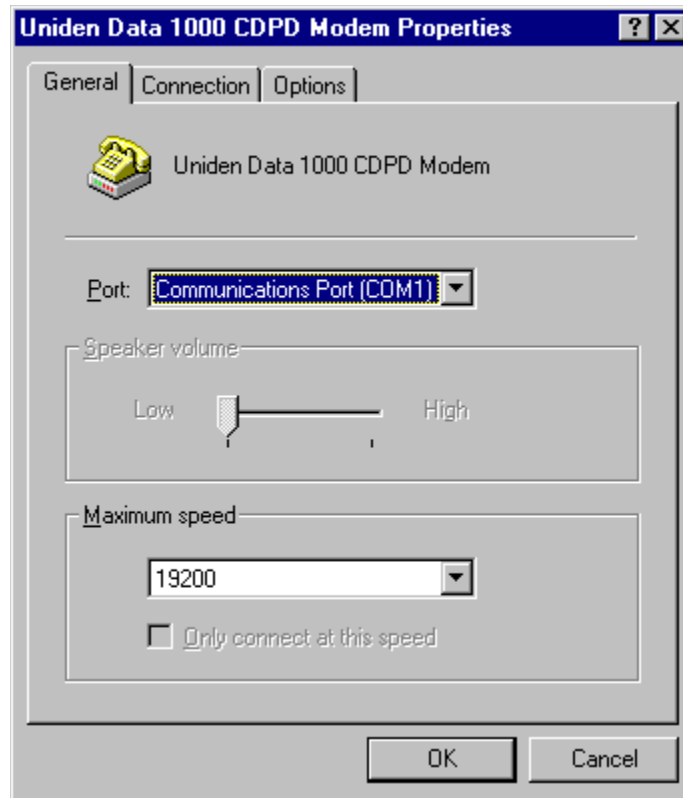
▲ *Uniden Data 2000 Wireless CDPD PC Card*

5. In the **Telephone Number** box, enter the single digit: 2. Click **Next**, then click **Finish** to create a new Windows 95 connection icon named CDPD SLIP.
6. Select the new icon with the right mouse button. From the sub-menu, click **Properties**.
7. Select **Configure** from the **Properties** screen.

**Note:** The baud rate that you set in dial-up networking must match the baud rate of the Uniden Data 1000 modem. The modem is set to 19200 baud at the factory. Use the command **AT BAUD 19200** to change the baud rate.

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8. Select the appropriate communications port, then click **OK**.



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1. Click **Server Type**.
2. From the **Type of Dial-Up Server** box, click SLIP:Unix Connection.
3. In the **Advanced Options** box, deselect **Log on to network**.
4. In the **Allowed network protocols** box, click **TCP/IP**.
5. From the **TCP/IP Settings** box, select **Specify an IP address**.
6. Enter the IP address provided by your CDPD carrier.
7. If you have been given the address of a Domain Name Server (DNS) select **Specify Name Server Address**. Enter the address as your Primary DNS.

**Note:** A DNS is needed to access sites by name, i.e. www.uniden.com.

8. Deselect **Use IP header compression**.

**Note:** This setting is independent of the header compression setting on the modem (AT CMPR 1 or 0).

9. Click **OK** 3 times to exit the Properties program.

### **2.5.8 Connecting to the CDPD Network**

To connect to the CDPD Network, take the following steps:

1. Double-click the new icon you created in the previous section.
2. A window should appear, displaying the progress of your connection. Within a few seconds, the connection display should show that a connection has been established. Once this has occurred, you may minimize the window and proceed with the Windows 95 networking programs.

### **2.5.9 Troubleshooting**

If you encounter problems using your Uniden Data 1000 to access the Internet, there are several steps you can take to diagnose the problem:

1. The “TX” light on the modem provides a general status indication. It is steady orange when the modem is searching for a channel; flashing orange when it has locked on a channel and is

### ▲ Uniden Data 2000 Wireless CDPD PC Card

attempting to register with the CDPD network; and steady green when it is registered. When the modem transmits data, the light flashes green. If the light is not green most of the time, you will probably have some trouble accessing the Internet.

2. If the modem fails to register, it could be a problem with the IP address, or a problem with coverage. Reset the modem and type the command **AT STATUS ALL?** (using HyperTerminal) to determine the modem's status before calling the service provider.

## 2.6 Using Windows NT Dial-up Networking

To use your Uniden Data 1000 modem with Windows NT Dial-up Networking, take the following steps:

### 2.6.1 Preparation

You must install the Uniden Data 1000 host applications, UDConfig and UDInsight, before using Windows NT Dial-up Networking. The two new files necessary for Windows NT Dial-up Networking are:

- **mdmud1k.inf**
- **rnaplus.inf**.

These files will be installed in the **c:\program files\uniden** sub-directory during the installation process. For Uniden Data 1000 host application installation and setup procedures, refer to section **5.2.1 Uniden Data Host Applications/Installation and Setup**.

### **2.6.2 Installing dial-up networking**

To determine if dial-up networking is already installed, double-click on the **My Computer** icon. If you don't see an icon for **Dial-up Networking**, you will need to add this feature:

**Note:** It is possible that Windows NT setup software will be required for installation.

1. Click on the **My Computer** icon.
2. Select **Control Panel**.
3. Select **Add/Remove Programs**.
4. Select **Windows NT Setup** tab.
5. Select **Communication**.
6. Check the **Dial-up Networking** box, then click **OK**.

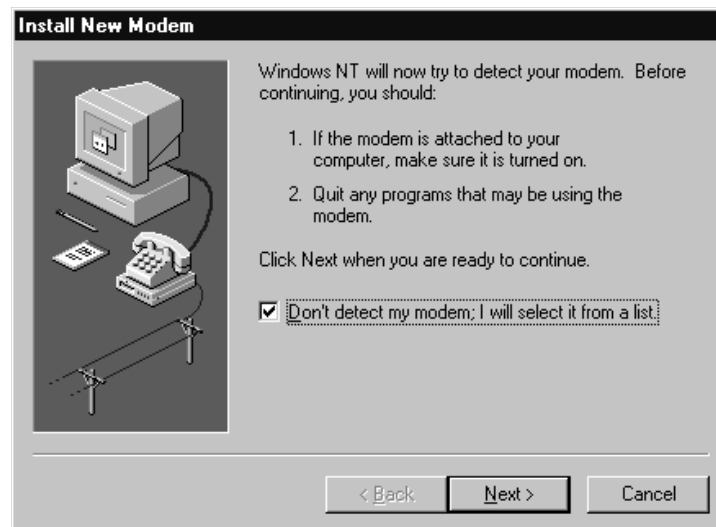


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### 2.6.3 Installing the Uniden Data 1000 Modem

In order to install the modem, Windows NT requires that the user be the administrator. To install the modem, take the following steps:

1. Select **Control Panel**.
2. Double-click on the **Modems** icon.
3. From the **Modems Properties** dialog box, select **add**.
4. From the **Install New Modem** dialog box, check the "Don't detect my modem..." box, then click **Next**.

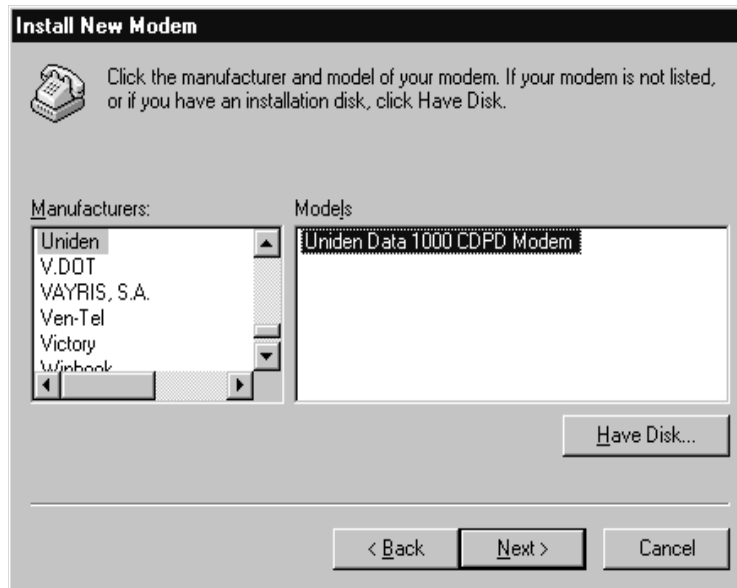


5. If you are installing from the floppy disk, click **Have Disk**, and select **c:\program files\uniden\mdmud1k.inf**.

**Note:** This file defines the Uniden parameters necessary for the **Install New Modem** dialog box.

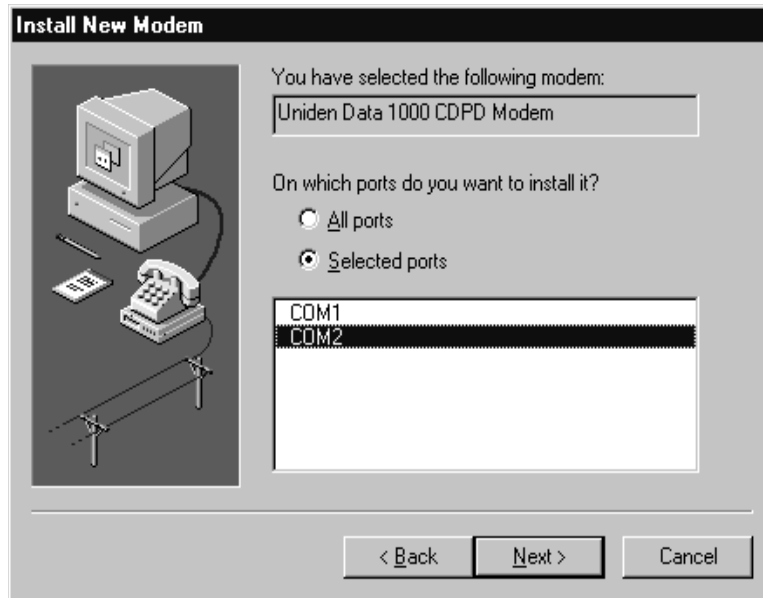
6. Select Uniden from the **Manufacturers** box and Uniden Data 1000 CDPD Modem from the **Modems** box, then click **Next**.

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7. Select the Communications Port you plan to use with the Uniden Data 1000, then click **Next**.

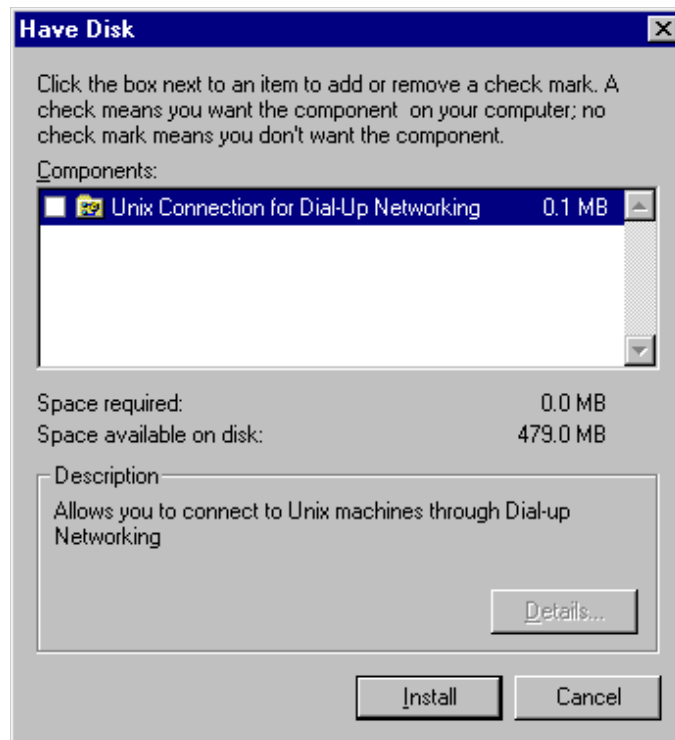
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8. After a moment, the installation should be complete. Click **Finish**.

### 2.6.4 Installing Windows NT Support for SLIP

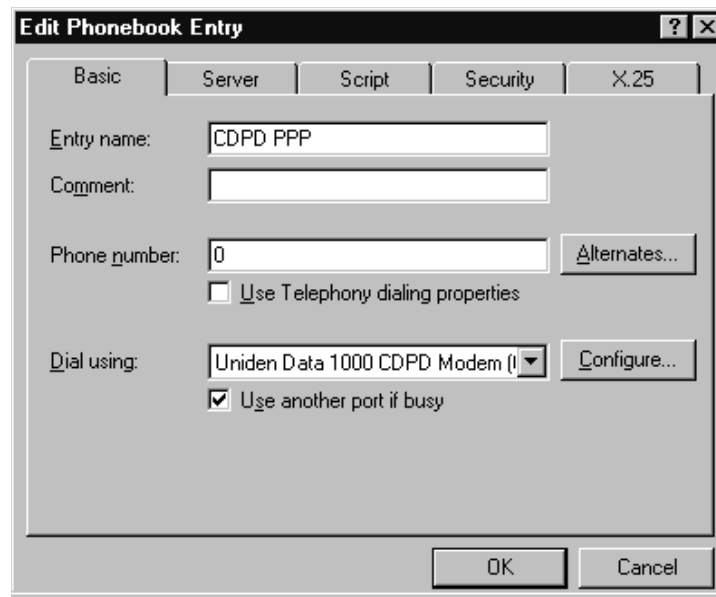
1. Start the **Add/Remove Programs** tool from the **Control Panel**.
2. Select the **Windows NT Setup** tab.
3. Click **Have Disk**. If you know where the file **rnplus.inf** is located, enter its path (i.e. a:\rnplus.inf). Otherwise, select **Browse** and locate the file, then click **OK**.
4. Check the box for the "Unix Connection for Dial-Up Networking" then click **Install**.



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### 2.6.5 Set up Dial-up Networking for PPP

1. Double-click on the **My Computer** icon.
2. Open the **Dial-Up Networking** folder.
3. Click **More** and select Edit entry and modem properties.
4. From the **Edit phonebook Entry** dialog box, select the **Basic** tab.
5. Enter CDPD PPP in the **Entry Name** box.
6. Enter Uniden Data 1000 CDPD Modem in the **Dial using** box.
7. Enter 0 in the **Phone number** box.



8. Click **Configure**.
9. From the **Modem Configuration** screen, select 19200 in **Initial Speed**.

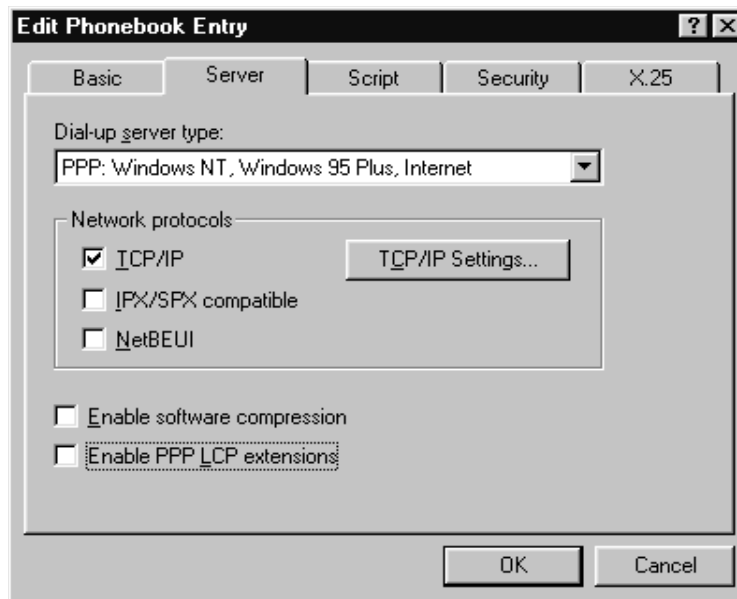
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**Note:** The baud rate that you set in dial-up networking must match the baud rate of the Uniden Data 1000 modem. The modem is set to 19200 baud at the factory).

10. Click **OK**.

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11. Select the **Server** tab.
12. From the **Dial-Up Server Type** box, select PPP: Windows 95, Windows NT, Internet
13. Check TCP/IP in **Network Protocols**.
14. Click **TCP/IP Settings**.



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15. If you have been given the address of a Domain Name Server (DNS), enter the address as your **Primary DNS**.

**Note:** A DNS is needed to access sites by name, i.e. www.uniden.com.

16. Deselect **Use IP header compression**.

**Note:** This setting is independent of the header compression setting on the modem (**AT CMPR 1** or **0**).

17. Click **OK** twice.

**PPP TCP/IP Settings**

Server assigned IP address

Specify an IP address

IP address: 0 . 0 . 0 . 0

Server assigned name server addresses

Specify name server addresses

Primary DNS: 206 . 126 . 64 . 253

Secondary DNS: 0 . 0 . 0 . 0

Primary WINS: 0 . 0 . 0 . 0

Secondary WINS: 0 . 0 . 0 . 0

Use IP header compression

Use default gateway on remote network

OK Cancel

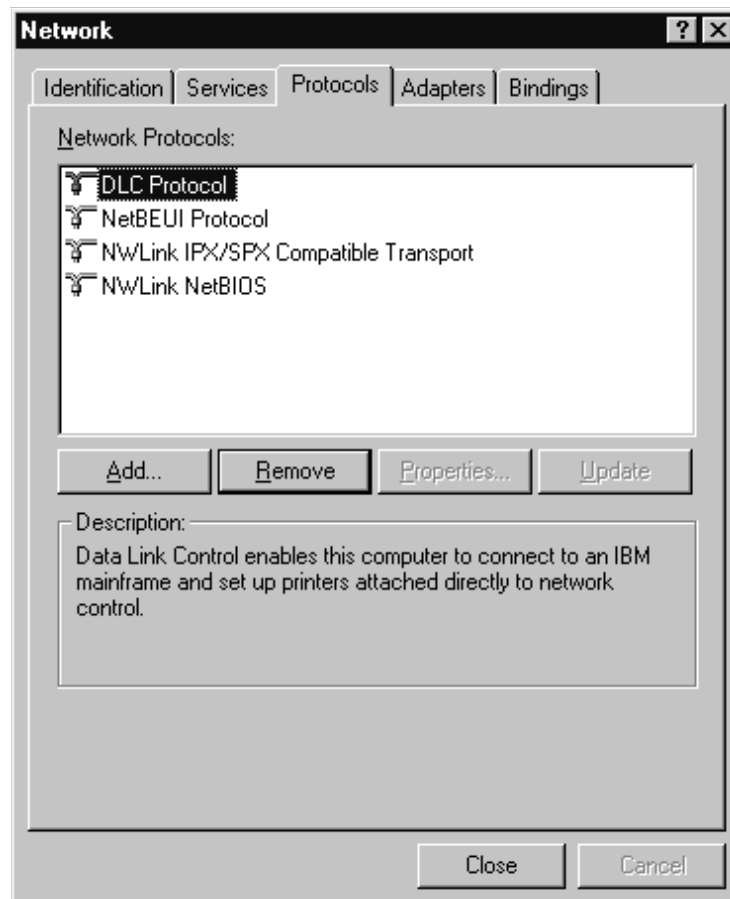


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**2.6.6 Adding TCP/IP Protocol Support**

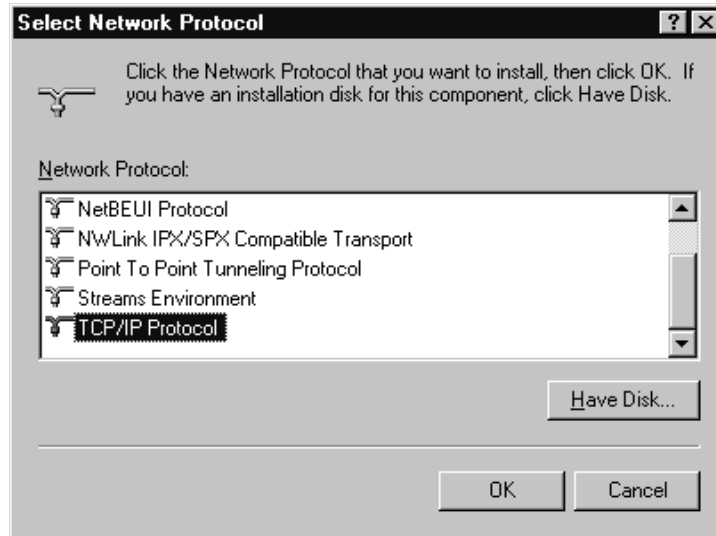
In order to add TCP/IP protocol support, Windows NT requires that the user be the administrator. To add TCP/IP protocol support, take the following steps:

1. Select **Control Panel**.
2. Double-click on the **Network** icon.
3. Choose the **Protocols** tab, then click **Add**.



▲ **Uniden Data 2000 Wireless CDPD PC Card**

4. From the **Select Network Protocol** dialog box, select TCP/IP Protocol, then click **OK**.

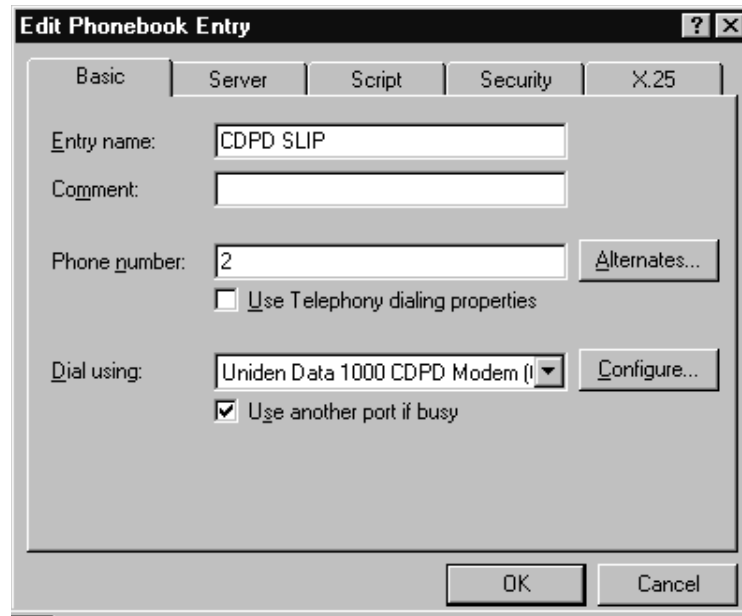


5. Restart Windows NT.

▲ **Uniden Data 2000 Wireless CDPD PC Card**

**2.6.7 Set up Dial-up Networking for SLIP**

1. Double-click on the **My Computer** icon.
2. Open the **Dial-Up Networking** folder.
3. Click **More** and select Edit entry and modem properties.
4. From the **Edit Phonebook Entry** dialog box, select the **Basic** tab.
5. Enter CDPD SLIP in the **Entry name** box.
6. Enter Uniden Data 1000 CDPD Modem in the **Dial using** box.
7. Enter 2 in the **Phone number** box.



8. Click **Configure**.
9. From the **Modem Configuration** screen, select 19200 in **Initial Speed**.

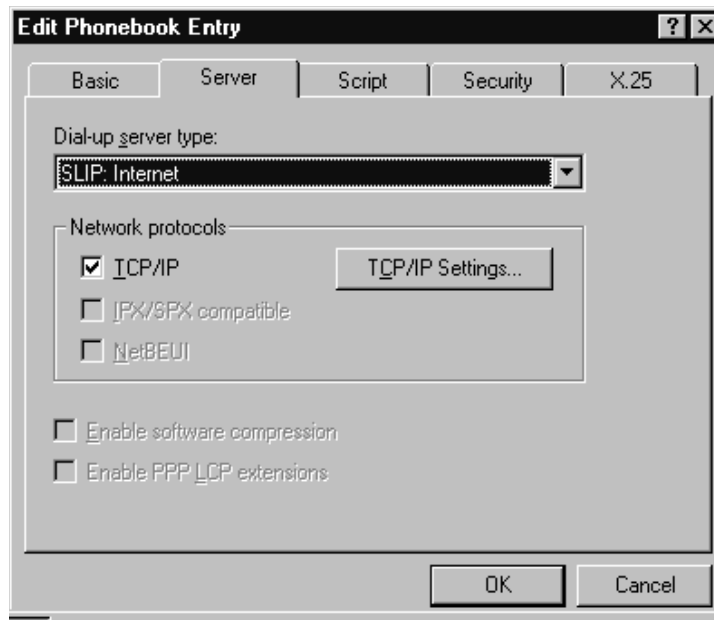
▲ *Uniden Data 2000 Wireless CDPD PC Card*

**Note:** The baud rate that you set in dial-up networking must match the baud rate of the Uniden Data 1000 modem. The modem is set to 19200 baud at the factory.

10. Click **OK**.

▲ *Uniden Data 2000 Wireless CDPD PC Card*

11. Select the **Server** tab.
12. From the **Dial-up server type** box, select SLIP: Internet.
13. Check TCP/IP in **Network protocols**.
14. Click **TCP/IP Settings**.



▲ **Uniden Data 2000 Wireless CDPD PC Card**

15. From **SLIP TCP/IP settings** dialog box, enter the IP Address provided by your CDPD carrier.
16. If you have been given the address of a Domain Name Server (DNS), select **Name server addresses**. Enter the address as your **Primary DNS**.

**Note:** A DNS is needed to access sites by name, e.g. www.uniden.com.

17. Deselect **Force IP header compression**.

**Note:** This setting is independent of the header compression setting on the modem (AT CMPR 1 or 0).

18. Click **OK** twice.

The image shows a screenshot of the "SLIP TCP/IP Settings" dialog box. The dialog has a title bar with a question mark and a close button. The main area contains several input fields and checkboxes. The "IP address:" field contains "166.147.64.130". Below it, a section titled "Name server addresses:" contains four fields: "Primary DNS:" with "206.126.64.253", "Secondary DNS:" with "0.0.0.0", "Primary WINS:" with "0.0.0.0", and "Secondary WINS:" with "0.0.0.0". At the bottom, there are two checkboxes: "Force IP header compression" (unchecked) and "Use default gateway on remote network" (checked). Below the checkboxes is a "Frame size:" dropdown menu set to "1006". At the very bottom are "OK" and "Cancel" buttons.

### **2.6.8 Connecting to the CDPD Network**

To connect to the CDPD Network, take the following steps:

1. Double-click the new icon you created in the previous section.
2. A window should appear, displaying the progress of your connection. Within a few seconds, the connection display should show that a connection has been established. Once this has occurred, you may minimize the window and proceed with the Windows NT networking programs.

### **2.6.9 Troubleshooting**

If you encounter problems using your Uniden Data 1000 to access the Internet, there are several steps you can take to diagnose the problem:

1. The “TX” light on the modem provides a general status indication. It is steady orange when the modem is searching for a channel; flashing orange when it has locked on a channel and is attempting to register with the CDPD network; and steady green when it is registered. When the modem transmits data, the light flashes green. If the light is not green most of the time, you will probably have some trouble accessing the Internet.
2. If the modem fails to register, it could be a problem with the IP address, or a problem with coverage. Reset the modem and type the command **AT STATUS ALL?** (using HyperTerminal) to determine the modem’s status before calling the service provider.

## **2.7 Uniden Data 2000 Host Applications**

\*\*\*Update information to reflect UD2000 changes. Do not yet have from engineers.

After running Windows 95 Dial-up Networking, your next step is to load the Uniden Data 2000 host applications.

There are two host applications provided with the Uniden Data 2000: UD Config and UD Insight. UD Config allows the user to configure and modify the parameters of the Uniden Data 2000. UD Insight provides insight to the user regarding the state and status of the Uniden Data 2000 in the SLIP Mode.



**Important:** UD Config requires the Uniden Data 2000 to be in AT command mode in order to operate, not UDP, TCP or SLIP mode.



**Important:** UD Insight requires the Uniden Data 2000 to be in SLIP mode with a Winsock in place and running.

### **2.7.1 UD Config**

UD Config is a host application that allows the user to configure and modify the parameters of the Uniden Data 2000. It has 7 tabbed dialogs which represent the 7 different parameter areas that are accessible to the user.

The seven areas are:

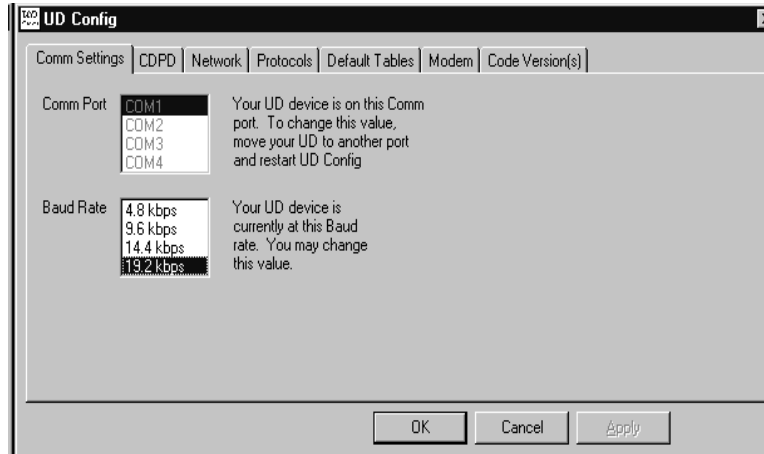
- Comm Settings
- Network
- CDPD
- Default Tables
- Modem
- Code Version
- Status

**Note:** Each field within each tabbed dialog offers tool tips which explain the field's purpose, as well as how to select or add information to the field.



▲ Uniden Data 2000 Wireless CDPD PC Card

*Comm Settings*



The Comm Settings tab displays which COM Port the Uniden Data 2000 is configured to, as well as the baud rate it is using.

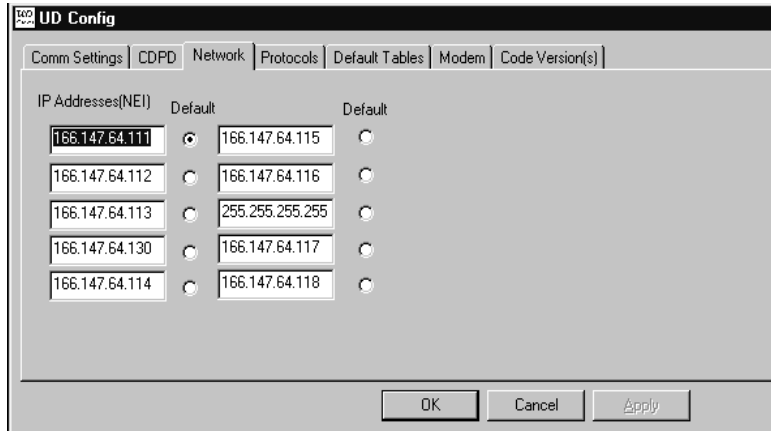
UD Config searches for the Uniden Data 2000 upon startup. If it finds the Uniden Data 2000, it 'remembers' which COM port, and at which baud rate it found the Uniden Data 2000. Subsequent executions of UD Config will then look for the Uniden Data 2000, starting from the previously saved settings. If UD Config does not find the Uniden Data 2000, it begins a search, checking COM1 through COM4, using the following baud rates: 4800, 9600, 14400, and 19200 baud.

When UD Config searches for the PC Card, the Comm Settings tab dialog is displayed first, indicating to the user where UD Config found the PC Card. If UD Config located the Uniden Data 2000 at its previously stored location, the Comm Setting tabbed dialog displays last. Beyond this, there is no particular order to the remaining UD Config dialog tabs.

**Note:** Each time the user switches from one tabbed dialog to another, the mouse changes to a hourglass icon while UD Config loads the parameters from the Uniden Data 2000.

▲ **Uniden Data 2000 Wireless CDPD PC Card**

**Network**



The Network tab provides settings that identify the Uniden Data 2000 to its network.

▲ **Uniden Data 2000 Wireless CDPD PC Card**

**CDPD**



The CDPD tab provides settings that define how the Uniden Data 2000 interacts with the CDPD network.

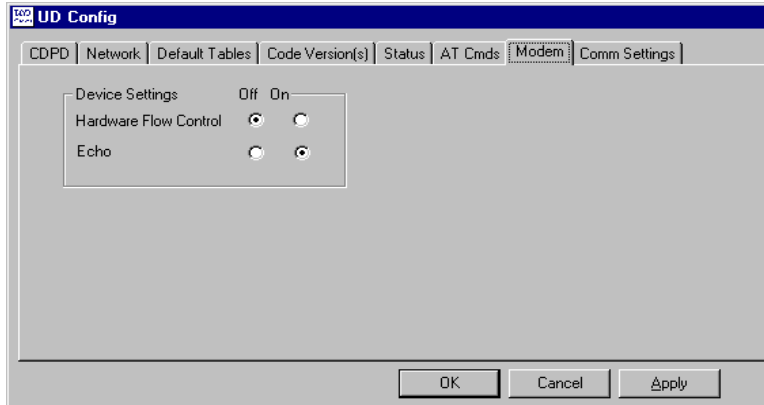
**Default Tables**



The Default Tables tab provides the controls to load and/or save preset tables of Uniden Data 2000 settings.

▲ **Uniden Data 2000 Wireless CDPD PC Card**

**Modem**



The Modem tab provides the modem type settings that define how the Uniden Data 2000 behaves as a modem.

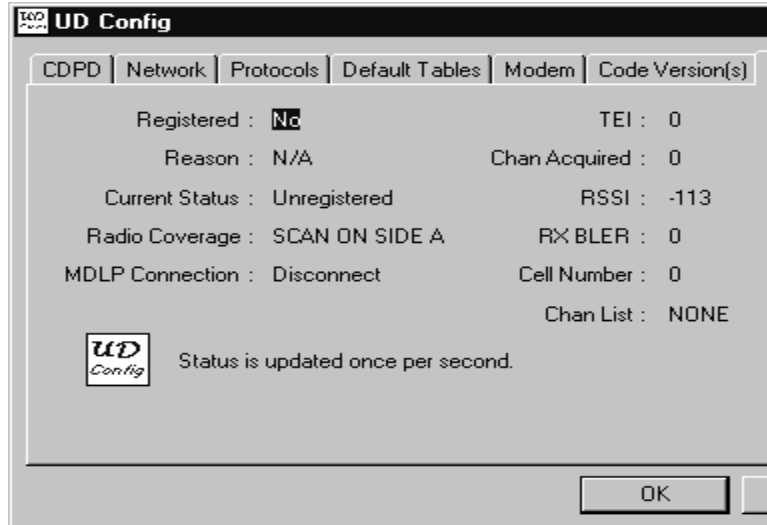
**Code Version**



The Code Version tab displays UD Config's code version, the version of Boot Rom, and the software version which has been loaded in the Uniden Data 2000.

▲ Uniden Data 2000 Wireless CDPD PC Card

Status



Registered: Registration status.

Reason: Registration Denied reason

Current Status: Current modem CDPD status.

Radio Coverage: CDPD Radion Coverage Indication.

MDLP Connection: MDLP Conection status.

TEI: Temporary Equipment Identification.

Chan Acquired: Current Channel Acquired.

RSSI: Receive Signal Strength Indication.

RX BLER: Receive Block Error Rate.

Cell Number: Current Cell Number.

Chan List: Current Channel List.

▲ *Uniden Data 2000 Wireless CDPD PC Card*

### **2.7.2 UD Insight**

UD Insight provides insight to the user regarding the state and status of the Uniden Data 2000. The application works when the Uniden Data 2000 is in SLIP/PPP mode and a Winsock is in place and running. Winsocks include Windows 95 Dial up Networking, Trumpet, and other similar applications resident on a Windows 95 platform.

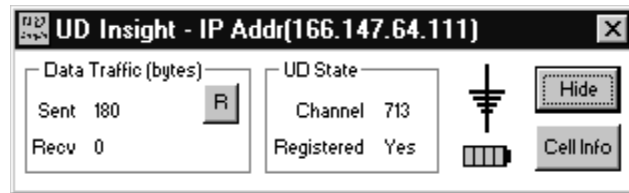
When the Uniden Data 2000 is in SLIP mode and a Winsock is in place, applications communicate to the Uniden Data 2000 with either UDP over IP packets, or TCP over IP packets. UD Insight uses UDP over IP packets, and sends a request for information from the Uniden Data 2000. The Uniden Data 2000 replies with a response that includes the following data:

- channel** - Current channel
- rsssi** - Received signal strength indication. Add to -113 to get true RSSI in dBm.
- regstate** - Registration state. 0= No; 1=Yes.
- reg\_result** - Registration result code.
- spni** - Service provider network ID.
- cell\_num** - Current cell number.
- wasi** - Wide area service ID.
- spi** - Service provider ID
- data\_sent** - Bytes sent
- data\_rcvd** - Bytes received
- active\_nei [NEI\_LEN]** - Current IP address

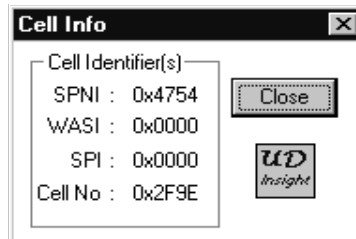
These packets are sent and received once every 5 seconds.

▲ Uniden Data 2000 Wireless CDPD PC Card

The following dialog box displays when UD Insight is accessed:

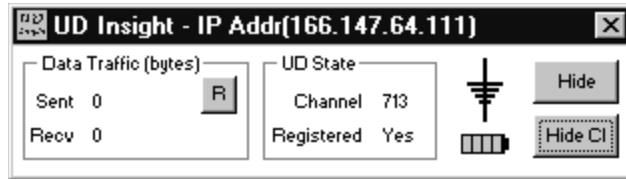


- The antenna icon has bars that represent 10 dB of RSSI, starting at -110. One bar is added for each 10 dB.
- The Cell Info button displays information regarding the specific cell that the Uniden Data 2000 is currently attempting to communicate with. Clicking the Cell Info button brings up the Cell Info dialog box:



▲ **Uniden Data 2000 Wireless CDPD PC Card**

- When the Cell Info dialog box is displayed, the button used to display it changes from Cell Info, to Hide CI.



- The R button can be used to reset the Data Traffic counts to zero. These counts are relative, starting at zero each time the PC Card is powered up.
- The UD 2000's IP address is indicated in the UD Insight title bar.

**Note:** The battery Icon is not applicable to the Uniden Data 2000.



- The Hide button reduces UD Insight to a system tray icon. Double clicking on the icon, will reopen UD Insight to its normal size and state. UD Insight continues to communicate whether it is minimized in the system tray, or maximized on screen.

**Note:** When UD Insight is minimized in the system tray, it displays as UD with a green dot. The green dot indicates that the Uniden Data 2000 is registered. A red dot indicates that UD Insight is not registered.



▲ Uniden Data 2000 Wireless CDPD PC Card



- UD Insight will run simultaneously while other applications are active, such as e-mail, web browsers etc.

## 3 Troubleshooting/Customer Service

### 3.1 Troubleshooting

The Uniden Data 2000 PC Card is manufactured with software installed and is shipped ready for use. If a problem arises, do not attempt to repair items within the PC Card without assistance. After performing minimal troubleshooting (using the information in the table below), call Uniden Customer Service at 1-888-6-UNIDEN for additional instruction.

The following table provides basic information designed to simplify the troubleshooting process:

Symptom	Action
If you connect the PCCard to the host terminal, but the connection is not acknowledged by the host...	Call Uniden Customer Service at 1-800-6-UNIDEN
If UDInsight does not come up...	<b><u>PENDING/ JAMES McDERMOTT to provide info.</u></b>
If UDInsight comes up, but the information it provides is not updating...	For Example: Data sent = 0, Data received = 0, Channel = Unknown, Registered = Unknown, make sure Windows 95 Dialup Networking is connected.
If the PC Card is not acquiring a channel...	Check the current RSSI level. It should be greater than -90. If it is not greater than -90, try moving to a different location.
If a channel has been acquired but the PC Card is not registered...	Check with your service provider for the correct IP address and EID. You must provide the service provider with a reason for denial.  To check the reason for denial...

▲ **Uniden Data 2000 Wireless CDPD PC Card**

Symptom	Action
You run Windows 95 Dial-Up Networking but it does not connect.	Check the batteries and their polarity. If the polarity is correct, call Customer Service at 1-800-x-UNIDEN
If there is no AT command response...	Check your terminal settings: 9600 baud (or the one you have set), 8 data bits, 1 stop bit, No parity, H/W flow control on.
If AT DLMODE? Response is not "0" (zero)...	Use AT DLMODE 0. Then use AT RESET to restart.
If you cannot transmit or receive data in UDP mode	Make sure the local and host (destination) IP address and port numbers are valid.
If you cannot transmit or receive data in TCP mode	Check that the destination PC Card is alive by using the AT PING <dest_ip_addr> command.
Other problems/ troubleshooting concerns	Contact your service provider or Uniden Customer Service.

### **3.2 Customer Service**

Uniden provides its customers with complete customer service and technical support. If you have questions about your Uniden Data 2000 PC Card or if you need additional troubleshooting assistance, please contact our Customer Service Department at 1-888-6-UNIDEN or visit the Uniden web page at <http://www.uniden.com>.

## **A** **Appendix: Specifications**

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### **A.1 Size**

#### **Standard Portion**

85 mm x 54 mm x 4.8 mm (3.37" x 2.12" x .19")

#### **Extended Portion**

64.3 mm x 57.9 mm x 20 mm (2.53" x 2.28" x .70"), including battery compartment.

### **A.2 Weight**

141 g (5 oz), not including battery.

### **A.3 PCMCIA Interface**

PCMCIA Type II interface

### **A.4 Data Rate**

19.2 Kbps Airlink (physical layer) as specified in the CDPD System Specification 1.1.

### **A.5 Antenna Interface**

Custom antenna provided with the unit. External antenna connector allows a high gain antenna to be substituted for maximum performance.

### **A.6 Battery Specifications (get info)**

NiCd battery pack required.

#### **A.6.1 Battery Power Modes**

The Uniden Data 2000 operates in one of three battery power modes:

##### **CDPD Normal operating mode**

\*\*\*Need info

▲ **Uniden Data 2000 Wireless CDPD PC Card**

***CDPD Sleep mode***

\*\*\*Need info.

***CDPD 'Coma' mode***

\*\*\*Need info.

**A.7 Radio Specifications**

***Transmit Frequencies***

824MHz-849 MHz

***Receive Frequencies***

869 MHz - 894 MHz

- Full Duplex
- 0.6W transmit power
- Receiver sensitivity - 113 dBm

**A.8 Environmental Specifications**

***Temperature Range***

0 to +50 degrees Celsius, operating.

***Storage Temperature***

-20 to +70 degrees Celsius

***Vibration***

Sinusoidal 1.5 g, 5 Hz to 500 Hz

***Shock***

20 g shock

***Humidity***

5% - 95% relative humidity

***Emissions Limits***

Per FCC CFR-47 Part 2, Part 15, and Part 22

▲ **Uniden Data 2000 Wireless CDPD PC Card**

***Electrostatic Discharge (ESD)***

15 kV, with no electrical damage or impairment of function

## **B** *Appendix: Additional References*

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### **B.1 Printed References**

Comer, Douglas E. Internetworking With TCP/IP Volume 1: Principles, Protocols, and Architecture, Third Edition. Prentice-Hall 1995. ISBN 0-13-216987-8 (v.1)

Stevens, W. Richard. TCP/IP Illustrated, Volume 1: The Protocols. Addison-Wesley 1993. ISBN 0-201-63346-9 (v.1)

Cellular Digital Packet Data System Specification, Release 1.1. January 19, 1995. Available from the CDPD Forum, 401 N. Michigan Avenue, Chicago, IL 60611-4267. Phone: 800-335-2373.

Sweethaven, M. and Kumar, Rajiv. Cellular Digital Packet Data. Artech House 1996. ISBN 0-89006-709-0

### **B.2 On-line References**

The CDPD forum is an industry association of cellular data end users, data product, software application and service providers. Their web site is at <http://www.cdpd.org>.

Uniden's web site at <http://www.uniden.com>, includes up-to-date information about Uniden products.

The Internet is specified by a series of documents called RFCs. These are available on-line at <http://sunsite.auc.dk/RFC/rfc>.

AT&T provides a map of CDPD coverage throughout the United States at <http://www.attws.com/nohost/data/coverage>.



## **C** *Appendix: FAQs*

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### *What is CDPD?*

Cellular Digital Packet Data (CDPD) is a wireless, public access, packet data standard designed to operate over existing analog cellular phone systems. Since CDPD is designed to use existing cellular phone systems, it provides a large coverage area, low service pricing and fast transaction execution. CDPD's additional benefits are as follows:

- Quick, inexpensive and efficient transmission of data packets over the existing cellular network
- Built-in encryption for security, where applicable
- A billing structure which charges for message size rather than on-line time, depending on individual service provider's service plans
- Forward error correction methods that reduce the effects of noise and interference on the airlink
- Availability

### *What is the Uniden Data 2000 Wireless CDPD PC Card?*

The Uniden Data 2000 is a wireless CDPD PC Card which enables most vendor's laptops, handheld computers, and Personal Digital Assistants with Type II PC Card slots to communicate with host-based applications such as web servers, intranet servers, databases, dispatch systems, and other host computer systems. The Uniden Data 2000 uses the Internet suite of protocols running over the CDPD system. The product is fully Windows compatible, supporting Windows 95, Windows NT, and Windows CE, and provides a Graphical User Interface (GUI) which offers the user simplified access to operational status and statistics, as well as the ability to configure, control, and monitor the performance of the device. The Uniden Data 2000's compact size makes it easy and convenient to stay connected while on the road.

### *Why should I buy a Uniden Data 2000 Wireless CDPD PC Card?*

Uniden's subscriber equipment is intended to provide a win/win business opportunity for our customers. By leveraging our years of experience in radio systems and large volume manufacturing, we provide cutting edge wireless voice and data devices at substantially lower

**▲ Uniden Data 2000 Wireless CDPD PC Card**

prices than competitors in the marketplace, thereby enabling new applications and creating new markets.

Uniden is committed to high quality which is evidenced by all of its manufacturing facilities being certified to the demanding ISO 9002 international quality standard, and having received ISO 9001 certification for its design processes. The combination of functionality, price, and quality has made Uniden successful in an expansive variety of markets and will extend Uniden's success into future wireless communications arenas.

***Where can I buy one of these hot Uniden Data 2000 Wireless CDPD PC Cards?***

The Uniden Data 1000 modem is currently being sold to system integrators and will soon be available through a variety of distribution channels.

Uniden offers excellent pricing incentives for its large volume customers. Please contact our customer information line to obtain additional information on this exciting new Uniden product.

***\*\*Which PC Card accessories are available?***

Need info/confirmed.

***What is a typical usage of SLIP or PPP?***

A typical application for using the SLIP interface via the RS232C interface to the Uniden Data 1000 modem, might consist of a communications package like Reflection, Trumpet Winsock, or the native Winsock from Microsoft<sup>®</sup> residing on Windows<sup>®</sup> 95. These PC applications consist of E-mail, FTP, Web Browser, etc. All of these packages can be configured to use the SLIP protocol over a standard RS232C interface, thus allowing easy interfacing to the Uniden Data 1000, and mobile Internet access on a world wide basis.

## D Appendix: Software

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### D.1 About Uniden Data 2000 Software

\*\*\*Need to update chapter with info from Lyndon.  
Uniden Data 2000 software has been factory installed.

In most cases, you will not need to install software in your PC Card, however, there are some instances when software installation is required:

- You receive an upgraded version of the software.
- You wish to change the data encryption support. (You may switch from software that supports data encryption to a version that does not support data encryption, and vice-versa.)

The Uniden Data 2000 supports two types of software: data encryption software (128 bit key and 40 bit key) and non-encryption software. **Data encryption software can *only* be used within the United States and Canada.**

To check the software version, use the AT command **AT SWVER?** or **ATI** listed in section **6.5 AT Commands/Reading the Configuration**.

If you would like to re-load the software and do not have the appropriate software diskette, contact Uniden Customer Service directly at 1-888-6-UNIDEN to request a diskette containing the appropriate software version.

After you receive the appropriate diskette, refer to section **5.1.4 Uniden Data 2000 Software Downloading Instructions**, in this chapter, for downloading procedures.

**Note:** Any PC Card configuration which has been set prior to reloading the software will be maintained after the new software has been loaded. Reconfiguring the PC Card is unnecessary.

▲ **Uniden Data 2000 Wireless CDPD PC Card**

**D.1.1 Diskette Contents/Uniden Data 2000 Software Diskette (get correct files)**

- DNLD.EXE - A software downloading utility that can run under both Windows 95 and Windows NT.
- UD2000.DNL - A file containing Uniden Data 2000 data encryption software (128-bit key), or UD2000N.DNL - A file containing Uniden Data 2000 non-encryption software.
- BOOT.DNL - A file containing the Uniden Data 2000 boot code.
- README.TXT - A file containing release notes and instructions for the Uniden Data 2000.

**D.1.2 Requirements for Software Installation (what are the requirements for this? Lyndon?)**

- A diskette containing Uniden Data 2000 software
- RS-232 serial port cable (remove.)
- PC with a terminal emulator program such as Procomm or HyperTerminal.

**D.1.3 Transferring Files From the Diskette To Your PC**

1. Create and name a directory on the PC's hard drive, using the DOS command **md FILENAME**.

**Example: md UD2000**

2. Copy the entire contents of the diskette into this directory.

**D.1.4 Uniden Data 2000 Software Downloading Instructions (are these still correct?)**

1. Connect the Uniden Data 2000 to an available COM port on the PC using the serial cable.
2. From the PC, switch to an MS DOS prompt.
3. Select the directory in which you copied the files, using the DOS command **cd FILENAME**

**Example: cd UD2000**

▲ **Uniden Data 2000 Wireless CDPD PC Card**

4. Type in the command **DNLD UD2000.DNL** (plus, if desired, any option described in the following table.)

**Example: DNLD UD2000.DNL -port COM2 -  
atrate<baudrate> -dlrate<baudrate>.** (This option directs the PC Card to use PC COM port 2 and sets the atrate and baudrate.)



**Important:** The atrate and baudrate *must match* in order for a successful download to occur.

Command or DLL Utility Syntax	Description
-port COM1	Use PC COM port 1
-port COM2	Use PC COM port 2
-port COM3	Use PC COM port 3
-port COM4	Use PC COM port 4
-dlrate <baudrate>	Specify the data rate used for a binary download (options: 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200 bps) (default rate=57600 bps, fastest rate=115200 bps)
-atrate <baudrate>	Specify the data rate used for AT commands (options: 4800, 9600, 14400, 19200 bps) (default rate=9600 bps, fastest rate=19200 bps)
-image <n>	Load the n'th image from the download file (default=1)

▲ **Uniden Data 2000 Wireless CDPD PC Card**

Command or DLL Utility Syntax	Description
-quiet	Suppress the banner and copyright message
-implant	Place the software in a directory without downloading

- The following progress message displays on screen:

Example:

```
Opening COM2
Looking for Uniden Data device...
Sending AT commands at 9600
Uniden Data 2000 Detected
Reading BOOT software directory...
Reading main software directory...
Downloading the following image:
  Name: (filename)
  Version: (version name)
  Date: (date)
Erasing affected memory...
Erasing flash sector 4
Erasing flash sector 5
Erasing flash sector 6
Erasing flash sector 7
Erasing flash sector 10
Entering binary download mode...
```

- The download process will take 1-2 minutes depending on your PC's operating system and other programs that may be competing for the PC's CPU time.
- At the conclusion of a successful download the Uniden Data 2000 will reset and the newly loaded software will be enabled.

### ▲ Uniden Data 2000 Wireless CDPD PC Card

- The following message displays on screen:

Resetting Modem...  
Download Successful.



**Note:** If any problems arise during the downloading process, contact Uniden Customer Service at 1-888-6-UNIDEN for troubleshooting assistance.

## **D.2 About Uniden Data 2000 Host Application Software**

The Uniden Data 2000 host applications, UDConfig and UDInsight are distributed on a separate set of diskettes: the **UDConfig & UDInsight Installation Diskettes (Diskettes 1 and 2)**. These applications must be downloaded to the host terminal, in order to set up the host applications for use with the Uniden Data 2000.

### **D.2.1 Uniden Data 2000 Host Applications/Installation and Setup**

To install and set up the UD Config and UD Insight host applications, take the following steps:

1. Insert **Diskette 1** of the **UDConfig & UDInsight Installation Diskettes** into drive a:.
2. Click the Start button.
3. Select Run.
4. In the Run dialog box, enter the command line a:\setup.
5. Follow the instructions provided by the Setup Wizard to complete installation. The Uniden Data 2000 host applications will be copied to the location you specify on the host system, and desktop and task bar icons will be created for each application.

**Note:** Host application software only needs to be installed once, (when you initially set up the Uniden Data 2000 for use with a particular host machine); *however*, you must repeat the installation process for each *new* host terminal used with the Uniden Data 2000.

## **E** Appendix: Warranty and Notices

### **E.1 One Year Limited Warranty**

**Important:** Evidence of original purchase is required for warranty service.

**WARRANTOR:** UNIDEN San Diego Research & Development Center, Inc. ("Uniden")

**ELEMENTS OF WARRANTY:** Uniden warrants, for one year, to the original retail owner, this Uniden Product to be free from defects in materials and craftsmanship with only the limitations or exclusions set out below.

**WARRANTY DURATION:** This warranty to the original user shall terminate and be of no further effect one year after the date of original retail sale. The warranty is invalid if the Product is (A) damaged or not maintained as reasonable or necessary, (B) modified, altered, or used as part of any conversion kits, subassemblies, or any configurations not sold by Uniden, (C) improperly installed, (D) serviced or repaired by someone other than an authorized Uniden service center for a defect or malfunction covered by this warranty, (E) used in any conjunction with equipment or parts or as part of any system not manufactured by Uniden, or (F) installed or programmed by anyone other than as detailed by the User's Manual for this product.

**STATEMENT OF REMEDY:** In the event that the product does not conform to this warranty at any time while this warranty is in effect, warrantor will repair the defect and return it to you without charge for parts, service, or any cost (except shipping and handling) incurred by warrantor or its representatives in connection with the performance of this warranty. **THE LIMITED WARRANTY SET FORTH ABOVE IS THE SOLE AND ENTIRE WARRANTY PERTAINING TO THE PRODUCT AND IS IN LIEU OF AND NATURE WHATSOEVER, WHETHER EXPRESS, EXCLUDES ALL OTHER WARRANTIES OF ANY**



**IMPLIED OR ARISING BY OPERATION OF LAW, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF THE MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY DOES NOT COVER OR PROVIDE FOR THE REIMBURSEMENT OR PAYMENT OF INCIDENTAL OR CONSEQUENTIAL DAMAGES.** Some states do not allow this exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you.

**LEGAL REMEDIES:** This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. This warranty is void outside the United States of America.

**PROCEDURE FOR OBTAINING PERFORMANCE OF WARRANTY:** If, after following the instructions in this User's Manual, you are certain that the Product is defective, call Uniden customer service at **1-888-6-UNIDEN** for instructions.

---

## ***E.2 Standards Compliance***

This unit is compliant to the following specifications:

- <sup>2</sup> CDPD System Specification Release 1.1
- <sup>2</sup> FCC Compliance
- <sup>2</sup> PC Card certification

## ***E.3 FCC Compliance Information***

The Uniden Data 2000 has been tested and found to comply with the limits for a Class B digital device, pursuant to Standard 47 CFR Part 2 Paragraphs 2.993, 2.985, 2.989 and 2.991; Part 15, Subpart B, Paragraphs 15.107(b) and 15.109(b); and Part 22 Paragraphs 22.917(d)(1), (d)(2) and (d)(3) of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in residential instal-

**▲ Uniden Data 2000 Wireless CDPD PC Card**

lations. The Uniden Data 2000 generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Increase the distance between the Uniden Data 2000 and the receiver.
- Consult the dealer or a qualified technician for help.