



Courier V. Everything External Modem: Getting Started

FINAL

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About This Manual

This manual explains how to set up and start using your *Courier V.Everything External Modem*.

Refer to the *Command Reference* manual, also included with the Courier, for detailed information about using advanced features.

We Welcome Your Suggestions

We've made every effort to provide you with useful, accurate information. If you have any comments or suggestions about these materials, please let us know.

Voicemail: **(847) 933-5200**
Email: **sysdocs@usr.com**

Chapter 1

The Courier

The *Courier V. Everything External Modem* makes any computer or terminal with an EIA / RS-232 serial port (or a Macintosh serial port) capable of exchanging data with modems or fax machines over standard, analog telephone lines at speeds of up to 33.6 Kbps.

Using the Courier

The most common uses of the Courier modem are for accessing the Internet or online services, accessing corporate networks remotely, calling bulletin board systems (BBSs), and for sending or receiving facsimiles or files.

Using the Courier always requires some kind of communications software. The software required differs depending on what you're trying to do.

Accessing the Internet

To access the Internet, you need to set up an account with an Internet service provider in your area. Often, Internet service providers supply you with the software you'll need. In other cases, support for Internet access is built in to your computer's operating system, as is the case with Windows 95.

The software needed to access the Internet is called a TCP / IP protocol stack. Your TCP / IP protocol stack must provide a dialing application that is capable of sending data over a serial line using the Point-to-Point protocol (PPP) or the Serial Line Internet Protocol (SLIP).

Calling Online Services

Each online service, such as America Online or CompuServe, provides its own customized communications software package. A couple of these packages are included with the Courier. These packages do the dialing and guide you through the steps of registration.

Accessing Corporate Networks Remotely

Dialing in to a remote network requires remote access software. When you dial in to a network, the software makes your remote computer appear to the network as locally attached. You can then use your network just as you would if you were there: send mail, print files, and access LAN drives.

A remote access package is included with the Courier.

Calling Bulletin Board Systems (BBSs)

Calling a BBS requires communications software that does terminal emulation. The software should also support common, standard file transfer protocols, such as YMODEM and ZMODEM.

A communications software package is included with the Courier.

Sending Facsimiles or Files

Most communications software packages support file transfers and many support fax operations. You can use fax-capable software to call fax machines or other fax modems and send facsimiles.

Courier Controls, Displays, and Connectors

These figures show the controls, displays, and connectors on the Courier and indicate where to find more information about each.

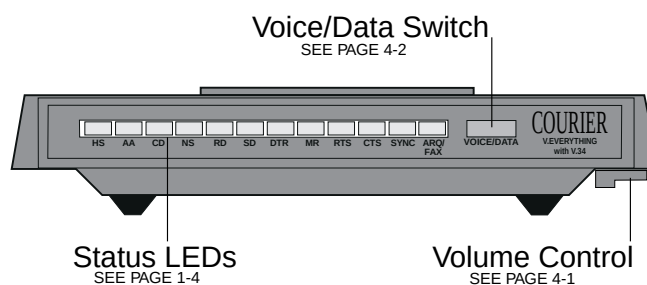


Figure 1-1. The Courier V.Everything Modem (Front).

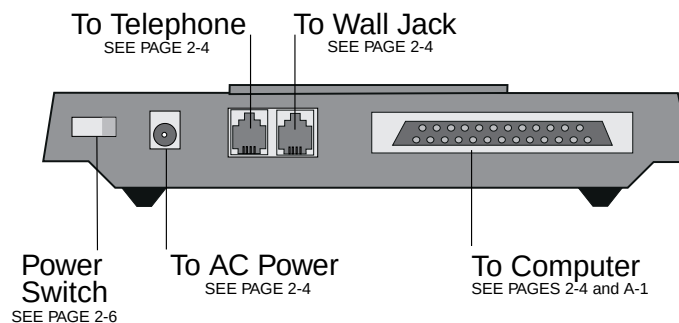


Figure 1-2. The Courier V.Everything Modem (Back).

Status Indicators

The Courier displays its status using 12 light-emitting diodes (LEDs) that are visible from the front.

Table 1-1. The Courier's Status Indicators.

HS	High Speed
On	4800 bps or faster connection. Once on, remains on until reset.
Off	The Courier has not made a 4800 bps or faster connection since last reset.
AA	Auto Answer Status
On	Auto-answer on.
Blinking	Incoming call detected.
Off	Auto-answer off.
CD	Carrier Detect Status
On	Carrier detected from remote device, or carrier detect forced on (using DIP switch 6).
Off	Carrier not detected.
OH	Off Hook
On	The Courier has control of the line.
Off	The Courier does not have control of the line.
RD	Received Data Status
Flashing	The Courier is sending data to your computer.
Off	Idle.
SD	Send Data Status
Flashing	The Courier is receiving data from your computer.
Off	Idle.
TR	Data Terminal Ready Status
On	DTR signal received from your computer, or DTR is forced on (using DIP switch 1).
Off	DTR not detected.
MR	Modem Ready
On	The Courier is powered on.
Flashing	The Courier is retraining with a remote device or is in test mode.
Off	The Courier is powered off.
RS	Request to Send Status
On	RTS signal received from your computer.
Off	RTS signal not detected.
CS	Clear to Send Status
On	The Courier is sending your computer the CTS signal.
Off	The Courier is not sending your computer the CTS signal.

continued...

SYN	Synchronous Status
On	The Courier is in synchronous mode.
Blinking	Dial security is active.
Off	The Courier is not in synchronous mode/dial security not active.
ARQ/FAX	Error Correction/Fax
On	Error correction is active.
Flashing	The Courier is retransmitting data to the remote modem.
Blinking	The Courier is in fax mode.
Off	Error correction not active/not retransmitting data/not in fax mode.

Features

33.6 Kbps Connectivity

The Courier contains software that enables 31.2 and 33.6 Kbps connection rates, as well as improves throughput at lower speeds. While line conditions may not always allow for 33.6 Kbps connections, the new software makes it more likely that your Courier will achieve and maintain 28.8 Kbps connections. It can add up to 4800 bps to the average V.34 connection rate.

Selective Reject

Selective Reject is an optional part of the ITU V.42 (LAPM) specification. This feature improves performance on noisy lines by reducing the amount of overhead incurred when the protocol must resend data due to errors.

When selective reject is active, only the frame that contained the error is resent, instead of the frame plus all of the following unacknowledged frames. You can disable selective reject by changing a setting in S-Register 51 (see Appendix A, *Alphabetic Command Summary*, in the Courier Modems Command Reference manual).

Attaining Speeds Above 28.8 Kbps

V.34 connections at 21.6, 24.0, and 26.4 Kbps are common. To get connections of 28.8, 31.2, and 33.6 Kbps, line quality must be *pristine* end-to-end. In addition, 31.2 and 33.6 Kbps connection rates are possible only when the device to which you are

connecting also runs software that supports speeds above 28.8 Kbps.

If you are curious about the role that line quality plays in attaining and maintaining high speed connections, and want to learn what you can do to improve connections, request the following document from our Fax on Demand service: *Phone Line Quality and High Speed Connections*. The Fax on Demand number is (800) 762-6163.

V.Everything

The Courier provides full support of the V.34 standard, V.Fast Class, V.32 *terbo*, and many other modulation schemes, spanning the range of speeds between 33.6 Kbps and 300 bps. We call this unique combination of abilities **V.Everything**. See the *Compatibility* section in Appendix B, *Technical Specifications*, for details.

Flash ROM Upgradability

Courier modems are software-upgradable using XMODEM file transfers, allowing you quick, easy access to updates of the Courier's technology. See Chapter 17, *Upgrading the Courier's Software*, in the *Courier Modems Command Reference* manual.

Dial Security

The Courier's dial security functionality is part of its operating software, which allows you to control access at a modem-to-modem level instead of using software that runs on the host computer.

With Dial Security, you can prevent unauthorized access to a system through the use of password prompting and dialback. Refer to Chapter 9, *Dial Security*, in the *Courier Modems Command Reference* manual.

Remote Configuration and Diagnostics

You can remotely configure and test the Courier. If you are a network administrator supporting remote users, this feature can save you time and money. Refer to Chapter 8, *Remote Access*, in the *Courier Modems Command Reference* manual.

Adaptive Speed Leveling (ASL)

Couriers monitor line conditions while connected, and fall back to the next lower speed—for example, 19.2K, then 16.8K in V.32terbo mode—if conditions are poor. Couriers also detect improved line conditions and shift upward to the next higher speed. Transmit and receive channels adapt independently, each detecting and adjusting to line conditions.

Calls to and from Modems and Fax Machines

When used with fax-capable communications software, the Courier auto-detects and responds to calls from modems and Group III fax machines, using EIA-standard Class 1 or 2.0 fax software.

Testing

ITU-T V.54 loopback testing is available. The Courier can perform analog, digital, and remote digital loopback tests. See Chapter 15, *Testing*, in the *Courier Modems Command Reference* manual.

Caller ID Support

The Courier can interpret and display caller ID information. See the Caller ID section in Chapter 3, *Dialing, Answering, and Hanging Up*, in the *Courier Modems Command Reference* manual.

Distinctive Ring Support

The Courier can be set to recognize and respond to any of four distinctive ring patterns. See the Distinctive Ring section in Chapter 3, *Dialing, Answering, and Hanging Up*, in the *Courier Modems Command Reference* manual.

Carrier Loss Redial

If you enable the carrier loss redial feature, the Courier will automatically redial the last number it dialed if carrier is lost (for example, if there is trouble on the line or if the remote modem hangs up). This feature is useful for dialed-line connections that operate unattended. See Chapter 3, *Dialing, Answering, and Hanging Up*, in the *Courier Modems Command Reference* manual.

Plug and Play Support

The software for the external Courier has been developed to support Plug and Play (as defined by the Plug and Play External COM Device Specification, Version 1.00). When you connect the Courier to a computer that uses a Plug and Play operating system, such as Windows 95, the computer will automatically detect and configure itself to support the Courier.

Synchronous Support

The Courier can connect to synchronous serial ports to allow access to mini- and mainframe computers. See Chapter 12, *Dedicated/Leased Line and Synchronous Applications*, in the *Courier Modems Command Reference*.

Dedicated- and Leased-Line Support

The Courier does not need to be connected to the public switched telephone network. You can connect a standard telephone cable between the Courier and another modem and make connections without even dialing. You can also connect the Courier to a line that you lease from the telephone company. See Chapter 12, *Dedicated/Leased Line and Synchronous Applications*, in the *Courier Modems Command Reference*.

Chapter 2 ***Installing the Courier***

What You Need

A Computer or Terminal with a Serial Port

The Courier is compatible with any computer or terminal that provides a serial port with an EIA-232 interface. See Appendix A, *The Serial Port*, for details.

For top performance, your serial port must support speeds of 115.2 Kbps. For IBM-compatible PCs, make sure your computer has a 16C550 UART. Check your computer's documentation for details.

An Analog Telephone Line

The Courier requires a standard, analog telephone line. **Do not connect the Courier to a digital telephone line.** Digital lines are commonly used in office buildings and hotels. If you are unsure whether your line is analog or digital, ask a network administrator or your local telephone company.

Communications Software

You must configure and run a communications software package in order to make the Courier work. The Courier is shipped with a DOS/Windows communications software package.

A Serial Cable

Because there are a variety of connector types that different computers require, a serial cable is not provided with the Courier. See the next section, *Choosing a Serial Cable*, for guidelines.

Choosing a Serial Cable

- 1 Check the back of your computer for a *serial port*. Serial ports may be labeled with the word COM or RS-232 or with symbols such as **IOIOI**, , or . Refer to your computer's documentation to be sure.

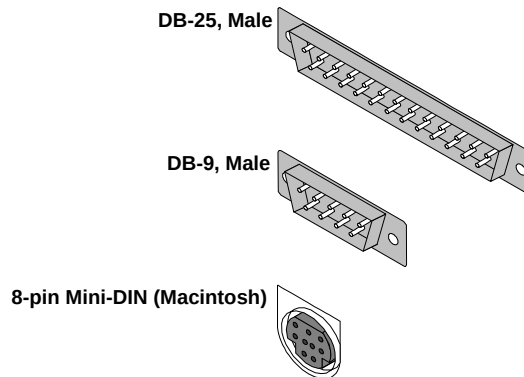


Figure 2-1. Typical Serial Ports.

- 2 Depending on what kind of serial port is on your computer, obtain a serial cable with a connector that will fit (either a female DB-25, female DB-9, or a male 8-pin Macintosh serial connector). The Courier's end of the serial cable must be a male DB-25 connector. For a Macintosh, you need a *hardware handshaking* cable.

NOTE: If you plan to connect the Courier to a mainframe computer or use the Courier to dial in to a mainframe computer, refer to Chapter 12, *Synchronous Applications*, in the *Courier Modems Command Reference* manual.

Package Contents

- ◆ The Courier
- ◆ Power adapter
- ◆ Phone cable
- ◆ Quick reference card
- ◆ Customer support services card
- ◆ DOS/ Windows communications software package
- ◆ A *Command Reference* manual and this *Getting Started* manual

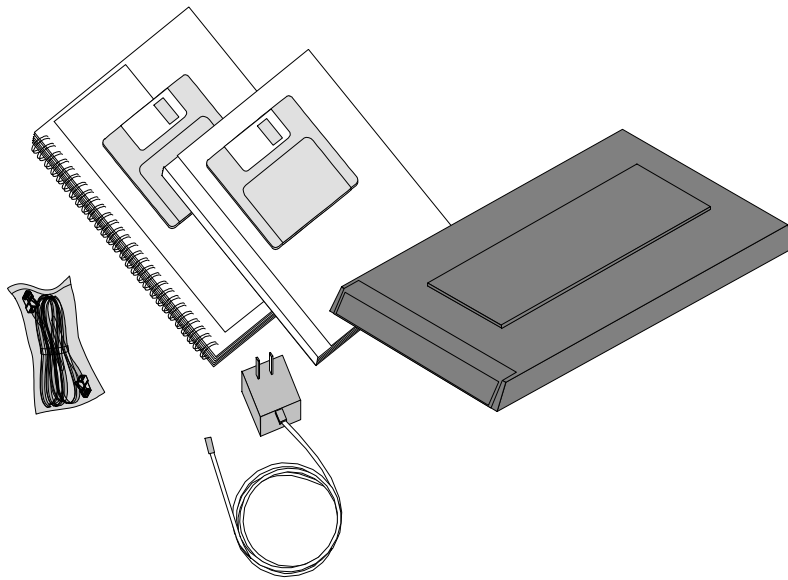


Figure 2-2. Contents of the Courier Package.

Installing the Courier

- 1** Connect the male DB-25 end of your serial cable to the Courier and the other end to a serial port on your computer.
- 2** If you are connecting the Courier to an IBM-compatible PC, note the number of the serial port to which you connect the Courier. If your serial ports are lettered instead of numbered, A is COM1 and B is COM2.
- 3** Connect one end of the phone cable to the wall jack and the other end to the Courier port labeled JACK.

If you have a telephone that you'd like to connect to the Courier, plug its cable into the Courier port labeled PHONE.
- 4** Plug one end of the power adapter to the Courier and the other end to a standard AC outlet.
- 5** Switch your computer's power on.

Setting the DIP Switches

The DIP switches are located on the bottom of the Courier. You will probably not need to change the DIP switch settings.

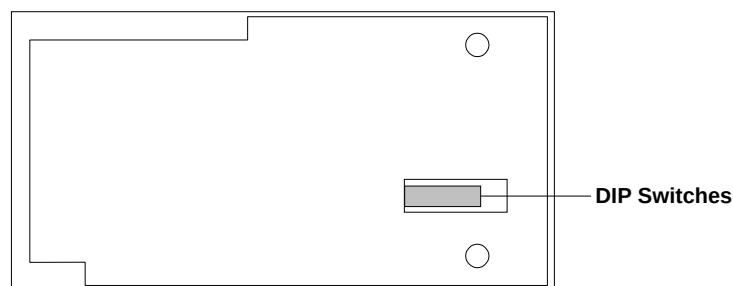


Figure 2-3. Location of the DIP Switches.

Table 2-1. DIP Switch Settings.

DIP Switch	Factory Setting	Setting	Effect	For More Info ¹
1	OFF	OFF ON	DTR normal Ignore DTR	Ch 6
2	OFF	OFF ON	Verbal result codes Numeric result codes	Ch 5
3	ON	OFF ON	Suppress result codes Display result codes	Ch 5
4	OFF	OFF ON	Echo offline commands Don't echo offline commands	Ch 2
5	ON	OFF ON	Auto-answer Don't auto-answer	Ch 3
6	OFF	OFF ON	Normal Carrier Detect Carrier Detect always on	Ch 6
7	OFF	OFF ON	Display all result codes Display result codes only when originating calls	Ch 5
8	ON	OFF ON	Ignore AT commands (dumb mode) Act on AT commands (smart mode)	Ch 1
9	OFF	OFF ON	Disconnect on +++ Don't disconnect on +++	Ch 2
10	OFF	OFF ON	Load the configuration that is stored in non-volatile memory (NVRAM)* Load the &F0 configuration from read-only memory (ROM)*	Ch 4

IMPORTANT: When you power ON or reset the Courier, the DIP switch settings override the settings you may have made previously using AT commands.

If you change the DIP switch settings while the Courier is powered ON, you can avoid powering the Courier off to make the new settings take effect. Just send the Courier the ATZ command.

¹ For more information, refer to the indicated chapter in the *Courier Modems Command Reference*.

Powering On the Courier

Flip the power switch at the back right corner of the Courier. Watch the LED indicators at the front.

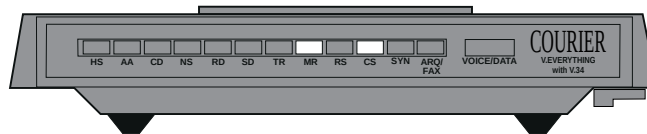


Figure 2-4. Normal Appearance of the Courier's LEDs When Not Attached to a Computer.

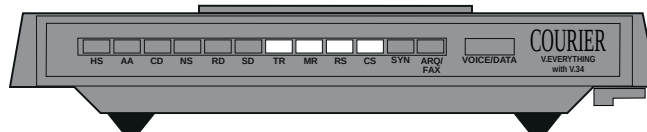


Figure 2-5. Normal Appearance of the Courier's LEDs When Attached to a Computer and Ready to Receive Commands.

Chapter 3

Communicating with the Courier

After you've connected the Courier to a serial port and powered the Courier on, you need to make sure that your computer can send commands to the Courier. Once you're sure that your computer can communicate with the Courier, you're ready to start making or taking calls!

The methods of verifying communication with a modem vary depending on the operating system your computer uses.

Windows 95	OS/2
Windows 3.x	Mac OS
Windows NT RAS	UNIX / AIX / Linux
DOS	Mainframe OSs

This chapter provides advice about how to get many popular operating systems to communicate with the Courier. The last section, Testing the Courier, explains how to verify that your Courier and software are working together correctly.

Windows 95

The first time you start Windows 95 after you've installed the Courier, Windows 95 will auto-detect the Courier. Make sure the Courier is powered on when you start Windows 95.

Windows 95 has built-in support for Couriers, but since the Courier has been updated since the release of Windows 95, you need to supply Windows 95 with an updated INF file so it can properly identify your Courier. The latest INF file is always available from our BBS and our ftp site.

Getting the INF File

- 1** Power on your computer with the modem installed. As Windows 95 loads, it presents a **New Hardware Found** panel. Select Standard Modem.
- 2** Start a communications software package (such as HyperTerminal, which is included with Windows 95) and dial the U.S. Robotics BBS at **(847) 982-5092**.

Go to **File directories**, then **5) U.S. Robotics Courier**.
Download the **MDMUSRCR.INF** file.

Or, **ftp://ftp.usr.com/SYS/PCB/dl05** and get **MDMUSRCR.INF**.

Installing the INF File

- 1** Go to an MS-DOS Prompt:

```
Microsoft® Windows 95  
©Copyright Microsoft Corp 1981-1995  
c:\WINDOWS>
```

- 2** Change to the directory in which you put the INF file, for example, the TEMP directory.

```
C:\WINDOWS>cd\temp
```

Windows responds:

```
C:\TEMP>
```

- 3** Enter the following command:

```
C:\TEMP>copy mdmusr.cr.inf \windows\inf
```

Windows responds:

```
1 file(s) copied
```

Be aware that the \inf directory is hidden, and even though it may not appear, it is there.

Making Windows 95 Auto-Detect Your Courier

- 1** Click **Start | Settings | Control Panel** and then double-click **Modems**. Remove the Standard Modem.
- 2** Then click **Add**.
- 3** At the Install New Modem panel, click **Next**.
Windows 95 will auto-detect your Courier and install the appropriate support.

Windows 95 Dial-Up Networking: Internet Access

This section explains how to set up the Courier for accessing the Internet using Windows 95 Dial-Up Networking. You can also use Dial-Up Networking for accessing remote LANs.

Make sure Dial-Up Networking is installed.

- 1** Click **Start | Settings | Control Panel**.
- 2** From the **Control Panel**, double-click on **Network**.
If a **Dial-Up Adapter** is listed, go to step 5. If not, continue with step 3.
- 3** Go back to the **Control Panel** and double-click on **Add/Remove Programs**.
- 4** Click the **Windows Setup** tab. Then double-click on **Communications**. Click on **Dial-Up Networking** to check the box. Click **OK**, then **OK**.
Insert your Windows 95 Setup diskette or CD-ROM when you are prompted, and Windows 95 will install Dial-Up Networking.

Add Dial-Up TCP/IP Support.

5 Click **Start | Settings | Control Panel**.

6 From the **Control Panel**, double-click on **Network**.

If **TCP/IP -> Dial-Up Adapter** is listed, go to step **8**. If not, continue with step **7**.

7 Select **Add... | Protocol | Microsoft | TCP/IP | OK**.

Insert your Windows 95 Setup diskette or CD-ROM when you are prompted, and Windows 95 will install TCP/IP protocol support.

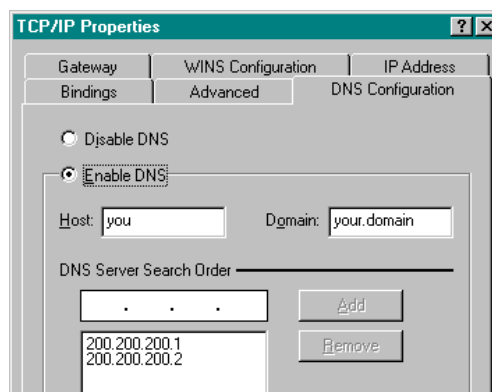
Customize the TCP/IP Settings.

8 Click **Start | Settings | Control Panel**.

9 From the **Control Panel**, double-click on **Network**.

10 Select **TCP/IP -> Dial-Up Adapter | Properties...** Click on the **DNS Configuration** tab. Select **Enable DNS**.

Type in your **Host:** and **Domain:** names, which are provided to you by your Internet service provider. Type your DNS server's IP address or addresses (also provided by your Internet service provider) in the blank, and then click **Add | OK | OK**.



Set Up a Connection to Your Internet Service Provider.

11 Click **Start | Programs | Accessories | Dial-Up Networking**.

12 Double-click **Make New Connection**.

Type a name for the connection, then click **Next >**. Type a phone number for the connection, then click **Next >**. You should see a message indicating that a new connection was created successfully. Click **Finish**.

13 From the Dial-Up Networking window, put the cursor over your new icon and click the right mouse button. Select **Properties** from the menu that appears.

14 Click **Server Type...**, and then deselect **Log on to Network**, **NetBEUI**, and **IPX/SPX Compatible**. Select **OK**, then **OK**.

Double click on your new connection icon to connect!

Windows 3.x

Windows 3.x comes with a built-in communications software package, Windows Terminal. You can use Windows Terminal to test the Courier or you can install the communications software package that is included in the package with the Courier.

Windows Terminal is in the Accessories group by default. Because Terminal only supports speeds up to 19200 bps, you will probably want to use a third-party communications software package, such as Quick Link II instead. For Quick Link II, see the section, *Testing the Courier*, on page 3-14. For other Windows software packages, see Chapter 5, *Setups for Common Windows Software Packages*.

For instructions about how to set up your Windows communications software package, call our fax-on-demand service (at 800-762-6163 or 847-676-1598) or our BBS (at 847-982-5092). Request document 10000 for a list of our technical support documents.

DOS

Because there is no communications software built in to DOS, you must install and run a third-party communications software package in order to operate the Courier.

The Quick Link II diskette, which is included in the package with the Courier, contains a DOS version of the software as well as a Windows version.

You must choose the COM port to which the Courier is attached in whatever communications software package you are using.

For instructions about how to set up your DOS communications software package, call our fax-on-demand service (at 800-762-6163 or 847-676-1598) or our BBS (at 847-982-5092). Request document 10000 for a list of our technical support documents.

OS/2

To get the best performance, you should replace the standard OS/2 serial port drivers COM.SYS and VCOM.SYS with SIO.SYS and VSIO.SYS. You can get these enhanced drivers from our BBS at 847-982-5092. Check file area 18, *OS/2 Support, Utilities, etc* for SIO153.ZIP.

For help with OS/2 Warp installations, download the file WARPIN.ZIP from BBS file area 18, *OS/2 Support, Utilities, etc*.

For instructions about how to set up your OS/2 communications software package, call our fax-on-demand service (at 800-762-6163 or 847-676-1598) or our BBS (at 847-982-5092). Request document 10000 for a list of our technical support documents.

Mac OS

Be sure you're using a hardware handshaking cable to connect the Courier to the Macintosh. Also, if you won't be using AppleTalk Remote Access (ARA), then set AppleTalk to **Inactive** (in Chooser). Otherwise ARA may interfere with your communications software.

As a general rule, set DIP switches 1, 3, 5, and 8 ON, and use AT&F1 as your modem initialization string.

For instructions about how to set up your Macintosh communications software package, call our fax-on-demand service (at 800-762-6163 or 847-676-1598) and request document 10000 for a list of available documents. Or, call our Macintosh BBS (at 847-676-1598).

Windows NT

As a Client

If you want only to dial out using the Courier, Windows NT works very much like Windows 3.x. Windows NT ships with a built-in Terminal program that can support speeds of up to 115.2 Kbps.

Additionally, Windows NT includes a Remote Access Dialer, but it is not installed by default.

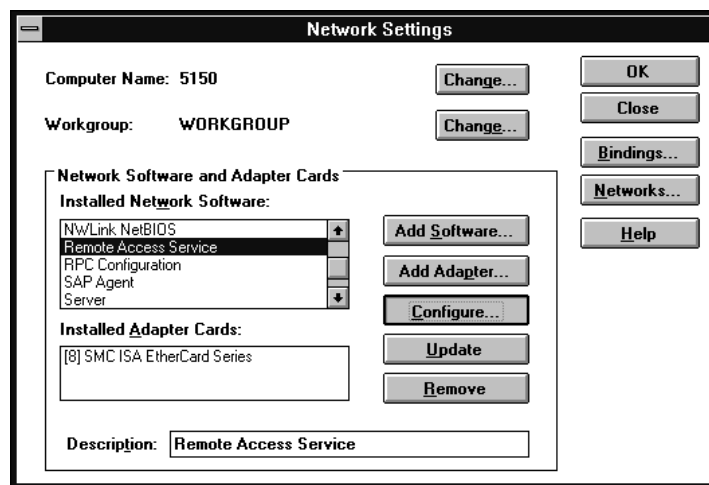
You can install Quick Link II in Windows NT but you may experience problems with fax operations.

As a Server

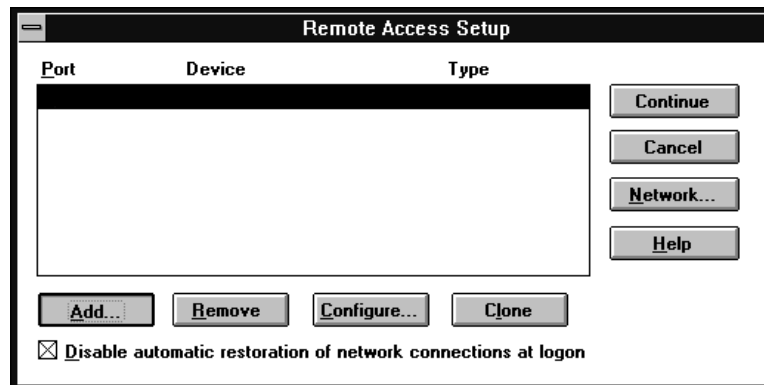
Here's how to set up Windows NT Remote Access Service (RAS) to recognize the Courier. First, you must install RAS, which is included with Windows NT but is not installed by default.

Start Windows Terminal to verify that NT can communicate with the Courier. Select the COM port to which the Courier is connected. You should be able to send **AT** <Enter> and get an **OK** response.

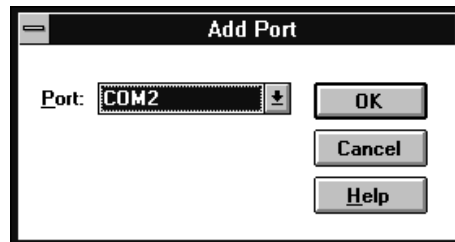
From the Control Panel, double-click **Network**. The Network Settings window appears. Scroll down the list of Installed Network Software and select **Remote Access Service**.



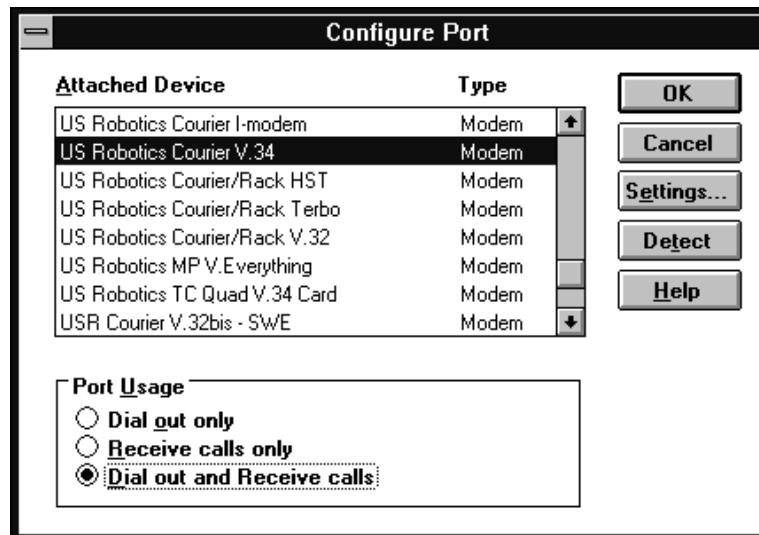
Click **Configure...** The Remote Access Setup windows appears. Click **Add...**



Select the port to which the Courier is connected.



When you click **OK**, Remote Access setup asks you if you would like it to try to detect the modem connected to the port. Click **Cancel** to select the Courier from a list.



Select **US Robotics Courier V.34**, and then click OK and exit from Network setup. When you're prompted to restart NT, click **Don't Restart Now**. Then, from Program Manager, click **File | Shutdown**. When NT shuts down, power your computer off and then on again.

Now RAS knows about the serial port and the Courier that is attached. Next, you need to set up user accounts and access privileges; those tasks are beyond the scope of this manual.

UNIX/Linux/AIX

If the Courier will be answering, set DIP switch 3 OFF; 4 and 8 ON.

Linux has a built-in communications software package called minicom. By default, minicom is located in the `usr/bin` directory.

For instructions about how to set up your UNIX, Linux, or AIX communications software package, call our fax-on-demand service (at 800-762-6163 or 847-676-1598) or our BBS (at 847-982-5092). Request document 10000 for a list of our technical support documents.

Mainframe OSs

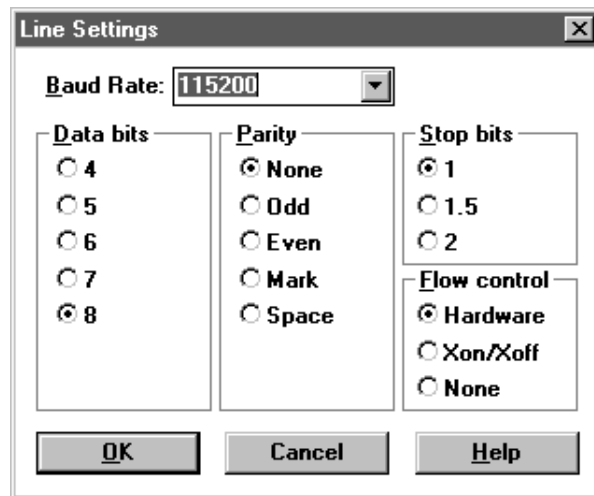
Refer to Chapter 12, *Synchronous Applications*, in the *Courier Modems Command Reference* manual.

Testing the Courier

Use any communications software package for this test. Quick Link II Fax is used as an example.

Quick Link II Fax

- 1 Install and then start Quick Link.
- 2 Click **Setup | Line Settings...** Make the following settings.
If you are using a computer with a serial port that cannot support high speeds, choose 19200. Then click **OK**.



- 3 Click **Setup | Modem Setup...** Select the Comm. Port to which the Courier is attached. Click **OK**.
- 4 In the terminal window, type **AT <Enter>**. The Courier should respond **OK**.
- 5 Dial the U.S. Robotics BBS at (847) 982-5092. For example, **ATDT18479825092 <Enter>** dials the U.S. Robotics BBS as a long-distance call.

NOTE: If you need to dial 9 to get an outside line, dial as in this example: **ATDT9,18479825092 <Enter>**. If you want to disable call waiting for this call, in most areas, dial *70 before you dial the phone number, for example, **ATDT*70,18479825092 <Enter>**.

The following screens are what you should see when you dial the BBS.

```
atdt9825092
CONNECT 31200/ARQ/V34/LAPM/V42BIS
CONNECT 31200/ARQ/V34/LAPM/V42BIS
CONNECT 115200 / 02-27-96 (12:52:21)
(Error Correcting Modem Detected)

USR Support BBS - ComServer 486
PCBoard (R) v15.22/100 - Node 11

Testing your system capability...
Do you want graphics (Enter)=yes? ( )
```

Figure 3-1. Connecting...

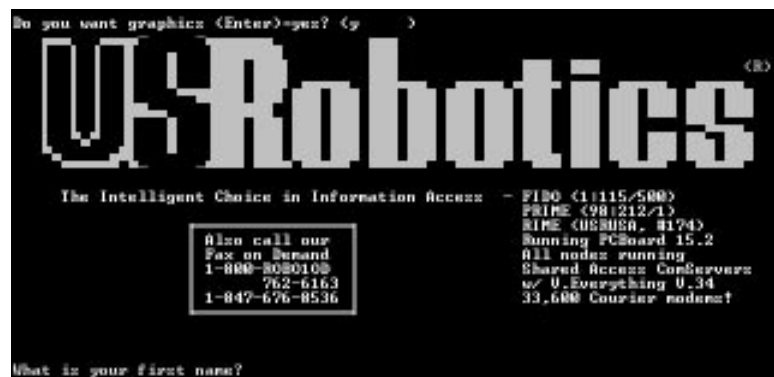
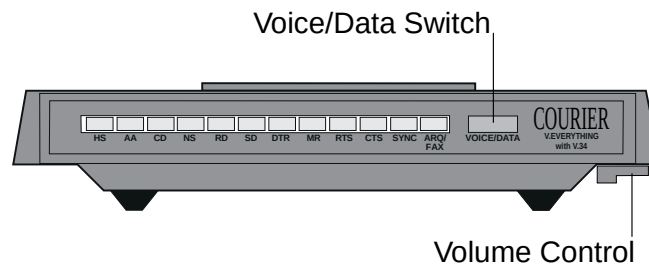


Figure 3-2. Success!

Chapter 4 Other Features

This chapter explains how to use features specific to the *Courier V.Everything External Modem*, including the volume control, the Voice/Data switch, and MI/MIC operations.



Volume Control

The volume control is located under the right front of the Courier. Slide the control toward the front of the Courier to increase the volume. Slide the control toward the back of the Courier to decrease the volume.

Use the `ATMn` command to control when the speaker sounds. M1 is the default.

- | | |
|-----------|--|
| Mn | Control when the speaker sounds. |
| M0 | The speaker is always off. |
| M1 | The speaker is on until the call is negotiated. |
| M2 | The speaker is always on. |
| M3 | The speaker turns on after the last digit is dialed and stays on until the call is negotiated. |

Example: **ATM1 <Enter>**.

The Voice/Data Switch

The Voice/Data switch allows you to alternate voice and data over the same connection. You call the remote user by telephone, then you each press the Voice/Data switch on the Courier. After you're finished sending and receiving files, press the Voice/Data switch to return to voice.

You can accomplish the same function by sending AT commands, and you can also assign a different function to the Voice/Data switch if you don't plan to use it for alternating voice and data.

Changing back to voice after the modems connect requires that both modems have handset exclusion. Handset exclusion means that when the modem is using the phone line, the modem automatically disconnects the phone (handset). If you keep the handset off hook, once you hang up the modem, the handset takes over the phone line and you can use voice communications again.

If the remote user does not have handset exclusion, you may not be able to switch back to voice mode successfully once you have switched to Data mode.

If the remote user does not have a Voice/Data switch, he or she can follow the instructions for using the appropriate AT command. See the next section for details.

Using the Voice/Data Switch—S32=1, S32=2

Either user can start the call, but you need to decide up front which modem will originate and which will answer.

- 1** Send the modem that will originate **ATS32=1 <Enter>**
Sending ATS32=1 tells the Courier to go on line and send ATD <Enter> when you press the Voice/Data switch.
- 2** Send the modem that will answer **ATS32=2 <Enter>**

Sending ATS32=2 tells the Courier to go on line and send ATA <Enter> when you press the Voice / Data switch.

NOTE: If you've stored a command string (using &ZC=s), the Courier will default to S32=9, which executes the stored command string when you push the Voice / Data switch.

- 3** Call the remote user (make a voice call) or have them call you. You must use the phone that is attached to the Courier's PHONE port.
- 4** When you're ready for the modems to connect, press the Voice / Data switch of the "originating" modem (the one that set S32=1). The handset goes dead. Do not hang up the phone.

Immediately afterward, press the Voice / Data switch of the "answering" modem (the one that set S32=2). The modems go through the normal negotiation process.

If the answering modem has handset exclusion, the answering user should not hang up the phone either.

If the remote modem doesn't have handset exclusion, you can try to switch back to voice later. Or, you both can hang up your phones as soon as the modems go off hook.

Using Commands—ATD, ATA

If your Voice / Data switch is set for a function other than Voice / Data operations and you don't wish to change it, use AT commands.

- 1** Make a voice call to the remote user (or have the remote user call you). You must both use telephones that are connected to the PHONE port of your modems.

- 2 If you are to originate the connection, type the following command:

ATD <Enter>

NOTE: Be sure the modem is not set to X2, X4, X6 or X7, or it will return the NO DIAL TONE result code and hang up.

- 3 The remote user should type the answer command:

ATA <Enter>

- 4 If the remote modem also has handset exclusion, leave both phones off hook in case you wish to switch back again to voice after your data transfer. If the remote modem doesn't have handset exclusion, switching back to voice may not be successful. If you don't want to switch back to voice later, hang up both phones as soon as the modems go off hook.

Changing the Function of the Voice/Data Switch

Use Register S32 to set the voice / data switch for the function you desire. The default is S32=1—pressing the switch forces the modem off hook in Originate mode.

Holding the switch in when you power on the modem causes it to perform a power-on self-test.

NOTE: Some of the applications listed below require pre-configuration. Review the Chapter (from Table 4-1) in the *Courier Modems Command Reference* before assigning the Voice / Data switch function.

Table 4-1. Voice/Data Switch Commands.

S32 Value	Voice/Data Switch Function	Related Command
0	Disabled	—
1	Voice/Data—Originate Mode	ATD (Chapter 3)
2	Voice/Data—Answer Mode	ATA (Chapter 3)
3	Redial Last Number	ATDL (Chapter 3)
4	Dial Number Stored at position 0	ATDS0 (Chapter 3)
5	Auto Answer On/Off Toggle	ATS0=0 or 1 (Chapter 3)
6	Reset Modem	ATZ (Chapter 4)
7	Initiate Remote Digital Loopback	AT&T6, S16=8 (Chapter 15)
8	Busy Out the Phone Line Toggle	—
9*	Execute Stored Command	AT&ZC=s (Chapter 4)

* The modem is shipped from the factory set at S32=9. If a command string has been stored (&ZC=s), the Courier sends the stored command string when you push the Voice/Data switch. If no command string is stored, the Courier still reports that S32=9, but actually behaves as if it is set to S32=1, Originate mode.

You can program the voice / data switch to execute a stored command string when pressed. The following example assigns a command string that displays the link diagnostics screen when you press the voice / data switch.

AT&ZC=I6 <Enter>

Set the voice / data switch function to *execute stored command string* by setting Register S32 to 9 with the following command:

ATS32=9 <Enter>

Note that you can reset the voice / data switch at any time to one of the other available functions. Additionally, you can overwrite the stored command string with a new one at any time.

Once you've stored your command string and set Register S32, press the Voice / Data switch whenever you want the Courier to send the command string.

Getting Information About Calls

Here are the commands that provide detailed information about your current settings and current and last calls.

To get call-in-progress data and current settings while you are on line, set DIP switch 9 OFF and then send **ATZ <Enter>** (or power the Courier off and then on).

Alternatively, you can send **ATS14.0=0 <Enter>**, but be aware that the DIP switch setting will override your setting at power on or reset (even if you add &W to write the command to NVRAM).

Once you've set DIP switch 9 or sent **ATS14.0=0 <Enter>**, you can type the following command to get to online command mode, and the Courier will not hang up:

+++

To return on line, type:

ATO <Enter>

Current Settings

Current settings	ATi4
Data or fax mode	AT+FCLASS?
	0=Data 1=Class 1 fax 2.0=Class 2.0 fax

Call in Progress

Speed	ATi6 — Speed
Duration	ATi6 — Current Call
Modulation	ATi11 — Modulation
Error control protocol	ATi6 — Protocol
Compression type	ATi6 — Compression
Data or fax mode	AT+FCLASS?
	0=Data 1=Class 1 fax 2.0=Class 2.0 fax

Last Call

Last-dialed number	ATI4 — Last Dialed #
Disconnect reason	ATI6 — Disconnect Reason is
Speed	ATI6 — Speed
Duration	ATI6 — Last Call
Modulation	ATI11 — Modulation
Error control protocol	ATI6 — Protocol
Compression type	ATI6 — Compression

MI/MIC Operations

Couriers are shipped with MI/MIC disabled, that is, for normal use. Mode Indicate/Mode Indicate Common (MI/MIC) closure is required for some applications where existing hardware, such as a PBX, does the dialing.

For these applications, the Courier must power up in Originate mode. Then the Courier goes on line and accepts data when it connects with the number dialed by the system equipment.

Once you've set Register S34, have the system force the modem off hook by closing the MI/MIC leads in the phone line connector.

Setting the MI/MIC Jumpers

- 1** Send **ATS34.5=1&W** <Enter>.
- 2** Power off the Courier and disconnect all of its cables.
- 3** Turn the Courier upside down. Remove the two square vinyl feet and put them aside.
- 4** Remove the two Phillips screws located in the wells beneath the vinyl feet.
- 5** Pry off the plastic volume slide-switch cover.
- 6** Raise the back end of the case bottom and lift it away.

- 7 Remove the modem (printed circuit board), carefully easing the voice / data switch out of its opening in the front panel.
- 8 Locate jumpers J4 and J6.

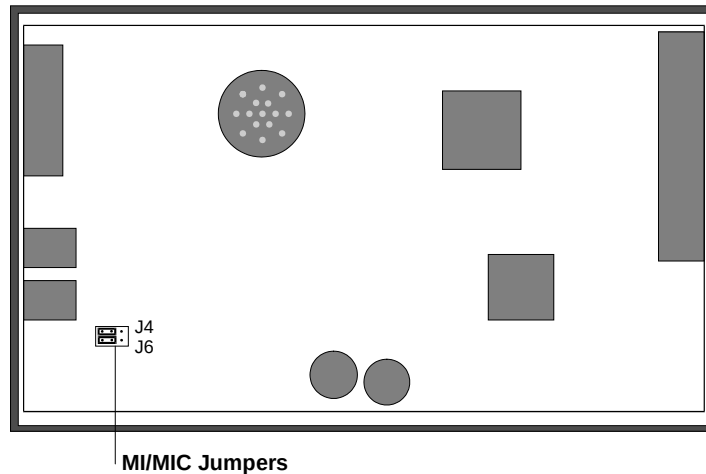
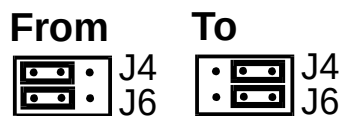


Figure 4-1. Location of the MI/MIC Jumpers.

- 9 Set the jumpers as shown:



- 10 Replace the modem and reconnect the cables.

CAUTION: When you power on the modem there will be potentially hazardous voltage, particularly near the phone jacks. Do not touch the board when the power is on.

- 11 Power on the modem. Check to see that the Off Hook (OH) status light goes on. If you dialed a number, listen for an answer tone from the remote modem.

Then drop the DTR signal. The modem should go on hook and the OH status light should go off.

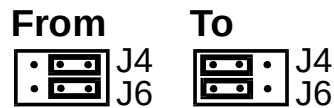
- 12** When you are sure the equipment is working correctly, reassemble the Courier.

Troubleshooting

If the Courier does not respond to MI/MIC closure, or if the Courier fails to go back on hook when the computer or terminal drops the Data Terminal Ready (DTR) signal, your phone equipment probably reverses MI/MIC polarity.

You can solve this problem by reversing the modem's MI/MIC wiring. Do this by resetting the two jumpers on the printed circuit board.

Follow the steps from the previous section. This time, set the jumpers as follows:



If you still have difficulty, there may be a problem with the phone cable or with your hardware.

Chapter 5

Setups for Common Windows Software Packages

If you are running one of the following software packages, follow the steps given to configure it for use with the Courier.

America Online v2.0	Prodigy
NetManage Chameleon v4.5	Trumpet Winsock
pcAnywhere v2.0 for Windows	WinCIM (for CompuServe)
ProComm Plus v2.0 for Windows	WinFax Pro 4.0

These instructions are valid as of the printing of this manual and may not apply to future releases of the software packages.

If you need further help, or help with a software package that is not listed here, try our fax-on-demand service (at 800-762-6163 or 847-676-1598) or our BBS (at 847-982-5092). Request document 10000 for a list of our technical support documents.

America Online 2.0

- 1** From the **America Online - Welcome** window, choose **Setup**.
- 2** From the **Network & Modem Setup** window, select **Setup Modem**.
- 3** From the **Modem Selection and Customization** window, select the COM port that the Courier is using, and choose **USR Robotics Courier HST Dual Std/PC FAX w/ASL (v2.0)** as your modem. Then select **Edit Commands**.

- 4** The following window will appear. Change the **Setup Modem String** to match:



USRobotics Courier HST Dial Str(PC FAX w/ASL [v2.0])	
Setup Modem String:	AT&F1*M
Restore Modem String:	AT
Dial Prefix:	ATD
Dial Suffix:	M
Disconnect String:	ATHM
Escape String:	+++
Reset String:	ATZM
OK Cancel	

- 5** Select **OK**, then **OK**, then **OK**.

NetManage Chameleon 4.5

You should know in advance which Internet service provider (for example, PSINet or NETCOM) you will be using. NetManage provides a number of configuration templates for many popular Internet service providers. The settings recommended here are the Courier-specific ones only.

- 1** Click **Setup | Communications | Port**. Two settings will be specific to your setup:

Baud Rate: 115200 bps is recommended, but only if you have a 16550 UART. The UART is a computer chip that controls the transmission and reception of signals through your computer's serial port. Check your computer's manual to be sure - slower UARTs, like 16450 or 8250, will limit speeds to 19200 bps.

Connector: Select the COM port to which the Courier is attached.

Baud Rate

☐ 2400
 ☐ 9600
 ☐ 19200
☐ 38400
 ☐ 57600
 ☒ 115200

Data Bits ☒ 5 ☐ 6 ☐ 7 ☒ 8

Stop Bits ☒ 1 ☐ 1.5 ☐ 2

Parity ☒ None ☐ Odd ☐ Even ☐ Mark ☐ Space

Flow Control ☒ Hardware ☐ None

☐ Parity Check ☒ Carrier Detect

Connector ☐ None ☐ COM1 ☒ COM2 ☐ COM3 ☐ COM4

OK Cancel

- 2 Click **Setup | Communications | Modem**. Select U.S. Robotics Courier Dual Standard.

Modem Name: USRobotics Courier Dual Standard/Dual Standard PC OK Cancel

Settings

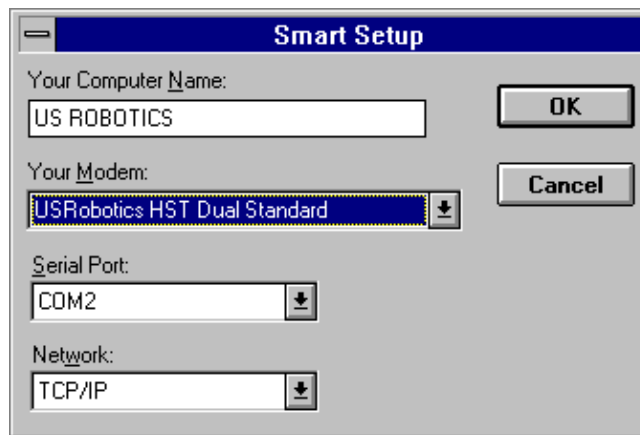
Modem Init: ^M~AT X6 &B1 &H1 &R2 E0 V1 ^V2=5 ^M

Dial Prefix: ATDT **Dial Suffix:** ^M **Binary IX:** **Max Speed:** 115200

Answer Setup: M~ATS0=1^M **Hang Command:** ++~^ATH^M **Binary BX:**

pcAnywhere 2.0 for Windows

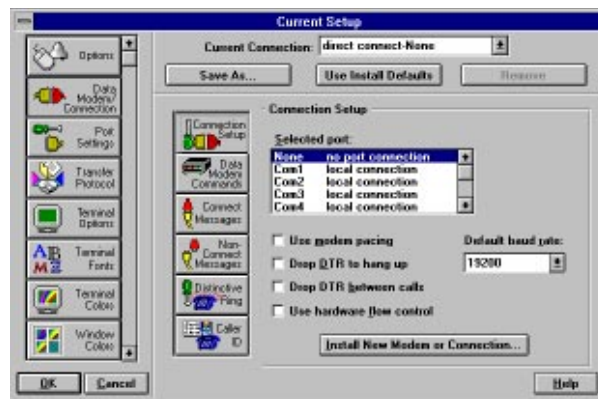
- 1** From the **Smart Setup** window, go to the **Your Modem** area and select **USRobotics Courier HST Dual Standard**.



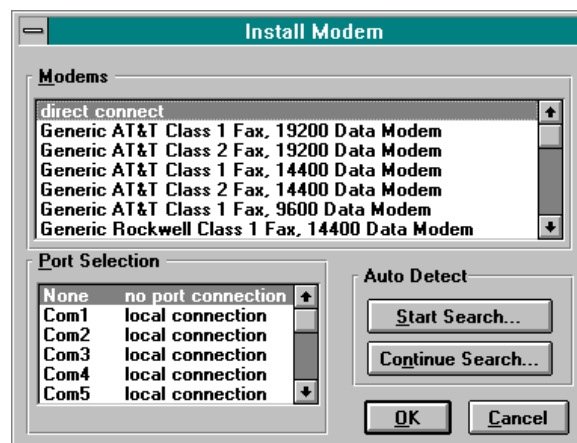
- 2** Select the serial port and the protocol running on the network into which you'll be dialing, and then select **OK**.

ProComm Plus 2.0 for Windows

- 1** Double-click on the PROCOMM PLUS icon.
- 2** Select **Setup**, and then **Setup....**
- 3** Select **Data Modem/Connection**, and then **Connection Setup** as shown in the following window:



- 4** Select **Install New Modem or Connection**. Under AutoDetect, select **Start Search**.



- 5 After the search is complete, go to the **Modems** list and select **US Robotics Dual Standard 28800**, and then select **OK**.

Prodigy

- 1 Start Prodigy.
- 2 From the **Prodigy SIGN-ON** window, select **Comm Options Setup**.
- 3 From the **Set Up** window, select a **Modem Speed** of **9600 bps** and select the Communications Port that the Courier is using; then select **OK**.

Set-Up

Primary Phone Number: 1 708 555 5555
Modem Speed (bps): 2400, 9600, 14400
Network Symbol: Q

Alternate Phone Number:
Modem Speed (bps): 2400, 9600, 14400
Network Symbol: Q

Communications Port:
☐ COM 1 ☐ COM 3
☒ COM 2 ☐ COM 4

Phone Type:
☒ Tone ☐ Pulse

Dialing Options for this session:
☒ Dial with my Primary Number
☐ Dial with my Alternate Number
☐ Dial the PRODIGY Phone Directory
Note: Alternate number may not be available when primary is working.

Please Note:
Not all modem speeds available in all areas.

☒ Save settings for future sessions.

OK Cancel Help

Trumpet Winsock

- 1** From Windows, double-click the **Trumpet Winsock** icon. Select **Dialler**, and then **Edit Scripts**.
- 2** Open the **LOGIN.CMD** file. Change these lines:
output AT&F1\13
input 10 OK\n
output atdt<phone number to dial>
- 3** Exit and save the changes you made.
- 4** From **File | Setup**, under **SLIP Port**, enter the COM port number that the Courier is using, its Baud Rate, and check **Hardware Handshake**.

You're now ready to call your Internet service provider. Select **Dialler | Login**.

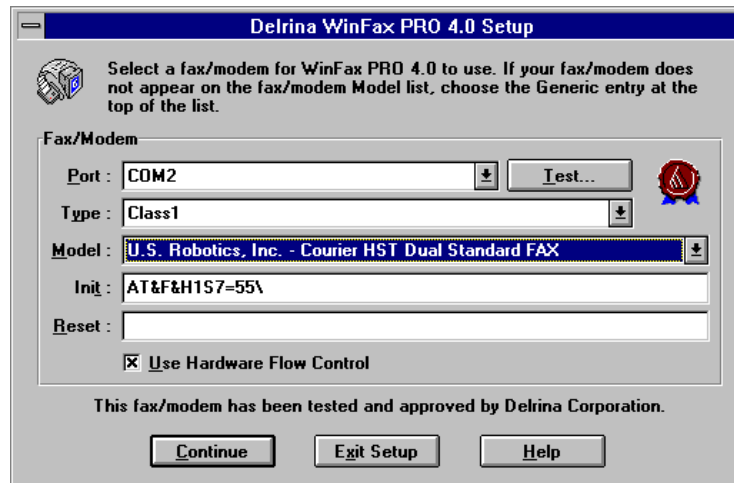
Win CIM (CompuServe)

- 1** From Windows **Main**, double-click on **Control Panel**. From **Control Panel**, double-click on **Ports**. Set the COM port that the Courier is using to **19200** baud rate and **Hardware** flow control.
- 2** Start the WinCIM program, and select **Special** and then **Session Settings**. Make sure that you choose the COM port that the Courier is using and set the baud rate to 19200.
- 3** From the **Special** pull-down menu, select **Modem Control Strings**. Your modem type should be **Current** and **Initialize** should show this string:
AT&F&B1&H1&R2&A3&K3X4^M

Reset should show **&F**, **Connect** should show **CONNECT**, and **Suffix** should show **^M**.

WinFax PRO 4.0

- 1 During installation, you are asked the following question:
Do you want Setup to test COM ports for a fax device?
Select **Yes**.
- 2 When the following screen appears, choose as the Model **U. S. Robotics, Inc Courier Dual Standard FAX**, and then select **Continue**.



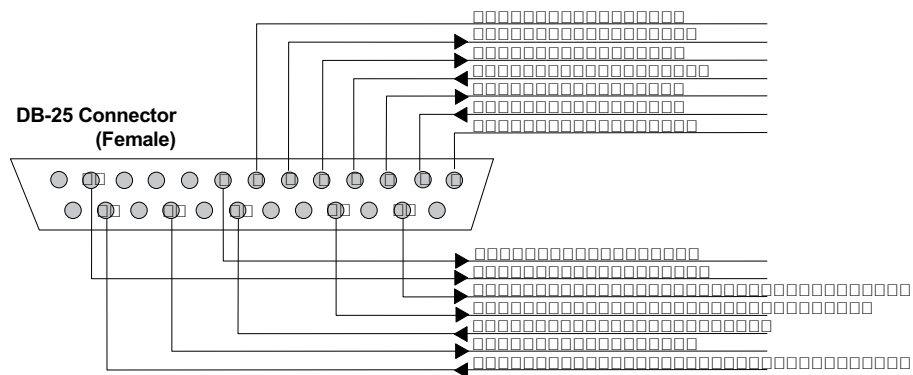
Appendix A

The Serial Port

Most computers provide a DB-25 or DB-9 port that conforms to the EIA-232 standard. If you are connecting the Courier to a Macintosh computer, see the section *For Macintosh Computers*.

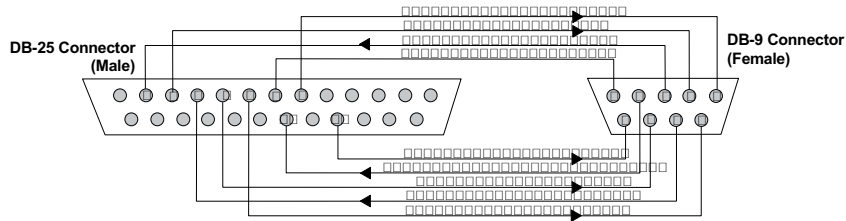
The EIA-232 Interface

The Courier's serial port is factory set to signal according to the EIA-232 standard:



Wiring a DB-25 to DB-9 Cable

DB-9 connectors for PCs should be wired at the computer end of the cable as shown below.



Minimum Requirements

Some computer / terminal equipment supports only a few of the Courier's EIA-232 signals. The minimum required for the Courier to operate asynchronously follows:

DB-25 Pin	DB-9 Pin	Function
2	3	Transmitted Data
3	2	Received Data
7	5	Signal Ground
20	4	Data Terminal Ready

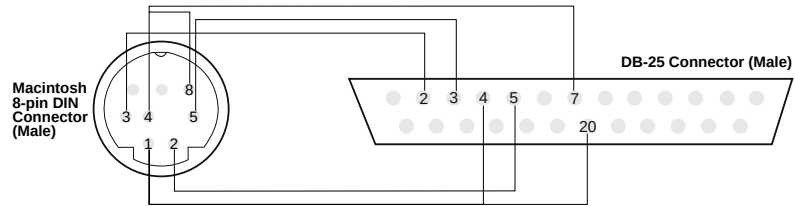
Flow Control Requirements

If your computer and software support Clear to Send and you wish to use Transmit Data hardware flow control (&H1), Pin 5 (DB-25) or Pin 8 (DB-9) is required.

If your computer and software support Request to Send and you wish to use Received Data hardware flow control (&R2), Pin 4 (DB-25) or Pin 7 (DB-9) is required.

For Macintosh Computers

If you're connecting the Courier to a Macintosh computer, we strongly recommend that you purchase a *Hardware Handshaking* cable to get the most reliable performance.



Mac Pin	Mac Pin Description	Modem Pin	Modem Pin Description
1	Output Handshake	4,20	Request to Send and Data Terminal Ready
2	Input Handshake	5	Clear to Send
3	Transmit Data -	2	Transmit Data
4	Ground	7	Ground
4,8	Ground to Received Data		
5	Received Data -	3	Received Data

Appendix B

Technical Specifications

Standards Compatibility

The Courier uses multiple standard data communications protocols and is also compatible with many nonstandard schemes.

NOTE: The International Telecommunication Union (ITU-T) was formerly the International Telegraph and Telephone Consultative Committee (CCITT).

Modulation

ITU-T V.34	33.6/31.2/28.8/26.4/24/21.6/19.2/16.8/14.4/12 Kbps; 9600/7200/4800 bps asynchronous Trellis Coded Modulation (TCM)
V.FC	28.8/26.4/24/21.6/19.2/16.8/14.4 Kbps asynchronous Trellis Coded Modulation (TCM)
V.32terbo	21.6/19.2/16.8/14.4/12 Kbps; 9600/7200 bps asynchronous Trellis Coded Modulation (TCM); 4800 bps asynchronous Quadrature Amplitude Modulation (QAM)
HST	16.8/14.4/12 Kbps; 9600/7200 bps asynchronous, asymmetrical, 450 bps back channel with automatic handshake adjustment to 300 bps Trellis Coded Modulation (TCM) and Quadrature Amplitude Modulation (QAM); 4800 bps asynchronous, asymmetrical, 450 bps back channel with automatic

	handshake adjustment to 300 bps Quadrature Amplitude Modulation (QAM).
ITU-T V.32bis	14.4 / 12 Kbps; 9600 / 7200 bps asynchronous Trellis Coded Modulation (TCM); 4800 bps asynchronous Quadrature Amplitude Modulation (QAM)
ITU-T V.32	9600 bps asynchronous, Trellis Coded Modulation (TCM); 4800 bps asynchronous, Quadrature Amplitude Modulation (QAM)
ITU-T V.22bis	2400 bps asynchronous, Quadrature Amplitude Modulation (QAM)
Bell 212A	1200 bps (also V.22) asynchronous, Differential Phase Shift Keying (DPSK)
ITU-T V.23	1200 bps asymmetrical with 75 bps back channel with Frequency Shift Keying (FSK), used by some U.K. and European phone systems.
Bell 103	300 bps (ITU-T V.21 optional) asynchronous, Frequency Shift Keying (FSK)

Error Control, Data Compression, Testing, and Dialing

ITU-T V.42	LAPM error control, 1200 bps and higher
MNP	Levels 2, 3 and 4 error control, level 5 data compression, 1200 bps and higher
HST	Asymmetrical mode, at 16.8 / 14.4 / 12 Kbps; 9600 / 7200 / 4800 bps, 450 / 300 bps back channel
ITU-T V.42bis	Data compression, 1200 bps and higher
ITU-T V.54	Digital and remote digital loopback testing
ITU-T V.25bis	Dialing and answering method for automatic calling and / or answering equipment.

Fax

The Courier provides Group III-compatibility when controlled by Class 1 or Class 2.0 fax software. In addition, the Courier adheres to the following standards:

TIA / EIA-578	Service Class 1 Asynchronous Facsimile DCE Control Standard
---------------	---

TIA / EIA-592	Service Class 2.0 Asynchronous Facsimile DCE Control Standard
ITU-T V.17	14.4 / 12 Kbps
ITU-T V.29	9600 / 7200 bps
ITU-T V.27ter	4800 / 2400 bps
ITU-T V.21	300 bps

Additional Specifications

Supported serial port rates	115200, 57600, 38400, 19200, 9600, 4800, 2400, 1200, 300 bps												
Adaptive Speed Leveling (ASL)	21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800 bps												
Serial port connector	DB-25												
Serial interfaces	EIA RS-232, supports Macintosh serial ports												
Communications channel	Full- or half-duplex on 2-wire phone lines; demand-driven high-speed turnaround in HST mode; symmetrical speeds in V.32 <i>bis</i>												
Data format	Binary, serial; defaults to 8-bit word length, no parity, and 1 stop bit. <table><tr><th>Word Length</th><th>Parity (1 Bit)</th><th>Stop Bits</th></tr><tr><td>7</td><td>Even, Odd, Mark, Space</td><td>1</td></tr><tr><td>7</td><td>None</td><td>2</td></tr><tr><td>8</td><td>None</td><td>1</td></tr></table>	Word Length	Parity (1 Bit)	Stop Bits	7	Even, Odd, Mark, Space	1	7	None	2	8	None	1
Word Length	Parity (1 Bit)	Stop Bits											
7	Even, Odd, Mark, Space	1											
7	None	2											
8	None	1											
Flow Control Buffers	Variable sizes												
Command Buffer	56 characters, excluding the AT prefix, Carriage Return and spaces												

Test Options	Remote digital loopback, digital loopback, test pattern, and dial test
Failed Call Timeout	60 second default, programmable 2-255 sec
Answer Tone Timeout	60 seconds
Answer Tone Detector	2080-2120 Hz
Loss of Carrier (Disconnect Timer)	0.7 second default, programmable 0.2-25.5 sec.
Equalization	Adaptive
Receive Sensitivity	- 43 dBm $\pm$ 2 dBm
Transmit Level	- 9 dBm maximum
Transmitter Frequency Tolerance	.01%
Certification	FCC Part 15, Class B Domestic; IC (Canada) CS-03, UL listed
Ringer Equivalence	0.4b

Appendix C

Warranty and Notices

Limited Warranty

U.S. Robotics Access Corp. warrants to the original consumer or other end user purchaser that this product is free from defects in materials or workmanship for a period of five years from the date of purchase. During the warranty period, and upon proof of purchase, the product will be repaired or replaced (with the same or similar model) at our option, without charge for either parts or labor. This warranty shall not apply if the product is modified, tampered with, misused, or subjected to abnormal working conditions.

REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE, AND U.S. ROBOTICS SHALL IN NO EVENT BE LIABLE TO PURCHASER FOR INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND OR CHARACTER.

Some states do not allow the exclusion or limitation of incidental or consequential damages or allow limitations on how long an implied warranty lasts, so the above limitations or exclusion may not apply to you. This warranty gives you specific legal rights. You may also have other rights that vary from state to state.

Should you encounter problems in operating this device, first follow the instructions in Chapter 16, *Troubleshooting*, of the *Courier Modems Command Reference* manual. The chapter contains solutions to operating problems as well as procedures to follow if there is an apparent Courier malfunction.

Service/Support

To obtain service under this warranty, contact U.S. Robotics Corporate/Systems Support as described below. Be sure to have the product's serial number handy if you call, or send copies if you are contacting us by mail.

Contacting U.S. Robotics

Check the Corporate/Systems Customer Support card that came with your Courier for information about how to contact us.

If the support representative determines that you should send your equipment to USR for service, you will be given a Service Repair Order (SRO) number to help us keep track of your warranty request. Once you have received your SRO number, take or mail the product, postage prepaid, to U.S. Robotics at the address on page 16-8 in the *Courier Modems Command Reference*. Include proof of the date of purchase.

IMPORTANT: If you ship your unit, pack it securely, be sure your SRO number is visible on the outside of the package, and ship it charges prepaid and insured.

Notices

FCC Registration

FCC15: CJE-0263

FCC 68: CJEUSA-73130-FA-E

Connecting to the Telephone Company's Lines

The telephone company may request the telephone number(s) to which the Courier is connected and the FCC information printed above.

If the Courier is malfunctioning, it may affect the telephone lines. In this case, disconnect the Courier until the source of the difficulty is traced.

FCC Notice: Radio and Television Interference

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment 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:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

IC (Industry Canada)

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the radio interference regulations of Industry Canada (formerly Canadian Department of Communications).

Le présent appareil numérique n'émet pas de bruits radio-électriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par Industrie Canada (antérieurement le ministère des Communications du Canada).

The Industry Canada (formerly DOC) label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The department does not guarantee the equipment will operate to a user's satisfaction.

Before installing this equipment, make sure you are permitted to connect it to the facilities of the local telecommunications company. You must also install the equipment using an acceptable method of connection. In some cases, you may also extend the company's inside wiring for single line individual service by means of a certified connector assembly (telephone extension cord). You should be aware, however, that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by a user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

For your own protection, make sure that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

WARNING: Do not attempt to make such connections yourself; contact the appropriate electric inspection authority or electrician.

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